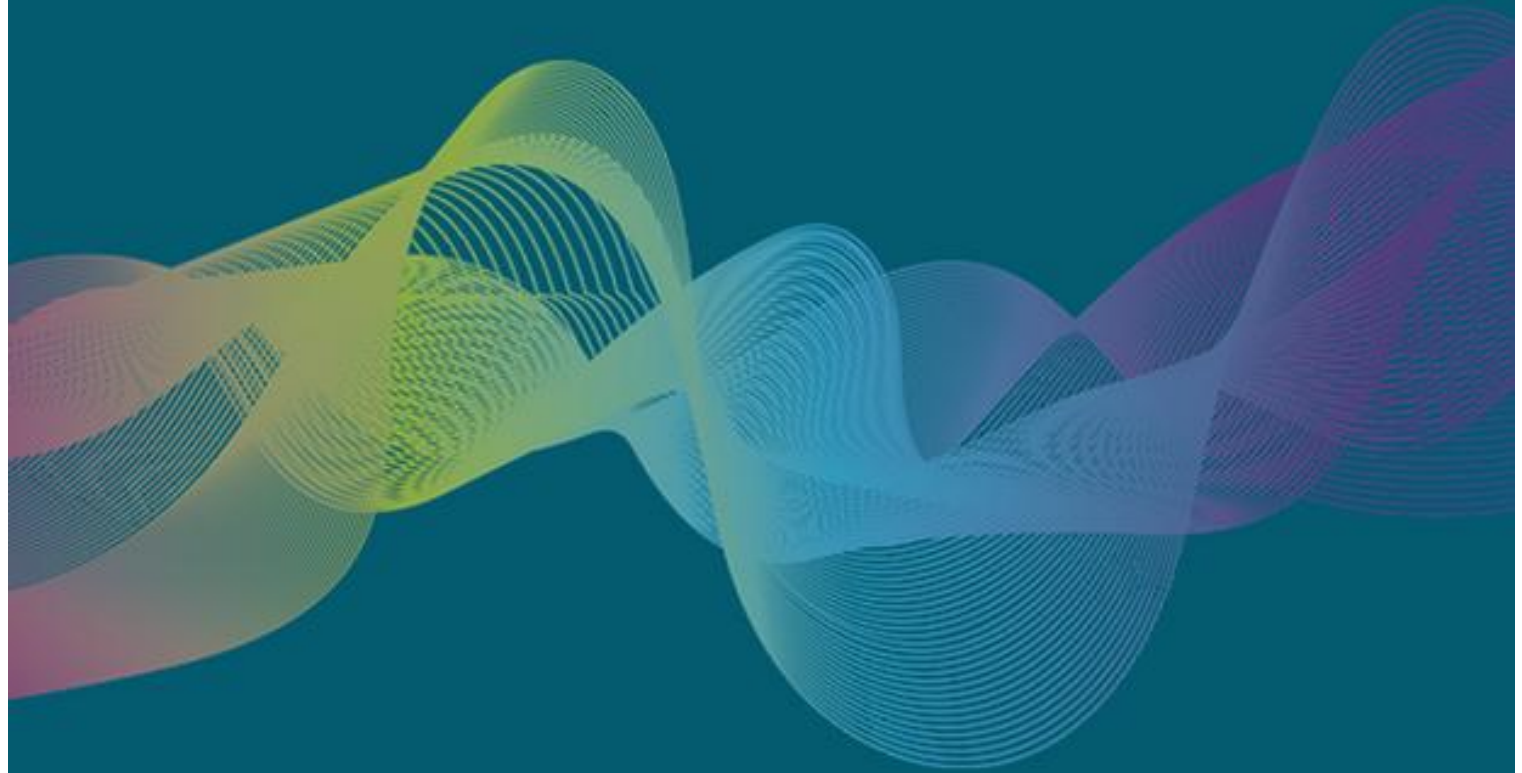




INDONESIAN JOURNAL *of* HEALTH ADMINISTRATION

JURNAL ADMINISTRASI KESEHATAN INDONESIA



Volume 12. Issue 1. June 2024

Commentary

What is the Role of
Journalism in the Political
Advocacy of Health Policy
in Indonesia?
See Page 4-10

Original Research

Health Financing Analysis of
Minimum Service Standards
in the Health Sector.
See Page 62-73

Original Research

Health Advertising on
Instagram: Is It Effective
While Following Ethical
Guidelines?
See Page 150-161

<http://e-journal.unair.ac.id/JAKI>

oa
Open Access



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia) is published by Universitas Airlangga, Faculty of Public Health, Department of Health Administration and Policy collaborated with Indonesian Public Health Union (*Persakmi*). We welcome all of experts, practitioners, and academicians who are interested in healthcare administration to submit their articles. Articles in this journal discuss various current issues in healthcare administration. The publication is issued twice a year (June and December). Indonesian Journal of Health Administration has been indexed by Scopus, DOAJ, Google Scholar, SINTA 2, Garuda, BASE, EBSCO, Hinari, ASEAN Citation Index (ACI) and *Indonesian Publication Index* (IPI).

EDITORIAL BOARD OF INDONESIAN JOURNAL OF HEALTH ADMINISTRATION

EDITOR IN CHIEF:

Prof. Dr. Ratna Dwi Wulandari, S.KM., M.Kes. Universitas Airlangga, Indonesia

EDITORIAL BOARD:

Dr. P.H. Vallerut Pobkeeree, Mahidol University, Thailand
Dr. Aidalina Mahmud, Universiti Putra Malaysia, Malaysia
Dr. Anis Fuad, Gadjah Mada University, Indonesia
Dr. Oliver Mudjarabikwa, Coventry University, United Kingdom
Ilham Akhsanu Ridlo, S.KM., M.Kes., Indonesian Public Health Union (Persakmi), Indonesia
Dr. Azniah Syam, S.KM, M.Kes., College of Health Sciences General Nani Hasanuddin, Indonesia
Dr. Ima Nadatien, S.KM., M.Kes., University of Nahdlatul Ulama Surabaya, Indonesia
Nia Kurnia Sholihat, M.Sc., Apt., University of Jenderal Soedirman, Indonesia
dr. Nur Aisyah Jamil, M.Sc., Islamic University of Indonesia, Indonesia
Andini Yulina Pramono, S.KM., MARS., Ph.D., Australia National University, Australia
Angelo Ercia, M.PH., Ph.D, European Public Health Association, United Kingdom
Dwi Rukma Santi, S.ST., M.Kes., Islamic State University of Sunan Ampel, Indonesia
Fauzie Rahman, S.KM., M.PH., Lambung Mangkurat University, Indonesia
Naiya Patel, M.P.H., B.D.S., University of Louisville School of Public Health, United States
Nuzulul Kusuma Putri, S.KM., M.Kes. Universitas Airlangga, Indonesia
Dr. Haerawati Idris, S.KM, M.Kes., Sriwijaya University, Indonesia
Nur Atika, S.KM., M.Kes, Universitas Airlangga, Indonesia
Alya Hazfiarini, S.KM., University of Melbourne, Australia
Abdu Naf'an Aisul Muhlis, S.KM., M.Sc.PH., Faculty of Public Health, University of Debrecen, Hungary
Aisyah Putri Rahvy, S.KM., M.KM. Universitas Indonesia, Indonesia
Zakiyah Dania Billah, S.Hum., MA. Universitas Dinamika, Indonesia

ADVISORY BOARD:

Prof. Dr. Sathirakorn Pongpanich, Chulalongkorn University, Thailand
Dr. Agung Dwi Laksono, S.KM., M.Kes., National Research and Innovation Agency, Indonesia
Assoc. Prof. Reece Hinchcliff, Queensland University of Technology, Australia
Prof. Dr. Ridwan Amiruddin, SKM, M.Kes, Indonesian Public Health Union (Persakmi), Indonesia
Prof. Sukri Palutturi, S.KM, M.Kes, MSc.PH, Hasanuddin University, Indonesia
Prof. Hanifa Maher Denny, S.KM, M.PH., Ph.D., Diponegoro University, Indonesia
Dr. Ronald Del Castillo, University of the Philippines, Philippines

PEER REVIEWERS:

Dr. Demsa Simbolon, S.KM., M.KM., Poltekkes Kemenkes Bengkulu, Indonesia
Ika Nurmaya, S.KM., M.Kes., Universitas Negeri Surabaya, Indonesia
Rosda Febriana, S.Fam., M.Fam.Klin., Apt., RSU Bhakti Dharma Husada, Indonesia
Dr. Yusriani, S.KM., M.Kes., Universitas Muslim Indonesia
Asmaripa Ainy, S.Si., M.Kes. Universitas Sriwijaya, Palembang, Indonesia
Dr. Eka Wilda Faida, S.KM, M.Kes. STIKES Yayasan RS Dr Soetomo Surabaya, Indonesia
Maya Weka Santi, S.KM., M.Kes. Politeknik Negeri Jember, Jember, Indonesia
Novy Reandy Sasmita, S.Si., M.Sc. Universitas Syiah Kuala, Banda Aceh, Indonesia
dr. Ryan Rachmad Nugraha, M.PH. University of Antwerp, Antwerpen, Belgium
Wiwin Nur Aeni, S.Kep.Ns., M.Kep. Sekolah Tinggi Ilmu Kesehatan Indramayu, Indonesia
Agus Fitriangga, S.KM., M.KM. Tanjung Pura University, Indonesia
Dr. Yandrizal, S.KM., M.Kes. College of Health Sciences Tri Mandiri Sakit Bengkulu
dr. Sendhi Trisanti Puspitasari, M.Kes. Universitas Negeri Malang, Indonesia
Moses Phiri, M.Sc. Health Professions Council of Zambia, Zambia



EDITORIAL ASSISTANT:

Arif Wardoyo, S.KM., M.KP. Universitas Airlangga, Indonesia
Adinda Rahma Triyaniarta, S.KM. Universitas Airlangga, Indonesia

EDITORIAL ADDRESS:

Faculty of Public Health (3rd Floor, JAKI OFFICE) Universitas Airlangga
Jl. Mulyorejo Kampus C Unair, Surabaya 60115, Indonesia
Telp. (62) (31) 5928994, (62) (31) 60707527, Fax (62) (31) 5927113

E-mail: jaki@fkm.unair.ac.id / ijha@fkm.unair.ac.id

Facebook Fanpage: <https://www.facebook.com/IJHAconnect>

Instagram: <https://instagram.com/IJHAconnect>

Twitter: <https://x.com/IJHAconnect>

Medium: <https://medium.com/ijha>

Website: <https://e-journal.unair.ac.id/JAKI>



LIST OF CONTENT

Policy Advice on Equal Access to Healthcare: What'S New? <i>Rekomendasi Kebijakan untuk Kesetaraan Akses terhadap Layanan Kesehatan: Apa yang Baru?</i> Abdu Nafan Aisul Muhlis	1-3
What is the Role of Journalism in the Political Advocacy of Health Policy in Indonesia? <i>Apa Peran Jurnalisme dalam Advokasi Politik Kebijakan Kesehatan di Indonesia?</i> Ilham Akhsanu Ridlo	4-10
Education's Role in Primary Healthcare Utilization Among Older People in Indonesia <i>Peran Pendidikan dalam Pemanfaatan Puskesmas pada Lansia di Indonesia</i> Agung Dwi Laksono Ratna Dwi Wulandari, Zuardin, Nikmatur Rohmah	11-24
The Implementation of Patient Safety Goals for Patients' Satisfaction in The Hemodialysis Unit <i>Implementasi Sasaran Keselamatan Pasien terhadap Kepuasan Pasien di Unit Hemodialisa</i> Dwi Ambarwati, Arlina Dewi	25-36
Analysis of the Market Structure of Hospital Industry in Indonesia <i>Analisis Struktur Pasar Industri Rumah Sakit di Indonesia</i> Emma Rachmawati, Yuyun Umniyatun, Deni W. Kurniawan, Mochamad I. Nurmansyah, Mukhaer Pakkanna, Husnan Nurjuman, Slamet Budiarto, Virgo S. Gohardi	37-48
Leadership Traits of Nurse Managers and Nurse Staff Commitment in the Philippines Hospitals <i>Sifat Kepemimpinan Manajer Perawat dan Komitmen Perawat Staf di Rumah Sakit Filipina</i> Paida P. Abdulmalik, Hamdoni K. Pangandaman	49-61
Health Financing Analysis of Minimum Service Standards in the Health Sector <i>Analisis Pembiayaan Kesehatan Standar Pelayanan Minimal Bidang Kesehatan</i> Arie Risdiyanti, Hadi Paramu, Sunarto	62-73
The Effects of Social Assistance Programs on Stunting Prevalence Rates in Indonesia <i>Pengaruh Program Bantuan Sosial Terhadap Tingkat Prevalensi Stunting di Indonesia</i> Siti Munawaroh, Moh Najikhul Fajri, Shochrul Rohmatul Ajija	74-85
Anti-Smoking Messages Versus Pro-Smoking Messages Among Indonesian Adolescent Smokers <i>Pesan Anti Rokok dan Pesan Pro Rokok pada Remaja Perokok di Indonesia</i> Hario Megatsari, Rita Damayanti, Dian Kusuma, Mursyidul Ibad, Siti R. Nadhiroh, Erni Astutik, Susy K. Sebayang	86-96
Effectiveness of Telemedicine Healthcare Services in Rural Areas of Bangladesh: A Study on Selected Villages <i>Efektivitas Layanan Kesehatan Telemedicine di Daerah Pedesaan Bangladesh: Studi pada Desa Terpilih</i> Md. Mafizur Rahman, Md. Arifur Rahman	97-107
Lymphatic Filariasis Drug Treatment Policies in Eastern Indonesia: What Target Characteristics Matter? <i>Kebijakan Pengobatan Filariasis di Kawasan Timur Indonesia: Target Karakteristik Apa yang Berpengaruh?</i> Agung Puja Kesuma, Mara Ipa, Agung Dwi Laksono, Tri Wahono, Rina Marina, Lukman Hakim	108-119



LIST OF CONTENT

Inpatient Care Utilization After JKN: A Study Case in East Nusa Tenggara <i>Pemanfaatan Layanan Rawat Inap Setelah JKN: Studi Kasus di Nusa Tenggara Timur</i> Aisyah Putri Rahvy, Ascobat Gani	120-128
Cost-Analysis of Reducing Mortality Rate for LBW Babies at Fatmawati Hospital's NICU <i>Analisis Biaya Perbaikan Pelayanan pada BBLR di NiCU RSUP Fatmawati</i> Prasetya Rahman Salim, Nadia Dwi Insani, Estro Dariatno Sihalohe	129-138
Provision of Lactation Clinic in Companies in Semarang City: A Review of Policy Implementation <i>Penyediaan Klinik Laktasi pada Perusahaan di Kota Semarang: Tinjauan Implementasi Kebijakan</i> Jihan Nurul Qamariah Khalishah, Ayun Sariatmi, Rani Tiya Budiyantri	139-149
Health Advertising on Instagram: Is It Effective While Following Ethical Guidelines? <i>Iklan Kesehatan di Instagram: Apakah Efektif dan Sesuai dengan Pedoman Etik?</i> Anky Angga Alhudha, Winny Setyonugroho, Firman Pribadi	150-161
Navigating Barriers: The Need for Integrated Health Information System for Tuberculosis-Diabetes Co-Screening <i>Mencari Arah Mengatasi Hambatan: Kebutuhan Sistem Informasi Terintegrasi Skrining Ganda Tuberculosis-Diabetes</i> Merita Arini, Denny Anggoro Prakoso, Farid Suryanto, Arlina Dewi, Muzaitul Akma binti Mustapa Kamal Basha	162-176



All articles published in Indonesian Journal of Health Administration (*Jurnal Administrasi Kesehatan Indonesia*) are open access under the Creative Common Attribution Licence (<http://creativecommons.org/licenses/by/4.0>); thus, build upon the material, copy and distribution of the material are not limited as long as the original source is cited.

POLICY ADVICE ON EQUAL ACCESS TO HEALTHCARE: WHAT'S NEW?

Rekomendasi Kebijakan untuk Kesetaraan Akses terhadap Layanan Kesehatan: Apa yang Baru?

Abdu Nafan Aisul Muhlis^{1,2}

¹Editor Team of Indonesian Journal of Health Administration, Surabaya, Indonesia

²Doctoral School of Health Sciences, University of Debrecen, Hungary

Correspondence:

Address: Department of Epidemiology and Public Health, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

E-mail: nafan.abdu@med.unideb.hu

With less than a decade remaining to achieve the 2030 Sustainable Development Goals (SDGs), attaining SDG Goal 3, which emphasizes health and well-being for all, remains critical (Elliott, 2022). However, disparities in healthcare access persist, negatively impacting vulnerable populations (United Nations, 2023). Some countries have adopted Universal Health Coverage (UHC) to ensure equal access to healthcare for everyone (World Health Organization, 2024). How effective is this in improving population health and encouraging people to seek care?

Since Indonesia implemented national health insurance (*Jaminan Kesehatan Nasional* or JKN) in 2014, access to healthcare has remained a key concern. In this edition of Indonesian Journal of Health Administration, Rahvy and Gani (2024) highlight significant disparities in access to inpatient care, showing that urban residents in East Nusa Tenggara (NTT) are much more likely to use these services than their rural counterparts. With nearly 60% JKN coverage in NTT in 2019, they suggest that the government expand insurance coverage and improve healthcare accessibility to prevent poverty from hospitalization costs. Additionally, Laksono *et al.* (2024) found that seniors and informal workers face barriers to healthcare access. They recommend policymakers consider travel time to primary healthcare centers in future planning, noting that older adults are more likely to visit primary care if it is within ten minutes of travel.

Bridging this gap is essential. Implementing JKN has increased demand for health services and encouraged the

growth of private hospitals, making the sector more attractive to investors. However, Rachmawati *et al.* (2024) reported that public hospitals still dominate the market share, thus indicating the need for policies that ensure equal access in all health service sectors. Digital marketing in healthcare is promising but must comply with ethical guidelines to reach diverse populations effectively. (Alhudha, Setyonugroho and Pribadi, 2024). Meanwhile, Rahman and Rahman (2024) point out the potential of telemedicine in rural areas, such as cost savings and increased accessibility. Despite its benefits, awareness and internet connectivity issues remain barriers.

To improve the quality of health services in the UHC era, Ambarwati and Dewi (2024) research on patient safety in hemodialysis units, concluding the need to improve safety measures, such as patient identification and hand hygiene. Also, effective nursing leadership significantly influences healthcare outcomes, as Abdulmalik and Pangandaman (2024) discussed. This study suggests that leadership traits such as ethical behavior and continuing education positively impact nurses' commitment and, consequently, the quality of patient care in Philippine hospitals. In addition, research on tuberculosis-diabetes mellitus (TB-DM) screening reveals significant challenges in private primary health services in Indonesia. Despite the promise of health information systems (HIS), effective two-way screening remains difficult due to systemic barriers. This study advocates a holistic approach involving various sectors to improve the

integration and management of TB-DM screening in private health services (Arini *et al.*, 2024).

This issue also covers studies that address maternal and child health disparities. Munawaroh, Fajri and Ajija (2024) emphasize the role of social assistance programs like *Bantuan Pangan Non-Tunai* (BPNT) and Program *Keluarga Harapan* (PKH) in reducing stunting rates in Indonesia. These programs, while crucial, require effective utilization and public education on childcare and nutrition to maximize their impact. The study reveals a correlation between increased social assistance and decreased stunting prevalence, supported by improved sanitation and education levels.

A study on health financing under Minimum Service Standards (MSS) in Lumajang Regency discovers persistent disparities in service access and health outcomes. Challenges include lower-than-expected Local Original Revenue (LOR) realization and insufficient budget allocation for maternal health services. This report advises diversifying funding sources and reallocating budgets to improve regional service delivery efficiency and equity (Risdiyanti, Paramu and Sunarto, 2024).

The analysis of NICU service improvements at Fatmawati Hospital quantifies a 55% increase in costs but a significant decrease in infant mortality rates. (Salim, Insani and Sihaloho, 2024) This study underscores the cost-effectiveness of enhancing NICU services despite initial financial investments. A study on implementing lactation clinics in Semarang City highlights the need for clearer policies and greater awareness to support breastfeeding in workplace settings. (Khalishah, Sriatmi and Budiyaniti, 2024)

This issue published an interesting article on the influence of media on health policy. In his commentary, Ridlo (2024) discusses the influential role of media in shaping health policy agendas during political campaigns. He highlights the importance of media in addressing urgent health issues such as non-communicable diseases and healthcare disparities. Also, in this edition, the evaluation of smoking policy among adolescents is examined. Megatsari

et al. (2024) explore the exposure of Indonesian adolescent smokers (IAS) to anti-smoking messages (ASM) and pro-smoking messages (PSM). They analyzed data from the 2019 Global Youth Tobacco Survey (GYTS) in Indonesia, which shows high exposure to both ASM (92.4%) and PSM (93%). Despite government regulations for smoke-free schools, compliance is low. This study proposes the need for stronger ASM efforts. Kesuma *et al.* (2024) also recommends targeted health promotion strategies to tackle lymphatic filariasis (LF) treatment compliance in Eastern Indonesia.

References

- Abdulmalik, P.P. and Pangandaman, H. (2024) 'Leadership Traits of Nurse Managers and Nurse Staff Commitment in the Philippines Hospitals', *Indonesian Journal of Health Administration*, 12(1), pp. 49–61. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.49-61>.
- Alhudha, A.A., Setyonugroho, W. and Pribadi, F. (2024) 'Health Advertising on Instagram: Is It Effective While Following Ethical Guidelines?', *Indonesian Journal of Health Administration*, 12(1), pp. 150–161. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.150-161>.
- Ambarwati, D. and Dewi, A. (2024) 'The Implementation of Patient Safety Goals for Patients' Satisfaction in the Hemodialysis Unit', *Indonesian Journal of Health Administration*, 12(1), pp. 25–36. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.25-36>.
- Arini, M. *et al.* (2024) 'Navigating Barriers: The Need for Integrated Health Information System for Tuberculosis-Diabetes Co-Screening', *Indonesian Journal of Health Administration*, 12(1), pp. 162–177. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.162-176>.
- Elliott, S.J. (2022) 'Global health for all by 2030', *Canadian Journal of Public*

- Health*, 113(2), pp. 175–177. Available at: <https://doi.org/10.17269/s41997-022-00623-x>.
- Kesuma, A.P. *et al.* (2024) 'Lymphatic Filariasis Drug Treatment Policies in Eastern Indonesia: What Target Characteristics Matter?', *Indonesian Journal of Health Administration*, 12(1), pp. 108–119. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.108-119>.
- Khalishah, J.N.Q., Sariatmi, A. and Budiyantri, R.T. (2024) 'Provision of Lactation Clinic in Companies in Semarang City: A Review of Policy Implementation', *Indonesian Journal of Health Administration*, 12(1), pp. 139–149. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.139-149>.
- Laksono, A.D. *et al.* (2024) 'Education's Role in Primary Healthcare Utilization Among Older People in Indonesia', *Indonesian Journal of Health Administration*, 12(1), pp. 11–24. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.11-24>.
- Megatsari, H. *et al.* (2024) 'Anti-Smoking Messages Versus Pro-Smoking Messages Among Indonesian Adolescent Smokers', *Indonesian Journal of Health Administration*, 12(1), pp. 86–96. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.86-96>.
- Munawaroh, S., Fajri, M.N. and Ajija, S.R. (2024) 'The Effects of Social Assistance Programs on Stunting Prevalence Rates in Indonesia', *Indonesian Journal of Health Administration*, 12(1), pp. 74–85. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.74-85>.
- Rachmawati, E. *et al.* (2024) 'Analysis of the Market Structure of Hospital Industry in Indonesia', *Indonesian Journal of Health Administration*, 12(1), pp. 37–48. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.37-48>.
- Rahman, M.M. and Rahman, M.A. (2024) 'Effectiveness of Telemedicine Healthcare Services in Rural Areas of Bangladesh: A Study on Selected Villages', *Indonesian Journal of Health Administration*, 12(1), pp. 97–107. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.97-107>.
- Rahvy, A.P. and Gani, A. (2024) 'Inpatient Care Utilization After Jkn: A Study Case in East Nusa Tenggara', *Indonesian Journal of Health Administration*, 12(1), pp. 120–128. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.120-128>.
- Ridlo, I.A. (2024) 'What Is the Role of Journalism in the Political Advocacy of Health Policy in Indonesia?', *Indonesian Journal of Health Administration*, 12(1), pp. 4–10. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.4-10>.
- Risdiyanti, A., Paramu, H. and Sunarto, S. (2024) 'Health Financing Analysis of Minimum Service Standards in the Health Sector', *Indonesian Journal of Health Administration*, 12(1), pp. 62–73. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.62-73>.
- Salim, P.R., Insani, N.D. and Sihalohe, E.D. (2024) 'Cost-Analysis of Reducing Mortality Rate for LBW Babies at Fatmawati Hospital's NICU', *Indonesian Journal of Health Administration*, 12(1), pp. 129–138. Available at: <https://doi.org/10.20473/jaki.v12i1.2024.129-138>.
- United Nations (2023) 'Goal 3: Ensure healthy lives and promote well-being for all at all ages', *United Nations Sustainable Development Goals*. Available at: <https://www.un.org/sustainabledevelopment/health/>.
- World Health Organization (2024) *Health equity, WHO Health Topics*. Available at: <https://www.who.int/health-topics/health-equity>.

WHAT IS THE ROLE OF JOURNALISM IN THE POLITICAL ADVOCACY OF HEALTH POLICY IN INDONESIA?

Apa Peran Jurnalisme dalam Advokasi Politik Kebijakan Kesehatan di Indonesia?

Ilham Akhsanu Ridlo^{1,2}

¹Institute of Communication and Media Research, Ludwig Maximilian Universität (LMU), München, Germany

²Department of Health Policy and Administration, Universitas Airlangga, Surabaya, Indonesia

Correspondence:

Address: Geschwister-Scholl-Platz 1, 80539 München, Germany | e-mail: ilham.ridlo@campus.lmu.de

Abstract

In this short commentary article, the complex association between journalism, health policy, and political campaigning in Indonesia is explained, in need of more scholarly expansion. Within those limitations, the paper does alert to the necessary function journalism serves intrinsic to the public discourse that drives health policy recommendations, as well as noting how this has been perverted by misinformation and dwindling faith in the media. The article examines how journalism (including digital and social media) has shaped health policy advocacy and public opinion and highlights the role of the media in health communication campaigns and policy reform. Through scrutiny of its role in health policy advocacy, with a broader look at how journalism roles have shifted over time. In this article, the author demonstrated that journalism is a bridge between health policy experts and the public, enabling a more informed democratic engagement with health policy. These conclusions highlight the need to build a nexus between democratic journalism and health policy advocacy for public health priorities in Indonesia.

Keywords: health policy, journalism, political campaign

Abstrak

Dalam artikel komentar singkat ini, hubungan yang kompleks antara jurnalisme, kebijakan kesehatan, dan kampanye politik di Indonesia dijelaskan, yang membutuhkan lebih banyak pengembangan keilmuan. Dalam keterbatasan tersebut, makalah ini mengingatkan akan fungsi jurnalisme yang penting dan vital dalam wacana publik yang mendorong rekomendasi kebijakan kesehatan, serta mencatat bagaimana hal ini telah disesatkan oleh informasi yang keliru dan berkurangnya kepercayaan terhadap media. Artikel ini mengkaji bagaimana jurnalisme (termasuk media digital dan media sosial) telah membentuk advokasi kebijakan kesehatan dan opini publik, serta menyoroti peran media dalam kampanye komunikasi kesehatan dan reformasi kebijakan. Melalui pengamatan terhadap perannya dalam advokasi kebijakan kesehatan, dengan melihat lebih luas bagaimana peran jurnalisme telah bergeser dari waktu ke waktu. Dalam artikel ini, penulis menunjukkan bahwa jurnalisme berperan sebagai jembatan antara para ahli kebijakan kesehatan dan masyarakat, yang memungkinkan adanya keterlibatan demokratis yang lebih terinformasi dalam kebijakan kesehatan. Kesimpulan ini menyoroti perlunya membangun hubungan antara jurnalisme demokratis dan advokasi kebijakan kesehatan untuk prioritas kesehatan masyarakat di Indonesia.

Kata kunci: jurnalisme, kampanye politik, kebijakan kesehatan

Introduction

It can be argued that journalism is crucial in informing the public about policy issues and providing the necessary information for public discourse and decision-making (Napoli, 2020). In some cases, the role of journalism can be said to be more specific in public health issues related to health policy. The relationship between journalism and social security and health financing has attracted significant attention from journalists, resulting in

numerous studies on media framing (Jung, 2016; Calnan, 2020; Eriksen *et al.*, 2023).

The role of journalism (and media) has become more relevant and closer since the onset of the COVID-19 pandemic. The role of journalism in guiding public health protocols and critiquing government policies has become increasingly important during the pandemic (Estella, 2020; Perreault and Perreault, 2021). However, on the other hand, their products leave a lot of criticism regarding accuracy, misinformation (Luengo and García-Marín,



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.4-10.

Received: 2024-02-03, Revised: 2024-06-11, Accepted: 2024-06-24, Published: 2024-06-25.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Ilham Akhsanu Ridlo

This is an Open Access (OA) article under the CC BY-SA 4.0 International License <https://creativecommons.org/licenses/by-sa/4.0/>

How to cite:

Ridlo, I. A. (2024) "What is the Role of Journalism in the Political Advocacy of Health Policy in Indonesia?", *Indonesian Journal of Health Administration*, 12(1), pp. 4-10. doi: 10.20473/jaki.v12i1.2024.4-10.

2020; Nasir, Baequni and Nurmansyah, 2020; Arora, 2022) and addressing public trust issues (Bromme *et al.*, 2022) have been identified as key areas for future research.

The series of events during the COVID-19 pandemic has been linked to the democratic crisis (Amat *et al.*, 2020; Bandelow, Hassenteufel and Hornung, 2021; Engler *et al.*, 2021). In Indonesia, democratic backsliding has allowed anti-democratic actors to become more explicit in silencing dissenting voices (Fealy, 2020; Hermawan, 2020). Threats to press freedom during the pandemic have been associated with anti-science narratives that compromised the government's ability to manage COVID-19 (Wiratraman, 2020). More than ever before, journalism, democracy and public health converge in the face of a health crisis. Each sector contributes significantly to determining how people relate socially. Additionally, the connection between journalism and health policy in political campaign events in electoral democratic setting is something worth exploring further. This is because it embraces many dimensions of unexplored interdisciplinary studies on journalism approaches in Indonesia contributing to health policy advocacy such as *Indonesian Journal of Health Administration* (IJHA). The paper provides insight into their dynamic interplay within political campaigns taking place in Indonesia.

Discussion

The 2024 presidential election in Indonesia has prompted discussion on a number of health issues. These issues include programs such as free lunch (makan siang gratis), stunting, and distribution of medical doctors (Nurhasim *et al.*, 2024). In an electoral democracy system, political campaigns play an important role in shaping public opinion and assessing the direction of policies politicians offer (Matsubayashi, 2013). This provides the impetus for journalism and the media to perform their function of disseminating information and framing public health issues to get the attention of

advocates, policy analysts, and academics in the field of public health. Otherwise, it may lead to misunderstandings among the voting public and policymakers. Furthermore, the extent to which health issues are included in political decisions and reflected in journalists' media reporting indicates policy neglect (Jessani *et al.*, 2022; Picard, 2020).

The role of journalism in strengthening democratic values is crucial, including in health policy formulation processes that involve public participation. The dissemination of accurate and unbiased information by the media helps inform the public about important health issues, policy developments, and debates that encourage public participation (Henderson, Hilton and Green, 2019). Transparency and access to public health information can only work through a well-functioning democracy. Framing public discourse is also a role of journalism. This role highlights the impact on the public interest, ethical considerations, and social determinants of health rather than presenting issues through a narrow technocratic lens. This framing influences how the public and policymakers perceive and prioritise health issues (Calnan, 2020; Eriksen *et al.*, 2023). This public framing strengthens democratic representation and challenges power imbalances that often sideline minority groups in the policy-making process.

Public framing by utilizing digital media and social media in political campaigns can also substantially influence priority issues in health policy advocacy. Today, the merger of digital technology and social media platforms has the potential to facilitate targeted outreach, audience segmentation, and personalized communication in encouraging public participation on public health issues (Afful-Dadzie, Afful-Dadzie and Egala, 2021; Akbar, Kurniadi and Nurliawati, 2021; Barberá *et al.*, 2022). In the framework of political advocacy (Gilardi *et al.*, 2021), the use of social media platforms by political authorities has the potential to shape public health communication and encourage policy reform. Empirical evidence suggests

that the media, including political advertising, can influence public opinion, policymakers, and policy agendas (Fowler *et al.*, 2019). In addition, some models explain the impact of social media on public health campaigns, which are related to indirect influences on behavior modification, such as how health sector reforms can be driven by media coverage pressures (Charalambous, 2019; Abuhashesh *et al.*, 2021; Afful-Dadzie, Afful-Dadzie and Egala, 2021; Akbar, Kurniadi and Nurliawati, 2021; Apriliyanti, Utomo and Purwanto, 2021).

What Happens in Indonesia?

In Indonesia, health policy issues in political campaigns have gained a place in media coverage. Issues raised include inadequate health budgets, malnutrition, stunting, health service gaps, health service accessibility, and dangers related to non-communicable diseases. This depicts how online media amplification, as a consequence of journalism, has directed public attention towards diverse health policy concerns in Indonesia. In the realm of political campaign contestation, the role of online media is noteworthy because it has the potential to stimulate public discourse in shaping the political agenda (Adiprasetyo and Larasati, 2020; Benning, Ashby and Chapp, 2020; Fadhlurrohman and Purnomo, 2020), including public health issues.

The discourse revolving around journalism (and media more broadly) and health policy is particularly intriguing, especially after a meticulous analysis of several articles on the interconnectedness of journalism and public policy and how certain media outlets have also assumed the role of health policy advocates during the COVID-19 pandemic. For instance, online media outlets such as *Project Multatuli*, born during the pandemic, and *Watchdoc*, a documentary video genre media, serve as an alternative medium for disseminating COVID-19 countermeasures. *Narasi*, employing a social media approach, also offers an alternative avenue for public deliberation.

Meanwhile, other media outlets with a more scholarly disposition, such as *The Conversation Indonesia*, were initially established to amplify research findings for the public and policymakers. The emergence of several new online media does not diminish the role of traditional media that have long been established (such as *Kompas*, *Tempo*, *Media Indonesia*, *Jawa Pos*, *The Jakarta Post*, and others), which also have amplification for policymakers.

Journalism bridges health policy experts and the public, effectively translating complex issues into narratives that are easy to comprehend. In political campaigns, media coverage can greatly shape health topics that have become part of the political discussion. The role of media diversity and independence is significant. Conversely, a concentrated or state-controlled media landscape may limit the range of perspectives and narratives presented, thereby reducing the impact of journalism (Hanitzsch, 2005; Haryanto, 2011; Tapsell, 2012, 2017; Ali and Eriyanto, 2021). In addition to state control, other factors, such as media ownership, media literacy, alternative sources of information, cultural diversity, and political divisions, can also influence the role of journalism in shaping the public narrative about public health.

There is some research on how health topics can be integrated into political communication and become public attention (Ridlo, 2023), so that it has the potential to provide a deep public understanding of health policy even though this is often intended for populist purposes. This populist goal will not become a public issue without the involvement of journalism and the media so that political issues about health can be moderated for the wider public interest. This step of journalism and the role of the media plays an important role in enabling voters to understand the policy implications and allowing candidates to articulate their positions on pressing health issues. Therefore, the relationship between journalism and health policy advocacy cannot be separated as a strategic part in creating discourse around health issues has become an important

point in the political process (Aarva, 2006; Aelst, 2019; Luengo and García-Marín, 2020; Napoli, 2020; Perreault and Perreault, 2021). Despite the current and future political and democratic challenges, the Indonesian people still have a great opportunity to advocate for the public by encouraging deliberative democratic spaces for public health goals for all. Bringing journalism closer as an effective tool in the health policy advocacy process can help leaders in the health sector to address information gaps, increase public participation at large in health development and future health emergency preparedness.

Conclusion

The relationship between journalism and health policy in political campaigns is a complex realm, but studies and efforts to bring this field together have important potential to encourage public participation in public health in Indonesia. As explored in this article, the role of journalism and the media in moderating health issues into the public agenda is something that the author feels needs to be considered by policymakers, regardless of whether it is in a political campaign. In striving for a healthier democracy, the interaction between these areas must be fostered to ensure that health policy debates are adequately informed, evidence-based, and reflect the democratic values that seek to be upheld. Through these efforts, journalism and the media play a role in strengthening the foundations of a democratic society that prioritizes health and well-being for all.

Declarations

Ethics Approval and Participant Consent

Not applicable.

Conflict of Interest

The author is the former managing editor of *The Indonesian Journal of Health Administration*. The author expresses ideas and scientific opinions under the journal's policies in this commentary publication. This type of commentary

publication still undergoes peer review and editorial process even though it falls into the lower level of the evidence hierarchy (expert opinion).

Availability of Data and Material

Not applicable.

Author's Contributions

Not applicable.

Funding Sources

Not applicable.

Acknowledgments

Not applicable.

References

- Aarva, P. (2006) 'Studying the striving and opposing forces in newspaper journalism: The actantial model of health promotion', *Health Promotion International*, 21(2), pp. 160–168. Available at: <https://doi.org/10.1093/heapro/dal010>.
- Abuhashesh, M.Y. et al. (2021) 'The role of social media in raising public health awareness during the pandemic covid-19: An international comparative study', *Informatics*, 8(4). Available at: <https://doi.org/10.3390/informatics8040080>.
- Adiprasetyo, J. and Larasati, A.W. (2020) 'Pandemic crisis in online media: Quantitative framing analysis on detik.com's coverage of covid-19', *Jurnal Ilmu Sosial dan Ilmu Politik*, 24(2), pp. 153–170. Available at: <https://doi.org/10.22146/JSP.56457>.
- Aelst, P. (2019) 'Journalists and Public Policy', in T.P. Vos et al. (eds) *The International Encyclopedia of Journalism Studies*. 1st edn. Wiley, pp. 1–6. Available at: <https://doi.org/10.1002/9781118841570.iejs0054>.
- Afful-Dadzie, E., Afful-Dadzie, A. and Egala, S.B. (2021) 'Social media in health communication: A literature review of information quality', *Health*

- information management: journal of the Health Information Management Association of Australia* [Preprint]. Available at: <https://doi.org/10.1177/1833358321992683>.
- Akbar, G.G., Kurniadi, D. and Nurliawati, N. (2021) 'Content Analysis of Social Media: Public and Government Response to COVID-19 Pandemic in Indonesia', *Jurnal Ilmu Sosial dan Ilmu Politik*, 25(1), pp. 16–31. Available at: <https://doi.org/10.22146/jsp.56488>.
- Ali, D.J. and Eriyanto (2021) 'Political polarization and selective exposure of social media users in indonesia', *Jurnal Ilmu Sosial dan Ilmu Politik*, 24(3), pp. 268–283. Available at: <https://doi.org/10.22146/JSP.58199>.
- Amat, F. et al. (2020) 'Pandemics meet democracy. Experimental evidence from the COVID-19 crisis in Spain'.
- Apriliyanti, I.D., Utomo, W.P. and Purwanto, E.A. (2021) 'Examining the policy narratives and the role of the media in policy responses to the COVID-19 crisis in Indonesia', *Journal of Asian Public Policy*, 0(0), pp. 1–17. Available at: <https://doi.org/10.1080/17516234.2021.1954770>.
- Arora, N. (2022) 'Misinformation, Fake News and Rumor Detection', pp. 307–324. Available at: https://doi.org/10.1007/978-981-16-3398-0_14.
- Bandelow, N.C., Hassenteufel, P. and Hornung, J. (2021) 'Patterns of Democracy Matter in the COVID-19 Crisis', *International Review of Public Policy*, 3(1). Available at: <https://doi.org/10.4000/irpp.1788>.
- Barberá, P. et al. (2022) 'Distract and Divert: How World Leaders Use Social Media During Contentious Politics', *The International Journal of Press/Politics*, p. 19401612221102030. Available at: <https://doi.org/10.1177/19401612221102030>.
- Benning, T.J., Ashby, G.B. and Chapp, C.B. (2020) 'Frequency and Specificity of Pediatric Health Policy Discussions in Political Campaigns', *JAMA Pediatrics*, 174(8), p. 795. Available at: <https://doi.org/10.1001/jamapediatrics.2020.0932>.
- Bromme, R. et al. (2022) 'An anchor in troubled times: Trust in science before and within the COVID-19 pandemic', *PLOS ONE*. Edited by A. Gesser-Edelsburg, 17(2), p. e0262823. Available at: <https://doi.org/10.1371/journal.pone.0262823>.
- Calnan, M. (2020) 'Framing Health Policy in the Media', in *Health Policy, Power and Politics: Sociological Insights*. Emerald Publishing Limited, pp. 87–101. Available at: <https://doi.org/10.1108/978-1-83909-394-420201008>.
- Charalambous, A. (2019) 'Social Media and Health Policy', *Asia-Pacific Journal of Oncology Nursing*, 6(1), p. 24. Available at: <https://doi.org/10/gjhd8k>.
- Engler, S. et al. (2021) 'Democracy in times of the pandemic: explaining the variation of COVID-19 policies across European democracies', *West European Politics*, 44(5–6), pp. 1077–1102. Available at: <https://doi.org/10.1080/01402382.2021.1900669>.
- Eriksen, A. et al. (2023) 'The media's coverage and framing of hospital reforms: The case of Denmark', *Health Policy*, 133, p. 104840. Available at: <https://doi.org/10.1016/j.healthpol.2023.104840>.
- Estella, P.G. (2020) 'Journalism competence and the COVID-19 crisis in Southeast Asia', *Pacific Journalism Review: Te Koakoa*, 26(2), pp. 15–34. Available at: <https://doi.org/10.24135/pjr.v26i2.1132>.
- Fadhlurrohman, M.I. and Purnomo, E.P. (2020) 'The role of online mass media as a tool for the 2019 political campaign in Indonesia', *Jurnal Studi Komunikasi (Indonesian Journal of*

- Communications Studies*), 4(2), p. 311. Available at: <https://doi.org/10.25139/jsk.v4i2.2182>.
- Fealy, G. (2020) 'Jokowi in the Covid-19 Era: Repressive Pluralism, Dynasticism and the Overbearing State', *Bulletin of Indonesian Economic Studies*, 56(3), pp. 301–323. Available at: <https://doi.org/10.1080/00074918.2020.1846482>.
- Fowler, E.F. et al. (2019) 'Issues Relevant to Population Health in Political Advertising in the United States, 2011-2012 and 2015-2016', *The Milbank Quarterly*, 97(4), pp. 1062–1107. Available at: <https://doi.org/10.1111/1468-0009.12427>.
- Gilardi, F. et al. (2021) 'Social Media and Political Agenda Setting', *Political Communication*, pp. 1–22. Available at: <https://doi.org/10.1080/10584609.2021.1910390>.
- Hanitzsch, T. (2005) 'Journalists in Indonesia: educated but timid watchdogs', *Journalism Studies*, 6(4), pp. 493–508. Available at: <https://doi.org/10.1080/10584609.2021.1910390>.
- Haryanto, I. (2011) 'Media ownership and its implications for journalists and journalism in Indonesia', *Politics and the media in twenty-first century Indonesia: Decade of democracy*, pp. 104–118.
- Henderson, L., Hilton, S. and Green, J. (2019) *Media Analysis and Public Health: Contemporary Issues in Critical Public Health*. 1st edn. Available at: <https://www.routledge.com/Media-Analysis-and-Public-Health-Contemporary-Issues-in-Critical-Public-Health/Henderson-Hilton-Green/p/book/9780367784546> (Accessed: 7 June 2024).
- Hermawan, A. (2020) *Politics of pandemics: How online 'buzzers' infect Indonesia's democracy, jeopardize its citizens*, *The Jakarta Post*. Available at: <https://www.thejakartapost.com/academia/2020/03/21/covid-19-doesnt-care-about-politics-how-online-buzzers-infect-indonesias-democracy.html> (Accessed: 24 April 2021).
- Jessani, N.S. et al. (2022) 'Evidence attack in public health: Diverse actors' experiences with translating controversial or misrepresented evidence in health policy and systems research', *Global Public Health*, 17(11), pp. 3043–3059. Available at: <https://doi.org/10.1080/17441692.2021.2020319>.
- Jung, E. (2016) 'Campaigning for All Indonesians: The Politics of Healthcare in Indonesia', *Contemporary Southeast Asia*, 38(3), pp. 476–494. Available at: <https://doi.org/10.1355/cs38-3e>.
- Luengo, M. and García-Marín, D. (2020) 'The performance of truth: politicians, fact-checking journalism, and the struggle to tackle COVID-19 misinformation', *American Journal of Cultural Sociology*, 8(3), pp. 405–427. Available at: <https://doi.org/10.1057/s41290-020-00115-w>.
- Matsubayashi, T. (2013) 'Do Politicians Shape Public Opinion', *British Journal of Political Science*, 43(02), pp. 451–478. Available at: <https://doi.org/10.1017/S0007123412000373>.
- Napoli, P.M. (2020) 'Connecting Journalism and Public Policy: New Concerns and Continuing Challenges', *Digital Journalism*, 8(6), pp. 691–703. Available at: <https://doi.org/10.1080/17441692.2021.2020319>.
- Nasir, N.M., Baequni, B. and Nurmansyah, M.I. (2020) 'MISINFORMATION RELATED TO COVID-19 IN INDONESIA', *Jurnal Administrasi Kesehatan Indonesia*, 8(0), pp. 51–59. Available at: <https://doi.org/10.20473/jaki.v8i0.2020.51-59>.
- Nurhasim, A. et al. (2024) *Kelemahan pada 7 isu krusial membayangi*

- kemenangan Prabowo-Gibran, *The Conversation*. Available at: <http://theconversation.com/kelemahan-pada-7-isu-krusial-membayangi-kemenangan-prabowo-gibran-222272> (Accessed: 10 June 2024).
- Perreault, M.F. and Perreault, G.P. (2021) 'Journalists on COVID-19 Journalism: Communication Ecology of Pandemic Reporting', *The American Behavioral Scientist*, p. 0002764221992813. Available at: <https://doi.org/10/gjvmbm>.
- Picard, R.G. (2020) 'Politics in the Pursuit of Policy Outcomes', in R.G. Picard (ed.) *Media and Communications Policy Making: Processes, Dynamics and International Variations*. Cham: Springer International Publishing (Palgrave Global Media Policy and Business), pp. 47–70. Available at: https://doi.org/10.1007/978-3-030-35173-1_3.
- Ridlo, I.A. (2023) 'Frequency and specificity of health issues in local political campaigns', *International Journal of Health Governance*, 28(4), pp. 368–382. Available at: <https://doi.org/10.1108/IJHG-03-2023-0034>.
- Tapsell, R. (2012) 'Politics and the Press in Indonesia', *Media Asia*, 39(2), pp. 109–116. Available at: <https://doi.org/10.1080/01296612.2012.11689925>.
- Tapsell, R. (2017) *Media power in Indonesia: oligarchs, citizens and the digital revolution*. London: Rowman & Littlefield International, Ltd (Media, culture and communication in Asia-Pacific societies).
- Wiratraman, H.P. (2020) *Deportasi peneliti asing, pembubaran diskusi kampus: kuatnya narasi antisains pemerintahan Jokowi*, *The Conversation*. Available at: <http://theconversation.com/deportasi-peneliti-asing-pembubaran-diskusi-kampus-kuatnya-narasi-antisains-pemerintahan-jokowi-131903> (Accessed: 1 November 2021).

EDUCATION'S ROLE IN PRIMARY HEALTHCARE UTILIZATION AMONG OLDER PEOPLE IN INDONESIA

Peran Pendidikan dalam Pemanfaatan Puskesmas pada Lansia di Indonesia

*Agung Dwi Laksono^{1,2}, Ratna Dwi Wulandari^{2,3}, Zuardin Zuardin⁴, Nikmatur Rohmah⁵

¹ National Research and Innovation Agency Republic of Indonesia, Jakarta, Indonesia

² The Airlangga Centre for Health Policy, Surabaya, Indonesia

³ Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

⁴ Faculty of Psychology and Health, UIN Sunan Ampel, Surabaya, Indonesia

⁵ Faculty of Health Science, Muhammadiyah University of Jember, Jember, Indonesia

Correspondence*:

Address: BJ. Habibie Building, Jl. MH. Thamrin No. 8, Central Jakarta, Indonesia | e-mail: agung.dwi.laksono@brin.go.id

Abstract

Introduction: The current situation shows that life expectancy is increasing, so the population of older people is also growing. As a vulnerable group, more senior people desperately need primary health care, and barriers to accessing services will increase vulnerability.

Aim: The study aimed to investigate the impact of education on primary healthcare utilization among older people.

Methods: This cross-sectional study examined 52,893 older people. It employed primary healthcare utilization as an outcome variable and education level as an exposure variable. Furthermore, the study used eight control variables: residence type, age group, gender, marital status, wealth, time travel to primary healthcare, and health insurance. We employed binary logistic regression to examine the data.

Results: The study showed that older adults with primary education were 1.050 times more likely than those without to utilize primary healthcare (95% CI 1.046-1.054). Older people with secondary education were 0.643 times less likely to use primary healthcare than those without (95% CI 0.638-0.649). Older adults with secondary education were 0.378 times less likely than those without to use primary healthcare (95% CI 0.372-0.383). Furthermore, the study indicated that all control variables were significantly related to direct healthcare utilization.

Conclusion: The study concluded that education level influences primary healthcare utilization among older people in Indonesia.

Keywords: elderly people, education, primary healthcare, healthcare evaluation, healthcare access, public health

Abstrak

Latar Belakang: Situasi saat ini menunjukkan bahwa usia harapan hidup semakin meningkat, sehingga jumlah penduduk lanjut usia juga semakin meningkat. Sebagai kelompok rentan, lansia sangat membutuhkan layanan kesehatan dasar, dan hambatan dalam mengakses layanan akan meningkatkan kerentanan.

Tujuan: Tujuan penelitian ini adalah untuk melihat dampak pendidikan terhadap pemanfaatan layanan kesehatan primer di kalangan lansia.

Metode: Studi potong lintang ini meneliti 52.893 lansia. Selain itu, penelitian menggunakan pemanfaatan layanan kesehatan primer sebagai variabel hasil dan tingkat pendidikan sebagai variabel paparan. Selain itu, penelitian ini menggunakan delapan variabel kontrol: tempat tinggal, usia, jenis kelamin, status perkawinan, kekayaan, perjalanan waktu ke layanan kesehatan primer, dan asuransi kesehatan. Kami memanfaatkan regresi logistik biner untuk analisis data.

Hasil: Hasil studi menginformasikan bahwa lansia dengan pendidikan dasar 1,050 kali lebih mungkin memanfaatkan layanan kesehatan primer dibandingkan mereka yang tidak sekolah (95% CI 1,046-1,054). Lansia dengan pendidikan menengah 0,643 kali lebih kecil kemungkinannya untuk menggunakan layanan kesehatan primer dibandingkan mereka yang tidak (AOR 0,643; 95% CI 0,638-0,649). Orang dewasa yang lebih tua dengan pendidikan menengah adalah 0,378 kali lebih kecil kemungkinannya dibandingkan mereka yang tidak menggunakan layanan kesehatan primer (AOR 0,378; 95% CI 0,372-0,383). Selanjutnya, hasil studi menemukan bahwa semua variabel kontrol signifikan berkaitan dengan pemanfaatan layanan kesehatan primer.

Kesimpulan: Tingkat pendidikan memengaruhi pemanfaatan layanan kesehatan primer pada lansia di Indonesia.

Kata kunci: akses kesehatan, evaluasi kesehatan, kesehatan masyarakat, lansia, pelayanan kesehatan dasar, pendidikan



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.11-24

Received: 2023-04-25, Revised: 2023-11-22, Accepted: 2023-11-24, Published: 2024-06-12.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Agung Dwi Laksono, Ratna Dwi Wulandari, Zuardin Zuardin, Nikmatur Rohmah

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Laksono, A. D., Wulandari, R. D., Zuardin, Z., and Rohmah, N. (2024) "Education's Role in Primary Healthcare Utilization Among Older People in Indonesia", *Indonesian Journal of Health Administration*, 12(1), pp. 11-24. doi: 10.20473/jaki.v12i1.2024.11-24.

Introduction

Life expectancy at birth is the estimated average number of years a person has from conception. Life expectancy illustrates a community's health state. Premature death is also reflected in life expectancy. The 2018 world community's life expectancy was 72.5 years based on WHO data. Inequality in life expectancy remains significant throughout the world. Rich countries have more than 80 years of life expectancy, while countries with the worst health conditions have 50-60 years (Roser *et al.*, 2019). Most high-income countries experienced a decline in life expectancy during 2014-15. However, most of these countries experienced an increase in 2015-2016 (Ho and Hendi, 2018). In 2019, the average life expectancy in Indonesia was 73.3 years for women and 69.4 years for men. The life expectancy of the Indonesian people has increased from year to year. The rise in life expectancy also suggests that Indonesians' socioeconomic and health conditions have improved (Indonesian Central Bureau of Statistics, 2021a). One of the indicators of health quality related to life expectancy is the health of the elderly group.

Older people are a vulnerable group due to degenerative diseases. According to a study, older persons have unmet care needs and chronic disorders. Older people have physical, psychological, social, and environmental limitations. The body functions of older adults also experience disturbances in the form of mental and physical disorders. In several cases, some elderly experience visual hallucinations, anxiety, worry, frustration, and fear. Physical conditions include heart failure, dementia, cancer, COPD, urinary incontinence, impaired digestive function, and knee osteoarthritis (Abdi *et al.*, 2019; Llopis-Cardona *et al.*, 2023; Svrika *et al.*, 2017). Older people in China, about 35% to 46%, are the vulnerable elderly group. In China, over 67% of older people are at risk of passing away or functional impairment (Kong and Yang, 2019).

In 2019, there were 25.9 million senior individuals in Indonesia or roughly 9.7% of the country's population. The older

adults' poverty rate in Indonesia is higher than other age groups, reaching 11.1%. Meanwhile, the elderly morbidity rate in Indonesia is also high, namely 25.05%. Older people and aging are closely linked to four diseases: blood circulation disorders, hormonal-metabolic disorders, joint infections, and neoplasms (Misnaniarti, 2017). Environmental, technological, and lifestyle changes have altered the disease pattern in Indonesia. Diabetes, heart disease, dyslipidemia, obesity, kidney disease, lung disease, and cancer are the most common diseases in Indonesia (Purnamasari, 2018). Furthermore, the prevalence of obesity and central obesity among Indonesian adults is 23.1% and 28%, respectively (Harbuwono *et al.*, 2018). Moreover, cancer, stroke, renal, joint disease, diabetes mellitus, heart disease, hypertension, and obesity showed a growing tendency in 2018 Indonesian Primary Health Research compared to prior studies (Purnamasari, 2018).

A previous study showed several non-communicable diseases related to older adults in Indonesia. The prevalence of hypertension, mental health issues, and depression among the elderly increases with age. Most hypertension and mental-emotional illnesses were more common among older people with poor education, and depression was more common in those with a low education level (Rukmini *et al.*, 2022). In Indonesia, nearly half of older adults (48.14%) experienced physical and psychological health concerns, and roughly 24.35% of the seniors were ill in the previous month. However, in 2020, the morbidity rate for older persons in Indonesia will be the lowest in the preceding six years. Most elderly persons self-medicate or seek outpatient care for their health problems (96.12%) (Indonesian Central Bureau of Statistics, 2021b; Megatsari *et al.*, 2023; Rukmini *et al.*, 2022).

Primary health care is the first level of service and the public's first point of contact with the healthcare system. Primary health care is universally available, and access to health services is a critical socioeconomic determinant of health to increase the availability and timeliness of

quality health care. In China, older persons with adequate access to health care have a longer life expectancy (Hao *et al.*, 2020). Most older adults in Indonesia choose to visit a practicing nurse/midwife, followed by community health care (C.-M. Chen and Baithesda, 2020). However, Ontario research found challenges to aged care, such as poor system connectivity and inadequate service access (Lafortune *et al.*, 2015). As a vulnerable group, older people desperately need primary health care, and barriers to accessing services will increase vulnerability (Suslo *et al.*, 2023).

One study reports a strong relationship between education and population health. We can see that education policies can also be viewed as downstream health policies. Education is positively related to health through many mechanisms. In the adult group, an increase in education leads to a rise in healthy old age (Beltrán-Sánchez *et al.*, 2015; Nantabah *et al.*, 2023). The Elderly in Indonesia who have no education and live in rural areas are more likely to use community health care (C.-M. Chen and Baithesda, 2020). Based on the narration, the study's goal is to look into the impact of education on primary healthcare utilization among older people in Indonesia.

Method

Study Design and Data Source

We used secondary data from the 2018 Indonesian Basic Health Survey in the cross-sectional investigation. The Republic of Indonesia's Ministry of Health conducted a national-scale survey. During May and July 2018, the survey used Household and Individual Instruments interviews to acquire data for the survey.

The Indonesian Basic Health Survey 2018 surveyed all Indonesian households. This poll is based on the Central Statistics Agency's 2018 National Socioeconomic Survey, conducted in March 2018. Moreover, the 2018 Indonesian Basic Health Survey visited a target sample of 300,000 households from 30,000 census blocks, while the 2018 Socioeconomic Survey visited a target sample of 300,000

families from 30,000 census blocks (The Indonesian MOH, 2018).

The survey employed the probability proportional to size (PPS) approach, which uses systematic linear sampling in two stages: Stage 1: Implicit stratification based on the welfare strata of all census blocks established by the 2010 Population Census. PPS chose the sample survey as the sampling frame for selecting census blocks from a master frame of 720,000 from the 2010 Population Census, of which 180,000 were chosen (25%). The survey used the PPS method to identify the number of census blocks in each urban/rural strata per regency/city to create a Census Block Sample List. A total of 30,000 Census Blocks were chosen in the voting. Stage 2: To preserve the representation of the diversity value of household characteristics, utilize systematic sampling to select ten homes in each Census Block with the highest implicit stratification of education completed by the Head of Household. All household-chosen members will be polled as part of the 2018 Indonesian Basic Health Survey (Riseskdas) (The Indonesian MOH, 2018).

The participants in the study were all over 65 years old. According to the sampling methodology, this study used a weighted sample of 52,893 people.

Outcome Variables

The research employed primary healthcare use as the outcome variable. The utilization of primary healthcare by older adults was the access to primary healthcare. Primary healthcare use is split into unutilized and utilized (The Indonesian MOH, 2018).

Exposure Variable

We included education level as an exposure variable. The education level is determined based on the respondent's confession. Meanwhile, the study defines the education of older people as not attending school or receiving their last diploma. Moreover, the study included four education levels: no formal education, primary, secondary, and higher.

Control Variables

Furthermore, we examined eight control factors. The eight were residence type, age group, gender, marital status, employment status, health insurance, time travel to primary healthcare, and wealth status.

The study separated the housing types into urban and rural. We employed the Indonesian Statistics' provisions for urban-rural categorization. We divided older adults into 65-74 (youngest-old), 75-84 (middle-old), and ≥ 85 (oldest-old) (Lee *et al.*, 2018). However, we split gender into male and female. We also divided people into three categories regarding marital status: never married, married, and divorced/ widowed.

Unemployed and employed are the two employment statuses. Uninsured, government-run, private-run, and government-run + private-run insurance are the four types of health insurance ownership identified in the survey. Furthermore, two types of time travel to primary healthcare are ten minutes and more than ten minutes.

The survey used the wealth index formula to determine wealth status. The wealth index was calculated using a weighted average of a family's total spending in the survey. Meanwhile, the poll created a wealth index based on crucial household expenditures such as insurance, food, accommodation, etc. Furthermore, the study separated the income into the poorest, poorer, middle, richer, and richest (Wulandari, Laksono, Prasetyo, *et al.*, 2022).

Data Analysis

We used the Chi-Square test in the early stages to offer a bivariate comparison. A collinearity test was also employed to ensure that the independent variables in the final regression model did not have a strong link. In the last point of the study, we used a binary logistic regression. The survey used the test to examine the multivariate association between all

independent factors and primary healthcare use. We used an adjusted odds ratio (AOR) at 95% significance. We employed the IBM SPSS 26 application throughout the statistical examination.

Besides, we employed ArcGIS 10.3 (ESRI Inc., Redlands, CA, USA) to map primary healthcare utilization among Indonesia's elderly in 2018 by province.

Result and Discussion

According to the findings, Indonesia's national average primary healthcare utilization among older adults was 10.3%. Meanwhile, Figure 1 informs the distribution map of immediate healthcare utilization by the province among older adults. The map indicates a tendency for direct healthcare utilization outside Java-Bali Island, as the government's center tends to be better.

Table 1 displays descriptive statistics of primary healthcare use and Indonesia's elderly characteristics. The study results find older people with unutilized primary healthcare ruled in all education. Meanwhile, regarding the type of residence, older adults in the urban area lead the secondary and higher education categories. Moreover, older people, the youngest age, dominated at all education levels.

The male ruled in the secondary and higher education categories. On the contrary, the female elderly lead in the no and primary education. The married elderly ruled in all education level categories based on marital status, except that divorced or widowed elderly dominated no education category.

Table 1 shows the unemployed dominated in none and secondary education; employed elderly ruled in primary and higher education categories. Moreover, the elderly with government-run insurance dominated all education level types.

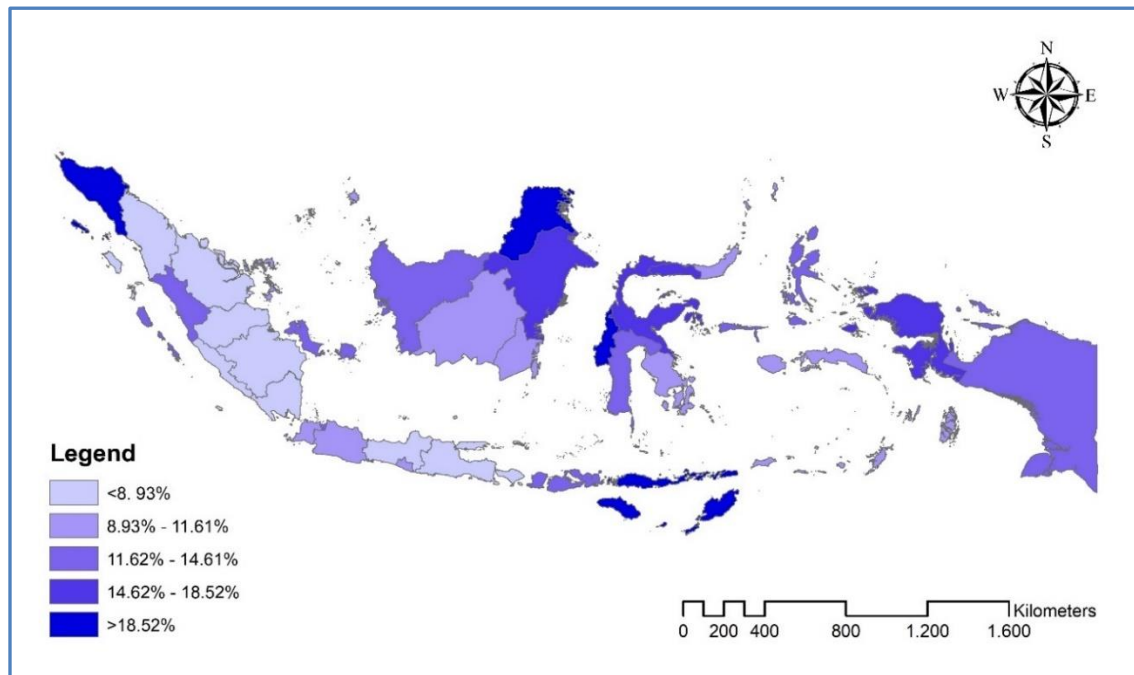


Figure 1. Map of Distribution of primary healthcare utilization among older adults by the province, Indonesia, 2018

Table 1. Descriptive statistic of primary healthcare use and older adults characteristics, Indonesia, 2018

Demographic Characteristics	Education Level				p-value
	None (n=197,340)	Primary (n=413,012)	Secondary (n=14,025)	Higher (4,993)	
Primary Healthcare Utilization					< 0.001
Unutilized	89.4%	89.0%	93.0%	95.7%	
Utilized	10.6%	11.0%	7.0%	4.3%	
Type of residence					< 0.001
Urban	39.2%	50.0%	83.8%	84.1%	
Rural	60.8%	50.0%	16.2%	15.9%	
Age					< 0.001
Youngest-old	56.5%	71.2%	78.4%	82.8%	
Middle-old	33.3%	24.0%	19.9%	16.5%	
Oldest-old	10.2%	4.8%	1.7%	0.7%	
Gender					
Male	30.3%	49.4%	64.4%	63.8%	
Female	69.7%	50.6%	35.6%	36.2%	
Marital status					< 0.001
Never in union	1.4%	0.9%	1.1%	1.7%	
Married/ Living with a partner	40.3%	58.9%	70.9%	76.0%	
Divorced/ Widowed	58.2%	40.2%	28.0%	22.3%	
Employment status					< 0.001
Unemployed	61.5%	49.2%	51.7%	45.8%	
Employed	38.5%	50.8%	48.3%	54.2%	
Health Insurance					
Uninsured	36.3%	32.7%	16.6%	7.0%	
Government-run	63.4%	66.2%	78.1%	83.2%	
Private-run	0.2%	0.8%	4.1%	7.1%	
Government and Private-run	0.1%	0.3%	1.2%	2.7%	

Demographic Characteristics	Education Level				p-value
	None (n=197,340)	Primary (n=413,012)	Secondary (n=14,025)	Higher (4,993)	
Wealth status					< 0.001
Poorest	35.3%	25.8%	5.2%	2.5%	
Poorer	23.6%	20.9%	8.0%	3.4%	
Middle	17.4%	18.8%	12.7%	7.3%	
Richer	14.6%	18.1%	20.5%	14.6%	
Richest	9.1%	16.4%	53.6%	72.2%	
Time travel					< 0.001
≤10 minutes	42.9%	49.6%	62.3%	65.6%	
>10 minutes	57.1%	50.4%	37.7%	34.4%	

Table 2. The findings of binary logistic regression of primary healthcare use among older adults, Indonesia, 2018

Predictor	Utilized Primary Healthcare			
	p-value	AOR	95% CI	
			Lower Bound	Upper Bound
Education: No Education	-	-	-	-
Education: Primary	< 0.001	1.050	1.046	1.054
Education: Secondary	< 0.001	0.643	0.638	0.649
Education: Higher	< 0.001	0.378	0.372	0.383
Residence: Urban	< 0.001	0.877	0.874	0.881
Residence: Rural	-	-	-	-
Age: Youngest-old	-	-	-	-
Age: Middle-old	< 0.001	0.908	0.904	0.911
Age: Oldest-old	< 0.001	0.729	0.723	0.735
Gender: Male	< 0.001	1.030	1.026	1.034
Gender: Female	-	-	-	-
Marital: Never in union	-	-	-	-
Marital: Married/Living with partner	< 0.001	0.913	0.898	0.929
Marital: Divorced/Widowed	< 0.001	0.901	0.898	0.905
Employment: Unemployed	-	-	-	-
Employment: Employed	< 0.001	0.848	0.845	0.851
Health insurance: Uninsured	-	-	-	-
Health insurance: Government-run	< 0.001	2.158	2.150	2.167
Health insurance: Private-run	< 0.001	1.303	1.277	1.330
Health insurance: Government-run and Private-run	< 0.001	0.394	0.371	0.417
Wealth: Poorest	-	-	-	-
Wealth: Poorer	< 0.001	1.067	1.061	1.072
Wealth: Middle	< 0.001	1.030	1.024	1.035
Wealth: Richer	< 0.001	1.043	1.038	1.049
Wealth: Richest	< 0.001	0.908	0.903	0.913
Time travel: ≤10 minutes	< 0.001	1.067	1.061	1.072
Time travel: >10 minutes	-	-	-	-

The poorest were ruled out in the no and primary education categories based on wealth. Reversely, the richest ruled in the secondary and higher education groups. Furthermore, the secondary and higher education groups lead for ten minutes based on time travel to primary healthcare. On the contrary, the elderly with more than ten minutes ruled in the none and primary education categories.

Based on gender, males led the uninsured category. According to marital status, married elderly has significance in all types of health insurance ownership. In addition to that, primary education represented the uninsured category. Meanwhile, employed dominated all sorts of health insurance ownership. Finally, the richest are overwhelmed by all adults with insurance based on wealth status.

The following phase was to do a collinearity test. The results demonstrate that there is no significant link between the independent variables. Furthermore, the tolerance value for all variables is more significant than 0.10, and the variance inflation factor (VIF) value for all variables is less than 10.00. There were no signs of multicollinearity in the regression model.

Table 2 displays the binary logistic regression findings of primary healthcare utilization among older people. The study used the "utilized primary healthcare" as a reference in the investigation. Table 2 indicates that older adults with primary education are 1.050 times more likely than those without to use primary healthcare (95% CI 1.046-1.054). Meanwhile, older people with secondary education are 0.643 times less likely than those without to utilize primary healthcare (95% CI 0.638-0.649). Moreover, older people with secondary education are 0.378 times less likely than those without to use primary healthcare (95% CI 0.372-0.383).

The findings explain that the education level of older adults contributes to direct healthcare utilization in Indonesia (Gao *et al.*, 2022; Mahmudiono and Laksono, 2021). Education is a fundamental social determinant that affects the upstream aspects of public health (Rohmah *et al.*, 2020). A study conducted in China to improve the primary healthcare

system found that education level is one of the main challenges in implementing integrated healthcare reform (Li *et al.*, 2017). The findings align with previous studies, which explained that most older adults prefer to go to the midwife/nurse rather than visit primary healthcare. Education level, region, and disease condition are significantly predicting factors for all disease types in direct health services (C. M. Chen and Baithesda, 2020; Megatsari *et al.*, 2018). A study conducted in Italy also confirmed that education is one of the most important factors influencing the choice of health services in different geopolitical areas (Barbiellini *et al.*, 2021; Wulandari *et al.*, 2023).

Moreover, the findings indicate that older people with secondary and higher education are likelier to utilize primary healthcare. The condition can explain that better education of older adults positively impacts immediate healthcare utilization in Indonesia. Healthcare services are essential in public policy and in achieving universal health coverage (Prinja *et al.*, 2019). The higher the level of education, the lower the likelihood that older people will experience health problems and poor functional capacity (Azhar *et al.*, 2021). Education provides several benefits for health because it affects psychosocial and behavioral factors. Elderly individuals with higher levels of education are less likely to expose themselves to illness and unsuitable working conditions (Vegi *et al.*, 2020).

Besides, the findings found that all control variables were significantly related to primary healthcare utilization. Older people in the urban area are 0.877 times less likely than those in the rural area to utilize primary healthcare (95% CI 0.874-0.881). Geographical access to primary health care in urban areas is more affordable than in rural (Laksono *et al.*, 2019b; Seran *et al.*, 2020). The disparity in direct health services is still an unresolved problem in Indonesia (Laksono *et al.*, 2019a; Wulandari, Laksono, Nantabah, *et al.*, 2022). On the other hand, politicians must uphold access to primary healthcare as a fundamental right to promote population health (Wang *et al.*, 2018). A

prior study advised that elderly persons, particularly those living in rural parts of developing countries, have adequate access to healthcare (Banerjee, 2021; Zhang *et al.*, 2017). Moreover, other studies inform that the authors see disparities in primary health care between ethnic minorities and the majority areas. Policymakers evenly distribute professional health workers, and road access improvements will also improve spatial access to direct health services and narrow the gap (Sillehu *et al.*, 2023; Wang *et al.*, 2018).

According to the age group, the middle-old is 0.908 times less likely than the youngest-old to utilize primary healthcare (95% CI 0.904-0.911). Furthermore, the oldest is 0.729 times less likely than the youngest to use primary healthcare (95% CI 0.723-0.735). Table 2 shows gender is also related to direct healthcare utilization. The male is 1.030 times more likely than the female to use primary healthcare (95% CI 1.026-1.034). According to marital status, the married elderly are 0.913 times less likely than those who are never in a union to utilize primary healthcare (95% CI 0.898-0.929). Conversely, the divorced/widowed elderly are 0.901 times less likely than those who are never in a union to utilize primary healthcare (95% CI 0.898-0.905). Table 2 displays employment that is also connected to direct healthcare utilization. The employed are 0.848 times less likely than the unemployed to use primary healthcare (95% CI 0.845-0.851).

The situation informs that several other aspects also influence primary healthcare utilization among older adults in Indonesia, including age group, gender, marital status, and employment status. Previous research has informed that life expectancy gains due to employment status depend on race, gender, education, and other social situations (Assari, 2018; Yang *et al.*, 2021). In Indonesia, a previous study found factors related to healthcare utilization among adults were also associated with gender, marital status, and type of work (Laksono *et al.*, 2019b; Megatsari *et al.*, 2021).

Regarding health insurance ownership, older adults with government-run insurance are 2.158 times more likely than the uninsured to utilize primary healthcare (95% CI 2.150-2.167). Meanwhile, the elderly with private-run insurance is 1.303 times more likely than the uninsured to use primary healthcare (95% CI 1.277-1.330). Moreover, older adults with government-run and private-run insurance are 0.394 times less likely to utilize primary healthcare than the uninsured (95% CI 0.371-0.417).

