p-ISSN: 2338-5324
e-ISSN: 2442-7276

JKP

JURNAL KEPERAWATAN PADJADJARAN

OPEN ACCESS

Embracing innovation framework and transformative paradigm: A practical application in the ultralight project

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Abstract

Higher education, as a centre for research and innovation in the era of transformative learning, is encouraged to conduct research and innovation that can lead to innovation and impact in the areas of health, economy, and sustainability. Innovation requires a framework that functions as an essential guide for development. However, limited innovation frameworks can be applied in nursing, including maternity nursing. This study discusses the M-Motion framework as an alternative framework for developing maternity nursing innovation research. M-Motion comprises of three steps of: pre-innovation, innovation, and post-innovation and it is applied to the Ultralight Project. The project aims to improve pregnancy and fetal health by using the DetectMe device to integrate mothers' self-monitoring data into online health systems so that the condition of pregnant women and their babies is promptly and accurately monitored. The application of the M-Motion framework to the Ultralight Project is a step in the right direction as it helps in illustrating the sequence between research and innovation, especially as it relates to the acceleration of reducing maternal and fetal mortality rates.

Keywords: health innovation; pregnancy; transformative learning; women's health

Health innovation is often associated with the application of knowledge and technology to create or modify something new, with the aim of advancing health services. Health innovations benefit the society in many ways, such as improving efficiency, reducing healthcare cost and making healthcare safer and more accessible (Körükcü & Kukulu, 2010; Lukovics & Zuti, 2015). Higher education plays a key role in health innovations by being the origin of many innovations in healthcare (Mulaudzi & Chyun, 2015). Because of the link between technology and improved healthcare services, higher education, including nursing discipline, has been encooouraged to adopt technology in nursing research (Madiuw et al., 2019). However, health innovation can also be seen as something intimidating and is ofetn met with resistance because of the perception that it reduces time spent with patients, which can lead to an increase in patient adverse events (Piyakong & Pholanun, 2023).

Generally, health innovations are defined as ideas, procedures, or products in the health sector that are designed to be adopted and developed, with the aim of having a significant impact on individuals, groups, or society as a whole (Kimble & Massoud, 2017). The most important characteristics of health innovation are novelty, applicability, and the benefits produced (Panchbudhe et al., 2021). Novelty can be in the form of new services, methods, or technology. The benefits produced can be seen from the patient's point of view, such as an increase in health levels and reduced suffering from disease (Panchbudhe et al., 2021). Based on the benefits aimed for the stakeholders, such as patients, innovation can be categorized into nondisruptive and disruptive. Nondisruptive innovations are those additional, evolutionary, maintained or improved from preexisting ones, but

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 235-239

http://dx.doi.org/10.24198/jkp.v12i3.2679

Article Info

Received : December 13, 2024
Revised : December 18, 2024
Accepted : December 18, 2024
Published : December 26, 2024

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Citation

Widiasih, R., Pramukti, I., Aini, F. H. Q., & Popola, T. (2024). Embracing innovation framework and transformative paradigm: A practical application in the ultralight project . *Jurnal Keperawatan Padjadjaran, 12*(3), 235-239. http://dx.doi.org/10.24198/jkp.v12i3.2679