Older adults with government-run insurance can contribute to direct healthcare utilization in Indonesia. Several studies inform several things. First, having health insurance increases the likelihood of receiving health services and lowers out-of-pocket hospitalization costs. Second, healthcare systems distribute benefits unequally, with low- and middle-income persons benefiting most from out-of-pocket reductions. Third, health insurance benefits rural populations somewhat, demonstrating that institutional impediments persist. Fourth, health insurance does not boost patient visits to primary care institutions; hospitals remain the dominant providers (Laksono *et al.*, 2021, 2023; Putri *et al.*, 2023; Wulandari, Laksono, Sillehu, *et al.*, 2022). On the contrary, our analysis of the elderly shows that government-run insurance can increase access to primary health care.

Based on wealth status, all statuses of wealth have more possibility than the poorest to utilize primary healthcare, except the richest, who are less likely than the poorest to use primary healthcare. The results explain why the condition is associated with the ability to pay for services (Muttaqien *et al.*, 2021). These results strengthen the previous studies in various countries (Islam and Shahjahan, 2021; Laksono *et al.*, 2022; Wulandari *et al.*, 2019; Wuneh *et al.*, 2019). Conversely, several previous studies informed that wealthier people prefer to seek treatment at hospitals with more complete services (Wulandari *et al.*, 2019; Wulandari, Laksono, Prasetyo, *et al.*, 2022).

Finally, Table 2 indicates that primary healthcare travel time affects direct

healthcare utilization. Older adults with ten minutes to travel to primary healthcare are 1.067 times more likely than those with more than ten minutes to utilize primary healthcare (95% CI 1.061-1.072). Travel time can be an early factor to consider in using primary healthcare. The faster the travel time to primary healthcare, the more opportunities for the Elderly to take advantage of direct health services. A previous study informed that long-distance travel and the economic aspect of access to health services for older people further exacerbated the gap between urban and suburban areas to utilize primary healthcare (Du *et al.*, 2020; Ipa *et al.*, 2023; Lama *et al.*, 2020). Another study emphasizes a critical place that policymakers must address regarding accessibility to primary healthcare centers. Policymakers should consider the time spent on foot or by car at primary healthcare centers in future policy planning and decision-making (Du *et al.*, 2020).

Strength and Limitation

We evaluate big data to represent nationally. On the contrary, we look at secondary data, limiting the factors acceptable variables can examine. Earlier studies established several other factors connected to primary healthcare utilization among older people, such as travel costs, lifestyles, and diseases affecting older adults, which we cannot study (Lee *et al.*, 2021; Xiao *et al.*, 2021).

Conclusion

The study concluded that education level influences primary healthcare utilization among older adults in Indonesia. On the other hand, we also found all control variables related to immediate healthcare use: age group, gender, marital status, employment status, health insurance ownership, wealth status, and time travel to primary healthcare.

Policymakers can take advantage of the results to accelerate primary healthcare utilization among older people in Indonesia. Policymakers can determine specific policy targets based on the findings.

Abbreviations

AOR: Adjusted Odds Ratio; CI: Confidence Interval; *Riskesdas*: *Riset Kesehatan Dasar*.

Declarations

Ethics Approval and Consent Participant

The 2018 Indonesian Basic Health Survey was approved by the National Ethics Committee (LB.02.01/2/KE.024/2018). All respondents' identities were removed from the dataset after the survey. Participants have given written consent to participate in the study. Through the website <http://www.litbang.kemkes.go.id/layanan-permintaan-data-riset/>, the author has been granted permission to utilize the data for this study.

Conflict of Interest

The authors affirm that they do not have any competing interests.

Availability of Data and Materials

The author cannot publicly disclose the data since neither a third party nor the Ministry of Health of the Republic of Indonesia, the data's owner, is authorized to do so. For researchers who meet the requirements for access to confidential data, the 2018 Indonesian Basic Health Survey data set is accessible online at <https://layanandata.kemkes.go.id/>.

Authors' Contribution

ADL constructed the study concept; RDW proposed the methodology; Z and NR drafted, edited, and revised the text; and ADL wrote the first draft.

Acknowledgment

The National Institute of Health Research and Development is to be thanked for agreeing to analyze the data for this article.

References

- Abdi, S., Spann, A., Borilovic, J., de Witte, L., and Hawley, M. (2019). Understanding the care and support needs of older people: a scoping review and categorisation using the

- WHO international classification of functioning, disability and health framework (ICF) (BMC geriatrics (2019) 19 1 (195)). *BMC Geriatrics*, 19(195), 1–15. <https://doi.org/10.1186/s12877-019-1279-8>
- Assari, S. (2018). Life Expectancy Gain Due to Employment Status Depends on Race, Gender, Education, and Their Intersections. *Journal of Racial and Ethnic Health Disparities*, 5(2), 375–386. <https://doi.org/10.1007/s40615-017-0381-x>
- Azhar, G., Wei, J. Y., Schutzler, S. E., Coker, K., Gibson, R. V., Kirby, M. F., Ferrando, A. A., and Wolfe, R. R. (2021). Daily Consumption of a Specially Formulated Essential Amino Acid-Based Dietary Supplement Improves Physical Performance in Older Adults With Low Physical Functioning. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 76(7), 1184–1191. <https://doi.org/10.1093/gerona/glab019>
- Banerjee, S. (2021). Determinants of rural-urban differential in healthcare utilization among the elderly population in India. *BMC Public Health*, 21(1), 1–18. <https://doi.org/10.1186/s12889-021-10773-1>
- Barbiellini, A. C., Macciò, S., Cantarutti, A., Gessoni, F., Bardin, A., Zanier, L., Canova, C., and Simonato, L. (2021). Hospitalizations and emergency department visits trends among elderly individuals in proximity to death: a retrospective population-based study. *Scientific Reports*, 11(1), 21472. <https://doi.org/10.1038/s41598-021-00648-1>
- Beltrán-Sánchez, H., Soneji, E., and Crimmins, E. (2015). Past, Present, and Future of Healthy Life Expectancy. *Cold Spring Harb Perspect Med.*, 5(11), 1–11. <https://doi.org/10.1101/cshperspect.a025957>
- Chen, C. M., and Baithesda, B. (2020). Primary healthcare utilization by the elderly: a secondary analysis of the 5th Indonesian Family Life Survey. *Working with Older People*, 24(2), 81–94. <https://doi.org/10.1108/WWOP-01-2020-0001>
- Du, M., Cheng, L., Li, X., and Yang, J. (2020). Factors affecting the travel mode choice of the urban elderly in healthcare activity: comparison between core area and suburban area. *Sustainable Cities and Society*, 52(January 2020), 101868. <https://doi.org/10.1016/j.scs.2019.101868>
- Gao, Q., Prina, A. M., Ma, Y., Aceituno, D., and Mayston, R. (2022). Inequalities in Older age and Primary Health Care Utilization in Low-and Middle-Income Countries. *International Journal of Health Services*, 52(1), 99–114. <https://doi.org/10.1177/00207314211041234>
- Hao, L., Xu, X., Dupre, M. E., Guo, A., Zhang, X., Qiu, L., Zhao, Y., and Gu, D. (2020). Adequate access to healthcare and added life expectancy among older adults in China. *BMC Geriatrics*, 20(129), 1–15. <https://doi.org/10.1186/s12877-020-01524-9>
- Harbuwono, D. S., Pramono, L. A., Yunir, E., and Subekti, I. (2018). Obesity and central obesity in indonesia: Evidence from a national health survey. *Medical Journal of Indonesia*, 27(2), 53–59. <https://doi.org/10.13181/mji.v27i2.1512>
- Ho, J. Y., and Hendi, A. S. (2018). Recent trends in life expectancy across high income countries: Retrospective observational study. *BMJ (Online)*, 362(4 June), 1–14. <https://doi.org/10.1136/bmj.k2562>
- Indonesian Central Bureau of Statistics. (2021a). *Life Expectancy at Birth (Angka Harapan Hidup saat Lahir)*. Badan Pusat Statistik.
- Indonesian Central Bureau of Statistics. (2021b). *The 2020 Elderly Population Statistics (Statistik Penduduk Lanjut*

- Usia 2020).
<https://www.bps.go.id/publication/2020/12/21/0fc023221965624a644c1111/statistik-penduduk-lanjut-usia-2020.html>
- Ipa, M., Laksono, A. D., and Wulandari, R. D. (2023). The Role of Travel Time on Hospital Utilization in the Islands Area: A Cross-Sectional Study in the Maluku Region, Indonesia, in 2018. *Indian Journal of Community Medicine*, 48(2), 269–273. https://doi.org/10.4103/ijcm.ijcm_229_22
- Islam, M. M., and Shahjahan, M. (2021). Exploring the reasons and factors influencing the choice of home delivery of births in rural Bangladesh: a community-based cross-sectional study. *Journal of Health Research, ahead-of-p(ahead-of-print)*. <https://doi.org/10.1108/jhr-07-2020-0284>
- Kong, T., and Yang, P. (2019). Finding the vulnerable among China's elderly: identifying measures for effective policy targeting. *Journal of Aging and Social Policy*, 31(3), 271–290. <https://doi.org/10.1080/08959420.2018.1485391>
- Lafortune, C., Huson, K., Santi, S., and Stolee, P. (2015). Community-based primary health care for older adults: A qualitative study of the perceptions of clients, caregivers and health care providers. *BMC Geriatrics*, 15(1), 1–11. <https://doi.org/10.1186/s12877-015-0052-x>
- Laksono, A. D., Nugraheni, W. P., Ipa, M., Rohmah, N., and Wulandari, R. D. (2023). The Role of Government-run Insurance in Primary Health Care Utilization: A Cross-Sectional Study in Papua Region, Indonesia, in 2018. *International Journal of Health Services*, 53(1), 85–93. <https://doi.org/10.1177/00207314221129055>
- Laksono, A. D., Nugraheni, W. P., Rohmah, N., and Wulandari, R. D. (2022). Health insurance ownership among female workers in Indonesia: does socioeconomic status matter? *BMC Public Health*, 22(1), 1798. <https://doi.org/10.1186/s12889-022-14189-3>
- Laksono, A. D., Wulandari, R. D., and Matahari, R. (2021). The determinant of health insurance ownership among pregnant women in Indonesia. *BMC Public Health*, 21(1), 1538. <https://doi.org/10.1186/s12889-021-11577-z>
- Laksono, A. D., Wulandari, R. D., and Soedirham, O. (2019a). Regional Disparities of Health Center Utilization in Rural Indonesia. *Malaysian Journal of Public Health Medicine*, 19(1), 158–166. <https://doi.org/10.37268/mjphm/vol.19/no.1/art.48>
- Laksono, A. D., Wulandari, R. D., and Soedirham, O. (2019b). Urban and Rural Disparities in Hospital Utilization among Indonesian Adults. *Iranian Journal of Public Health*, 48(2), 247–255. <https://doi.org/10.18502/ijph.v48i2.819>
- Lama, T., Baskota, S., Gurung, M., Poudel, L., Bhandari, N., and Lama, S. D. (2020). Health seeking behaviour among elderly in Nason Rural Municipality, Manang. *Journal of General Practice and Emergency Medicine of Nepal*, 7(9), 1–5. <https://doi.org/10.59284/jgpeman87>
- Lee, S. B., Oh, J. H., Park, J. H., Choi, S. P., and Wee, J. H. (2018). Differences in youngest-old, middle-old, and oldest-old patients who visit the emergency department. *Clinical and Experimental Emergency Medicine*, 5(4), 249–255. <https://doi.org/10.15441/ceem.17.261>
- Lee, T.-Y., Susanti, H. D., Hung, K.-C., Yang, S.-Y., Fang, H.-F., Tsai, J.-R., Chiou, J.-F., and Chung, M.-H. (2021). Health care needs of elderly patients with lung, liver, or colon cancer in Taiwan. *BMC Palliative Care*, 20(1), Article number 21. <https://doi.org/10.1186/s12904-021-00708-3>
- Li, X., Lu, J., Hu, S., Cheng, K. K., Maeseneer, J. De, Meng, Q., Mossialos, E., Xu, D. R., Yip, W.,

- Zhang, H., Krumholz, H. M., Jiang, L., and Hu, S. (2017). The primary health-care system in China. *The Lancet*, 390(10112), 2584–2594. [https://doi.org/10.1016/S0140-6736\(17\)33109-4](https://doi.org/10.1016/S0140-6736(17)33109-4)
- Llopis-Cardona, F., Armero, C., and Sanf  lix-Gimeno, G. (2023). Estimating disease incidence rates and transition probabilities in elderly patients using multi-state models: a case study in fragility fracture using a Bayesian approach. *BMC Medical Research Methodology*, 23(1), Article number 40. <https://doi.org/10.1186/s12874-023-01859-y>
- Mahmudiono, T., and Laksono, A. D. (2021). Disparity in the hospitals utilization among regions in Indonesia. *Open Access Macedonian Journal of Medical Sciences*, 9(E), 1461–1466. <https://doi.org/10.3889/oamjms.2021.7304>
- Megatsari, H., Laksono, A. D., Herwanto, Y. T., Sarweni, K. P., Geno, R. A. P., Nugraheni, E., and Ibad, M. (2021). Does husband/partner matter in reduce women's risk of worries?: Study of psychosocial burden of covid-19 in indonesia. *Indian Journal of Forensic Medicine and Toxicology*, 15(1), 1101–1106. <https://doi.org/10.37506/ijfmt.v15i1.13564>
- Megatsari, H., Laksono, A. D., Ridlo, I. A., Yoto, M., and Azizah, A. N. (2018). Community Perspective about Health Services Access. *Bulletin of Health Systems Research*, 21, 247–253. <https://doi.org/10.22435/hsr.v21i4.231>
- Megatsari, H., Nandini, N., and Laksono, A. D. (2023). Health Center Utilization among the Elderly in the East Java Province. *Jurnal PROMKES*, 11(1), 26–35. <https://doi.org/10.20473/jpk.V11.I1.2023.26-35>
- Misnaniarti, M. (2017). Situation Analysis of Elderly People and Efforts To Improve Social Welfare in Indonesia. *Jurnal Ilmu Kesehatan Masyarakat*, 8(2), 67–73. <https://doi.org/10.26553/jikm.2017.8.2.67-73>
- Muttaqien, M., Setiyaningsih, H., Aristianti, V., Coleman, H. L. S., Hidayat, M. S., Dhanalvin, E., Siregar, D. R., Mukti, A. G., and Kok, M. O. (2021). Why did informal sector workers stop paying for health insurance in Indonesia? Exploring enrollees' ability and willingness to pay. *PLOS ONE*, 16(6), e0252708. <https://doi.org/10.1371/journal.pone.0252708>
- Nantabah, Z. K., Mubasyiroh, R., Kristanto, A. Y., Indrawati, L., Paramita, A., Tjandrarini, D. H., and Laksono, A. D. (2023). Public satisfaction with the quality of First Health Facility Services in Indonesia: Does sociodemographic matter? *Asian Pacific Journal of Tropical Medicine*, 16(9), 409–417. <https://doi.org/10.4103/1995-7645.386257>
- Prinja, S., Bahuguna, P., Gupta, I., Chowdhury, S., and Trivedi, M. (2019). Role of insurance in determining utilization of healthcare and financial risk protection in India. *PLoS ONE*, 14(2), 1–16. <https://doi.org/10.1371/journal.pone.0211793>
- Purnamasari, D. (2018). The Emergence of Non-communicable Disease in Indonesia. *Acta Medica Indonesiana*, 50(4), 273–274. <https://www.actamedindones.org/index.php/ijim/article/view/1028>
- Putri, N. K., Laksono, A. D., and Rohmah, N. (2023). Predictors of national health insurance membership among the poor with different education levels in Indonesia. *BMC Public Health*, 23(1), Article number 373. <https://doi.org/10.1186/s12889-023-15292-9>
- Rohmah, N., Yusuf, A., Hargono, R., Laksono, A. D., Masrurroh, Ibrahim, I., and Walid, S. (2020). Determinants of teenage pregnancy in Indonesia. *Indian Journal of Forensic Medicine and Toxicology*, 14(3), 2080–2085. <https://doi.org/https://doi.org/10.3750>

- 6/ijfmt.v14i3.10736
- Roser, M., Oriz-Ospina, E., and Ritchie, H. (2019). *Life Expectancy*. Our Word in Data.
- Rukmini, R., Handajani, A., Paramita, A., Andarwati, P., and Laksono, A. D. (2022). Non-Communicable Diseases among the Elderly in Indonesiain 2018. *Indian Journal of Forensic Medicine and Toxicology*, 16(1), 1026–1036. <https://doi.org/10.37506/ijfmt.v16i1.17631>
- Seran, A. A., Laksono, A. D., Sujoso, A. D. P., Masruroh, Ibrahim, I., Marasabessy, N. baharia, Rohmah, N., Pakaya, N., and Adriyani, R. (2020). Does Contraception Used Better In Urban Areas?: An Analysis of The 2017 IDHS (Indonesia Demographic And Health Survey). *Systematic Reviews in Pharmacy*, 11(11), 1892–1897. <https://doi.org/10.31838/srp.2020.11.266>
- Sillehu, S., Laksono, A. D., Wulandari, R. D., and Khoiri, A. (2023). Hospital Utilization in Maluku Province. *The Indonesian Journal of Public Health*, 18(3), 470–480. <https://doi.org/10.20473/ijph.vl18i3.2023.470-480>
- Susło, A., Mizia, S., Horoch-lyszczarek, E., and Pochybełko, E. (2023). The future of care and healthcare provision to community-dwelling disabled elderly people in an ageing society. *Family Medicine and Primary Care Review*, 25(1), 102–106. <https://doi.org/10.5114/fmpcr.2023.126025>
- Svraka, E., Pecar, M., Jaganjac, A., Hadziomerovic, A., Kaljic, E., and Kovacevic, A. (2017). Physical Therapy in Elderly Suffering from Degenerative Diseases. *Materia Socio Medica*, 29(4), 272–275. <https://doi.org/10.5455/msm.2017.29.272-275>
- The Indonesian MOH. (2018). *The 2018 Indonesian Basic Health Survey*.
- Vegi, A. S. F., Filho, E. I. F., Pessoa, M. C., Ramos, K. L., and Ribeiro, A. Q. (2020). Walkability and healthy aging: An analytical proposal for small and medium-sized Brazilian cities. *Cadernos de Saude Publica*, 36(3), e00215218. <https://doi.org/10.1590/0102-311x00215218>
- Wang, X., Yang, H., Duan, Z., and Pan, J. (2018). Spatial accessibility of primary health care in China: A case study in Sichuan Province. *Social Science and Medicine*, 209, 14–24. <https://doi.org/10.1016/j.socscimed.2018.05.023>
- Wulandari, R. D., Laksono, A. D., Nantabah, Z. K., Rohmah, N., and Zuardin, Z. (2022). Hospital utilization in Indonesia in 2018: do urban-rural disparities exist? *BMC Health Services Research*, 22(22), 491. <https://doi.org/10.1186/s12913-022-07896-5>
- Wulandari, R. D., Laksono, A. D., Prasetyo, Y. B., and Nandini, N. (2022). Socioeconomic Disparities in Hospital Utilization Among Female Workers in Indonesia: A Cross-Sectional Study. *Journal of Primary Care and Community Health*, 13(2), 1–7. <https://doi.org/10.1177/21501319211072679>
- Wulandari, R. D., Laksono, A. D., Rohmah, N., and Ashar, H. (2023). Regional differences in primary healthcare utilization in Java Region-Indonesia. *PLoS ONE*, 13(3), e0283709. <https://doi.org/10.1371/journal.pone.0283709>
- Wulandari, R. D., Laksono, A. D., Sillehu, S., and Khoiri, A. (2022). Health Insurance Ownership among Moluccans in Indonesia. *Indian Journal of Community Medicine*, 47(3), 332–335. https://doi.org/10.4103/ijcm.ijcm_593_21
- Wulandari, R. D., Qomarrudin, M. B., Supriyanto, S., and Laksono, A. D. (2019). Socioeconomic Disparities in Hospital Utilization among Elderly People in Indonesia. *Indian Journal of Public Health Research and Development*, 10(11), 1800–1804. <https://doi.org/10.5958/0976->

- 5506.2019.03885.3
- Wuneh, A. D., Medhanyie, A. A., Bezabih, A. M., Persson, L. Å., Schellenberg, J., and Okwaraji, Y. B. (2019). Wealth-based equity in maternal, neonatal, and child health services utilization: A cross-sectional study from Ethiopia. *International Journal for Equity in Health*, 18(201), 1–9. <https://doi.org/10.1186/s12939-019-1111-2>
- Xiao, L., Le, C., Wang, G.-Y., Fan, L.-M., Cui, W.-L., Liu, Y.-N., Shen, J.-R., and Golden, A. R. (2021). Socioeconomic and lifestyle determinants of the prevalence of hypertension among elderly individuals in rural southwest China: a structural equation modelling approach. *BMC Cardiovascular Disorders*, 21(1), Article number 64. <https://doi.org/10.1186/s12872-021-01885-y>
- Yang, L., Wang, L., Di, X., and Dai, X. (2021). Utilisation of community care services and self-rated health among elderly population in China: a survey-based analysis with propensity score matching method. *BMC Public Health*, 21(1), 1936. <https://doi.org/10.1186/s12889-021-11989-x>
- Zhang, X., Dupre, M. E., Qiu, L., Zhou, W., Zhao, Y., and Gu, D. (2017). Urban-rural differences in the association between access to healthcare and health outcomes among older adults in China. *BMC Geriatrics*, 17(1). <https://doi.org/10.1186/s12877-017-0538-9>

THE IMPLEMENTATION OF PATIENT SAFETY GOALS FOR PATIENTS' SATISFACTION IN THE HEMODIALYSIS UNIT

Implementasi Sasaran Keselamatan Pasien terhadap Kepuasan Pasien di Unit Hemodialisa

*Dwi Ambarwati¹, Arlina Dewi¹

¹Master of Hospital Administration, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

Correspondence*:

Address: Jl. Brawijaya (Southern Ringroad), Tamantirto, Kasihan, Bantul, Yogyakarta, Indonesia | e-mail: dwi5ambarwati@gmail.com

Abstract

Background: Surveys on patient safety in dialysis units uncover a range of significant patient safety issues. Hemodialysis centers are particularly vulnerable to adverse events due to a number of risk factors, such as machine malfunctions, excessive blood loss, patient falls, prescription errors, and inadequate infection control procedures.

Aim: Analyze the problem of implementing patient safety goals and describe the patients' satisfaction with the implementation of patient safety goals.

Methods: This study employs a concurrent embedded methodology with a mixed-methods design, utilizing quantitative data to complement the qualitative data. Applying the focus group discussion (FGD) technique, questionnaires and observations of hemodialysis patients' satisfaction with implementing patient safety goals were utilized to complete the data collection.

Results: According to the patient satisfaction survey, two patients were worried that their dialyzer tubes had been mixed up, earning a negative score of 5.13%. 23.07% of patients had negative results on the infection prevention risk questionnaire; 3 patients (7.69%) only seldom cleaned their hands before starting dialysis, and 6 patients (15.38%) did not.

Conclusion: The implementation of patients' identification and the reduction of infection risk through hand hygiene have not been carried out consistently, concerning patient safety goals in the hemodialysis unit.

Keywords: hand hygiene, hemodialysis, patient safety goals, patients' satisfaction, patients' identification

Abstrak

Latar Belakang: Survei terhadap keselamatan pasien di unit hemodialisis mengungkapkan berbagai risiko keselamatan pasien yang penting. Pusat hemodialisis paling rentan terhadap kejadian buruk karena berbagai faktor risiko seperti kesalahan dialiser, kehilangan darah berlebih, pasien jatuh, kesalahan pengobatan, tindakan pengendalian infeksi yang tidak memadai dan mesin yang rusak.

Tujuan: Menganalisis permasalahan implementasi sasaran keselamatan pasien di unit hemodialisis dan mendeskripsikan tingkat kepuasan pasien terhadap implementasi sasaran keselamatan pasien.

Metode: Penelitian ini menggunakan metode concurrent embedded dengan desain mixed method dimana data kuantitatif melengkapi data kualitatif. Pengumpulan data menggunakan kuesioner dan observasi pada kepuasan pasien terhadap implementasi sasaran keselamatan pasien digunakan untuk melengkapi pengumpulan data dari teknik Focus Group Discussion (FGD).

Hasil: Hasil kuesioner tentang kepuasan pasien menunjukkan angka negatif 5,13% yaitu 2 pasien merasa khawatir tabung dialisernya tertukar. Pada kuesioner risiko pencegahan infeksi menunjukkan hasil negatif 23,07% yaitu 3 pasien (7,69%) kadang-kadang melakukan hand hygiene sebelum tindakan dialisis dan 6 pasien (15,38%) tidak melakukan hand hygiene sebelum tindakan dialisis.

Kesimpulan: Masalah yang ditemukan dalam implementasi sasaran keselamatan pasien di unit hemodialisis yaitu pelaksanaan identifikasi pasien dan penerapan pengurangan resiko infeksi dengan menjaga kebersihan tangan belum konsisten.

Kata kunci: hemodialisis, identifikasi pasien, kebersihan tangan, kepuasan pasien, sasaran keselamatan pasien



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.25-36

Received: 2023-05-31, Revised: 2024-01-03, Accepted: 2024-01-09, Published: 2024-06-15.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Dwi Ambarwati, Arlina Dewi

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Ambarwati, D. and Dewi, A. (2024) "The Implementation of Patient Safety Goals for Patients' Satisfaction in The Hemodialysis", Indonesian Journal of Health Administration, 12(1), pp. 25-36. doi: 10.20473/jaki.v12i1.2024.25-36.

Introduction

Patient safety has gained significant international attention ever since the Institute of Medicine (IOM) published the results of its study conducted in the United States in 2000. According to a "To Err Is Human" study, there were 6.6% of fatalities and 2.9% of adverse events in Colorado and Utah. In New York, the incidence rate was 3.7% and the mortality rate was 13.6% (Yasmi and Thabrany, 2018). The unexpected event rate in hospitals in many different countries was discovered to vary between 3.2% and 16.6%. In Europe, 83.5% of patients faced an infection risk. Between 50% and 72.3% of patients had some indications of medical errors (Isnainy, Gunawan, and Anjarsari, 2021).

In 25 studies conducted in 27 countries across six continents, the average adverse events were reported at 10%, about a half (51.2%) were preventable, and 7.3% were fatal (Schwendimann *et al.*, 2018). It has been reported that the accurate patient safety measures may reduce healthcare-associated infections up to 70% across the United States of America (The Lancet, 2019). The 313 outpatient records, exhibiting the highest treatment demand, contained 15.3% of the cases of adverse events. Procedure-related adverse events accounted for the majority (39.5%), treatments (21.9%), infections (10%), and diagnoses (0.1%) (Ortner *et al.*, 2021).

Hemodialysis centers are particularly vulnerable to adverse events due to a number of risk factors, such as machine malfunctions, excessive blood loss, patient falls, prescription errors, and inadequate infection control procedures. According to surveys on patient safety, there are numerous serious problems with patient safety in hemodialysis. Some studies conducted in four hemodialysis units in the United States discovered that 88 side effects occurred during 64,541 dialysis treatments in 17 months, or one case for every 733 treatments (De Paula Faria Rocha, 2022).

Numerous studies outline the goals for patient safety in hemodialysis rooms. Patient identification and tube labeling are

the two processes that pose the biggest risk to patient safety. These studies show that incorrect patient identification happens in 16.1% of cases and that inadequate labeling practices are responsible for 56% of patient misidentifications (Cornes *et al.*, 2019). Other research found that hemodialysis patients older than 65 had a 47% chance of falling within a year. This number exceeds the non-dialysis senior population's annual rate of 0.3–0.7 falls per patient (De Paula Faria Rocha, 2022).

Implementing patient's safety goals is one-way hospitals can adopt to improve the quality of their medical care. The six patients' safety goals as follows: lowering the risk of infection associated with health measures; improving and effective communication; increasing medicine safety; ensuring precise location, exact procedures, and exact patient during surgery; and lowering the risk of patient falls. Hospitals can evaluate patients' safety goals and practices to identify and address safety issues that are relevant to day-to-day operations in hemodialysis units. In this study, the patients' satisfaction related to the implementation of patients' safety goals will be further examined, as will the issue of implementing patients' safety goals in the hemodialysis unit.

Method

In this study, a concurrent embedding approach with a mixed method design is utilized, in which the quantitative and the qualitative data are combined simultaneously. The study was conducted in a type D private-public hospital with 45 patients on average and 390 hemodialysis treatments per month.

The seven nurses who work in the hemodialysis unit were observed during the qualitative data collection process, which also included Focus Group Discussion (FGD). Regarding the issues with patients' safety goals, the implementation of FGD using the six patients' safety goals was also discussed.

In order to gather quantitative data from 17- point questionnaires on patients' satisfaction with the implementation of their safety goals, a purposive sampling

technique was applied to 45 patients, resulting in 39 hemodialysis patients with stable general conditions. The scale runs from 1 (not satisfied) to 4 (very satisfied). The qualities of tangible, responsiveness, assurance, empathy, and dependability are included in the patient satisfaction questionnaire. The objective of the questionnaires is to investigate how satisfied patients are with how the six patient safety goals have been implemented. Positive responses to the questionnaires are those that indicate high levels of satisfaction or contentment; negative responses indicate lower levels of satisfaction or dissatisfaction. The six patient safety goals were referenced in the questionnaire items (Figure 1).

Result and Discussion

The aforementioned Table 1 and Table 2 show the attributes of the

respondents. The majority of hemodialysis patients who responded to the survey were female (46,15%), between the ages of 61 and 75 (51,28%), with a senior high school (41,02%), employed as farmers (30,77%), and receiving hemodialysis twice a week (92,31%).

The seven participants in the focus group discussion (FGD) were all nurses employed in the hemodialysis unit. Surveys regarding the overall experience were given to the 39 hemodialysis patients. All patients (100%) and the 26 patients (74.36%) who accompanied by their families are funded by the social security administrative agency (BPJS). All on-duty nurses on the hemodialysis unit were informed about the implementation of the patient safety goals during the Focus Group Discussion (FGD).



Source: De Paula Faria Rocha (2022)

Figure 1. Questions about patient satisfaction with the implementation of patient safety goals

Table 1. The characteristics of nurse respondents

Characteristic	Variable	n	(%)
Gender	Male	2	28,57
	Female	5	71,43
Education	Diploma	7	100
Hemodialysis training	Own	6	85,71
	Do not have	1	14,79

Table 2. The characteristics of respondents' hemodialysis patients

Characteristic	Variable	n	(%)
Gender	Male	21	53,85
	Female	18	46,15
Frequency/ week	One time/week	3	7,69
	Two times/week	36	92,31
Age	<40	10	25,64
	41 - 60	9	23,08
	61 - 75	20	51,28
Education	Elementary school	9	23,08
	Junior High School	7	17,95
	Senior High School	16	41,02
	Diploma	1	2,56
	Bachelor	5	12,81
	Master	1	2,56
Work	Farmer	12	30,77
	Private	10	25,64
	Unemployed	8	20,51
	Teachers	4	10,25
	Retired civil officers	4	10,25
	Tailor	1	2,56

Accuracy of Patients Identification.

The identifying procedures on the hemodialysis patients have to be improved, and all respondents agreed to do so. Occasionally, after certification, people forget to put the patients' bracelets on. Before starting hemodialysis treatment, it should be standard procedure for patients to check in, get an identity bracelet, and have their condition assessed. The nurses agreed to be more committed to putting identification into practice. One indication of this loyalty is the possibility for patients with the same name but different addresses to receive hemodialysis treatments on the same schedule. Nurse A revealed:

"There are cases where patients' with the same names are scheduled for hemodialysis at the same time and on the same days, so it is necessary

to put on an identity bracelet so that there are no mistakes".

Nurse B recommended using stickers with names and Medical Record numbers to identify patients on the dialyzer tubes rather than markers to prevent identity theft or misplaced barcodes. The nurse made a statement to indicate the mistaken identity:

"Sometimes, it can be done, but there is a possibility of human's error".

To increase patients' confidence that their dialyzer tubes are separate from those of other patients, it is essential to verify that the patient's name on the dialyzer tube matches the name on their identity bracelets before the patient uses the dialysis machine. An alternate method of patient identification is to write the patient's

name and the number of hemodialysis treatments on the dialyzer tube. The patient should also be told so that he/she is required to be more aware of the risks to his/her health and safety.

Improved effective communication

In order to accomplish patient safety goals, good officer-to-officer, officer-to-patient, or patient-family communication has been adopted. Effective communication between healthcare professionals has undergone a well-established procedure through books and handovers. Greater attention must be given to new patients beginning hemodialysis treatment in order to facilitate effective communication. Nurse C described this method expressed in the following utterances:

"Officers always introduce themselves before conducting the procedure, for elderly patients need to be extra patient and assisted by communication with waiting families, thus strengthening the patient's sense of confidence in undergoing his/ her first hemodialysis".

"Staff-patient communication is going well; new patients always introduce themselves prior to hemodialysis, while established patients already know each other," said Nurse A.

Because they were already acquainted, some elderly patients were able to communicate effectively with one another with ease. WhatsApp groups have been utilized for additional communication to help patients and their families communicate. Additionally, Nurse G stated:

"There is a handover process, communication between officers is already underway, and the WhatsApp group also supports communication with patients and families."

Increased medicine safety that needs to be watched out for

Emergency kits are constantly available in case they are needed, and high-alert drugs are labeled, kept in a safe place, and organized according to pharmaceutical guidelines. The pharmacist should replace that equipment right away if it is used. Its use is carefully tracked and controlled in accordance with the pharmacy unit's guidelines. To reduce mistakes, the previous medication intake is carefully reviewed before using it.

Certainty of the exact location of the patient's exact procedure

Patient safety targets are more closely tied to actions in the operating room, such as placing an AV shunt, and are related to making sure the proper location and procedure are followed. Patients in the hemodialysis unit were not located. Before starting hemodialysis treatment, it is necessary to always check the positioning of the AV shunts in order to determine the correct needle piercing position.

Reduction of infection risk by evaluating the implementation of hand hygiene and 5 moments

The nurses on the hemodialysis unit have practiced hand hygiene; however, one of the five steps that are sometimes overlooked is simply rubbing hands together before administering treatment, even though it seems like a simple task, as nurse D disclosed:

"Hand rub sometimes has not been done, for example, just want to directly press or touch the monitor screen of the dialysis machine".

Patients and their families need to be better educated, and hand hygiene campaigns must be implemented. Patients need to be educated by all nurses, not just the hemodialysis unit's PPI coordinator. Patients with Arteriovenous (AV) shunt access should refrain from using soap and running water to wash the area of their arm that will receive the injection in addition to practicing good hand hygiene. The campaign is still going strong even though

officers and patients have received hand hygiene training because, as Nurse E pointed out, mistakes can still happen:

"I sometimes forget because I arrive late though the sink is already available in front of the entrance, so it shouldn't be missed".

Nurse F continued, saying,

"Infection prevention campaigns still need to be carried out because sometimes they forget, even though hand hygiene in care and patients is already running".

Reduction of the risk of the patient falling.

Hemodialysis staff members and patients have never fallen while performing the procedure. Efforts to lower the risk of falling have continued. These include the placement of the yellow triangle risk marker

on the bed, the installation of the patient initiation from the bed rail ward, and the triangle risk marker to foresee potential incidents involving slippery floors. In order to facilitate the implementation of patient safety goals in the hemodialysis unit, the nurse offered a number of recommendations and assessments of the facilities and infrastructure. nurse C stated during the FGD:

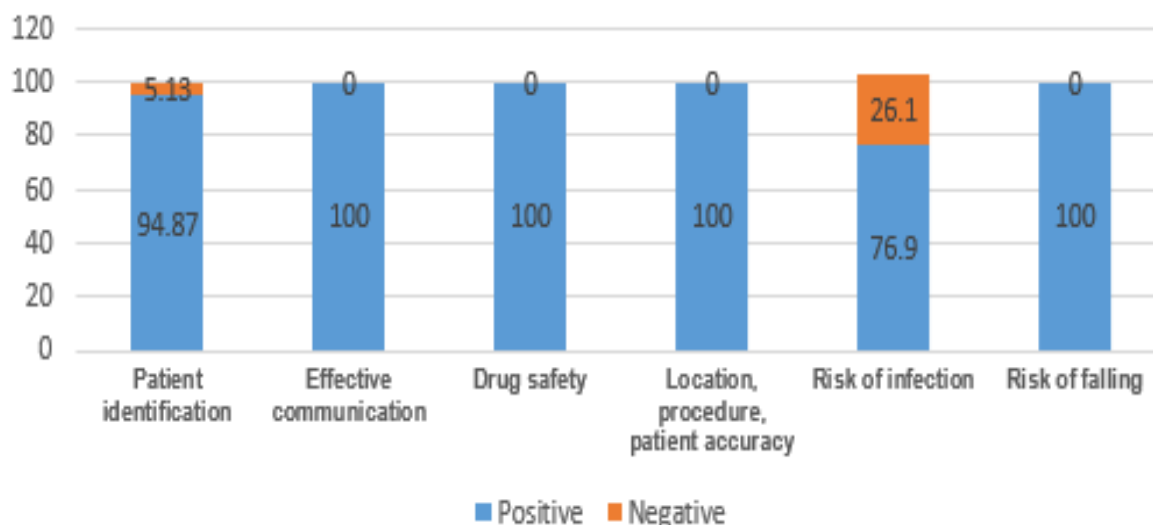
"Patient safety efforts are in progress, yellow triangles are installed on the bed if there is fluid, a fall risk triangle is installed, and the bed rail is installed".

continued Nurse F:

"the bed rail has been installed if there is a patient initiating hemodialysis from the ward".

Table 3. Guiding Questions for the FGD

No	Questions
1.	Accuracy of patient identification: -How do you check the patient's identity before performing the action? -How do you show the patient the bed/ dialysis machine that the patient will use?
2.	Improve effective communication -How do you communicate during dialysis with the nurses on duty? -How do you build good communication between officers and dialysis patients?
3.	Increased drug safety to watch out for -How do you manage high-alert drugs and LASA? -How do you manage concentrated electrolytes in dialysis units?
4.	Certainty of the right location, right patient, and right surgical procedure -How do you check the position of the needle prick before performing dialysis action?
5.	Reduction of infection risk -How do you organize Hand hygiene at 5 moments? -How do you use gloves when performing actions?
6.	Reduction of the risk of patients falling -Has there ever been a patient fall case? -How do you make efforts to deal with the patients fall?
7.	What is your experience in implementing the Patient Safety Goals?
8.	How are patient safety goals inhibitory factors in dialysis units
9.	What are the supporting factors of patient safety goals in dialysis units?
10.	How is the nurse's input for the process of improving the implementation of patient safety goals in the dialysis unit?



Source: Author's Data

Figure 2. Satisfaction with the implementation of patient safety goals

These include the rails on certain patient beds, which require improvement because they are difficult to raise. In order to help patients who experience difficulty moving when using the restroom, some wheelchair facilities have been added. Long-term recommendations for the building's expansion should center on widening the distance between patient beds, ensuring easy access to the restrooms, and situating the hemodialysis unit close to the emergency room or intensive care unit.

Table 3 provides the lists of the guideline's questions discovered during the FGD to determine some issues concerning with implementing the six patients' safety goals in the hemodialysis unit.

The results of the patient satisfaction survey regarding the hemodialysis unit's execution of the patients' safety goals are presented in Figure 2. The results of the infection prevention risk questionnaire state a negative result of 26,1%, namely that the patient occasionally or does not perform hand hygiene prior to the procedure of dialysis. The patient satisfaction questionnaire shows a negative result of 5,13% in the implementation of patient identification, namely that the patient is worried that the dialyzer will be mixed up.

Discussion

By implementing the six patient's safety goals, the hemodialysis unit is required to uphold quality standards and patient's safety (Iffah, Anies and Setyaningsih, 2021).

The two patient safety aim implementations in the hemodialysis unit that are indicated in the FGD are the adoption of inconsistent patient identification and the implementation of hand hygiene programs, particularly for patients and their waiting families. Two patients expressed concern that their dialyzer tubes had been switched, accounting for a negative score of 5.13% on the patient satisfaction survey. The infection prevention risk questionnaire yielded negative results in 23.07% of cases; more precisely, table 3 shows that 3 patients (7.69%) occasionally cleaned their hands before dialysis, while 6 patients (15.38%) did not. Thirteen patients and their families (33.3%) said they did not understand the concept of patient safety. Online education about patient safety objective is necessary for patients and their families.

Based on the FGD results regarding the assessment of the implementation of patient safety goals 2, 3, 4, and 6, which are

there effective interaction, the improving medication safety that needs to be watched out for, the certainty of the right location, the right procedure, the right-patient surgery, and lowering the patient risk of falls, the nurse reported that the dialysis procedure had gone well by the standards. Similar to this, the patients who were asked about their satisfaction with the implementation of patient safety goals 2, 3, 4, and 6 gave positive responses, such as "very satisfied" or "satisfied," and there are no patients gave a negative response, such as "less satisfied" or "dissatisfied."

One of the foundational elements of hospital safety services is accurate patient identification. In order to ensure patients' safety, the first step in any action taken on their behalf by healthcare professionals is patient identification. A great deal of errors originates from mistakes made in patient identification, and these mistakes are not uncommon (Pratiwi, 2019). Patient identification errors and the inability to identify patient injury are the main causes of patient safety accidents (Surbakti, 2020).

The College of American Pathologists studied six different kinds of miss identification between 1999 and 2000. The lack of bracelets, bracelets belonging to other patients, patients wearing multiple bracelets, contradicting patient information, incomplete or inaccurate information, and incorrect and illegible information were some examples of these types. It discovered a 2.6% error rate, with the most common error being the absence of a bracelet (71%), followed by unreadable bracelets (8%) (D'Acunto *et al.*, 2021).

Patient identification is the process of precisely and reliably providing information about the patient's identity across the whole course of care and matching a patient to the planned intervention (Riplinger, Piera-Jiménez and Dooling, 2020). Blood draws from dialysis patients occur frequently, which raises their risk of infection, side effects, and medical errors.

During hemodialysis, accurate identification helps prevent unfavorable side effects like incorrect blood type transfusions, dialyzer tube switching, and medication administration errors. Precise

patient identification is the first step in ensuring that a particular patient receives the right care, which is very important. The patient identification and tube labeling measures pose the greatest risk to patient safety. Some studies claim that incorrect patient identification happens in 16.1% of cases and that incorrect labeling practices are to blame for 56% of patient misidentification. To identify the patient, use open-ended questions that require three separate pieces of information. Labeling the tubes, whether prior to or following sampling or electronically linking the patient's identity to the tube label ought to be carried out in the patient's presence. The likelihood of patient misidentification will be reduced as a result of this combination (Cortes *et al.*, 2019). Hemodialysis patients who report that two patients (5.13%) remain anxious about having their dialyzer tubes changed out might feel more satisfied with their care if they use this flexible identification approach. The results in Table 4 demonstrate that other patients are unconcerned because they and their families do not see how important patient safety is. Thirteen patients, or 33.33% of the total, stated they had no idea about patient safety to address the concerns brought up and enhance the processes for identifying hemodialysis patients in the hemodialysis unit, some work needs to be done. Even though most of the nurses working in the hemodialysis unit are familiar with the principles of patient safety, some of them continue to hold unfavorable opinions about the use of patient-identifying bracelets. This is due to the perception among patients, their families, and medical staff that they already know one another, making it safe for them to not wear identification bracelets in the hemodialysis unit (Kusumastuti, Hilman and Dewi, 2021). When there are patients with the same name on the same hemodialysis schedule, even when personnel and patients know one another, there is still a chance of misidentification.

Hemesath *et al.*'s research indicates that staff awareness-raising education approaches improve adherence to the mandate to check patient identity bracelets.

Analysis and observation of the attachment indicators on patient identity bracelets displayed an increase from 42.9% to 57.8% and from 81.38% to 94.37%, respectively, between January and April 2013 and September and December 2014 (Hemesath *et al.*, 2015). Corrective action is necessary for the identification of patients in the hemodialysis unit. As suggested by the nurse during the FGD, "The proposal for patient identification on the dialyzer tube that has been using markers can be replaced by using stickers with the name and medical record number filled to prevent the risk of identity writing or bar codes being lost and peeled." New regulations and training for medical personnel are introduced along with new technology, like particular stickers (bar codes) for dialyzer tubes.

The second problem that arises in the FGD is the uneven application of hand hygiene, especially for patients or their families. Hand hygiene practices are the most important factor influencing the spread of nosocomial viruses among hospital staff members. Hand hygiene is the most basic and time-tested strategy for preventing infections. Hand hygiene is a cost-effective and efficient way to lower hospital infections.

Patients on hemodialysis are at serious risk from blood-borne viruses such as the hepatitis C virus (HCV). Globally, hemodialysis patient reports an estimated 20,000 new HCV cases as outbreaks annually. The primary contributing factor to nosocomial HCV transmission during hemodialysis is the healthcare workers' lack of adherence to infection control protocols. In order to minimize access-related problems and maintain the dialysis equipment, nurses are essential to the treatment of vascular access. Although it is generally accepted that wearing gloves and practicing proper hand hygiene is important during vascular access procedures for hemodialysis, there isn't enough concrete evidence to support these common-sense precautions. Using occult blood detection techniques in hemodialysis units, a prospective study was conducted in Mongolia to evaluate the possibility of invisible blood contamination of gloved

nurses' hands during vascular access. Patient with hemoglobin 5.27 was detected in a total of 60.13% (273/454) samples (Li *et al.*, 2022).

The significance of hand hygiene spurred the extensive investigation, and it was discovered that despite its ease, affordability, and simplicity, officer's behavior was less than anticipated. A cross-sectional study of nursing staff attitudes and knowledge regarding hand hygiene compliance was conducted in six secondary hospitals in Kuwait. Out of the 765 nurses who participated in the study, 524 (68.5%) could list the five necessary steps for good hand hygiene. Only 25% of nursing staff adhere to hand hygiene, despite having a good understanding of certain aspects of it; self-reported attachment rates of 69.5% varied significantly ($p = 0.001$) amongst hospitals. In a Saudi Arabian nursing study, 74.6% of nurses agreed with the statement that wearing gloves reduces the need to wash their hands, while 73.7% disagreed. Wearing gloves as a substitute for good hand hygiene practices is still common among nurses, even though this idea is generally accepted by them (Al-Anazi *et al.*, 2022).

Strategies to reduce non-compliance rates, enhance patient safety and quality of care, and look into factors that influence the process, such as related policies and behavioral issues, are required. Furthermore, nursing managers need to understand how providing models affects day-to-day operations (Hammerschmidt and Manser, 2019).

Nurses and other healthcare professionals should receive interventions that emphasize the importance of adhering to hand hygiene guidelines. In this research employee acceptance is still low despite the fact that most healthcare facilities provide multiple training sessions on proper hand hygiene practices. The most important first step in creating programs for behavior change is investigating why people do the things they do and what makes them change. Therefore, determining the root causes of inadequate hand hygiene is essential to altering this behavior. Staff members wash their hands less frequently

for a variety of reasons, according to nurses. These include poor hygiene habits, ignorance, carelessness, routine tasks, a lack of equipment for washing and drying hands, crowded wards, poor cleaning supplies, flaws in the management system, and perceived social pressures.

The nursing profession is crucial to maintaining patient safety because of its prominent position and constant interaction with patients. While performing their responsibilities to safeguard patients in hospitals, nurses can find novel ways to improve the quality of care they provide and the satisfaction of their patients. Therefore, in order to promote a culture of safety in the field, it is essential to increase knowledge through monitoring, education, and evaluation (Indrayadi, Oktavia and Agustini, 2022).

Conclusions

The accuracy of patient identification is where the first patient safety objective in the hospital service safety begins. The following step of the activation process will benefit from accurate patient identification. A mistake made during the patient identification process will be the main cause of the problem at the next step. In order to prevent errors caused by patient misidentification, hospitals must enhance their patient identification system.

Hand hygiene-related topics require further research, especially in the behavioral domain. Asepsis procedures and good hand hygiene are critical for maintaining vascular access, which is required for safe care participation. These social factors include healthcare personnel, patients, and waiting families.

The hemodialysis unit's implementation of patient safety has left the patients feeling content. Nonetheless, there are still two patients concern regarding patient identification and adherence to hand hygiene practices for infection risk reduction, both of which require ongoing improvement. Positive criteria of very satisfied and satisfied were generally expressed by the patients.

Abbreviations

FGD: Focus Group Discussion, HCV: the hepatitis C virus, HD: Hemodialysis, BPJS: *Badan Penyelenggara Jaminan Sosial* (Social Security Administrative Agency), PPI: *Pencegahan dan Pengendalian Infeksi*, AV Shunt: Arteriovenous Shunt.

Declarations

Ethics Approval and Consent Participant

Respondents were addressed before the survey's objectives and purposes, and verbal consent to participate in the study was taken from them. The study was approved by The Health Research Ethics Committee, Universitas Muhammadiyah Yogyakarta No. 176/EC-KEPK UMY/IV/2023.

Conflict of Interest

The authors declare that there is no potential conflict of interest concerning the authorship and publication of this article.

Availability of Data and Materials

Not applicable

Authors' Contribution

DA started the idea. DA and AD conducted a literature review, developed methodologies, interpreted data, and wrote submitted manuscripts. All authors certify they have complete access to study data supporting the publication, have read and approved the manuscript, and take full responsibility for its content.

Funding Source

The authors did not receive support from any organization for the submitted work and no funding was received to assist with the preparation of this manuscript.

Acknowledgment

We would like to thank the Muhammadiyah University of Yogyakarta for granting research permission and the hemodialysis unit of Aisyiyah Muntlan Hospital as a research object that produces data that can contribute to the realization of patient safety.

References

- Al-Anazi, S. *et al.* (2022) 'Compliance with hand hygiene practices among nursing staff in secondary healthcare hospitals in Kuwait', *BMC Health Services Research*, 22(1), p. 1325. Available at: <https://doi.org/10.1186/s12913-022-08706-8>.
- Cornes, M. *et al.* (2019) 'Blood sampling guidelines with focus on patient safety and identification – a review', *Diagnosis*, 6(1), pp. 33–37. Available at: <https://doi.org/10.1515/dx-2018-0042>.
- D'Acunto, J.I. *et al.* (2021) 'Detección de fallas en las pulseras identificatorias de pacientes internados', *Medicina (Buenos Aires)*, 81(4), pp. 597–601. Available at: http://www.scielo.org.ar/scielo.php?script=sci_abstract&pid=S0025-76802021000400597&lng=es&nrm=iso&tlng=es.
- De Paula Faria Rocha, R. (2022) 'Patient Safety in Hemodialysis', in A. C.F. Nunes (ed.) *Multidisciplinary Experiences in Renal Replacement Therapy*. IntechOpen. Available at: <https://doi.org/10.5772/intechopen.101706>.
- Hammerschmidt, J. and Manser, T. (2019) 'Nurses' knowledge, behaviour and compliance concerning hand hygiene in nursing homes: a cross-sectional mixed-methods study', *BMC Health Services Research*, 19(1), p. 547. Available at: <https://doi.org/10.1186/s12913-019-4347-z>.
- Hemesath, M.P. *et al.* (2015) 'Educational strategies to improve adherence to patient identification', *Revista Gaúcha de Enfermagem*, 36(4), pp. 43–48. Available at: <https://doi.org/10.1590/1983-1447.2015.04.54289>.
- Iffah, N., Anies, A. and Setyaningsih, Y. (2021) 'Penerapan Keselamatan dan Kesehatan Kerja di Instalasi Hemodialisis Rumah Sakit', *HIGEIA (Journal of Public Health Research and Development)*, 5(1), pp. 84–96. Available at: <https://doi.org/10.15294/higeia.v5i1.39776>.
- Indrayadi, I., Oktavia, N.A. and Agustini, M. (2022) 'Perawat dan Keselamatan Pasien: Studi Tinjauan Literatur', *Jurnal Kepemimpinan dan Manajemen Keperawatan*, 5(1), pp. 62–75. Available at: <https://doi.org/10.32584/jkmk.v5i1.1465>.
- Isnainy, U.C.A.S., Gunawan, M.R. and Anjarsari, R. (2021) 'Hubungan sikap perawat dengan penerapan patient safety pada masa pandemi Covid 19', *Holistik Jurnal Kesehatan*, 14(4), pp. 674–679. Available at: <https://doi.org/10.33024/hjk.v14i4.3850>.
- Kusumastuti, D., Hilman, O. and Dewi, A. (2021) 'Persepsi Pasien dan Perawat tentang Patient Safety di Pelayanan Hemodialisa', *Jurnal Keperawatan Silampari*, 4(2), pp. 526–536. Available at: <https://doi.org/10.31539/jks.v4i2.1974>.
- Li, L. *et al.* (2022) 'Assessment of the invisible blood contamination on nurses' gloved hands during vascular access procedures in a hemodialysis unit', *American Journal of Infection Control*, 50(6), pp. 712–713. Available at: <https://doi.org/10.1016/j.ajic.2021.12.009>.
- Ortner, J. *et al.* (2021) 'Frequency of outpatient care adverse events in an occupational mutual insurance company in Spain', *Journal of Healthcare Quality Research*, 36(6), pp. 340–344. Available at: <https://doi.org/10.1016/j.jhqr.2021.05.005>.
- Pratiwi, I.A. (2019) 'Implementasi Sasaran Keselamatan Pasien di Rumah Sakit', *Jurnal Akbid Griya Husada*, 2(1), pp. 132–136.
- Riplinger, L., Piera-Jiménez, J. and Dooling, J.P. (2020) 'Patient Identification Techniques – Approaches, Implications, and Findings', *Yearbook of Medical Informatics*, 29(01), pp. 081–086.

- Available at:
<https://doi.org/10.1055/s-0040-1701984>.
- Schwendimann, R. *et al.* (2018) 'The occurrence, types, consequences and preventability of in-hospital adverse events – a scoping review', *BMC Health Services Research*, 18(1), p. 521. Available at: <https://doi.org/10.1186/s12913-018-3335-z>.
- Surbakti, M.B. (2020) 'Isu Terkini Terkait Keselamatan Pasien dan Keselamatan Kesehatan Kerja dalam Keperawatan'. Available at: <https://doi.org/10.31219/osf.io/ys5q7>.
- The Lancet (2019) 'Patient safety: too little, but not too late', *The Lancet*, 394(10202), p. 895. Available at: [https://doi.org/10.1016/S0140-6736\(19\)32080-X](https://doi.org/10.1016/S0140-6736(19)32080-X).
- Yasmi, Y. and Thabrany, H. (2018) 'Faktor-Faktor Yang Berhubungan Dengan Budaya Keselamatan Pasien Di Rumah Sakit Karya Bhakti Pratiwi Bogor Tahun 2015', *Jurnal Administrasi Rumah Sakit Indonesia*, 4(2). Available at: <https://doi.org/10.7454/arsi.v4i2.2563>.

ANALYSIS OF THE MARKET STRUCTURE OF HOSPITAL INDUSTRY IN INDONESIA

Analisis Struktur Pasar Industri Rumah Sakit di Indonesia

Emma Rachmawati¹, *Yuyun Umniyatun¹, Deni Wahyudi Kurniawan¹, Mochamad Iqbal Nurmansyah², Mukhaer Pakkanna³, Husnan Nurjuman⁴, Slamet Budiarto⁵, Virgo Sulianto Gohardi⁵

¹ Department of Public Health, Faculty of Health Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia

² Department of Public Health, Faculty of Health Sciences, Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia

³ Department of Management, Faculty of Digital Economics, Institut Teknologi dan Bisnis Ahmad Dahlan, Tangerang Selatan, Indonesia

⁴ Department of Public Health, Faculty of Social and Political Sciences, Universitas Sultan Ageng Tirtayasa, Serang, Indonesia

⁵ Division of Health, Central Board of Muhammadiyah, Jakarta, Indonesia

Correspondence*:

Address: Limau II Kebayoran Baru, 12130, Jakarta, Indonesia | e-mail: yuyun.umniyatun@uhamka.ac.id

Abstract

Background: Over the past decade, private investments in health care including hospital have grown significantly, more than doubling. As the number of hospitals in Indonesia increases, a competitive business environment develops. Identifying hospital market structure can help various stakeholders to optimize the hospital performance.

Aims: This study analyzed the market structure and concentration of the hospital industry in Indonesia.

Methods: This study used hospital characteristics data from Ministry of Health of Indonesia that retrieved in October 2020. Market concentration is determined by the number of industry players operating in a market, the distribution of services, and the types of services offered. The hospital market concentration was identified by measuring the Concentration Ratio (CR) and the Herfindahl–Hirschman index (HHI).

Results: The results showed that the market share of hospitals in Indonesia were still dominated by government hospitals, which represent 51.4% of the market share. The concentration ratio of four companies (CR₄) remains <40, indicating that competition remains relatively open among private hospitals at the national level.

Conclusion: Several cities have established hospital markets that are characterized by robust competition, whereas in other cities, the hospital industry remains oligopolistic or monopolistic. It is important to note, however, that this does not imply that the market structure is ineffective on account of competition; rather, it is the result of a scarcity of hospitals in a number of Indonesian cities.

Keywords: Concentration ratio, Economic competition, Herfindahl–Hirschman Index, Hospital market

Abstrak

Latar Belakang: Selama dekade terakhir, investasi swasta dalam pelayanan kesehatan termasuk rumah sakit telah tumbuh secara signifikan, lebih dari dua kali lipat. Seiring bertambahnya jumlah rumah sakit di Indonesia, lingkungan bisnis yang kompetitif pun berkembang. Mengidentifikasi struktur pasar rumah sakit dapat membantu berbagai pemangku kepentingan untuk mengoptimalkan kinerja rumah sakit.

Tujuan: Studi ini menganalisis struktur pasar dan konsentrasi industri rumah sakit di Indonesia.

Metode: Penelitian ini menggunakan data karakteristik rumah sakit dari Kementerian Kesehatan RI yang diunduh pada Oktober tahun 2020. Konsentrasi pasar ditentukan oleh jumlah pelaku industri yang beroperasi di suatu pasar, sebaran layanan, dan jenis layanan yang ditawarkan. Konsentrasi pasar rumah sakit diidentifikasi dengan mengukur Concentration Ratio (CR) dan indeks Herfindahl–Hirschman (HHI).

Hasil: Hasil penelitian menunjukkan bahwa pangsa pasar rumah sakit di Indonesia masih didominasi oleh rumah sakit pemerintah yaitu sebesar 51,4% pangsa pasar. Rasio konsentrasi empat perusahaan (CR₄) tetap <40, menunjukkan bahwa persaingan masih relatif terbuka di antara rumah sakit swasta di tingkat nasional.

Kesimpulan: Beberapa kota telah memiliki struktur pasar rumah sakit dengan kompetisi efektif sementara struktur rumah sakit di beberapa kota masih bersifat oligopoly maupun monopoly. Namun, perlu menjadi catatan disini bahwa hal tersebut tidak berarti bahwa struktur pasar yang tidak efektif karena kompetisi namun lebih dikarenakan masih terbatasnya jumlah rumah sakit di beberapa kota di Indonesia.

Kata kunci: Herfindahl–hirschman index, Konsentrasi rasio, Pasar Rumah Sakit, Persaingan ekonomi



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: [10.20473/jaki.v12i1.2024.37-48](https://doi.org/10.20473/jaki.v12i1.2024.37-48)

Received: 2023-03-10, Revised: 2023-12-03, Accepted: 2024-01-26, Published: 2024-06-14.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Emma Rachmawati, Yuyun Umniyatun, Deni W Kurniawan, Mochamad I Nurmansyah, Mukhaer Pakkanna, Husnan Nurjuman, Slamet Budiarto, Virgo S Gohardi. This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Rachmawati, E., Umniyatun, Y., Kurniawan, D. W., Nurmansyah, M. I., Pakkanna, M., Nurjuman, H., Budiarto, S., and Gohardi, V. S. (2024) "Analysis of The Market Structure of Hospital Industry in Indonesia", *Indonesian Journal of Health Administration*, 12(1), pp. 37-48. doi: [10.20473/jaki.v12i1.2024.37-48](https://doi.org/10.20473/jaki.v12i1.2024.37-48).

Introduction

Health spending measures the final consumption of health care goods and services (OECD, 2018). Global health spending reached US\$ 8.3 trillion in 2018, about 10% of global gross domestic product (WHO, 2020). Before the Coronavirus Disease 2019 (COVID-19) pandemic in 2019, OECD countries spent ~8.8% of their Gross Domestic Product (GDP) on average on healthcare, a figure that has remained largely unchanged since 2013. The US spends the most on healthcare, equivalent to 16.8% of its GDP, well ahead of the next highest-spending country, Germany, at 11.7% (OECD, 2021).

At the global level, the hospital service market was worth US\$ 9.58 trillion in 2020 and is expected to reach US\$ 16.45 trillion by 2027 (Precedence Research, 2022). Similar trends are seen in Central European countries, where healthcare is currently one of the largest sectors in Germany (11.0% of GDP), Austria (10.1%), Slovak Republic (7.6%), and the Czech Republic (7.1%) (Lauraéus *et al.*, 2021). Studies have shown that increased health spending positively correlates with economic growth (Raghupathi and Raghupathi, 2020; Ying *et al.*, 2022).

Healthcare industry growth will continue while private interest in developing hospitals remains. Private investments in health services have increased dramatically over the last decade, more than doubling (Scheffler, Alexander and Godwin, 2021). The private sector in India invests in tier 2 and 3 cities and outside metropolitan cities, where hundreds of investment opportunities are available in the hospital sector (Sarwal *et al.*, 2021).

The health industry in Indonesia was estimated to reach US\$ 60.6 billion in 2018, a growth of 14.9% compared to 2012–2018. Significant growth was seen in the hospital sector, with 2,083 hospitals in 2012 increasing to 2,820 in 2018 (Kuntjoro and Wibowo, 2018). The pharmaceutical industry sector grew by 11.4%, increasing from 193 industries in 2015 to 215 in 2017. The medical device industry also grew by 12.6%, increasing from 215 industries in

2015 to 242 in 2017 (Ministry of Health of Indonesia, 2018).

Over the last 11 years, the number of hospitals in Indonesia has increased by 80% (Trisnantoro and Listyani, 2018). However, The Indonesian tourists' demand for medical tourism services abroad is still high. It was estimated that the total money spent by Indonesian citizens for treatment in other Association of Southeast Asian Nations (ASEAN) countries in 2016 was US\$ 11.5 billion annually, with the majority (80%) spent in Malaysia. Several private and public hospitals have expanded the number of beds or built new hospitals to overcome this. According to one study, the primary motivations of Indonesian tourists seeking medical treatment in Malaysia are dissatisfaction with Indonesian medical practices and a lack of expertise in the field (Md Zain *et al.*, 2022).

The hospital industry market in Indonesia is entering a more complex phase given that the Indonesian government has currently implemented the National Health Insurance (*Jaminan Kesehatan Nasional [JKN]*) program, operated by the Health Social Security Administration (*Badan Penyelenggara Jaminan Sosial Kesehatan / BPJS Kesehatan*). From an economic perspective, the JKN program has created greater demand in the health sector (Britton, Koseki and Dutta, 2018).

On the other side, the growth in the number of hospitals in Indonesia creates a competitive business climate. However, the existence of unfair business competition practices has an impact on various parties. Hidden yet perilous forms of competition exist in the Indonesian health service industry, according to the findings of a study; these include health business mafias, monopolies, and deceit involving the concealment of patient hands (Alfarizi and Zalika, 2023). Unfair business competition, for business actors and consumers, this practice can create an imbalance in business opportunities for various groups at different levels and can lead to consumer/ community losses. A broader interpretation of the loss would be inefficiency manifested in wastage or

suboptimal resource allocation (Czyżewski *et al.*, 2020).

Identifying market structure of one industry is significant as efficiency is substantially impacted by the market structure within which a company, including a hospital, operates. The characteristics of the market structure dictate the level of competition, which varies from perfect competition, characterized by a multitude of small sellers and buyers, a homogeneous product, and price-taking by all, to pure monopoly, denoting a market with a single buyer, or monopoly, signifying a market with a single supplier. Other market structures exist between these two extremes, including monopolistic competition (many sellers and many buyers offering differentiated products) and oligopoly, which is characterized by a small number of sellers who vary in size and market power. Effective resource allocation results from the efficient operation of the market, which is facilitated by a number of conditions. The primary conditions are observable with respect to the structure of the market (Mwachofi and Al-Assaf, 2011).

Unfortunately, hospital market structure research in Indonesia remains understudied. One study has been conducted in 2014 examining hospital market structure in South Sumatera Province (Tatarifah, 2014). Another study has been conducted to identify the issue of competition in the Indonesian Health Services Industry (Alfarizi and Zalika, 2023). Therefore, this study analyses the Indonesian hospital industry's market structure and competition map through the concentration ratio (CR) and Herfindahl–Hirschman Index (HHI).

Method

This study used hospital data originating from the Online Hospital Information System (SIRS), which was obtained in October 2020 (Ministry of Health of Indonesia, 2020). SIRS is a hospital reporting system in the Ministry of Health of Indonesia that comprises hospital identity data, hospital personnel data, service activity recapitulation data, inpatient disease/ morbidity data, and

outpatient disease/ morbidity data. Hospital identity data consists of their code, name, type, class, director's name, address, area, operator license, accreditation, accreditation date, service indicators, and bed facilities for the last three years. The data is further categorised into two divisions based on ownership and geography. In the first division, hospitals are divided into government and private hospitals, and private hospitals are subdivided into for-profit and nonprofit. Data generated is for each hospital group based on their service type (general or special) and the number of hospitals and beds. In the second division, hospital data on the number of beds are grouped by province to calculate the number of beds and bed ratios for each of the 34 Indonesian Provinces.

Market concentration is determined by the number of industry players operating in a market, the distribution of services, and the types of services offered. We discuss the hospital market concentration through an explanation of the relevant market, the calculation of market share, and the CR and HHI. Calculating an industry's competitive map requires determining the relevant market, which relates to the reach or marketing areas of business actors with the same or similar goods or services or substitutions for these goods and or services (Lubis *et al.*, 2017).

Market share is the percentage of total sales of goods or services controlled by each business actor, which are merged, or its competitors. Market share can generally be assessed by calculating the CR or HHI. The CR value represents the total market share of a certain number of companies (Calkins, 1983). The CR for the largest firm (k) in an industry is calculated by summing the market share of these k firms, which can be represented as:

$$CR_k = S_1 + S_2 + S_3 + S_4 + S_5 + \dots + S_k$$

Where:

S_i = the percentage market share of firm i

The most commonly used CR is the CR of four companies (CR_4) (Gwin, 2001; Naldi and Flamini, 2014). CR_4 is the total market share held by the top four

companies in an industry, calculated based on the following formula (Naldi and Flamini, 2014) and the interpretation as follows: $CR4 = 0$ means Perfect competition, $0 < CR4 < 40$ means Monopolistic effective competition or monopolistic competition, $40 \leq CR4 < 60$ means Monopolistic competition or loose oligopoly, $60 \leq CR4 < 90$ means Strict oligopoly or dominant firm with a competitive fringe, $90 \leq CR4 < 100$ means a dominant firm with a competitive fringe or an effective monopoly and $CR4 = 100$ means perfect monopoly.

In addition to CR, the HHI can be used to analyse market concentration (Calkins, 1983; Gwin, 2001). The HHI accounts for the number of companies in the market and their concentration by incorporating a relative measure (i.e., the market share of all companies in the market). The HHI is calculated by squaring the market share of all firms in the market and then summing the squares with the following formula:

$$HHI = S_1^2 + S_2^2 + S_3^2 + \dots + S_n^2$$

Where:

n = the total number of companies

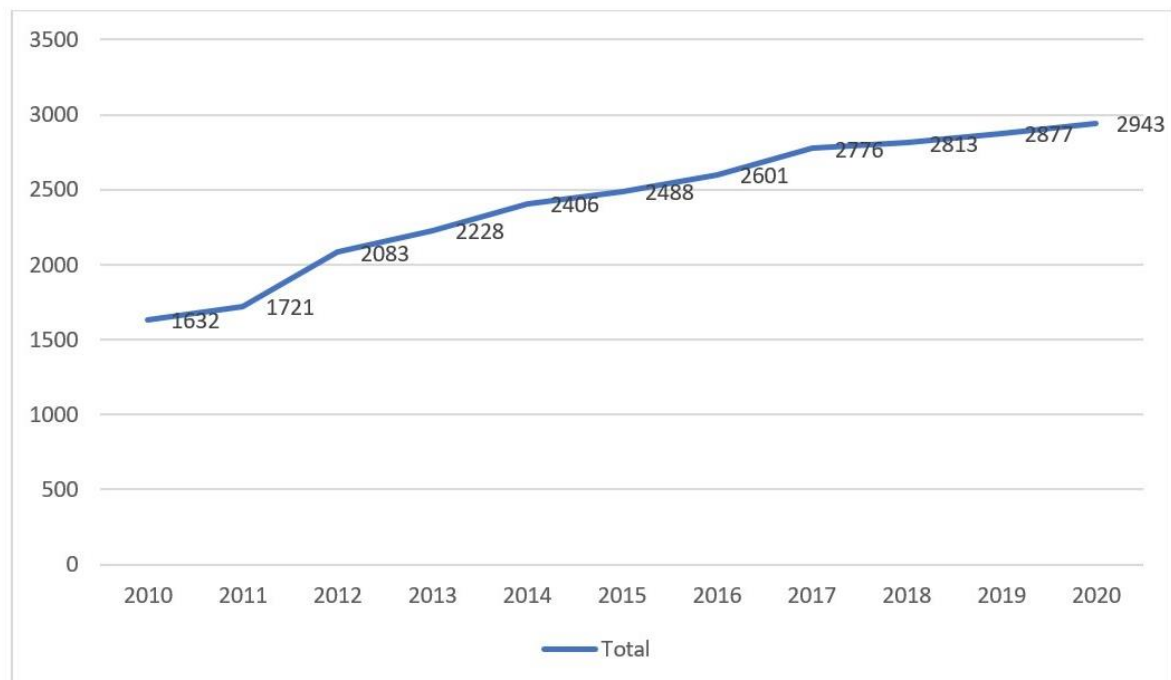
S_i = their percentage market share of firm i

The HHI value indicates the concentration, where the maximum value refers to monopolistic and the minimum value to perfect competition. Therefore, the higher the HHI value, the higher the market concentration of the top companies (Naldi and Flamini, 2014). $HHI < 1000$ means unconcentrated market indicated effective or monopolistic competition while $1000 \leq HHI < 1800$ means medium concentration that indicated Monopolistic or oligopolistic competition and $HHI = 1800$ means highly concentrated that indicated monopolistic or loose oligopolistic competition.

Result and Discussion

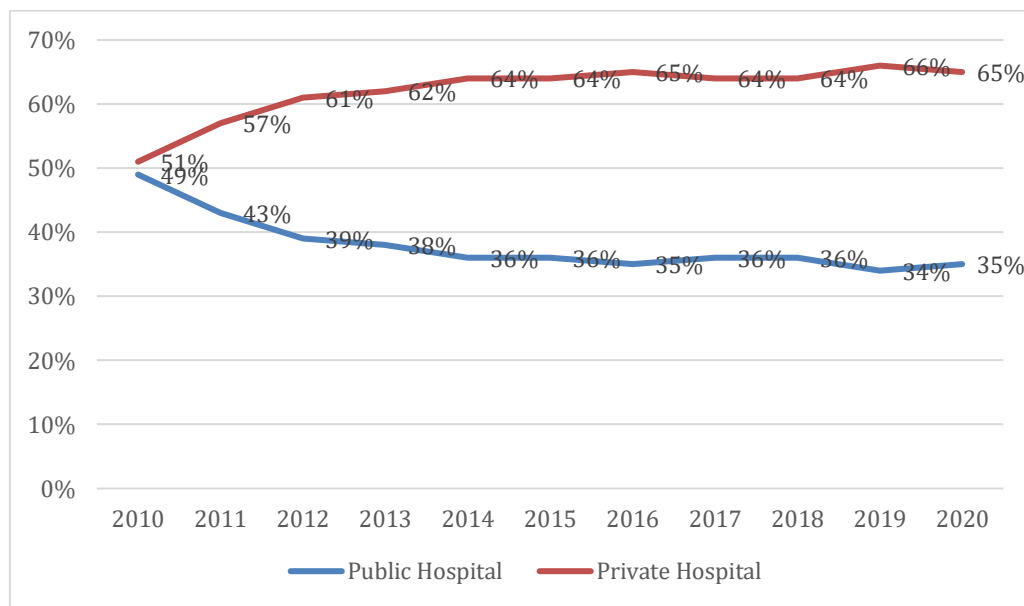
Hospital Market Structure in Indonesia

Hospitals in Indonesia continue to show rapid growth with many owner entities. Over the last 11 years, the number of hospitals in Indonesia increased by 80% or >1,300, from 1,632 in 2010 to 2,943 in 2020. At the national level, there are 2,943 hospitals owned by 1,344 institutions, of which 1,319 are private entities and 25 are governments (Figure 1).