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

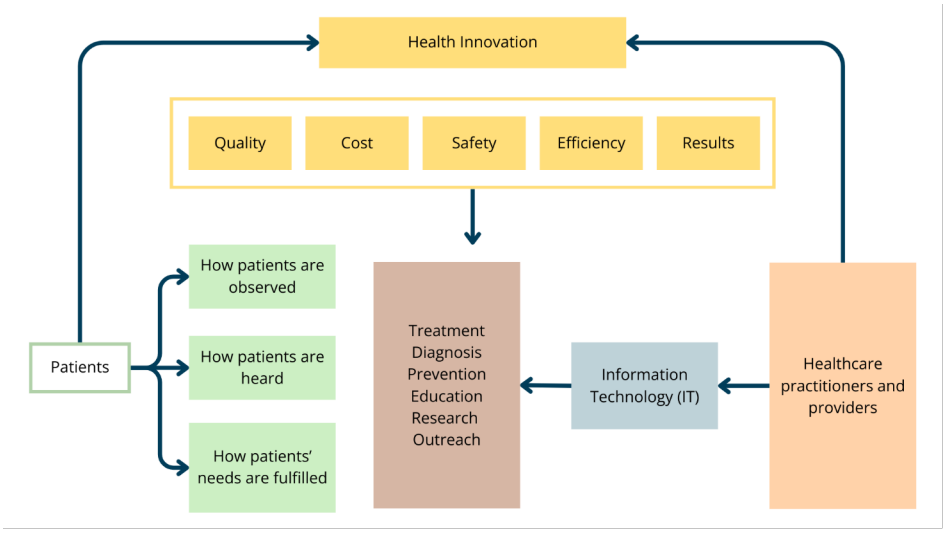


Figure 1. Conceptual Framework for Health Innovations (Flessa & Huebner, 2021; Omachonu & Einspruch, 2010)

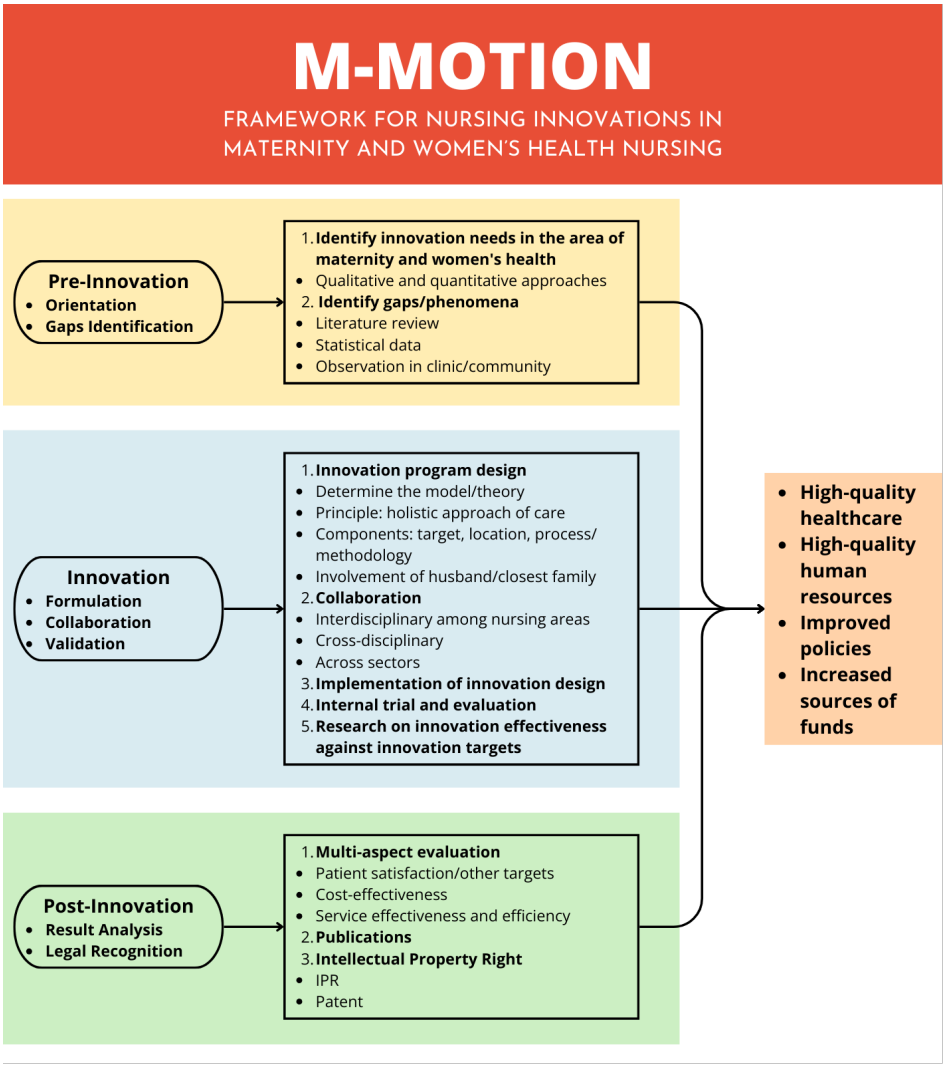


Figure 2. M-Motion Framework for Nursing Innovations in Maternity and Women's Health Nursing

still having the opportunity to solve current problems. On the other hand, disruptive innovations are radical, revolutionary, transformational, or nonlinear. Hence, disruptive innovations are meant to change the old system and create new markets (Omachonu & Einspruch, 2010). Society as stakeholders can be greatly impacted by health innovations in the information technology sector. The advantages of information technology in revolutionizing healthcare include more extensive and flexible services through telemedicine or telenursing; integrated health information systems; drug safety monitoring on a global scale; and higher quality information for healthcare workers and patients (Sounderajah et al., 2021).

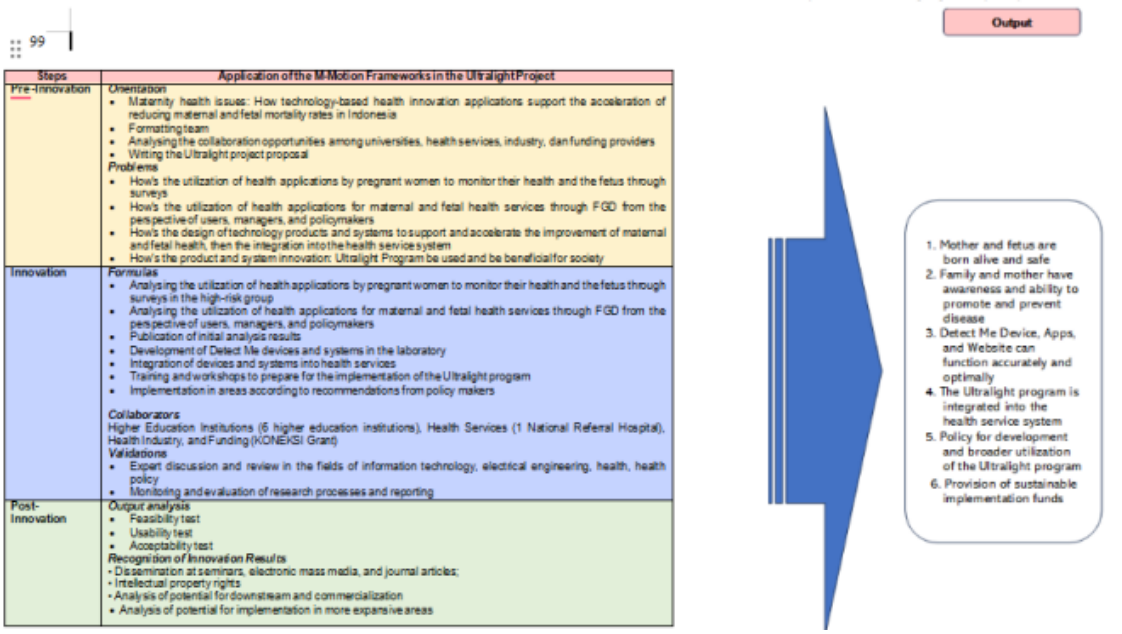
The health innovation framework (Figure 1) illustrates the six focus of health service activities, including treatment, diagnosis, prevention, education, research, and outreach. To process these activities, health services effectively manage service quality, cost, safety, efficiency, and outcomes. At the core of healthcare innovation are the needs of patients, healthcare practitioners, and healthcare providers. Healthcare organizations create innovations by relying on new or existing information technology. When successful, innovations focus on evaluating three things: a) how patients are observed, b) how patients are heard, and c) how patients' needs are met.