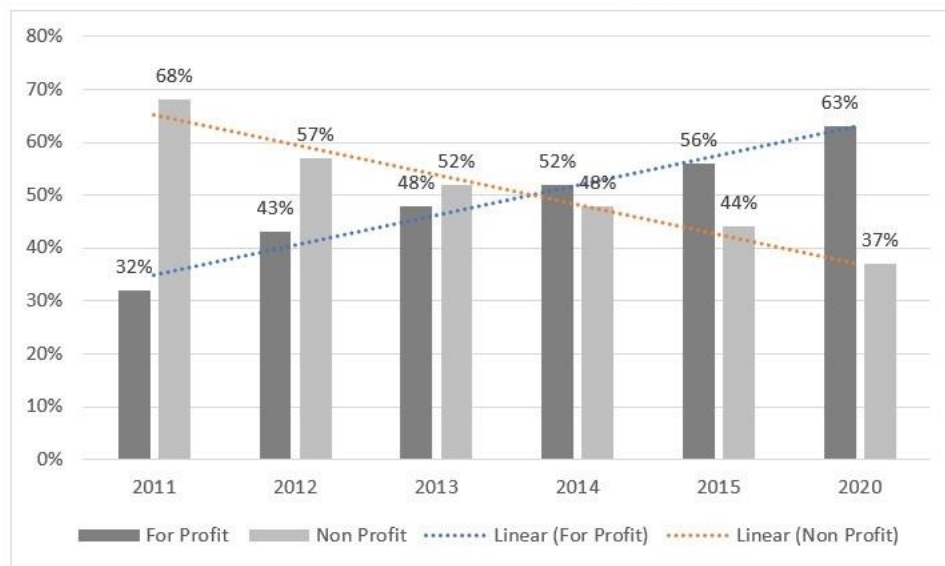
Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 1. Growth in the number of public and private hospitals in Indonesia from 2010-2020



Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 2. Proportion of public and private hospital in Indonesia from 2010-2020



Hospital type	2011	2012	2013	2014	2015	2020
Nonprofit	655	727	724	736	705	706
For-profit	315	543	666	807	895	1,188
Total	970	1,270	1,390	1,543	1,600	1,894

Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 3. Changes in the proportion of for-profit and non-profit private hospitals

Hospital ownership can be divided into government and private. The Ministry of Health data shows that private hospitals have historically experienced faster growth than government hospitals. Over ten years, government hospitals only grew 39%, from 751 in 2010 to 1,043 in 2020. In contrast, private hospital numbers almost doubled (92%), from 838 in 2010 to 1,900 in 2020. The proportion of government hospitals continues to decline, from 49% to 35%, while that of private hospitals continues to grow, from 51% to 65% (Figure 2).

The growth of private hospitals can be further seen from the nature of their business, for-profit and non-profit. The proportion of non-profit private hospitals still dominated the total number of private hospitals at 52% until 2013. Even in 2011, the number of non-profit hospitals was double that of for-profit hospitals. Currently, the proportion of for-profit hospitals is almost double that of non-profit hospitals (Figure 3).

Non-profit hospitals in Indonesia are mostly founded by religious and social organisations. The top 10 are dominated by hospitals established by Islamic organisations such as *Muhammadiyah*, which has founded 112 hospitals since its establishment in 1912, followed by *Nahdlatul 'Ulama*, which has 24 hospitals across Indonesia.

Hospital Market Concentration

The distribution of hospitals and the adequacy of beds in Indonesia are concentrated in big cities. CR calculations performed in provincial capitals show that almost all have met the minimum standard of 1 bed per 1,000 population. Only the capital city of Banten Province, Serang, has a bed ratio below the minimum standard of 0.88 beds per 1,000 population. Furthermore, several provincial capitals have very high bed ratios.

Twenty-six provincial capitals have a bed ratio of >2 beds per 1,000 population. Many provincial capitals have bed ratios above 3 or 4 beds per 1,000 population. The highest bed ratios were in Banda Aceh City with 7.57 and Manado City with

6.33 per 1,000 population. These findings show that most institutions build hospitals in big cities, especially provincial capitals, worsening equitable access to public health services in small towns.

Table 1. Market share of private hospitals in provincial capitals.

Provincial capital	CR4 value	TT ratio
Tarakan	100%	1.46
Mamuju	100%	1.32
Serang	100%	0.88
Gorontalo	100%	3.85
Bengkulu	100%	3.04
Sorong	100%	1.54
Jayapura	100%	3.70
Ternate	100%	1.95
Banjarmasin	95%	2.24
Palangkaraya	90%	2.32
Ambon	87%	2.69
Pangkalpinang	86%	2.53
Banda Aceh	83%	7.57
Pontianak	78%	2.42
Palu	78%	3.90
Kupang	77%	2.54
Samarinda	77%	2.25
Manado	74%	6.33
Yogyakarta	72%	3.84
Mataram	64%	2.55
Kendari	60%	3.72
Bandar Lampung	59%	2.44
Semarang	59%	2.41
Batam	54%	1.18
Jambi	53%	3.14
Bandung	53%	1.97
Pekanbaru	52%	2.94
Denpasar	51%	2.06
Palembang	48%	2.64
Pusat	47%	5.23
Padang	44%	2.66
Surabaya	32%	2.36
Makassar	31%	4.06
Medan	26%	4.15

Source: Online Hospital Information System of Ministry of Health (SIRS Online)

CR4 data shows that most of the hospital market in Indonesian provincial capitals is an oligopoly, while some cities such as Makassar, Surabaya and Medan experience effective competition with CR4 values <40. However, some cities such as Tarakan, Mamuju, Serang, Gorontalo,

Banjarmasin, Bengkulu, Sorong and Jayapura, still have a CR4 value of >90 (Table 1). This indicates that there is still a tendency for hospital market monopolies in these cities. Monopolies on health services, whether carried out by profit or non-profit hospitals, are dangerous for consumers because they can set prices higher and create great inefficiencies. (Richman, 2012)

Market Share and HHI of the Indonesian Hospital Industry

Based on the National data, the market share of hospitals in Indonesia is generally dominated by government hospitals, which represent 51.4% of the overall market share. Meanwhile, private hospitals represent 48.6%. The average number of beds in private hospitals is less than that in government hospitals, causing the market share of private hospitals to be smaller despite their greater number

(49,5% vs. 50,5% of market share) (Table 2). Similarly, their CR4 is <40, indicating that competition remains relatively open among private hospitals at the national level.

Hospitals in Indonesia continue increase over the last 11 years from 1632 in 2010 to 2943 in 2020 or increase 80%. In national level, the ownership of hospital dominated private entities and government. Historically, private hospitals grow faster than government hospitals. In last the 10 years government hospitals only grown by 39% while private hospitals grown by 92% that lead to the decline in the share market from 33% to 35%.

The study observed different growth rate between private hospitals based on the nature of their business. While for-profit hospitals did not initially grow very well, there has been a trend toward increasing for-profit compared to non-profit private hospitals in recent years.

Table 2. National market share of government and private hospitals

Network	Number of hospitals	Number of beds	Average number of beds	Market share	HHI
District government	569	70,637	124	23.7%	563.77
Provincial government	148	29,764	201	10.0%	100.10
Municipal government	100	16,269	163	5.5%	29.91
Ministry of Health	35	14,715	420	4.9%	24.47
<i>Muhammadiyah*</i>	112	9,286	83	3.1%	9.74
TNI AD (Indonesian Army)	75	8,376	112	2.8%	7.93
<i>PT. Pertamina Bina Medika IHC*</i>	56	5,961	106	2.0%	4.01
<i>PT. Siloam International Hospitals Tbk*</i>	40	5,273	132	1.8%	3.14
POLRI (Indonesian Police)	49	5,011	102	1.7%	2.84
<i>Hermina Group*</i>	36	3,631	101	1.2%	1.49
<i>Mitra Keluarga Group*</i>	26	2,846	109	1.0%	0.92
Others	1,697	125,727	74	42.3%	4.62
Grand Total	2,943	297,496	101	100%	752.93
Government Hospitals	1,049	150,156	143	50,5%	
Private Hospitals	1,894	147,340	78	49,5%	

*Non-government hospitals, Source: Online Hospital Information System of Ministry of Health (SIRS Online)

The proportion of non-profit private hospitals remain dominant within the total number of private hospitals until 2013, however the situation began to change in 2014 with a shift in the trend of hospital ownership, where for-profit hospitals began to grow faster than non-profit hospitals. Currently, the proportion of for-profit hospitals is almost double that of non-profit hospitals.

One of the instigators was the emergence of the 2009 Hospital Law that initially required hospitals to only be established by institutions that focus on hospitals. It also required all hospitals to have their own legal entity. The Central Executive of *Muhammadiyah* submitted a judicial review to the Constitutional Court to challenge this issue, which was granted by the Constitutional Court. As a result, many hospitals have changed from a foundation to a limited liability company.

Similarly, the amendment to the Foundation Law that prohibits entities from distributing business proceeds to owners disincentivises hospital managers from choosing a legal entity in their establishment and encourages many to choose a for-profit legal entity (PT/Limited Company [LC]) as a business strategy (Herawati, 2017). Therefore, foundation legal entities are considered less agile, conflict-prone, and unable to provide sufficient incentives for hospital development. The treatments and facilities obtained between foundation-based and LC hospitals are similar. While the hospital law states that public hospitals can be given tax incentives, there are no implementing regulations, resulting in this policy being unrealised.

Another factor influencing the growth of private hospitals is the JKN program, which expands the coverage of insurance ownership in the community to make the health sector more attractive for corporate investors. This factor also makes competition in the hospital industry increasingly fierce, making it difficult for non-profit hospitals to compete with for-profit hospitals since they require very intensive capital.

Universal health coverage also affected the growth of private hospitals in

China, Vietnam, and the Lao People's Democratic Republic (Lao PDR) because the governments needed the private sector to provide community health services. Therefore, the private sector is expanding its presence in healthcare due to the increasing demand for modern and high-quality health services and fiscal constraints on public services. The role of the private sector in providing health services also dominates the hospital and primary healthcare (PHC) sectors in Japan and Korea since social health insurance and government funds guarantee health financing for citizens (Cowley and Chu, 2019).

The example of the fastest-growing hospital groups is the Siloam Group. Founded in 1996, Siloam now has 40 hospitals. This rapid development was driven by the company's strategy to expand its market share by acquiring existing hospitals (Siloam International Hospitals, 2022). In addition to acquisitions, company-based hospital expansion efforts in Indonesia have consolidated funding by turning into a public company. To date, seven hospital groups have listed themselves on the stock market, enabling them to receive fresh funds to finance their network expansion. For example, Siloam conducted a limited public offering of shares in 2017 (right issue) and received Rp 3.1 trillion in funds (Siloam International Hospitals, 2022).

In general, the growth of hospitals in Java is still higher than in other areas. Outside Java, hospital growth has expanded in Sumatra and Bali, which grew by 16% (Frost and Sullivan, 2019). Opportunities and demands for hospitals remain very high outside Jakarta because government hospitals cannot fulfil their needs. Regions outside Java still promise high growth opportunities, driven by the low demand for bedding, lower minimum wages, and lower land acquisition costs (Frost and Sullivan, 2019). Therefore, several hospital groups are aggressively targeting areas outside Java to balance the distribution of services throughout Indonesia. For example, Siloam built hospitals in Yogyakarta, Labuan Bajo, Bau-bau, and Jember, acquired two hospitals in

Java and Kalimantan, and established an express clinic (Frost and Sullivan, 2019).

Different conditions are found when comparing the growth of private hospitals in Indonesia with that in several countries. In Indonesia, a significant increase in private hospitals began in 2014. However, in some countries, there has been a decline in private hospitals. The American Hospital Association (AHA) reports that hospitals decreased from 5,810 in 2000 to 5,795 in 2009 and 5,564 in 2015 (Center for Health Statistics, 2017). In Malaysia, there has been a decline in private hospitals from 252 in 2018 to 219 in 2020. Within a decade, hospitals in Taiwan also declined from 508 in 2010 to 479 in 2020 (Zhang, 2022).

In Australia, there has also been a decline in health service use at private hospitals, particularly for elective treatment. This decrease was due to increased costs, longer waiting times, and doctors practising more in government hospitals, decreasing hospital profitability, stock prices, and long-term investment capacity. Coupled with the coronavirus disease 2019 (COVID-19) pandemic that caused an economic recession, it is likely to reduce further the use of services in private hospitals (Bai *et al.*, 2020). According to Health Policy Plus (HPP) and The National Team for the Acceleration of Poverty Reduction, the rapid growth of private hospitals in Indonesia, particularly in Java and Sumatra, is due to the implementation of JKN. Group-owned private for-profit hospitals indicate a desire to profit from the JKN market. When the market for urban and suburban areas in Java and Sumatra is maximised, there will likely be an expansion in rural areas despite a lack of trained doctors and nurses. While JKN has encouraged private sector market growth, provided investment incentives, and increased competition, it has yet to encourage increases in the diversity of service areas or holistic products (HPP and TNP2K, 2018).

On market competition the study found that the distribution of hospitals and the adequacy of beds in Indonesia remain imbalance. Big cities and capital cities could provide and comply to meet the minimum standard of 1 bed per 1,000

population. However, the study found that based on the CR4 data, this study found out that the hospital market in Indonesia is oligopoly with some cities have effective competition with CR4 values <40, and some cities still have a CR4 value of >90 indicating there remains a tendency to monopolise the hospital market in these cities.

However, the assumption of a monopolistic trend in the hospital market does not apply in Indonesia since some regions still do not have enough hospitals to accommodate the needs of their community. Therefore, the government is expected to encourage hospital construction, particularly in areas where hospitals are minimal, so that everyone can access health services fairly and equitably.

While regarding the market share of Indonesia hospital industry, the study found that the HHI value for the combined market of private and public hospitals is 752.9, which is relatively high due to the high market share of government hospitals. Nevertheless, this figure indicates that competition remains relatively open since it is <1800. We calculated the HHI only for private hospitals to compare competition development with previous studies. Previous studies by The National Team for the Acceleration of Poverty Reduction (*Tim Nasional Percepatan Penanggulangan Kemiskinan* [TNP2K]) calculated the HHI of all national private hospitals, showing that Indonesia's HHI continued to increase from 0.27 in 2011 to 0.31 in 2013 and 0.32 in 2016 (Britton, Koseki and Dutta, 2018). Our HHI calculation in 2020 shows the national HHI is 94.63, significantly higher than the values reported in previous studies, indicating that the competition for private hospitals in Indonesia is getting tougher. Similarly, the CR4 is <40, indicating that competition remains relatively open among private hospitals at the national level.

Conclusion

The number of hospitals in Indonesia has increased rapidly in the last decade. Private hospitals have historically experienced faster growth than government hospitals. Over ten years,

government hospitals increased 39%, from 751 hospitals in 2011 to 1,043 in 2020, while private hospitals almost doubled (92%), from 990 in 2011 to 1,900 in 2020. Private hospitals in Indonesia can be classified into for-profit and non-profit. There has been a recent tendency for for-profit private hospitals to increase compared to non-profit private hospitals in Indonesia.

The distribution of hospitals and the adequacy of beds in Indonesia are concentrated in big cities. CR4 calculations for provincial capitals show that almost all meet the minimum standard of 1 bed per 1000 population. CR4 data shows that most of the hospital market in Indonesian provincial capitals is an oligopoly, while some cities experience effective competition with CR4 values <40. However, some cities still have a CR4 value of >90. Nevertheless, this does not apply to the healthcare market in Indonesia, where this threshold does not indicate a monopoly by one entity but the small number of hospitals in various regions in Indonesia.

While competition between hospitals is relatively open, the government needs to pay attention to business competition between hospitals to prevent fraud by hospital business actors or health service market monopoly. The government also needs to encourage a conducive business climate while prioritising the quality of hospital services to encourage various hospital business actors to run hospitals that provide equitable access to public services for everyone throughout Indonesia. Additional research could be directed towards the identification of unfair business practices within the Indonesian hospital industry. This is essential in order to provide the government, in particular, with the insight necessary to establish a hospital business environment that is favourable.

Abbreviations

CR: Concentration Ratio; HHI: Herfindahl–Hirschman Index; SIRS: *Sistem informasi Rumah Sakit*.

Declarations

Ethics Approval and Consent Participant

Ethical approval will not be required because this study retrieved and synthesized data from already published information.

Conflict of Interest

There are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of Data and Materials

Dataset available from SIRS Online of the Ministry of Health of the Republic of Indonesia.

Authors' Contribution

All authors conceived and designed the study. DWK, YU, MP, HN, SB, VSG conducted the data collection from SIRS and complete the data with secondary sources. ER, YU, DWK and MIN analyzed the data. ER, DWK, MIN wrote the original draft of the paper. All authors approved the final version of the manuscript and agreed to be held accountable for the content therein.

Funding Source

This study was funded by Lembaga Penelitian dan Pengembangan Universitas Muhammadiyah Prof. Dr. Hamka (Lemlit UHAMKA) number 740/F.03.07/2021 and are independent from the funder.

Acknowledgment

The authors would like to Unit Pengembangan dan Publikasi Ilmiah (UPPI) UHAMKA for their editing the early draft for manuscript and for initial English editing.

References

- Alfarizi, M. and Zalika, Z. (2023) 'Isu Persaingan Industri Pelayanan Kesehatan Indonesia: Tantangan dan "Perisai" Pengawasan KPPU', *Jurnal Persaingan Usaha*, 3(1), pp. 5–18. Available at: <https://doi.org/10.55869/kppu.v3i1.89>.

- Bai, T. et al. (2020) 'The falling growth in the use of private hospitals in Australia', SSRN Electronic Journal [Preprint]. Available at: <https://doi.org/10.2139/ssrn.3725863>.
- Britton, K., Koseki, S. and Dutta, A. (2018) 'Expanding Markets while Improving Health in Indonesia The Private Health Sector Market in the JKN Era'. Available at: <https://doi.org/10.2307/3480160>.
- Center for Health Statistics, N. (2017) Table 89. Hospitals, beds, and occupancy rates, by type of ownership and size of hospital: United States, selected years 1975–2015.
- Cowley, P. and Chu, A. (2019) 'Comparison of private sector hospital involvement for UHC in the western pacific region', *Health Systems and Reform*, 5(1), pp. 59–65. Available at: <https://doi.org/10.1080/23288604.2018.1545511>.
- Czyżewski, B. et al. (2020) 'Deadweight loss in environmental policy: The case of the European Union member states', *Journal of Cleaner Production*, 260. Available at: <https://doi.org/10.1016/j.jclepro.2020.121064>.
- Frost and Sullivan (2019) *Pasar Pelayanan Kesehatan Indonesia Diharapkan Mencapai Keuntungan*, Frost & Sullivan. Available at: <https://www2.frost.com/news/press-releases>.
- Gwin, Carl.R. (2001) 'A Guide for Industry Study and the Analysis of Firms and Competitive Strategy'. Available at: <https://www.scribd.com/document/137034638/A-Guide-for-Industry-Study-and-the-Analysis-of-Firms-and-Competitive-Strategy-pdf>.
- Herawati, E. (2017) *Rumah Sakit: Pilih Yayasan Atau Perseroan Terbatas?*, Rubric of Faculty Members. Available at: <https://business-law.binus.ac.id/2017/06/30/rumah-sakit-pilih-yayasan-atau-perseroan-terbatas/>.
- HPP and TNP2K (2018) *The Financial Sustainability of Indonesia's National Health Insurance Scheme: 2017–2021*, <https://www.tnp2k.go.id/articles>. Available at: <https://www.tnp2k.go.id/download/516561.%20The%20Financial%20Sustainability%20of%20NHI.pdf>.
- Kuntjoro and Wibowo, D.B. (2018) 'Tantangan Pertumbuhan Industri Pelayanan Kesehatan di Indonesia', in *Seminar Nasional IV Peran industri Kesehatan dalam mendukung Pertumbuhan Ekonomi di Indonesia*. Available at: <https://indohcf.com/files/2018-04/03.-dr.-daniel-budi-wibowo-indohcf-2018.pptx>.
- Lauraéus, T. et al. (2021) 'Market Structure analysis with Herfindahl-Hirschman Index and Lauraéus-Kaivo-Oja Indices in the Global Robotics Markets', *Economics and Culture*, 18(1), pp. 70–81. Available at: <https://doi.org/10.2478/jec-2021-0006>.
- Lubis, A.F. et al. (2017) *Hukum Persaingan Usaha*. Jakarta: Komisi Pengawas Persaingan Usaha (KPPU).
- Md Zain, N.A. et al. (2022) 'Intra-Regional Medical Tourism Demand in Malaysia: A Qualitative Study of Indonesian Medical Tourists' Rationale and Preferences', *Malaysian Journal of Medical Sciences*, 29(2), pp. 138–156. Available at: <https://doi.org/10.21315/mjms2022.29.2.13>.
- Ministry of Health of Indonesia (2018) 'Strategi mendongkrak industri farmasi dan alat kesehatan', in *Seminar Nasional IV Peran industri Kesehatan dalam mendukung Pertumbuhan Ekonomi di Indonesia*. Available at: www.indochf.com.
- Ministry of Health of Indonesia (2020) 'Dashboard RS Online'. Available at: <https://sirs.kemkes.go.id>.
- Mwachofi, A. and Al-Assaf, A.F. (2011) 'Health Care Market Deviations from

- the Ideal Market', Sultan Qaboos University Medical Journal, 11(3), pp. 328–337.
- Naldi, M. and Flamini, M. (2014) 'The CR4 Index and the Interval Estimation of the Herfindahl-Hirschman Index: An Empirical Comparison', SSRN Electronic Journal [Preprint]. Available at: <https://doi.org/10.2139/ssrn.2448656>
- OECD (2018) 'Health spending'. OECD. Available at: <https://doi.org/10.1787/8643de7e-en>.
- OECD (2021) Health at a Glance 2021: OECD Indicators. OECD (Health at a Glance). Available at: <https://doi.org/10.1787/ae3016b9-en>.
- Precedence Research (2022) Hospital Services Market Size, Share, Trends, Growth 2027. Available at: <https://www.precedenceresearch.com/hospital-services-marke>.
- Raghupathi, V. and Raghupathi, W. (2020) 'Healthcare Expenditure and Economic Performance: Insights From the United States Data', Frontiers in Public Health, 8. Available at: <https://doi.org/10.3389/fpubh.2020.00156>.
- Richman, B.D. (2012) 'Concentration in Health Care Markets: Chronic Problems and Better Solutions'. Rochester, NY. Available at: <https://papers.ssrn.com/abstract=2163749>.
- Sarwal, R. et al. (2021) Investment Opportunities in India's Healthcare Sector. NITI Aayog.
- Scheffler, R.M., Alexander, L.M. and Godwin, J.R. (2023) 'Soaring Private Equity Investment in the Healthcare Sector: Consolidation Accelerated, Competition Undermined, and Patients at Risk', SSRN Electronic Journal [Preprint]. Available at: <https://doi.org/10.2139/ssrn.3860353>
- Siloam International Hospitals (2022) Pencapaian Perusahaan - Siloam Hospitals. Available at: <https://www.siloamhospitals.com>.
- Tatarifah, A.J. (2014) Struktur Pasar, Perilaku dan Kinerja Industri Jasa Pelayanan Kesehatan di Provinsi Sumatera Selatan. Undergraduate thesis. Universitas Sriwijaya.
- Trisnantoro, L. and Listyani, E. (2018) 'Jumlah RS di Indonesia Pertumbuhan RS Publik', April. Available at: <https://www.persi.or.id/images/2017/10/itbang/rsindonesia418.pdf>.
- WHO (2020) Global spending on health 2020: weathering the storm. Available at: <https://www.who.int/publications/i/item/9789240017788>.
- Ying, S. et al. (2022) 'Industrial dynamics and economic growth in health-care context. Evidence from selected OECD countries', Journal of Business & Industrial Marketing, 37(8), pp. 1706–1716. Available at: <https://doi.org/10.1108/JBIM-11-2020-0513>.
- Zhang, W. (2022) 'Number of hospitals in Taiwan 2010-2020', Statista [Preprint]. Available at: <https://www.statista.com/statistics/934717/taiwan-number-of-hospitals/>.

LEADERSHIP TRAITS OF NURSE MANAGERS AND NURSE STAFF COMMITMENT IN THE PHILIPPINES HOSPITALS

Sifat Kepemimpinan Manajer Perawat dan Komitmen Perawat Staf di Rumah Sakit Filipina

Paida P. Abdulmalik¹, *Hamdoni K. Pangandaman¹

¹Mindanao State University, Main Campus, Marawi City, Philippines

Correspondence*:

Address: Mindanao State University, Main Campus, Marawi City, Lanao Del Sur, 9700, Philippines| e-mail: hamdoni.pangandaman@msu.edu.ph

Abstract

Background: Effective nurse leadership significantly influences healthcare service quality. Nurse managers' leadership impacts staff nurse commitment, patient outcomes, and organizational success.

Aims: To examine nurse manager leadership traits and their relationship with staff nurse commitment in a government hospital.

Methods: Descriptive-inferential correlation research with stratified and randomized nurse managers (n = 21) and staff nurses (n = 117) as participants from five selected hospitals at Lanao del Norte. Adopted questionnaires on leadership traits and commitment were used and data were analyzed using frequency, percentage, mean, and standard deviation in SPSS v.25.

Results: The result shows that nurse manager leadership qualities are usually valid for a leader who encourages others to do what is right, gives subordinates continuing education, and is an ethical and self-confident leader. Their staff nurses believed positive components of the leadership traits of nurse managers were sometimes true. Staff nurses were generally still deciding whether they were committed to their work effectively, continuously, or normatively. Nurse managers' leadership traits are significantly related to the staff nurses' affective, continuance, and normative commitment.

Conclusion: Fostering positive leadership through education and supportive environments enhances staff nurse commitment and job satisfaction, reducing nurse turnover and improving nursing care quality.

Keywords: commitment, leadership traits, leadership qualities, nurse manager, nurse staff

Abstrak

Latar Belakang: Kepemimpinan perawat yang efektif secara signifikan mempengaruhi kualitas layanan kesehatan. Kepemimpinan manajer perawat berdampak pada komitmen perawat staf, hasil perawatan pasien, dan kesuksesan organisasi.

Tujuan: Memeriksa sifat kepemimpinan manajer perawat dan hubungannya dengan komitmen perawat staf di rumah sakit pemerintah.

Metode: Penelitian ini menggunakan metode penelitian korelasi deskriptif-inferensial dengan manajer perawat yang dipilih secara stratifikasi dan acak (n = 21), serta perawat staf (n = 117) sebagai partisipan dari lima rumah sakit terpilih di Lanao del Norte. Kuesioner yang diadopsi tentang sifat kepemimpinan dan komitmen digunakan, dan data dianalisis menggunakan frekuensi, persentase, rata-rata, dan standar deviasi di SPSS v.25.

Hasil: Hasil penelitian menunjukkan bahwa sifat kepemimpinan manajer perawat biasanya valid untuk seorang pemimpin yang mendorong orang lain untuk melakukan yang benar, memberikan pendidikan berkelanjutan kepada bawahan, dan merupakan seorang pemimpin yang etis dan percaya diri. Perawat staf percaya bahwa komponen positif dari sifat kepemimpinan manajer perawat kadang-kadang benar. Para perawat staf umumnya masih memutuskan apakah mereka berkomitmen untuk bekerja secara efektif, berkelanjutan, atau normatif. Sifat kepemimpinan manajer perawat berhubungan secara signifikan dengan komitmen afektif, berlanjut, dan normatif perawat staf.

Kesimpulan: Membangun kepemimpinan positif melalui pendidikan dan lingkungan yang mendukung meningkatkan komitmen dan kepuasan kerja perawat staf, mengurangi pergantian perawat, dan meningkatkan kualitas perawatan keperawatan.

Kata kunci: komitmen, kualitas kepemimpinan, manajer perawat, sifat-sifat kepemimpinan, staf perawatan



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.49-61

Received: 2023-07-28, Revised: 2024-02-11, Accepted: 2024-03-08, Published: 2024-06-25.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Paída P. Abdulmalik, Hamdoni K. Pangandaman

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Abdulmalik, P. P. and Pangandaman, H. K. (2024) "Leadership Traits of Nurse Managers and Nurse Staff Commitment in the Philippines Hospitals", *Indonesian Journal of Health Administration*, 12(1), pp. 49-61. doi: 10.20473/jaki.v12i1.2024.49-61.

Introduction

The significance of adept leadership in the healthcare realm cannot be overstated, as it fundamentally shapes the trajectory of patient care and the overall functioning of healthcare institutions (Ofei *et al.*, 2022; Özkan, Çamlica and Kartal, 2022; Cai *et al.*, 2023). Within this context, nurse managers assume a pivotal role, functioning as supervisors, mentors, and administrators, and hold the responsibility of steering nursing staff toward exemplary performance and professional excellence. Their competence in fostering a positive work environment and instilling commitment among staff nurses significantly impacts employee morale, engagement, and retention (Nurmeksela *et al.*, 2021).

Labrague *et al.* (2021) found that organizational commitment and turnover intention among rural nurses in the Philippines are interconnected, indicating the significance of organizational commitment in retaining nursing staff. The leadership styles of nurse managers have been identified as influential factors in staff nurses' commitment. A study then found that nurse managers' transactional and laissez-faire leadership styles were not related to affective commitment among staff nurses in Japan, suggesting the importance of leadership styles in influencing staff nurses' commitment (Specchia *et al.*, 2021). Similarly, it has been highlighted that the leadership practices of nurse managers directly affect the organizational commitment and job satisfaction of staff nurses (Aragasi and Pangandaman, 2021; Sahan and Terzioglu, 2022). These findings indicate that the leadership characteristics of nurse managers play a crucial role in shaping the commitment of staff nurses.

Furthermore, the work climate and perceived autonomy of nurses have also been identified as influential factors in organizational commitment. A study found that the degree of nurses' perceived autonomy had an impact on their organizational commitment, emphasizing the significance of the work climate in shaping nurses' commitment (Dinc *et al.*,

2022). Additionally, it has been highlighted that nurse leaders who are committed to professional development and collaboration with colleagues show a strong commitment to their profession, which can influence the commitment of staff members (Hua *et al.*, 2022).

While the available literature has extensively examined the theories and techniques of leadership in various organizational settings, empirical research concentrating on the leadership qualities of nurse managers and their impact on staff nurse commitment is still lacking, particularly in the context of the Philippine healthcare system (Heng *et al.*, 2021; Hamlin *et al.*, 2023). The quality of healthcare services can be affected when nurse managers in the clinical context strive to influence the dedication and retention of staff nurses (Cox, 2019). According to a study by Shehab *et al.*, nurses not committed to their work will likely look for greener pastures abroad, a phenomenon common in the Philippines. Nurse managers are no longer just responsible for administrative tasks but also act as inspirational leaders who motivate and guide their teams (Shehab, Eid and Kamel, 2022). Nurses who feel supported, valued, and empowered by their managers are likelier to demonstrate a higher commitment to their roles and the organization's objectives (Beiranvand *et al.*, 2021; Yesilbas and Kantek, 2022). Identifying the traits and qualities of nurse managers can shed light on the leadership approaches prevalent in the healthcare sector, particularly in government hospitals, which can help present opportunities for improvements and optimization (Sethi, Chaturvedi and Kataria, 2023; Quintero *et al.*, 2023). Therefore, this study addresses this research gap by meticulously examining nurse managers' leadership traits and qualities in government hospitals in Southern Mindanao, Philippines.

This research holds significant value for the healthcare sector by offering insights into effective nurse management's impact on excellence and patient outcomes. It contributes to nursing leadership knowledge by identifying key attributes that enhance staff nurses' commitment. With a

focus on Southern Mindanao, it becomes a valuable resource for future research and best practices in nurse management. The study explores nurse managers' traits in government hospitals and their correlation with staff nurses' commitment levels. As such, its significance lies in advancing theoretical understanding and practical applications for healthcare organizations, improving leadership practices, nurturing committed nursing teams, and ultimately enhancing patient care. The findings extend to broader discussions on healthcare management, leadership, and organizational behavior, not only within the Philippines but also internationally.

Method

In undertaking this study, a descriptive-correlational approach has been adopted to describe the leadership qualities and traits of nurse managers and their association with the commitment of their staff nurses. As the literature describes, the descriptive approach describes the characteristics or natural occurrences of a situation or phenomenon (Dawadi, Shrestha and Giri, 2021). Then, correlation means finding a significant relationship between variables (Tatliyer *et al.*, 2019), which are nurse managers' leadership qualities and traits and the commitment of staff nurses.

The study was conducted in the province of Lanao del Norte in southern Mindanao, Philippines, an area characterized by a diverse healthcare landscape, encompassing numerous government hospitals, each confronting distinct challenges and opportunities related to nursing management and staff commitment. The selected government hospitals were Kauswagan, Kolambugan, Lanao del Norte, Kapatagan, and Sultan Naga Dimaporo.

Nurse managers and staff were stratified and randomly selected after the computation of samples from the total population through the Raosoft online sample size calculator (Raosoft, 2020).

The selection of the respondents was based on specific criteria. The staff nurses (n=117) were selected based on characteristics that they (1) must be a

registered nurse; (2) have been working in the said hospital for at least six months; (3) working under the direct supervision of a supervisor, regardless of appointment status; and (4) and willing to participate in the study. As for nurse managers, the criteria are: (1) must be a registered nurse; (2) have been working in the said hospital for at least six months; (3) have been a nurse manager for at least six months; (4) be a current nurse manager in any specific area of the hospital; and (5) be willing to participate in the research study.

Modified checklist-type questionnaires were used for both staff and nurse managers. The first section or part of the survey was provided to staff nurses and nurse managers, and it sought information about their gender, marital status, age, education, monthly income, length of service, and employment.

Moreover, Part II asked about the leadership traits and qualities of the nurse managers and was adopted from an existing study. The leadership traits questionnaire was adopted from the study by Ocho *et al.* which had twenty-eight item questions with the corresponding definitions measured through a six-point Likert scale based on staff nurses' perceptions (Ocho *et al.*, 2021).

Furthermore, Part III of the questionnaire dealt with the work commitment of staff nurses in triad dimensions such as affective (high ACS scores to the organization because they want to), continuance (because they have to) and normative commitment (e.g., strong normative commitment because they feel they ought to). Each dimension has eight question items that are measured using a seven-point Likert scale, with 1 being strongly disagree and 7 being strongly agree (Bongalonta, 2022).

The data gathering was initiated by obtaining a valid and reliable questionnaire and seeking permission from the chief of hospitals at five government hospitals in Lanao del Norte. Subsequently, letters of permission were sent to nurse managers and selected staff nurses, explaining the study's purpose and obtaining informed consent. Respondents were assured of the right to withdraw without facing any

consequences. Following the collection of completed questionnaires, the researchers confirmed adherence to guidelines, checked for accuracy and completeness, and then went on to tabulate and analyze the data in order to make meaningful interpretations, draw conclusions, and recommendations.

The data analysis process involved in this study was systematic and rigorous. After collecting the completed questionnaires from nurse managers and selected staff nurses, the researcher ensured that all responses adhered to the provided instructions and verified the

accuracy and completeness of the data. The tabulated data were then analyzed thoroughly to derive meaningful insights and interpretations. Statistical methods such as frequency, simple percentage, mean, standard deviation, and Pearson *r* were applied to identify patterns, trends, and correlations within the data.

For ethical considerations, researchers prioritized the principles of respect, beneficence, and justice to ensure the protection and well-being of all participants involved (Ethical clearance: MSU-REC: 0511-2022).

Table 1. Demographic Profile

Demographic Profile		Staff Nurse		Nurse Manager	
		freq.	%	freq.	%
Age	20 – 25 years old	7	5.98	2	10.0
	26 – 30 years old	59	50.43	2	10.0
	31 – 35 years old	35	29.91	2	10.0
	36 – 40 years old	8	6.84	4	20.0
	41 – 45 years old	3	2.56	9	45.0
	46 – 50 years old	5	4.27	1	5.0
Sex	Male	15	12.8	3	15.0
	Female	102	87.2	17	85.0
Civil Status	Single	56	47.9	0	0.0
	Married	59	50.4	19	95.0
	Widowed	1	.9	1	5.0
	Separated	1	.9	0	0.0
Highest Educational Attainment	Bachelor's Degree (BSN)	83	70.9	10	50.0
	On-going Master's Degree	13	11.1	1	5.0
	Master's Degree Holder	21	17.9	8	40.0
	On-going Doctorate Degree	0	0.0	1	5.0
	Doctorate Degree Holder	0	0.0	0	0.0
Monthly Family Income	Less than 10,000php	1	.9	0	0.0
	10,001-20,000php	100	85.5	0	0.0
	20,001-30,000php	14	12.0	8	40.0
	30,001 php and above	2	1.7	12	60.0
Length of Service	Less than 1 year	12	10.26	0	0.0
	1 to 3 years	42	35.90	0	0.0
	3 to 5 years	24	20.51	2	10.0
	5 to 10 years	27	23.08	4	20.0
	10 to 20 years	10	8.55	5	25.0
	More than 20 years	2	1.71	9	45.0
Employment Status	Job Order	104	88.9	0	0.0
	Contractual	10	8.5	2	10.0
	Regular	3	2.6	18	90.0

Table 2. Managers Leadership Traits

Leadership Traits	Mean	SD	Descriptive Interpretation	Leadership Traits	Mean	SD	Descriptive Interpretation
Honest	4.56	1.19	Usually True	Motive Arouser	4.32	1.46	Sometimes True
Fraternal	4.53	1.36	Usually True	Consideration	4.31	1.31	Sometimes True
Just	4.49	1.25	Usually True	Orderly	4.28	1.33	Sometimes True
Communi- cative	4.43	1.34	Usually True	Morale Booster	4.28	1.33	Sometimes True
Trust	4.42	1.23	Usually True	Confidence builder	4.27	1.35	Sometimes True
Sincere	4.39	1.22	Usually True	Visionary	4.25	1.42	Sometimes True
Responsi- bility	4.38	1.48	Usually True	Generous	4.25	1.39	Sometimes True
Group Orientation	4.38	1.40	Usually True	Inspirational	4.19	1.42	Sometimes True
Encouraging	4.38	1.33	Usually True	Diplomatic	4.13	1.40	Sometimes True
Compas- sionate	4.37	1.41	Usually True	Courage	4.13	1.29	Sometimes True
Modest	4.35	1.37	Usually True	Humorous	4.05	1.47	Sometimes True
Team Building	4.34	1.37	Usually True	Bossy	3.69	1.62	Sometimes True
Appreciation	4.34	1.34	Usually True	Participative	3.20	1.67	Sometimes but Infrequently True
Liability	4.33	1.35	Usually True	Distant	3.03	1.70	Sometimes but Infrequently True
Integrating	4.33	1.27	Usually True	-	-	-	-

Before initiating data collection, explicit permission was sought from the chief of hospitals at five government hospitals in Lanao del Norte, and, subsequently, individual informed consent was obtained from the nurse manager and selected staff nurses. The study's purpose was well-explained, assuring participants of withdrawal rights without consequences. Confidentiality, anonymity, secure data storage, and ethical conduct underscored the researcher's commitment to responsible research.

Result and Discussion

The demographic profile in Table 1 presents 117 staff nurses and 20 nurse managers. The age distribution among staff nurses were 26 to 30 years old (50.43%), while nurse managers were evenly distributed across different age groups and both dominated by female nurses. There were more married nurse managers (95.0%) than staff nurses (50.4%).

Aspirant qualified managers emerged among staff nurses indicated by the number of holding a masters' degree (17%). As expected, staff nurses' income is meagre compared to the nurse managers.

Based on length of service, most of the staff nurses are advance beginners who have mostly been working for almost five years (56%) being guided by nurse managers who have been working for more than 20 years (45%) and have work security as a regular employee.

The data indicate that (Table 2) nurse managers tend to exhibit certain leadership traits more frequently than others. Traits such as "Honest," "Fraternal," "Just," "Communicative," "Trust," and "Sincere", suggesting positive leadership qualities, seem to be commonly observed in nurse managers participating in the study.

The data suggest that nurse managers generally possess positive leadership traits, with honesty, compassion, and group orientation being some of their most notable attributes. However, there is variability in the occurrence of traits related to humor, bossiness, and participative or distant behavior.

The data presented in Table 3 provide insight into the commitment levels of staff nurses across three dimensions such as affective, continuance, and normative commitment. The mean scores for Affective Commitment (4.00), Continuance Commitment (4.28), and Normative Commitment (3.72) suggest a moderate level of commitment overall. The standard deviations (SD) for each dimension (ranging from 1.580 to 1.604) indicate some variability in the nurses' commitment scores.

The descriptive interpretation of "Undecided" for all three dimensions implies that the nurses' commitment levels are not strongly leaning toward either high or low commitment, but rather in a state of ambivalence.

Result of the correlation shows that leadership traits of nurse managers have a significant relationship with affective, continuance, and normative commitment of staff nurses at work (sig. = 0.000, 0.007 and 0.002. respectively < 0.05 α level). The degree of correlation or significant relationship leadership traits of nurse managers were found to have a positively low correlation for affective commitment (0.339) and positively linear correlation for both continuance (0.250) and normative commitment (2.79). The positive correlation means parallel relationship between variables, as such, increase (or decrease) in the value of leadership traits of nurse managers, the affective commitment may slowly increase (or decrease) and linearly increase (or decrease) continuance and normative commitment of staff nurses at work.

The study examined the association between staff nurses' levels of commitment to the healthcare organization and the leadership traits of nurse managers. The demographic profile of the respondents (staff nurses and nurse managers) showed exciting trends, as, based on their age, it suggests that the age representation of nurses employed in a hospital varies as there are newly licensed or novice, young-to-mid adult or experienced, and seasoned or expert nurses who have almost reached the age of retirement. Based on statistics, the age of nurses at Lanao del Norte compared to the average 40-year-old age of nurses in the country is slightly younger, which has been attributed to the turnover rate of nurses or could be a factor of commitment at work (Malki, Hamouda and Felemban, 2020; Sapar and Oducado, 2021).

Table 3. Commitment of Staff Nurses

Dimensions of Commitment of Staff Nurses'	Mean	SD	Descriptive Interpretation
Affective Commitment	4.00	1.580	Undecided
Continuance Commitment	4.28	1.595	Undecided
Normative Commitment	3.72	1.604	Undecided

Hospitals in the Philippines retain few seasoned nurses, about 40 years old and above average, due to greener pastures in Western countries that provide higher salaries and benefits. On average, Filipino nurses spent about 1 to 10 years working experience in a government or private hospital before migration, which is part of the requirements for nurses seeking employment abroad (Falguera *et al.*, 2021; Pangandaman, 2023). It implies that about 60% of nurses employed in a hospital tend to work outside the country if they do not have strong commitment and dedication at the workplace, resulting in a shortage of seasoned and young and mid-adult nurses (Al-Haroon and Al-Qahtani, 2020; Labrague, Ballard and Fronda, 2021). The trend in the cycle of nursing based on the evidence suggests a larger influx of young nurses annually since the country produces hundreds of thousands of nurses, but study shows that young nurses have a higher tendency to leave organizations compared to older ones (Chao and Lu, 2020; Labrague, Ballard and Fronda, 2021).

The nurse managers have been promoted to the position, possibly based on their performance at work, dedication, commitment, and educational attainment. As such, nurse managers must be encouraged to engage and pursue continuing education to open more opportunities and improve the quality of care they translate with the staff nurses (Pangandaman, 2019; Darling-Hammond *et al.*, 2020; Mlambo, Silén and McGrath, 2021). Moreso, nurse managers possessed important leadership traits based on the appraisal of their staff nurses. They trust their nurse managers because they are just, sincere, honest, responsible, communicative, and group-oriented, which are positive traits needed for effective management and administration (Mabona, *et al.*, 2022; Aseery, Mahran and Felemban, 2023). Study has found that nurse managers' personality traits influence the job satisfaction of nurses. Leadership traits noted by nurse managers are responsibility, modesty, compassion, inspiration, a sense of integrity, and admitting liability for work consequences. Accordingly, nurses possess good

leadership traits and qualities when allowed to observe, model, and practice leadership behaviors (Mejia *et al.*, 2020; Malawat, Hariyati and Sari, 2021).

On the other hand, they are sometimes presumed as bossy and humorous yet diplomatic and confidence-building. This means that sometimes, the natural behavior of managers adds zest to the circle of his/her staff nurses as a curved line of professionalism instead of a linear one, as explained in that professionalism is not at all absolute and overarching. It accords with the claim in other studies that nurse managers must be flexible to become team builders, morale boosters, participative and considerate (Hajizadeh *et al.*, 2022). Likewise, the eight qualities of a great nurse, such as caring, communicative, empathic, attentive, problem-solver, respectful, self-aware and desire to keep learning, partly reflect the qualities of nurse managers in this study (Kodama and Fukahori, 2017). Leadership traits of nurse managers at the hospital of Lanao del Norte that dictate a combination of factors that shaped the patterns and characteristics of their behavior and leadership are indispensable in promoting a quality and safe nursing service that reflects the competence, satisfaction, and or comfort of their staff nurses. It also means that staff nurses are being treated professionally by their nurse managers as they admitted that they had experienced and observed positive personality traits; this then tickles the sense of commitment of nurses at work (Mejia *et al.*, 2020; Labrague, Ballard and Fronda, 2021).

Moreover, findings in the affective commitment of staff nurses imply that they have a sense of emotional attachment or feeling toward their working environment as they enjoy sharing some extent of their personal life. They consider working in the hospital their second abode, and family is formed with the people around them, a sense of belongingness that they looked to work for and stay with. Based on studies, affective commitment is a positive work attitude that can become a resource for nurses due to its strong relationship with well-being, strengthened by work experiences that contribute to nurses'

sense of comfort in the workgroup (Galletta *et al.*, 2019; Davidescu *et al.*, 2020)

In accordance with this study, when work-family or personal matters are out of balance, nurses' sense of collective belonging to the workgroup protects them from emotional tiredness by strengthening their resistance to stressors (Aragasi and Pangandaman, 2021; Labrague, Ballad and Fronda, 2021).

Furthermore, the associated significant findings between the length of service and continuance commitment reflect that those staff nurses who have been working in the hospital for more than ten years, have high continuance commitment at work (Naghneh *et al.*, 2017). However, several factors influence continuance commitment: clinical or hospital environment, job relevance and satisfaction, and pay and benefits general satisfaction (Cox, 2019; Keith *et al.*, 2021). The top in the ranked workplace environment that does not suit the comfort, personality professionalism, and standard of an employee tends for them to have low continuance commitment, which then highly tends to seek for further opportunities and settings (Orgambidez, Borrego and Vázquez-Aguado, 2019). There are also staff nurses or professionals who prefer to be placed in a situation that makes them highly relevant. Their contributions could make a significant difference and impact their workplace and society.

Lastly, the primary and most minor reason in Western countries, yet the most common in the Philippines, is the salary and benefits offered (Orgambidez, Borrego and Vázquez-Aguado, 2019). Nevertheless, it is interesting to note that, in this study, there are more nurses with considerable continuance commitment, which suggests nurse retention despite knowing that the Philippines is a top exporter of nurses globally (Cox, 2019; Labrague, Ballad and Fronda, 2021). Staff nurses in Lanao del Norte have a robust ethical concept and the idea of other opportunities in other clinical work setting locally and abroad. However, it is superseded by their belief in the benefits and the values of being loyal to an

organization. It fits the description of "normative commitment" as a feeling of allegiance to the principles and objectives of the organization (Heng *et al.*, 2021). Staff nurses are ethically grounded in the belief that leaving the organization is not suitable for themselves and their workplace, as it connotes betrayal and distrust. Organizational commitment can lead to an atmosphere of accomplishment, a sense of belonging, and engagement among employees as well as improved job efficiency, financial prosperity, and a boost in the efficacy and effectiveness of the latter (Ofei *et al.*, 2022).

Furthermore, the correlation of variables implies that the nurse manager's leadership trait is connected with their staff nurses' commitment. It means possessing positive leadership traits by nurse managers betters the emotional feeling, values, and beliefs (affective commitment), the perceived analysis of the cost-benefit situation and membership (continuance commitment), establishing a sense of dedication toward the organization's principles and goals (normative commitment) of staff nurses). Among all the dimensions, affective commitment has the most significant degree of correlation with leadership traits because both deal with emotion, which agrees with studies that indicate Influential nursing leaders are experts who are in charge of establishing objectives for the nursing departments of their organizations (Labrague, Ballad and Fronda, 2021). As professional nurse leaders strive for excellence with their staff, they must also concentrate on making sure that their teams provide exceptional patient care as part of their commitment to excellence. Influential nurse leaders give their employees a realistic goal to work toward in order to enhance performance and patient care by setting short-term priorities. In light of this, the best qualities of nursing team leaders are those who solicit feedback from their team before setting goals (Lapeña *et al.*, 2018). Utilizing feedback assures that organizations make decisions based on the interests of all stakeholders (Galletta *et al.*, 2019; Mabona *et al.*, 2022).

Conclusion

The study's findings provide a crucial understanding of the relationship between the leadership traits of nurse managers and the staff nurses' levels of commitment in the healthcare organization. The demographic profile of the respondents indicates a varied age representation among nurses, with a significant proportion being relatively young, potentially leading to turnover and a shortage of seasoned nurses in the hospital. Nurse managers were found to possess positive leadership traits, such as honesty, compassion, and effective communication, which significantly influence the commitment levels of staff nurses. Nurse managers' positive traits contribute to staff nurses' affective commitment, indicating an emotional attachment and sense of belonging to the workplace. Additionally, continuance commitment is influenced by factors like workplace environment, job satisfaction, and pay and benefits, while normative commitment stems from nurses' loyalty to the organization's values and goals.

The study emphasizes the importance of nurturing and promoting positive leadership traits among nurse managers through continuing education and leadership development programs. By fostering a supportive work environment and engaging in participative decision-making, nurse managers can enhance staff nurses' commitment and job satisfaction. Moreover, the findings highlight the significance of recognizing and addressing factors that contribute to nurse turnover, such as providing competitive compensation and opportunities for career growth. Overall, the study underscores the critical role of nurse managers in shaping the commitment and well-being of the nursing workforce and the importance of effective leadership in promoting quality nursing care.

Declarations

Ethics Approval and Consent Participant

The study adhered to ethical principles, with participants giving informed consent. The ethics review committee approved the

protocol, safeguarding rights and confidentiality. Anonymity and confidentiality were upheld for data privacy and research purposes.

Conflict of Interest

No conflicts of interest exist between the researchers and the publication of this study.

Availability of Data and Materials

Not applicable.

Authors' Contribution

PPA and HKP contributed equally to this research study. PPA was involved in the conceptualization, setting the design, collection of data, and analysis. HKP played a key role in the literature review, data interpretation, and manuscript preparation. Both authors actively participated in the critical review and revision of the final manuscript, ensuring its intellectual integrity and scholarly quality. The authors jointly approve the submission of this work and take responsibility for its content.

Funding Source

No funding acquired from any institution in the completion of this research.

Acknowledgment

The authors acknowledge the valuable participation of the respondents as well as the healthcare organization for granting access and cooperation during data collection. The authors also extend their gratitude to their colleagues and peers for their insights and support. This study would not have been possible without their contributions and collaboration.

References

- Al-Haroon, H.I. and Al-Qahtani, M.F. (2020) 'Assessment of organizational commitment among nurses in a major public hospital in Saudi Arabia', *Journal of Multidisciplinary Healthcare*, 13.
<https://doi.org/10.2147/JMDH.S256856>

- Aragasi, N.A. and Pangandaman, H.K. (2021) 'Coping style, anxiety level, organizational support, and work commitment of educators during the COVID-19 pandemic in the Philippines: A mixed-methods study', *Belitung Nursing Journal*, 7(4). <https://doi.org/10.33546/bnj.1393>
- Aseery, M., Mahran, S. and Felemban, O. (2023) 'The Relationship Between Emotional Intelligence and Conflict Management Strategies From the Nurse Managers' Perspective', *Cureus* [Preprint]. <https://doi.org/10.7759/cureus.35669>
- Beiranvand, M. S., Beiranvand, S., Beiranvand, S. and Mohammadipour, F. (2021) 'Explaining the effect of authentic and ethical leadership on psychological empowerment of nurses', *Journal of Nursing Management*, 29(5). <https://doi.org/10.1111/ionm.13246>
- Bongalonta, M.B. (2022) 'Relationship Between Organizational Commitment Dimensions and Job Satisfaction: The Case of Employees of Sorsogon State College Bulan Cam-pus', *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(5). <https://doi.org/10.11594/ijmaber.03.05.17>
- Cai, Y., Li, Q., Cao, T. and Wan, Q. (2023) 'Nurses' work engagement: The influences of ambidextrous leadership, clinical nurse leadership and workload', *Journal of Advanced Nursing*, 79(3), pp. 1152–1161. <https://doi.org/https://doi.org/10.1111/jan.15086>
- Chao, S.F. and Lu, P.C. (2020) 'Differences in determinants of intention to stay and retention between younger and older nursing assistants in long-term care facilities: A longitudinal perspective', *Journal of Nursing Management* [Preprint]. <https://doi.org/10.1111/ionm.12952>
- Cox, C.A. (2019) 'Nurse manager job satisfaction and retention: A home healthcare perspective', *Nursing Management*, 50(7). <https://doi.org/10.1097/01.NUMA.0000558512.58455.68>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B. and Osher, D. (2020) 'Implications for educational practice of the science of learning and development', *Applied Developmental Science*, 24(2). <https://doi.org/10.1080/10888691.2018.1537791>
- Davidescu, A.A., Apostu, S., Paul, A. and Cășuneanu, I. (2020) 'Work flexibility, job satisfaction, and job performance among Romanian employees-Implications for sustainable human resource management', *Sustainability (Switzerland)*, 12(15). <https://doi.org/10.3390/su12156086>
- Dawadi, S., Shrestha, S. and Giri, R.A. (2021) 'Mixed-Methods Research: A Discussion on its Types, Challenges, and Criticisms', *Journal of Practical Studies in Education*, 2(2). <https://doi.org/10.46809/jpse.v2i2.20>
- Dinc, M.S., Zaim, H., Hassanin, M. and Alzoubi, Y.H. (2022) 'The effects of transformational leadership on perceived organizational support and organizational identity', *Human Systems Management*, 41(6). <https://doi.org/10.3233/HSM-211563>
- Falguera, C.C., De Los Santos, J. A. A., Galabay, J. R., Firmo, C. N., Tsaras, K., Rosales, R. A., Mirafuentes, E. C. and Labrague, L. J. (2021) 'Relationship between nurse practice environment and work outcomes: A survey study in the Philippines', *International Journal of Nursing Practice*, 27(1). <https://doi.org/10.1111/ijn.12873>
- Galletta, M., Portoghese, I., Melis, P., Gonzalez, C. I. A., Finco, G., D'Aloja, E., Contu, P. and Campagna, M. (2019) 'The role of collective affective commitment in the relationship between work-family conflict and emotional exhaustion among nurses: A multilevel modeling approach', *BMC Nursing*, 18(1). <https://doi.org/10.1186/s12912-019-0329-z>
- Hajizadeh, A., Bahreini, R., Kakemam, E., Zamanzadeh, V., Hamidi, H. and

- Khodayari-Zarnaq, R. (2022) 'Developing a framework for the participation of nursing managers in the health policy-making process in Iran: A Delphi study', *Journal of Nursing Management*, 30(8). <https://doi.org/10.1111/jonm.13841>
- Hamlin, R.G., Ruiz, C. E., Jones, J. and Patel, T. (2023) 'Toward a universalistic behavioural model of perceived managerial and leadership effectiveness for the health services sector', *Health Services Management Research*, 36(2). <https://doi.org/10.1177/09514848211065462>
- Heng, E., Kelana, B. W. Y., Ismail, S. A. and Hishan, S. S. (2021) 'Nurses' Perception of Structural Empowerment in Commitment Towards Quality Improvement Sustainability', *International Journal of Academic Research in Business and Social Sciences*, 11(8). <https://doi.org/10.6007/ijarbss/v11-i8/10682>
- Hua, W., Fang, Q., Lin, W., Liu, Z., Lu, W., Zhu, D. and Wu, Y. (2022) 'The level and influencing factors of graduating nursing students' professional commitment from the perspective of Ecological Systems Theory: A cross-sectional study', *Nurse Education Today*, 119. <https://doi.org/10.1016/j.nedt.2022.105567>
- Keith, A.C., Warshawsky, N., Neff, D., Loerzel, V. and Parchment, J. (2021) 'Factors that influence nurse manager job satisfaction: An integrated literature review', *Journal of Nursing Management*, 29(3). Available at: <https://doi.org/10.1111/jonm.13165>.
- Kodama, Y. and Fukahori, H. (2017) 'Nurse managers' attributes to promote change in their wards: a qualitative study', *Nursing Open*, 4(4). <https://doi.org/10.1002/nop2.87>
- Labrague, L.J., Ballad, C.A. and Fronda, D.C. (2021) 'Predictors and outcomes of work-family conflict among nurses', *International Nursing Review*, 68(3). <https://doi.org/10.1111/inr.12642>
- Lapeña, L.F.R., Lapeña, L.F., Tuppal, C.P., Loo, B.G. and Abe, K.H. (2018) 'Transformational and Transactional Leadership Styles of Nurse Managers and Job Satisfaction among Filipino Nurses: A Pilot Study', *Nurse Media Journal of Nursing*, 7(2). <https://doi.org/10.14710/nmjn.v7i2.15171>
- Mabona, J.F., Rooyen, D. and Ham-Baloyi, W. Ten (2022) 'Best practice recommendations for healthy work environments for nurses: An integrative literature review', *Health SA Gesondheid*, 27. <https://doi.org/10.4102/hsag.v27i0.1788>
- Malawat, K.Y., Hariyati, Rr.T.S. and Sari, K.M. (2021) 'Nursing managers' strategies for reducing interpersonal and interprofessional conflicts in the Covid-19 Pandemic', *International Journal of Nursing and Health Services (IJNHS)*, 3(6). <https://doi.org/10.35654/ijnhs.v3i6.403>.
- Malki, S., Hamouda, G. and Felemban, O. (2020) 'Relationship between Perceived Organizational Support and Quality of Nurses' Work Life at King Fahad Hospital-Saudi Arabia', *Innovative Journal of Medical and Health Science*, 10(10). <https://doi.org/10.15520/ijmhs.v10i10.3136>
- Mejia, P.C.G., Breboneria, B.J.L., Pangandaman, H.K., Sadang, J.S., Hengnalen, B., Calaycay, J.M., Mala, N.D., Estanislao, A.M., Diamla, R.L., Penullar Jr., W.S. Phumchaisai, P., Dijamco, M.E. and Cordova-Acedera L.V. (2020) 'Student nurses' leadership and management competencies and key performance indicators (KPIs) for patient safety outcomes in Nakhon Pathom, Thailand', *International Journal of Advanced and Applied Sciences*, 7(2). <https://doi.org/10.21833/ijaas.2020.02.015>

- Mlambo, M., Silén, C. and McGrath, C. (2021) 'Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature', *BMC Nursing*, 20(1). <https://doi.org/10.1186/s12912-021-00579-2>
- Naghneh, M.H.K., Tafreshi, M. Z., Naderi, M., Shakeri, N., Bolourchifard, F. and Goyaghaj, N. S. (2017) 'The relationship between organizational commitment and nursing care behavior', *Electronic Physician*, 9(7). <https://doi.org/10.19082/4835>
- Nurmeksela, A., Mikkonen, S., Kinnunen, J. and Kvist, T. (2021) 'Relationships between nurse managers' work activities, nurses' job satisfaction, patient satisfaction, and medication errors at the unit level: a correlational study', *BMC Health Services Research*, 21(1). <https://doi.org/10.1186/s12913-021-06288-5>
- Ocho, O.N., Wheeler, E., Rigby, J. and Tomblin Murphy, G. (2021) 'Core competencies and challenges among nurses transitioning into positions of leadership – a Caribbean perspective', *Leadership in Health Services*, 34(3). <https://doi.org/10.1108/LHS-03-2021-0014>
- Ofei, A.M.A., Paarima, Y., Barnes, T. and Poku, C. A. (2022) 'Toxic leadership behaviour of nurse managers on perceived job satisfaction and productivity of nursing workforce in sub-Saharan Ghana: A multi-centre cross-sectional study', *Journal of Nursing Management*, 30(7). <https://doi.org/10.1111/jonm.13741>
- Orgambidez, A., Borrego, Y. and Vázquez-Aguado, O. (2019) 'Self-efficacy and organizational commitment among Spanish nurses: the role of work engagement', *International Nursing Review*, 66(3). <https://doi.org/10.1111/inr.12526>
- Özkan, A., Çamlica, T. and Kartal, H. (2022) 'An analysis of the effect of nurse managers' toxic leadership behaviours on nurses' perceptions of professional values: A cross-sectional survey', *Journal of Nursing Management*, 30(4). <https://doi.org/10.1111/jonm.13597>
- Pangandaman, H. (2023) 'Challenges Faced by Digital Immigrant Nurse Educators in Adopting Flexible Learning Options During the COVID-19 Pandemic: A Phenomenological Study', *Journal of Client-centered Nursing Care*, 9(4), pp. 309–316. <https://doi.org/10.32598/JCCNC.9.4.571.2>
- Pangandaman, H.K. (2019) 'Philippine Higher Education Vis-À-Vis Education 4.0: A Scoping Review', *International Journal of Advanced Research and Publications*, 3(3). Available at: <http://www.ijarp.org/published-research-papers/mar2019/Philippine-Higher-Education-Vis-vis-Education-40-A-Scoping-Review.pdf> (Accessed: 11 February 2024).
- Raosoftware (2020) *RAOSOFT Sample Size Calculator 2020, Online*. Available at: <http://www.raosoftware.com/samplesize.html> (Accessed: 11 February 2024).
- Sahan, F.U. and Terzioğlu, F. (2022) 'Transformational leadership practices of nurse managers: the effects on the organizational commitment and job satisfaction of staff nurses', *Leadership in Health Services*, 35(4). <https://doi.org/10.1108/LHS-11-2021-0091>
- Sapar, L.C. and Oducado, R.M.F. (2021) 'Revisiting job satisfaction and intention to stay: A cross-sectional study among hospital nurses in the Philippines', *Nurse Media Journal of Nursing*, 11(2). <https://doi.org/10.14710/NMJN.V11I2.36557>
- Sethi, S., Chaturvedi, Dr.V. and Kataria, Dr.P. (2023) 'A Review of Upskilling in The Healthcare Sector With Special Emphasis On Nurses', *International Journal of Life Science and Pharma Research* [Preprint]. <https://doi.org/10.22376/ijlpr.2023.13.4.sp6.l1-l11>.

- Shehab, M. A., Eid, N. M. and Kamel, F. F. (2022) 'Spiritual Leadership Educational Program for Head Nurses and its Effect on Nurses' Motivation', *Journal of Nursing Science Benha University*, 3(2). <https://doi.org/10.21608/jnsbu.2022.247683>
- Specchia, M.L., Cozzolino, M. R., Carini, E., Di Pilla, A., Galletti, C., Ricciardi, W. and Damiani, G. (2021) 'Leadership styles and nurses' job satisfaction. Results of a systematic review', *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph18041552>.
- Tatliyer, A., Cervantes, I., Formoso-Rafferty, N. and Gutiérrez, J. P. (2019) 'The statistical scale effect as a source of positive genetic correlation between mean and variability: A simulation study', *G3: Genes, Genomes, Genetics*, 9(9). <https://doi.org/10.1534/g3.119.400497>
- Yesilbas, H. and Kantek, F. (2022) 'Trends and hot topics in nurse empowerment research: A bibliometric analysis', *Japan Journal of Nursing Science*, 19(2). <https://doi.org/10.1111/jjns.12458>
- Quintero, M.Z., Indrasena, B. S. H., Fox, L., Subedi, P. and Aylott, J. (2023) 'Upstreamist leaders: how risk factors for unscheduled return visits (URV) to the emergency department can inform integrated healthcare', *Leadership in Health Services*, 36(3). <https://doi.org/10.1108/LHS-06-2022-0069>.

HEALTH FINANCING ANALYSIS OF MINIMUM SERVICE STANDARDS IN THE HEALTH SECTOR

Analisis Pembiayaan Kesehatan Standar Pelayanan Minimal Bidang Kesehatan

*Arie Risdiyanti¹, *Hadi Paramu², Sunarto³

¹Postgraduate Program, Universitas Jember, Jember, Indonesia

²Faculty of Economics and Business, Universitas Jember, Jember, Indonesia

³Faculty of Medicine, Universitas Islam Indonesia, Yogyakarta, Indonesia

Correspondence*:

Address: Jl. Kalimantan No.37, Krajan Timur, Sumbersari, Jember, Indonesia | Email: 212520102027@mail.unej.ac.id

Abstract

Background: This research focuses on health financing Minimum Service Standards (MSS) in the health sector in Lumajang Regency, Indonesia, spanning 2019 to 2022. Despite the government's emphasis on Health MSS, disparities in service access and health conditions persist across different regions.

Aims: The research aims to provide insights into the effectiveness of health financing, serving as a foundation for policy recommendations to enhance the efficiency and effectiveness of health fund allocation in Lumajang Regency.

Methods: The research employs a quantitative descriptive approach, utilizing DHA and CBA. The study also investigates the budget allocation for MSS Health services.

Results: The findings of the research reveal that the realization of Local Original Revenue (LOR) in the Health sector tends to fall below targets. Non-Physical DAK dominate the funding sources in Community Health Centers (*Puskesmas*). Maternal health services receive the highest MSS Health budget allocation, but the spending proportion relative to total health expenditure is decreasing.

Conclusion: The research underscores the importance of addressing disparities in health financing and service access in Lumajang Regency. Recommendations include the diversification of funding sources, optimization of financing at the *Puskesmas* level, and a reevaluation of the budget allocation for maternal health services.

Keywords: CBA, DHA, health financing analysis, minimum service standards

Abstrak

Latar belakang: Penelitian ini berfokus pada pembiayaan kesehatan dalam penerapan Standar Pelayanan Minimal (SPM) sektor kesehatan di Kabupaten Lumajang, Indonesia, selama kurun waktu 2019 hingga 2022. Meskipun pemerintah menekankan pada SPM Kesehatan, namun kesenjangan dalam akses layanan dan kondisi kesehatan masih terus terjadi di seluruh sektor wilayah yang berbeda.

Tujuan: Penelitian ini bertujuan untuk memberikan wawasan mengenai efektivitas pembiayaan kesehatan, sehingga dapat menjadi landasan rekomendasi kebijakan untuk meningkatkan efisiensi dan efektivitas alokasi dana kesehatan di Kabupaten Lumajang.

Metode: Penelitian ini menggunakan pendekatan kuantitatif dengan menggunakan District Health Accounts (DHA) dan Cost and Benefit Analysis (CBA). Studi ini juga menyelidiki alokasi anggaran untuk berbagai layanan SPM.

Hasil: Temuan penelitian mengungkapkan bahwa realisasi Pendapatan Asli Daerah (PAD) bidang Kesehatan cenderung dibawah target. Dana kapitasi JKN mendominasi sumber pendanaan di Pusat Kesehatan Masyarakat (*Puskesmas*). Pelayanan kesehatan ibu menerima alokasi anggaran SPM Kesehatan tertinggi, namun proporsi pengeluaran terhadap total belanja kesehatan mengalami penurunan.

Kesimpulan: Penelitian ini menggarisbawahi pentingnya mengatasi kesenjangan dalam pembiayaan kesehatan dan akses layanan di Kabupaten Lumajang. Rekomendasinya antara lain diversifikasi sumber pendanaan, optimalisasi pembiayaan di tingkat *Puskesmas*, dan evaluasi ulang alokasi anggaran pelayanan kesehatan SPM Bidang Kesehatan.

Kata kunci: analisis pembiayaan kesehatan, CBA, DHA, standar pelayanan minimal



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.62-73.

Received: 2023-11-24, Revised: 2024-04-14, Accepted: 2024-04-30, Published: 2024-06-20.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Arie Risdiyanti, Hadi Paramu, Sunarto

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Risdiyanti, A., Paramu, H. and Sunarto. (2024) "Health Financing Analysis of Minimum Service Standards In The Health Sector", *Indonesian Journal of Health Administration*, 12(1), pp. 62-73. doi: 10.20473/jaki.v12i1.2024. 62-73.

Introduction

Quality health services are a fundamental prerequisite for achieving societal well-being. In this context, the health sector's Minimal Service Standards (MSS) are a crucial benchmark (World Health Organization, 2022). MSS in Health, as regulated by Minister of Health Regulation No. 4 of 2019, mandates that every citizen is entitled to basic health services of a minimal type and quality. However, despite Health MSS being a government priority to narrow regional gaps, on-the-ground realities still reveal significant disparities in service access and health conditions across various regions. The implementation of MSS poses a complex challenge, particularly concerning local health financing schemes (Myloneros and Sakellariou, 2021). In this context, the study of local health financing schemes in Indonesia becomes a focal point of interesting debate. Local governments are responsible for planning, financing, and distributing health services, but policy complexity and local political interests influence their role in health financing allocation (Sunarto, 2020; Santinha *et al.*, 2023). In an effort to achieve Health MSS targets, the central government's role in health financing regulation remains dominant. In Lumajang Regency, despite an increase in the regional budget value in recent years, the budget allocation for health MSS has not seen a proportional increase.

The data show that health financing in Lumajang Regency is still far from the desired target, as reflected in the decreasing percentage of the budget allocated to health MSS from year to year. Reconciliation results of the Regional Budget Implementation of Lumajang Regency (2019-2022) reveal data for Health MSS financing recorded as 5.89% of the regional government's health budget in 2019 (amounting to IDR 19,871,181,718 out of a total of IDR 337,220,278,143.91). Subsequently, in 2020, it was 3.94% of the regional government's health budget (amounting to IDR 13,175,653,782 out of a total of IDR 334,306,388,483.6). In 2021, it was only 2.01% of the regional

government's health budget (amounting to IDR 8,525,902,328 out of IDR 423,663,017,207.13). The latest data for 2022 show a further decrease to 1.89% of the regional government's health budget (amounting to IDR 7,963,801,042 out of IDR 421,720,186,525.47) (Pemkab Lumajang, 2022).

Reconciliation results of budget and Health MSS realization data from 2019 to 2022 indicate significant fluctuations, with some Health MSS indicators still below 50% of the target. This condition raises serious concerns, especially when compared to the monitoring and evaluation results of the Lumajang Regency Health MSS team, noting that the performance of the Health MSS program has not yet reached the 100% target. Therefore, this study delves deeper into the health financing scheme in Lumajang Regency. The primary focus will be on District Health Account (DHA) analysis as a tool to understand health fund flows systematically (Haryani, Nasution, and Ginting, 2022; Gani, 2022). Additionally, the Cost and Benefit Analysis (CBA) approach will be applied to measure the economic efficiency of basic health services and evaluate the impact of investments in fulfilling Health MSS financing (Brent, 2023). This study is expected to reveal a clearer connection between health financing schemes, the fulfillment of Health MSS targets, and the economic impact of these investments (Darrudi, Khoonsari, and Tajvar, 2022). Better alignment between programs, activities, outputs, and outcomes is anticipated through comprehensive and evidence-based analysis (Lundmark *et al.*, 2021). This serves as an important initial step to enhance the effectiveness and efficiency of resource utilization in achieving Health MSS targets in Lumajang Regency (Xu *et al.*, 2018).

Method

This research employed a descriptive research design with a quantitative analysis approach to provide an overview or description of government-sourced health financing in the implementation of Minimal

Service Standards (MSS) in the health sector in Lumajang Regency from 2019 to 2022. The integrated approach includes a District Health Account (DHA) and Cost-Benefit Analysis (CBA) with a focus on income allocation, expenditure allocation, and budget expenditure appropriateness (Murniati, Indrayathi, and Januraga, 2020). Secondary data used are derived from MSS Health budget documents in Lumajang Regency from 2019 to 2022. Secondary data collection involves instruments in the form of data collection forms prepared by the researchers. Data analysis was carried out through pivot tables, considering nine dimensions of the District Health Account (DHA), involving funding sources, budget managers, service providers, types of activities, budget items, programs, activity levels, and beneficiaries (John *et al.*, 2019).

The research was conducted in the Lumajang Regency Government, involving the Health Office and Community Health Centers. The research period extended from January to September 2023, covering the permission process, primary data collection, data cleaning and processing, data analysis, and result writing. The research object is MSS Health service activities in the Health Office and Community Health Centers in Lumajang Regency. Data processing used a computer with simple calculations using pivot tables, followed by data analysis (Palupi *et al.*, 2020). Identification of costs and benefits was conducted to illustrate the comparison between total costs and total benefits received from MSS Health financing (Hauck *et al.*, 2018).

After identifying the value of benefits and costs, a Benefit-Cost Ratio (BCR) calculation was performed to evaluate whether the benefits are proportional to the investment made (Rahmiyati *et al.*, 2019). BCR was calculated by comparing total benefits with total costs. Research ethics approval involves informed consent, anonymity, and confidentiality of research subject information. This research has been submitted to the Ethics Commission of the Faculty of Dentistry, University of Jember. The analysis was conducted to assess the cost requirements for meeting

the targets of the Minimal Service Standards in the Health Sector in the Lumajang Regency. The gap between needs and the budget spent was also evaluated.

The classification of budget based on programs helps clarify program objectives by determining the desired outputs. Additionally, the program's impact was evaluated based on health outcomes, financial protection, and community responsiveness (Kruk *et al.*, 2018). The research findings are presented in tables, graphs, and narratives to facilitate readers' understanding of the study's discoveries. This research is expected to provide insights into the effectiveness of health financing in implementing the SPM in the Health Sector in Lumajang Regency. This analysis can serve as a foundation for local government policies to enhance the efficiency and effectiveness of health fund allocation.

Result and Discussion

Health Financing MSS

The allocation of the income budget in the health sector in Lumajang Regency during 2019-2022 highlights the reality that the Local Original Revenue (LOR) in the health sector generally did not reach the set target, except in 2019, when it reached 109.59%. The realization of income from LOR sources remains stable, rarely exceeding 50 billion rupiahs, with the capitation funds from Social Security Administrative Body - National Health Insurance Program (BPJS JKN) being the main contributor, especially after the status of public health centers changed to Regional Public Service Bodies in 2021. Despite yearly fluctuations, income from JKN capitation funds remains dominant, reaching 97.56% in 2022, while income from local levies tends to decline after 2020. Budget allocation for health services under the Health Sector MSS during 2019-2022 shows fluctuations. In 2019, maternal health services received the highest allocation, while in 2020, services for individuals with severe mental disorders had the highest allocation. Expenditure realization tends to decrease from 2019 to

2022, with an average expenditure absorption of around 65.73%. Although the highest budget allocation is for maternal health services, the highest absorption percentage is in the services for Hypertension and TB patients. Compared to the budget allocation, the total expenditure realization shows fluctuations, with a significant decrease in 2020 and fluctuations in the following years.