Globally, nurses participate in innovative activities to improve the quality of nursing care and to reduce hospitalization costs, and ensure the health of communities, groups, and individuals. Innovation is the process of developing new technologies and ways of working with new approaches, which can include the development of tools that support nursing services. Additionally, innovation can also take the form of breakthrough nursing interventions based on new ideas or refinement of previous ideas (Asurakkody & Shin, 2018; Brysiewicz et al., 2015; Lowen et al., 2017) . Innovation in health begins with a new idea and continues with changes toward better quality, which can have effects in health promotion, disease prevention, and improve patient care. Some of the challenges of nursing innovation include the challenges of utilizing technology in nursing care, especially with differences in culture, socio-economic disparities, and quality and cost of care throughout Indonesia. Other challenges nurses face is the demand to continuously innovate, observant of problems and opportunities for innovation, understand how to deliver the innovations to stakeholders, and make innovating into a practice for nurses, including in maternity and women's health nursing services.

One of the stages in innovating is to design a base structure that will become the foundation of the innovation. Creating an innovation framework or model will guide and direct the way of thinking for every element involved in innovation. With the use of a framework, ideas can be clearly and openly conveyed. Frameworks can be made in the form of physical descriptions, diagrams, or simple sketches. It guides the innovation process to reduce the risk of failure because it is expected that all elements involved have the same mindset and the same final goals. By designing a specific one that can be used in nursing innovation, especially maternity nursing, the development of maternity services can be optimized. Some innovations in maternity nursing area had been introduced, such as simulation-based learning for improving nursing students performance in managing post-partum hemorrage (Pansuwan & Klankhajhon, 2021) or artificial intelegence as an educational media to improve adolesent reproductive health (Handayani et al., 2022). However, these innovations focused more in education area.

Women's health issues, especially maternal health problems, are priority issues in the world health development, and it is included as one of the Sustainable Development Goals (SDGs) in Indonesia. Indonesia is still ranked as one of the ASEAN country with the highest incidence of maternal and infant mortality (Ministry of Health, 2024). Maternal and infant deaths are often caused by high-risk issues during pregnancy, such as hypertension in pregnancy (pre-eclampsia and eclampsia), gestational diabetes, profusive bleeding, placental abnormalities, and pregnancy infections (Widiasih & Nasution, 2020). The risk factors of such cases are obesity, substance and drug abuse, smoking, nutritional deficiencies, pregnant in high-risk ages, and trauma during pregnancy (Widiasih & Nasution, 2020). There are various government programs implemented by nurses in improving maternal and women's health in Indonesia (Widiasih & Nelson, 2021), but more efforts are still needed to achieve the SDGs target by 2030, one of which begins with determining the framework for a health service innovation.

Frameworks can assist in nursing innovation, especially in the area of maternity and women's health nursing. The frameworks are developed based on theories and concepts of health and nursing innovation which then integrates with the characteristics of maternity nursing. The M-Motion framework of Maternity Nursing Innovation, which was integrated based on theories, is one example (Flessa & Huebner, 2021; Makowiecka et al., 2019). The "M" from M-Motion stands for maternity, and "-Motion" means continuation and sustainability of innovation. The framework consists of three main stages, namely (1) Pre-Innovation; (2) Innovation; and (3) Post-Innovation. The Pre-Innovation stage is done by conducting an initial study with a quantitative or qualitative approach to analyse what is needed for innovation. In this stage, gaps or phenomena for the innovation is also identified by conducting a literature review from scientific articles, legal statistical data, or official government reports. The second stage, Innovation, consists of three main components, which are innovation formulation, collaboration, and validation. The formulation component determines