Identification of BCR

Table 1 shows that from the 4-year time series data, the direct benefit-to-cost ratio (BCR) is consistently greater than one each year. In 2019, the BCR was 1.72, meaning that for every 1 million rupiahs spent on the direct costs of implementing Health Sector MSS (SPM), a profit of 1.72 times was gained in the effort to improve the public health status. In 2020, the BCR was 1.09, signifying that for every 1 million rupiahs spent on the direct costs of implementing Health Sector MSS, a profit of 1.09 times was obtained. In 2021, the BCR was 1.42, indicating that for every 1 million rupiahs spent on the direct costs of implementing Health Sector MSS, a profit of 1.42 times was gained. In 2022, the BCR was 4.91, meaning that for every 1 million rupiahs spent on the direct costs of implementing Health Sector MSS, a profit of 4.91 times was achieved in the effort to improve the public health status. In 2022, the direct benefits received by the community reached the highest BCR value. The district's ratio of direct benefit value to

direct expenditure for Health Sector MSS is relatively consistent and stable. The value of benefits obtained closely matches the cost incurred. The calculation of total cost elements (total cost), derived from the summation of direct and indirect costs, is compared with total benefit elements (total benefit), obtained by summing direct and indirect benefits, as detailed in Table 2.

Table 2 shows that the total benefit value of financing the implementation of Health Sector MSS for improving the public health status is much greater than the total cost value. It is almost ten times and even reaches thirty times. One of the reasons is that the value of indirect benefits is greater than direct benefits, significantly influencing the BCR value. The BCR values range from a minimum of 9.56 in 2020 to a maximum of 34.11 in 2022. In 2019, with a BCR of 10.41, it means that for every 1 million rupiahs spent on the implementation of Health Sector MSS, a profit of 10.41 million rupiahs is gained. In 2022, with a BCR of 34.11, it means that for every 1 million rupiahs spent on the implementation of Health Sector MSS, a profit of 34.11 million rupiahs is obtained. In 2022, the value of benefits received is significantly higher compared to previous years. The results of comparing the value of benefits and the value of financing Health Sector MSS found that the volume of cases drives the difference in benefit values served. All results show that $BCR > 1$, indicating that financing Health Sector MSS should be a regional priority program in addressing regional health issues.

Table 1
BCR for Direct Cost- Benefit

Variable	Value of SPM Health Services (in million rupiah)			
	2019	2020	2021	2022
Direct Cost (DC)	19.890,98	13.159,54	8.515,10	7.923,52
Direct Benefit (DB)	34.189,83	14.354,09	12.099,05	38.904,12
Net direct benefit D(B-DC)	14.298,85	1.194,55	3.583,95	30.980,60
BCR (DB/DC)	1,72	1,09	1,42	4,91

Table 2
BCR for Total Cost-Benefit

Variable	Value of SPM Health Services (in million rupiah)			
	2019	2020	2021	2022
Total Cost (TC)	19.871,19	13.175,66	8.525,90	7.963,80
Total Benefit (TB)	206.941,21	126.230,34	103.453,59	271.607,81
Net benefit (TB-TC)	187.070,03	113.023,10	94.927,69	263.644,01
BCR	10,41	9,56	12,13	34,11

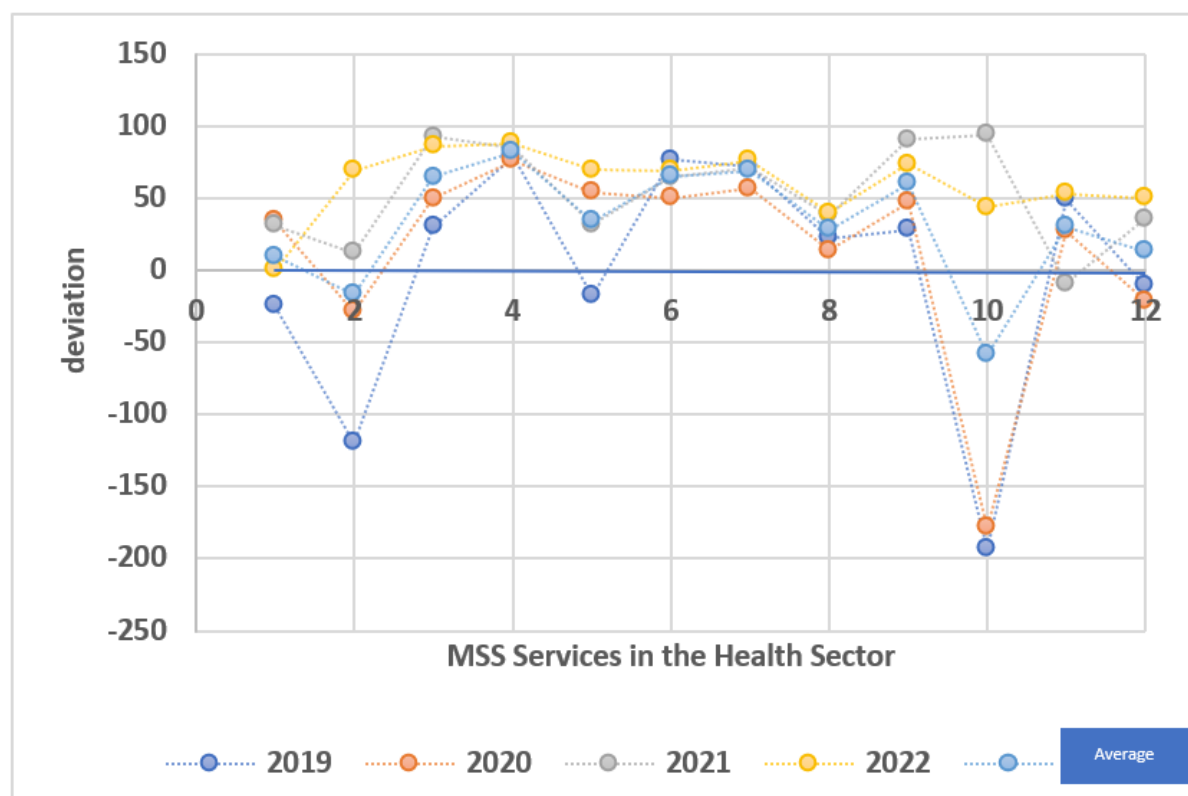
Table 3
MSS deviation in Lumajang Regency

No	SPM Health sector	MSS deviation (%Performance Achievement - %Financing Fulfillment)				Average	Standard Deviation
		2019	2020	2021	2022		
1	Pregnant Women's Health Services	-24,83	33,52	30,66	-0,05	9,83	27,65
2	Maternal Health Services	-119,33	-28,86	11,68	68,73	-16,95	79,13
3	Newborn Health Services	30,04	49,59	92,82	85,61	64,52	29,76
4	Toddler Health Services	78,72	75,87	84,5	88,01	81,77	5,49
5	Health Services at Primary Education Age	-18,05	53,87	31,55	69,25	34,16	38,09
6	Health Services in the Productive Age	76,58	49,86	64,5	68,78	64,93	11,22
7	Health Services for the Elderly	71,46	56,38	70,94	76,06	68,71	8,54
8	Health Services for Hypertension Sufferers	21,66	13,43	37,69	39,35	28,03	12,59
9	Health Services for Diabetes Mellitus Sufferers	28,07	47,21	90,25	73,3	59,71	27,53
10	Health Services for People with Serious Mental Disorders	-193,23	-178,19	93,9	43,66	-58,47	148,48
11	Health Services for People with TB	49,02	27,28	-9,21	52,88	29,99	28,46
12	Health Services for People at Risk of HIV Infection	-11,43	-21,24	35,86	49,65	13,21	34,81

Information:

 Negative deviation (%performance achieved-%direct cost fulfillment <0)

 Positive deviation (%performance achievement-%direct cost fulfillment >0)



Source: L Primary Data

Figure 1. Scatter Diagram of MSS Deviation

In 2021, negative deviations were only found in health services for TB patients (-9.21). Other Health Sector MSS services had positive deviation values. In fact, three services had positive deviations of more than 90, namely services for newborns, patients with diabetes mellitus, and individuals with severe mental disorders. In 2022, negative deviations were only found in antenatal care services (-0.05). Other Health Sector MSS services had positive deviation values, with the highest score in services for toddlers (88.01). The average deviation results show that two Health Sector MSS services have negative average deviations, namely services for individuals with severe mental disorders (-58.47) and services for maternal health (-16.95). Other services have positive average deviations, with the highest score in toddler health services (81.77). The distribution of deviation values over four years is presented in the form of a Scatter Diagram in Figure 1.

In Figure 1, the distribution of percentage deviation in performance target

achievement with the percentage of total cost fulfillment for Health Sector MSS services in Lumajang Regency is dominated by positive values compared to negative deviation values. It means that the performance achievement of the Health Sector MSS implementation in Lumajang Regency is already performance-based. The total allocated and spent costs provide leverage for the success of the Health Sector MSS program. However, there are still some services that show significant negative deviation values, resulting in a large standard deviation, such as services for maternal health and services for individuals with severe mental disorders.

Discussion

Health Financing of MSS

Despite becoming the foundation of a high-quality health system, Primary health services in Indonesia often fail to fulfill their roles. The government is responsible for providing basic health services based on MSS, but health financing remains a challenge. Health expenditure in Indonesia

is low compared to other countries, and the budget proportion for the Health Sector MSS tends to decrease (Au Yong *et al.*, 2021). The ability of regions to fulfill the financing needs of basic health services, especially to achieve MSS targets, is still not optimal. Despite the increase in regional health budgets, they are not fully allocated effectively for the Health Sector MSS. There is a decrease in the percentage of regional health spending directed towards meeting MSS service needs, while the total budget increases. The limitation of Health Sector MSS funding is one of the reasons for the low achievement of MSS performance targets in Lumajang Regency. The focus on the quantitative aspects of services to meet MSS targets, without ensuring equality and accessibility of services for vulnerable populations, is a major constraint. The largest source of funding comes from central government transfer funds, especially from the Revenue Sharing Fund, indicating a high dependence on central funds. Financing for the Health Sector MSS in Lumajang Regency has not yet become a priority in health budget allocations (Indriyanti, 2023). Studies indicate that the proportion of government financing for public health will not be sustainable in the future, given the faster growth of health financing needs than economic growth. An aging population and epidemiological transitions will increase the financing burden, requiring modifications or interventions in health financing (Cristea *et al.*, 2020).

Funding for the implementation of Health Sector MSS is still highly dependent on funding sources from the central government, while SPM has become the mandatory responsibility of local governments. District/city governments should be able to allocate sufficient Regional Budget to achieve SPM indicator targets. Financing for health promotion and prevention programs, especially Health Sector MSS services, is still relatively small compared to curative financing (Tandon and Reddy, 2021). The study also notes variations in SPM achievements among Puskesmas caused by inhibiting factors, such as budget limitations, infrastructure,

and human resources. Dependence on assistance from the state budget, while budgets from village funds and Puskesmas BLUD are relatively small, hinders the achievement of MSS performance targets. Additionally, the study results show that financing is more dominant for curative-rehabilitative activities compared to promotive-preventive activities, reflecting budget cuts in preventive health sector MSS services (Zeng *et al.*, 2020). Improvements in budget allocation and financing priorities are needed to ensure that preventive efforts receive more attention. The new Health Law Number 17 of 2023, which eliminates mandatory spending for health expenditures, demands a performance-based budget principle. In this context, health financing in Lumajang Regency tends to be an operational (direct spending) of more than 98%, with the capital expenditure of less than 1%. The allocation of financing based on the level of activities shows that the implementation of Health Sector MSS activities is predominantly received by the community at the district, village, and community levels (Syafrawati *et al.*, 2023). Although there are monitoring and evaluation programs, the intensity and methods of monitoring and evaluation vary between programs. Financing based on beneficiaries shows almost equal distribution across all age groups, but further investment is still needed in specific age groups, such as the productive age and the elderly. In order to improve the quality of health services and achieve Health Sector MSS targets, coordination of health financing among involved agencies is required. Overall, this study highlights the need for expanded financing, increased budget allocation for Health Sector MSS services, and a greater focus on preventive efforts to ensure comprehensive public health (Yaghoubi *et al.*, 2023).

Adequacy Costs of Minimum Service Standards in Lumajang Regency

Information on MSS costs in Indonesia is limited, while variations in healthcare costs between regions are quite significant. A study in Lumajang Regency shows that the direct cost estimate to

achieve Health Sector MSS targets requires a significant budget allocation. The unit cost of MSS at the District Health Office ranges from IDR 24,872 to IDR 1,580,122. The total estimated direct cost needs are highest for TB and HIV, while the lowest is for Hypertension. In 2019-2022, the estimated direct cost needs increased from IDR 90.051 billion to IDR 117.235 billion. However, cost fulfillment only reached about 8.33%-22.07% of the total estimated needs each year. This gap indicates that the available and spent financing is insufficient, and there is potential for an increase in financing needs as fulfillment decreases (Clark *et al.*, 2018).

The study also highlights the practice of annual MSS budgeting in districts/cities that tends to use the estimated expenditure from the previous year, not reflecting the actual costs. Research conducted at the Puskesmas Palengaan, Pamekasan Regency, shows that the income projection in 2021 increased by 10%, but the fulfillment of Health Sector MSS performance indicators decreased due to the insufficient budget allocation. Health service analysis shows a gap between fulfillment and estimated needs, especially in services for toddlers, productive ages, and elderlies. Some services have fulfillment below IDR 10 billion compared to estimated needs. Conversely, there are services with fulfillment of more than 100%, indicating excessive cost allocation. Disease prevention and service integration are recognized as crucial factors for a quality healthcare system (AbdulRaheem, 2023). Increasing fiscal space for health can be achieved through macroeconomic improvements, health reprioritization, tax allocation, grants, and efficiency. Although creating new resources is important, improving efficiency is also recognized as a practical way to increase fiscal space in countries with low resources (Zeng *et al.*, 2020).

Identification Costs and Benefits of Minimum Service Standards in Lumajang Regency

The analysis of budget performance aims to ensure the effectiveness and efficiency of the government intervention

towards the root problems of the community. Cost-Benefit Analysis (CBA) is conducted to evaluate programs by calculating total monetary costs and benefits. Financing for the Health Sector MSS in Lumajang Regency (2019-2022) is divided into direct and indirect costs. Generally, direct costs are greater than indirect costs, indicating the performance basis in Health Sector MSS services. The highest fulfillment of direct costs is in maternal health services, while the lowest is in newborn care services. Direct costs show a decreasing trend each year (Hyeda *et al.*, 2022).

The total benefits of implementing Health Sector MSS, including direct and indirect benefits, vary each year. The highest benefit value was achieved in 2022 at IDR 271.61 billion, while the lowest was in 2021 at IDR 103.45 billion. Direct benefits come from avoiding inpatient and outpatient costs for patients at Puskesmas. Direct benefits show annual variations, with the largest component coming from avoiding outpatient costs at Puskesmas. Indirect benefits are greater than direct benefits, especially from avoiding the loss of productivity for patients and their companions during outpatient treatment (Zawudie *et al.*, 2022).

Analysis of Budget Outputs MSS

Health Sector MSS services in Lumajang Regency have been implemented by the District Health Office and Puskesmas, but their overall performances have unreached the targets. The graphical display shows variations in the achievement of Health Sector MSS among services from 2019 to 2022. Although some services achieve 100% of the target, there are achievement gaps for some services below 50% in certain years. Successful implementation is related to internal and cross-sector communication and coordination, from planning to monitoring and evaluation (Gooding *et al.*, 2022). Plans for achieving Health Sector MSS targets are outlined in local government planning documents such as RPJMD, Renstra, and RKPD. The year of 2022 indicated a more balanced radar of performance achievement. The research

findings highlight deviations in the percentage of performance target achievement and direct cost fulfillment for Health Sector MSS (Légaré *et al.*, 2018). Most of the positive deviation values indicate that performance-based achievement and financing influence the success of the program (Amin and Cek, 2023). However, some services, such as for maternal health and severe mental disorders, show significant negative deviation, creating a large standard deviation.

Conclusion

Based on this research, it is concluded that in Lumajang Regency, the realization of Local Original Revenue (LOR) in the Health Sector tends to be lower than the target, Central transfer fund (Non-physical DAK) domination of funding sources from Puskesmas. The highest budget allocation for Health Sector MSS is in maternal health services, while the expenditure proportion to the total district health budget is decreasing. High dependence on central transfer funds indicates the need for diversification of funding sources. Puskesmas plays a key role in managing, financing, and providing Health Sector MSS services, with the involvement of the District Health Office and BPJS Kesehatan. The estimation of direct cost needs shows variation, and although there is an annual increase in financing, it is not optimal to finance all the direct cost needs of basic health services in Health Sector MSS.

The impact analysis of implementing Health Sector MSS shows that the direct benefit-to-cost ratio remains stable and relatively similar, with the total benefit-to-cost ratio being greater. Although most of the performance achievements of Health Sector MSS are performance-based, there are still some services with significant negative deviations, such as services for

maternal health and severe mental disorders.

Abbreviations

BCR: Benefit Cost Ratio, *BPJS*: *Badan Penyelenggara Jaminan Sosial* (Social Security Administrative Body); *BLUD*: *Badan Layanan Umum Daerah*, LOR: Local Original Revenue, MSS: Minimum Service Standart, *RPJMD*: *Rencana Pembangunan Jangka Menengah Daerah* (Regional Medium-Term Development Plan), *Renstra*: *Rencana Strategis* (Strategic Plan), *RKPD*: *Rencana Kerja Pemerintah Daerah* (Regional Government Work Plan).

Declarations

Ethics Approval and Consent Participant

Respondents were addressed before the survey about the survey's objectives and purposes, and verbal consent to participate in the study was taken from ethical FKG Unej No.1785/UN25.8/KEPK/DL/2022

Conflict of Interest

The authors declare no conflict interest in this study.

Availability of Data and Materials

Not applicable.

Authors' Contribution

AR wrote the original draft, concept, methodology, reviewed, and edited the manuscript. HP and SS: conceptualized, and reviewed the methodology.

Funding Source

Not applicable.

Acknowledgment

We would like to acknowledge all respondents and Universitas Jember

References

- AbdulRaheem, Y. (2023) 'Unveiling the Significance and Challenges of Integrating Prevention Levels in Healthcare Practice', *Journal of Primary Care & Community Health*, 14, p. 21501319231186500. Available at: <https://doi.org/10.1177/21501319231186500>.
- Amin, H.I.M. and Cek, K. (2023) 'The Effect of Golden Ratio-Based Capital Structure on Firm's Financial Performance', *Sustainability (Switzerland)*, 15(9). Available at: <https://doi.org/10.3390/su15097424>.
- Au Yong, H.N. *et al.* (2021) 'The Impact of Socioeconomic Factors on Public Health Care Expenditure in Asean Countries', *Journal of Environmental Science and Sustainable Development*, 4(2), pp. 195–221. Available at: <https://doi.org/10.7454/jessd.v4i2.1104>.
- Brent, R.J. (2023) 'Cost-Benefit Analysis versus Cost-Effectiveness Analysis from a Societal Perspective in Healthcare', *International Journal of Environmental Research and Public Health*, 20(5). Available at: <https://doi.org/10.3390/ijerph20054637>.
- Clark, R., Reed, J. and Sunderland, T. (2018) 'Bridging funding gaps for climate and sustainable development: Pitfalls, progress and potential of private finance', *Land Use Policy*, 71, pp. 335–346. Available at: <https://doi.org/10.1016/j.landusepol.2017.12.013>.
- Cristea, M. *et al.* (2020) 'The Impact of Population Aging and Public Health Support on EU Labor Markets', *International Journal of Environmental Research and Public Health*, 17(4), p. 1439. Available at: <https://doi.org/10.3390/ijerph17041439>.
- Darrudi, A., Ketabchi Khoonsari, M.H. and Tajvar, M. (2022) 'Challenges to Achieving Universal Health Coverage Throughout the World: A Systematic Review', *Journal of Preventive Medicine and Public Health*, 55(2), pp. 125–133. Available at: <https://doi.org/10.3961/jpmph.21.542>.
- Gani, A. (2022) *Pedoman DHA (District Health Account)*. Jakarta: UI Press.
- Gooding, K. *et al.* (2022) 'How can we strengthen partnership and coordination for health system emergency preparedness and response? Findings from a synthesis of experience across countries facing shocks', *BMC Health Services Research*, 22(1). Available at: <https://doi.org/10.1186/s12913-022-08859-6>.
- Haryani, N., Nasution, S.W. and Ginting, C.N. (2022) 'Analysis of Government Sourcing Health Financing With District Health Account (DHA) Approach in Deli Serdang Regency, 2018-2020', *International Journal of Health and Pharmaceutical (IJHP)*, 2(4), pp. 718–722. Available at: <https://doi.org/10.51601/ijhp.v2i4.90..>
- Hauck, K. *et al.* (2019) 'How can we evaluate the cost-effectiveness of health system strengthening? A typology and illustrations', *Social Science and Medicine*, 220, pp. 141–149. Available at: <https://doi.org/10.1016/j.socscimed.2018.10.030>.
- Hyeda, A., Da Costa, É.S.M. and Kowalski, S.C. (2022) 'The trend and direct costs of screening and chemotherapy treatment of breast cancer in the new coronavirus pandemic: total and interrupted time series study', *BMC Health Services Research*, 22(1), p. 1466. Available at: <https://doi.org/10.1186/s12913-022-08884-5>.
- Indriyanti, D. (2023) 'Management of Non-Physical Special Allocation Funds for the Health Sector Health Operational Assistance at Community Health Centers during the Pandemic Period', *International Journal of Integrative Sciences*, 2(3), pp. 325–338. Available at:

- <https://doi.org/10.55927/ijis.v1i4.3587>.
- John, S.K. et al. (2019) *Feasibility Study for the Consolidation of Military Medical Education and Training Organizations, Functions, and Activities (Revised)*. Institute for Defense Analyses, pp. i–ii. Available at: <https://www.jstor.org/stable/resrep22861.1>.
- Kruk, M.E. et al. (2018) 'High-quality health systems in the Sustainable Development Goals era: time for a revolution', *The Lancet Global Health*, 6(11), pp. e1196–e1252. Available at: [https://doi.org/10.1016/S2214-109X\(18\)30386-3](https://doi.org/10.1016/S2214-109X(18)30386-3).
- Légaré, F. et al. (2018) 'Interventions for increasing the use of shared decision making by healthcare professionals', *The Cochrane database of systematic reviews*, 7, p. CD006732. Available at: <https://doi.org/10.1002/14651858.CD006732.pub4>.
- Lundmark, R. et al. (2021) 'Alignment in implementation of evidence-based interventions: a scoping review', *Implementation Science*, 16(1), p. 93. Available at: <https://doi.org/10.1186/s13012-021-01160-w>.
- Murniati, N.N., Indrayathi, P.A. and Januraga, P.P. (2020) 'Analysis of Public Health Centre Financing using the District Health Account (DHA) Model in Karangasem District, Bali, Indonesia', *Public Health and Preventive Medicine Archive*, 8(1), pp. 66–71. Available at: <https://doi.org/10.15562/phpma.v8i1.256>.
- Myloneros, T. and Sakellariou, D. (2021) 'The effectiveness of primary health care reforms in Greece towards achieving universal health coverage: a scoping review', *BMC Health Services Research*, 21(1). Available at: <https://doi.org/10.1186/s12913-021-06678-9>.
- Palupi, J. et al. (2020) 'The effectiveness of literacy stimulation model based on multisensory development of the results of DDST', in *Journal of Physics: Conference Series*. Institute of Physics Publishing. Available at: <https://doi.org/10.1088/1742-6596/1563/1/012056>.
- Pemkab Lumajang (2022) *Laporan Realisasi Anggaran Pendapatan dan Belanja Daerah*. Lumajang: Pemkab Lumajang.
- Rahmiyati, A.L. et al. (2018) 'Cost Benefit Analysis (CBA) Program Pemberian Makanan Tambahan (PMT) Susu Pada Karyawan di PT. Trisula Textile Industries Tbk Cimahi Tahun 2018', *Jurnal Ekonomi Kesehatan Indonesia*, 3(1).
- Santinha, G. et al. (2023) 'Designing a Health Strategy at Local Level: A Conceptual Framework for Local Governments', *International Journal of Environmental Research and Public Health*, 20(13), p. 6250. Available at: <https://doi.org/10.3390/ijerph20136250>.
- Syafrawati, S. et al. (2023) 'Factors driving and inhibiting stunting reduction acceleration programs at district level: A qualitative study in West Sumatra', *PLoS ONE*, 18(3 MARCH). Available at: <https://doi.org/10.1371/journal.pone.0283739>.
- Tandon, A. and Reddy, K.S. (2021) 'Redistribution and the health financing transition', *Journal of global health*, 11, p. 16002. Available at: <https://doi.org/10.7189/jogh.11.16001>.
- World Health Organization (2022) *Indonesia TB Joint External Monitoring Mission (JEMM) Report*. WHO Indonesia. Available at: [https://www.who.int/indonesia/news/publications/other-documents/tb-joint-external-monitoring-mission-\(jemm\)-report--2022](https://www.who.int/indonesia/news/publications/other-documents/tb-joint-external-monitoring-mission-(jemm)-report--2022).
- Xu, X. et al. (2018) 'Evaluation of health resource utilization efficiency in community health centers of Jiangsu

- Province, China', *Human Resources for Health*, 16(1). Available at: <https://doi.org/10.1186/s12960-018-0275-y>.
- Yaghoubi, M. *et al.* (2023) 'Providing a model for financing the treatment costs during biological crises using the fiscal space development approach', *Health Economics Review*, 13(1). Available at: <https://doi.org/10.1186/s13561-023-00450-x>.
- Zawudie, A.B. *et al.* (2022) 'Economic Burden of Diabetic Mellitus Among Patients on Follow-up Care in Hospitals of Southwest Shewa Zone, Central Ethiopia', *BMC Health Services Research*, 22(1), p. 1398. Available at: <https://doi.org/10.1186/s12913-022-08819-0>.
- Zeng, W. *et al.* (2020) 'Improving Fiscal Space for Health from The Perspective of Efficiency in Low- and Middle-Income Countries: What is The Evidence?', *Journal of Global Health*, 10(2), pp. 1–10. Available at: <https://doi.org/10.7189/jogh.10.020421>.

THE EFFECTS OF SOCIAL ASSISTANCE PROGRAMS ON STUNTING PREVALENCE RATES IN INDONESIA

Pengaruh Program Bantuan Sosial Terhadap Tingkat Prevalensi Stunting di Indonesia

*Siti Munawaroh¹, Moh Najikhul Fajri², Shochrul Rohmatul Ajija¹

¹Department of Economics, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia

²Department of Economics, Faculty of Economics and Business, Universitas Diponegoro, Semarang, Indonesia

Correspondence*:

Address: Unair B Campus, Airlangga Street 4-6, Gubeng, Surabaya, Indonesia | e-mail: wmunal462@gmail.com

Abstract

Background: Social assistance, such as Non-Cash Food Assistance (BPNT) and the Family Hope Program (PKH), are among the instruments used to eradicate stunting in the short and long term. Therefore, it is important to ensure its effective use by individuals.

Aims: This study aimed to review the effect of social assistance on stunting prevalence rates in Indonesia.

Methods: This research employs a quantitative approach, utilizing numerical measurements and statistical analysis. The data is secondary and sourced from the Central Bureau of Statistics and the Ministry of Finance. The specific method applied is the generalized method of moments (GMM) dynamic panel regression. The research sample encompasses panel data from 34 provinces from 2015 to 2021. This study utilizes the indicator of very short height for children less than five years of age as a proxy for stunting. Furthermore, low height in children is adopted as a measure of stunting. Furthermore, this study adopted a measure of low height in children to indicate stunting.

Results: The results showed that social assistance negatively affected stunting, supported by various other indicators such as the proportion of proper sanitation, the average length of schooling, protein consumption, and drinking water sources. Meanwhile, excessive calorie consumption increased stunting in a certain period.

Conclusion: In this condition, government social assistance was urgently needed since access to the lowest decile households increased stunting rates. The practical implications for policy derived from these findings involve optimizing the efficiency of social assistance initiatives, emphasizing the significance of addressing environmental factors in programs aimed at preventing stunting, integrating health and nutrition initiatives, and implementing educational campaigns within communities to raise awareness about calorie consumption.

Keywords: child health, social assistance, stunting, toddlers

Abstrak

Latar Belakang: Bantuan sosial seperti Bantuan Pangan Non Tunai (BPNT) dan Program Keluarga Harapan merupakan salah satu instrumen yang diperlukan dalam rangka mengentaskan stunting dalam jangka pendek dan panjang. Untuk itu, perlu intensifikasi bantuan sehingga masyarakat dapat menggunakannya dengan baik.

Tujuan: Penelitian ini bertujuan untuk meninjau pengaruh bantuan sosial terhadap pengendalian stunting di Indonesia.

Metode: Penelitian ini menggunakan pendekatan kuantitatif dengan pengukuran yang bersifat numerik dan menggunakan analisis statistik. Data yang digunakan adalah data sekunder yang diperoleh dari Badan Pusat Statistik dan Kementerian Keuangan. Metode yang diterapkan adalah regresi panel dinamis generalized method of moments (GMM). Sampel penelitian mencakup data panel dari 34 provinsi yang diamati selama periode 2015-2021. Penelitian ini menggunakan tinggi badan sangat pendek untuk usia balita sebagai proksi dari stunting.

Hasil: Hasilnya menunjukkan bahwa bantuan sosial berpengaruh negatif terhadap stunting didukung oleh berbagai indikator lainnya seperti proporsi sanitasi layak, rata-rata lama sekolah, konsumsi protein, dan sumber air minum. Sementara itu, dugaan konsumsi kalori berlebihan justru berdampak pada peningkatan stunting dalam kurun waktu tertentu.

Kesimpulan: Pada kondisi ini, bantuan sosial dari pemerintah sangat diperlukan mengingat akses rumah tangga desil terbawah terkadang berpotensi meningkatkan angka stunting. Implikasi kebijakan dari temuan ini diantaranya adalah optimasi program bantuan sosial, menyoroti pentingnya perhatian terhadap aspek lingkungan dalam program pencegahan stunting, integrasi program kesehatan dan gizi, serta program edukasi masyarakat tentang konsumsi kalori.

Kata kunci: balita, bantuan sosial, stunting, kesehatan anak



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.74-85.

Received: 2023-07-01, Revised: 2024-03-02, Accepted: 2024-05-02, Published: 2024-06-26.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Siti Munawaroh, Moh Najikhul Fajri, Shochrul Rohmatul Ajija

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Munawaroh, S., Fajri, M. N. and Ajija, S. R. (2024) "The Effects of Social Assistance Programs on Stunting Prevalence Rates in Indonesia", *Indonesian Journal of Health Administration*, 12(1), pp. 74-85. doi: 10.20473/jaki.v12i1.2024. 74-85.

Introduction

Parents are expected to anticipate exceptional growth and development of their children. However, the expectation is not achieved due to malnutrition-related challenges. In a study conducted by the Ministry of Health, 10.2% of Indonesian children weighed less than 2500 grams, 19.6% exhibited abnormal weight indicative of malnourishment, while 32.2% experienced stunting (Ministry of Health, 2018). The developmental delays were experienced due to malnutrition, and the impact resulted in stunting. According to the World Health Organization (WHO) definition, stunting is manifested when the height of children is minus two standard deviations of the growth median for their age (WHO, 2022). Consequently, stunting children are shorter than their peers of the same age group.

The Indonesian Nutrition Status Survey (SSGI) showed that the prevalence of stunting decreased from 24.4% in 2021 to 21.6% in 2022 (Ministry of Health RI, 2023). Even though a decrease was experienced in 2022, the condition remained a severe problem for children health. Wardani *et al.* (2022a) stated that stunting causes a decline in cognitive, language, and motor functions as well as several degenerative diseases. This statement was supported by President Joko Widodo at the BKKBN National Work Meeting, where the condition was reported to be dangerous for children's development, leading to poor learning abilities, mental retardation, and chronic diseases (Bureau of Communication and Public Service, 2023). Tampy *et al.* (2020) stated that normal children could improve their cognitive abilities. Therefore, the condition can affect the quality of human resources in the future.

The causes of stunting are very complex and previous studies showed that there was the influence of maternal factors such as height, age during pregnancy, duration of breastfeeding, dietary nutrition during pregnancy, and maternal education level on the increased risk (Beal *et al.*, 2018; Nurbiah, Rosidi and Margawati,

2019; Tyas and Setyonaluri, 2022; Wardani, Nurrochmah and Mawarni, 2022a). Furthermore, stunted mothers with low education increase the likelihood of stunting (Widyaningsih *et al.*, 2022). A large number of children living at home under age five and the lack of mothers attending antenatal care services can also increase the risk (Titaley *et al.*, 2019).

In another study, Kandpal *et al.* (2016) examined the Conditional Cash Transfer (CCT) program, one of which was Pantawid for stunting in the Philippines. The program had a significant effect on reducing stunting by using cross-sectional data and providing cash transfers to poor households for education, children's health, and maternal health services. Meanwhile, Muhtar *et al.* (2022) showed that social assistance programs, as measured through the Family Hope Program (PKH) and the Staple Food Program, reduced stunting in Blora, Central Java.

In several previous studies, stunting has often focused on socioeconomic factors and household characteristics (Akbar, Mahardhika and Sihalo, 2021), as well as maternal (Beal *et al.*, 2018; Nurbiah *et al.*, 2019; Tyas and Setyonaluri, 2022; Wardani *et al.*, 2022b;) and environmental factors (Irianti *et al.*, 2019; Cameron *et al.*, 2021; Nizaruddin and Ilham, 2022). Furthermore, there are studies linking stunting to food prices (Ilman and Wibisono, 2019). While only a few studies have directly linked cases of stunting to cash assistance programs like Indonesia's PKH, the program does contain elements that can potentially contribute to addressing stunting. Though not specifically designed to tackle stunting, PKH provides financial assistance to households, which can improve their access to nutritious food and essential health services. Therefore, the impact of direct assistance on stunting in Indonesia was examined. This study contributes to the reduction of stunting and provides an overview of the importance of direct cash assistance to improve children's nutritional status, impacting health and decreasing the condition.

Table 1. Definition of Study Variables

	Variable	Acronym	Definition	Unit	Source
Dependent	Stunting	$Stunting_{it}$	The prevalence of (very short) in children under 5 years/children	Percentage	BPS
Independent	Social Assistance	SA_{it}	Realization of social assistance funds for each province	Percentage	Ministry of Finance
	Sanitation	$Sanitation_{it}$	Households by province and have access to proper sanitation	Percentage	BPS
	Sanitary Proportion	$Sanitary_Prop_{it}$	Proportion of households that have access to proper sanitation services	Percentage	BPS
	Mean Years School	MYS_{it}	The average number of years spent by residents aged 15 and over	Years	BPS
	Prevalence of Undernourishment	PoU_{it}	An estimate of the proportion of a given population, for which the usual daily energy consumption from food is not sufficient to meet the required energy level	Percentage	BPS
	Average calorie consumption	$Calorie_{it}$	Average calorie consumption for each province	Percentage	BPS
	Average protein consumption	$Protein_{it}$	Average protein consumption for each province	Percentage	BPS
	Internet access	$Internet_urban_{it}$	Households that have accessed the internet in 3 last month in urban	Percentage	BPS
		$Internet_rural_{it}$	Households that have accessed the internet in 3 last month in the rural	Percentage	BPS
	Source of drinking water	SDW_{it}	Households with an adequate source of drinking water in urban and rural	Percentage	BPS
		SDW_urban_{it}	Households with an adequate source of drinking water in urban	Percentage	BPS
		SDW_rural_{it}	Households with an adequate source of drinking water in rural	Percentage	BPS

Method

In this study, a quantitative method was used with a stochastic model to consider the existence of variables with a probability distribution (Gujarati, 2004). In addition, Generalized Method of Moments (GMM) was used to estimate parameters in dynamic panel data and overcome autocorrelation as well as heteroscedasticity problems. GMM equated the moment from the sample

condition to the population. Robustness check was carried out to ensure validation of the estimation results.

This study utilizes secondary data from a panel of 34 Indonesian provinces from 2015 to 2021. The data are sourced from the Central Bureau of Statistics and cover fundamental aspects relevant to stunting, including information on sanitation, malnutrition, education, calorie and protein consumption, and access to clean water. Additionally, the Indonesian

Ministry of Finance obtained data on local government spending within the social sector, a crucial component of the relevant social security landscape. The starting point of 2015 aligns with the national trend in stunting reduction, while 2021 is the most recent data available across all provinces. Detailed variable definitions are provided in Table 1.

Based on previous study, social assistance programs negatively affect stunting (Aizawa, 2020; Jibril, Puspitarini and Nawangsih, 2022). Programs such as PKH play an essential role in improving the nutritional status of children and can indirectly reduce stunting rates. In addition, sanitary conditions are an essential part of reducing this condition. Several studies showed that proper sanitation was negatively related to the condition (Rah *et al.*, 2020; Gizaw *et al.*, 2022). Children with proper sanitation are 29% less likely to experience the problem than those with poor sanitation (Rah *et al.*, 2020). Meanwhile, the educational level of parents negatively correlates with stunting (Casale, Espi and Norris, 2018; Chowdhury *et al.*, 2022). Insufficient food consumption has a positive relationship with the prevalence (Wardani, Wulandar and Suharmanto, 2020). In the severe category, stunting children are mostly from families with insufficient food consumption or insecurity.

Nutritional status, measured by calories and protein, correlates with stunting. Caloric intake has a negative correlation (Logarajan *et al.*, 2023) and can reduce the prevalence. However, some studies stated that the proportion of calories from carbohydrates and protein was not a predictor of the condition (Pratiwi, Irawan and Hidayat, 2019). Protein intake negatively correlates with stunting (Ernalina *et al.*, 2018; Rizal, Haya and Maigoda, 2022) and can reduce the incidence. Nutrition, particularly in the form of protein, plays an important role in supporting the growth of children. The absence or deficiency of this essential substance can significantly hinder their development (Rahayu *et al.*, 2020). Other variables, such as internet access, negatively affect stunting (Huo *et al.*, 2022). Accessing the internet facilitates the acquisition of related information, prevention, and effective strategies for overcoming the condition (Talib *et al.*, 2021). The source of drinking water also affects the prevalence. Households with access to proper drinking water sources can reduce stunting (Gupta and Santhya, 2020). Children with an adequate source of drinking water are more likely to prevent the condition than those with access to inadequate drinking water (Mzumara *et al.*, 2018; Sunardi *et al.*, 2021).

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
stunting	238	10.963	3.551	4.192	22.028
lnSA	238	4.602	1.449	1.662	8.784
sanitation	238	71.056	14.427	23.9	97.12
sanitary_prop	238	70.839	14.539	23.37	97.12
MYS	238	8.838	.879	6.27	11.2
PoU	238	10.785	8.422	1.43	38.35
lnCalorie	238	7.632	.067	7.432	7.841
lnProtein	238	4.074	.109	3.648	4.341
internet_urban	238	76.158	12.121	39.51	95.44
internet_rural	238	47.548	20.65	0	83.4
SDW (Source of drinking water)	238	76.736	12.449	37.35	99.86
SDW_urban	238	65.489	18.156	0	94.55
SDW_rural	238	88.01	7.714	55.34	99.86

Table 3. Estimation Results of the Effect of Social Assistance on Stunting Prevalence

	(1) stunting	(2) stunting	(3) stunting	(4) stunting	(5) stunting	(6) stunting
_cons	-57.721 (35.688)	23.381 (40.311)	18.74 (49.529)	-98.461*** (35.865)	77.753 (52.333)	-14.724 (35.062)
L.stunting	.097* (.056)	.166*** (.059)	.164*** (.052)	.28*** (.052)	.266*** (.062)	.491*** (.043)
L.lnSA	-.256** (.116)					
L2.lnSA		-.532*** (.126)	-.44*** (.145)	-.624*** (.102)	-.236* (.132)	-.584*** (.125)
sanitation	1.078* (.55)	2.419*** (.834)	2.67*** (.865)	2.668*** (.903)	3.326*** (.86)	3.721*** (.963)
sanitary_prop	-1.089** (.553)	-2.378*** (.84)	-2.637*** (.862)	-2.572*** (.91)	-3.307*** (.868)	-3.623*** (.971)
MYS	-5.912*** (2.26)	-3.462** (1.505)	-3.14* (1.611)	-2.468** (1.005)	-4.241** (2.001)	-4.12** (1.894)
PoU	.131** (.063)	-.061 (.047)	-.089** (.043)	-.065 (.058)	.037 (.031)	.131** (.052)
lnCalorie	14.884* (8.144)	17.979*** (6.773)	18.938** (8.404)	36.545*** (9.218)	-4.859 (5.555)	5.925 (4.978)
lnProtein	-.048 (7.05)	-30.25*** (7.727)	-32.178*** (9.314)	-39.491*** (12.093)		
internet_urban	-.038 (.051)	-.045 (.045)		.061 (.053)		.03 (.061)
internet_rural	.191*** (.033)	.128*** (.025)	.129*** (.026)		.127*** (.033)	
SDW	.011 (.025)					
SDW_urban		-.008 (.026)	.004 (.023)		-.015 (.023)	
SDW_rural		.028* (.016)		.046*** (.017)		.057*** (.017)
Observations	204	170	170	170	170	170
Province	34	34	34	34	34	34
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes
Province Effect	Yes	Yes	Yes	Yes	Yes	Yes
Robust	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	.Z	.Z	.Z	.Z	.Z	.Z

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

SDW: Source of drinking water

Source: Results of the author's estimation

The effect of social assistance programs can be estimated using dynamic panel regression in the form of GMM. In this study, GMM with a variable lag term was constructed to analyze the impulse response to changes in social assistance units. The transmission of the Arellano-bond and Sargan post-estimator tests is better and more accessible from the classic problems of autocorrelation and heteroscedasticity (Arellano and Bond, 1991; Arellano and Bover, 1995), and the empirical model is shown as follows.

$$\begin{aligned}
 Stunting_{it} = & lnSA_{it} + sanitation_{it} \\
 & + sanitary_{prop_{it}} + MYS_{it} \\
 & + PoU_{it} + lnCalorie_{it} \\
 & + lnProtein_{it} \\
 & + Internet_{urban_{it}} \\
 & + Internet_{rural_{it}} + SDW_{it} \\
 & + SDW_{urban_{it}} \\
 & + SDW_{rural_{it}} + u_{it}
 \end{aligned}$$

Result and Discussion

Descriptive Statistics

Table 2 shows descriptive statistics and stunting data has an average of 10,963, where the prevalence rate is not too high. The natural logarithm of social assistance also spreads, making it more accurate with the average value. Furthermore, 70,839 households have proper sanitation, and the average length of schooling as measured from years spent by residents aged 15 years and above is nine years or in the Junior High School category. The average insufficient food consumption is 10.785%, which means there are still people who consume food, but slightly less than their energy needs. The nutritional condition as measured by consuming calories and protein has also been shown sufficiently. There is more internet access in cities but the feasibility of drinking water sources in villages is far greater than in cities.

Estimation Results

Table 3 presents the results of regression estimates and focuses on social assistance. The coefficients show that the prevalence of previous stunting has a positive effect on the current result. Specifically, a 1% increase in the previous stunting prevalence leads to an estimated 0.097% increase in the current stunting prevalence. Meanwhile, social assistance consistently has a negative and significant correlation with the prevalence at lag1 and lag2. This suggests that a 1% increase in social assistance in the past year (lag1) is associated with a 0.256% decrease in the current stunting prevalence. Furthermore, the presence of social assistance even one period earlier (lag2) is also consistently associated with a decrease in the current prevalence of stunting. The percentage of households with proper sanitation positively affects the prevalence. However, the proportion of households with proper sanitation is negatively correlated and relatively consistent by adding or subtracting other variables. These results indicate that the higher the proportion of households with proper sanitation, the lower the prevalence of stunting. As seen in the first estimate, when the proportion of proper sanitation increases by 1%, it

reduces the prevalence of stunting by 1.08%. Level of education also has a negative and significant effect on the occurrence of stunting. It means the higher the education level, the lower the stunting prevalence rate. In the first estimate, increasing education by one year can reduce the stunting prevalence rate by 5.912%. Insufficient food consumption seen from equations 1 and 6 causes stunting. In the first estimate, when the prevalence of undernourishment increases by 1%, it can increase the prevalence of stunting by 0.131%. Calorie and protein consumption have a positive and negative correlation with the variable. Finally, the percentage of access to the internet and a source of proper drinking water in the village is positively correlated with the prevalence. This suggests that while both internet access and a source of proper drinking water are available within the village, there is still room for improvement in their accessibility or quality.

Discussion

According to Minister of Finance Regulation No 254/PMK.05/2015, Social Assistance Expenditures at State Ministries/ Institutions are in the form of transfers of money, goods, or services provided by the Government to protect society from possible social risks, increase economic capacity, and community welfare. In this context, the concept plays an important role in mitigating social vulnerability, particularly in addressing issues such as stunting. This enables individuals to lead healthy, intelligent lives and give birth to the next generation, free from the burden of stunting.

Social assistance provided is in the form of material and non-material (Ministry of Social Affairs, 2021). Material assistance is usually through programs such as the Smart Indonesia Program (KIP), the National Health Insurance Program (JKN), PKH, and Non-Cash Food Assistance (BPNT). Meanwhile, non-material assistance is provided through psychoeducation at the Family Development Session (FDS). This form of material and non-material assistance can

be used as well as possible by the community following its designation.

The estimation results have a negative correlation with the prevalence of stunting. The results are in line with the study by Kandpal *et al.* (2016), Aizawa (2020), and Jibril *et al.* (2022), where the existence of social assistance programs reduces the prevalence. Furthermore, the program can be used for spending on children needs by fulfilling nutritious food, which will have a good impact on their growth and development. It is undeniable that social assistance is not used according to children's needs but for other needs. Therefore, socializing and educating the public regarding the importance of maintaining children care and nutrition is important.

The percentage proportion of households with access to proper sanitation services also negatively correlates with the prevalence of stunting. This follows the results of study by Rah *et al.* (2020) and Gizaw *et al.* (2022), where it was found that proper sanitation conditions reduce the prevalence. Sanitation factors include the use and ownership of latrines, defecation behavior, and disposal of children's feces in latrines. Furthermore, open defecation can cause developmental delays in children (Bagcchi, 2015) and this behavior contaminates the environment due to the spread of bacteria in feces. Several bacteria can enter the intestines when children touch bacteria and suck their fingers, leading to potential consequences such as appetite disruption, and malnutrition, contributing to the prevalence.

A high level of parental education also reduces the prevalence of stunting. This is in line with Casale *et al.* (2018) and Chowdhury *et al.* (2022), where parents' education level negatively correlates with the condition. Parents find it easier and faster to access health information, impacting the growth and development of children with higher education. Even the level of a mother education greatly affects the health of children. This is related to the significant role of forming the habit of eating nutritious food. Therefore, the level of education is closely related to nutritional knowledge in children.

The prevalence of stunting is also associated with insufficient food consumption. Insufficient food consumption has a positive correlation with the prevalence and, according to Wardani *et al.* (2020), stunting children tend to come from families with insufficient food intake or insecurity. Inadequate food consumption affects the nutritional adequacy of families, specifically for mothers and children. Lack of nutrition negatively impacts children's growth and leads to stunting.

The estimation results showed that calorie consumption had a positive correlation, but in the correlation matrix, calorie and protein consumption negatively impacted stunting. According to Ernalina *et al.* (2018), Logarajan *et al.* (2023), and Rizal, Haya, and Maigoda (2022), the better the nutrition of children as measured by the consumption of sufficient calories and protein, the less likely there will be a risk of stunting. Protein is needed to develop every cell in the body and maintain immunity (Rizal, Haya and Maigoda, 2022). Calorie intake containing carbohydrates is also the most important energy source for children to experience good growth and be free from malnutrition problems.

Access to the internet and a source of proper drinking water in the village is positively correlated with the prevalence of stunting. This is in contrast to studies by Mzumara *et al.* (2018), Gupta and Santhya (2020), Sunardi *et al.* (2021), and Talib *et al.* (2021), where internet access and adequate drinking water sources are found to reduce the condition. Internet access reflects the possibility that parents have not fully used available resources. In addition, they are not using the access to seek information or knowledge related to the condition but for other purposes. This limited use may not yield significant results in the prevention of the condition. Similarly, proper drinking water sources in the village positively correlate with stunting. The category of having access to a reliable source of drinking water may not necessarily reflect the actual condition for all activities, including drinking, cooking, and toileting. Some households in rural areas still use inadequate water sources for bathing and washing (Nurhidayati and

Riyadi, 2022). These efforts have also not yielded significant results in terms of improving access to safe drinking water sources within the village and reducing the prevalence of stunting.

This study also had various limitations, for example, the potential for proper sanitation was expanded directly. Furthermore, internet access, which should open up knowledge and information, had a positive impact on increasing stunting. Future research needs to simulate some of the methods used. The positive association between internet access and increased stunting requires further analysis. Research can examine the internet content accessed, the extent to which the information obtained is helpful or even counterproductive to children's health, and identify factors that can increase the effectiveness of sanitation in reducing stunting.

Conclusion

In conclusion, this study was conducted to analyze social assistance programs on the prevalence of stunting in Indonesia. Based on the estimation results, direct social assistance from the government reduced the potential within a certain period. Adequate sanitation and proportions had positive and negative effects on stunting. Meanwhile, the average length of schooling, protein consumption, urban internet access, and rural drinking water sources negatively affected stunting.

Insufficient food consumption, calorie consumption, and drinking water sources in urban areas positively affected stunting. This indicated that the higher assistance given to certain decile people also promoted an increase in decent consumption. However, the increase required specific information from internet accessibility and the availability of food sources as well as water in the surrounding environment. The role of the highly educated head of household promoted knowledge and provided insight into healthy consumption. This potential also depended on the good quality of the surrounding environment to reduce the prevalence.

The implications of this study highlight the importance of various factors in reducing stunting. Comprehensive regulatory efforts are essential to reduce the prevalence of stunting significantly. If used effectively by families, social cash transfers can significantly reduce stunting by helping them meet their children's nutritional and health needs. Through this program, beneficiary families receive cash to buy more nutritious food and access essential health services such as immunizations and regular check-ups. In the long run, cash transfers can improve families' overall social and economic conditions, leading to increased access to essential resources for improving child health.

This study's novelty lies not only in highlighting the significant role of social cash transfers in indirectly reducing stunting but also in linking it to various factors affecting family well-being. These factors include socioeconomic status, health (encompassing nutrition and water sources), and access to information, including the internet. By examining these interconnected aspects, this research provides a valuable foundation for policymakers and relevant agencies to design more effective stunting reduction policies that address the multidimensional nature of the problem.

Abbreviations

WHO: World Health Organization, BKKBN: National Family Planning Coordinating Board; PKH: Family Hope Program, KIP: Smart Indonesia Program, JKN: National Health Insurance Program, BPNT: Non-Cash Food Assistance.

Declarations

Ethics Approval and Consent Participant
Not applicable.

Conflict of Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the performance.

Availability of Data and Materials

Not applicable.

Authors' Contribution

SM, MNF, and SRA conceptualized the study; created the methodology; wrote, reviewed, and edited the manuscript; and wrote the original draft.

Funding Source

This study received no external funding.

Acknowledgment

The authors are grateful to the Faculty of Economics and Business, Universitas Airlangga for their technical support and all the contributors who have provided assistance in this study.

References

- Aizawa, T. (2020) 'Joint Impact of the Conditional Cash Transfer on Child Nutritional Status and Household Expenditure in Indonesia', *Journal of Human Capital*, 14(1), pp. 122–164. <https://doi.org/10.1086/708093>
- Akbar, M.T., Mahardhika, D.W. and Sihaloho, E.D. (2021) 'Stunting in Eastern Indonesia: Determinants and Solution from Indonesian Family Life Survey', *Cita Ekonomika*, 15(1), pp. 1–13. <https://doi.org/https://doi.org/10.51125/citaekonomika.v15i1.3230>
- Arellano, M. and Bond, S. (1991) 'Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations', *The Review of Economic Studies*, 58(2), pp. 277–297. <https://doi.org/10.2307/2297968>
- Arellano, M. and Bover, O. (1995) 'Another look at the instrumental variable estimation of error-components models', *Journal of Econometrics*, 68(1), pp. 29–51. [https://doi.org/https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/https://doi.org/10.1016/0304-4076(94)01642-D)
- Bagcchi, S. (2015) 'India's poor sanitation and hygiene practices are linked to stunting in children, study finds', *BMJ: British Medical Journal*, 350, p. h1564. <https://doi.org/10.1136/bmj.h1564>
- Beal, T., Tumilowicz, A., Sutrisna, A., Izwardy, D. and Neufeld, L.M. (2018) 'A review of child stunting determinants in Indonesia.', *Maternal & Child Nutrition*, 14(4), p. e12617. <https://doi.org/10.1111/mcn.12617>
- Bureau of Communication and Public Service (2023) *Prevalensi Stunting di Indonesia Turun ke 21,6% dari 24,4%, SehatNegeriku*. Available at: <https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20230125/3142280/prevalensi-stunting-di-indonesia-turun-ke-216-dari-244/>
- Cameron, L., Chase, C., Haque, S., Joseph, G., Pinto, R. and Wang, Q. (2021) 'Childhood stunting and cognitive effects of water and sanitation in Indonesia', *Economics & Human Biology*, 40, p. 100944. <https://doi.org/https://doi.org/10.1016/j.ehb.2020.100944>
- Casale, D., Espi, G. and Norris, S.A. (2018) 'Estimating the pathways through which maternal education affects stunting: evidence from an urban cohort in South Africa', *Public Health Nutrition*. 2018/02/19, 21(10), pp. 1810–1818. <https://doi.org/D0I:10.1017/S1368980018000125>
- Chowdhury, T.R., Chakrabarty, S., Rakib, M., Winn, S. and Bennie, J. (2022) 'Risk factors for child stunting in Bangladesh: an analysis using MICS 2019 data', *Archives of Public Health*, 80(1), p. 126. <https://doi.org/10.1186/s13690-022-00870-x>
- Ernalina, Y., Utari, L.D., Suyanto and Restuastuti, T. (2018) 'Different Intakes of Energy and Protein in Stunted and Non-stunted Elementary School Children in Indonesia', *KnE Life Sciences*, 4(4). <https://doi.org/10.18502/kls.v4i4.2318>
- Gizaw, Z., Yalew, A. W., Bitew, B. D., Lee, J. and Bisesi, M. (2022) 'Stunting among children aged 24–59 months and associations with sanitation, enteric infections, and environmental enteric dysfunction in rural northwest

- Ethiopia', *Scientific Reports*, 12(1), p. 19293.
<https://doi.org/10.1038/s41598-022-23981-5>
- Gujarati, D.N. (2004) *Basic Econometrics*, 4th edn. New York.
- Gupta, A.K. and Santhya, K.G. (2020) 'Proximal and contextual correlates of childhood stunting in India: A geo-spatial analysis', *PLoS ONE*, 15(8 August), pp. 1–20.
<https://doi.org/10.1371/journal.pone.0237661>
- Huo, S., Wang, K., Liu, Z., Yang, Y., Hee, J. Y., He, Q., Takesue, R. and Tang, K. (2022) 'Influence of Maternal Exposure to Mass Media on Growth Stunting Among Children Under Five: Mediation Analysis Through the Water, Sanitation, and Hygiene Program', *JMIR Public Health Surveill*, 8(4), p. e33394.
<https://doi.org/10.2196/33394>
- Ilman, A.S. and Wibisono, I.D. (2019) 'Reducing Stunting through Trade Reforms: Analysis of Food Prices and Stunting Prevalence in Indonesia', *Center for Indonesian Policy Studies* [Preprint]. Center for Indonesian Policy Studies.
<https://doi.org/10.35497/276145>
- Irianti, S., Prasetyoputra, P., Dharmayanti, I., Azhar, K. and Hidayangsih, P.S.. (2019) 'The role of drinking water source, sanitation, and solid waste management in reducing childhood stunting in Indonesia', *IOP Conference Series: Earth and Environmental Science*, 344(1), p. 12009. <https://doi.org/10.1088/1755-1315/344/1/012009>
- Jibril, M., Puspitarini, R.C. and Nawangsih, V.S.A. (2022) 'Efektivitas Family Development Session (FDS) Program Keluarga Harapan (PKH) Dalam Upaya Menurunkan Angka Stunting Pada Anak', *Jurnal Sosial Politik Integratif*, 2(2), pp. 140–154. Available at: <https://jisip.org/index.php/jsp/article/view/67/38>
- Kandpal, E., Alderman, H., Friedman, J., Filmer, D., Onishi, J. and Avalos, J. (2016) 'A Conditional Cash Transfer Program in the Philippines Reduces Severe Stunting', *The Journal of Nutrition*, 146(9), pp. 1793–1800.
<https://doi.org/10.3945/jn.116.233684>
- Logarajan, R.D., Nor, N. M., Ibrahim, S., & Said, R. (2023) 'Social determinants of stunting among malay children below five years in malaysia', *Nutrition*, 111, p. 112030.
<https://doi.org/https://doi.org/10.1016/j.nut.2023.112030>
- Ministry of Health (2018) *Cegah Stunting itu Penting*. Available at: https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Warta-Kesmas-Edisi-02-2018_1136.pdf
- Ministry of Health RI (2023) *Buku Saku Hasil Survei Status Gizi Indonesia (SSGI) 2022*. Available at: <https://www.badankebijakan.kemkes.go.id/buku-saku-hasil-survei-status-gizi-indonesia-ssgi-tahun-2022/>
- Ministry of Social Affairs (2021) *Modul 6 Pemanfaatan bantuan sosial dalam pemenuhan gizi anak usia dini & ibu hamil (3 JP)*, Tanoto Foundation. Available at: <https://ppkhsragen.com/wp-content/uploads/2021/05/Modul-6-Pemanfaatan-Bantuan-Sosia-dalam-Pemenuhan-Gizi-Anak-Usia-Dini-dan-Ibu-Hamil.pdf>
- Muhtar, Pudjianto, B. and Habibullah (2022) 'Social approach to stunting prevention in Blora, Central Java, Indonesia', *Simulacra*, 5(2), pp. 13–28. Available at: <https://journal.trunojoyo.ac.id/simulacra/article/view/15909/7354>
- Mzumara, B., Bwembya, P., Halwiindi, H., Mugode, R. and Banda, J. (2018) 'Factors associated with stunting among children below five years of age in Zambia: Evidence from the 2014 Zambia demographic and health survey', *BMC Nutrition*, 4(51), pp. 1–8.
<https://doi.org/10.1186/s40795-018-0260-9>
- Nizaruddin, N. and Ilham, M.I. (2022) 'The Effect of Sanitation on Stunting Prevalence in Indonesia', *Populasi*,

- 30(2), pp. 34–51. Available at: <https://journal.ugm.ac.id/populasi/article/view/80186>
- Nurbiah, Rosidi, A. and Margawati, A. (2019) 'The potency of socio-economic family and cultural factor in affecting stunting of Muna ethnic in Batalaiworu, Southeast Sulawesi', *IOP Conference Series: Earth and Environmental Science*, 292(1), p. 12015. <https://doi.org/10.1088/1755-1315/292/1/012015>.
- Nurhidayati, V.A. and Riyadi, H. (2022) 'Quality of Water Sources, Sanitation, and Hygiene in Households with Stunted Children in Rural and Urban Areas in West Java', *Amerta Nutrition*, 6(1), pp. 13–18. Available at: <https://ejournal.unair.ac.id/AMNT/article/view/39803/23614>.
- Pratiwi, I.G.A.P.E., Irawan, R. and Hidayat, B. (2019) 'Hubungan antara kalori total, protein, rasio protein: Kalori pada makanan pendamping ASI dan pola pemberian susu dengan stunting pada anak usia 6-24 bulan di Kenjeran, Surabaya, Indonesia', *Medicina*, 50(3), pp. 576–581. <https://doi.org/10.15562/medicina.v50i3.627>.
- Rah, J.H., Sukotjo, S., Badgaiyan, N., Cronin, A. A. and Torlesse, H. (2020) 'Improved sanitation is associated with reduced child stunting amongst Indonesian children under 3 years of age.', *Maternal & Child Nutrition*, 16 Suppl 2(Suppl 2), p. e12741. <https://doi.org/10.1111/mcn.12741>
- Rahayu, A. Yulidasari, F., Anggraini, L., Rahman, F., Laily, N., Sari, A.R., Noor, M.S., Puteri, A.O., Rosadi, D. and Anhar V.Y. (2020) 'Energy and Protein Intake-Related Risks Affected the Occurrence of Stunting Among Young Children', in *4th International Symposium on Health Research*, pp. 330–336. <https://doi.org/10.2991/ahsr.k.200215.063>
- Rizal, A., Haya, M. and Maigoda, T.C. (2022) 'Faktor Faktor yang Berhubungan dengan Anak Balita Stunting pada Keluarga Nelayan di Wilayah Kecamatan Teluk Segara Kota Bengkulu', *Jurnal Mitra Rafflesia*, 14(1), pp. 155–165. Available at: <https://jurnal.stikesbhaktihusada.ac.id/index.php/MR/article/view/155-165>
- Sunardi, N., Insani, C.S.D., Martini, E., Sagala, E.D., Surahman, M. and Munawaroh, M. (2021) 'Strategi Manajemen Untuk Mewujudkan Kemandirian Yayasan Islam Nurul Amal Melalui Program Wirausaha', *Jurnal PADMA: Pengabdian Dharma Masyarakat*, 1(4). <https://doi.org/10.32493/jpdm.v1i4.13498>
- Talib, R.A., Jumuddin, F.A., Ramlan, W.M., Hamzaid, N.H., Koon, P.B., Wee, W.L., Jamil, S.M., Lian, D.K. and Safii, N.S. (2021) 'Health communication medium and nutrition knowledge to reduce stunting among residents of people's housing project in Kuala Lumpur, Malaysia: a preliminary finding', *Journal of Education and Social Sciences*, 18(2), pp. 59–66. Available at: https://www.jesoc.com/wp-content/uploads/2022/01/JESOC18.I SU-2_33.pdf
- Tampy, S.T. et al. (2020) 'The Associations between Anemia, Stunting, Low Birthweight, and Cognitive Ability in Indonesian Children: An Analysis from Indonesian Family Life Survey', *Journal of Maternal and Child Health*, 5(4), pp. 402–412. Available at: <https://thejmch.com/index.php/thejmch/article/view/451>.
- Titaley, C.R., Ariawan, I., Hapsari, D., Muasyaroh, A. and Dibley, M. J. (2019) 'Determinants of the Stunting of Children Under Two Years Old in Indonesia: A Multilevel Analysis of the 2013 Indonesia Basic Health Survey', *Nutrients*, 11(5). <https://doi.org/10.3390/nu11051106>
- Tyas, A.P. and Setyonaluri, D. (2022) 'Association between Maternal Mental Health and Child Stunting in Indonesia', *Kemas*, 17(3), pp. 381–388. <https://doi.org/10.15294/kemas.v17i3.27813>

- Wardani, D.W.S.R., Wulandari, M. and Suharmanto, S. (2020) 'Hubungan Faktor Sosial Ekonomi dan Ketahanan Pangan terhadap Kejadian Stunting pada Balita', *Jurnal Kesehatan*, 11(2), pp. 287–293. <https://doi.org/10.26630/jk.v11i2.2230>
- Wardani, I.M.K., Nurrochmah, S. and Mawarni, D. (2022a) 'Determinants of Stunting in the Eastern Indonesia Region Based on Indonesian Family Life Survey 5 Data BT - Proceedings of the 3rd International Scientific Meeting on Public Health and Sports (ISMOPHS 2021)', Atlantis Press, pp. 189–194. <https://doi.org/10.2991/ahsr.k.220108.033>
- Wardani, I.M.K., Nurrochmah, S. and Mawarni, D. (2022b) 'Faktor Maternal sebagai Determinan Stunting di Kawasan Timur Indonesia: Analisis Data Indonesian Family Life Survey 5', *Jurnal Penelitian Kesehatan Suara Forikes*, 13(1), pp. 229–233. Available at: <https://forikes-ejournal.com/index.php/SF/article/view/sf13144>
- WHO (2022) *Stunting prevalence in children aged < 5 years (%) (Health Inequality Monitor)*. Available at: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3328>
- Widyaningsih, V., Mulyaningsih, T., Rahmawati, F. N. and Adhitya, D. (2022) 'Determinants of socioeconomic and rural–urban disparities in stunting: evidence from Indonesia', *Rural and Remote Health*, 22(1). <https://doi.org/https://doi.org/10.22605/RRH7082>

ANTI-SMOKING MESSAGES VERSUS PRO-SMOKING MESSAGES AMONG INDONESIAN ADOLESCENT SMOKERS

Pesan Anti Rokok dan Pesan Pro Rokok pada Remaja Perokok di Indonesia

*Hario Megatsari^{1,2}, Rita Damayanti², Dian Kusuma³, Mursyidul Ibad⁴, Siti Rahayu Nadhiroh⁵, Erni Astutik¹, Susy Katikana Sebayang⁶

¹Department of Epidemiology, Biostatistics, Population Studies, and Health Promotion, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

²Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

³Department of Health Services Research and Management, School of Health & Psychological Sciences, University of London, London, United Kingdom

⁴Department of Public Health, Faculty of Health, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

⁵Department of Nutrition, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

⁶Research Group for Health and Wellbeing of Women and Children, Faculty of Health, Medicine and Life Science, Universitas Airlangga, Banyuwangi, Indonesia

Correspondence*:

Address: Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia | e-mail: hario.megatsari@fkm.unair.ac.id

Abstract

Background: Anti-smoking messages (ASM) is a program designed to educate the public about the dangers of tobacco use, aiming to prevent adolescents and young people from smoking cigarettes in any form and to assist smokers in giving up their smoking habit. On the contrary, pro-smoking messages (PSM) is a marketing technique to promote tobacco products.

Aims: This study was conducted to describe the exposure to ASM and PSM among Indonesian adolescent smokers (IAS).

Methods: This study analyzed secondary data from the 2019 Global Youth Tobacco Survey (GYTS) Indonesia. The outcome variable was the respondent's smoking intensity in the last 30 days. The independent variables were the exposure to ASM and PSM in the various below-the-line media.

Results: Most IAS were male (93.4%), mostly in secondary school (60.3%) and spent more than IDR 11,000 per week (71.1%). Adolescent smokers were exposed to ASM at a rate of 92.4%. Furthermore, ASM exposure happened to 60.5% of the low-intensity youth smoker group and 39.5% of the high-intensity youth smoker group. Meanwhile, 93% of adolescent smokers were exposed to PSM, with 40.8% in the high-intensity youth smoker group and 59.2% in the low-intensity youth smoker group.

Conclusion: The exposure to ASM and PSM in the adolescent smoker group was relatively the same.

Keywords: ASM, PSM, prevention, public health, tobacco control, youth

Abstrak

Latar belakang: Pesan anti rokok (PAR) adalah program yang mengedukasi masyarakat tentang bahaya penggunaan tembakau, mencegah remaja dan anak muda merokok dalam bentuk apapun, dan membantu perokok untuk berhenti dari kebiasaan rokoknya. Sebaliknya, Pesan Pro Rokok (PRR) adalah teknik pemasaran untuk mempromosikan produk tembakau.

Tujuan: Penelitian ini dilakukan untuk mendeskripsikan paparan PAR dan PRR di kalangan perokok remaja Indonesia (PRI).

Metode: Penelitian ini menganalisis data sekunder dari Global Youth Tobacco Survey (GYTS) Indonesia 2019. Variabel luaran yaitu intensitas merokok responden dalam 30 hari terakhir. Variabel bebasnya adalah paparan PAR dan PRR di berbagai media.

Hasil: Sebagian besar PRI adalah laki-laki (93,4%), dan mereka kebanyakan bersekolah di sekolah menengah (60,3%) dan menghabiskan lebih dari Rp11.000 dalam seminggu (71,1%). Perokok remaja terpapar rokok pada tingkat 92,4%. Selain itu, paparan PAR mencapai 60,5% pada kelompok perokok remaja dengan intensitas rendah dan 39,5% pada kelompok perokok remaja dengan intensitas tinggi. Sementara itu, 93% perokok remaja terpapar PRR. Lebih lanjut, paparan PSM adalah 40,8% pada kelompok perokok remaja intensitas tinggi dan 59,2% pada kelompok perokok remaja intensitas rendah.

Kesimpulan: Paparan PAR dan PRR pada kelompok perokok remaja relatif sama.

Kata kunci: kesehatan masyarakat, PAR, PPM, pengendalian tembakau, pencegahan, remaja



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.86-96

Received: 2023-11-07, Revised: 2024-05-05, Accepted: 2024-05-24, Published: 2024-06-23.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Hario Megatsari, Rita Damayanti, Dian Kusuma, Mursyidul Ibad, Siti Rahayu Nadhiroh, Erni Astutik, Susy Katikana Sebayang

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Megatsari, H., Damayanti, R., Kusuma D., Ibad, M., Nadhiroh, S. R., Astutik, E. and Sebayang, S. K. (2023) "Anti-Smoking Messages Versus Pro-Smoking Messages Among Indonesian Adolescent Smokers", *Indonesian Journal of Health Administration*, 12(1), pp. 86-96. doi: 10.20473/jaki.v12i1.2024.86-96.

Introduction

One of the leading causes of death globally is tobacco usage. There is growing apprehension regarding the susceptibility of adolescents to tobacco addiction (WHO, 2021). Adolescents between the ages of 13 and 15 years make up 25 million of the world's cigarette consumers. The Southeast Asia Region (SEARO) and Western Pacific Region (WPRO) showed the highest prevalence of smoking with an estimated 6.4 million and 4.7 million individuals affected, respectively. Indonesia significantly contributes to the prevalence of smoking throughout its regions (Lian and Dorotheo, 2021).

Tobacco smoke comprises a vast array of over 4,000 distinct chemical compounds, 40 of which have carcinogenic properties. The presence of carbon monoxide, tar, nicotine, and heavy metals in tobacco smoke at elevated levels can lead to the development of cardiovascular disease, oral and lung cancer, diminished respiratory function, and impaired fertility (Lian and Dorotheo, 2021).

Numerous studies have provided substantial evidence suggesting that the initiation of smoking during adolescence causes immediate detrimental impacts on health and raises the risk of serious illnesses throughout one's lifespan (USDHSS, 2012). The initiation of cigarette smoking during adolescence can result in nicotine dependence, hence exerting detrimental effects on the long-term development of the brain. In addition, it is important to note that those who engage in smoking at a young age face potential consequences such as the deceleration of lung function and delayed lung development (USDHSS, 2014).

Anti-smoking messages (ASM) programs play a vital role in disseminating knowledge to the general population regarding the hazards associated with tobacco consumption. These initiatives serve to prevent adolescents and young individuals from initiating cigarette smoking in any manifestation, while also providing support to smokers to stop smoking (Andersen *et al.*, 2018). Contrarily, pro-smoking messages (PSM) function as a

marketing strategy utilized by the tobacco industry to endorse its products, primarily focusing on attracting younger audiences (USDHSS, 2012).

Previous studies have addressed the correlation between ASM and PSM and youth smoking behavior. Numerous studies have examined the impact of anti-tobacco media on the decrease or prevention of tobacco use in adolescents (Emory *et al.*, 2015; Erguder *et al.*, 2016). Other studies on anti-tobacco media have focused on anti-smoking campaigns and the prevailing smoking rates to develop impactful interventions to mitigate the prevalence of smoking (Rao *et al.*, 2014). Additional evidence can be found in a study conducted by Mannocci *et al.* (2021), which revealed that adolescents exhibit a preference for anti-smoking messages that include a scientific orientation and effectively challenge misconceptions about smoking (Mannocci *et al.*, 2021).

On the other hand, several studies have also shown an association between PSM and youth smoking behavior. PSM can be defined as a combination of direct and indirect marketing strategies through the sponsorship of athletic events and music festivals, which involve the use of billboards and ads (USDHSS, 2012). Existing studies have unequivocally demonstrated a correlation between adolescent smoking patterns and the promotion of tobacco products through advertisements (Agaku, King and Dube, 2014; Megatsari *et al.*, 2019; Shang *et al.*, 2016). Therefore, this study aims to describe the exposure to ASM and PSM among Indonesian adolescent smokers (IAS).

Method

The 2019 Indonesian Global Youth Tobacco Survey (GYTS) was a cross-sectional study conducted at Indonesia's public and private schools to investigate the prevalence of tobacco use among students aged from 13 to 17 years.

The authors acquired the data for the 2019 Indonesia Global Youth Tobacco Survey (GYTS) from the official website of the Centers for Disease Control and

Prevention (CDC):
<https://www.gtssacademy.org/explore/dataset/>.

Sampling in this study was divided into two distinct phases. In the initial phase, schools were selected using the probability-proportionate-to-size (PPS) method. The subsequent phase involved the random selection of courses from various educational institutions. A comprehensive survey was conducted among the entire student population of the selected classes.

The data collection method was initiated by the enumerators through a brief chat with the teacher and administration team at the school. During this interaction, the enumerators explained the sample class, and thereafter, all students in the selected class actively participated in the survey. The interview was conducted with all students enrolled in the designated class, with an approximate duration of 45 minutes.

Before disseminating the questionnaire to the students, the enumerators provided a comprehensive explanation of the protocols and guidelines for completing the answer sheets and the questionnaire. Before participating in the survey, students were required to provide consent. Data collected were generally about the response choices provided by each student. Upon the completion of all the questions, the research team proceeded with data collection from the answer sheets.

The dependent variable in this study was the smoking consumption level reported by the respondents within the past 30 days. For the categorization, the consumption was considered low if the respondent smoked less than one cigarette per day, while high consumption was defined as consuming two cigarettes or more than two cigarettes per day. The study examined ASM and PSM exposure across a range of existing media platforms, including television, radio, internet, billboards, posters, newspapers, magazines, and movies throughout a 30-day timeframe. The other variables were

sex (male and female), grade (secondary school and high school), and weekly spending money categories (I usually don't have any spending money, less than IDR 11,000, IDR 11,000-20.000, IDR 21,000-30.000, IDR 31,000-40.000, IDR 41,000-50.000, and more than IDR 50.000).

The variables were weighted and subsequently analyzed using the chi-square statistical test. The data analysis was processed on STATA 16.0.

Results and Discussions

Table 1 shows the respondent characteristics. Most of the individuals in the IAS were male, accounting for 93.4% of the participants. Furthermore, a significant proportion of the participants, specifically 60.3% of them, were enrolled in secondary school. Additionally, a substantial majority of the participants, around 71.1%, reported spending more than IDR 11,000 per week.

The prevalence of smoking among adolescent males in Indonesia remains high according to numerous previous studies and official surveys. According to a survey conducted by the Indonesian Ministry of Health, the prevalence of smoking among individuals aged 10-18 years rose. The survey revealed that the smoking rate climbed from 7.2% in 2013 to 9.1% in 2018 (MOH-RI, 2019). In 2020, a study conducted by Soerojo *et al.* showed that the prevalence of male smokers was significantly higher compared to female smokers (Soerojo *et al.*, 2020). Another study by Efendi *et al.* revealed that many factors were related to male adolescents' smoking habit (Efendi *et al.*, 2019).

Some studies found that the number of students at the secondary level was quite high. A study conducted by Gentzke *et al.* showed that 6.7% of middle school students (equivalent to 800,000 individuals) notably acknowledged themselves consuming tobacco products (Gentzke *et al.*, 2020).

Table 2 presents the cross-tabulation analysis between ASM exposure and IAS. The table indicates that the level of exposure to ASM among IAS group with low cigarette consumption was significantly

Table 1. Respondent characteristics

Characteristics	n	%
Sex		
Male	1,602	93.47
Female	112	6.53
Total	1,714	100
Grade		
Secondary school	1,033	60.27
High school	681	39.73
Total	1,714	100
Weekly spending money		
I usually don't have any spending money	102	25.44
Less than IDR 11,000	394	22.99
IDR 11,000-20,000	401	23.40
IDR 21,000-30,000	175	10.21
IDR 31,000-40,000	107	6.24
IDR 41,000-50,000	168	9.80
More than IDR 50,000	367	21.41
Total	1,714	100

Table 2. Cross-tabulation between ASM and IAS

Exposure of ASM	IAS				Total	
	Low Consumption		High Consumption			
	Num	Percentage	Num	Percentage	Num	%
Yes	959	60.54	625	39.46	1,584	100
No	69	53.08	61	46.92	130	100
Total	1,028		686		1,714	

higher than those with high cigarette consumption. The overall proportion of IAS exposed to ASM was found to be 92.4%. Conversely, the proportion of IAS who did not have any exposure to ASM was shown below 8%. Moreover, it was observed that over 5% of the IAS, particularly those in the high consumption category, were not exposed to ASM.

Researchers and various agencies believe that health communication strategies can serve as an effective technique for conveying the ASM effectively (Andersen *et al.*, 2018). The Centers for Disease Control and Prevention (CDC) have developed a framework consisting of four distinct health communication strategies for effectively disseminating anti-smoking messages. These strategies include the use of paid media, earned media, social media, and

communication programs. ASM covers a lot of information about smoking prevention, smoking cessation, and the inherent hazards associated with smoking among other related topics (Bayly, Cotter and Carroll, 2019; Beasley *et al.*, 2020).

Anti-smoking campaigns play a crucial role in complete tobacco control programs since they seek to provide knowledge about the detrimental effects of smoking, alter attitudes and beliefs about smoking, enhance individuals' intentions to quit smoking, and encourage attempts to quit smoking. It is recommended that these efforts focus on large populations that are at a higher risk and provide sustained and continuous dissemination of information, particularly on conveying messages regarding the detrimental health consequences associated with smoking (Sadeghi, Masoudi and Khanjani 2020).

Public education campaigns that specifically target adults and youth have the potential to exert a substantial influence on young individuals to refrain smoking habits, thus contributing to the sustainable reduction in smoking prevalence (Beasley *et al.*, 2020).

Indonesia has implemented multiple campaigns aimed at disseminating anti-smoking messages. The Ministry of Health of Republic of Indonesia (MOH-RI) initiated a national campaign in 2016 known as "Suara Hati Anak" (the voice of children) (Ramadhan, 2016). The campaign was inspired by a real-life incident of a smoker residing in Muara Angke, North Jakarta, whose smoking habit had detrimental consequences on the well-being of his children. Another nationwide effort was *Suara Tanpa Rokok* (the voice without cigarettes), which aimed to promote a smoke-free environment (Maharani, 2016; MOH-RI, 2015). The campaign addressed the health implications associated with cigarette smoking.

In addition, the Indonesian Government issued the Regulation of The Indonesian Minister of Education and Culture Number 64 of 2015 concerning smoke-free areas in the school environment. In general, the purpose of this regulation is to prohibit students from smoking, educate them about the harm of tobacco products, and ban all forms of PSM.

However, challenges in implementing the regulation were not easy to tackle. Some studies showed that even though the regulation was published, the compliance rate was still low. In 2021, Asyary *et al.* performed a nationally representative survey encompassing 900

elementary, junior, and senior high schools over 60 regions across 24 provinces in Indonesia. They found that the compliance rate with smoke-free zones (SFZs) in Indonesian schools was 66.2% based on seven out of eight indicators. This indicates that the majority of schools have not yet completely complied with SFZ laws (Asyary *et al.*, 2021).

Table 3 displays the results of the cross-tabulation study conducted to examine the relationship between PSM and IAS. The table demonstrates a statistically significant disparity in the level of exposure to PSM. The study revealed that 93% of the IAS had been exposed to PSM. In contrast, the percentage of IAS who did not have any prior exposure to PSM was found to be less than 8%. Furthermore, it was revealed that a significant proportion of Indonesian youth, around 95%, under the high consumption category were exposed to PSM.

Several researchers have shown evidence of the correlation between the level of PSM exposure and youth smoking behavior in Indonesia. In 2016, a study was undertaken by Prabandari *et al.* to investigate the correlation between the perception of cigarette advertising and the initiation of smoking among young individuals. Their study revealed that cigarette advertisements were found to have an impact on the inclination of adolescents to engage in smoking behavior. Furthermore, it found a positive association between smoking status and many factors, including perception of youth-targeted cigarette advertisements, attitude towards PSM, susceptibility to smoking, as well as the presence of smoking friends and family members (Prabandari and Dewi, 2016).

Table 3. Cross-tabulation between PSM and IAS

Exposure of PSM	IAS				Total	
	Low Consumption		High Consumption			
	Num	Percentage	Num	Percentage	Num	%
Yes	943	59.20	650	40.80	1,593	100
No	73	60.33	48	39.67	121	100
Total	1,016		698		1,714	

In the context of Indonesia, social media have emerged as a prominent medium for the promotion of commercial products and services. In 2021, a significant proportion of the population, numbering 170 million individuals or approximately 61.8% of the total population, engaged in the active utilization of social media platforms (Kemp, 2021). Instagram, Facebook, and YouTube serve as the primary digital platforms to which Indonesian adolescents are exposed to the PSM (Septiono *et al.*, 2022). In 2017, the tobacco industry allocated a substantial amount of 481.3 million USD towards digital advertising. By 2021, the amount was projected to increase twofold, reaching a total of 844.9 million USD. Regrettably, the absence of regulatory measures about the use of PSM on the internet and social media platforms allows the tobacco industry to promote their products massively daily (Soerojo *et al.*, 2020).

In a study conducted by Sutrisno *et al.*, a robust correlation was identified between exposure to cigarette advertisements, the presence of smoking peers, and the subsequently inclined number of adolescents to engage in smoking behavior, both in short and long-term, in Sleman Regency, Indonesia (Sutrisno and Melinda, 2021).

During the Covid-19 pandemic in Malang, Indonesia, Laili *et al.* revealed a significant level of exposure among the youth population was influenced by several forms of cigarette marketing and promotional activities. Exposure to such advertisements was determined to have a potential influence on the escalation of smoking behavior (Laili *et al.*, 2022).

The relatively high exposure to PSM in Indonesia is due to the tobacco industry interference (TII). TII encompasses various strategies employed by the tobacco industry to impede the massive use of tobacco and influence tobacco control. These strategies include both direct and indirect political lobbying and campaigns, research funding endeavors, regulation formation, policy-making, and engagement in social responsibility initiatives as public-relation campaigns (WHO, 2008). In 2023, Indonesia obtained a global tobacco index

score of 84, positioning it at the 87th rank out of a total of 90 countries. This indicates that the level of TII in Indonesia remains significantly higher in comparison to other nations (GCGGTC, 2023).

Various institutions in Indonesia, including governmental and civic entities, have already initiated endeavors to control tobacco. Since 2012, many organizations and agencies have made endeavors to enact an update to the Broadcasting Law 32 of 2002 with regards to the telecommunications and broadcasting public service. Many civil organizations initiated a legal examination of Article 46 Paragraph 3 about cigarette advertisements, which was subsequently presented to the Indonesian Constitutional Court in 2017. The outcome of the judicial review, however, did not yield the desired results (MKRI, 2017). The Indonesian Child Protection Commission (KPAI) has called upon the Indonesian Government to revise the National Law Number 32 of 2002 and implement a comprehensive prohibition on all forms of tobacco advertisements, promotion, and sponsorship (TAPS). These proposed measures seek to safeguard the well-being of children and adolescents by mitigating their exposure to smoking-related behaviors (KPAI, 2017).

The utilization of policy interventions is strongly recommended by the WHO, especially when WHO released MPOWER in 2007. The primary purpose of MPOWER is to support the implementation of impactful interventions at the national level, aiming to reduce the demand for tobacco as outlined in the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). MPOWER stands for (1) monitoring tobacco use; (2) protecting people from tobacco smoke; (3) quitting tobacco; (4) warning about the dangers of tobacco; (5) banning tobacco advertisements, promotion, and sponsorship; and (6) raising taxes on tobacco (WHO, 2008).

Since 2008, the WHO has also periodically evaluated the situation of tobacco control in each country. One of the WHO's agendas is conducting an assessment or scoring on the MPOWER aspect at the country level. The evaluation

and scoring are released in the form of a report entitled WHO Report on The Global Tobacco Epidemic, where the quantitative assessment of the MPOWER aspect is placed at the end of each report published by the WHO.

In general, the assessment method carried out by the WHO on the MPOWER aspect includes several aspects, namely data source, data validation, data sign-off, and finally data analysis. Details of the assessment method for MPOWER scoring can be examined in more depth in each WHO's MPOWER report published from 2008 to the latest in 2021 (WHO, 2021).

The purpose of the MPOWER assessment is to assist countries in developing policies and intervention programs related to tobacco control. Quoting the explanation from Heydari *et al.*, the MPOWER assessment or scoring is carried out to see what has been achieved and what still needs to be addressed by countries to strengthen tobacco control programs (Heydari *et al.*, 2013).

Studies have been done at a global scale to examine the correlation between MPOWER scores and key indicators of tobacco control. The study conducted by Dubray *et al.* examined the relationship between MPOWER scores and the prevalence of smoking behavior on a global scale. The findings indicated that higher levels of MPOWER, along with consistent and regular monitoring of tobacco use (M) and increase in taxes (R), were associated with lower tobacco smoking rates over some time (Dubray *et al.*, 2015). A study conducted by Shang *et al.* yielded findings consistent with Dubray's research, indicating the efficacy of MPOWER policies in reducing smoking prevalence among adult populations (Ngo *et al.*, 2017).

Regarding MPOWER number five (5), Indonesia dealt with challenging situations. The latest report of the WHO's MPOWER in 2022 showed that the position of regulation banning tobacco advertising was categorized as "complete absence of a ban or ban that does not cover national television, radio, and print media" (WHO, 2023). Astuti *et al.* in 2017 investigated the stakeholders' perspectives on the adoption and implementation of the tobacco control

regulation, as portrayed in news media coverage. They found that the tobacco company made most of the opposing arguments, while the national government, media, and activists of tobacco control made up almost all of the pro arguments (Astuti and Freeman, 2017). This study is subject to a constraint due to the restricted scope of the variable used, which relies on the availability of secondary data (specifically GYTS data). In addition, the authors lack particular information regarding certain detailed factors, such as the primary message conveyed in the anti-smoking campaign and the type of internet connection used by respondents when viewing TAPS or anti-smoking messaging. Nevertheless, the study has a beneficial influence for tobacco control initiatives in Indonesia.

Furthermore, this study can be extrapolated to the national level by appropriately assigning weight to accurately depict the extent of the issue at a national scale. Moreover, this study might serve as a valuable resource for other researchers seeking to delve into many aspects of the anti-smoking campaign in Indonesia, including the messaging strategies, program implementation, and more.

Conclusions

The levels of exposure to ASM and PSM among IAS were found to be comparable. The Indonesian government ought to consider a prohibition from exposing people to PSM and focus on developing an innovative and strategic ASM program that specifically caters to the adolescent group's needs.

Abbreviations

KPAI: *Komisi Perlindungan Anak Indonesia* (Indonesian Commission for Child Protection); MKRI: *Mahkamah Konstitusi Republik Indonesia* (Constitutional Court of the Republic of Indonesia); ASM: Anti-Smoking Messages; PSM: Pro-Smoking Messages; IAS: Indonesian Adult Smoker; WHO: World Health Organization; SEARO: Southeast

Asia Region; WPRO: Western Pacific Region; USDHSS: United State Department of Human and Health Services; GYTS: Global Youth Tobacco Survey; CDC: Center for Disease Control and Prevention; PPS: Probability proportionate to size; MOH-RI: Ministry of Health of Republic of Indonesia; TII: Tobacco Industry Interference; GCGGTC: Global Centre for Good Governance in Tobacco Control; TAPS: Tobacco Advertisement, Promotion, and Sponsorship; MPOWER: (1) Monitoring tobacco use; (2) Protecting people from tobacco smoke; (3) Offering people quitting tobacco; (4) Warning about the dangers of tobacco; (5) Enforce banning tobacco advertisements, promotion, and sponsorship; and (6) Raising taxes on tobacco.

Declaration

Ethics Approval and Consent Participant

The Indonesian 2019 Global Youth Tobacco Survey (GYTS) has obtained ethical approval from the Health Research Ethics Commission and the National Health Research and Development Agency. The notification number indicating the approval is LB.02.01/2/KE.315/2019. The respondents gave consent forms to participate in this study, and all of their identities were removed from the dataset. All procedures were conducted according to the applicable norms and legislation.

Conflict of Interest

All authors declare that they have no conflicts of interest.

Availability of Data and Materials

The datasets generated and analyzed during the current study are available on the CDC website repository, <https://www.gtssacademy.org/explore/datasets/>

Authors' Contribution

HM, RD, and DK conceptualized the study; HM, MI, and SKS created the methodology; HM, SRN, and EA wrote, reviewed, and edited the manuscript; HM and RD wrote the original draft.

Funding Source

N/A

Acknowledgment

The authors would like to thank the Faculty of Public Health, Universitas Airlangga for their technical support and all the contributors who helped in this study.

References

- Agaku, I.T., King, B.A. and Dube, S.R. (2014) 'Trends in exposure to pro-tobacco advertisements over the Internet, in newspapers/magazines, and at retail stores among U.S. middle and high school students, 2000–2012', *Preventive Medicine*, 58, pp. 45–52. Available at: <https://doi.org/10.1016/j.ypmed.2013.10.012>.
- Andersen, S. et al. (2018) *Best Practices User Guide: Health Communications in Tobacco Prevention and Control*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- Astuti, P.A.S. and Freeman, B. (2017) "It is merely a paper tiger." Battle for increased tobacco advertising regulation in Indonesia: content analysis of news articles', *BMJ Open*, 7(9), p. e016975. Available at: <https://doi.org/10.1136/bmjopen-2017-016975>.
- Asyary, A. et al. (2021) 'Prevalence of Smoke-Free Zone Compliance among Schools in Indonesia: A Nationwide Representative Survey', *Asian Pacific journal of cancer prevention: APJCP*, 22(2), pp. 359–363. Available at: <https://doi.org/10.31557/APJCP.2021.22.2.359>.
- Bayly, M., Cotter, T. and Carroll, T. (2019) 'Examining the effectiveness of public education campaigns', in M. Scollo and M. Winstanley (eds) *Tobacco in*

- Australia: *Facts and issues*. Melbourne: Cancer Council Victoria. Available at: <https://www.tobaccoinaustralia.org.au/chapter-14-social-marketing/14-4-examining-effectiveness-of-public-education-c>.
- Beasley, S. *et al.* (2020) 'What makes an effective antismoking campaign – insights from the trenches', *Public Health Research & Practice*, 30(3). Available at: <https://doi.org/10.17061/phrp3032021>.
- Dubray, J. *et al.* (2014) 'The effect of MPOWER on smoking prevalence', *Tobacco Control*, 24(6), pp. 540–542. Available at: <https://doi.org/10.1136/tobaccocontrol-2014-051834>.
- Efendi, F. *et al.* (2019) 'Determinants of smoking behavior among young males in rural Indonesia', *International Journal of Adolescent Medicine and Health*, 33(5). Available at: <https://doi.org/10.1515/ijamh-2019-0040>.
- Emory, K.T. *et al.* (2015) 'Receptivity to cigarette and tobacco control messages and adolescent smoking initiation', *Tobacco control*. 2014/02/06 edn, 24(3), pp. 281–284. Available at: <https://doi.org/10.1136/tobaccocontrol-2013-051187>.
- Erguder, T. *et al.* (2013) 'Exposure to anti- and pro-tobacco advertising, promotions or sponsorships: Turkey, 2008', *Global Health Promotion*, 23(2_suppl), pp. 58–67. Available at: <https://doi.org/10.1177/1757975913502369>.
- GCGGTC (2023) *How Deadly Is Tobacco Industry Influence in Indonesia?* Bangkok, pp. 15. Available at: <https://globaltobaccoindex.org/country/ID>.
- Gentzke, A.S. *et al.* (2020) 'Tobacco Product Use Among Middle and High School Students - United States, 2020', *MMWR. Morbidity and mortality weekly report*, 69(50), pp. 1881–1888. Available at: <https://doi.org/10.15585/mmwr.mm6950a1>.
- Heydari, G. (2020) 'A decade after introducing WHO Report on the Global Tobacco Epidemic, trend analysis of implementation of the WHO FCTC MPOWER in Eastern Mediterranean Region', in: *Tobacco, smoking control and health educ.*, European Respiratory Society. Available at: <https://doi.org/10.1183/13993003.congress-2020.3041>.
- Heydari, Gh. *et al.* (2013) 'WHO MPOWER tobacco control scores in the Eastern Mediterranean countries based on the 2011 report', *Eastern Mediterranean Health Journal*, 19(04), pp. 314–319. Available at: <https://doi.org/10.26719/2013.19.4.314>.
- Kemp, S. (2021) *DIGITAL 2021: INDONESIA, Data Reportal*. Available at: <https://datareportal.com/reports/digital-2021-indonesia>.
- KPAI (2017) 'Tanpa Kompromi, KPAI Minta UU Penyiaran Cantumkan Larangan Iklan Rokok', *KPAI Publikasi*, pp. 3–3. Available at: <https://www.kpai.go.id/publikasi/tanpa-kompromi-kpai-minta-uu-penyiaran-cantumkan-larangan-iklan-rokok>.
- Laili, K. *et al.* (2022) 'The impact of exposure to cigarette advertising and promotion on youth smoking behavior in Malang Regency (Indonesia) during the COVID- 19 Pandemic', *Journal of public health in Africa*, 13(Suppl 2), pp. 2409–2409. Available at: <https://doi.org/10.4081/jphia.2022.2409>.
- Lian, T.Y. and Dorotheo, U. (2021) *The Tobacco Control Atlas: ASEAN Region*. 5th edn. Edited by B.

- Ritthiphakdee et al. Bangkok: Southeast Asia Tobacco Control Alliance (SEATCA), p. 188. Available at: https://seatca.org/dmdocuments/SEATCA_ASEAN_Tobacco_Control_Atlas_5th_Ed.pdf.
- Maharani, D. (2016) 'Iklan Antirokok Terbaru Fokus Bahaya Rokok Pada Organ', *Kompas.com*, pp. 2–2. Available at: <https://health.kompas.com/read/2016/09/02/152417023/iklan.antirokok.terbaru.fokus.bahaya.rokok.pada.organ>.
- Mannocci, A. et al. (2019) 'Which are the communication styles of anti-tobacco spots that most impress adolescents?', *European Journal of Public Health*, 29(Supplement_4). Available at: <https://doi.org/10.1093/eurpub/ckz185.114>.
- Megatsari, H. et al. (2019) 'Visibility and hotspots of outdoor tobacco advertisement around educational facilities without an advertising ban: Geospatial analysis in Surabaya City, Indonesia', *Tobacco prevention & cessation*, 5, pp. 32–32. Available at: <https://doi.org/10.18332/tpc/112462>.
- MKRI (2017) 'Petition on Review of Cigarette Advertising Rejected', *Constitutional Court of the Republic of Indonesia*, pp. 2–2. Available at: https://en.mkri.id/news/details/2017-12-14/Petition_on_Review_of_Cigarette_Advertising_Rejected.
- MOH-RI (2015) *Pesan dari Korban Rokok (Ibu Ike)*, *Youtube*. Available at: <https://www.youtube.com/watch?v=xFGvm3HqOt8>.
- MOH-RI (2019) *National Result of Basic Health Research in Indonesia for the Period of 2018 (Riskesdas 2018)*. Jakarta: Ministry of Health of Republic of Indonesia.
- Ngo, A. et al. (2017) 'The effect of MPOWER scores on cigarette smoking prevalence and consumption', *Preventive medicine*. 2017/05/11 edn, 105S, pp. S10–S14. Available at: <https://doi.org/10.1016/j.ypmed.2017.05.006>.
- Prabandari, Y.S. and Dewi, A. (2016) 'How do Indonesian youth perceive cigarette advertising? A cross-sectional study among Indonesian high school students', *Global health action*, 9, pp. 30914–30914. Available at: <https://doi.org/10.3402/gha.v9.30914>.
- Primasari, S.I. and Listina, F. (2022) 'Faktor Faktor Yang Berhubungan dengan Kepatuhan Dalam Penerapan Kawasan Tanpa Rokok Di Lingkungan Puskesmas Candipuro Kabupaten Lampung Selatan', *Jurnal Ilmu Kesehatan Indonesia (JIKSI)*, 2(2). Available at: <https://doi.org/10.57084/jiksi.v2i2.737>.
- Ramadhan, L.I. (2016) 'Iklan Antirokok Kemenkes dari Kisah Nyata di Muara Angke', *Tempo.co*, pp. 2–2. Available at: <https://nasional.tempo.co/read/774674/iklan-antirokok-kemenkes-dari-kisah-nyata-di-muara-angke>.
- Rao, S. et al. (2014) 'Anti-smoking initiatives and current smoking among 19,643 adolescents in South Asia: findings from the Global Youth Tobacco Survey', *Harm reduction journal*, 11, pp. 8–8. Available at: <https://doi.org/10.1186/1477-7517-11-8>.
- Sadeghi, R., Masoudi, M.R. and Khanjani, N. (2020) 'A Systematic Review about Educational Campaigns on Smoking Cessation', *The Open Public Health Journal*, 13(1), pp. 748–755. Available at: <https://doi.org/10.2174/1874944502013010748>.
- Septiono, W. et al. (2021) 'Self-reported exposure of Indonesian adolescents

- to online and offline tobacco advertising, promotion and sponsorship (TAPS)', *Tobacco Control*, 31(1), pp. 98–105. Available at: <https://doi.org/10.1136/tobaccocontrol-2020-056080>.
- Shang, C. *et al.* (2016) 'Global Evidence on the Association between POS Advertising Bans and Youth Smoking Participation', *International journal of environmental research and public health*, 13(3), p. 306. Available at: <https://doi.org/10.3390/ijerph13030306>.
- Soerojo, W. *et al.* (2020) *Atlas Tembakau Indonesia 2020*. Jakarta, Republic of Indonesia, pp. 33–33. Available at: <https://www.tcsc-indonesia.org/wp-content/uploads/2020/06/Atlas-Tembakau-Indonesia-2020.pdf>.
- Sutrisno, R.Y. and Melinda, F. (2021) 'The Effects of Cigarette Advertisement and Peer Influence on Adolescent's Smoking Intention in Indonesia', *Open Access Macedonian Journal of Medical Sciences*, 9(T4), pp. 291–295. Available at: <https://doi.org/10.3889/oamjms.2021.5809>.
- USDHSS (2012) *Preventing Tobacco Use Among Youth and Young Adults*. Atlanta, GA: Centers for Disease Control and Prevention (US), p. 80. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK99237/>.
- USDHSS (2014) *The Health Consequences of Smoking—50 Years of Progress*. Atlanta, GA: Centers for Disease Control and Prevention (US), p. 192. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK179276/>.
- WHO (2008) *MPOWER: A Policy Package to Reverse the Tobacco Epidemic*, WHO. Geneva: World Health Organization. Available at: http://www.who.int/blindness/AP2014_19_Russian.pdf?ua=1.
- WHO (2021) *WHO Report on the Global Tobacco Epidemic, 2021 Addressing New and Emerging Products*. Geneva: World Health Organization. Available at: <https://apps.who.int/iris/bitstream/handle/10665/343287/9789240032095-eng.pdf?sequence=1%26isAllowed=y>.
- WHO (2023) *WHO Report on the Global Tobacco Epidemic, 2023: Protect People from Tobacco Smoke*. Geneva: World Health Organization. Available at: <https://iris.who.int/bitstream/handle/10665/372043/9789240077164-eng.pdf?sequence=1>.

EFFECTIVENESS OF TELEMEDICINE HEALTHCARE SERVICES IN RURAL AREAS OF BANGLADESH: A STUDY ON SELECTED VILLAGES

Efektivitas Layanan Kesehatan Telemedicine di Daerah Pedesaan Bangladesh: Studi pada Desa Terpilih

Md. Mafizur Rahman¹, *Md. Arifur Rahman^{1,2}

¹Department of Public Administration, Faculty of Social Science, Jagannath University, Dhaka, Bangladesh

²Associates for Innovative Research and Development Ltd., Dhaka, Bangladesh

Correspondence*:

Address: Distillery Road, Gandaria, Dhaka, Bangladesh | e-mail: arifurrahman4515@gmail.com

Abstract

Background: The healthcare system in Bangladesh faces challenges in providing equitable access and quality healthcare to rural and remote communities compared to urban areas. The country has incorporated telemedicine into its healthcare system to address these issues.

Aims: This study aimed to assess the effectiveness of telemedicine services in rural Bangladesh.

Methods: The study employed a mixed-method approach that included survey questionnaires and in-depth interviews. A total of 100 participants were selected for the questionnaire survey for quantitative data, and 20 in-depth interviews were conducted to collect qualitative data.

Results: The findings indicate that telemedicine has garnered a positive reception among rural residents. An overwhelming 86% regarded telemedicine as a cost-effective healthcare option. Impressively, 44% reported accessing telemedicine services within 10 minutes, demonstrating their accessibility. Furthermore, a majority (54%) expressed satisfaction with telemedicine services. However, dissatisfaction was noted concerning the physical environment of the telemedicine centers.

Conclusion: Overall, telemedicine in Bangladesh has proven effective in terms of cost savings, time efficiency, and gaining significant acceptance among rural residents. To further improve healthcare accessibility, expanding telemedicine centers to reach every remote union in Bangladesh is imperative. Additionally, raising awareness, providing ICT and telemedicine education, and ensuring affordable and reliable internet connectivity will maximize the potential of telemedicine services, ultimately benefiting underprivileged rural populations.

Keywords: healthcare, rural Bangladesh, telehealth, telemedicine

Abstrak

Latar Belakang: Sistem layanan kesehatan di Bangladesh menghadapi tantangan dalam menyediakan akses yang adil dan layanan kesehatan berkualitas bagi masyarakat pedesaan dan terpencil dibandingkan dengan wilayah perkotaan. Negara ini telah memasukkan telemedicine ke dalam sistem layanan kesehatannya untuk mengatasi permasalahan ini.

Tujuan: Penelitian ini bertujuan untuk menilai efektivitas layanan telemedicine di pedesaan Bangladesh.

Metode: Penelitian ini menggunakan pendekatan metode campuran yang mencakup kuesioner survei dan wawancara mendalam. Sebanyak 100 peserta dipilih untuk survei kuesioner untuk data kuantitatif, dan 20 wawancara mendalam dilakukan untuk mengumpulkan data kualitatif.

Hasil: Temuan menunjukkan bahwa telemedicine mendapat sambutan positif di kalangan penduduk pedesaan. Sebanyak 86% responden menganggap telemedicine sebagai pilihan layanan kesehatan yang hemat biaya. Yang mengesankan, 44% melaporkan mengakses layanan telemedicine hanya dalam 10 menit, dan ini menunjukkan aksesibilitasnya. Selain itu, mayoritas (54%) menyatakan puas terhadap layanan telemedicine. Namun, terdapat ketidakpuasan mengenai lingkungan fisik pusat telemedicine.

Kesimpulan: Secara keseluruhan, telemedicine di Bangladesh telah terbukti efektif dalam penghematan biaya, efisiensi waktu, dan mendapatkan penerimaan yang signifikan di kalangan penduduk pedesaan. Untuk lebih meningkatkan aksesibilitas layanan kesehatan, perluasan pusat telemedicine untuk menjangkau setiap serikat pekerja terpencil di Bangladesh sangatlah penting. Selain itu, meningkatkan kesadaran, memberikan pendidikan TIK dan telemedicine, serta memastikan konektivitas internet yang terjangkau dan andal akan memaksimalkan potensi layanan telemedicine, yang pada akhirnya akan memberikan manfaat bagi masyarakat pedesaan yang kurang mampu.

Kata kunci: layanan kesehatan, pedesaan Bangladesh, telehealth, telemedicine



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.97-107.

Received: 2024-01-05, Revised: 2024-05-25, Accepted: 2024-06-02, Published: 2024-06-26.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Md. Arifur Rahman, Md. Mafizur Rahman

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Rahman, M. M. and Rahman, M. A. (2024) "Effectiveness of Telemedicine Healthcare Services in Rural Areas of Bangladesh: A Study on Selected Villages", Indonesian Journal of Health Administration, 12(1), pp. 97-107. doi: 10.20473/jaki.v12i1.2024.97-107.

Introduction

Healthcare in Bangladesh is still a burning issue due to its high-density population and inadequate organizational and infrastructural capacity. The current population size of the country is 165 million, among which 113 million people live in rural areas (Dhaka Tribune, 2022). With this vast population in the rural area, it becomes the government's responsibility to provide equal health services and access to the rural people as to the urban. However, reaching rural people with equal health services is still challenging due to geographical, infrastructural, and human resource barriers. The HRH (Human Resource for Health) Data Sheet 2019 shows an estimated 8.3 doctors, nurses, and midwives per 10,000 population (Ministry of Health and Family Welfare, 2019). Addressing these barriers, the Government of Bangladesh (GoB) developed an innovation in its health sector with telemedicine. Telemedicine uses electronic communication technology to exchange health or medical-related information from one place to another to improve the patient's clinical health status (American Telemedicine Association, 2017). Instead of visiting the doctor physically, telemedicine allows patients to communicate with a doctor using technology. Considering the challenging healthcare conditions of the country, telemedicine service can be a blessing (Akhtar, Alam and Siddiquee, 2019). It is an effective instrument for providing healthcare from a distant location (Prodhan, Rahman and Jahan, 2016a). Telemedicine has been defined by the World Health Organization (WHO) as "the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment, and prevention of disease and injuries, research and evaluation and the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities" (World Health Organization, 2010). The primary intention of

telemedicine service is to enhance healthcare services to geographically underprivileged and medically underserved populations by delivering high-quality care at a reduced cost as well as with greater convenience (LeRouge and Garfield, 2013).

The concept of telemedicine is not very new in Bangladesh. The Ministry of Health and Family Welfare (MOHFW) initiated e-health services in 1998 to improve public healthcare systems, though telemedicine was founded in 1999 (Hoque and Bao, 2015). However, it has remained beyond the reach of much of the underprivileged population due to inadequate attention (Nessa *et al.*, 2008). In partial fulfillment of the Digital Bangladesh Vision 2021, telemedicine was adopted under MOHFW in several public hospitals in 2010 (Zobair, Sanzogni and Sandhu, 2020). Since then, a number of public and private telemedicine initiatives have been undertaken within the country.

Telemedicine could serve as a less expensive and easier means to deliver medical services to a large number of people in remote places while utilizing limited resources (Hudson, 2006; Chavula, 2013). A previous study found that telemedicine has significantly reduced the cost and travel time of patients as compared to its counterpart conventional approach (Sorwar *et al.*, 2016). It has the potential to improve access to quality health services in remote places (Nessa *et al.*, 2008).

In addition to economic considerations, consumer satisfaction is an important issue to consider when designing a telemedicine program because it indicates how effectively the medium satisfies patients' expectations (Kruse *et al.*, 2017). Prior research identified that factors like social influence, perceived usefulness, and satisfaction positively affect an individual's intention to use telemedicine services. In contrast, other factors like resistance to change and technology anxiety negatively influence it (Rahman and Hoque, 2018). Another study found that patients' expectations for adopting telemedicine health services are highly influenced by self-efficacy,

telemedicine experience, enjoyment, and prior satisfaction (Zobair, Sanzogni and Sandhu, 2019).

However, the journey of telemedicine in Bangladesh has never been so flawless. Several impediments still affect the successful implementation of telemedicine services within the country. Hakim (2016) mentioned that lack of adequate funding, patients' worries concerning telemedicine, a lack of public education for the use of e-health services, software weaknesses to deal with growing workloads, a lack of technically competent workers, lack of a complete legal structure regarding telemedicine, shortage of telemedicine-related policy, and an absence of telecommunication network in a few parts of the country are some of the issues that affect telemedicine implementation in public hospitals of Bangladesh. This is supported by Khatun and Sima (2015) have also agreed to the facts; however, Zobair *et al.* (2020) argued that organizational ineffectiveness, quality of care, motivation of the health staff, and patients' trustworthiness are the prevalent barriers to telemedicine service in rural public hospitals. Moreover, the patient's data security in the existing telemedicine system is a matter of concern (Nusrat *et al.*, 2019).

The above literature indicates that a few studies have been conducted considering the potentiality and the prevalent challenges and barriers to implementing telemedicine services. However, very little or no exploratory research is available on the consumers' perception regarding telemedicine in the local context of Bangladesh; particularly, no studies have been conducted in the study area. Therefore, this study aims to explore the effectiveness of a telemedicine healthcare service among rural people in Bangladesh. The geographic variances and people's orientation to various localities have substantially made the paper unique, and it will further assist the concerned authority in taking the required actions to improve the service effectiveness and acceptability among rural people in Bangladesh.

Method

Research Design

A mixed-method research technique was used, which combined quantitative and qualitative approaches. Mixed-method data collection facilitates exploring, unraveling, and understanding issues, situations, and relationships (Aminuzzaman, 1991). A questionnaire survey was used to gather quantitative data, and in-depth interviews were conducted to collect qualitative data. The study was conducted at three selected villages of Mollahat Union of Nalchity Upazila in Jhalakathi District of Bangladesh as the Telemedicine Program is implemented in this area by the Department of Biomedical Physics and Technology, University of Dhaka, with support from a2i Program of the Bangladesh Government.

Sampling and Participants

For quantitative data (phase I), a total of 100 participants were selected for the questionnaire survey, and 20 in-depth interviews were conducted for collecting qualitative data (phase II) through purposive and snowball sampling. The statistical formula determined the sample size at 90% confidence level and 7% marginal error for a population of 350. The original result of the sample size was 98.99 which was rounded to 100 to ensure the accuracy of the data and validate the findings. The eligibility criteria for participating in this study were rural people who have used telemedicine at least once in their lives.

Data Collection Procedure

Data were collected in two phases. In phase I (quantitative part), a semi-structured questionnaire was developed after reviewing relevant available literature by the researchers. The questionnaire includes a brief introduction of the study, purposes, confidentiality, and consent of the respondents on the first page. The participants completed the questionnaire in the presence of the researchers. The questionnaire was divided into four sections in which they had to fill in the socio-demographic details (e.g., gender, age, educational qualification, and occupation)

as well as the respondents' perception and experience of telemedicine service. A group of expert researchers examined the validity of content.

In Phase II (qualitative part), data were collected through in-depth interviews (IDI) consisting of open-ended questions such as "Where do you usually visit to seek healthcare services?"; "What do you know about telemedicine?"; "How do you perceive the conventional way of healthcare and telemedicine healthcare from your point of view?"; "Which way of healthcare service is more convenient and why?"; "Tell me about your telemedicine experience and how satisfied you were with the service?"; "How was the environment of the telemedicine center?"; "How do you think the service is trustworthy to you?"; "What difficulties or disruptions have you faced while getting the service?" Finally, the participants were asked to "Give some recommendations to improve the effectiveness and acceptability of telemedicine service among rural people in Bangladesh." Most of the interviews took around 30 minutes, and, together, the audio was recorded with the consent of the participants. The researchers also took field notes during the interviews to record additional important information.

In this study, the participant's native language was used for data collection and then translated into English for analysis. The linguistic accuracy of the language was assessed and verified by proficient linguists to ensure its semantic integrity.

Data Analysis

The quantitative data (Phase I) was analyzed using the Statistical Package of Social Sciences (SPSS) software. The collected data underwent a comprehensive review process, which involved conducting various frequency and data checks to ensure accuracy and integrity.

For qualitative data (phase II), after the interviews were completed, verbatim

transcription was conducted by expert transcribers. The transcripts were carefully and thoroughly read. Then, the transcripts were compared with the audio recordings to identify any missing information. A thematic analysis of the texts was performed by using manual coding.

Result and Discussion

Characteristics of the Participants

The quantitative data analysis shows that, among the 100 participants, 54% were female, and 46% were male. Most of the participants were in the age range of 48-57 years (30%). Among them, 13% were illiterate, and only 5% had completed graduation and above levels of education. The majority of the participants (33%) were involved in agriculture and 10% were students. Socio-demographic details of the participants are demonstrated in Table 1.

Sources of Information

When asked about how they came to know about telemedicine, most of them (46%) reported through a door-to-door campaign program from neighbors (33%), relatives (14%), and friends (7%). Participants' opinions regarding the sources of information about telemedicine are presented in Figure 1. However, the majority of the participants reported that the campaign programs were not held frequently. There is a huge gap in information and awareness about telemedicine within the consumer. A participant described the situation below: "Most people in this area do not know that such services exist and what they offer. I have worked as a campaigner for this service. I have been to people's doors to make them understand telemedicine and invited them to experience it. But this small-scale campaign program is not enough to reach everyone in this area" [IDI-01; female; age: 32 years old].

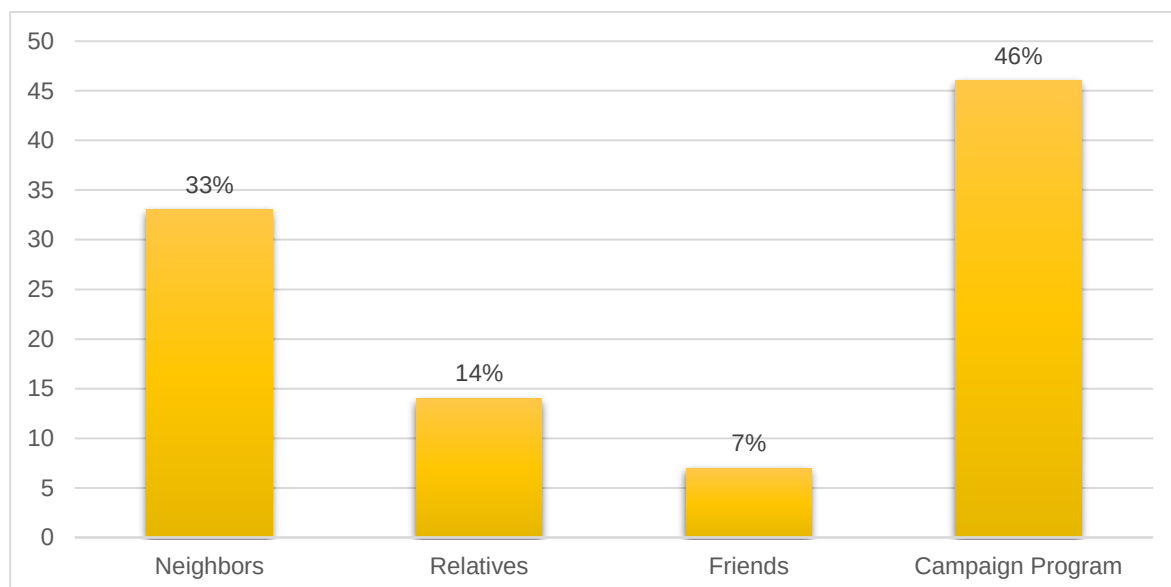


Figure1. Sources of Information about Telemedicine

Table 1. Socio-demographic Characteristics of the Participants (N = 100)

Measure	Items	Frequency	%
Gender	Male	46	46%
	Female	54	54%
Age Group	18-27	16	16%
	28-37	17	17%
	38-47	23	23%
	48-57	30	30%
	58 and above	14	14%
Educational Qualification	Illiterate	13	13%
	Primary	40	40%
	Secondary	28	28%
	Higher Secondary	14	14%
	Graduate & above	5	5%
Occupation	Agriculture	33	33%
	Business	12	12%
	Service Holder	11	11%
	Self Employed	21	21%
	Student	10	10%
	Others*	13	13%

*Housewife

Participants' Knowledge of Telemedicine and ICT

Prior and proper knowledge of any service is crucial to understanding the impact and effectiveness of the service. Telemedicine is a technological service system, so the knowledge of ICT is also interlinked with the knowledge of telemedicine. Most participants (44%)

reported having 'poor' knowledge of telemedicine, while only 2% reported having 'excellent' knowledge. Regarding the knowledge of ICT, most of the participants (36%) reported 'poor,' and 34% reported 'very poor.' Details of participants' responses regarding knowledge of Telemedicine and ICT are shown in Table 2.

Table 2. Participant's Knowledge

Knowledge of Telemedicine			Knowledge of ICT		
Rating*	f	%	Rating*	f	%
1	20	20%	1	34	34%
2	44	44%	2	36	36%
3	24	24%	3	20	20%
4	10	10%	4	8	8%
5	2	2%	5	2	2%

*Rating: 1= very poor; 2= poor; 3= good; 4= very good; 5= excellent

Knowledge of ICT and telemedicine plays a critical role in forming people's trust in telemedicine. Having a proper knowledge of technology helps to understand the telemedicine process better. The study findings supported that rural people have poor knowledge of technology and telemedicine, which corresponds to the findings of a previous study (Chowdhury, Sunna and Ahmed, 2021). Lack of knowledge about ICT and the basic knowledge of telemedicine about what it is or the process of how it works impacts their perception of the telemedicine service. Their unknown fear of the complexity of the process leads to avoidance of taking telemedicine services. A similar study (Khan, Rahman and AnjumIslam, 2021) also suggested that shortage of ICT access and lack of knowledge regarding telemedicine are the barriers to the use of telemedicine.

Cost Saving and Time Efficient Service Delivery

Among the participants, 86% opined that telemedicine service costs less than a physical healthcare center's service. According to them, they also have to spend travel costs to get healthcare services from other physical healthcare centers. On the other hand, 14% opined that it is not less than the cost of other healthcare centers. One of the reasons behind their opinion was that they have easy access to public hospitals. Participants' opinions about the cost of service are presented in Figure 2.

Most participants (44%) reported having to wait about 10 minutes for the service while 28% and 18% of the participants reported waiting 15 and 20

minutes, respectively. The rest, 10%, have to wait for about 25 minutes. Serials of patients and time for connecting with doctors were reported as a few reasons for their waiting time. Details of participants' responses regarding the waiting time for service delivery are shown in Table 3.

The opinions of a few participants regarding the cost and time effectiveness of telemedicine are expressed as follows: "I am a day laborer. It is difficult for me to bear the cost of a private hospital. On the other hand, traveling a long distance to seek healthcare from a public hospital also requires a good amount of money. Telemedicine has made it easier for me. Now I, my family members, can easily consult with quality doctors at a lower cost" [IDI-11; male; age: 42 years old]. "I am a small businessman. I have to deal with several issues all day, so sometimes, I can't make time to take my family members to clinics for health consultations when they are sick. Small issues are mostly ignored. But telemedicine made it easier for us. The telemedicine center is near my house and a much less time-consuming process than traveling elsewhere" [IDI-20; male; age: 43 years old].

The present study found that in terms of cost and time saving, telemedicine has significantly reduced the amount of time and cost required for the users to access healthcare services. The cost of the service is lower than that of a physical healthcare center. Rural underprivileged people are mostly deprived of quality healthcare services because of poor economic conditions. In that case, telemedicine serves people at a very low cost. The findings show that the cost of a telemedicine service is around BDT 100-300, which the users considered to be lower than the conventional way of seeking healthcare services. Moreover, telemedicine helped people reduce travel costs, which is an additional advantage for them. Before telemedicine, people had to travel to the city hospitals or clinics to get any primary healthcare services, which required more time. Rural people are mostly engaged in daily activities or labor for their livelihood, so their payments are also on a daily basis. It was difficult for them

to avoid their daily labor just for a primary check-up as it affected their economic condition. As a result, their primary healthcare was neglected in most of the cases. However, telemedicine has reduced their stress in regard to getting at least their primary healthcare. Being nearer to their location, they can easily visit the center for a primary health consultation. Moreover, the waiting time for getting the service is very low compared to the physical healthcare centers. Prior studies conducted in a similar context also correspond to the result and agreed that telemedicine has been a very cost and time efficient service (Prodhan, Rahman and Jahan, 2016b; Sorwar *et al.*, 2016; Akhtar, Alam and Siddiquee, 2019; Atmojo *et al.*, 2020; Salsabilla *et al.*, 2021).

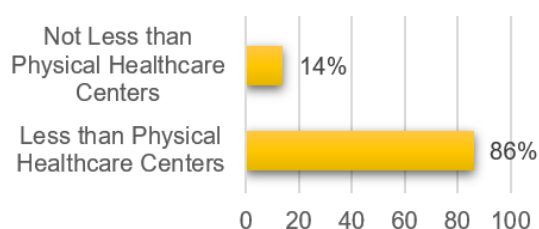


Figure 2. Participants' Opinions about Cost

Table 3. Waiting Time for Service Delivery

Time (Minutes)	f	%
10	44	44%
15	28	28%
20	18	18%
25	10	10%

Participants' Satisfaction Regarding Telemedicine

Patient satisfaction is another key indicator for measuring effectiveness. Satisfaction lies in the expectations of the patients. The study found that the rural patients were mostly satisfied with the telemedicine service. Most of the participants (54%) expressed their satisfaction level with the service as satisfactory, and a moderate number of people (36%) were neutral with the service. However, none of the users expressed dissatisfaction with the service, and a few (6%) were highly satisfied. The providers'

and the doctors' behavior, service quality, and the service's usefulness have a key impact in determining the patients' satisfaction. Moreover, the low cost and the less time-consuming characteristics of the service played a significant role in determining the patients' satisfaction. Previous studies in Bangladesh have supported this finding indicating that majority of the telemedicine users were highly satisfied with the service and the behavior of service provider (Rahman and Hossain, 2016; Sorwar *et al.*, 2016).

Participants' Trust Regarding Telemedicine

Patients' trust is a significant indicator of acceptance of telemedicine services. According to Akter *et al.* (2011), trustworthiness in telemedicine is crucial for establishing patients' confidence and assuring their desire to reuse the system. The findings of this study suggested that most of the participants (48%) were neutral about the trustworthiness of the service, but none of them think the service is not trustworthy. However, the service was trustworthy to a significant number of participants (42%), and to a few participants (6%), it was very trustworthy. Similar results were found in a previous study conducted in Bangladesh showing that only 1% have no trust in telemedicine (Rahman and Hossain, 2016).

Participants' Opinions about Internet Connection Stability

Internet connection stability is a key issue in telemedicine service delivery as the whole process depends on it. Most of the participants (64%) opined that there was no disruption in the service due to internet connectivity. However, a significant portion of the participants (36%) stated they had faced internet instability while receiving the service.

One of the participants described the situation as follows: "While the doctor was talking, it was not very clear. Some words were stuck, and sometimes, I had to repeat my words several times. The service provider told me it might happen due to poor internet connection" [IDI-12; male; age: 20 years old].

Internet connection stability is another crucial factor in delivering telemedicine services effectively. With the advancement of technology and the telecommunication sector, most of the geographical areas in Bangladesh are now covered with internet connectivity. However, issues with the speed and stability of the internet connection remain. The study revealed that, although more than half of the service seekers didn't face any difficulty with internet connectivity, a considerable number of the service seekers reported difficulties. Sometimes, the connection is totally lost, and the system can't work out. Many times, it lags while communicating with the doctors. This disruption hampers the attention of the service seekers as well as the doctors. Also, the service providers mentioned the high cost of the internet packages. Previous studies (Zobair *et al.*, 2020; Khan *et al.*, 2021; Rahman *et al.*, 2022) also argued that low speed of internet connectivity and high cost of infrastructure are significant barriers to the adoption of telemedicine services.

Participants' Opinions about Telemedicine Services and Center

The present telemedicine program is found to be providing only primary treatments such as – fever, cold, pain, blood pressure, and other related complications. Participants opined that it could be better if the service area could be increased, especially for gynecological problems and having at least one female service provider. Even with these limited facilities, this program has proven effective and achieved success in rural areas. Other studies conducted in similar settings comply with the present study's finding (Brear, 2006; Froehlich *et al.*, 2009; Akhtar, Alam and Siddiquee, 2019).

Regarding the resource availability and the physical environment of the telemedicine center, this study found that some required instruments, such as the Electrocardiogram (ECG) machine, were not available. Moreover, the physical environment of the center was not up to the mark. A good environment and resource availability at the center influence the

patients to have trust in the service. Usually, for providing telemedicine service, a computer or laptop for operating telemedicine software and contacting doctors, a printer for printing prescriptions, and a weight measurement machine, stethoscope, blood pressure measuring tool, and ECG machine to measure the health condition of the patients are necessary. A prior study (Kruse *et al.*, 2018) also found that a lack of appropriate resources and equipment is the potential barrier to telemedicine adoption.

Limitations of the Study

There are some limitations in this research, leading to further research opportunities. First, this study analyzed only one telemedicine center and the study area was limited to a single sub-district in Bangladesh due to time and budget constraints. Future studies might include additional telemedicine centers to test the generalizability of the findings. Second, the study was conducted on a small number of respondents. Future research could include a higher number of respondents to attain better variations of the data. Finally, this study was limited to Bangladesh. Combining this study with cross-sectional data from similar developing countries can provide a more comprehensive picture of the effectiveness of telemedicine globally.

Conclusion

In essence, the study findings revealed that telemedicine has gained acceptance among rural service seekers and is contributing effectively by providing a quality healthcare service to remote people at a reduced cost and consuming less time than other forms of healthcare services. Although this service is limited to primary healthcare only, it greatly impacts the health status of disadvantaged rural people as they can access the service easily. However, a lack of awareness among the people keeps most rural people out of reach of the service. There are inadequate campaigning programs regarding telemedicine services. Also, the high cost of the internet and low bandwidth connection is another obstacle to delivering

the service properly. Furthermore, immediate and continuous actions should be implemented to enjoy the full potential of this great innovation. It is possible to alleviate the limitations and obstacles are with the support from the concerned authority and by appropriate government measures and actions. Expansion of telemedicine centers, a proper mechanism for creating awareness among people, educating people with the knowledge of ICT and telemedicine, ensuring an optimal level of internet bandwidth, proper allocation of necessary tools in telemedicine centers, establishing proper monitoring mechanism for every telemedicine center and engaging people by ensuring their trust might be helpful in this regard.

Abbreviations

WHO: World Health Organization; GoB: Government of Bangladesh; HRH: Human Resource for Health; ICT: Information and Communications Technology; a2i: Access to Information.

Declarations

Ethics Approval and Consent Participant

This study is part of a bachelor's thesis; therefore, ethical approval was granted by the Examination Committee. A detailed consent form was developed and distributed among the potential respondents of the study; however, only those willing to participate in the survey and interview voluntarily were considered as the study respondents.

Conflict of Interest

The authors declare that there is no significant competing financial, professional, or personal interests that might have affected the performance.

Availability of Data and Materials

Not applicable.

Authors' Contribution

Both authors contributed to the conception and design of the study, material preparation, data collection and analysis. MAR developed the initial manuscript draft,

and MMR commented on previous versions. Finally, both authors read and approved the final manuscript.

Funding Source

Not applicable.

Acknowledgment

Not applicable.

References

- Akhtar, R., Alam, S. and Siddiquee, N.K.A. (2019) 'Telemedicine: an ICT based healthcare approach to ensure health service for all', *International Journal of Community Medicine and Public Health*, 6(9), p. 3732. <https://doi.org/10.18203/2394-6040.ijcmph20193961>
- Akter, S., D'Ambra, J. and Ray, P. (2011) 'Trustworthiness in mHealth information services: An assessment of a hierarchical model with mediating and moderating effects using partial least squares (PLS)', *Journal of the American Society for Information Science and Technology*, 62(1), pp. 100–116. <https://doi.org/10.1002/asi.21442>
- American Telemedicine Association (2017) *What is Telemedicine*. Available at: <http://www.americantelemed.org/about-telemedicine/what-is-telemedicine#.U-b7glBdWt0>.
- Aminuzzaman, S.M. (1991) *Introduction to Social Research*. Dhaka, Bangladesh: Bangladesh Publishers.
- Atmojo, J.T., Sudaryanto, W.T. and Widiyanto, A. (2020) 'Telemedicine, Cost Effectiveness, and Patients Satisfaction: A Systematic Review', *Journal of Health Policy and Management*, 5(2), pp. 103–107.
- Brear, M. (2006) 'Evaluating telemedicine: lessons and challenges', *Health Information Management: Journal of the Health Information Management Association of Australia*, 35(2), pp. 23–31. <https://doi.org/10.1177/183335830603500206>
- Chavula, H.K. (2013) 'Telecommunications development and economic growth in

- Africa', *Information Technology for Development*, 19(1), pp. 5–23. <https://doi.org/10.1080/02681102.2012.694794>
- Chowdhury, S.R., Sunna, T.C. and Ahmed, S. (2021) 'Telemedicine is an important aspect of healthcare services amid COVID-19 outbreak: Its barriers in Bangladesh and strategies to overcome', *The International Journal of Health Planning and Management*, 36(1), pp. 4–12. <https://doi.org/10.1002/hpm.3064>
- Dhaka Tribune (2022) 'Census 2022: Bangladesh population now 165 million', *Dhaka Tribune*, 27 July. Available at: <https://www.dhakatribune.com/bangladesh/2022/07/27/bangladeshs-population-size-now-1651-million> (Accessed: 1 August 2022).
- Froehlich, W., Seitaboth, S., Chanpheaktra, N. and Pugatch, D. (2009) 'Case report: an example of international telemedicine success', *Journal of Telemedicine and Telecare*, 15(4), pp. 208–210. <https://doi.org/10.1258/jtt.2008.081001>
- Hakim, A.I. (2016) 'Expected Challenges to implement Telemedicine service in public hospitals of Bangladesh', *Journal of Social and Administrative Sciences*, 3(3), pp. 231–244. <https://doi.org/10.1453/jsas.v3i3.939>
- Hoque, M.R. and Bao, Y. (2015) 'Cultural Influence on Adoption and Use of e-Health: Evidence in Bangladesh', *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association*, 21(10), pp. 845–851. <https://doi.org/10.1089/tmj.2014.0128>
- Hudson, H.E. (2006) *From Rural Village to Global Village: Telecommunications for Development in the Information Age*. Mahwah, N.J: Routledge.
- Khan, M.M., Rahman, S.M.T. and AnjumIslam, S.T. (2021) 'The Use of Telemedicine in Bangladesh during COVID-19 Pandemic', *E-Health Telecommunication Systems and Networks*, 10(01), pp. 1–19. <https://doi.org/10.4236/etsn.2021.101001>
- Khatun, F. and Sima, Mst.R.K. (2015) 'Impact of ICT on Health Services in Bangladesh: A Study on Hobiganj Adhunik Zila Sadar Hospital', *SSRN Electronic Journal* [Preprint]. <https://doi.org/10.2139/ssrn.2591201>
- Kruse, C.S., Krowski, N., Rodriguez, B., Tran, L., Vela, J. and Brooks, M. (2017) 'Telehealth and patient satisfaction: a systematic review and narrative analysis', *BMJ Open*, 7(8), p. e016242. <https://doi.org/10.1136/bmjopen-2017-016242>
- Kruse, C.S., Atkins, J. M., Baker, T. D., Gonzales, E. N., Paul, J. L. and Brooks, M. (2018) 'Factors influencing the adoption of telemedicine for treatment of military veterans with post-traumatic stress disorder', *Journal of Rehabilitation Medicine*, 50(5), pp. 385–392. <https://doi.org/10.2340/16501977-2302>
- LeRouge, C. and Garfield, M.J. (2013) 'Crossing the Telemedicine Chasm: Have the U.S. Barriers to Widespread Adoption of Telemedicine Been Significantly Reduced?', *International Journal of Environmental Research and Public Health*, 10(12), pp. 6472–6484. <https://doi.org/10.3390/ijerph10126472>
- Ministry of Health and Family Welfare (2019) *HRH Data Sheet-2019*. Available at: https://hsd.portal.gov.bd/sites/default/files/files/hsd.portal.gov.bd/page/e620d076_40f0_4f38_a87a_7897e006a91d/MOHFW_HRH_Data%20Sheet%202019.pdf
- Nessa, A., Ameen, M. A., Ullah, S. and Kwak, K.S. (2008) 'Applicability of Telemedicine in Bangladesh: Current Status and Future Prospects', in *2008 Third International Conference on Convergence and Hybrid Information Technology*, pp. 948–953. <https://doi.org/10.1109/ICCIT.2008.236>

- Nusrat, S.A., Ferdous, J., Ajmat, S. B., Ali, A. and Sorwar, G. (2019) 'Telemedicine System Design using Blockchain in Bangladesh', in *2019 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE). 2019 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE)*, Melbourne, Australia: IEEE, pp. 1–5. <https://doi.org/10.1109/CSDE48274.2019.9162401>
- Prodhan, U.K., Rahman, M.Z. and Jahan, I. (2016a) 'A survey on the telemedicine in Bangladesh', in *2016 International Conference on Computing, Communication and Automation (ICCCA). 2016 International Conference on Computing, Communication and Automation (ICCCA)*, Greater Noida, India: IEEE, pp. 857–861. <https://doi.org/10.1109/CCAA.2016.7813835>
- Prodhan, U.K., Rahman, M.Z. and Jahan, I. (2016b) 'A Systematic analysis on the Telemedicine Services in Bangladesh.'
- Rahman, H., Al Ameen, M., Ullah, S. and Kwak, K. (2022) 'Use of Telemedicine in Bangladesh: Current Status and Future Prospects', 7(2), pp. 1–13. <https://doi.org/10.5281/zenodo.6407570>
- Rahman, M.S. and Hoque, R. (2018) 'Factors Affecting the Adoption of Telemedicine in Rural Areas of Bangladesh'. Available at: https://web.archive.org/web/20200323173228id_/https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1606&context=amcis2018
- Rahman, T. and Hossain, M.A. (2016) 'Peoples' Perception towards Telemedicine: A Case Study on Rural Area of Bangladesh', *Information and Knowledge Management*, 6(4).
- Salsabilla, A., Azzahra, A.B., Syafitri, R.I.P., Supadmi, M. and Suwantika, A.A. (2021) 'Cost-Effectiveness of Telemedicine in Asia: A Scoping Review', *Journal of Multidisciplinary Healthcare*, 14, pp. 3587–3596. <https://doi.org/10.2147/JMDH.S332579>
- Sorwar, G., Rahman, M. M., Uddin, R. and Hoque, M. R. (2016) 'Cost and Time Effectiveness Analysis of a Telemedicine Service in Bangladesh', *Studies in Health Technology and Informatics*, 231, pp. 127–134. <https://doi.org/10.3233/978-1-61499-712-2-127>
- World Health Organization (2010) *Telemedicine: Opportunities and developments in Member State*. Available at: <https://www.afro.who.int/publications/telemedicine-opportunities-and-developments-member-state> (Accessed: 1 August 2022).
- Zobair, K.M., Sanzogni, L. and Sandhu, K. (2019) 'Expectations of telemedicine health service adoption in rural Bangladesh', *Social Science & Medicine*, 238, p. 112485. <https://doi.org/10.1016/j.socscimed.2019.112485>
- Zobair, K.M., Sanzogni, L. and Sandhu, K. (2020) 'Telemedicine Healthcare Service Adoption Barriers in Rural Bangladesh', *Australasian Journal of Information Systems*, 24. <https://doi.org/10.3127/ajis.v24i0.2165>

LYMPHATIC FILARIASIS DRUG TREATMENT POLICIES IN EASTERN INDONESIA: WHAT TARGET CHARACTERISTICS MATTER?

Kebijakan Pengobatan Filariasis di Kawasan Timur Indonesia: Target Karakteristik Apa yang Berpengaruh?

*Agung Puja Kesuma¹, Mara Ipa¹, Agung Dwi Laksono¹, Tri Wahono¹, Rina Marina¹, Lukman Hakim¹

¹Research Center for Public Health and Nutrition, National Research and Innovation Agency, Bogor, Indonesia

Correspondence*:

Address: Cibinong Science Center Jl. Raya Bogor, Pakansari, Kec. Cibinong, Bogor, Indonesia | e-mail: agungpeka@gmail.com

Abstract

Background: Lymphatic filariasis (LF) drug treatment compliance remains a challenge in Eastern Indonesia.

Aims: The study sought to determine which aspects of Eastern Indonesia's LF drug treatment compliance policies were most pertinent.

Methods: The 2018 Indonesian Basic Health Survey data was employed. The analysis units were adults (≥ 15 years) who had received LF drug treatment. LF drug treatment compliance was analyzed based on respondent characteristics (age, gender, marital status, education, occupation, wealth and comorbidities) using binary logistic regression.

Results: The proportion of adherence to LF treatment in Eastern Indonesia was 73.1%. Respondent characteristics that influenced LF treatment compliance were age group > 24 (AOR = 1.374, 95% CI: 1.305-1.447), female (AOR = 1.307, 95% CI: 1.263-1.353), all educated respondent status (AOR = 2.152, 95% CI: 2.043-2.268), and all employed respondents (AOR = 1.437, 95% CI: 1.365 - 1.512). Married respondents and those with all levels of wealth status were less likely to take LF drug treatment

Conclusion: Policy focus on improving LF treatment compliance among the younger male, the less educated, the unemployed, and those with lower social economic status.

Keywords: compliance, Eastern Indonesia, lymphatic filariasis, public health

Abstrak

Latar Belakang: Kepatuhan terhadap pengobatan filariasis limfatik (LF) masih menjadi tantangan di wilayah Indonesia Timur.

Tujuan: Menganalisis karakteristik yang paling sesuai untuk kebijakan kepatuhan pengobatan LF wilayah Indonesia Timur.

Metode: Studi ini memanfaatkan data hasil Survei Kesehatan Dasar Indonesia 2018. Unit analisis adalah orang dewasa (≥ 15 tahun) yang mendapat terapi obat LF setelah didiagnosis. Kepatuhan pengobatan LF dianalisis berdasarkan karakteristik responden (usia, jenis kelamin, perkawinan, pendidikan, pekerjaan, kekayaan, dan penyakit penyerta). menggunakan regresi logistik biner.

Hasil: Proporsi kepatuhan terhadap pengobatan LF di wilayah timur Indonesia sebesar 73.1%. Karakteristik responden yang berpengaruh terhadap kepatuhan pengobatan LF adalah kelompok usia > 24 (AOR= 1,374, 95% CI : 1,305-1,447), perempuan (AOR= 1,307, 95% CI : 1,263-1,353), semua status responden yang berpendidikan (AOR=2,152, 95% CI : 2,043-2.268), dan semua responden yang bekerja (AOR=1.437, 95% CI : 1.365 – 1.512). Responden yang menikah dan dari semua tingkat kekayaan memiliki kemungkinan lebih rendah untuk mengkonsumsi obat LF.

Kesimpulan: Fokus kebijakan peningkatan kepatuhan pengobatan LF kepada golongan muda, laki-laki, berpendidikan rendah, dan tingkat sosial ekonomi rendah.

Kata kunci: filariasis limfatik, Indonesia bagian timur, kepatuhan, kesehatan masyarakat



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: [10.20473/jaki.v12i1.2024.108-119](https://doi.org/10.20473/jaki.v12i1.2024.108-119).

Received: 2023-07-10, Revised: 2024-06-12, Accepted: 2024-06-19, Published: 2024-06-25.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Agung Puja Kesuma, Mara Ipa, Agung Dwi Laksono, Tri Wahono, Rina Marina, Lukman Hakim

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Kesuma, A. P., Ipa, M., Laksono, A. D., Wahono, T., Marina, R. and Hakim, L. (2024) "Lymphatic Filariasis Drug Treatment Policies in Eastern Indonesia: What Target Characteristics Matter?", *Indonesian Journal of Health Administration*, 12(1), pp. 108-119. doi: [10.20473/jaki.v12i1.2024.108-119](https://doi.org/10.20473/jaki.v12i1.2024.108-119).

Introduction

The neglected tropical disease lymphatic filariasis (LF) is caused by roundworms of the family Filariodidea carried by such mosquitoes as *Aedes*, *Culex*, *Mansonia*, and *Anopheles*. LF is not a fatal disease, but it can cause permanent disability (Lourens and Ferrell, 2019; Sungpradit and Sanprasert, 2020). In 2020, there were 72 LF endemic countries, and 863 million individuals in 47 of these countries needed prophylactic chemotherapy to prevent LF. The disease is distributed in tropical and sub-tropical regions such as Africa, the South Pacific Islands, Southeast Asia, Latin America, and the Caribbean (Sungpradit and Sanprasert, 2020). In 2000, the distribution of the highest prevalence of LF in the world was in Southeast Asia, with a 52% prevalence of LF worldwide. It was estimated that the majority of LF cases in 2018 would remain in Southeast Asia, including Indonesia, with the provinces of East Nusa Tenggara and Papua having the highest numbers of LF cases (NIHRD, 2019; Deshpande *et al.*, 2020).

Efforts to prevent LF require the involvement of all sectors and stakeholders, with health promotion and knowledge improvement for the public being essential to LF risk reduction (Maryen, Kusnanto and Indriani, 2018). In addition, to break the chain of transmission, the government implements a mass drug administration (MDA) program in LF endemic areas. The procedure for MDA typically involves the distribution of medications. The use of community drug distributors, known as cadres in Indonesia, who collaborate with village health personnel to deliver LF medications, is one of the main elements of mass treatment programs in Indonesia (Titaley *et al.*, 2018). MDA coverage necessitates the population's willingness to take the drug as prescribed. Several places with limited resources have struggled to sustain MDA coverage over time (Won *et al.*, 2009; Burgert-Brucker *et al.*, 2020). A number of prior studies have found that low MDA compliance for the elimination of LF is one of the variables determining the incidence

of re-transmission of LF in locations that have completed MDA (Widjanarko, Saraswati and Ginandjar, 2018; Biritwum *et al.*, 2019; Burgert-Brucker *et al.*, 2020).

Some obstacles to MDA adherence for the elimination of LF are related to individual influences and program implementation (Silumbwe *et al.*, 2017). Individual influences include fear of adverse events (Mathieu *et al.*, 2004; Widiastuti *et al.*, 2021), education level (Kasturiratne *et al.*, 2001), occupation, knowledge (Krentel *et al.*, 2016) and wealth (Gunawardena, Ismail, and Bradley, 2007). One of the impacts of the program is increased participants' exposure to advertisements on the media as well as local drug distributors and health worker visits (Krentel *et al.*, 2016). Indonesia is an archipelago of approximately 260 million inhabitants (World Bank, 2020). The dispersion of the population, the vast distances involved, and the geography of the region are obstacles for the population to receive expeditious treatment (Meireles *et al.*, 2020) and it is also true for Indonesia (Suharmiati, Laksono and Astuti, 2013; Laksono, Rukmini and Wulandari, 2020). Based on the preceding information, this study aimed to identify the most suitable characteristics for LF drug treatment compliance policies in the eastern region of Indonesia. The findings of this research can be considered in the development of appropriate policies regarding targets related to MDA coverage to accelerate the elimination of LF in eastern Indonesia, including whether intensive socialization or involvement of key stakeholders is needed.

Method

Data Source

For this study, secondary data were taken from the 2018 Indonesian Basic Health Survey, carried out by the National Institute of Health Research and Development (NIHRD). Indonesia also conducted a community-based cross-sectional survey in 2018 as part of its Basic Health Survey. This survey's sample structure was derived from the results of the 2018 National Socio-economic Survey, which was carried out by the Central

Statistics Agency in March of 2018. The 2018 Indonesian Basic Health Survey targeted 300,000 households from 30,000 census blocks, and the 2018 Indonesian Socio-economic Survey targeted 300,000 families from 30,000 census blocks.

The 2018 Indonesian Basic Health Survey adopted Probability Proportional to Size (PPS), a two-stage systematic linear sampling method. The first stage constituted implicit stratification based on the 2010 Population Census' determination of the welfare strata of each census unit. As many as 180,000 census blocks (or 25%) of the total 720,000 census blocks from the 2010 Population Census were chosen by PPS as the sampling frame from the sample survey. The survey counted census blocks in each urban/rural stratum per regency/city using the PPS method to create a census block sample list, resulting in 30,000 census blocks being surveyed. The second phase used systematic sampling to identify the ten homes in each census block with the highest implicit stratification of education completed by the head of household. Members of randomly chosen households in Indonesia were questioned for the 2018 Basic Health Survey (NIHRD, 2019).

Specifically, 295,720 houses in 34 provinces with 1,091,528 household members were surveyed for the 2018 Indonesia Basic Health Survey. A sample of data from five chosen provinces was studied. We limited our analysis to people aged 15 years and above ($n = 790$) living in five provinces (Papua ($n = 274$), West Papua ($n = 99$), Maluku ($n = 177$), North Maluku ($n = 50$), and East Nusa Tenggara ($n = 160$)) who had been diagnosed with LF and had received LF medication treatment. The sample consisted of 760 respondents selected using multistage cluster sampling.

Variables

The study used compliance with LF drug treatment as an outcome variable. If a household member had taken the LF drug, the variable would have a "Yes" value, indicating that the individual had taken the LF medication after being diagnosed with positive laboratory-confirmed LF within the preceding 24 months by local healthcare

professionals/physicians and a "No" value otherwise. LF is typically confirmed in health facilities by microscopic examination of stained blood smears. The interviewer for this study did not conduct any screening tests. The study developed variables according to respondents' self-reported use of LF medications following a laboratory diagnosis of LF within the previous twenty-four months.

In the study, the characteristics of each respondent were used as independent variables. Factors such as age, gender, occupation, degree of education, marital status, wealth and the presence or absence of co-occurring disorders were considered. The last birthday was used to calculate age in the study. Ages 15–24 and older made up the demographics of the respondents, who were categorized as either male or female. There were three distinct occupational groups, namely, the unemployed, farmers and those in other professions. Four tiers of schooling were used, namely, no education, elementary, secondary and tertiary. There were two possible marital statuses, namely, unmarried and married. Finally, the study looked at the most recent diploma to assess education level.

In 2018, the Indonesian Basic Health Survey calculated wealth using a wealth index. A weighted average of a family's total outlays was used to calculate the wealth index (NIHRD, 2019; Sartirano *et al.*, 2023). Polling was conducted using responses on basic household expenditures such as healthcare, food, and housing to calculate the wealth index. The poll segmented the income index into lowest, middle, high, and highest income groups. Control variables, including province and category of residence, were evaluated along with respondent characteristics. There were five provinces investigated in total. Cities and rural areas offered different types of living situations.

Data Analysis

Initially, the investigation used a chi-square test to compare two variables. A collinearity test was also conducted to ensure that the independent variables in the final regression model were not

interrelated. The final analysis employed binary logistic regression. The survey assessed the multivariate connection between all independent factors and primary healthcare use using the prior test. The statistical analysis used IBM SPSS 26.

Result and Discussion

The analysis results informed that the proportion of lymphatic filariasis drug treatment compliance in eastern Indonesia, which was the study's object of analysis, was 73.1%. Table 1 provides a statistical description of this. According to Table 1, individuals aged above 24 dominated both groups of LF drug therapy compliance. As for the gender-based proportion, females outnumbered males in both groups of LF drug therapy compliance. In terms of marital status, married individuals were dominant in both LF drug therapy compliance groups.