Steps	Application of the M-Motion Frameworks in the Ultralight Project
Pre-Innovation	Orientation • Maternity health issues: How technology-based health innovation applications support the acceleration of reducing maternal and fetal mortality rates in Indonesia • Formatting team • Analysing the collaboration opportunities among universities, health services, industry, dan funding providers • Writing the Ultralight project proposal *Problems* • How's the utilization of health applications by pregnant women to monitor their health and the fetus through surveys • How's the utilization of health applications for maternal and fetal health services through FGD from the perspective of users, managers, and policymakers • How's the design of technology products and systems to support and accelerate the improvement of maternal and fetal health, then the integration into the health service system • How's the product and system innovation: Ultralight Program be used and be beneficial for society
Innovation	*Formulas* • Analysing the utilization of health applications by pregnant women to monitor their health and the fetus through surveys in the high-risk group • Analysing the utilization of health applications for maternal and fetal health services through FGD from the perspective of users, managers, and policymakers • Publication of initial analysis results • Development of Detect Me devices and systems in the laboratory • Integration of devices and systems into health services • Training and workshops to prepare for the implementation of the Ultralight program • Implementation in areas according to recommendations from policy makers *Collaborators* Higher Education Institutions (6 higher education institutions), Health Services (1 National Referral Hospital), Health Industry, and Funding (KONEKSI Grant) *Validations* • Expert discussion and review in the fields of information technology, electrical engineering, health, health policy • Monitoring and evaluation of research processes and reporting
Post-Innovation	*Output analysis* • Feasibility test • Usability test • Acceptability test *Recognition of Innovation Results* • Dissemination at seminars, electronic mass media, and journal articles; • Intellectual property rights • Analysis of potential for downstream and commercialization • Analysis of potential for implementation in more expansive areas

Figure 3. Application of the M-Motion Framework in the Ultralight Project

the framework or theory and methodology that will guide the process. The collaboration component is done to increase efficiency, integrate various knowledge sectors, broaden community feedback, and create a service that is more holistic, innovative, and used-based. Lastly, in the Post-Innovation stage, output analysis and legal recognition of the innovation products are completed.

The M-Motion framework has been applied in several innovation projects in the area of maternity and women's health nursing, especially in health promotive efforts. The M-Motion framework is currently applied to the Ultralight Project, an Innovative Solution to Optimize Digital Technology and the Health System Strengthening in Accelerating the Reduction of Foetal-Maternal Mortality: Indonesia-Australia Study. The stages of the framework are applied in the project as follows.

The transformation of innovation and technology in healthcare and nursing, especially in the maternity and women's health sector, continues to evolve rapidly. Nurses as health professionals cannot go through all of the challenges in technology transformation alone, but they have great potential in becoming leaders of multidisciplinary innovators by partnering with industry and key stakeholders. The challenge for nurse innovators is to continue to find innovative ideas, collaborate with different professions and fields to improve the quality of holistic nursing services for patients, families, and communities. In support of achieving the SDGs target, more nursing innovations in technology, especially in improving maternal and women's health promotion, are needed. The M-Motion framework has been applied in the Ultralight Project as the foundation to establish shared goals between partners and streamline the project roadmap. With the M-Motion framework, Ultralight Project is hoped to produce health innovations that can help promote the health of pregnant women and their babies.

Declaration of Interest

None to declare

Acknowledgment

Thank you to all partners and study participants involved in the Ultralight Project.

Funding

Cowater Inc. KONEKSI grant

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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Factors influencing children's dietary variety in Eastern Indonesia: A comprehensive national analysis