Table 1 indicates that people with secondary education dominated the non-compliance group, while those with primary education did the compliance group. Based on occupation, unemployed individuals were superior in number in both LF drug therapy compliance groups. Regarding wealth status, the richest individuals dominated both groups of LF drug therapy compliance. In terms of comorbidities, those without any comorbidities dominated both LF drug therapy compliance groups. Based on the province, residents of Maluku dominated the non-compliance group, while residents of Papua did the compliance group. Moreover, those living in rural areas surpassed their urban counterparts in number in both groups of LF drug therapy compliance.

Table 2 presents the binary logistic regression results used to analyze the association between characteristics and lymphatic filariasis (LF) drug treatment compliance in Eastern Indonesia. The study used the "lymphatic filariasis drug treatment compliance = No" category as a reference in this analysis.

According to Table 2, individuals over 24 years of age were 1.374 times more

likely than those ages 15–24 years to have taken LF drug treatment (AOR 1.374; 95% CI 1.305-1.447), indicating that younger people in Eastern Indonesia were less compliant to the LF drug treatment. Regarding gender, females were 1.307 times more likely than males to have taken LF drug treatment (AOR 1.307; 95% CI 1.263-1.353), indicating that males in Eastern Indonesia were less compliant with LF drug treatment in Eastern Indonesia. In terms of marital status, married individuals had 0.793 the likelihood of single individuals to have taken LF drug treatment (AOR 0.793; 95% CI 0.757-0.831), indicating that married individuals in Eastern Indonesia were less compliant with the LF drug treatment.

People with education of all levels had more possibility of taking LF drug treatment than non-educated people in Eastern Indonesia. Similarly, working individuals engaged in any profession had a higher probability of taking LF drug treatment than those who were unemployed in Eastern Indonesia. Furthermore, people of all wealth statuses had low likelihood of taking LF drug treatment in Eastern Indonesia. Several factors, such as feeling healthy, fearing side effects, and concerns about safety due to health conditions, can contribute to this issue (Sindhu *et al.*, 2023). One control variable, province, in addition to exposure, was also related to LF drug treatment compliance. People of East Nusa Tenggara was second to Papuans to have the highest likelihood of taking LF drug treatment in Eastern Indonesia.

In the present investigation, a significant majority of participants diagnosed with LF ($\geq 70\%$) said that they adhered to a prescribed regimen of LF medication subsequent to receiving confirmation from a medical professional. The outcome of anti-filarial therapy in individuals with lymphatic filariasis (LF) was found to be correlated with many demographic characteristics, including age, gender, marital status, level of educational attainment, occupation, and socio-economic status.

Table 1. Descriptive statistics of lymphatic filariasis drug treatment compliance in Eastern Indonesia (n = 760)

Variables	LF Drug Therapy Compliance		p-value
	No (n = 191)	Yes (n = 569)	
Age			* < 0.001
15–24	29.9%	24.4%	
> 24	70.1%	75.6%	
Gender			* < 0.001
Male	48.7%	46.1%	
Female	51.3%	53.9%	
Marital status			* < 0.001
Single	34.8%	31.5%	
Married	65.2%	68.5%	
Education			* < 0.001
No education	16.3%	14.3%	
Primary	34.5%	40.3%	
Secondary	37.3%	31.8%	
Higher	11.8%	13.6%	
Occupation Type			* < 0.001
No work	46.7%	40.1%	
Farmer	26.1%	32.0%	
Non-farmer	27.2%	27.9%	
Wealth Status			* < 0.001
Poorest	14.3%	20.0%	
Tend to be poor	13.6%	16.0%	
Middle	16.6%	16.4%	
Tend to be rich	25.6%	21.7%	
Richest	29.9%	25.9%	
Comorbidities			0.066
No	90.9%	90.5%	
Yes	9.1%	9.5%	
Province			* < 0.001
East Nusa Tenggara	20.2%	24.3%	
Maluku	30.1%	20.3%	
North Maluku	7.5%	3.4%	
West Papua	16.2%	8.7%	
Papua	25.9%	43.2%	
Type of residence			* < 0.001
Urban	42.2%	36.3%	
Rural	57.8%	63.7%	

Note: *p < 0.001.

Table 2. Binary logistic regression results of lymphatic filariasis drug treatment compliance in Eastern Indonesia (n = 760)

Predictors	LF Drug Therapy Compliance			
	p-value	AOR	95% CI	
			Lower Bound	Upper Bound
Age: 15–24	-	-	-	-
Age: > 24	**<0.001	1.374	1.305	1.447
Gender: Male	-	-	-	-
Gender: Female	**<0.001	1.307	1.263	1.353
Marital Status: Single	-	-	-	-
Marital Status: Married	**<0.001	0.793	0.757	0.831
Education: No education	-	-	-	-
Education: Primary	**<0.001	2.152	2.043	2.268
Education: Secondary	**<0.001	1.836	1.737	1.941
Education: Higher	**<0.001	2.120	1.976	2.274
Occupation: No work	-	-	-	-
Occupation: Farmer	**<0.001	1.437	1.365	1.512
Occupation: Non-farmer	**<0.001	1.401	1.337	1.469
Wealth: Poorest	-	-	-	-
Wealth: Tend to be poor	*0.006	0.921	0.869	0.977
Wealth: Middle	**<0.001	0.816	0.771	0.864
Wealth: Tend to be rich	**<0.001	0.689	0.651	0.730
Wealth: Richest	**<0.001	0.571	0.537	0.606
Province: East Nusa Tenggara	-	-	-	-
Province: Maluku	**<0.001	0.655	0.625	0.687
Province: North Maluku	**<0.001	0.377	0.350	0.406
Province: West Papua	**<0.001	0.606	0.572	0.643
Province: Papua	**<0.001	1.839	1.755	1.928
Residence: Urban	-	-	-	-
Residence: Rural	0.927	0.998	0.958	1.040

Note: AOR: Adjusted Odds Ratio; CI: Confidence Interval; *p < 0.010; **p < 0.001.

Age is one of the attributes that is firmly connected with many elements. It additionally has close connections with work, marriage, and reproduction. This study showed that age correlated with LF drug treatment compliance. Older individuals were found to pay more attention to their health and be more compliant with the filarial drug treatment. Additionally, the results also showed that parents of children under five were most likely to be non-adherent due to concerns about treatment side effects (Boyd *et al.*, 2010). Conversely, an earlier Subang study found no correlation between age and anti-filariasis medication compliance (Widawati *et al.*, 2020). In contrast, a study conducted

in Pondicherry, South India, found that treatment adherence was significantly poorer among participants aged 61 and older (Nandha *et al.*, 2007).

The current study revealed that males were less compliant with the LF drug treatment than females in Eastern Indonesia. This result is consistent with a study conducted in Pondicherry, southern region of India and Mandalay Region, Myanmar (Nandha *et al.*, 2007; Dickson *et al.*, 2021), but different from a study in Subang and Depok, Western Indonesia, which reported that gender did not have any impact on adherence to anti-filarial medication (Santhi, 2011; Widawati *et al.*, 2020). This discrepancy may be attributed

to the fact that men in Eastern Indonesia often do more work because they play an essential role in the family economy. Men tend not to take filarial drugs because the MDA side effects can interfere with their daily work. Therefore, outreach to the entire community is essential before implementing the program. Information sharing is one of the keys to successful program implementation (Ikawati *et al.*, 2019). According to this finding, we can develop flexible treatment delivery by exploring options to accommodate the needs and preferences of males in Eastern Indonesia. According to the LF elimination program guidelines, individuals must take filariasis medication under the supervision of health cadres.

The analysis results further indicated that married individuals were less compliant with the LF drug treatment than single individuals in Eastern Indonesia. In other words, unmarried individuals paid more attention to their health and were more compliant with the filarial drug treatment. The potential side effects of the medication might have discouraged married individuals from complying with the filarial drug treatment. They might assume that adverse reactions to therapy, including lightheadedness, nausea and dizziness, could interfere with their daily activities. Different results were reported by the Subang-based study, according to which the percentage of respondents who were unmarried and did not take filarial drugs was higher (37.6%) than that of those who were married (25.1%) or divorced (23.1%). It was also reported that there was no correlation between marital status and medication adherence (Widawati *et al.*, 2020). Similar results were found in previous studies in Nigeria (Ogbonnaya and Okeibunor, 2004) and Myanmar (Koyadun and Bhumiratana, 2005), indicated that there was no statistically significant association between marital status and the behavior of using filariasis drugs. Based on these results, it is necessary to strengthen the awareness among married individuals using a family-centered approach. This may involve promoting open communication within

families and encouraging mutual support for health-seeking behaviors.

People with all levels of education had more possibility of taking the LF drug treatment than those non-educated in Eastern Indonesia. According to this study, education demonstrated the potential of affecting community compliance when taking filarial drugs. Studies have shown that education can lead to better knowledge and a better understanding of filariasis, leading to more compliance in taking medications. For instance, a study in Bandung identified the knowledge about diseases and the active involvement of medical professionals were among the catalysts for expanding the scope of filarial drugs (Ipa *et al.*, 2016). A schistosomiasis study conducted in the Philippines demonstrated mass drug administration compliance. The study noted that respondents who knew the disease and how the disease was transmitted were more obedient to taking the drug than those who did not (Inobaya *et al.*, 2018). Numerous studies have also reported that understanding the causes of lymphatic filariasis and how to prevent the illness could affect community compliance (Krentel, Fischer and Weil, 2013; Kouassi *et al.*, 2018). A study in Sri Lanka found that the failure to take the drug was due to the lack of information on taking filarial drugs (Gunawardena *et al.*, 2007). Meanwhile, a study in Ambon showed no relationship between education and filariasis drug-taking behaviour (Kerjapy, Titaley and Sanaky, 2019).

The current study's results further indicated that the unemployed were less compliant with the LF drug treatment than working individuals, regardless of their type of occupation. Employed individuals tend to exhibit a heightened level of concern for their well-being and possess a heightened awareness of their physical condition. This is mostly due to the recognition that maintaining good health is a crucial determinant of achieving success in the workplace. This study showed that working individuals of any occupation type were more likely to comply with medication than those who were not working. LF can lead to lifelong disability through the enlargement

of the legs, arms, and genitals. Another finding elsewhere also showed that working individuals were more compliant in taking the filarial drug (Purwastyastuti, 2010; Agustini and Indrawati, 2018; Sari, Ginandjar and Saraswati, 2020). Different results were reported by previous studies in South Sumatra, Ambon, and Subang, Indonesia, that there was no link between occupation and filariasis drug-taking behavior (Oktarina, 2010; Kerjapy, Titaley and Sanaky, 2019).

People of the poorest wealth status were the most likely to take LF drug treatment in Eastern Indonesia, showing that they had better lymphatic filariasis drug treatment compliance than people of other wealth statuses. This is most likely related to the large number of LF cases in regions with low socio-economic conditions, resulting in a poor environment that encourages mosquito vector breeding. Studies showed that 94% of endemic LF cases took place in areas with a low human development index (Durrheim *et al.*, 2004).

Moreover, people living in Papua had the highest likelihood of taking the LF drug treatment in Eastern Indonesia (Indonesia Ministry of Health, 2020). The policy of reducing LF cases in endemic areas through the implementation of MDA annually for five years or more for all eligible populations, until the adult worms die or stop producing microfilariae, may have caused LF drug compliance in Papua Province to be better than other provinces. This is in line with a Pekalongan-based study, which states that LF drug compliance is higher in LF endemic areas (Widjanarko, Saraswati and Ginandjar, 2018).

Only variables from the 2018 Indonesian Basic Health Survey were included in the analysis. The analysis results could not explain a number of other variables known to influence LF drug treatment compliance mentioned in previous studies: knowledge of lymphatic filariasis, the procedure of MDA, and adverse drug reactions (Manyeh *et al.*, 2020, 2021). Quantitative methodological studies failed to comprehensively explain the lasting impacts of cultural elements as

identified in previous studies. Several previous studies, including those on stigma and self-esteem, produced relevant findings (Kulkarni *et al.*, 2020; Taylor *et al.*, 2022).

Conclusion

The study found that factors like age, gender, marital status, occupation, level of education and income were associated to LF drug treatment plans in Eastern Indonesia. Younger males and those with lower socio-economic status and less education or employment stability were the primary focus of programs designed to improve LF drug treatment compliance.

Compliance of LF treatment can be improved through health promotion programs with specific targets, and involvement of all community components including families, community leaders, peers, and local leaders. In addition, flexible drug distribution options can be implemented based on regional characteristics and the integration of LF treatment services with existing programs.

It is critical to acknowledge the limitations of this study: The data was gathered through self-reporting, which may cause response bias and alter the accuracy of the results. The study's cross-sectional design limited our ability to demonstrate causal links between the identified characteristics and treatment compliance. Furthermore, the study was conducted in a specific geographic region; therefore, the results may cannot be applied to other people or contexts. Despite these limitations, the results provide valuable insights into the determinants of adherence to LF medication in eastern Indonesia and highlight the importance of targeted interventions to address the barriers faced by susceptible groups.

Abbreviations

AOR: adjusted odds ratio; CI: confidence interval; LF: lymphatic filariasis; MDA: mass drugs administration; NIHRD: National Institute of Health Research and Development.

Declarations

Ethics Approval and Participant Consent

The 2018 Indonesian Basic Health Survey is authorized by the National Ethics Committee. All survey respondents' names were erased from the database.

Conflict of Interest

The authors have stated that they have no conflict of interest to disclose.

Availability of Data and Materials

NIHRD provides access to a wide range of data and resources for conducting research and analysis. A third party prohibits the writers from disclosing the data.

Authors' Contribution

Study concept development: MI, LH and ADL. Methods: MI, ADL, APK and TW. Formal analysis: MI and RM. Validation: ADL, MI and APK. Data visualization: ADL, TW and RM. Writing (first draft): MI and LH. The entirety of the authors made contributions to the composition, review and editing of the manuscript.

Funding

For this study, the authors did not receive any funding.

Acknowledgments

The authors wish to acknowledge the NIHRD for providing authorization to analyze the dataset reported in this work.

References

- Agustini, A. and Indrawati, F. (2018) 'Program Pemberian Obat Pencegahan Massal (POPM) Filariasis', *Higeia Journal of Public Health Research and Development*, 1(3), pp. 84–94. Available at: <http://journal.unnes.ac.id/sju/index.php/higeia>.
- Biritwum, N.K. *et al.* (2019) 'Progress towards lymphatic filariasis elimination in Ghana from 2000-2016: Analysis of microfilaria prevalence data from 430 communities', *PLoS Neglected*

Tropical Diseases, 13(8). Available at:

<https://doi.org/10.1371/journal.pntd.0007115>.

- Boyd, A. *et al.* (2010) 'A community-based study of factors associated with continuing transmission of lymphatic filariasis in Leogane, Haiti', *PLoS Neglected Tropical Diseases*, 4(3), pp. 1–10. Available at: <https://doi.org/10.1371/journal.pntd.0000640>.
- Burgert-Brucker, C.R. *et al.* (2020) 'Risk factors associated with failing pretransmission assessment surveys (Pre-tas) in lymphatic filariasis elimination programs: Results of a multi-country analysis', *PLoS Neglected Tropical Diseases*, 14(6), pp. 1–17. Available at: <https://doi.org/10.1371/journal.pntd.0008301>.
- Deshpande, A. *et al.* (2020) 'The global distribution of lymphatic filariasis, 2000–18: a geospatial analysis', *The Lancet Global Health*, 8(9), pp. e1186–e1194. Available at: [https://doi.org/10.1016/S2214-109X\(20\)30286-2](https://doi.org/10.1016/S2214-109X(20)30286-2).
- Dickson, B.F.R. *et al.* (2021) 'Risk factors for lymphatic filariasis and mass drug administration non-participation in Mandalay Region, Myanmar', *Parasites and Vectors*, 14(1), pp. 1–14. Available at: <https://doi.org/10.1186/s13071-021-04583-y>.
- Durrheim, D.N. *et al.* (2004) 'Editorial: Lymphatic filariasis endemicity – an indicator of poverty?', *Tropical Medicine & International Health*, 9(8), pp. 843–845. Available at: <https://doi.org/10.1111/J.1365-3156.2004.01287.X>.
- Gunawardena, G.S.A. *et al.* (2007) 'Impact of the 2004 mass drug administration for the control of lymphatic filariasis, in urban and rural areas of the Western province of Sri Lanka', *Annals of Tropical Medicine & Parasitology*, 101(4), pp. 335–341. Available at: <https://doi.org/10.1179/136485907X176364>.

- Gunawardena, S. *et al.* (2007) 'Factors influencing drug compliance in the mass drug administration programme against filariasis in the Western province of Sri Lanka', *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 101(5), pp. 445–453. Available at: <https://doi.org/10.1016/j.trstmh.2006.09.002>.
- Ikawati, B. *et al.* (2019) 'Supporting factors to get coverage of malaria mass blood survey (MBS) above 80%: Lesson learn from gripit village, Banjarmangu sub district, Banjarnegara district', *Indian Journal of Public Health Research and Development*, 10(3), pp. 649–653. Available at: <https://doi.org/10.5958/0976-5506.2019.00575.8>.
- Indonesia Ministry of Health (2020) *Indonesia Health Profile*. Jakarta: Indonesia Ministry of Health.
- Inobaya, M.T. *et al.* (2018) 'Mass drug administration and the sustainable control of schistosomiasis: Community health workers are vital for global elimination efforts', *International Journal of Infectious Diseases*, 66, pp. 14–21. Available at: <https://doi.org/10.1016/j.ijid.2017.10.023>.
- Ipa, M. *et al.* (2016) 'Analysis of mass drug coverage for prevention of filariasis in Bandung district with a system dynamic model approach.', *Balaba*, 12(1), pp. 31–38. Available at: <http://ejournal2.litbang.kemkes.go.id/index.php/blb/article/view/721>.
- Kasturiratne, K.T. *et al.* (2001) 'Compliance with the mass chemotherapy program for lymphatic filariasis', *The Ceylon Medical Journal*, 46(4), pp. 126–129. Available at: <https://doi.org/10.4038/cmj.v46i4.6431>.
- Kerjapy, S.L., Titaley, C.R. and Sanaky, M. (2019) 'Faktor-faktor Penerimaan Obat Pada Program Pemberian Obat Pencegahan Massal (POPM)', *Pattimura Medical Review*, 1(1). Available at: <https://ojs3.unpatti.ac.id/index.php/ameri/article/view/1279>.
- Kouassi, B.L. *et al.* (2018) 'Perceptions, knowledge, attitudes and practices for the prevention and control of lymphatic filariasis in Conakry, Republic of Guinea', *Acta Tropica*, 179, pp. 109–116. Available at: <https://doi.org/10.1016/j.actatropica.2017.12.002>.
- Koyadun, S. and Bhumiratana, A. (2005) 'Surveillance of imported bancroftian filariasis after two-year multiple-dose diethylcarbamazine treatment', *The Southeast Asian Journal of Tropical Medicine and Public Health*, 36(4), pp. 822–831. Available at: <https://www.thaiscience.info/journals/Article/TMPH/10594791.pdf>.
- Krentel, A. *et al.* (2016) 'Improving Coverage and Compliance in Mass Drug Administration for the Elimination of LF in Two "Endgame" Districts in Indonesia Using Micronarrative Surveys', *PLoS Neglected Tropical Diseases*, 10(11), pp. 1–22. Available at: <https://doi.org/10.1371/journal.pntd.0005027>.
- Krentel, A., Fischer, P.U. and Weil, G.J. (2013) 'A Review of Factors That Influence Individual Compliance with Mass Drug Administration for Elimination of Lymphatic Filariasis', *PLoS Neglected Tropical Diseases*, 7(11). Available at: <https://doi.org/10.1371/journal.pntd.0002447>.
- Kulkarni, P. *et al.* (2020) 'Mass drug administration programme against lymphatic filariasis-an evaluation of coverage and compliance in a northern Karnataka district, India', *More...*, 8(1), pp. 87–90. Available at: <https://doi.org/10.1016/j.cegh.2019.04.013>.
- Laksono, A.D., Rukmini, R. and Wulandari, R.D. (2020) 'Regional disparities in antenatal care utilization in Indonesia', *PLoS ONE*, 15(2), pp. e0224006–e0224006. Available at: <https://doi.org/10.1371/journal.pone.0224006>.

- Lourens, G.B. and Ferrell, D.K. (2019) 'Lymphatic Filariasis', *Nursing Clinics of North America*, 54(2), pp. 181–192. Available at: <https://doi.org/10.1016/j.cnur.2019.02.007>.
- Manyeh, A.K. *et al.* (2020) 'Exploring factors affecting quality implementation of lymphatic filariasis mass drug administration in bole and central gonja districts in northern ghana', *PLoS Neglected Tropical Diseases*, 14(8), pp. 12–23. Available at: <https://doi.org/10.1371/journal.pntd.007009>.
- Manyeh, A.K. *et al.* (2021) 'Evaluating context-specific evidence-based quality improvement intervention on lymphatic filariasis mass drug administration in Northern Ghana using the RE-AIM framework', *Tropical Medicine and Health*, 49(1), pp. 16–16. Available at: <https://doi.org/10.1186/s41182-021-00305-3>.
- Maryen, Y., Kusnanto, H. and Indriani, C. (2018) 'Risk Factors of Lymphatic Filariasis in Manokwari, West Papua', *Tropical Medicine Journal*, 4(1), pp. 60–64. Available at: <https://journal.ugm.ac.id/tropmed/article/view/37186>.
- Mathieu, E. *et al.* (2004) 'Factors associated with participation in a campaign of mass treatment against lymphatic filariasis, in Leogane, Haiti', *Annals of Tropical Medicine & Parasitology*, 98(7), pp. 703–714. Available at: <https://doi.org/10.1179/000349804X3135>.
- Meireles, B.M. *et al.* (2020) 'Factors associated with malaria in indigenous populations: A retrospective study from 2007 to 2016', *PLOS ONE*. Edited by J. Moreira, 15(10), p. e0240741. Available at: <https://doi.org/10.1371/journal.pone.0240741>.
- Nandha, B. *et al.* (2007) 'Delivery strategy of mass annual single dose DEC administration to eliminate lymphatic filariasis in the urban areas of Pondicherry, South India: 5 years of experience', *Filaria Journal*, 6, pp. 1–6. Available at: <https://doi.org/10.1186/1475-2883-6-7>.
- NIHRD (2019) *The 2018 Indonesia Basic Health Survey (Riskesdas): National Report*. Jakarta: National Institute of Health Research and Development of The Indonesia Ministry of Health.
- Ogbonnaya, L.U. and Okeibunor, J.C. (2004) 'Sociocultural Factors Affecting the Prevalence and Control of Lymphatic Filariasis in Lau Local Government Area, Taraba State', *International Quarterly of Community Health Education*, 23(4), pp. 341–371. Available at: <https://doi.org/10.2190/AY5A-QAY4-6H8D-VEL7>.
- Oktarina, R. (2010) *Faktor-Faktor Yang Berhubungan Dengan Praktek Minum Obat Pada Pengobatan Massal Filariasis Di Kelurahan Sukajadi Kabupaten Banyuwasin Tahun 2009*. Universitas Indonesia.
- Purwastyastuti (2010) 'Pemberian Obat Massal Pencegahan (POMP) Filariasis', *Buletin Jendela Epidemiologi*, 1(1), pp. 15–20.
- Santhi, F. (2011) *Kepatuhan Minum Obat Filariasis Pada Pengobatan Massal Berdasarkan Teori Health Belief Model Di Kelurahan Limo Depok Tahun 2011*. Universitas Indonesia.
- Sari, P.R., Ginandjar, P. and Saraswati, L.D. (2020) 'Gambaran Kepatuhan Minum Obat Pencegahan Massal Filariasis (Studi Di Wilayah Kerja Puskesmas Jetak Kabupaten Semarang', *Jurnal Kesehatan Masyarakat (e-Journal)*, 8(4), pp. 463–468. Available at: <https://ejournal3.undip.ac.id/index.php/jkm/article/view/26982>.
- Sartirano, D. *et al.* (2023) 'Strengths and limitations of relative wealth indices derived from big data in Indonesia', *Front Big Data.*, 6: 1054156. Available at: <https://doi.org/10.3389/fdata.2023.1054156>.
- Silumbwe, A. *et al.* (2017) 'A systematic review of factors that shape implementation of mass drug

- administration for lymphatic filariasis in sub-Saharan Africa', *BMC Public Health*, 17(1). Available at: <https://doi.org/10.1186/s12889-017-4414-5>.
- Sindhu, K.N. *et al.* (2023) 'Perceptions Associated with Noncompliance to Community-Wide Mass Drug Administration for Soil-Transmitted Helminths', *American Journal of Tropical Medicine and Hygiene*, 109(4), pp. 830–834. Available at: <https://doi.org/10.4269/ajtmh.23-0176>.
- Suharmati, S., Laksono, A.D. and Astuti, W.D. (2013) 'Review Kebijakan tentang Pelayanan Kesehatan Puskesmas di Daerah Ter pencil Perbatasan', *Bull Heal Syst Res.*, 16: 109–11. Available at: <https://www.neliti.com/publications/20839/up-review-kebijakan-tentang-pelayanan-kesehatan-puskesmas-di-daerah-terpencil-pe>.
- Sungpradit, S. and Sanprasert, V. (2020) 'Lymphatic filariasis', in G. Misra and V.K. Srivastava (eds) *Molecular Advancements in Tropical Diseases Drug Discovery*. London: Elsevier Inc., pp. 65–94. Available at: <https://doi.org/10.1201/9781420004946.ch8>.
- Taylor, M. *et al.* (2022) 'Community views on mass drug administration for filariasis: a qualitative evidence synthesis', *Cochrane Database of Systematic Reviews*, 2022(2), pp. CD013638–CD013638. Available at: <https://doi.org/10.1002/14651858.CD013638.pub2>.
- Titaley, C.R. *et al.* (2018) 'Assessing knowledge about lymphatic filariasis and the implementation of mass drug administration amongst drug deliverers in three districts/cities of Indonesia', *Parasites and Vectors*, 11(1). Available at: <https://doi.org/10.1186/s13071-018-2881-x>.
- Widawati, M. *et al.* (2020) 'Sociodemographic, Knowledge, and Attitude Determinants of Lymphatic Filariasis Medication Adherence in Subang, Indonesia', 24(94), pp. 1–6. Available at: <https://doi.org/10.2991/ahsr.k.200311.001>.
- Widiastuti, D. *et al.* (2021) 'Adverse reactions following mass drug administration with diethylcarbamazine and albendazole for lymphatic filariasis elimination in West Sumatera, Indonesia', *Southeast Asian Journal of Tropical Medicine and Public Health*, 52(1), pp. 1–10. Available at: <https://journal.seameotropmednetwork.org/index.php/jtropmed/article/view/381>.
- Widjanarko, B., Saraswati, L.D. and Ginandjar, P. (2018) 'Perceived threat and benefit toward community compliance of filariasis' mass drug administration in Pekalongan district, Indonesia', *Risk Management and Healthcare Policy*, 11, pp. 189–197. Available at: <https://doi.org/10.2147/RMHP.S172860>.
- Won, K.Y. *et al.* (2009) 'Assessing the Impact of a Missed Mass Drug Administration in Haiti', *PLoS Negl Trop Dis*, 3(8): e443. Available at: <https://doi.org/10.1371/journal.pntd.0000443>.
- World Bank (2020) 'Total Population (2018). Public Data. [citation : 21 April 2020].'

INPATIENT CARE UTILIZATION AFTER JKN: A STUDY CASE IN EAST NUSA TENGGARA

Pemanfaatan Layanan Rawat Inap Setelah JKN: Studi Kasus di Nusa Tenggara Timur

***Aisyah Putri Rahvy¹, Ascobat Gani¹**

¹Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

Correspondence*:

Address: Faculty of Public Health, Universitas Indonesia, Depok, Indonesia | Email: aisyah.putri14@ui.ac.id

Abstract

Background: Healthcare utilization is a predictor of health status among the population. The issues of its accessibility and equity have been raised, particularly after the government launched JKN (Jaminan Kesehatan Nasional).

Aim: This study aims to analyze the determinants of inpatient care utilization in East Nusa Tenggara.

Method: We used SUSENAS 2019 dataset and carried out descriptive and econometrics analysis to covariates including age, gender, educational level, type of health insurance, employment status, and type of residence.

Result: We found that all covariates analyzed were statistically significant in affecting the probability of inpatient care utilization ($p\text{-value} < 0.005$). Different patterns of sociodemographic factors among people in East Nusa Tenggara will affect their rate of inpatient care utilization.

Conclusion: Inpatient care utilization rate is crucial to measure health accessibility and prevent any aggravated morbidity due to delayed treatment. Strategies to increase inpatient care utilization are needed to provide accessible treatment for all and increasing population health status.

Keywords: East Nusa Tenggara, health utilization, hospitalization, inpatient care

Abstrak

Latar Belakang: Pemanfaatan layanan kesehatan merupakan salah satu determinan dalam memprediksi status kesehatan pada populasi. Isu terkait aksesibilitas dan ekuitas kesehatan menjadi topik hangat terlebih setelah pemerintah mengimplementasikan JKN (Jaminan Kesehatan Nasional).

Tujuan: Studi ini bertujuan untuk menganalisis determinan utilisasi layanan rawat inap di provinsi Nusa Tenggara Timur.

Metode: Peneliti menggunakan data SUSENAS 2019 dan melakukan analisis deskriptif serta ekonometri pada variabel usia, jenis kelamin, tingkat pendidikan, tipe asuransi kesehatan, status pekerjaan, dan tempat tinggal.

Hasil: Peneliti menemukan bahwa seluruh variabel secara signifikan berdampak pada probabilitas pemanfaatan layanan rawat inap di Nusa Tenggara Timur (nilai $p < 0.005$). Perbedaan pola faktor sosiodemografi akan mempengaruhi tingkat pemanfaatan layanan rawat inap.

Kesimpulan: Tingkat utilisasi layanan rawat inap adalah hal yang krusial untuk mengukur aksesibilitas kesehatan dan mencegah morbiditas yang diperparah karena penanganan yang terlambat. Strategi untuk meningkatkan tingkat utilisasi dibutuhkan untuk menyediakan perawatan yang dapat diakses oleh masyarakat dan meningkatkan derajat kesehatan masyarakat.

Kata kunci: Nusa Tenggara Timur, pemanfaatan layanan kesehatan, rawat inap

Introduction

Since health is one part of individual human rights, its accessibility and utilization become a crucial issue. Healthcare utilization is determined by whether people need and want care, as well as access of care (National Academies of Sciences, 2018). Health accessibility includes several dimensions, such as approachability, acceptability, availability

and accommodation, affordability, and appropriateness (Pullyblank *et al.*, 2023). If health accessibility is usually discussed from a provider perspective, its utilization on the other hand is analyzed from a patient or consumer aspect. The issues about health utilization are raised since accessibility of services does not ensure the rate of its utilization being optimum.

Andersen's model describes several factors which influence healthcare



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.120-128.

Received: 2023-02-22, Revised: 2024-04-18, Accepted: 2024-06-17, Published: 2024-06-26.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Aisyah Putri Rahvy, Ascobat Gani

This is an Open Access (OA) article under the CC BY-SA 4.0 International License <https://creativecommons.org/licenses/by-sa/4.0/>

How to cite:

Rahvy, A. P. And Gani, A. (2024) "Inpatient Care Utilization After JKN: A Study Case in East Nusa Tenggara", *Indonesian Journal of Health Administration*, 12(1), pp. 120-128. doi: 10.20473/jaki.v12i1.2024.120-128.

utilization, such as predisposing factors, enabling factors, and illness level or need factors (Alkhawaldeh *et al.*, 2023). Predisposing factors include traits which are pre-exist in individuals such as age, sex, beliefs or faiths, and other demographic factors. Enabling factors such as income, health insurance coverage, and health accessibility make it possible for individuals to seek and utilize health services. Meanwhile, illness levels or need factors are often reflected in perceived illness felt by patients and evaluated illness examined by health professionals.

Inpatient care is defined by OECD as formally admitted to hospitals or other health facilities to get treatment and stays for a minimum one night (*OECD Glossary of Statistical Terms - In-patient care*). It is often associated with the risk of out-of-pocket payment and catastrophic health expenditure, as a study in Indonesia found that inpatient care tended to contribute the most to high OOP spending among households (Manafe *et al.*, 2021; Maulana *et al.*, 2022).

Jaminan Kesehatan Nasional or JKN is a social health insurance established by the Indonesian government in 2014. Aiming to provide universal health coverage for all citizens, JKN has become the largest national health insurance in the world with more than 220 million citizens and 27 thousand healthcares included in the scheme. JKN plays an important role in ensuring access to health services with certain types of membership based on income and employment status. Formal workers are registered to JKN by the employers, while those categorized as poor and near-poor are included in Subsidized Contribution Recipients or *Penerima Bantuan Iuran* (PBI) (Maulana *et al.*, 2022). JKN has covered treatment for diseases and drugs listed in Indonesia Case Based Groups (INA CBG's) and Formularium Nasional (Fornas)

East Nusa Tenggara (NTT) consists of many islands such as Flores, Sumba, and Timor with 22 regions. It is one of the provinces in Indonesia with low healthcare utilization rate for both inpatient and outpatient care, as well as primary and

secondary healthcare (Ramadani *et al.*, 2021). Although nearly 60% of people in NTT had JKN, statistics report found that more than 70% of people did not go to healthcare and received treatment in 2021 (Manafe *et al.*, 2021). Most of them preferred to cure themselves, indicating issues in utilizing professional healthcare despite the availability of care and JKN. Therefore, this study aims to analyze factors related to healthcare utilization focusing on inpatient care in East Nusa Tenggara after JKN implementation.

Method

This study uses SUSENAS 2019 dataset to conduct econometric analysis using logit regression. This study included 51,754 individual observations in East Nusa Tenggara. We conducted logistic regression to find the best model which defines the inpatient care utilization. Outcome variable in this study is the likelihood of inpatient care utilization, which varies between 0 and 1. Utilization of inpatient care is influenced by many factors: demographic factors, socioeconomic factors, health service-related factors, factors related to individual health status, and health insurance-related factors (Azimzadeh *et al.*, 2019).

We carried out analysis on other covariates such as type of residence (urban or rural), age group, gender, employment (formal or informal), type of health insurance owned, and education. We divided the health insurance types into private insurance, regional insurance (*Jamkesda*), JKN non-PBI (*Peserta Bantuan Iuran*), and JKN PBI. JKN PBI is a type of JKN membership which premium paid by the government. Age variable in this study was divided into five groups: group 1 (0-5 years), group 2 (6-11 years), group 3 (12-25 years), group 4 (26-65 years), and group 5 (above 65 years). We also grouped education variable based on its level, which were elementary school, junior high school, senior high school, and diploma/bachelor degree or higher. The empirical model for this study is as follows.

$$\text{Inpatient_i} = \beta_0 + \beta_1\text{insurance} + \beta_2\text{age} + \beta_3\text{gender} + \beta_4\text{employment} + \beta_5\text{education} + \beta_6\text{residence} + \text{uit}$$

The model explains that inpatient utilization is defined by independent variables including residence, age, gender, employment, education, health insurance ownership, and any other factors that are not included in this study. The confidence interval used in this study was 95%.

Result and Discussion

Population Characteristics

Analyzing the proportion of each category in independent variables, we found that most respondents lived in urban areas with the proportion of 83% compared to rural areas. Furthermore, the proportion of gender and employment type were relatively similar with almost 50% proportion for male and female as well as formal and informal work. The highest percentage of the age group was detected at 25-65 years old (43%), indicating the high proportion of the productive age group. Most respondents finished elementary school as their highest educational level (44%). Respondents were highest categorized in JKN PBI for their health insurance ownership (47.83%). But surprisingly, the proportion of people with no insurance was the second highest, reaching 32%. The detailed result of descriptive statistics test is shown in Table 1.

Econometric analysis

We conducted logit regression analysis to see how the probability of inpatient care utilization is affected by several factors. The result of logit test is shown in Table 2. Using rural areas as reference, we noted that those who lived in urban areas were more likely to access inpatient care 1.152 times. Male respondents were also less likely to access care with odds ratio 0.649 compared to females. When using productive age (25-65 years) as the reference group, the younger age of respondents had lower probability to get inpatient care except for those who were 0-5 years, but the odds ratio was not

statistically significant. People who were 65 years or older tended to access inpatient care 1.354 times compared to those in productive age.

Moreover, we also found that informal workers had less probability (0.538 times) to access inpatient care rather than formal workers. When we examined the influence of education level on inpatient care utilization, we noted that the higher the last educational level was, the higher the probability of getting inpatient care. People who graduated from senior high school or higher education were 1.2 times more likely to access inpatient care, although the p-value for junior high school level was not significant. Health insurance also affected the rate of inpatient care utilization. Those who were insured had higher probability to get treatment in inpatient care. The highest odds ratio was found in JKN non-PBI, but in general all types of health insurance increased the chance of utilizing inpatient care although the odds ratio of private insurance was not statistically significant.

Discussion

This study endeavors to achieve deeper understanding related to inpatient care utilization factors in Nusa Tenggara Timur using econometric analysis on Susenas 2019. We discovered that type of residence, gender, age group, employment status, education level, and type of health insurance influenced inpatient care utilization rate.

Most people in Nusa Tenggara Timur (NTT) received inpatient care in public hospitals (39.2%) and primary healthcare (36.76%) (Manafe et al., 2021). This study found that residential status of individuals affected their utilization of inpatient care. Since NTT is mainly divided into three big islands, the accessibility of inpatient care may be varied between one region and another. This is supported by Wulandari et al. (2022) in that disparities of inpatient care in urban-rural settings exist. People who live in urban areas might have better utilization due to better quality of care (Johar et al., 2019).

Table 1. Population characteristics

	Variables	Obs.	%
Residence	Urban	43,137	83%
	Rural	8,617	17%
Gender	Male	26,082	50%
	Female	25,672	50%
Age	0-5 years	6,367	12%
	6-11 years	7,386	14%
	12-25 years	12,972	25%
	26-65 years	22,045	43%
	>65 years	2,984	6%
Employment	Formal	29,488	57%
	Informal	22,266	43%
Education	Elementary school	22,975	44%
	Junior high school	7,717	15%
	Senior high school	8,280	16%
	Diploma until Postgraduate	3,675	7%
Health insurance	No insurance	16,572	32.02%
	Private insurance	92	0.18%
	Regional insurance	4,227	8.17%
	JKN non-PBI	5,199	10.05%
	JKN PBI	24,756	47.83%

Table 2. Logit regression result

	Variables	Coefficient	Odds Ratio
Residence	Urban	0.141*	1.152*
	Rural (reference)	-	-
Gender	Male	-0.433*	0.649*
	Female (reference)	-	-
Age	0-5 years	0.027	1.027
	6-11 years	-1.237*	0.290*
	12-25 years	-0.805*	0.447*
	26-65 years (reference)	-	-
	>65 years	0.303*	1.354*
Employment	Formal (reference)	-	-
	Informal	-0.619	0.538*
Education	Elementary school (reference)	-	-
	Junior high school	-.009	0.991
	Senior high school	0.241*	1.272*
	Diploma until Postgraduate	0.303*	1.355*
Health insurance	No insurance (reference)	-	-
	Private insurance	0.472	1.603
	Regional insurance	0.604*	1.829*
	JKN non-PBI	0.952*	2.592*
	JKN PBI	0.741*	2.099*

Cons: -2.972, Pseudo R²: 0.047

Confidence Interval: 95%, *: significant p-value <0.005

The gap between human resources availability in NTT is also reflected by the shortness and unequal distribution of health professionals. The ratio of physicians in NTT was 2.4 per 10,000 citizens, far below the 1:1000 ratio recommended by the WHO. Kupang, the capital city of NTT, has 9:10,000 doctor ratio while Timor Tengah Selatan with similar number of residents has only 1.6 doctors per 10,000 population. We highlighted that 36.76% inpatient care was utilized in primary healthcare, but at the same time 10 regions or almost half of the regions in NTT did not have any doctor in some primary care facilities ("Ministry of Health," 2021). This indicates the huge gap of health professional availability which may lead to the inequalities of inpatient care utilization within NTT regions. Moreover, this might be the reason why people in rural areas have to spend more time and cost to access health services (Laksono *et al.*, 2019).

Sociodemographic factors such as educational level and income in urban areas might also be one step ahead compared to rural, and again influencing the gap of inpatient care utilization rate. As it is critical to ensure the quality and accessibility of care regardless geographical barriers, efforts made to tackle urban-rural disparities are no exception.

Age is one factor that influences the utilization of inpatient care (Anwar and Pujiyanto, 2022). Older adults are found to have higher chances of hospitalization. This might be due to the increased risk of morbidity among elderly (Hassan *et al.*, 2022). This is also supported by a statistical report by the regional government of NTT that more than 48% of elderly reported any health issues which might be due to biological aging (Bland, 2018; Manafe *et al.*, 2021). The high proportion of elderly who suffered from any kind of illness should get attention from government, since their illness may lead to a more chronic condition which requires even more cost. Strengthening the health program for the elderly as a prevention strategy from being sick is important to maintain or even increase their quality of life.

Nevertheless, the same report also stated that children below five years old were the second highest group with any health issues report. Although our study did not result in a significant value of children's odds ratio, it is important to acknowledge the risk of several health issues which are commonly found in children such as respiratory system and digestive system diseases which may influence their hospitalization rate (Feng *et al.*, 2019).

Furthermore, this study also discovered that males had a lower possibility to access inpatient care, which might be due to the lower proportion of males with health issues reported (Manafe *et al.*, 2021). Females are also more likely to utilize different types of health services, such as maternal care during childbearing age. The regional health report of NTT showed that most women aged 15-49 years old had labor in healthcare facilities (89.27%), indicating the better access of maternal care. However, results from a systematic review found that women's autonomy to access healthcare was sometimes influenced by men as they were considered as decision-makers in the family (Idris *et al.*, 2023). Women whose husbands had higher education level were more likely to have better autonomy to access healthcare, while another study in Nigeria found that women whose husbands worked tend to less likely decide their own healthcare (Osamor and Grady, 2018). This indicates the existence of socio-cultural and gender-related variables which may affect the decision of getting inpatient care.

Employment type is found significant to influence the probability of inpatient care in this study. Informal workers are less likely to utilize inpatient care compared to formal ones (Naicker *et al.*, 2021). This is presumably caused by the lack of social protection to access healthcare, as medical costs and opportunity lost due to being hospitalized prevent informal workers getting treatment (Lee and Di Ruggiero, 2022). After the JKN implementation, informal workers were aware of the importance of health insurance (Siswoyo *et al.*, 2019). However, the same study also identified the reasons why informal workers delayed their JKN ownership, which

included not fully understanding the mechanism of JKN and already had private health insurance. Another previous study by Muttaqien *et al.* (2021) also found that, based on 2016 survey, the average willingness and ability to pay informal workers was below the premium of JKN. The same study also highlighted the uncertain income and needs of informal workers, which made them stop paying for national health insurance or JKN. Ensuring the coverage of JKN to informal workers is crucial so that they can access health services and maintain their productivity.

Education is often discussed as a predisposing factor of accessing healthcare. The presence of educated family members is significantly associated with skilled delivery care utilization (Tesfaye *et al.*, 2019). Education plays an important role in providing knowledge, although it is not the only source people can attain to get knowledge related to health treatment. In our study, we found that the higher the educational level, the more likely they were to utilize inpatient care. People with higher education might have better knowledge and attitude of their health status, making them more aware of perceived illness they feel thus leading them to access healthcare.

Interestingly, prior study in Indonesia also found that educational inequalities were found larger in inpatient care utilization compared to primary care (Mulyanto *et al.*, 2019). Our study supported the argument that different educational level may play a huge role in individual's choice of receiving inpatient care. As most respondents in NTT were graduated from elementary school as their last educational level, the government should maximize other potential sources besides formal schools as a way to carry out health education and health promotion.

The type of insurance ownership was found significant in this study. People who are not insured have less protection from financial risk due to medical and non-medical costs of inpatient care. Having either private, regional, or national health insurance like JKN will significantly help them to utilize proper treatment whenever they need inpatient care. A study

conducted in America also proved that health insurance would increase outpatient, inpatient, and emergency care utilization (Farrell and Gottlieb, 2020). Patients are usually scared of not being able to afford the cost after getting treatment in health services, which forces them to delay treatment and worsen their condition. But the problem of "cost" does not only exist for medical cost only. A study by Erlangga *et al.* (2019) found that JKN increased the probability of getting inpatient care for both the PBI and Non-PBI group. However, the probability gap between these two groups was huge, as the contributory group would be more likely to use inpatient care, 8.2%, while the subsidized group only had 1.8% more probability when both groups were compared to those without JKN ownership. The assumption behind these phenomena is that the opportunity cost they will lose if they are hospitalized and the risk of impoverishment in lower socioeconomic groups are crucial predictors of inpatient care utilization.

Nevertheless, the availability and ownership of JKN in Indonesia are also facing barriers in achieving Universal Health Coverage (UHC). Although JKN has been proven to increase the healthcare utilization rate nationally, the Eastern part of Indonesia was still lacking of service availability which resulted in lower rate of service use, insurance claims, and out-of-pocket spending (Pratiwi *et al.*, 2021). Therefore, increasing the national health insurance coverage rate and securing its equity by managing healthcare based on supply and demand will become a real changer for those from low and middle socioeconomic status.

This study has limitations. We used SUSENAS 2019 which reflected the socioeconomic status of households and individuals before the pandemic, and, consequently, did not capture any change to health utilization rate after the pandemic era. The inpatient care utilization was also not divided by patient provider types. Moreover, we analyzed the probability of inpatient care utilization using a single choice of every health insurance type and excluded the possible mix of more than one insurance type. As the proportion of mixed

types of health insurance ownership was very low, we believed that it would not affect the overall result significantly.

Conclusion

Inpatient care utilization rate is crucial to measure health accessibility and prevent any aggravated morbidity due to delayed treatment. Age, gender, employment status, type of residence, educational level, and type of health insurance owned are significantly impacting the probability of using inpatient care in East Nusa Tenggara. Since getting proper treatment for every citizen is a part of human rights, it is important to intervene in the issues related to the barriers of utilizing inpatient care in East Nusa Tenggara. Government needs strategies to ensure access as well as equity of inpatient care across all sociodemographic determinants of the population. Overcoming geographical barriers in East Nusa Tenggara might be difficult, but the availability of inpatient care in all regions should be a top priority. With almost 60% of JKN coverage in East Nusa Tenggara in 2019, the government may need to prioritize the increase of national health insurance coverage, in line with healthcare accessibility, so that the community will be able to access inpatient care without feeling afraid of being poor due to hospitalization.

Abbreviations

JKN: *Jaminan Kesehatan Nasional*; (National Health Insurance Program) PBI: *Penerima Bantuan Iuran*; SUSENAS: *Survei Ekonomi Sosial Nasional*; NTT: *Nusa Tenggara Timur*; INA CBG's: *Indonesia Case Based Groups*; Fornas: *Formularium Nasional*; Jamkesda: *Jaminan Kesehatan Daerah*; Universal Health Coverage (UHC)

Declarations

Ethics Approval and Consent Participant

This research does not require applicable ethics approval and participant consent.

Conflict of Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the study.

Availability of Data and Materials

Data and material research can be provided at open data repository like OSF or by upon request to corresponding author.

Source of Research Funding

There is no source of research funding.

Authors' Contribution

APR conceptualized the study; APR and AG created the methodology; APR wrote, reviewed, and edited the manuscript; AG reviewed the overall manuscript.

References

- Alkhalwaldeh, A. *et al.* (2023) 'Application and Use of Andersen's Behavioral Model as Theoretical Framework: A Systematic Literature Review from 2012–2021', *Iranian Journal of Public Health* [Preprint]. Available at: <https://doi.org/10.18502/ijph.v52i7.13236>.
- Anwar, M.N. and Pujiyanto, P. (2022) 'Analysis of Socioeconomic Factors on Healthcare Facilities Utilization for Inpatient Care in Indonesia', *PREPOTIF: Jurnal Kesehatan Masyarakat*, 6(1), pp. 696–709. Available at: <https://doi.org/10.31004/prepotif.v6i1.3265>.
- Azimzadeh, S. *et al.* (2019) 'Effective Factors of Utilization of Inpatient, Outpatient, Diagnostic, and Pharmaceutical Health Services: A Systematic Review', *Galen Medical Journal*, 8, p. e1236. Available at: <https://doi.org/10.22086/gmj.v8i0.1236>.
- Bland, J.S. (2018) 'Age as a Modifiable Risk Factor for Chronic Disease', *Integrative Medicine: A Clinician's Journal*, 17(4), pp. 16–19. Available at:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6469457/>.
- Erlangga, D. et al. (2019) 'The impact of public health insurance on health care utilisation, financial protection and health status in low- and middle-income countries: A systematic review', *PLOS ONE*, 14(8), p. e0219731. Available at: <https://doi.org/10.1371/journal.pone.0219731>.
- Farrell, C.M. and Gottlieb, A. (2020) 'The Effect of Health Insurance on Health Care Utilization in the Justice-Involved Population: United States, 2014–2016', *American Journal of Public Health*, 110(Suppl 1), pp. S78–S84. Available at: <https://doi.org/10.2105/AJPH.2019.305399>.
- Feng, G. et al. (2019) 'Disease spectrum analysis of hospitalized children in China: A study of 18 tertiary children's hospitals', *Pediatric Investigation*, 3(3), pp. 159–164. Available at: <https://doi.org/10.1002/ped4.12144>.
- Idris, I.B. et al. (2023) 'Women's autonomy in healthcare decision making: a systematic review', *BMC Women's Health*, 23, p. 643. Available at: <https://doi.org/10.1186/s12905-023-02792-4>.
- Johar, M. et al. (2019) "Tahukah kamu?": Analisis Set Data Survei Sosial Ekonomi Nasional (Susenas)', *Jurnal Ekonomi dan Pembangunan Indonesia*, 19(2), pp. 191–208. Available at: <https://doi.org/10.21002/jepi.v19i2.843>.
- Laksono, A.D., Wulandari, R.D. and Soedirham, O. (2019) 'Urban and Rural Disparities in Hospital Utilization among Indonesian Adults', *Iranian Journal of Public Health*, 48(2), pp. 247–255. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6556184/>.
- Lee, J. and Di Ruggiero, E. (2022) 'How does informal employment affect health and health equity? Emerging gaps in research from a scoping review and modified e-Delphi survey', *International Journal for Equity in Health*, 21(1), p. 87. Available at: <https://doi.org/10.1186/s12939-022-01684-7>.
- Manafe, A., Sinurat, D. and Sukin, M. (2021) *Statistik Kesehatan Provinsi Nusa Tenggara Timur 2021*. 53000.2210.
- Maulana, N. et al. (2022) 'How Jaminan Kesehatan Nasional (JKN) coverage influences out-of-pocket (OOP) payments by vulnerable populations in Indonesia', *PLOS Global Public Health*. Edited by H.H. Farooqui and H.H. Farooqui, 2(7), p. e0000203. Available at: <https://doi.org/10.1371/journal.pgph.0000203>.
- Ministry of Health (2021) *Indikator Kinerja Program PPSPDMK 1 Periode Tahun 2021 Berdasarkan Aplikasi SISDMK Kemenkes, Tableau Software*. Available at: https://public.tableau.com/views/IndikatorKinerjaProgramPPSPDMK1-2021/Dashboard1?:embed=y&:showVizHome=no&:host_url=https%3A%2F%2Fpublic.tableau.com%2F&:embed_code_version=3&:tabs=no&:toolbar=yes&:animate_transition=yes&:display_static_image=yes&:display_spinner=no&:display_overlay=yes&:display_count=yes&:language=en-US&publish=yes&:loadOrderID=0 (Accessed: 2 March 2023).
- Hassan, N.Z.A.M. et al. (2022) 'The inequalities and determinants of Households' Distress Financing on Out-off-Pocket Health expenditure in Malaysia', *BMC Public Health*, 22(1), p. 449. Available at: <https://doi.org/10.1186/s12889-022-12834-5>.
- Mulyanto, J., Kringos, D.S. and Kunst, A.E. (2019) 'Socioeconomic inequalities in healthcare utilisation in Indonesia: a comprehensive survey-based overview', *BMJ Open*, 9(7), p. e026164. Available at: <https://doi.org/10.1136/bmjopen-2018-026164>.

- Muttaqien, M. *et al.* (2021) 'Why did informal sector workers stop paying for health insurance in Indonesia? Exploring enrollees' ability and willingness to pay', *PLOS ONE*, 16(6), p. e0252708. Available at: <https://doi.org/10.1371/journal.pone.0252708>.
- Naicker, N. *et al.* (2021) 'Health Services Use and Health Outcomes among Informal Economy Workers Compared with Formal Economy Workers: A Systematic Review and Meta-Analysis', *International Journal of Environmental Research and Public Health*, 18(6), p. 3189. Available at: <https://doi.org/10.3390/ijerph18063189>.
- National Academies of Sciences, E. *et al.* (2018) 'Factors That Affect Health-Care Utilization', in *Health-Care Utilization as a Proxy in Disability Determination*. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK500097/> (Accessed: 18 April 2024).
- OECD (2008) *OECD Glossary of Statistical Terms*. OECD. Available at: <https://doi.org/10.1787/9789264055087-en>.
- Osamor, P. and Grady, C. (2018) 'Factors Associated with Women's Health Care Decision-Making Autonomy: Empirical Evidence from Nigeria', *Journal of Biosocial Science*, 50(1), pp. 70–85. Available at: <https://doi.org/10.1017/S0021932017000037>.
- Pratiwi, A.B. *et al.* (2021) 'Is Indonesia achieving universal health coverage? Secondary analysis of national data on insurance coverage, health spending and service availability', *BMJ Open*, 11(10), p. e050565. Available at: <https://doi.org/10.1136/bmjopen-2021-050565>.
- Pullyblank, K. *et al.* (2023) 'Exploring Multiple Dimensions of Access to and Preferences for Telehealth Use', *Telemedicine Reports*, 4(1), pp. 348–358. Available at: <https://doi.org/10.1089/tmr.2023.0049>.
- Ramadani, R. *et al.* (2021) *Statistik JKN 2015-2019 Fakta dan Data Capaian Program Jaminan Kesehatan Nasional*. (1).
- Siswoyo, B.E., Prabandari, Y.S. and Hendartini, Y. (2019) 'Kesadaran Pekerja Sektor Informal terhadap Program Jaminan Kesehatan Nasional di Provinsi Daerah Istimewa Yogyakarta', *Jurnal Kebijakan Kesehatan Indonesia : JKKI*, 4(4), pp. 118–125. Available at: <https://jurnal.ugm.ac.id/jkki/article/view/36116>.
- Tesfaye, G. *et al.* (2019) 'Predisposing, enabling and need factors associated with skilled delivery care utilization among reproductive-aged women in Kersa district, eastern Ethiopia', *Reproductive Health*, 16(1), p. 167. Available at: <https://doi.org/10.1186/s12978-019-0829-z>.
- Wulandari, R.D. *et al.* (2022) 'Hospital utilization in Indonesia in 2018: do urban–rural disparities exist?', *BMC Health Services Research*, 22(1), p. 491. Available at: <https://doi.org/10.1186/s12913-022-07896-5>.

COST-ANALYSIS OF REDUCING MORTALITY RATE FOR LBW BABIES AT FATMAWATI HOSPITAL'S NICU

Analisis Biaya Perbaikan Pelayanan Pada BBLR di NICU RSUP Fatmawati

*Prasetya Rahman Salim¹, Nadia Dwi Insani¹, Estro Dariatno Sihalo²

¹Neonatal Unit, RSUP Fatmawati, Jakarta, Indonesia

²Department of Economics, Faculty of Economics and Business, Universitas Padjadjaran, Bandung, Indonesia

Correspondence*:

Address: Jl. RS. Fatmawati Raya No.4, RT.4/RW.9, Cilandak Barat, Jakarta, Indonesia | E-mail: pramsalim10@gmail.com

Abstract

Background: As a developing country that still struggles with infant mortality, Indonesia needs high-quality and efficient neonatal care. However, due to the complexity of neonatal care, the neonatal intensive care unit (NICU) still has a high cost, approximately USD 950 - 31,000, as the last line of care.

Aims: This study analyzes the cost incurred due to service improvement at Fatmawati General Hospital. The cost analysis may serve as useful evidence for other hospitals with NICUs that seek to improve their service.

Methods: We used cost analysis to examine pre-intervention costs in 2015 and post-intervention costs in 2021. Our data were gathered primarily in the NICU of Fatmawati General Hospital for three months in 2023.

Results: The results showed an increase in total cost of IDR 1,898,040,489 (55%). The largest cost increase was personnel and supplies costs, which accounted for 83.8% of the cost increase. However, this cost increase was also followed by a significant decrease in mortality rates, from 128 deaths per 1,000 births to 17 deaths per 1,000 births.

Conclusion: This study found a correlation between investment in service improvements and decreased infant mortality rates in the NICU of Fatmawati General Hospital. Although the 55% increase in total cost was associated with a significant decrease in infant mortality rates in the NICU of Fatmawati General Hospital, further studies are needed to determine the effectiveness of improvements in the NICU's services.

Keywords: cost, Indonesia, LBW, NICU

Abstrak

Latar Belakang: Sebagai lini akhir penanganan neonatus, Neonatal Intensive Care Unit (NICU) memiliki biaya rawat yang tinggi, sekitar 950 – 31,000 USD. Dengan kompleksitas yang dimiliki ranah neonatus, dibutuhkan tenaga medis dengan fasilitas serta kemampuan berkualitas tinggi. Sebagai salah satu negara berkembang dengan tingkat mortalitas yang masih tinggi, Indonesia membutuhkan perawatan neonatal yang berkualitas dan efisien.

Tujuan: Penelitian ini bertujuan untuk menganalisa biaya yang dibutuhkan untuk memperbaiki pelayanan di NICU RSUP Fatmawati.

Metode: Peneliti menggunakan cost analysis untuk melihat biaya pra-intervensi di 2015, dan biaya paska-intervensi di 2021. Data diambil secara primer di NICU RSUP Fatmawati selama tiga bulan di 2023.

Hasil: Hasil menunjukkan adanya peningkatan dalam biaya total sebesar IDR 1,898,040,489 (55%). Peningkatan terbesar disebabkan oleh biaya personnel dan supplies, mendominasi 83.8% dari peningkatan biaya. Namun, dalam periode yang sama, terlihat pula adanya penurunan angka mortalitas, yang menurun dari 128 kematian per 1000 kelahiran menjadi 17 kematian per 1000 kelahiran.

Kesimpulan: Terdapat korelasi antara investasi untuk perbaikan pelayanan yang dilakukan dan penurunan tingkat mortalitas di NICU RSUP Fatmawati. Peningkatan biaya 55% dari total biaya menunjukkan penurunan signifikan untuk tingkat mortalitas NICU RSUP Fatmawati. Penelitian lanjutan dibutuhkan untuk melihat efektivitas perbaikan pelayanan NICU RSUP Fatmawati.

Kata kunci: Biaya, Indonesia, BBLR, NICU



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.129-138

Received: 2023-12-03, Revised: 2024-05-20, Accepted: 2024-06-20, Published: 2024-06-27.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Prasetya Rahman Salim, Nadia Dwi Insani, Estro Dariatno Sihalo

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Salim, P. R., Insani, N. D. and Sihalo, E. D. (2024) "Cost-Analysis of Reducing Mortality Rate for LBW Babies at Fatmawati Hospital's NICU", *Indonesian Journal of Health Administration*, 12(1), pp. 129-138. doi: 10.20473/jaki.v12i1.2024.129-138.

Introduction

Infant health and well-being issues are being addressed globally. Goal 3.2 of the United Nations Sustainable Development Goals (SDGs) states that one of its goals is to reduce preventable deaths of newborns to as low as 12 per 1,000 live births by 2030 (UN, 2023). As of 2021, Indonesia's infant mortality rate remained at 19 per 1,000 live births, even after Indonesia regained its status as an upper middle-income country (Indonesian Ministry of Finance, 2023; UNICEF, 2023).

According to data for three consecutive years from the Indonesian Ministry of Health, LBW/ prematurity was the main cause of infant mortality, and the figure was around 27% annually (Table 1). Premature birth occurs when a baby is born before completing 37 weeks of gestation. The more premature a baby is, the greater the risk of mortality and morbidity. Premature babies may experience breathing difficulties, digestive problems, bleeding in the brain, and may have long-term effects such as stunted growth during childhood (CDC, 2022).

Table 1. Three Leading Causes of Death in Indonesian Neonates

Causes of Death	Incidence		
	2019	2020	2021
LBW	27.33%	27.76%	27.60%
Asphyxia	20.42%	21.63%	22.19%
Congenital	9.95%	8.97%	12.36%

Source: Ministry of Health (2022)

As the last line of neonatal care, where premature infants with complications are usually cared for, a neonatal intensive care unit (NICU) is one of the more expensive forms of care. Sharma and Murki (2021) made a summary of NICU costs from a literature study of various studies related to cost analysis in the NICU while Karambelkar *et al.* (2016) examined 126 neonates in India who were treated in the NICU for various diseases. It is estimated that approximately USD 90.7 is spent every day for care in the NICU. Narang *et al.* (2005) showed that the expenditure for each baby admitted to the NICU has several classifications. For extreme low

birth weight (ELBW) babies, it is around 3,800 USD, for babies between 1,000g and 1,250g, it is approximately USD 2,000, and for babies between 1,250g and 1500g, it is around USD 950 (Narang *et al.*, 2005). Meanwhile, Kirkby *et al.* (2007) found that the average cost for each preterm infant admitted to the NICU is USD 31,000.

Although it is difficult to make a balanced comparison for each costing study of the NICU, it can be concluded that managing a neonatal unit has significant costs. The complexity of neonatal unit management can be attributed to the high nurse/patient ratio and high expertise needed to solve neonatal problems (Sharma and Murki, 2021). With all the complexities and difference, and costly NICU treatments in multiple countries, it is important for Indonesia to have publications on NICU costs. To the best of our knowledge, no literature has discussed the empirical cost of NICU in Indonesia.

In addition to infants' early complications, their underdeveloped immune system makes them at greater risk of infection. Unfortunately, infection can sometimes occur during hospitalization, which is called healthcare associated infections (HAIs). The impact of HAIs can be morbidity, mortality, or financial burden to various stakeholders such as patients, their families, and the country's healthcare system (Sikora and Zahra, 2022). The US Center for Disease Control and Prevention states that, every year, nearly 1.7 million treated patients develop HAIs, and more than 98,000 of them die from HAIs. The prevalence of HAIs documented in the data shows that approximately 3.2% of all US patients and 6.5% of all patients in the European Union are affected by HAIs, and even higher rates worldwide (Allegranzi *et al.*, 2011; Magill *et al.*, 2018; Suetens *et al.*, 2018).

The occurrence rate of HAIs in the neonatal intensive care unit is around 30%, and 40% of neonatal deaths in developing countries are due to such infections (Pessoa-Silva *et al.*, 2004; Zaidi *et al.*, 2005). There are several reasons why HAIs are increasingly dangerous, with hospitals hosting more patients with weakened immune systems. In addition, with the

outpatient system, the risk for pathogen spread is higher. Sanitation protocols are lacking, and sterilization of equipment by medical staff is not strict. Widespread use of anti-microbial drugs also has a negative impact due to accumulation of anti-microbial resistance. Increased infections are associated with longer hospital length of stay, long-term disability, socioeconomic disruption, and increased mortality (Khan *et al.*, 2017). In addition, newborns admitted to the NICU are at risk for HAIs due to their physiologic instability, exposure to invasive medical equipment, and broad-spectrum antibiotics (NNIS, 2004; Singh, 2004; Sohn *et al.*, 2001). Infection rates in NICUs are also higher than those in well-baby nurseries, with infection rates in NICUs ranging from 6 to 40 per 100 admissions, while infection rates in well-baby nurseries range from 0.3 to 1.7 per 100 admissions (Scheckler and Peterson, 1986; Welliver and McLaughlin, 1984).

Neonatal care is a difficult and expensive domain to implement. If not managed properly, the effectiveness and efficiency of the NICU can be questioned and can place a significant financial burden on healthcare budgets. The high cost in NICUs also makes many hospitals management reluctant to invest in NICUs, especially in the treatment of LBW babies. Therefore, a cost analysis study is needed to provide evidence of the cost of improving NICU service and the extent to which infant mortality rates have changed. Furthermore, we aim to provide evidence for other hospitals with NICUs that also seek to improve their services.

Method

This study used a cost analysis method. The cost analysis referred to in this study is mainly a description of the direct cost with a health facility perspective, unlike other economic evaluation methods such as cost effectiveness analysis (CEA) that compares the cost to an outcome. This distinction is mentioned in Drummond *et al.* (2015).

Table 2. Measurement of costs and consequences in economic evaluation

Type of Study	Measurement of Cost	Measurement of Consequences
Cost Analysis	Monetary Units	None
Cost Effectiveness Analysis	Monetary Units	Natural units (e.g. life years gained, DALY)
Cost Utility Analysis	Monetary Units	Healthy years (quality adjusted life years)
Cost Benefit Analysis	Monetary Units	Monetary Units

Source: Drummond *et al.* (2015)

To record costs for the two periods, we used primary observation, medical records, and financial records to obtain the required data. The data were gathered in Fatmawati General Hospital from January to March 2023. We also conducted interviews with health personnel to clarify and complete our data. Data about infant mortality rates were obtained from the medical records of the NICU division. The unit of analysis was the NICU division of Fatmawati Hospital, with LBW patients. The population of this study was all patients admitted to the NICU in 2015 and 2021.

The period of 2015 and 2021 is chosen to represent the period of pre-intervention and post-intervention. This is due to the fact that the intervention started in 2016, and, in 2021, the period represents a NICU that already has an established improvement.

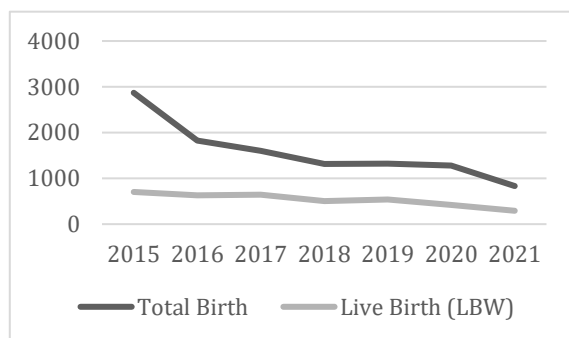
Results and Discussion

In 2015, changes came to Fatmawati General Hospital. The hospital was granted referral hospital status (*rumah sakit rujukan*), which means that it was required to treat patients referred from hospitals within the region. The NICU division of Fatmawati General Hospital was also affected by this policy. This policy also had significant consequences for the services provided.

Since 2015, there has been a continuous decline in births at Fatmawati General Hospital, from a total of 3,109 births in 2015 to 914 in 2021 (Figure 1).

There has been a 70.6% decrease in birth at Fatmawati General Hospital in just six years. However, this decrease in the birth rate does not mean a reduction in the burden on Fatmawati General Hospital, but rather an effort to focus on specializing in the treatment of critically ill patients.

The neonatal intensive care unit (NICU) of Fatmawati General Hospital, one of the healthcare divisions that has a high level of difficulty (Sharma and Murki, 2021), has begun to reduce the number of incoming patients and to treat more patient referrals from other hospitals since 2015, as seen in Figure 1. Patients are usually referred when the referring hospital determines that they are unable to treat the patient. Thus, although the number of patients admitted to the NICU at Fatmawati Hospital has decreased, its difficulty has increased.



Source: Primary Data, 2023

Figure 1. Total and LBW Birth in Fatmawati General Hospital, 2015 - 2021

One of the patient categories that make up the new NICU patient profile is LBW patients. Figure 1 shows that the decrease in total births was much more dramatic than the decrease in LBW patients. Therefore, LBW patients in the NICU also increased, from 24.5% in 2015 to 35.1% in 2021.

The increasing case-by-case difficulty also became one of the foundations for the NICU division of Fatmawati Hospital to implement service improvements. This improvement began in 2016. Some of the service improvements included moving the location of the NICU, the addition of an NICU consultant doctor, a decrease in the patient-per-nurse ratio, purchase of additional medical equipment,

the use of more disposable supplies to reduce infection, the use of total parenteral nutrition (TPN) fluids for infant nutrition, including the added resources needed for its material and labor costs.

In neonatal care, both after and before the improvements, there was no significant difference in the care procedure of LBW or non-BLW. However, the percentage of LBW, the leading cause of death for neonates, continued to increase in the NICU. In addition, LBW patients admitted to the NICU had a longer length of stay than non-BLW patients. This is a consequence of improved LBW care, where mortality rates decreased but patient length of stay increased. Longer lengths of stay also incurred higher costs. Therefore, LBW patients played an important role in determining the quality and efficiency of the NICU division of Fatmawati General Hospital.

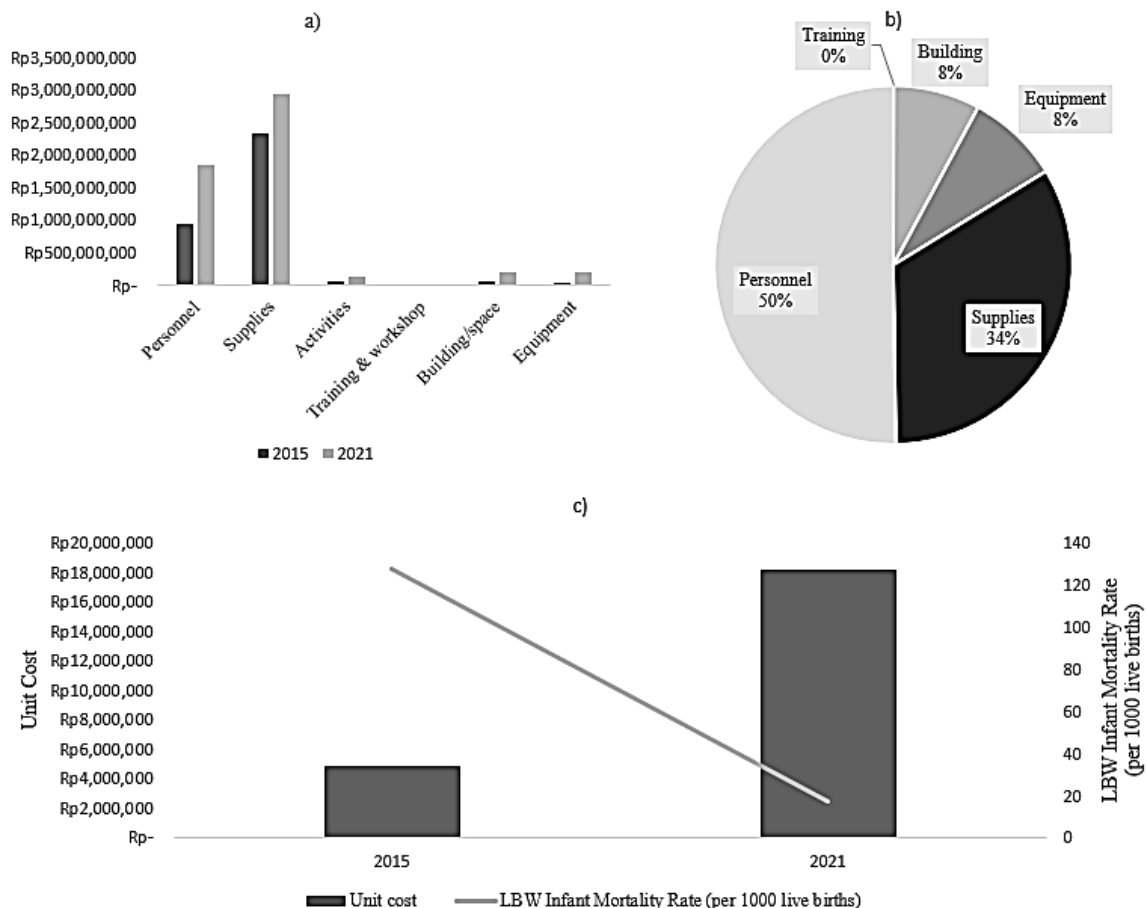
We conducted a cost analysis for the NICU division in two years to record the differences in costs due to improvements in NICU services, notably in 2015 (pre-improvement) and 2021 (post-improvement). It should also be noted that Fatmawati General Hospital is a referral hospital which means that all patient costs are covered by the government (BPJS), except for some costs such as training which is covered individually by the nurses. Table 3 shows the results of our cost analysis for Fatmawati General Hospital's NICU division in 2015 and 2021.

In 2015 and 2021, it was found that supplies, followed by personnel, accounted for the majority of the costs that Fatmawati General Hospital had to bear. The large costs incurred for LBW care supplies may indicate the high-care status of the NICU division. This finding is in accordance with previous literature, which found that neonatal care is a risky endeavor that is expensive to implement and requires high expertise to treat. The cost analysis is presented in Figure 1. In 2015, supplies accounted for 67.8% of total costs, and personnel accounted for 27.2% of total costs. Meanwhile, in 2021, supplies accounted for 55.2% of total costs, and personnel accounted for 34.8% of total costs.

Table 3. Summary of Costs, 2015 and 2021

Cost	2015 Summary		2021 Summary	
	Nominal (IDR)	%	Nominal (IDR)	%
Personnel	933,516,439	27.2	1,855,892,828	34.7
Supplies	2,324,143,238	67.8	2,939,914,476	54.9
Activities	61,601,412	1.8	123,202,824	2.3
Training	2,110,149	0.1	2,989,378	0.1
Building/space	66,733,446	1.9	210,282,402	3.9
Equipment	41,279,227	1.2	219,022,121	4.1
Total Cost	3,429,383,911.65		5,351,304,029	
Unit Cost	4,878,213.25		18,326,384	
Denominator	703		292	

Source: Primary Data, 2023



Note:

a) Comparison of costs in 2015 and 2021, b) Percentage of nominal cost increase, c) Unit cost and infant mortality rate in 2015 and 2021

Source: Primary Data, 2023

Figure 1. Data for Cost Analysis

Next, 2% of the total costs was building/space, with the two lowest components being equipment (1.4%) and training (0.2%). Capital costs, especially for building/space and equipment, had very high purchase costs. For example, the purchase cost of an NICU ventilator, which was IDR 180,000,000, and the high land price of Fatmawati Hospital in the metropolitan area. However, the capital cost becomes relatively low due to the long working life of capital goods.

Training and workshop, which was not covered by the health facility or the government, had the lowest cost. Training involved monthly case discussions and practical training in neonatal care. The cost of training was borne by the nurses who also managed the trainings. The nurses collected money every month to carry out these training courses.

Discussion

Comparing 2015 (pre-intervention) and 2021 (post-intervention), equipment had the highest cost increase, approximately 372.7%. This increase was due to the purchase of medical equipment such as echocardiogram, laminar air flow, ultrasound (USG), portable X-ray, additional CPAP, and additional ventilators. The cost of this equipment ranged from IDR 90,000,000 to IDR 788,000,000.

The second largest increase was building/space. The NICU was moved from the Teratai Building, which had a space of approximately 202 m², to the Bougenville Building, with a space of approximately 445 m². In addition, the use of space for LBW was higher in 2021 than in 2015. This percentage difference also affected the amount of cost increase for building/space.

The third largest increase was personnel as two doctors from Fatmawati Hospital's NICU had a specialty training program to become an NICU consultant, which increased the doctor's monthly salary, but quantitatively, it decreased from four doctors in 2015 to three doctors in 2021. In addition, there was also an increase in the number of nurses from 16 nurses in 2015 to 30 nurses in 2021. This supported Fatmawati Hospital's NICU regulation which increased the ratio of

nurses per patient from 1:8 in 2015 to 1:3 in 2021. Four additional pharmacy staff were required to make TPN liquid in 2021, whereas in 2015 there were no pharmacy staff in the NICU.

Training has since expanded. In 2015, only monthly case study discussions were held, while, in 2021, there were two additional trainings: 'Refresh Resuscitation, Stabilization and Transportation of Neonates', which was conducted every three months, and 'Comprehensive Neonates' which was conducted annually.

Finally, the smallest increase was in supplies. Although the percentage was small, there were many changes in this category due to improved services. For example the use of deep venous infusion with a PICC device, which replaced the peripheral infusion method with an IV catheter in 2015. Another example was the use of more disposable perfusor tubing, from the use of one piece per patient in 2015 to six pieces per patient in 2021. Both interventions were carried out to reduce the rate of HAIs. TPN fluids as a main intervention to improve nutrition also led to increased costs in 2015. In addition to TPN, there were also additional fluids such as D40%, magnesium, soluvit, phosphate, 20%, and surfactant.

Due to numerous improvements in supply, the increase in supply cost in nominal terms was very high, reaching IDR 615,771,238, which was the second highest increase in nominal costs. The largest nominal increase came from personnel, which included improved doctor skills, as well as an increase in the number of nurses and additional pharmacy staff. Viewed from a nominal perspective, looking at percentages alone cannot represent the overall cost situation of the NICU. Equipment and building/ space, which had the highest improvement rates, were much cheaper than improvements in supplies and personnel.

Total costs increased by more than half (55.35%). However, in terms of unit costs, costs almost tripled by 274%. This high increase in unit costs was mainly due to a decrease in the number of LBW patients, with each patient receiving far more comprehensive care in 2021 than

before. This highlights the impact of improved services.

The increased use of medical equipment in treating patients, an increase in the use of consumables, especially in the administration of IV fluids to infants, the provision of TPN nutrition, and the addition of healthcare workers, from nurses to pharmacy staff, showed the NICU division of Fatmawati Hospital could provide a better, more focused care for LBW patients. This was also reported by medical personnel at Fatmawati General Hospital's NICU who observed more frequent survival of LBW patients in the NICU. Comparison of unit costs with mortality rates in both periods can also be seen in Figure 2.

With an increase in cost per patient of 274% in 2021, infant mortality rates decreased dramatically from 128 deaths per 1,000 births in 2015 to 17 deaths per 1,000 births in 2021. This may indicate an improvement in services at the NICU of Fatmawati General Hospital although the profile of patients admitted was more challenging due to its status as a referral hospital. This cost increase also indicates that more LBW patients could be saved even at significantly higher costs.

Improved care provided by the NICU division of Fatmawati Hospital increased the costs of caring for LBW patients. One of these costs was an increase in the number of health workers. The ratio of nurses per patient improved from 1:8 to 1:3, allowing nurses to give more attention to each patient. There were 30 nurses on duty in the NICU, with an annual salary ranged from IDR 12,564,704 to IDR 49,994,752. Meanwhile, two doctors in the NICU also obtained a consultant degree (SpAK), increasing their annual salary from IDR 99,473,642 to IDR 206,365,385.

According to a report by medical staff at Fatmawati General Hospital, the NICU

also purchased some medical equipment, but these were expensive, and few NICUs in other hospitals had them. Apart from equipment such as incubators, ventilators, and CPAP which cost approximately IDR 90,000,000 - IDR 180,000,000, the NICU purchased equipment such as portable X-ray (IDR 204,441,200), echocardiogram (IDR 788,493,000), ultrasound (IDR 385,000,000), and blanketrol (IDR 580,400,000). In addition to the medical equipment above, the supplies used were also more expensive but easier to dispose of. Unlike peripheral abocath, which requires multiple IV injections, PICC requires only one injection. Reducing the frequency of injections reduces the likelihood of health-associated infections in LBW patients. In addition, the use of a disposable syringe also reduces that probability. Furthermore, the use of TPN liquid improves the nutritional status of LBW patients who cannot receive oral nutrition.

There is a disclaimer for the comparison in Table 4. Two of the mentioned study were done in advanced countries (the USA and Finland), thus their NICU conditions are quite different from developing countries such as Indonesia, India, and Pakistan. However, it does provide a perspective on how advanced nations spend much more to provide neonatal care. Anwar and Butt (2019) also show that Pakistan as a developing nation spent much more (Rp 25 million) than India (Rp 4,5 million) or Fatmawati General Hospital in 2015 (Rp 4,8 million). In terms of how the study was conducted, it utilized a retrospective study to find the costs, similar to how this study is conducted. Thus, the table could help provide a good comparison.

Table 4. Cost comparison with previous studies

Authors	Year	Country	NICU Unit Cost (adjusted to 2023 in Rupiah)
McLaurin <i>et al.</i>	2009	USA	41,050,319.48
Helle <i>et al.</i>	2016	Finland	64,202,699.67
Narang <i>et al.</i>	2005	India	4,515,535.14
Anwar and Butt	2009	Pakistan	25,122,795.52

Source: Anwar (2009); Helle *et al.* (2016); McLaurin *et al.* (2009); Narang *et al.* (2005).

Our findings suggest that the initial 2015 cost for Fatmawati General Hospital's NICU is similar to the median cost in India (Narang *et al.*, 2005). However, by the end of the 2021 post-service improvement period, the cost has risen to 18,326,384, around Rp 7 million less than the average cost per admission in Pakistan. Even with more than a fourfold increase in cost, which also has shown a significant decrease in neonatal mortality, the cost of Fatmawati General Hospital's NICU care for a preterm baby is still far from the Rp 41,050,319 shown in the USA. This could indicate that there is still a capacity to invest more in Fatmawati General Hospital's NICU to further improve its service.

For the improvements made in Fatmawati General Hospital's NICU, many of them were recommended by Sharma and Murki (2021) as proper methods to make NICU more cost-effective. Interventions such as the addition of CPAP and the usage of laminary airflow to ensure the sanitation of the total parenteral nutrition were endorsed in their study, and were also implemented during the period of improvement in Fatmawati General Hospital's NICU.

Extra medical personnel, better medical equipment, greater use of supplies, and consulting doctors with more advanced neonatal knowledge at Fatmawati General Hospital, contributed to a significant reduction in mortality rates, from 128 deaths per 1,000 births in 2015 to only 17 deaths per 1,000 births in 2021.

This study has a methodological limitation since it uses cost analysis, instead of other more advanced analysis such as CEA which measures the cost-effectiveness of the intervention. Future studies should measure the cost-effectiveness to further deepen the economic evaluation of the improvements made in Fatmawati General Hospital's NICU.

Conclusion

Considering the high infant mortality rates in Indonesia, especially due to premature birth, Fatmawati General

Hospital has improved its services. A holistic improvement that covered infection control and better nutrition was introduced in 2015. This improvement, increased the total cost from IDR 3,429,383,912 in the pre-intervention period (2015) to IDR 5,351,304,029 in the post-intervention period (2021). The largest increase in nominal costs was also due to supplies and personnel costs, with supplies costs increasing by IDR 615,771,238 and personnel costs increasing by IDR 922,326,388. However, this increase led to a significant decrease in LBW mortality rates as well, with 111 deaths per 1,000 LBW births. Because all patients in NICU were covered by the JKN-KIS healthcare program, the increased costs may place an additional burden on the state's social security system.

The results of the cost analysis can identify the cost elements needed to improve LBW services. However, our results did not allow us to obtain an effectiveness analysis of NICU's service improvements. Further research such as cost-effectiveness analysis could further investigate how effective service improvements have been made in the NICU of Fatmawati General Hospital.

Abbreviations

NICU: neonatal intensive care unit; LBW: low birth weight; TPN: total parenteral nutrition; PICC: peripherally inserted central catheter; CPAP: continuous positive airway pressure

Declarations

Ethics Approval and Consent Participant

There were no direct interactions with patients, but ethics approval was obtained (project no. LB.02.02/VIII.2/2627/2023).

Conflict of Interest

The authors declare no conflict of interest.

Availability of Data and Materials

Data and material research are available upon request.

Authors' Contribution

PRS conceptualized the idea, gathered the data, processed the costing analysis, and prepared the initial draft. NDI conducted in-depth analysis of the NICU, supported the necessary legal and administrative requirements, and conducted a general briefing of the NICU operational ecosystem. EDS supervised the whole process, honed the concept, led the data collection, reviewed the analysis, and revised the draft.

Funding

The authors received no financial support for this research.

Acknowledgment

We would like to thank RSUP Fatmawati for agreeing to support us in conducting our research. We are indebted to the doctors, nurses, and pharmacists that helped us conceptualize and gather the data. Finally, we would like to thank our family and special friend ZA for the unconditional support throughout the difficult process.

References

- Allegranzi, B. *et al.* (2011) 'Burden of endemic health-care-associated infection in developing countries: Systematic review and meta-analysis', *The Lancet*, 377(9761), pp. 228–241. Available at: [https://doi.org/10.1016/S0140-6736\(10\)61458-4](https://doi.org/10.1016/S0140-6736(10)61458-4).
- Anwar, Z. and Butt, T.K. (2009) 'Cost of patient care in neonatal unit', *Pakistan Paediatric Journal*, 33(1), pp. 14–18. Available at: <https://pakmedinet.com/14343>.
- CDC (2022) 'Premature Birth. Reproductive Health'. Available at: <https://www.cdc.gov/reproductivehealth/features/premature-birth/index.html>.
- Drummond, M.F. *et al.* (2015) *Methods for the Economic Evaluation of Health Care Programmes*. (Oxford University Press).
- Helle, E. *et al.* (2016) 'Morbidity and Health Care Costs After Early Term Birth', *Paediatric and Perinatal Epidemiology*, 30(6), pp. 533–540. Available at: <https://doi.org/10.1111/ppe.12321>.
- Indonesian Ministry of Finance (2023) *Recent Macroeconomics and Fiscal Update*. Indonesian Ministry of Finance.
- Karambelkar, G., Malwade, S. and Karambelkar, R. (2016) 'Cost-analysis of healthcare in a private-sector neonatal intensive care unit in India', *Indian Pediatrics*, 53(9), pp. 793–795. Available at: <https://doi.org/10.1007/s13312-016-0933-x>.
- Khan, H.A., Baig, F.K. and Mehboob, R. (2017) 'Nosocomial infections: Epidemiology, prevention, control and surveillance', *Asian Pacific Journal of Tropical Biomedicine*, 7(5), pp. 478–482. Available at: <https://doi.org/10.1016/j.apjtb.2017.01.019>.
- Kirkby, S. *et al.* (2007) 'Clinical outcomes and cost of the moderately preterm infant', *Advances in Neonatal Care*, 7(2), pp. 80–87. Available at: <https://doi.org/10.1097/01.ANC.0000267913.58726.f3>.
- Magill, S.S. *et al.* (2018) 'Changes in Prevalence of Health Care–Associated Infections in U.S. Hospitals', *New England Journal of Medicine*, 379(18), pp. 1732–1744. Available at: <https://doi.org/10.1056/nejmoa1801550>.
- McLaurin, K.K. *et al.* (2009) 'Persistence of morbidity and cost differences between late-preterm and term infants during the first year of life', *Pediatrics*, 123(2), pp. 653–659. Available at: <https://doi.org/10.1542/peds.2008-1439>.
- Narang, A., Kiran, P.S.S. and Kumar, P. (2005) 'Cost of neonatal intensive care in a tertiary care center', *Indian Pediatrics*, 42(10), pp. 989–997. Available at: <https://pubmed.ncbi.nlm.nih.gov/16269829/>.
- NNIS (2004) 'National Nosocomial Infections Surveillance (NNIS)

- System Report, data summary from January 1992 through June 2004, issued October 2004', *American Journal of Infection Control*, 32(8), pp. 470–485. Available at: <https://doi.org/10.1016/j.ajic.2004.10.001>.
- Pessoa-Silva, C.L. *et al.* (2004) 'Healthcare-Associated Infections Among Neonates in Brazil', *Infection Control and Hospital Epidemiology*, 25(9), pp. 772–777. Available at: <https://doi.org/10.2105/ajph.66.7.696>.
- Scheckler, W.E. and Peterson, P.J. (1986) 'Nosocomial infections in 15 rural Wisconsin hospitals - Results and conclusions from 6 months of comprehensive surveillance', *Infection Control*, 7(8), pp. 397–402. Available at: <https://doi.org/10.1017/S0195941700064626>.
- Sharma, D. and Murki, S. (2021) 'Making neonatal intensive care: cost effective', *Journal of Maternal-Fetal and Neonatal Medicine*, 34(14), pp. 2375–2383. Available at: <https://doi.org/10.1080/14767058.2019.1660767>.
- Sikora, A. and Zahra, F. (2022) *Nosocomial infections*. (StatPearls Publishing). Available at: <https://pubmed.ncbi.nlm.nih.gov/32644738/>.
- Singh, N. (2004) 'Large Infection Problems in Small Patients Merit a Renewed Emphasis on Prevention', *Infection Control & Hospital Epidemiology*, 25(9), pp. 714–718. Available at: <https://doi.org/10.1086/502465>.
- Sohn, A.H. *et al.* (2001) 'Prevalence of nosocomial infections in neonatal intensive care unit patients: Results from the first national point-prevalence survey', *Journal of Pediatrics*, 139(6), pp. 821–827. Available at: <https://doi.org/10.1067/mpd.2001.119442>.
- Suetens, C. *et al.* (2018) 'Prevalence of healthcare-associated infections, estimated incidence and composite antimicrobial resistance index in acute care hospitals and long-term care facilities: Results from two european point prevalence surveys, 2016 to 2017', *Eurosurveillance*, 23(46), pp. 1–18. Available at: <https://doi.org/10.2807/1560-7917.ES.2018.23.46.1800516>.
- UNICEF (2023) 'Indonesia (IDN) - Demographics, Health & Infant Mortality - UNICEF DATA'. Available at: <https://data.unicef.org/country/idn/>.
- United Nations (2023) *Goal 3. Ensure healthy lives and promote well-being for all at all ages*. Available at: <https://sdgs.un.org/goals/goal3>.
- Welliver, R.C. and McLaughlin, S. (1984) 'Unique Epidemiology of Nosocomial Infection in a Children's Hospital', *American Journal of Diseases of Children*, 138(2), pp. 131–135. Available at: <https://doi.org/10.1001/archpedi.1984.02140400017004>.
- Zaidi, A.K.M. *et al.* (2005) 'Hospital-acquired neonatal infections in developing countries', *Lancet*, 365(9465), pp. 1175–1188. Available at: [https://doi.org/10.1016/S0140-6736\(05\)71881-X](https://doi.org/10.1016/S0140-6736(05)71881-X).

PROVISION OF LACTATION CLINIC IN COMPANIES IN SEMARANG CITY: A REVIEW OF POLICY IMPLEMENTATION

Penyediaan Klinik Laktasi pada Perusahaan di Kota Semarang: Tinjauan Implementasi Kebijakan

Jihan Nurul Qamariah Khalishah¹, Ayun Sriatmi², *Rani Tiyas Budiyanthi²

¹Faculty of Public Health, Diponegoro University, Semarang, Indonesia

²Department of Administration and Health Policy, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia

Correspondence*:

Address: Jalan Prof. Jacob Rais, Kota Semarang, Indonesia | e-mail: ranitias@lecturer.undip.ac.id

Abstract

Background: As of 2022, Semarang City has 4,083 companies. However, according to the Labor Office of Semarang City, only 109 out of 529 companies provide lactation clinics. In addition, based on previous research in Pedurungan, Semarang City, most of the women (83,3%) who work do not practice exclusive breastfeeding (EBF), one reason being the lack of lactation clinics in companies.

Aims: This study examines the implementation of lactation clinic policies in companies in Semarang City.

Methods: This study used a qualitative method with a descriptive approach. The research variables included effectiveness, consistency, relevance, organizational structure, resources, sociocultural environment, economic environment, organizational culture, geographic environment, knowledge and skills, communication, and political support. Informants were selected based on purposive criteria, involving eight key informants and 18 supporting informants from eight companies in Semarang City.

Results: Lactation clinic policies were ineffective because companies were unaware of their contents and perceived them as recommendations only. On the contrary, working mothers who breastfed recognized the benefits of the policies and considered them relevant. Three out of eight companies provided lactation clinics. The people in charge had yet to be appointed due to the different capacities of the companies. Due to a lack of support from the sociocultural environment, working mothers needed more awareness of the importance of breastfeeding. In addition, most companies do not provide lactation clinics or recommend formula milk.

Conclusion: The current policies have not adequately supported the provision of lactation clinics in companies in Semarang City. To address this issue, lactation clinics should be classified according to the companies' capacities. It is also necessary to develop a leading sector that is transparent and responsible for supervising the provision of lactation clinics.

Keywords: exclusive breastfeeding in workplace, lactation clinic, policy implementation

Abstrak

Latar Belakang: Terdapat 4.048 perusahaan di Kota Semarang pada tahun 2022. Akan tetapi, Dinas Tenaga Kerja Kota Semarang mencatat hanya 109 perusahaan yang menyediakan klinik laktasi. Sementara itu, ada 83% ibu bekerja yang tidak memberikan ASI eksklusif, salah satu penyebabnya karena tidak ada klinik laktasi di tempat kerja.

Tujuan: Penelitian ini menganalisis implementasi kebijakan penyediaan klinik laktasi pada perusahaan di Kota Semarang.

Metode: Penelitian ini menggunakan metode kualitatif dengan pendekatan deskriptif. Variabel penelitian meliputi efektivitas, konsistensi, relevansi, struktur organisasi, sumber daya, lingkungan sosial budaya, lingkungan ekonomi, budaya organisasi, lingkungan geografis, pengetahuan dan keterampilan, komunikasi, dan dukungan politik. Informan ditentukan berdasarkan kriteria tertentu, dengan delapan informan utama dan 18 informan pendukung dari delapan perusahaan di Kota Semarang.

Hasil: Kebijakan penyediaan klinik laktasi belum efektif karena perusahaan menganggap kebijakan tersebut sebagai himbauan. Akan tetapi, kebijakan tersebut masih dianggap relevan karena ibu bekerja yang sedang menyusui dapat merasakan manfaatnya. Hanya tiga dari delapan perusahaan yang menyediakan klinik laktasi. Struktur organisasi dan sumber daya perusahaan kurang optimal karena kemampuan perusahaan yang berbeda. Lingkungan sosial budaya juga belum optimal karena ibu tidak terbiasa dengan budaya menyusui. Sebagai tambahan, perusahaan tidak menyediakan klinik laktasi dan justru menyarankan susu formula.

Kesimpulan: Kebijakan di Kota Semarang saat ini belum dapat mengakomodasi penyediaan klinik laktasi pada perusahaan. Sarana prasarana klinik laktasi perlu digolongkan berdasarkan kemampuan perusahaan. Selain itu, leading sector yang jelas dan bertanggung jawab terhadap pengawasan penyediaan klinik laktasi perlu dilahirkan.

Kata kunci: ASI eksklusif di tempat kerja, klinik laktasi, implementasi kebijakan



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/jaki.v12i1.2024.139-149

Received: 2023-12-21, Revised: 2024-05-13, Accepted: 2024-06-21, Published: 2024-06-27.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Jihan Nurul Qamariah Khalishah, Ayun Sriatmi, Rani Tiyas Budiyanthi

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Khalishah, J. N. Q., Sriatmi, A. and Budiyanthi, R. T. (2024) "Provision of Lactation Clinic in Companies in Semarang City: A Review of Policy Implementation", Indonesian Journal of Health Administration, 12(1), pp. 139-149. doi: 10.20473/jaki.v12i1.2024.139-149.

Introduction

The average proportion of female employees in Indonesia between 2020 and 2022 was projected at 35.47% out of 71,570,465 women of childbearing age. (BPS-Statistics Indonesia, 2022). Women of childbearing age may experience pregnancy, childbirth, postpartum, and breastfeeding during employment. One factor that influences the lack of exclusive breastfeeding (EBF) is the type of maternal employment (Rahmawati, 2014).

Mothers employed at companies or other industries often have limited breaks and demanding schedules, which can significantly impact their ability and motivation to breastfeed exclusively due to fatigue. Despite the implementation of workplace policies regarding breastfeeding practices, these challenges persist (Faradila, 2021). Companies can provide lactation clinics to increase the productivity of female employees. Breastfeeding can strengthen children's immune systems, reducing the likelihood of illness. Meanwhile, formula milk can be expensive and affect the well-being of working mothers.

The Government of Indonesia has implemented regulations to support exclusive breastfeeding and provide lactation clinics. These regulations are outlined in the Law of the Republic of Indonesia Number 33 of 2012 on Exclusive Breastfeeding and the Regulation of the Ministry of Health Number 15 of 2013 on the Procedures for Providing Special Breastfeeding Facilities and Expressing Milk. These regulations require all workplaces and public spaces to provide lactation clinics that meet established standards. These facilities should enable working mothers to breastfeed and express milk during working hours.

Semarang City has also implemented regulations to support exclusive breastfeeding and provide lactation clinics at workplaces, such as the Regional Regulation Number 2 of 2015 on Maternal and Child Safety and the Regulation of the Mayor of Semarang City Number 7 of 2013 on Increasing the Provision of Breast Milk.

A study conducted in Semarang City showed that most working mothers did not practice exclusive breastfeeding. The study also found that the employment status of mothers was associated with exclusive breastfeeding (Dahlan, Mubin and Mustika, 2013).

According to the government website of Semarang City, the number of companies in Semarang City increased from 4,072 in 2021 to 4,083 in 2022. However, only 20% of the 529 registered companies in the Labor Office of Semarang City provide lactation clinics. According to a preliminary qualitative study, the Health Office of Semarang City lacks standard operating procedures (SOPs) for providing lactation clinics despite the Regulation of the Mayor of Semarang City Number 7 of 2013. In addition, the coordination between the Health Office and the Labor Office of Semarang City has not been established.

Furthermore, there are no clear technical guidelines for providing lactation clinics, and no verbal or written administrative sanctions are imposed on companies that fail to provide them as stipulated in the Regulation of the Mayor of Semarang City Number 7 of 2013.

Based on interviews with three working mothers who breastfed from different companies, only one of the three mothers had access to a lactation clinic at her workplace. However, the condition of the lactation clinic did not meet her needs as the door could not be locked, there were no sink, tables, or chairs, and other employees often used the lactation clinic to rest and sleep. The two remaining mothers expressed breast milk in a prayer room or an unoccupied room separated by a cupboard. None of the three companies provided counseling on breastfeeding or expressing breast milk.

Based on the background above, this study aims to examine the implementation of the lactation clinic policies to meet the needs of working mothers who breastfed in companies in Semarang City.

Methods

This study used a qualitative method with a descriptive approach through in-

depth interviews. It was conducted in Semarang City between July and December 2023. Eight companies were included, with criteria for large and small companies in the mountain and coastal areas that have and don't have lactation clinics.

These companies were selected based on the number of workers and accessibility based on geographic condition consideration. Informants were selected based on purposive criteria with consideration of being directly or indirectly involved and knowing information about providing lactation clinics in Semarang City companies.

The eight main informants handled the implementation of the policy of providing lactation clinics in each company, which consists of the person responsible for managing the lactation clinic or HRD (Human Resource Development) in the company. Meanwhile, the triangulation informants were 18 with criteria of company leaders and working mothers who breastfed in the eight companies, the Health Office of Semarang City, and the Labor Office of Semarang City.

Weimer and Vinning's theory on policy implementation was used to analyze the data, which analyzed policy effectiveness, consistency, relevancy, the organizational structure of companies and institutions, resources of companies and institutions, the social environment of companies, the organizational culture of companies, and communication and political support from companies' perspectives.

Result and Discussion

Policy Implementation

Semarang City has implemented policies regarding the provision of lactation clinics. These policies are outlined in the Regulation of the Ministry of Health Number 15 of 2013 on the Procedures for Providing Special Breastfeeding Facilities and Expressing Breast Milk and the Regulation of the Mayor of Semarang City Number 7 of 2013 on Increasing the Provision of Exclusive Breast Milk.

These policies support the exclusive breastfeeding program, which ensures that

newborns have the right to receive breast milk and that mothers have the obligation to breastfeed. However, many large and small companies have not yet fully implemented these policies due to a lack of awareness of the policies regarding the provision of lactation clinics in companies. Often, these policies are perceived as recommendations only, as opposed to mandatory policies.

According to Table 1, not all large companies have lactation clinics; most workers use laboratories or prayer rooms to express breast milk. All companies have no internal regulations related to lactation clinic implementation, although some of them offer breastfeeding opportunities. This condition will make working mothers doubtful and confused about expressing breast milk without clear regulations.

The availability of lactation clinics, infrastructure, equipment, and transparent company policies are the main factors supporting working mothers in expressing breastmilk. This support is needed so that working mothers can express breast milk in peace and obtain legal or policy protection (Suciati, 2020). This support is needed so that working mothers can freely express breast milk and obtain legal or policy protection.

The gender of workers at the company does not affect the provision of lactation clinics. This can be seen in the fact that there are still companies that do not have lactation clinics, even though almost 80% of their workers are women.

Policy Effectiveness

Based on the study of eight companies, the Regulation of the Minister of Health Number 15 of 2013 and the Regulation of the Mayor of Semarang City Number 7 of 2013 have not been implemented effectively. This condition can be affected by content, actor, and context. In the research, only three of eight companies provided lactation clinics, none established internal regulations, and only one hired a breastfeeding counselor. In general, the companies were unaware of their obligation to provide lactation clinics and were unfamiliar with the policies stipulating the provision of lactation clinics.

Table 1. Overview of the Policy Implementation of the Provision of Lactation Clinic in Companies in Semarang City

Company/ Sector	Category	Staff	Lactation Clinic	Facilities	Breastfeeding Opportunities	Internal Regulations	Breastfeeding Counseling Staff	Funding
A (Food and Beverage)	Large	Male: 427 Female: 300 Total: 727	Since 2013. Utilized by five working mothers. x	Insufficient and do not meet minimum requirements Prayer room/toilet	Provided and flexible	x	x	✓
B (Furniture)	Large	Male: 63 Female: 546 Total: 609	x		Provided, but adjusted to workload	x	x	x
C (Garment)	Large	Male: 277 Female: 602 Total: 879	Since 2015. Utilized by two working mothers.	Insufficient and do not meet minimum requirements due to past overloads	Provided and flexible	x Required to report to the central company regarding lactation clinic facilities and breastfeeding counselors' fulfillment	✓	✓
D (Communication Services)	Large	Male: 62 Female: 63 Total: 125	Since 2018. Utilized by 20 working mothers. x	Insufficient and do not meet minimum requirements Laboratory/office	Provided, but adjusted to workload	x	x	✓
E (Low-Pressure Gas Regulator)	Large	Male: 38 Female: 37 Total: 75	x		Provided, but mothers are unaware.	x	x	x
F (Manpower Supply)	Small	Male: 42 Female: 12 Total: 54	x	Prayer room/desk	Provided and flexible	x	x	x
G (Design and Production of Photo Albums)	Small	Male: 14 Female: 7 Total: 21	x	Meeting room/desk	Provided, but adjusted to workload	x	x	x
H (Coating and Chemical)	Small	Male: 68 Female: 53 Total: 121	x	Storage warehouse/desk	Provided, but adjusted to workload	x	x	x

"We have not looked into those two policies yet." (Person in Charge of Lactation Clinic at Company A)

"...I had no idea about those two policies until this interview." (Leader at Company H)

The provision of lactation clinics can be adjusted to the conditions and capabilities of the company. However, no regulations specify the facilities of lactation clinics based on the classification of large and small companies. The three companies with lactation clinics did not meet the minimum requirements outlined in the regulations due to a lack of familiarity with the contents, a small number of female employees, and limited company budgets. These issues are not unique to Semarang City. A study conducted in South Kalimantan Province showed that most institutions or companies did not provide lactation clinics. In addition, none of the companies received any guidance or supervision (Henderawaty *et al.*, 2014).

However, the regulations clearly state that guidance and supervision should be provided through advocacy, dissemination, technical guidance, monitoring, and evaluation by relevant agencies. In addition, the Mayor of Semarang City's Regulation stipulates that companies that do not provide lactation clinics should be subject to verbal or written administrative sanctions. Nevertheless, the five companies without lactation clinics claimed that they were never sanctioned.

Workplace managers are the policy actors responsible for providing lactation clinics in companies. Meanwhile, the Health Office serves as the implementation coordinator. Unfortunately, companies were unaware of the implementation coordinator of these policies and never received any form of dissemination regarding lactation clinic policies from any institution. This is due to a lack of a leading sector related to these policies in Semarang City.

Furthermore, the Labor Office of Semarang City only monitors the availability of lactation clinics and not the provision of facilities within them. According

to the Health Office and the Labor Office of Semarang City, the coordinators of the implementation of these regulations are the Minister of Women Empowerment and Child Protection, the Minister of Manpower and Transmigration, and the Minister of Health as outlined in the Joint Ministerial Decree or the Joint Regulation of the three Ministers. A similar case was found in South Kalimantan Province, where the Women Empowerment and Child Protection Agency, the Office of Manpower and Transmigration, and the Health Office of South Kalimantan Province were unaware of the division of tasks and responsibilities among the offices. This resulted in a lack of communication, leading to no dissemination and monitoring of companies (Henderawaty *et al.*, 2014).

Several environmental factors influence policies and their implementation (O'Brien *et al.*, 2020). For instance, companies without lactation clinics are often influenced by employees who are not accustomed to expressing breast milk at work and company leaders who do not provide adequate support in terms of facilities, flexible pumping time, and internal regulations. In addition, working mothers face challenges in maintaining their breastfeeding productivity due to limited opportunities to express breast milk.

A study in Surakarta City found that psychological factors significantly impact breast milk production. Mothers who experience prolonged stress, sadness, lack of confidence, and various emotional distress were more likely to have reduced or no breast milk production (Satino and Setyorini, 2014). Another study showed that the lack of dedicated spaces for expressing breast milk and unsupportive company leadership regarding breastfeeding often lead to stress for working mothers. Additionally, the cleanliness of alternative lactation rooms cannot be guaranteed, which can lead to breast milk contamination (Thepha *et al.*, 2018).

Policy Consistency

Companies did not provide lactation clinics based on their classification, although they had different capacities.

Some companies believed that the provision of lactation clinics conflicted with the ability of working mothers to express breast milk, which overlaps with the Labor Law regulating a seven-hour workday. The lack of consistency is evident due to the lack of a transparent leading sector and conflicting policies.

Policy actors and stakeholders must have clearly defined and synchronized roles in overseeing, nurturing, supervising, monitoring, and evaluating the implementation to address this issue. Additionally, policy actors should conduct intensive and consistent dissemination to avoid multiple interpretations of different policies. Both policy actors and stakeholders must work together and share a common understanding. Moreover, the effective enforcement of policies requires firmness in implementing applicable sanctions (Lobubun, Raharusun and Anwar, 2022). However, the main obstacle to implementing policies is the lack of enforcement of applicable sanctions (Setiyowati and Ispriyarso, 2019). To ensure policy consistency, it is necessary to establish a shared understanding among policy stakeholders, the leading sector, and policymakers. This can be achieved through specific policies related to exclusive breastfeeding.

Policy Relevancy

The policies regarding the provision of lactation clinics remain relevant in promoting exclusive breastfeeding. Three companies reported benefits for mothers who breastfed, felt comfortable, respected their privacy, and maintained hygiene while expressing breast milk. In other words, the provision of lactation clinics in companies can enhance the success of exclusive breastfeeding for employees and serve as a profitable investment for companies by potentially increasing the productivity of female workers (Basrowi *et al.*, 2015).

However, there might be a discrepancy between the company's position and that of working mothers. For instance, due to the small number of mothers who breastfed, the company suggested using alternative facilities, such as prayer rooms, instead of providing a

lactation clinic. Nevertheless, working mothers expressed concerns about a lack of privacy and compromised hygiene when using other spaces to express breast milk.

In another company, lactation clinic policies were considered irrelevant because most working mothers provided formula milk and expressed breast milk using their equipment. However, the availability of lactation clinics is crucial because the equipment that mothers bring to express breast milk requires support from a lactation clinic to ensure hygiene (Sari and Prameswari, 2019).

Organizational Structure of Companies and Institutions

This study found only one company that hired a designated staff member, a qualified nurse responsible for the lactation clinic. The company considered the management of the lactation clinic crucial to providing and maintaining facilities, especially since most of the employees were women, and the company prioritized their health. The company also emphasized that a certified breastfeeding counselor should oversee the management of the lactation clinic. This could ensure that the lactation clinic meets the needs of breastfeeding mothers.

However, other companies did not have a specific position for this role due to employee efficiency and budget constraints. Instead, they delegated responsibilities to the human resources department (HRD). In some newly established companies, employees had dual roles, leading to work-related stress and reduced productivity. Therefore, a collaboration between the Health Office of Semarang City and public health centers near these companies is necessary to train the HRD personnel to understand the management protocols for lactation clinics, procedures for breastfeeding at work, and the necessary facilities, thereby meeting the needs of working mothers who breastfeed.

Resources of Companies and Institutions

Resources are crucial to program implementation, serving as a driving force

and policy implementer. However, this study found that lack of space continued to be a barrier for some companies with lactation clinics. Limited space in a company is the primary reason for the absence of lactation clinics. Interestingly, among working mothers in companies equipped with lactation clinics, 75% practiced exclusive breastfeeding, citing the comfort and convenience provided by these facilities (Subratha, 2019).

However, many companies did not prioritize the provision of lactation clinics due to budget constraints for facilities, infrastructure, and breastfeeding counselors. The lack of lactation support facilities is often attributed to its perceived high cost, making it infeasible to set up lactation support facilities (Kusumaningrum *et al.*, 2017).

This study found that only one company was willing to hire a designated lactation clinic supervisor certified as both a nurse and a breastfeeding counselor. Research shows that training more breastfeeding counselors can effectively increase exclusive breastfeeding rates in a region (Sari and Prameswari, 2019). Therefore, to address the shortage of breastfeeding counselors, one potential solution involves leveraging support from the work environment, such as colleagues acting as breastfeeding facilitators in the workplace or introducing breastfeeding support groups (Ickes *et al.*, 2023).

Sociocultural Environment of Companies

Many working mothers hesitated to express breast milk if no lactation clinic was available. As a result, they often left their children with their grandmothers, who provided them with formula milk.

Furthermore, some individuals in particular companies in Semarang City paid less attention to their health, particularly regarding exclusive breastfeeding. This is primarily influenced by a workforce dominated by millennials and Gen Z individuals who were unmarried and, therefore, did not breastfeed. Company culture and colleagues also play a significant role. The demands of production quality control could cause

working mothers to rush to express breast milk, resulting in less milk production and supplementation with formula milk. In addition, formula milk promotions diverted their attention from breastfeeding to providing their children with formula milk.

Extensive formula milk promotions can create the perception that it contains essential nutrients for infants, is necessary as an alternative to breast milk, and is a practical and efficient choice. However, long-term formula milk feeding can increase health risks in infants, including diarrhea, asthma, ear infections, allergies, obesity, sudden infant death syndrome (SIDS), diabetes, and impaired cognitive development (Kera *et al.*, 2023).

Furthermore, some mothers lacked knowledge of proper breast milk expression techniques and lactation terminology. In addition, some mothers were unfamiliar with breastfeeding equipment, such as cooler bags, and discarded expressing breast milk before receiving counseling. In some companies, working mothers were found to introduce formula milk to their children before returning to work after maternity leave. Some other working mothers faced challenges in providing exclusive breastfeeding due to nipple confusion experienced by their infants.

Counseling or education can be delivered through technology, such as creating WhatsApp groups and sending daily broadcasts. Workplace breastfeeding counselors should also be available 24/7 to answer questions and help motivate female employees who are currently breastfeeding. This emphasizes the importance of interventions aimed at motivating working mothers to breastfeed (Basrowi *et al.*, 2015).

Organizational Culture of Companies

Companies that provide lactation clinics suggest that their organizational culture highly prioritizes the health and hygiene of their employees, predominantly female employees. This was evident in the food and beverages, garment, and telecommunications industries, where more than 300 females were employed. Health programs, such as regular check-

ups, milk provisions, and nutritious meals, were provided to all employees.

However, the five companies that did not provide lactation clinics showed less concern for the health and hygiene of their employees. These companies operated in the furniture manufacturing, gas regulation, outsourcing, photo album design, and coating and chemical sectors, where fewer than 100 females were employed. Support from the workplace in creating a favorable work environment or organizational culture can enhance breastfeeding success for working mothers and alleviate pressures experienced by working mothers that affect breast milk production.

The Health Office and the Labor Office should conduct regular and ongoing dissemination with companies and labor unions to increase their understanding and establish an organizational culture that supports working mothers in providing lactation facilities at work (Melissa, Jati and Suparwati, 2015).

Communication and Political Support from Companies and Institutions

This study found that the companies informed working mothers about the breastfeeding policies at work. However, there is still room for improvement, as some mothers were unaware of their right to express breast milk in the workplace. In addition, miscommunication between company executives, HRD, and working mothers who breastfed was apparent.

Communication barriers were often caused by hierarchical and bureaucratic structures that impeded the flow of information from management to employees. Inconsistent information delivery regarding the benefits of lactation clinics and the mechanism of expressing breast milk while working also contributed to these barriers. To address this issue, a written policy supporting exclusive breastfeeding in the workplace is recommended. This policy should provide sufficient time for breastfeeding or expressing breast milk and clearly define the actors responsible for implementing exclusive breastfeeding. This will facilitate coordination (Melissa, Jati and Suparwati, 2015).

This study also found that communication between companies and the Labor and Health Offices was not established due to a lack of specific monitoring and coordination among sectors regarding lactation clinics. Misunderstandings or miscommunications often arise due to numerous bureaucratic levels involved in the communication process, leading to distortion of intended messages (Pratiwi, 2016).

Furthermore, the political support from company leaders significantly influenced the provision of lactation clinic facilities. However, there were still instances where company leaders did not support the provision of lactation clinics and suggested using formula milk. Company/institution leaders with experience or knowledge of exclusive breastfeeding need to consider the needs and expectations of working mothers in their companies. The productivity and quality of working mothers significantly impacted the company's outcomes and production costs. Therefore, leaders need to consider their needs and expectations (Setiyowati and Ispriyarso, 2019).

In addition, company leaders perceived inefficiencies in budget and human resources due to the small number of working mothers who breastfed. This led to discomfort among working mothers who expressed breast milk in a room without privacy. They often felt rushed while expressing milk, especially in customer service and fieldwork roles where production targets must be met.

The Health and Labor Offices of Semarang City can provide support through dissemination by inviting company representatives to discuss the provision of lactation clinic facilities and the importance of exclusive breastfeeding. Companies can also increase the use of lactation clinics by implementing programs such as employee training and counseling, distributing badges for breastfeeding mothers, and providing pocket-sized books on breastfeeding and daily monitoring (Melissa, Jati and Suparwati, 2015). Providing breastfeeding reminders, such as pocket-size books, can motivate mothers to breastfeed their babies more often (Hasanah *et al.*, 2020).

In carrying out this research, researchers faced several limitations, including that the company leadership could not be interviewed due to busy schedules, so they were replaced with the Human Resources Manager. Some companies have had new Human Resources Managers for one year, so they don't know about the company clinic. So, researchers interviewed HRD staff previously to get more in-depth information. In many companies, triangulation informants for working mothers who are breastfeeding are difficult to find at the company because the mothers no longer give exclusive breast milk and continue with formula milk.

Conclusion

Of the eight companies in Semarang City, only three provided lactation clinics. However, the lactation clinics failed to meet the minimum requirements regarding facilities and equipment. While all companies allowed working mothers to express breast milk, there were restrictions in terms of timing. None of the companies had internal policies that specifically addressed lactation clinics. Only one company hired a lactation counselor; most companies lacked funding to provide lactation clinics.

Policymakers must differentiate between policies related to implementation guidelines and technical aspects of setting up lactation clinics in companies, categorized according to the capabilities of both large and small enterprises. A transparent and responsible leading sector is necessary to oversee the provision of lactation clinics in companies and enforce sanctions for companies failing to implement the policy. Additionally, aligning perceptions among policymakers, leading sectors, and policy stakeholders is essential to implementing the provision of lactation clinics. This involves developing technical guidelines and conducting dissemination and monitoring activities for companies.

Finally, the GP2SP (*Gerakan Pekerja Perempuan Sehat Produktif*/ Healthy and

Productive Female Workers Movement) team from the Health Office of Semarang City needs to collaborate with local community health centers to organize prenatal classes for employees, provide counseling on exclusive breastfeeding in the workplace, and motivate working mothers to breastfeed exclusively. Meanwhile, the Labor Office of Semarang City needs to conduct awareness campaigns among labor unions regarding the importance of exclusive breastfeeding and the provision of lactation clinic facilities.

Abbreviations

WHO: World Health Organization; GP2SP: *Gerakan Pekerja Perempuan Sehat Produktif* (Healthy and Productive Female Workers Movement); EBF: exclusive breastfeeding; SKB: *Surat Keputusan Bersama* (Joint Ministerial Decree); BPPPA: *Badan Pemberdayaan dan Perlindungan Anak* (Women Empowerment and Child Protection Agency); Disnakertrans: *Dinas Tenaga Kerja dan Transmigrasi* (Office of Manpower and Transmigration); HRD: human resources department; Puskesmas: *pusat kesehatan masyarakat* (community health center); SIDS: sudden infant death syndrome; PKB: *perjanjian kerja bersama* (Collective Work Agreement); BPJS: *Badan Penyelenggara Jaminan Sosial* (Social Security Agency).

Declarations

Ethics Approval and Participants' Consent

This study follows the 2011 WHO ethical principles and received ethical approval from the Ethics Committee of Health Research of the Faculty of Public Health, Universitas Diponegoro on June 26, 2023 with a certificate number 335/EA/KEPK-FKM/2023.

Conflict of Interest

The authors declare no conflicts of interest.

Availability of Data and Materials

Data and materials are available upon request.

Authors' Contribution

JNQK and AS conceptualized the study and developed the methodology; JNQK, AS, and RTB wrote, reviewed, and edited the manuscript; JNQK and RTB wrote the original draft.

Funding Source

Not applicable.

Acknowledgment

We would like to thank the companies, the Labor Office of Semarang City, the Health Office of Semarang City, and the Faculty of Public Health, Universitas Diponegoro, for their contributions to this study.

References

- Basrowi, R.W. *et al.* (2015) 'Benefits of a Dedicated Breastfeeding Facility and Support Program for Exclusive Breastfeeding among Workers in Indonesia', *Pediatric Gastroenterology, Hepatology & Nutrition*, 18(2), p. 94. Available at: <https://doi.org/10.5223/pghn.2015.18.2.94>.
- BPS-Statistics Indonesia (2022) *Women and Men in Indonesia 2022*. Jakarta: BPS-Statistics Indonesia.
- Dahlan, A., Mubin, F. and Mustika, D.N. (2013) 'Hubungan Status Pekerjaan dengan Pemberian ASI Eksklusif di Kelurahan Palebon Kecamatan Pedurungan Kota Semarang', *Jurnal Kebidanan Unimus*, 2(2). Available at: https://jurnal.unimus.ac.id/index.php/jur_bid/article/view/1021.
- Faradila, F. (2021) *Pengalaman Ibu Pekerja Pabrik Dalam Pemberian ASI Eksklusif Di Wilayah Kerja Puskesmas Pringapus Kabupaten Semarang*. Universitas Ngudi Waluyo. Available at: <http://repository2.unw.ac.id/id/eprint/1406>.
- Hasanah, D.R., Putri, N.K. and Pramono, A.Y. (2020) 'The Effectiveness of Forming Breastfeeding Support Group Programs To Improve Exclusive Breastfeeding', *Indonesian Journal of Health Administration*, 8(1), pp. 5–19. Available at: <https://doi.org/10.20473/jaki.v8i1.2020.5-19>.
- Henderawaty, R., Kartasurya, M.I. and Suparwati, A. (2014) 'Analysis on Policy Implementation of Exclusive Breastfeeding for Working Women in South Kalimantan Province', *Jurnal Manajemen Kesehatan Indonesia*, 02(01), pp. 36–43. Available at: <https://ejournal.undip.ac.id/index.php/jmki/article/view/10350>.
- Ickes, S.B. *et al.* (2023) 'Mothers' willingness to use workplace lactation supports: evidence from formally employed mothers in central Kenya', *Current Developments in Nutrition*, p. 102032. Available at: <https://doi.org/10.1016/j.cdnut.2023.102032>.
- Kera, A.M. *et al.* (2023) 'Formula feeding and associated factors among mothers with infants 0–6 months old in Mettu Town, Southwest Ethiopia', *Food Science & Nutrition*, 11(7), pp. 4136–4145. Available at: <https://doi.org/10.1002/fsn3.3403>.
- Kusumaningrum, D.N., Hardianti, W. and Pradana, H.A. (2017) 'Komunitas Digital AIMI dan Gerakan Sosial Berbasis Facebook', *Journal of Islamic World and Politics*, 1(1). Available at: <https://doi.org/10.18196/jiwp.1104>.
- Lobubun, M., Raharusun, Y.A. and Anwar, I. (2022) 'Inkonsistensi Peraturan Perundang-Undangan Dalam Penyelenggaraan Pemerintahan Daerah Di Indonesia', *Jurnal Pembangunan Hukum Indonesia*, 4(2), pp. 294–322. Available at: <https://doi.org/10.14710/jphi.v4i2.294-322>.
- Melissa, A., Jati, S.P. and Suparwati, A. (2015) 'Analisis Implementasi Kebijakan Pemberian Air Susu Ibu Eksklusif Bagi Pekerja di PT. Apac Inti Corpora Kabupaten Semarang', *Jurnal Kesehatan Masyarakat*, 3(2), pp. 11–19. Available at: <https://ejournal3.undip.ac.id/index.php/jkm/article/view/11864>.
- O'Brien, G.L. *et al.* (2020) 'Health policy triangle framework: Narrative review

- of the recent literature', *Health Policy OPEN*, 1, p. 100016. Available at: <https://doi.org/10.1016/j.hpopen.2020.100016>.
- Pratiwi, D.M. (2016) 'Analisis Faktor Penghambat Pemanfaatan Ruang Menyusui di Tempat Kerja Pada Pekerja Wanita di PT. Daya Manunggal', *Unnes Journal of Public Health*, 5(2), p. 100. Available at: <https://doi.org/10.15294/ujph.v5i2.10111>.
- Rahmawati, R. (2014) *Rita rahmawati, Gambaran Pemberian MP-ASI Pada Bayi Usia Kurang Dari 6 Bulan Di Wilayah Kerja Puskesmas Kecamatan Pesanggrahan Jakarta Selatan Tahun 2014*. UIN Syarif Hidayatullah.
- Sari, N.K. and Prameswari, G.N. (2019) 'Implementasi Kebijakan Ruang Laktasi di Tempat Kerja', *Higeia Journal of Public Health Research and Development*, 3(1), pp. 24–35. Available at: <https://journal.unnes.ac.id/sju/higeia/article/view/26982>.
- Satino and Setyorini, Y. (2014) 'Analisis faktor yang mempengaruhi pemberian ASI eksklusif pada ibu primipara di Kota Surakarta', *Jurnal Terpadu Ilmu Kesehatan*, 3(2), pp. 106–214. Available at: <http://jurnal.poltekkes-solo.ac.id/index.php/Int/article/view/91>.
- Setiyowati, L. and Ispriyarso, B. (2019) 'Upaya Preventif Dalam Rangka Pengawasan Terhadap APBD Melalui Penjaringan Aspirasi Masyarakat Oleh DPRD', *Jurnal Pembangunan Hukum Indonesia*, 1(2), pp. 250–265. Available at: <https://doi.org/10.14710/jphi.v1i2.250-265>.
- Subratha, H.F.A. (2019) 'Hubungan Ketersediaan Ruang ASI Dengan Keberhasilan Pemberian ASI Eksklusif Pada Ibu Bekerja Di Tabanan', *JURNAL MEDIKA USADA*, 2(2), pp. 60–57. Available at: <https://doi.org/10.54107/medikausada.v2i2.49>.
- Suciati, S. (2020) 'Faktor-Faktor Yang Mempengaruhi Pemberian ASIEksklusif: Literature Review', *Kebidanan*, 10(2), pp. 1–6. Available at: <https://journal.unita.ac.id/index.php/bidan/article/view/406>.
- Thepha, T. et al. (2018) 'Perceptions of northeast Thai breastfeeding mothers regarding facilitators and barriers to six-month exclusive breastfeeding: Focus group discussions', *International Breastfeeding Journal*, 13(1), pp. 1–10. Available at: <https://doi.org/10.1186/s13006-018-0148-y>.

HEALTH ADVERTISING ON INSTAGRAM: IS IT EFFECTIVE WHILE FOLLOWING ETHICAL GUIDELINES?

Iklan Kesehatan di Instagram: Apakah Efektif dan Sesuai dengan Pedoman Etik?

Anky Angga Alhudha¹, *Winny Setyonugroho¹, Firman Pribadi¹

¹Master of Hospital Administration, Universitas Muhammadiyah Yogyakarta, Indonesia

Correspondence*:

Address: Universitas Muhammadiyah Yogyakarta, Bantul, Yogyakarta, Indonesia | E-mail: wsetyonugroho@umy.ac.id

Abstract

Background: Given the popularity of digital marketing in business today, every hospital can start utilizing it by establishing a social media account. Instagram is a social media platform that focuses on photographs. The AISAS (Attention, Interest, Search, Action, and Share) model can be used to assess the efficacy of marketing communications. Regardless, there are issues regarding legal and ethical issues. Therefore, a question emerges: How can health advertisements be effective while following ethical guidelines?

Aims: The purpose of this research is to analyse the content of healthcare advertisements on Instagram.

Methods: This study uses the quantitative descriptive content analysis method. The samples are Instagram advertisements for health services. Search them using the hashtags (#) #dokterjogja, #klinikjogja, #klinikyogyakarta, and #rumahsakitjogja. Using convenience sampling, the researcher randomly scrolls and stops on Instagram. The data were assessed by two coders using a checklist to ensure objectivity. The checklist contains three indicators, in this case, the AIA (Attention, Interest, Action) indicator, and the other indicators were obtained from the Regulation of the Minister of Health of the Republic of Indonesia (PERMENKES) number 1787 of 2010.

Results: The highest score of the AIA (Attention, Interest, Action) indicator is 12, and there are a total of 34 advertisements (coder 1), and 84 advertisements (coder 2) violate The Regulation of the Minister of Health (PERMENKES) No.1787/2010.

Conclusion: This study finds that effective advertising is almost certain to violate the regulation. An educational health information advertisement that introduces the services provided is a good way to promote healthcare providers while remaining ethical.

Keywords: advertising, AISAS, ethics, health, social media

Abstrak

Latar Belakang: Mengingat popularitas pemasaran digital dalam bisnis saat ini, tidak menutup kemungkinan bagi setiap rumah sakit untuk mulai memanfaatkannya dengan membuat akun media sosial. Instagram adalah platform media sosial yang berfokus pada foto. Efektivitas komunikasi pemasaran dapat dinilai dengan menggunakan model AISAS. Bagaimanapun, terdapat masalah tentang hukum dan etika. Oleh karena itu, muncul pertanyaan: bagaimana iklan kesehatan bisa efektif dengan tetap mengikuti pedoman etika?

Tujuan: Penelitian ini bertujuan untuk menganalisis konten iklan layanan kesehatan yang dipasang di Instagram

Metode: Penelitian ini menggunakan metode analisa konten deskriptif. Sampel penelitian ini adalah iklan Instagram layanan kesehatan dengan mencari tagar (#) #dokterjogja, #klinikjogja, #klinikyogyakarta dan #rumahsakitjogja. Teknik pengambilan sampel yang digunakan adalah convenience sampling, yaitu melakukan pencarian dan berhenti secara acak pada Instagram. Data dinilai oleh dua koder menggunakan daftar cek untuk memastikan objektivitas. Checklist ini berisi tiga indikator, dalam hal ini indikator AIA (Attention, Interest, Action) dan indikator lainnya diperoleh dari Peraturan Menteri Kesehatan Republik Indonesia (PERMENKES) nomor 1787 tahun 2010

Hasil: Skor tertinggi indikator AIA adalah 12 dan terdapat total 34 iklan (penilai 1) dan 84 iklan (penilai 2) melanggar Peraturan Menteri Kesehatan (PERMENKES) No.1787/2010

Kesimpulan: Studi ini menemukan bahwa hampir dapat dipastikan bahwa iklan yang efektif cenderung melanggar peraturan. Iklan edukasi kesehatan yang sekaligus memperkenalkan layanan yang disediakan, merupakan cara yang baik untuk mempromosikan penyedia layanan kesehatan dengan tetap menjaga etika

Kata kunci: AISAS, etik, iklan, kesehatan, media sosial



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/ijahi.v12i1.2024.150-161.

Received: 2023-06-16, Revised: 2023-12-28, Accepted: 2024-06-21, Published: 2024-06-27.

Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

Copyright (c) 2024 Anky Angga Alhudha, Winny Setyonugroho, Firman Pribadi

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Alhudha, A.A., Setyonugroho, W. and Pribadi, F. (2023) "Health Advertising on Instagram: Is It Effective While Following Ethical Guidelines?", *Indonesian Journal of Health Administration*, 12(1), pp. 150-161. doi: 10.20473/ijahi.v12i1.2024.150-161.

Introduction

Given the popularity of digital marketing in business and on the market today, every hospital can start utilizing it for all of its operations, including promoting health and marketing its best products. This can be done through various techniques, including creating websites, social media accounts, and eye-catching infographics to raise public awareness of the social media being used and encourage their effective use. In the digital marketing world, every company's ability to manage web pages, e-mail, and social media is now indispensable. Every hospital must have experts in the field of IT to advertise hospital products online without going against medical ethics (Prasetyo and Sulistiadi, 2019). Social media is increasingly utilized as an innovative marketing method due to its substantial influence and special benefits that are not present in traditional marketing approaches. These advantages include the ability to engage in interactive dialogue with clients on an individual basis, to reach a wider audience, to enhance cost-effectiveness, and to facilitate expeditiousness. It allows companies to contact more customers and have better, more targeted interactions with them (Snyman and Visser, 2014; Talpau, 2014). Promotions run on social media will boost a product's or company's brand exposure because of the expanding selection of possibilities available there (Schivinski and Dabrowski, 2015).

Instagram is a popular social media platform that prioritises sharing visual content, allowing users to efficiently learn information through photographs and images. As a result, marketers may interact with people regardless of their language or country (Park and Namkung, 2022). Instagram has proven to be an excellent tool for promotional purposes, facilitating the acquisition of new patients and the maintenance of existing ones (Marliani and Achadi, 2019). In the Internet era, where anyone can easily access information, we have seen a huge increase in what we call "active contact with information." Here, consumers voluntarily dig deeper and

share intriguing information they have discovered with others whenever they notice a product, service, or advertisement. The emotional undertones of user-generated content and information about the epidemic on social media can reveal patterns of emotional dispositions during public health emergencies. Social networking can influence decision-making behaviour, increasing the risk of misinformation, conspiracy theories, stigma, violence, and religious-cultural sentiment damage. Overuse of social media has been linked to mental health issues, including fear of missing out (FOMO), cyberbullying, sleep disruption, stress, depression, and false prestige. Additionally, offending people and defaming their relationships can arise. Medical communication on social media can be challenging due to compliance, trust, and patient privacy concerns, negatively impacting doctor-patient relationships (Kanchan and Gaidhane, 2023).

Social media marketing incorporates digital innovations into the health profession, resulting in mutual benefits for both the profession and the public. Before publishing healthcare advertisements on Instagram, it is advisable to adopt an educational approach that takes into account both marketing effectiveness and ethical considerations (Analisa and Setyonugroho, 2022). The AISAS (Attention, Interest, Search, Action, and Share) model can be used to assess the efficacy of marketing communications. The model is a fundamental framework for making decisions about promotional efforts. AIDMA, a model consisting of Attention, Interest, Desire, Memory, and Action, has been replaced by the AISAS model. Developed by the Dentsu Way, a Japanese company, AISAS defines the sequential stages of consumer behaviour in the internet and digital transformation era (Sugiyama and Andree, 2011).

Regardless, there are several issues to address, including legal and ethical issues (Mahapatra *et al.*, 2019). Ethics on health advertising in Indonesia is stipulated by the Regulation of the Minister of Health of the Republic of Indonesia

(PERMENKES) number 1787 of 2010 about Advertising and Publication of Health Services. There are also some debates about advertising involving doctors. The public have the right to get information about the competence of the physician, as well as address false health information. However, although doctors provide medical services, their major objective is to provide help. Therefore, the medical profession's social context should not focus on profit business competition (Prawiroharjo and Meilia, 2017).

Therefore, a question emerges: How can advertisements for health services achieve effective marketing while following professional ethics? This topic has not yet been explored in general. Hence, the objective of this study is to examine the content of health service advertising posted on Instagram by healthcare providers to ascertain effective strategies for promoting ethical healthcare providers.

Method

This study does not need ethical approval because it uses public data, so it does not require ethical clearance (Rab et al., 2008). This study uses the quantitative descriptive content analysis method. Descriptive content analysis is a systematic scientific approach that assesses the content and the dissemination of a message and information in various media (Kim, 2019).

The study employed certain criteria for inclusion, which entailed selecting healthcare advertisements sourced from the Instagram accounts of physicians, clinics, or hospitals in Yogyakarta. These advertisements had to be in the form of photographs accompanied by a caption and were uploaded throughout the timeframe from 2020 to the 1st of June 2023. The exclusion was the posts in the form of videos and if the clinics or hospitals are not in Yogyakarta.

The study sample was an Instagram advertisement related to health services,

discovered through a systematic search employing the use of a specific hashtag (#) #dokterjogja, #klinikjogja, #klinikyogyakarta and #rumahsakitjogja, which generated 35,860 posts. The technique used in the sampling methodology was convenience sampling, wherein the researchers randomly scrolled and stopped on the Instagram hashtag search page every nine posts; the content meeting the sample criteria was afterwards chosen as the sample.

Two coders (person A and person B) assessed one hundred and five advertisements using a checklist to ensure objectivity. The checklist contains twelve indicators, the AIA (Attention, Interest, Action) variable, derived from Dentsu Way's AISAS, a framework utilised to evaluate advertising effectiveness by considering marketing communications. By minimizing the scope, AIA provides a much quicker and easier way to assess the efficacy of advertisements. The other indicators were obtained from the Regulation of the Minister of Health of the Republic of Indonesia (PERMENKES) number 1787 of 2010, which refers to Advertising and Publication of Health Services to analyse advertising ethics violations. The research data are presented in descriptive statistics using percentages in the form of tables and graphics.

Result and Discussion

Indicators based on AIA (Attention, Interest, Action) from the AISAS model

SPSS V25.0 were used to analyse the indicator's reliability. The Cronbach's Alpha score is 0.784 on the 200 checklist assessments. The instruments and the data collection methods will be considered valid and reliable if the result is greater than 0.70 or if they meet the criteria and agreement established by the coders (Setyonugroho, Kennedy and Kropmans, 2015). A total of one hundred and five advertisements were assessed.

Table 1. Total Amount of Advertisement Fulfil Each of AIA Indicator

Variable	Indicator	Coder 1 n = 105		Coder 2 n = 105	
		Σ	%	Σ	%
Attention	Emphasises the primary information or headlines using captivating language (larger font sizes, distinct font kinds, or varying font colours).	81	77.1	101	96.2
	Uses slogans.	16	15.2	56	53.3
	Displays the brand's logo, which consists of both the logo name and logo mark.	92	87.6	98	93.3
	Has an appealing design (in the way of colour choices, typography use, and the availability of photographs / photos).	70	66.7	99	94.3
Interest	Uses logical and respectful language to engage customers.	102	97.1	104	99
	Explains information in a clear and understandable manner.	100	95.2	104	99
	Provides a detailed explanation of the promoted product or service, highlighting its benefits through expressive and clear language.	66	62.9	84	80
	Displays pictures of the physician/clinic/hospital location, facilities, and the physician's work results.	7	6.7	20	19
	Display telephone number.	86	81.9	91	86.7
	Shows comments as well as tagging activity in the comment section (mentioning friends).	21	20	21	20
Action	Uses persuasive words	21	20	59	56.2
	Provides promotional deals or price reductions.	13	12.4	29	27.6

Table 1 shows that the highest indicator in the Attention variable is "Displays the brand's logo, which consists of both the logo name and logo mark" by coder 1 (92 samples; 87.6%), which is followed by "Emphasises the primary information or headlines using captivating language (use larger font sizes, distinct font kinds, or varying font colours)" by coder 2 (101 samples; 96.2%). The lowest indicator is "Uses slogans" (coder 1: 15.2% (16 samples); coder 2: 53.3% (56 samples)). In the Interest variable, the lowest indicator is "Displays pictures of the physician/clinic/hospital location, facilities, and the physician's work results" (coder 1: 6.7% (7 samples); coder 2: 19% (20 samples)). The highest indicator for the Action variable is "Uses persuasive words" (coder 1: 20% (21 samples); coder 2: 56.2% (59 samples)).

Table 2 shows that three advertisements fulfil all the AIA indicators (12 indicators), one sample (coder 1) and

two samples (coder 2). The lowest scores of the AIA indicators score are 1 by coder 1 and 4 by coder 2.

Table 2. Category of AIA Indicator Score

Category	Coder 1	Coder 2
Fulfil 0 indicator	0	0
Fulfil 1 indicator	1	0
Fulfil 2 indicator	3	0
Fulfil 3 indicator	4	0
Fulfil 4 indicator	3	1
Fulfil 5 indicator	4	6
Fulfil 6 indicator	15	10
Fulfil 7 indicator	45	12
Fulfil 8 indicator	19	23
Fulfil 9 indicator	7	32
Fulfil 10 indicator	3	16
Fulfil 11 indicator	0	3
Fulfil 12 indicator	1	2
Total Samples	105	105

Indicator based on The Regulation of the Minister of Health number 1787/2010

Table 3 shows the total violations of each article clause. The article with the highest percentage of violations according to The Regulation of the Minister of Health number 1787 of 2010 is clause 5o, i.e., *"Health service advertising and publication must not use academic degrees and professional titles in the health sector"* by coder 1 (27 samples; 25.71%) and article 5l, i.e., *"Health service advertising and publication must not disclose information to the general public in a manner that encourages individuals to use health services at the health service facility"* by coder 2 (50 samples; 47.62%).

Table 3: Percentage of Total Violation of Each Article in The Regulation of the Minister of Health number 1787 of 2010

Article	Coder 1 n = 105		Coder 2 n = 105	
	Σ	%	Σ	%
Clause 4	4	3.81	1	0.95
Clause 5a	0	0.00	0	0.00
Clause 5b	0	0.00	0	0.00
Clause 5c	0	0.00	0	0.00
Clause 5d	0	0.00	0	0.00
Clause 5e	0	0.00	3	2.86
Clause 5f	0	0.00	0	0.00
Clause 5g	0	0.00	0	0.00
Clause 5h	0	0.00	0	0.00
Clause 5i	0	0.00	0	0.00
Clause 5j	1	0.95	1	0.95
Clause 5k	0	0.00	0	0.00
Clause 5l	5	4.76	50	47.62
Clause 5m	2	1.90	33	31.43
Clause 5n	3	2.86	5	4.76
Clause 5o	27	26.67	33	31.43
Clause 8(1)	7	5.71	31	29.52
Clause 10	2	1.90	2	1.90

AISAS Model in Instagram as an Effective Digital Advertising for Healthcare Industries

Organizations use social media for a variety of purposes, including building

brand awareness, influencing attitudes, interacting with customers, and learning about their preferences (Nayal and Pandey, 2021). Instagram is a free and user-friendly photo-based and video-sharing social media application with over 106.0 million Indonesian active Instagram users (Boulos, Giustini and Wheeler, 2016; Ki and Kim, 2019; *DataReportal*, 2023). Thus, Instagram is a good social media for marketing since photos/images can affect attention, attitude, or purchase intention (Li and Xie, 2020). During its entire process, AISAS describes the pattern of active customer behaviour.

The initial stage of the model involves capturing the *Attention* of potential customers. It includes introducing a product, establishing brand recognition, and making a strong first impression to attract the attention of customers (Sugiyama and Andree, 2011; Ebeid, 2014). The result of the assessment on this variable shows that the highest indicator is "Displays the brand's logo, which consists of both the logo name and logo mark" by coder 1 (92 samples) and "Emphasises the primary information or headlines using captivating language (use larger font sizes, distinct font kinds, or varying font colours)" by coder 2 (101 samples). A logo mark is an image or logo that represents a company and is used to communicate brand identification and attract customers' attention. Logos can affect consumers' impressions of a brand's personality and awareness. A well-designed logo can result in better market behaviour, such as increased market shares.

Headlines written in the conventional sense (short, to the point, and with a consistent tone) increase people's interest to read. Thus, advertisements for healthcare services from specific brands would be easy for consumers to recognize without having to seek the Instagram account name (Kim and Lim, 2019; Jeganathan and Szymkowiak, 2020). The average result indicates that 91 out of 105 advertisements put headlines with intriguing language and 95 out of 105 display their logo. The indicator "Has an appealing design (in the way of colour choices, typography use, and the

availability of photographs/ photos)" has the average result of 84 out of 105 advertisements. People could easily memorize and identify the graphic designs that appear in any digital marketing media. Attractive designs with the right stimulation can make prospective buyers able to determine products they want to get quickly. Good design should be tailored to specific consumers' perceptions and needs of each target audience and is attention-grabbing to transcend communication barriers in the consumer's environment (Situmorang, Wibowo and Fauzi, 2019; Oluyemi, 2021).

The lowest indicator of Attention is "Uses slogans", with an average result of 36 out of 105 advertisements. Slogan is a catchy phrase or term that is easy to recall. The advertising frequently uses a slogan to convey to readers a fundamental idea about the product. Nowadays, hashtags or signs (#) can be used to identify messages. Many three-word hashtags are used as slogans. In social media, hashtags have become a way to quickly locate the source of content (Caleffi, 2015; Mulyadi and Fitriana, 2018). It indicates that advertisements in social media may use signs (#) or hashtags more rather than slogans.

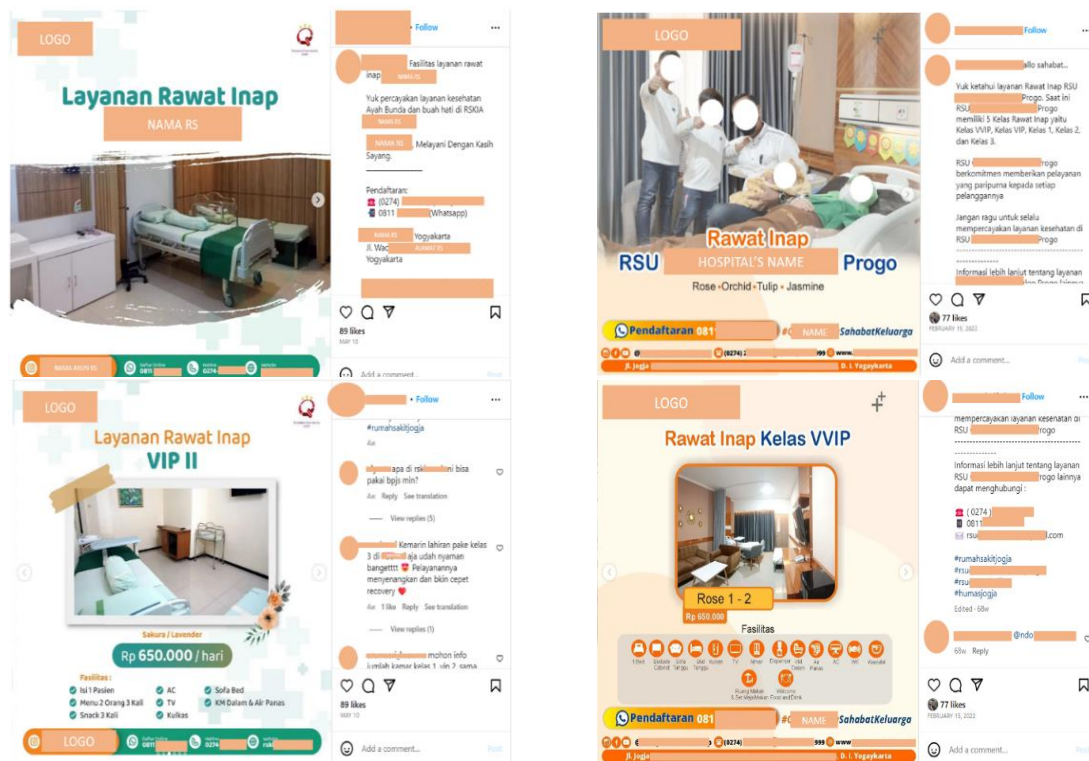
The Interest variable focuses on consumers who express interest in the healthcare services being marketed. There are a total of six indicators, with the first three specifically addressing the writing, which is 1) using logical and respectful language to engage customers, 2) explaining information clearly and understandably, and 3) providing a detailed explanation of the promoted product or service, highlighting its benefits through expressive and clear language. More than 60% of the total sample met all three indicators; the highest is the first indicator (coder 1: 102 samples; coder 2: 104 samples). The use of language in advertisements plays a part in conveying users' value on the offered good or service. Correct words must enhance the visual advertisements, build a strong bond with customers, and influence their purchasing

decisions. Choice of words also can build a self-image for their products. Businesses can compete by displaying a product's upsides (product uniqueness) in specific areas. Disclosing a product's superiority is crucial in convincing potential consumers (Kubro and Suyitno, 2019; Huang, Leong and Ismail, 2023).

The next indicator is "Displays pictures of the physician/ clinic/ hospital location, facilities, and the physician's work results", with the average result of 13 advertisements out of 105. It happened because of various reasons, including a lack of facilities or interior design in the healthcare providers' place. An image of a facility or destination can affect clients' satisfaction, behavioural aspects like the decision to visit, their following assessments of the area, and their future behavioural intentions (Kim *et al.*, 2017).

The next indicator associated with interest intends to improve customer attention by presenting contact information, with an average of 88 advertisements providing such contact details. Providing easily visible information in advertising, such as telephone numbers, can attract customers. The last indicator of Interest that shows consumer's interest in advertisements is "Shows comments as well as tagging activity (mentioning friends) in the comments section", with the average result of 21 advertisements.

The evaluation component of the *Action* variable focuses on how patients interact with healthcare providers. The *Action* variable consists of two indicators designed to enhance purchasing intentions and behaviours. The analysis of the *Action* indicators with the highest results is "Uses persuasive words" with an average of 35 advertisements. The second indicator of the *Action* variable is "Providing promotional deals or price reductions", with an average of 21 advertisements. The role of price in business is closely aligned with the product's quality, influencing the customer's decision to associate with the brand (Liem, 2023). This indicator, in fact, contradicts the Regulation of the Minister of Health number 1787 of 2010.



Ethical Issues on Health Advertising in Social Media

comments section suggest that the advertisements hold a significant level of audience interest. However, their fulfilment of all 12 AIA indicators does not necessarily comply with the Regulation of the Minister of Health number 1787 of 2010. The number of violations identified ranges from 1 to 2 (coder 1: 1 point (Advertisement number 74); coder 2: 2 points (Advertisement number 74 and number 93). They violate clause 5l, which says: "Advertisements and health service publications must not disclose information to the general public in a manner that encourages individuals to use health services at the health service facility". The violation was discovered in a caption that reads: "Come, entrust your health services at (hospital name)" in advertisement number 74 and that reads: "Don't hesitate, always trust (hospital name) for your health" in advertisement number 93. Both coders found them persuasive in a way that encourages customers to come to their health service facility. To achieve effective marketing communications, advertisements

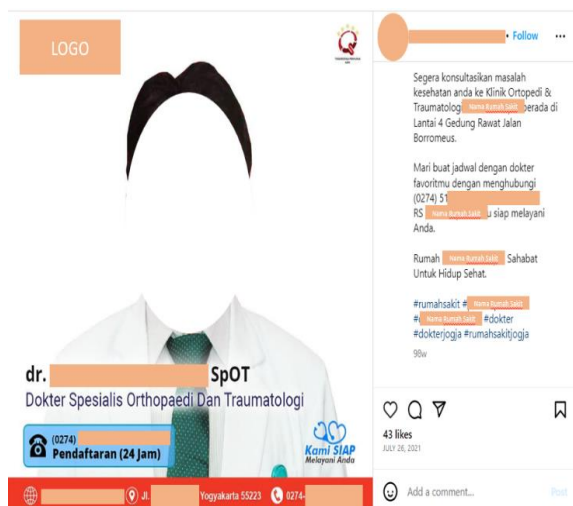


Figure 2. Advertisement number 29

need to use persuasive words in a way that customers want to check their health without encouraging them to come to their health service facility so it remains ethical. Another sample examined in this study was advertisement number 29 (Figure 2), with an AIA indicators score of 8-9 (coder 1: 8; coder 2: 9) and three violations according to both coders. The photo can attract attention, as shown by the score of 4 in the Attention variable awarded by both coders.

The Interest variable has a total score of 4, and it fails to fulfil the variable because there are neither pictures of the hospital location, facilities, the physician's work, nor comments or tagging activity in the comment section. It is tolerable since pictures of hospital locations or facilities tend to be shown on the other post on Instagram. The violations found by both coders in the article are: 1) "Advertisements and health service publications must not disclose information to the general public in a manner that encourages individuals to use health services at the health service facility", 2) "Advertisements and health service publications must not use academic degrees and professional titles in the health sector", and 3) "Health workers are prohibited from appearing in advertising or becoming models for advertisements for drugs, medical devices, medical supplies, and health service facilities except in public service advertisements". The violation was discovered in a caption, that reads: "Consult the Orthopaedic & Traumatology



Figure 3. Advertisement number 12

Clinic at (name of the hospital) immediately. It is located on the 4th Floor of the Borromeus Outpatient Building". Both coders also found that the advertisement put a health worker's picture and information. The presence of human figures has the capacity to captivate customers' attention. The fixation of viewers on human figures within a visual information environment is influenced by the presence of those human figures (Beh, Badni and Norman, 2011; Bakar, Desa and Mustafa, 2015). However, this statement contradicts the Regulation of the Minister of Health number 1787 of 2010.

Another sample is advertisement number 12 (Figure 3), with a small score of AIA indicators (i.e., 5 by both coders), but it does not violate The Regulation of the Minister of Health number 1787 of 2010. The picture only shows the headline, and there are no slogans, logos, or attractive designs according to Attention indicators. Still, it has well-packaged information about the product and shows their contact number.

Digital marketing strategies can be used effectively to promote and expand medical services within a corporate context. The strategic approach in this scenario is acquiring new consumers and delivering exceptional medical services to ensure their satisfaction and potentially generate referrals for other healthcare facilities. Health-care facilities can run media campaigns as long as they abide by the

advertising standards outlined in the law and the Regulation of Minister number 1787 of 2010. The language used must not be misleading, self-serving, boastful, or intended to promote the usage of the healthcare facility's services. Additionally, it is not permitted to disparage, fault, or evaluate the standard of care concerning other healthcare facilities. Special rates or discounts, images of medical experts or academic credentials, or marketing for treatment modalities without scientific testing are not permitted. The regulation of advertising in healthcare facilities has limitations for good reason. Still, this law has made it challenging for these facilities to create effective advertising, as healthcare providers also face another dilemma, which is exploiting profit or benefiting the consumer. Since social media can increase brand awareness (Faisal and Ekawanto, 2022), an educational approach can be used as an ethical marketing strategy. An educational advertisement that involves sharing health information and impartially introducing the services provided by the healthcare provider is a good way to promote healthcare providers while remaining ethical.

This study has several limitations, such as its focus only on the advertisement display and its discussion only on three of the five AISAS indicators. However, this study provides information about ethics in health advertising in social media and the AISAS method.

Conclusion

Digital technology marketing has a significant influence, increasing social media engagement and marketing activity. This study finds that it is almost certain that effective advertising is likely to violate the Regulation of the Minister of Health of the Republic of Indonesia (PERMENKES) number 1787 of 2010 about Advertising and Publication of Health Services. Further research should cover all advertisement regulations and need to be reviewed from the perspective of policymakers or legal advisors. The research findings above

suggest several courses of action to develop a standard framework for healthcare advertising that is ethical, legal, and effective. One such approach is creating educational health information advertisements that present the services offered.

Abbreviations

PERMENKES: *Peraturan Menteri Kesehatan* (Regulation of Minister of Health); FOMO: fear of missing out; AISAS: Attention, Interest, Search, Action, Share; AIA: Attention, Interest, Action; AIDMA: Attention, Interest, Desire, Memory, Action.

Declarations

Ethics Approval and Consent Participant

This research does not require ethical approval and participant's consent since the gathered data were public information.

Conflict of Interest

The authors declare that there is no significant competing financial, professional, or personal interests that might have affected the performance.

Availability of Data and Materials

Not applicable.

Authors' Contribution

AAA, WS, and FP conceptualized the study; AAA created the methodology; AAA, WS, and FP wrote, reviewed, and edited the manuscript; AAA, WS, and FP wrote the original draft.

Funding Source

The authors did not receive support from any organization for the submitted work.

Acknowledgment

The authors would like to offer their gratitude to Master Program of Hospital Administration, of Universitas Muhammadiyah Yogyakarta, for their technical support and to all contributors who have helped the completion of this study.

References

- Analisa, S. and Setyonugroho, W. (2022) 'Can Dentists Use Social Media Marketing Effectively While Adhering To Ethical Guidelines?', *Jurnal Aisyah: Jurnal Ilmu Kesehatan*, 7(S1). Available at: <https://doi.org/10.30604/jika.v7iS1.1214>.
- Bakar, M.H.A., Desa, M.A.M. and Mustafa, M. (2015) 'Attributes for Image Content that Attract Consumers' Attention to Advertisements', *Procedia - Social and Behavioral Sciences*, 195, pp. 309–314. Available at: <https://doi.org/10.1016/j.sbspro.2015.06.349>.
- Beh, C.-S., Badni, K. and Norman, E.W.L. (2011) 'Eye-tracking experiment to test key emerging principles of the visual communication of technology', in. *IDATER online conference: graphicacy and modelling 2010*, Loughborough: Design Education Research Group, Loughborough Design School, pp. 179–208. Available at: https://repository.lboro.ac.uk/articles/chapter/Eye-tracking_experiment_to_test_key_emerging_principles_of_the_visual_communication_of_technology/9342227/1.
- Boulos, M.K., Giustini, D. and Wheeler, S. (2016) 'Instagram and WhatsApp in Health and Healthcare: An Overview', *Future Internet*, 8(3), p. 37. Available at: <https://doi.org/10.3390/fi8030037>.
- Caleffi, P.-M. (2015) 'The "hashtag": A new word or a new rule?', *SKASE Journal of Theoretical Linguistics*, 12(2), pp. 46–69. Available at: http://www.skase.sk/Volumes/JTL28/pdf_doc/05.pdf.
- Ebeid, A.Y. (2014) 'Distribution Intensity, Advertising, Monetary Promotion, and Customer-Based Brand Equity: An Applied study in Egypt', *International Journal of Marketing Studies*, 6(4), p. p113. Available at: <https://doi.org/10.5539/ijms.v6n4p113>.
- Faisal, A. and Ekawanto, I. (2022) 'The role of Social Media Marketing in increasing Brand Awareness, Brand Image and Purchase Intention', *Indonesian Management and Accounting Research*, 20(2), pp. 185–208. Available at: <https://doi.org/10.25105/imar.v20i2.12554>.
- Huang, W., Leong, Y.C. and Ismail, N.A. (2023) 'The influence of communication language on purchase intention in consumer contexts: the mediating effects of presence and arousal', *Current Psychology* [Preprint]. Available at: <https://doi.org/10.1007/s12144-023-04314-9>.
- Jeganathan, K. and Szymkowiak, A. (2020) 'Social Media Content Headlines and Their Impact on Attracting Attention', *Journal of Marketing and Consumer Behaviour in Emerging Markets*, 1/2020(10), pp. 49–59. Available at: <https://doi.org/10.7172/2449-6634.jmcbem.2020.1.3>.
- Kanchan, S. and Gaidhane, A. (2023) 'Social Media Role and Its Impact on Public Health: A Narrative Review', *Cureus* [Preprint]. Available at: <https://doi.org/10.7759/cureus.33737>.
- Kemp, S. (2023) *DataReportal, DIGITAL 2023: INDONESIA*. Available at: <https://datareportal.com/reports/digital-2023-indonesia> (Accessed: 10 June 2023).
- Ki, C. 'Chloe' and Kim, Y. (2019) 'The mechanism by which social media influencers persuade consumers: The role of consumers' desire to mimic', *Psychology & Marketing*, 36(10), pp. 905–922. Available at: <https://doi.org/10.1002/mar.21244>.
- Kim, H. (2019) 'Globalization and regulatory change: The interplay of laws and technologies in E-commerce in Southeast Asia', *Computer Law & Security Review*, 35(5), p. 105315. Available at: <https://doi.org/10.1016/j.clsr.2019.03.009>.
- Kim, M.J. and Lim, J.H. (2019) 'A comprehensive review on logo

- literature: research topics, findings, and future directions', *Journal of Marketing Management*, 35(13–14), pp. 1291–1365. Available at: <https://doi.org/10.1080/0267257X.2019.1604563>.
- Kim, S.-E. et al. (2017) 'Effects of tourism information quality in social media on destination image formation: The case of Sina Weibo', *Information & Management*, 54(6), pp. 687–702. Available at: <https://doi.org/10.1016/j.im.2017.02.009>.
- Kubro, R.A. and Suyitno, I. (2019) 'Persuasive Language in Advertisement Discourses (Business Advertorial Analysis)', *ISLLAC: Journal of Intensive Studies on Language, Literature, Art, and Culture*, 3(2). Available at: <https://journal2.um.ac.id/index.php/jisllac/article/view/11337>.
- Li, Y. and Xie, Y. (2020) 'Is a Picture Worth a Thousand Words? An Empirical Study of Image Content and Social Media Engagement', *Journal of Marketing Research*, 57(1), pp. 1–19. Available at: <https://doi.org/10.1177/0022243719881113>.
- Liem, C. (2023) 'Impact of digital marketing and price towards intention to buy mediating by brand awareness in interior design business', *Fair Value: Jurnal Ilmiah Akuntansi dan Keuangan*, 5(7). Available at: <https://journal.ikopin.ac.id/index.php/fairvalue/article/view/3048>.
- Mahapatra, I. et al. (2019) 'Social Networking in Dentistry: A Review', *Indian Journal of Public Health Research & Development*, 10(11), p. 1162. Available at: <https://doi.org/10.5958/0976-5506.2019.03672.6>.
- Marliani, L. and Achadi, A. (2019) 'The Effectiveness of Instagram as A Promotion Media at Citra Ananda Maternal and Child Health Hospital, Ciputat, Banten', in *Strengthening Hospital Competitiveness to Improve Patient Satisfaction and Better Health Outcomes. The 6th International Conference on Public Health 2019*, Masters Program in Public Health, Universitas Sebelas Maret, pp. 130–136. Available at: <https://doi.org/10.26911/the6thicph-FP.02.03>.
- Mulyadi, U. and Fitriana, L. (2018) 'Hashtag (#) as Message Identity in Virtual Community', *Jurnal The Messenger*, 10(1), p. 44. Available at: <https://doi.org/10.26623/themessenger.v10i1.671>.
- Nayal, P. and Pandey, N. (2021) 'Role of Social Media in Hospital Branding: Insights for Marketing Practitioners', in A.P. Borges and P. Rodrigues (eds) *Advances in Marketing, Customer Relationship Management, and E-Services*. IGI Global, pp. 1–16. Available at: <http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-7998-3034-4.ch001> (Accessed: 11 June 2023).
- Oluyemi, A.S. (2021) 'Aspect of Consumer Behavioural Theory in the Context of Graphic Design', *Part B*, 9(4). Available at: <https://dergipark.org.tr/en/pub/gujsb/issue/67705/1013355>.
- Park, C.-I. and Namkung, Y. (2022) 'The Effects of Instagram Marketing Activities on Customer-Based Brand Equity in the Coffee Industry', *Sustainability*, 14(3), p. 1657. Available at: <https://doi.org/10.3390/su14031657>.
- Prasetyo, A.A.R. and Sulistiadi, W. (2019) 'Effect of Digital Marketing in Hospitals: A Systematic Review', in *Promoting Population Mental Health and Well-Being. The 5th International Conference on Public Health 2019*, Masters Program in Public Health, Universitas Sebelas Maret, pp. 509–512. Available at: <https://doi.org/10.26911/theicph.2019.04.47>.
- Prawiroharjo, P. and Meilia, P.D.I. (2017) 'Dokter Beriklan: Sebuah Tinjauan Menurut Kode Etik Kedokteran Indonesia (KODEKI) Tahun 2012', *Jurnal Etika Kedokteran Indonesia*, 1(1), p. 13. Available at: <https://doi.org/10.26880/jeki.v1i1.4>.

- Rab, M.A. *et al.* (2008) 'Ethical Practices for Health Research in the Eastern Mediterranean Region of the World Health Organization: A Retrospective Data Analysis', *PLoS ONE*. Edited by J.J. Miranda, 3(5), p. e2094. Available at: <https://doi.org/10.1371/journal.pone.0002094>.
- Schivinski, B. and Dabrowski, D. (2015) 'The impact of brand communication on brand equity through Facebook', *Journal of Research in Interactive Marketing*, 9(1), pp. 31–53. Available at: <https://doi.org/10.1108/JRIM-02-2014-0007>.
- Setyonugroho, W., Kennedy, K.M. and Kropmans, T.J.B. (2015) 'Reliability and validity of OSCE checklists used to assess the communication skills of undergraduate medical students: A systematic review', *Patient Education and Counseling*, 98(12), pp. 1482–1491. Available at: <https://doi.org/10.1016/j.pec.2015.06.004>.
- Situmorang, P.M.G., Wibowo, R.P. and Fauzi, F. (2019) 'The Effect of Implementing the Graphic Design in Digital Marketing on Sales of Products in Travel Companies', in *Proceedings of the 2019 International Conference on Organizational Innovation (ICOI 2019). Proceedings of the 2019 International Conference on Organizational Innovation (ICOI 2019)*, Ulsan, South Korea: Atlantis Press. Available at: <https://doi.org/10.2991/icoi-19.2019.37>.
- Snyman, L. and Visser, J.H. (2014) 'The adoption of social media and social media marketing by dentists in South Africa', *SADJ: journal of the South African Dental Association = tydskrif van die Suid-Afrikaanse Tandheelkundige Vereniging*, 69(6), pp. 258, 260–264. Available at: <https://pubmed.ncbi.nlm.nih.gov/26548200/>.
- Sugiyama, K. and Andree, T. (2011) *The Dentsu way: secrets of cross switch marketing from the world's most innovative advertising agency*. New York: McGraw-Hill.
- Talpau, A. (2014) 'Social Media - a New Way of Communication', *Bulletin of the Transilvania University of Braşov*, 7(2), p. 56. Available at: http://rs.unitbv.ro/BU2014/Series%20V/BULETIN%20V/I-06_TALPAU-1.pdf.

NAVIGATING BARRIERS: THE NEED FOR INTEGRATED HEALTH INFORMATION SYSTEM FOR TUBERCULOSIS-DIABETES CO-SCREENING

Mencari Arah Mengatasi Hambatan: Kebutuhan Sistem Informasi Terintegrasi Skrining Ganda Tuberkulosis-Diabetes

*Merita Arini¹, Denny Anggoro Prakoso², Farid Suryanto³, Arlina Dewi¹,
Muzaitul Akma binti Mustapa Kamal Basha⁴

¹Master of Hospital Administration Study Program, Postgraduate Program, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

²Department of Family Medicine and Community Medicine, Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

³Department of Information Systems, Faculty of Applied Science and Technology, Universitas Ahmad Dahlan, Yogyakarta, Indonesia

⁴Department of Special Care Nursing, Kuliyah of Nursing, International Islamic University Malaysia, Kuantan, Malaysia

Correspondence*:

Address: Postgraduate Building, UMY Central Campus, Jl. Brawijaya, Kasihan Bantul, Yogyakarta, Indonesia | e-mail: merita.arini@umy.ac.id

Abstract

Background: Tuberculosis-diabetes mellitus (TB-DM) is a co-epidemic condition representing a double burden for high TB burden countries like Indonesia. Private primary care (PPC) in Indonesia was newly reintroduced to the TB program.

Aims: This study explores the challenges PPC healthcare workers (HCWs) face in implementing TB-DM bi-directional screening and strategies to improve it.

Methods: An explorative qualitative method was used by conducting two-round focus group discussions (FGDs) with HCWs (n=15) from five private clinics in Yogyakarta Special Region Province Indonesia and triangulated with 10 DM patients and the TB program manager from the provincial health office. The data were audio recorded, transcribed verbatim, and subjected to thematic analysis.

Results: HCWs face complex barriers in TB-DM co-screening implementation from patients, HCWs, and health system aspects. An integrated system to remind, support decision-making, report, reduce documentation duplication, monitor, and evaluate co-screening implementation emerged as a potential strategy, although some challenges to deploy.

Conclusion: Albeit health information system (HIS) is promising in enhancing integrated TB-DM screening and management, a comprehensive approach and multisector roles are still needed to overcome impediments to TB-DM bidirectional screening in PPCs.

Keywords: diabetes mellitus, health information system, screening, tuberculosis

Abstrak

Latar Belakang: Tuberkulosis-Diabetes Melitus (TB-DM) merupakan kondisi ko-epidemi yang merupakan beban ganda bagi negara-negara dengan beban TB yang tinggi seperti Indonesia. Layanan kesehatan primer swasta (PPC) di Indonesia baru diperkenalkan kembali tentang program pengendalian TB.

Tujuan: Penelitian ini bertujuan untuk mengeksplorasi permasalahan yang dihadapi petugas kesehatan PPC dalam melaksanakan skrining dua arah TB-DM dan strategi untuk mengatasinya.

Metode: Metode kualitatif eksploratif digunakan dengan melakukan diskusi kelompok terfokus (FGD) dua putaran terhadap petugas kesehatan (n=15) dari lima klinik swasta di Provinsi Daerah Istimewa Yogyakarta Indonesia dan melakukan triangulasi terhadap 10 pasien DM dan pengelola program TB dari dinas kesehatan provinsi. FGD direkam secara audio, ditranskrip secara verbatim dan dilakukan analisis tematik.

Hasil: Petugas kesehatan menghadapi hambatan kompleks dalam pelaksanaan skrining dua arah TB-DM dari aspek pasien, petugas kesehatan, dan sistem kesehatan. Terungkap bahwa sistem informasi yang terintegrasi dan menjadi pengingat, mendukung pengambilan keputusan, pelaporan, mengurangi duplikasi dokumentasi, memantau dan mengevaluasi skrining sebagai strategi yang potensial. Namun demikian, terdapat potensi tantangan dalam penerapannya.

Kesimpulan: Meskipun HIS menjanjikan dalam meningkatkan skrining dan manajemen TB-DM yang terintegrasi, pendekatan komprehensif dan peran multisektor masih diperlukan untuk mengatasi hambatan terhadap skrining dua arah TB-DM di PPC.

Kata kunci: diabetes melitus, sistem informasi kesehatan, skrining, tuberkulosis



Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia)

p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 12 No.1 2024, DOI: 10.20473/ijahi.v12i1.2024.162-176.

Received: 2023-12-14, Revised: 2024-06-18, Accepted: 2024-06-21, Published: 2024-06-28.

Published by Universitas Airlangga in collaboration with Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi).

Copyright (c) 2024 Merita Arini, Denny Anggoro Prakoso, Farid Suryanto, Arlina Dewi, Muzaitul Akma binti Mustapa Kamal Basha

This is an Open Access (OA) article under the CC BY-SA 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

How to cite:

Arini, M., Prakoso, D.A., Suryanto, F., Dewi, A. and Basha, M.A.B.M.K. (2024) "Navigating Barriers: The Need for Integrated Health Information System for Tuberculosis-Diabetes Co-Screening", *Indonesian Journal of Health Administration*, 12(1), pp. 162-176. doi: 10.20473/ijahi.v12i1.2024.162-176.

Introduction

Tuberculosis (TB) and Diabetes Mellitus (DM) are chronic comorbid conditions that have become crucial global issues (Nicholson *et al.*, 2017; Zwama *et al.*, 2021). DM is a TB risk factor that often complicates and increases the risk of failing TB treatment, causing multidrug resistance and death. On the other hand, people with TB are more susceptible to transient hyperglycemia, which can develop into DM (Leung *et al.*, 2017; Zheng, Hu, and Gao, 2017).

Indonesia is currently ranked 2nd in the number of TB sufferers and 5th in the number of DM sufferers worldwide (International Diabetes Federation (IDF), 2021; World Health Organization, 2023). These two diseases contribute to the burden of morbidity and mortality along with economic and social issues (WHO, 2023). Integrated TB-DM practices have not been implemented routinely and systematically in health facilities in Indonesia (Republic Indonesia Ministry of Health, 2023). The TB-DM collaboration mechanism has not been established in private primary care (PPC), which has different resources and characteristics from the government's (Arini, Sugiyo, and Permana, 2022). This prior research showed that PPCs have not been involved in TB control programs.

Moreover, the national health financing system does not entirely support TB-DM case detection, and there are obstacles from the patients' perspective (Arini, Sugiyo, and Permana, 2022). The high number of patient visits to PPCs has the potential to obtain new TB case findings, especially from vulnerable groups (DM patients) (Surya, Setyaningsih, Nasution *et al.*, 2017; Fuady *et al.*, 2020). Additionally, not all healthcare workers are capable of conducting TB-DM screening (Arini, Ahmad and Utarini, 2020).

Strengthening the system for finding TB cases in the DM patients group has now become one of the priorities in national health programs (Almossawi *et al.*, 2019). Hence, Indonesia government launched The National Strategy for Controlling Tuberculosis in Indonesia 2020-2024 Enhancing the Public Private Mix ((PPM),

PPCs have been reintroduced to TB control (Republic Indonesia Ministry of Health, 2020a). Evidence highlights that not including the private sector in TB causes delays in case discovery, ineffective care, drug resistance, and patient costs (WHO, 2022).

Bottlenecks of healthcare organizations in implementing the TB-DM integrated care system should be identified to ensure that all at-risk patients receive bi-directional screening and are correctly recorded as suggested by previous research and Expanded Chronic Care Model (Barr *et al.*, 2003; Arini, Ahmad and Utarini, 2020). TB-DM co-screening is a valuable global strategy for preventing missed opportunities to identify TB patients and vice versa (Prakoso *et al.*, 2023). Hence, this study aims to explore the obstacles encountered by HCWs on TB-DM bi-directional screening implementation in PPCs and the strategies to resolve them.

Method

This qualitative-explorative study was conducted in February–April 2022 in Yogyakarta Special Region Province, Indonesia. This strategy fits the medical research's complexity. Additionally, this method could investigate unknown and complex themes, provide in-depth insights, and offer new viewpoints that quantitative tools may not capture for facilitating more robust evaluations (Hallingberg *et al.*, 2018; Pyo *et al.*, 2023).

Data were collected from five faith-affiliate private clinics and non-profit orientations. These evaluated clinics have been piloted implementing TB-DM bi-directional screening in three months since this research is part of a large study piloting the implementation of TB-DM collaborative services in PPCs in Yogyakarta Province. They also represented inpatient and outpatient clinics from rural, suburban, and urban areas.

Data collection was conducted by two-round focus group discussions (FGDs). The first FGD (early evaluation) was conducted to evaluate the TB-DM screening implementation with HCWs (n=15) from five clinics. Second, the 5

group mini FGDs were held as secondary evaluation with the same HCWs (n=15). These two data collection cycles were used to assess changes in the situation, including challenges and strategies to improve TB-DM screening. New programs implemented at a particular moment may affect HCW adoption for many reasons in daily service settings (Prakoso *et al.*, 2023). Mini FGD is a data collection method that uses the FGD technique with a small group of participants (2-5) (Nyumba *et al.*, 2018). Mini FGDs can be more engaging and comfortable for participants, potentially increasing information depth and completeness than conventional FGDs (Scheelbeek *et al.*, 2020). Moreover, in low-resource settings, this method can assist in overcoming power dynamics and conversational norms, allowing for more open sharing of personal viewpoints and experiences.

Purposive sampling using the criterion sampling technique was applied. The inclusion criteria for informants involved in FGDs were the TB-DM co-screening implementers, including policymakers in clinics and practitioners. They were selected to provide rich information regarding implementation experiences in their clinics. Hence, HCW participants from each clinic consisted of clinic directors, functional medical doctors, and the persons in charge (PIC) of TB or chronic care from each clinic.

The first and second authors, formally trained as qualitative researchers, collected the data. Meanwhile, the third and fourth authors, with a research background in health systems and health information, acted as observers in the FGDs. Open-ended questions and guidelines for discussions guided the FGDs. Each FGD and interview lasted about 180 minutes and were conducted in Indonesian and local Javanese languages.

The FGD and interview recordings were transcribed verbatim. Trained research assistants followed standard operational procedures to transcribe. Data

was organized in nVivo 12+, and inductive thematic analysis was conducted. Qualitative data transcripts were read and reread to find patterns and themes. Data segments are carefully classified and sorted to categorize connected and similar patterns. By grouping and refining, several more thorough theme groupings emerge (Figure 1). The first author conducted the first coding and was evaluated by others.

Multiple methods were applied to ensure trustworthiness (Carter *et al.*, 2014). Data sources were triangulated by: 1) repeated and rephrased questions for informants; 2) four mini FGDs and one in-depth interview with ten DM patients from these five clinics; 3) IDI with the provincial health office TB program manager; 4) cross-confirming informants' responses and reviewing screening implementation data (screening form completion, TB-DM report documents, and medical records). For investigator triangulation, the moderator and other researchers observed FGDs. Transcripts were not given to participants but were rechecked before coding to ensure reliability. To ensure equal data interpretation, those who write reviewed transcript results. We provide protocol thick description and created an audit trail to demonstrate dependability and confirmability. We also employed the COREQ (consolidated criteria for reporting qualitative research) checklist to verify research and reporting quality and robustness (Tong, Sainsbury, and Craig, 2007).

Result and Discussion

Fifteen HCWs from 5 different PPCs attended the FGDs (Table 1). The age range of the participants was 28-44 years, with an average of 32.5 years old. Most of them were female (80.1%), with an average length of employment of 7.2 years (range = 1.5-16 years), and from a multidisciplinary background. The research discovered three primary themes (Figure 1).

Table 1. Socio-demographic characteristics of the participants

Informant's Code	Gender	Age (year)	Job Position	Education	Work Period (year)
I1	F	38	PIC of chronic care program	Undergraduate	6
I2	F	31	Functional MD	Undergraduate	7
I3	F	36	Clinic director	Postgraduate	7
I4	F	28	Clinic director	Undergraduate	2
I5	M	30	Functional MD	Undergraduate	2
I6	F	32	PIC of chronic care program	Diploma	4
I7	F	26	Functional MD	Undergraduate	1.5
I8	F	28	PIC of chronic care program	Diploma	4
I9	F	28	Functional MD	Undergraduate	2.5
I10	M	36	Clinic director	Postgraduate	11
I11	F	42	PIC of chronic care program	Diploma	16
I12	F	31	Functional paramedic	Diploma	8
I13	F	44	Clinic director	Undergraduate	9
I14	F	28	PIC of chronic care program	Diploma	8
I15	F	30	Functional paramedic	Diploma	9

Note: F = female, M = male, MD = medical doctor, PIC = person in charge

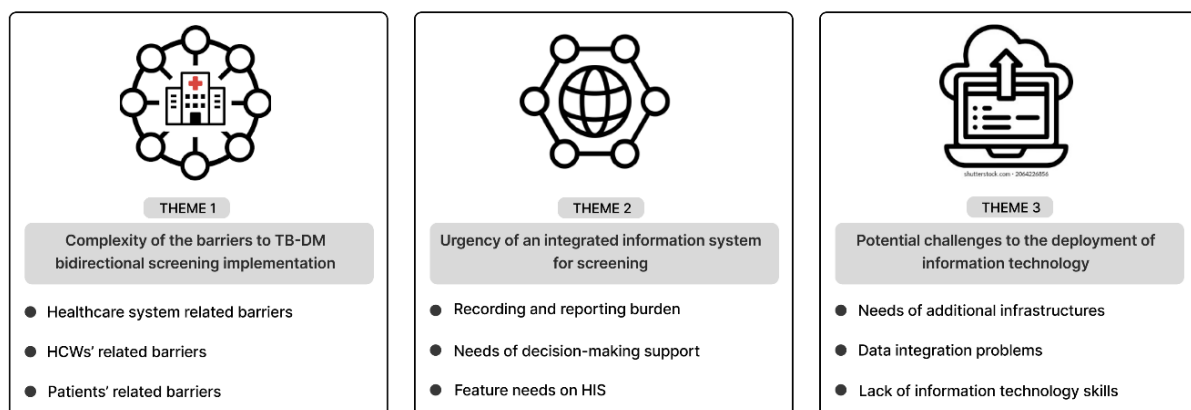


Figure 1. Themes and sub-theme

Theme 1: the complexity of TB-DM bidirectional screening implementation

In this study, five clinics completed at least three months of the pilot implementation of bidirectional TB-DM symptoms-based screening. Several bottlenecks existed in this third month, causing the clinics to adjust the screening methods. The constraints identified in the study encompassed obstacles relating to the health system, healthcare staff, and patients. These adjustments imply variation pathways in their applications.

"... usually, the patient will be screened by the nurse at the registration table. However, if the

nurse forgets, usually the doctor will screen it later." (I7)

"During PROLANIS (chronic care program), some geriatric patients were interviewed for screening. Other patients filled out the self-screening form by themselves." (I2)

In line with our study results, some health facilities often adjust the protocols or clinical procedures. Adaptation is inevitable in TB screening when integrated with another disease. The different flow of care, HCWs availability and workload, health examination equipment availability, and patient condition become the factors that

should be considered (Wijiseno, Arini, and Listiowati, 2023).

Healthcare system-related barriers

PPCs faced intricate obstacles as a result of resource constraints. The obstacles in the health system-related barriers from our study include lack of infrastructure, health financing system constraints, and unavailability of EMR. The clinics need more infrastructure to support further TB examinations and care. Although clinics can network with government health facilities, these situations could impede patient management follow-up due to increased patient burden.

“Even if the clinic can carry out a complete examination for TB, we did not yet have facilities for examination of AFB (acid-fast bacillus) and sputum collection booth outside.” (I4)

In the health financing system, informants were worried about the performance assessment by BPJS Kesehatan (the national social-health security agency) due to many suspected TB referrals to hospitals.

“When the AFB examination is negative, we still have to pursue further examinations, such as a chest x-ray. So, we must refer patients to the hospital, which will add the referral number because the limit referral ruled out by BPJS is a maximum of 14.4%.” (I4)

Informants said screening is often skipped since no system ensures it. Electronic and paper-based medical records (MR) lack a reminder system to encourage HCW screening and have not yet given screening history information. Data management is not integrated yet, so officers must manually recapitulate the report. Moreover, clinics without EMRs find data checking harder. Hence, HCWs often delay MR fulfillment, resulting in inaccurate results.

“There is no warning on the computer. Doctors only asked for complaints that are currently symptomatic, so sometimes the history is not noticed.” (I10)

“We recapitulate from both EMR and screening form manually.” (I1)

Incomplete MR fulfillment and unintegrated data caused clinical data not to be appropriately analyzed. PPCs also have trouble tracking patient histories due to a lack of data sharing or feedback from other referral health facilities. An excerpt below illustrates these continuity of care problems.

“I asked Puskesmas to share the data about the patient who was sent to us related to infectious diseases, especially the status of hepatitis, TB, or others such as HIV/AIDS ... but they did not provide the data transfer.” (I4)

Our research indicated that health organizations and the health system's financing, infrastructure, and continuity of treatment issues challenged TB-DM bidirectional screening pilot testing. This finding aligns with the unresolved constraints in Indonesian TB research (Almossawi *et al.*, 2019; Kurniawati, Padmawati, and Mahendradhata, 2019; Arini, Sugiyo and Permana, 2022). Moreover, the problem of patient referral barriers related to single-payer health financing policies (BPJS Kesehatan) in Indonesia still needs to be addressed with a high level of commitment and health financing sources innovations (Collins and Hafidz, 2014; Fuady *et al.*, 2019). Employing alternative health financing mechanisms can serve as a potential solution, although its long-term viability must be taken into account (Dong *et al.*, 2019).

HCW-related barriers

Different numbers and characteristics of patients affect clinics' workloads differently. High staff turnover, a demanding workload due to administrative burdens and patients, varied levels of

HCWs' commitment, and a lack of HCWs' competency were noticed. Not all HCWs can recognize the signs/ symptoms of TB or perform TB examination techniques.

"Some doctors have many patients, so they are in a hurry. Therefore, it was found that some patients had not been screened." (I7)

"... only female doctors screen TB in DM patients, while male doctors do not." (I1)

"Our colleagues do not consider that a DM patient with a two-week cough must be screened for AFB." (I10)

Our study found that healthcare workers (HCWs) faced awareness, knowledge, workload, and ethics challenges. This situation confirms South African evidence that HCWs availability and capability and the lack of an effective integrated system were the key barriers to delivering integrated TB-DM services in primary care (Almossawi *et al.*, 2019). This finding implies the need for continuing awareness sessions and capacity building (Arini, Primastuti, and Basha, 2024).

The informants reported their acceptability of the piloted screening program. Although, in general, they considered that this new task could still be managed. Some HCWs were uncomfortable with the patients' reactions to screening questions, were not used to conducting them at first, and felt crowded when there were many patients.

"This program is an additional service but is enjoyable and helps people with TB to be detected. Sometimes hurdles make us unsatisfied; therefore, I am responsible for it." (I7)

"It is a bit uncomfortable to meet a patient who refuses to be screened. Forcing him is also not good. When the PROLANIS was hectic, PROLANIS patients in the emergency room were present. There were also polyclinic patients. However, there was only one doctor, so it was a bit confusing." (I7)

HCWs in this study exhibited a positive attitude towards the dual screening procedure despite encountering various obstacles. Research conducted on religiously affiliated private hospitals also demonstrates comparable findings (Wijiseno, Arini, and Listiowati, 2023). Their understanding of existing regulations primarily determines the acceptability of private HCWs, the consistency of interventions and collaboration, and ethical considerations (Kurniawati, Padmawati, and Mahendradhata, 2019).

Patient-related barriers

Because TB is infectious, HCWs often meet patient denial during screening or referral to other health facilities for further TB examinations. TB or COVID-19 stigmatizes coughing. In addition, the characteristics of certain demanding patients add to the pressure placed on HCWs. Some patients or caregivers also skipped routine screenings because they were rushed.

"The patient says, 'I do not have TB; why am I being screened for that?' So, some of them refused to be screened." (I1)

"Sometimes the patient doesn't want to stay too long. For example, it's like he doesn't want to be asked any more questions." (I3)

Our research indicated that patients' perceptions often affect diagnosis flow as healthcare recipients. Many patients refuse referrals for further tests, delaying follow-up or diagnosis. The patient issues that hinder screening necessitate specific health promotion and community empowerment methods (Arini, Sugiyo, and Permana, 2022). On the other hand, to enhance the patients' acceptance of screening, it is necessary to streamline the interventions execution (Chapman and Veras-Estévez, 2021).

Our study revealed that health system, human resources, and patient difficulties impede TB-DM screening in PPCs, preventing all patients from being screened. Malawi and India have low DM screening rates due to various barriers, with

only 24% of TB patients in India examined for DM (Majumdar *et al.*, 2022; Nyirenda *et al.*, 2022). Bidirectional screening in Ghana is hindered by delays, poor patient information, stigma, poor collaboration between TB and DM units, and imbalanced funding (Salifu and Hlongwana, 2020). The cost and complexity of DM screening in low- and middle-income countries make it difficult to diagnose and manage TB-DM comorbidity (Fuady *et al.*, 2019; Salifu and Hlongwana, 2020). TB-DM screening performance, awareness, training, and resource allocation must address these complex hurdles to improve the healthcare system.

Theme 2: the urgency of an integrated information system for screening

Interestingly, HCWs suggested the use of integrated health information system (HIS) for aid bidirectional screening. They complained about the paper-based screening form, unintegrated MR recording and reporting, the requirement of HIS for decision-making support, and several helpful features.

Recording and reporting burden

HCWs are required to report individuals suspected of having TB and the management of patients to the National TB Information System (NTIS). Informants were perplexed by their early introduction to this reporting system. They must familiarize themselves with these application features and recognize when the patient should be reported.

“... a was disseminated (about the national TB information system), but we are still confused because it is just the beginning. So maybe it can be studied again.” (I4)

In line with our study findings, researchers found several reasons national reporting systems struggle to report in the NTIS. Problems include lacking human resources, TB program funding, non-integrated HIS, and poor TB recording and reporting flowchart socialization, which hamper optimal reporting (Zhou *et al.*, 2019; Ratnasari and Sjaaf, 2023). Over

25% of TB cases in Eastern China are underreported due to unqualified health workers, insufficient monitoring, and a complex health information management system reporting (Zhou *et al.*, 2019). A study in Zambia also revealed that 32.8% of TB cases were unnotified, and 11.3% were unreported in Zambia (Lungu *et al.*, 2022). Improving resources, training, protocols, and data management systems is essential to increase TB reporting accuracy and global TB monitoring systems.

HCWs must manually record, recapitulate, and assess paper-based piloting TB-DM screening. Some screening forms were incomplete due to administrative tasks. Thus, informants desired an integrated HIS to enhance HCW screening.

“The doctors often forget to fill out the recommendation section in the screening form. Maybe it is due to double filling here and MR.” (I4)

“The EMR, if possible, has a warning. ‘Oh, this patient must be screened for TB.’ (I7)

“There are many patient data, but I haven't matched the screening results yet.” (I2)

This study suggests a simple and comprehensive system to reduce administrative hassles and promote screening. The Indonesian HIS for recording and reporting TB (Republic Indonesia Ministry of Health, 2020b), does not monitor TB-DM screening or improve its application in everyday practice. A study in South Africa found that low TB-DM screening performance may be due to a lack of reporting responsibility (Almossawi *et al.*, 2019). Meanwhile, mobile and internet-based TB care and control using HIS/technology may improve disease control and surveillance, care administration, and patient outcomes (Aisyah *et al.*, 2020; Ibeneme *et al.*, 2020; Robbiati *et al.*, 2022).

Needs for decision-making support

The HCW participants needed help deciding when to refer the patient for further

testing or therapy due to typical and overlapping TB symptoms in DM patients. HCWs also require the patient's history and previous well-recorded TB-DM screening results to be considered when referring the patients.

"However, we are still confused about TB symptoms in DM patients. Is he just night sweats that need to be referred?" (I8)

"I had an X-ray yesterday at the Puskesmas.' Meanwhile, the doctor did not know his previous history" (I8)

Clinical decisions, primarily referrals, have procedural and financial consequences. According to our study, symptom-based screening is insufficient for diagnosing TB in DM patients. HIS can evaluate the feasibility and efficacy of peripheral-level DM screening for TB patients and provide frameworks for automated screening of early signs of diseases, which can affect patient outcomes (Setyowati *et al.*, 2020). Since healthcare standards suggest that when patients need GeneXpert or chest X-rays, HIS can help doctors and patients make informed decisions by giving relevant information and weighing the risks and benefits of actions (Brenner *et al.*, 2018; Wang *et al.*, 2023). HIS can aid, but epidemiological research should guide decision-making, which currently lacks strong evidence (Zheng, Hu, and Gao, 2017; Lin *et al.*, 2019). Technology-based TB-DM screening required a more targeted strategy targeting high-risk people, such as those with untreated diabetes or poorly managed hyperglycemia, to maximize resource allocation (Lin *et al.*, 2015).

Feature needs on HIS

HCWs mentioned their need for a simple and easy-to-use HIS to record screening activities. They also underlined the worth of integrating HIS with EMR to decrease redundant documentation, facilitate interpretation, and function as a reminder system to improve continuity of care.

"... if possible, the EMR already has a place for screening, so we no longer have to look for paper." (I7)

"It will be more manageable, and the screening coverage can also be recapitulated. It is also easier than paper-based screening. We go straight to it and click and click to fill out the screening results." (I3)

Our study found that health institutions need a reminder mechanism to encourage all HCWs to check for TB-DM. Despite inconsistent research on notices and reminders, they are necessary to boost screening coverage and promote continuity of care (De Medeiros *et al.*, 2017; Stop TB Partnership, 2018; Aisyah *et al.*, 2020). A Malawian study found that HCW reminders may improve awareness of guidelines/SOP and decision-making competency case management but not compliance (Kaunda-Khangamwa *et al.*, 2018). This literature also found that HIS's reminder system for HCWs and patients needs more policy support, such as human resource arrangements, incentives, monitoring, and feedback (Kaunda-Khangamwa *et al.*, 2018; Stop TB Partnership, 2018).

This study identified the initial requirement for assessments of HIS to enhance screening for comorbidities between TB and other diseases. HIS should be flexible enough for HCWs with or without EMR in their health institutions due to PPCs' EMR availability and preparedness. According to the literature, integrating data programs and NTIS modification is necessary to reduce record duplication and stimulate collaborative implementation (Harries *et al.*, 2015). HIS and EMR features should address duplication documentation, interpretation facilitation, and care continuity. First, unified data entry to reduce repeated paperwork and assure consistency (Pereira *et al.*, 2017)—consolidated HIS and EMR data in comprehensive patient records to give healthcare practitioners correct information. Interoperability automates data sharing, thus less typing (Pellison *et al.*, 2020). Clinical Decision Support Systems (CDSS) improve care continuity by reminding individuals of tasks,

medication schedules, and follow-ups (Armando *et al.*, 2023). Standardized formats and languages simplify data entry and interpretation (Armando *et al.*, 2023). Automation reduces routine activities, enhancing efficiency (de Vries *et al.*, 2021), while a user-friendly interface simplifies data entry and access, improving interpretation and use (Iribarren *et al.*, 2020).

Theme 3: potential challenges to the deployment of information technology

Some clinics studied have not used EMR. Participants felt a computer program or similar technology could help screen and record, but they also noted potential drawbacks. EMR clinics have resource constraints, minimal technology literacy, and the need to integrate existing data.

Needs for additional infrastructure

Informants highlighted the addition of computers, adequate internet signal, and electricity as prerequisites for clinics that have not implemented EMR and are located in suburban or rural areas. HCWs noticed that these conditions had become a financial challenge for still-developing clinics.

"It is challenging to use EMR for the level of a suburban clinic like ours. The first is computer availability. If indeed, God willing, with EMR, there must be a computer at every point of patient care." (I4)

"There will also be electrical problems, whether the power is sufficient because all services must use a computer." (I5)

Data integration problems

The participants highlighted some potential problems related to data and system integration. For clinics that have not implemented EMR, the retention of old patient data should be considered. Some errors in information systems also often happen and need to be solved to ensure healthcare is provided safely.

"I am confused. How to ensure the old patient data in this MR paper is entered into the EMR?" (I5)

"... sometimes the history of previous examinations of old patients cannot be opened." (I10)

Lack of information technology skills

The informant noticed that using new technology means the need for adaptation and training to be beneficial. They pointed out the need for a step-by-step process that takes time and funds.

"We must train IT skills from the beginning because not everyone is capable. We must learn together." (I4)

"If we use EMR, 'how could' if we are not used to it. It will take a long time." (I5)

It is interesting to note that although HIS can help HCWs improve TB-DM screening coverage and its reporting, several challenges are also identified in preparing for HIS deployment. Despite informants' needs, suburban and rural PPCs needed help affording computer equipment, internet connectivity, and electrical capacity. These findings indicate that organizational support significantly impacts HIS acceptance (Nugroho, Notobroto, and Rosyanti, 2021). Hence, a flexible, simple, and pleasurable HIS is a necessity to enhance technology adoption (Alshamari, 2016; De Medeiros *et al.*, 2017).

Furthermore, establishing a systematic HIS for TB-DM screening requires a phased approach to better adoption. First, an assessment identifies data gaps and defines essential components, including demographics, risk factors, and treatment history. This study suggests gathering user requirements, potential hurdles, and problem-solving solutions before building a new HIS to ease adoption. Healthcare providers can pinpoint specific gaps in current systems that align with the target population's unique needs, enhancing its effectiveness and relevance in healthcare delivery by

conducting this needs assessment (Setiyadi and Setyowati, 2022).

When adopting a new HIS, HCWs are concerned about errors and data integration to reduce documentation duplication. Developing HIS for comorbidity screening requires increasing data integration and real-time use. Therefore, data integration across healthcare departments, user-friendly interfaces, and robust data security are the subsequent phase's primary objectives, concentrating on development and implementation (Natsiavas *et al.*, 2018; Bowles *et al.*, 2020). Connecting data from wearable devices, patient portals, and medication adherence requires innovation (Vaz *et al.*, 2022).

Concerning reminder systems needs, the following steps in building a new HIS include considering digital notifications and reminders to be incorporated into HIS workflows through the design process. Decision support systems and intelligent alarms can reduce physician information overload and alert fatigue (Fernandes *et al.*, 2019). Thus, HIS workflows must strategically use digital notifications and reminders to streamline operations, improve collaboration, and optimize screening and follow-up.

Our study showed that HCWs' IT literacy needs to be addressed while adopting technology. To implement successfully, healthcare providers need multi-step training and continuing assistance (Jeyakumar *et al.*, 2021). Staff needs in-depth HIS training, hands-on experience, and scenario-based learning. Troubleshooting, refresher classes, and proactive helpdesk are needed. Successful HIS integration needs early stakeholder participation, continual improvement, and user input for incremental changes (Hariyanto, Denison, and Stillman, 2018). As for advancement, the HIS could identify potential comorbidity risks and trigger real-time interventions with this study's dynamic understanding of a patient's health. Explore artificial intelligence to analyze massive HIS datasets to generate predictive models for comorbidity development, enabling preventative medicine and individualized care (Prioleau *et al.*, 2023).

Finally, Usability testing is also needed when a new HIS is broadly implemented to evaluate how HCWs, as users, can learn, use technology, and overcome various obstacles related to IT and medical case management (Alshamari, 2016). This systematic approach promotes user buy-in and collaboration, resulting in a robust HIS that enhances TB-DM screening efficacy and patient care.

Our study findings reinforce that reducing TB-DM control gaps needs a multifaceted approach along with HIS deployment. Strategic co-infection control training for HCWs and community role in early detection and healthcare support is essential (Arini, Sugiyo, and Permana, 2022). Patients can also actively participate in their care by investing in health education programs (Listiowati *et al.*, 2023). Financial and logistical issues must be addressed through strategic health policies and external collaboration to reduce the TB-DM burden (Lin *et al.*, 2019).

This study has strengths and limitations that should be considered. The strength of this research is that as part of an umbrella study, it was carried out continuously, various sources were used to confirm data, and it was in-depth research due to close engagement with the participants. A limitation worth considering is the contextual nature of the qualitative research, where generalizations may not be possible.

Conclusion

PPCs faced cascade TB-DM screening barriers. Multifaceted approaches and multisector roles were needed to address health organizations, health systems, human resources, and patient challenges. This research supports earlier findings on complicated TB-DM integration barriers in Indonesia's private sector. It supports the private sector's role in future government health programs.

This study suggested building HIS as a reminder, decision-making support, reporting assistance, and monitoring and evaluation to increase screening implementation. However, successful technology implementation requires

complete HIS preparation and development considering needs, potential impediments, and health organization capability assessments.

HIS cannot solely improve TB-DM collaborative care and control. Complex, multisector actions are needed. Therefore, HIS needs more study to enhance uptake and program coverage. Given Indonesia's diverse health system, further study should focus on a more significant subject.

Abbreviations

AFB: acid-fast bacillus; CDSS: Clinical Decision Support Systems; DM: diabetes mellitus; EMR: electronic medical record; HCW: healthcare worker; HIS: health information system; IT: information technology; MD: medical doctor; MR: medical record; NTIS: National Tuberculosis Information System; PIC: person in charge; WHO: World Health Organization; HCW: healthcare worker; TB: tuberculosis.

Declarations

Ethics Approval and Consent Participant

This study obtained ethical approval from the Health Research Ethics Committee of the Universitas 'Aisyiyah Yogyakarta (No. 1905/KEP-UNISA/XI/2021). All informants underwent written informed consent procedures before data collection.

Conflict of Interest

The authors have no competing interest to declare.

Availability of Data and Materials

Data and material research can be provided upon request.

Authors' Contribution

MA and DAP conceptualized the study and created the methodology; MA and DAP conducted data collection; MA wrote the original draft; MA, DAP, FS, AD, and MAMKB wrote, reviewed, and edited the manuscript.

Funding Source

Universitas Muhammadiyah Yogyakarta.

Acknowledgment

We would like to thank private clinic leaders and staff for their technical support and all the contributors who helped in this study.

References

- Aisyah, D.N. et al. (2020) 'Knowledge, Attitudes, and Behaviors on Utilizing Mobile Health Technology for TB in Indonesia: A Qualitative Pilot Study', *Frontiers in Public Health*, 8(October), pp. 1–9. Available at: <https://doi.org/10.3389/fpubh.2020.531514>.
- Almossawi, H.J. et al. (2019) 'Primary Health Care System Readiness for Diabetes Mellitus and Tuberculosis Service Integration in South Africa', *J Trop Dis*, 7, p. 329. Available at: <https://www.walshmedicalmedia.com/open-access/primary-health-care-system-readiness-for-diabetes-mellitus-and-tuberculosis-service-integration-in-south-africa-44459.html>.
- Alshamari, M. (2016) 'Usability Factors Assessment in Health Information System', *Intelligent Information Management*, 08(06), pp. 170–180. Available at: <https://doi.org/10.4236/iim.2016.86012>.
- Arini, M., Ahmad, R.A. and Utarini, A. (2020) 'Tuberculosis and type 2 Diabetes Mellitus (TB-DM) comorbidity care: Barriers from the patients' perspective', *Enfermeria Clinica*, 30(S6), pp. 174–178. Available at: <https://doi.org/10.1016/j.enfcli.2020.06.040>.
- Arini, M., Primastuti, H.I. and Basha, M.A.B.M.K. (2024) 'Improving Knowledge of Non-Communicable Disease Program Managers in Tuberculosis-Diabetes Mellitus Control and Care', *Indonesian Journal of Public Health*, 19(1), pp. 13–25. Available at: <https://doi.org/10.20473/ijph.v19i1.2023.13-25>.
- Arini, M., Sugiyo, D. and Permana, I. (2022) 'Challenges, opportunities, and potential roles of the private primary

- care providers in tuberculosis and diabetes mellitus collaborative care and control: a qualitative study', *BMC Health Services Research*, 22(1), pp. 1–14. Available at: <https://doi.org/10.1186/s12913-022-07612-3>.
- Armando, L.G. *et al.* (2023) 'Clinical decision support systems to improve drug prescription and therapy optimisation in clinical practice: a scoping review', *BMJ Health and Care Informatics*, 30(1), pp. 1–10. Available at: <https://doi.org/10.1136/bmjhci-2022-100683>.
- Barr, V.J. *et al.* (2003) 'The expanded Chronic Care Model: an integration of concepts and strategies from population health promotion and the Chronic Care Model.', *Hospital quarterly*, 7(1), pp. 73–82. Available at: <https://doi.org/10.12927/hcq.2003.16763>.
- Bowles, J.K.F. *et al.* (2020) 'Integrating healthcare data for enhanced citizen-centred care and analytics', *Studies in Health Technology and Informatics*, 275, pp. 17–21. Available at: <https://doi.org/10.3233/SHTI200686>.
- Brenner, A.T. *et al.* (2018) 'Evaluating Shared Decision Making for Lung Cancer Screening', *JAMA Internal Medicine*, 178(10), pp. 1311–1316. Available at: <https://doi.org/10.1001/jamainternmed.2018.3054>.
- Carter, N. *et al.* (2014) 'The use of triangulation in qualitative research', *Methods & Meanings*, 41(5), pp. 545–547. Available at: <https://doi.org/10.1188/14.ONF.545-547>.
- Chapman, H.J. and Veras-Estévez, B.A. (2021) 'Lessons Learned During the COVID-19 Pandemic to Strengthen TB Infection Control: A Rapid Review', *Global Health: Science and Practice*, 9(4), pp. 964–977. Available at: <https://doi.org/10.9745/GHSP-D-21-00368>.
- Collins, D. and Hafidz, F. (2014) *Indonesia TB Financing Roadmap - 25 years from 2015-2039*.
- De Medeiros, E.R. *et al.* (2017) 'Clinical information systems for the management of tuberculosis in primary health care', *Revista Latino-Americana de Enfermagem*, 25. Available at: <https://doi.org/10.1590/1518-8345.2238.2964>.
- Developing enhanced tb public- private mix (PPM) data dashboards in high PPM priority countries to ensure action and accountability Meeting report Nairobi , Kenya* (2022).
- Dong, D. *et al.* (2019) 'Impact of an Innovative Tuberculosis Financing and Payment Model on Health Service Utilization by Tuberculosis Patients in China: Do The Poor Fare Better Than The Rich?', *Infectious Diseases of Poverty*, 8(21), pp. 1–10. Available at: <https://doi.org/10.1186/s40249-019-0559-z>.
- Fernandes, C.O. *et al.* (2019) 'Artificial intelligence technologies for coping with alarm fatigue in hospital environments because of sensory overload: Algorithm development and validation', *Journal of Medical Internet Research*, 21(11), p. 1–20. Available at: <https://doi.org/10.2196/15406>.
- Fuady, A. *et al.* (2019) 'Effect of financial support on reducing the incidence of catastrophic costs among tuberculosis-affected households in Indonesia: Eight simulated scenarios', *Infectious Diseases of Poverty*, 8(1), pp. 1–14. Available at: <https://doi.org/10.1186/s40249-019-0519-7>.
- Fuady, A. *et al.* (2020) 'Cost of seeking care for tuberculosis since the implementation of universal health coverage in Indonesia', *BMC Health Services Research*, 20(1), pp. 1–10. Available at: <https://doi.org/10.1186/s12913-020-05350-y>.
- Hallingberg, B. *et al.* (2018) 'Exploratory studies to decide whether and how to proceed with full-scale evaluations of public health interventions: A systematic review of guidance', *Pilot and Feasibility Studies*, 4(1), pp. 1–12. Available at:

- <https://doi.org/10.1186/s40814-018-0290-8>.
- Hariyanto, H., Denison, T. and Stillman, L. (2018) 'Understanding health information system implementation in an Indonesian primary health centre: A sociotechnical perspective', *Proceedings of the 22nd Pacific Asia Conference on Information Systems - Opportunities and Challenges for the Digitized Society: Are We Ready?, PACIS 2018* [Preprint], (October).
- Harries, A.D. et al. (2015) 'Diabetes mellitus and tuberculosis: programmatic management issues', *The International Journal of Tuberculosis and Lung Disease*, 19(8), pp. 879–886. Available at: <https://doi.org/10.5588/ijtld.15.0069>.
- Ibeneme, S. et al. (2020) 'Impact of information and communication technology diffusion on HIV and tuberculosis health outcomes among African health systems', *Informatics*, 7(2), pp. 1–10. Available at: <https://doi.org/10.3390/informatics7020011>.
- Iribarren, S.J. et al. (2020) 'Converting and expanding mobile support tools for tuberculosis treatment support: Design recommendations from domain and design experts', *Journal of Biomedical Informatics*, 112(100066), pp. 1–7. Available at: <https://doi.org/10.1016/j.yjbinx.2019.100066>.
- Jeyakumar, T. et al. (2021) 'An education framework for effective implementation of a health information system: Scoping review', *Journal of Medical Internet Research*, 23(2), pp. 1–17. Available at: <https://doi.org/10.2196/24691>.
- Kaunda-Khangamwa, B.N. et al. (2018) 'The effect of mobile phone text message reminders on health workers' adherence to case management guidelines for malaria and other diseases in Malawi: Lessons from qualitative data from a cluster-randomized trial', *Malaria Journal*, 17(1), pp. 1–13. Available at: <https://doi.org/10.1186/s12936-018-2629-2>.
- Kurniawati, A., Padmawati, R.S. and Mahendradhata, Y. (2019) 'Acceptability of mandatory tuberculosis notification among private practitioners in Yogyakarta, Indonesia', *BMC Research Notes*, 12(1), pp. 1–7. Available at: <https://doi.org/10.1186/s13104-019-4581-9>.
- Leung, C.C. et al. (2017) 'Effects of diabetes mellitus on the clinical presentation and treatment response in tuberculosis', *Respirology*, 22(6), pp. 1225–1232. Available at: <https://doi.org/10.1111/resp.13017>.
- Lin, Y. et al. (2015) 'Screening of patients with Diabetes Mellitus for Tuberculosis in Community Health Settings in China', *Tropical Medicine and International Health*, 20(8), pp. 1073–1080. Available at: <https://doi.org/10.1111/tmi.12519>.
- Lin, Y. et al. (2019) *Management of Diabetes Mellitus-Tuberculosis: A Guide to the Essential Practice*. first edit. Edited by International Union Against Tuberculosis and Lung Disease (The Union) and World Diabetes Foundation. Paris, France.
- Listiowati, E. et al. (2023) 'How to engage patients in achieving patient safety: A qualitative study from healthcare professionals' perspective', *Heliyon*, 9(2), p. e13447. Available at: <https://doi.org/10.1016/j.heliyon.2023.e13447>.
- Lungu, P.S. et al. (2022) 'Undernotification and underreporting of tuberculosis in Zambia: a national data quality assessment', *BMC Health Services Research*, 22(1), pp. 1–12. Available at: <https://doi.org/10.1186/s12913-022-08431-2>.
- Majumdar, A. et al. (2019) 'Tuberculosis-diabetes screening: how well are we doing? A mixed-methods study from North India', *Public Health Action*, 9(1), pp. 3–10. Available at: <https://doi.org/10.5588/pha.18.0048>.
- Natsiavas, P. et al. (2018) 'Comprehensive user requirements engineering methodology for secure and interoperable health data exchange 08 Information and Computing

- Sciences 0806 Information Systems', *BMC Medical Informatics and Decision Making*, 18(1), pp. 1–16. Available at: <https://doi.org/10.1186/s12911-018-0664-0>.
- Nicholson, T. et al. (2017) *Report and Analysis Toward comprehensive global health care delivery: Addressing the double threat of tuberculosis and diabetes*.
- Nugroho, H.S.W., Notobroto, H.B. and Rosyanti, L. (2021) 'Acceptance model of a mandatory health information system in Indonesia', *Healthcare Informatics Research*, 27(2), pp. 127–136. Available at: <https://doi.org/10.4258/HIR.2021.27.2.127>.
- Nyirenda, J.L.Z. et al. (2022) 'Bidirectional screening and treatment outcomes of diabetes mellitus (DM) and Tuberculosis (TB) patients in hospitals with measures to integrate care of DM and TB and those without integration measures in Malawi', *BMC Infectious Diseases*, 22(1), pp. 1–12. Available at: <https://doi.org/10.1186/s12879-021-07017-3>.
- Nyumba, T.O. et al. (2018) 'The use of focus group discussion methodology: Insights from two decades of application in conservation', *Methods in Ecology and Evolution*, 9(1), pp. 20–32. Available at: <https://doi.org/10.1111/2041-210X.12860>.
- Pellison, F.C. et al. (2020) 'Data integration in the Brazilian public health system for tuberculosis: Use of the semantic web to establish interoperability', *JMIR Medical Informatics*, 8(7). Available at: <https://doi.org/10.2196/17176>.
- Pereira, R. et al. (2017) 'Unified health database creation: 125 million brazilian cohort from information systems of hospital, outpatient, births, notifications and mortalities: IJPDS (2017) Issue 1, Vol 1:205 Proceedings of the IPDLN Conference (August 2016)', *International Journal of Population Data Science*, 1(1). Available at: <https://doi.org/10.23889/ijpds.v1i1.225>.
- Prakoso, D.A. et al. (2023) 'Acceptability and feasibility of tuberculosis-diabetes mellitus screening implementation in private primary care clinics in Yogyakarta, Indonesia: a qualitative study', *BMC Public Health*, 23(1), pp. 1–14. Available at: <https://doi.org/10.1186/s12889-023-16840-z>.
- Prioleau, T. et al. (2023) 'DiaTrend: A dataset from advanced diabetes technology to enable development of novel analytic solutions', *Scientific Data*, 10(1), pp. 1–9. Available at: <https://doi.org/10.1038/s41597-023-02469-5>.
- Pyo, J. et al. (2023) 'Qualitative Research in Healthcare: Necessity and Characteristics', *Journal of Preventive Medicine and Public Health*, 56(1), pp. 12–20. Available at: <https://doi.org/10.3961/jpmph.22.451>.
- Ratnasari, Y. and Sjaaf, A.C. (2023) 'Evaluation of Tuberculosis Recording and Reporting Case System At Syarif Hidayatullah Hospital in 2020', *Jurnal Administrasi Rumah Sakit Indonesia*, 9(1), pp. 21–24. Available at: <https://doi.org/10.7454/arsi.v9i1.4742>.
- Republic Indonesia Ministry of Health (2023) *Laporan Program Penanggulangan Tuberkulosis Tahun 2022*.
- Republic Indonesia Ministry of Health (2020a) *Strategi Nasional Penanggulangan Tuberkulosis di Indonesia 2020-2024*.
- Republic Indonesia Ministry of Health (2020b) 'The Republic of Indonesia Joint External Monitoring Mission for Tuberculosis', *Republic Indonesia Ministry of Health*, pp. 1–105.
- Robbiati, C. et al. (2022) 'Improving TB Surveillance and Patients' Quality of Care Through Improved Data Collection in Angola: Development of an Electronic Medical Record System in Two Health Facilities of Luanda', *Frontiers in Public Health*, 10(March), pp. 1–8. Available at: <https://doi.org/10.3389/fpubh.2022.745928>.

- Salifu, R.S. and Hlongwana, K.W. (2020) 'Barriers and facilitators to bidirectional screening of TB-DM in Ghana: Healthcare workers' perspectives', *PLoS ONE*, 15(7 July), pp. 1–12. Available at: <https://doi.org/10.1371/journal.pone.0235914>.
- Scheelbeek, P.F.D. *et al.* (2020) 'Improving the use of focus group discussions in low income settings', *BMC Medical Research Methodology*, 20(1), pp. 1–10. Available at: <https://doi.org/10.1186/s12874-020-01168-8>.
- Setiyadi, N.A. and Setyowati, M. (2022) 'Needs Assessment for an Information System to Support a TB Control Program in Indonesia', *KnE Life Sciences*, 2022, pp. 863–871. Available at: <https://doi.org/10.18502/cls.v7i2.10387>.
- Setyowati, M. *et al.* (2020) 'Development of Health Information System in TB Control Decision Support: Territoriality-Based Approach'. Available at: <https://doi.org/10.4108/eai.22-7-2020.2300294>.
- Stop TB Partnership (2018) 'Stop TB Field Guide 9: Strengthening Information Systems and Linkages to Care'.
- Surya, A. *et al.* (2017) 'Quality Tuberculosis Care in Indonesia: Using Patient Pathway Analysis to Optimize Public–Private Collaboration', *The Journal of Infectious Diseases*, 216(suppl_7), pp. S724–S732. Available at: <https://doi.org/10.1093/infdis/jix379>.
- Tong, A., Sainsbury, P. and Craig, J. (2007) 'Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups', *International Journal for Quality in Health Care*, 19(6), pp. 349–357. Available at: <https://doi.org/10.1093/intqhc/mzm042>.
- Vaz, C. *et al.* (2022) 'Formative acceptance of ingestible biosensors to measure adherence to TB medications', *BMC Infectious Diseases*, 22(1), pp. 1–11. Available at: <https://doi.org/10.1186/s12879-022-07756-x>.
- de Vries, G. *et al.* (2021) 'Human reading versus computer-automated reading of chest radiographs in a tuberculosis screening programme in Romania', *European Respiratory Journal*, 58(2004628), pp. 1–4. Available at: <https://doi.org/10.1183/13993003.04628-2020>.
- Wang, M. *et al.* (2023) 'Clinical assistant decision-making model of tuberculosis based on electronic health records', *BioData Mining*, 16(1), pp. 1–23. Available at: <https://doi.org/10.1186/s13040-023-00328-y>.
- WHO (2023) *Global Tuberculosis Report 2023*. (WHO).
- Wijiseno, B., Arini, M. and Listiowati, E. (2023) 'Healthcare workers' acceptance of the integrated tuberculosis–COVID-19 screening in central Java Private Hospitals, Indonesia', *Journal of Taibah University Medical Sciences*, 18(6), pp. 1311–1320. Available at: <https://doi.org/10.1016/j.jtumed.2023.05.010>.
- Zheng, C., Hu, M. and Gao, F. (2017) 'Diabetes and pulmonary tuberculosis: a global overview with special focus on the situation in Asian countries with high TB-DM burden', *Global Health Action*, 10(1), pp. 1–11. Available at: <https://doi.org/10.1080/16549716.2016.1264702>.
- Zhou, D. *et al.* (2019) 'Under-reporting of TB cases and associated factors: A case study in China', *BMC Public Health*, 19(1), pp. 1–9. Available at: <https://doi.org/10.1186/s12889-019-8009-1>.
- Zwama, G. *et al.* (2021) 'Health system influences on the implementation of tuberculosis infection prevention and control at health facilities in low-income and middle-income countries: A scoping review', *BMJ Global Health*, 6(5), pp. 1–13. Available at: <https://doi.org/10.1136/bmjgh-2020-004735>.



SUBSCRIPTION FORM

As I undersigned here to subscribe the copies of Indonesian Journal of Health Administration (IJHA) / Jurnal Administrasi Kesehatan Indonesia (JAKI):

Name :

Address :

.....

.....

Phone :

Email :

Thereby, we transfer some amount of money for some copies*:

Rp.125,000 (each number) + Shipping Charge, starting from

Volume:, Number:,

*We will send to you the invoice.

.....
Name and Signature

OPEN JOURNAL SYSTEM (OJS) <https://e-journal.unair.ac.id/JAKI>
Further inquiries, contact us at 087766510405/ WA only (JAKI Admin) or ijha@fkm.unair.ac.id



Announcement

Since 31 December 2022, we have been accepted to be indexed by Scopus.
<https://www.scopus.com/sourceid/21101152858>

Scopus

Source details

Indonesian Journal of Health Administration
Open Access
Years currently covered by Scopus: from 2019 to 2023
Publisher: Airlangga University
ISSN: 2303-3592 E-ISSN: 2540-9301
Subject area: [Medicine: Medicine \(miscellaneous\)](#) [Medicine: Health Policy](#) [Medicine: Public Health, Environmental and Occupational Health](#) [Medicine: Health Informatics](#)
Source type: Journal
[View all documents >](#) [Set document alert](#) [Save to source list](#)

CiteScore 2023
2.7

SJR 2023
0.185

SNIIP 2023
0.323

CiteScore 2023
2.7 = 261 Citations 2020 - 2023
95 Documents 2020 - 2023
29, 2024

CiteScoreTracker 2024
1.3 = 96 Citations to date
75 Documents to date
Last updated on 05 June, 2024 - Updated monthly

The Scopus CiteScore 2023 for IJHA was released in June 2024. Our score was 2.7, which puts us in Q2 Scopus.



Find us on <https://medium.com/ijha>

Medium



IJHA/JAKI

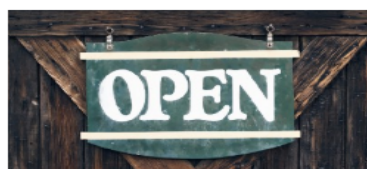
Cultivate, Collaborate and Connect Health Administration Research.



From Editorial Boards

JAKI: #OpenScience Discussion

Yesterday, JAKI Editorial Board team and all partners had a beautiful day of welcoming the JAKI English Editor. It was a fruitful day!



INDEXED BY DOAJ, JAKI IS READY TO PUBLISH QUALIFIED JOURNALS

Since 27th of February 2019, Jurnal Administrasi Kesehatan Indonesia has been indexed by DOAJ (Directory of Open Access Journals). DOAJ is...



Ilham Akhsanu Ridlo
May 7 - 1 min read

LISTED IN THE INTERNATIONAL COMMITTEE OF MEDICAL JOURNAL...

Great News! JAKI has been listed in the International Committee of Medical Journal Editors (ICMJE). See the list here...



Ilham Akhsanu Ridlo
May 7 - 1 min read

GETTING UPGRADED TO SINTA @, INDOONESIAN JOURNAL OF HEALTH ADMINISTRATION

Based on the stipulation of Directorate General of Research and Development, Ministry of Research, Technology and Higher Education of the...



Ilham Akhsanu Ridlo
May 7 - 1 min read

Learning Not Over Yet !!!!

Yes! This week is my last week at JAKI internship. I got a task to find reviewers. This is JAKI's strategies to give a great article. We...

Amirfa Puspa Santoso
Oct 10 - 2 min read

Get Closer to JAKI Vibes!

Amirfa Puspa Santoso
Oct 10 - 2 min read

Pengalaman Oke, Relasi Nambah!

Anchini Aurelia
Sep 10 - 3 min read

JAKI shares updates on medium.com. Keep in touch with us!



GUIDELINE FOR AUTHOR

INDONESIAN JOURNAL OF HEALTH ADMINISTRATION (IJHA)/ JURNAL ADMINISTRASI KESEHATAN INDONESIA (JAKI)

Indonesian Journal of Health Administration (IJHA / JAKI) receives scientific works in the form of ORIGINAL ARTICLES, COMMENTARY, LITERATURE REVIEW, and SHORT COMMUNICATIONS. The manuscript must be original and unpublished. If the manuscript is accepted for publication in IJHA, then the submission of the manuscript shall not be permitted to publish the manuscript to other media.

The manuscript is typed on A4 size A-size HVS paper with 1 spaced space on 1 side (not back and forth). Original and review articles are up to 4000 words (main text) with a structured abstract of up to 200 words and 30 references. Commentaries should be up to 1000 words with an unstructured abstract of up to 200 words and ten references. We also receive short communications, which should be up to 800 words long with only one table or figure, a structured abstract of up to 100 words, and five references. The font type used is Arial size 11 pt. Margin or border of writing from the edge of the paper 2.5 cm in all four sides. The script is typed in (2) two columns. You are not allowed to use footnote. The manuscript file is sent in MS Word format. The manuscript is written in English with effective and academic language. All incoming scientific articles will be judged by the editor-in-chief appointed by the editors.

1. TITLE should be concise and clear (maximum 12 words) without any subtitles. The title preferably does not show an analytical relationship, but rather displays the ultimate research findings / findings. You are not allowed to use abbreviations, except for common abbreviations (e.g. DNA).
2. ABSTRACT is presented in a structured paragraph written in English and Bahasa Indonesia (Approximately 200 words). The abstract should contain background, aims, method, results, and conclusion. Three to five keywords are written alphabetically under the abstract.
3. INTRODUCTION covers the background of the problem, the formulation of the problem, research objectives and the benefits of research findings.
4. METHOD contains research design; time and location of research; population, sample and sampling method; how research works; as well as analysis of research results.
5. RESULT AND DISCUSSION contains the results of research in accordance with the objectives of the study accompanied by scientific discussions and arguments. Tables, graphs, images that support the results of the study can be included. The discussion focused on discussing the main results of the study. The provisions of writing tables, graphs and drawings are as follows:
 - a. TABLES should be attached in the body article rather Than as appendix. Please follow these instructions in writing the table: (1) Written in 1 spaced format, Arial font, 11pt font size, no bold, centred; (2) Show "what", "where", "when"; (3) Title should be written at the top before the table; (4) Format table uses open table; (5) Not allowed to exceed the margin of writing, (6) No more than 3 tables allowed in each article, (7) Tables originating from citation shall explain their source.
 - b. GRAPHS OR DRAWINGS should be attached in the body article rather Than as appendix. Please follow these instructions in writing the graphs or drawing: (1) Written in 1 spaces, Arial font, 9pt font size, bold, centred; (2) The title of the image is written at the bottom of the image; (3) Not allowed to exceed the writing margin, (4) Maximum 3 Images are allowed in each article, (5) Graphs or images originating from the citation shall be written source. Both tables and images are not allowed to be presented in colouring legend, please use only black colour in the article.
6. CONCLUSION contains a brief statement, about the results obtained associated with the objectives and hypotheses (if any) has been proposed. If any suggestions or recommendations may be included in the conclusion
7. REFERENCES style used by JAKI should be written based on the Harvard Reference format 1 (author-date) already available in the Mendeley or Zotero reference style database. Please remain that we only receive papers that the references list is managed by Mendeley or Zotero. At least, 70% of bibliographies come from scientific articles (Journals). We are concerned to develop scientific knowledge and problem solving in any health administration issues, so please only use references which are published not more than 5 years from your submission date to IJHA.
<https://e-journal.unair.ac.id/JAKI/GFA>.



In Collaboration with:
**The Indonesian Public Health Union
(Persakmi)**

Issued:
**Faculty of Public Health
Universitas Airlangga**
Kampus C Universitas Airlangga
Jl. Mulyorejo Kampus C Unair,
Surabaya 60115, Indonesia



**Social
Media**



Scan Me !



jaki@fkm.unair.ac.id
fb.me/JAKIoffice
[@JAKIoffice](https://twitter.com/JAKIoffice)

Medium
<https://medium.com/ijha>