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Abstract

Background: Limited dietary diversity among children is a critical public health concern across Indonesia, with Eastern Indonesia facing the most severe nutritional challenges among children.
Purpose: This study aims to identify factors influencing children's dietary diversity in Eastern Indonesia.
Methods: A cross-sectional study design was employed, utilizing data from the 2017 Indonesia Demographic and Health Survey (n = 1,476). Dietary diversity was assessed using the dietary diversity score (DDS), categorized into adequate and inadequate levels.
Results: Key sociodemographic factors associated with DDS included the number of children in the household, place of residence, economic status, breastfeeding practices, and vitamin A supplementation, with p-values of 0.007, <0.001, 0.001, <0.001, and <0.001, respectively. Children who were not breastfed were 0.5 times more likely to have inadequate DDS compared to those who were breastfed (95% CI: 0.36–0.67). Urban-dwelling families had a 0.7 times lower risk of inadequate DDS than rural counterparts (p = 0.026; 95% CI: 0.47–0.95). Additionally, children from low-income families were twice as likely to experience inadequate DDS compared to those from higher-income families (p = 0.012; 95% CI: 1.14–2.99).
Conclusion: Rural residency, low income, lack of breastfeeding, and inadequate vitamin A supplementation significantly contribute to poor dietary diversity among children in Eastern Indonesia. These findings highlight the need for targeted government interventions to bridge gaps in maternal education, enhance healthcare access, and improve families' socioeconomic conditions, ultimately advancing child nutrition and health in the region.

Keywords: breastfeeding, dietary diversity score, east indonesia, food diversity

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 308-315

http://dx.doi.org/10.24198/jkp.v12i3.2488

Article Info

Received : January 26, 2024
Revised : November 13, 2024
Accepted : November 29, 2024
Published : December 25, 2024

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Citation

Prasetyo, Y. B., Wardojo, S. S. I., Laksono, A. D. (2024). Factors influencing children's dietary variety in Eastern Indonesia: A comprehensive national analysis. *Jurnal Keperawatan Padjadjaran, 12*(3), 308-315. http://dx.doi.org/10.24198/jkp.v12i3.2488

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Dietary diversity (DD) represents the variety of foods or food groups consumed within a given timeframe, often evaluated over 24 hours (Gonete et al., 2020; Pourebrahim et al., 2024). Conceptually, DD is considered a dependable measure of diet quality and nutritional sufficiency. A diverse diet typically provides a broader range of essential nutrients, which can help prevent nutritional deficiencies and promote overall health (Islam et al., 2023). Higher dietary diversity has been linked to better health outcomes, including enhanced nutritional status, more substantial immune function, and reduced risk of chronic diseases (Grant et al., 2024; Kiuchi et al., 2024). Measuring dietary diversity in settings with limited resources can help identify vulnerable groups, reveal nutritional gaps, and inform targeted policies to improve food security and public health, especially among children and pregnant women (Batame, 2024; Dzudzor et al., 2024).

While both nutritional problems and dietary diversity are critical in public health, they are distinct concepts. Nutritional problems encompass health conditions arising from inadequate or imbalanced nutrition, such as stunting, underweight, obesity, and micronutrient deficiencies, often driven by factors like food insecurity, poverty, limited healthcare, and lack of nutrition education. On the other hand, dietary diversity assesses the variety of food groups consumed and is a marker of dietary quality. A diverse diet can help prevent nutrient deficiencies and improve overall well-being (Deshpande et al., 2024; Kolliesuah et al., 2023). Identifying factors that predict dietary diversity, such as socioeconomic status, education, location, cultural practices, and food accessibility, enables health professionals and policymakers to design strategies that enhance diet quality and diversity, which is crucial in reducing malnutrition and diet-related diseases (Aboagye et al., 2024; Mao et al., 2024; Sato et al., 2024).

Despite the completion of the Millennium Development Goals (MDGs), many health issues, especially nutritional challenges, persist (Balaj et al., 2021; Mohammadi et al., 2020). Children from the lowest 20% income households, particularly in developing countries like Indonesia, remain at high risk of stunted growth (Lönnroth & Raviglione, 2016). The Sustainable Development Goals (SDGs) emphasize improving nutrition, aiming to decrease stunting, wasting, and child mortality caused by nutritional issues (de Onis & Branca, 2016; Haddad et al., 2015). In Indonesia, the National Movement for the Acceleration of Nutrition Improvement (Gerakan Nasional Percepatan Perbaikan Gizi or GNPPG), established under Presidential Regulation No. 42 of 2013, focuses on raising public awareness and encouraging community involvement to address nutritional challenges. Key GNPPG strategies include integrating nutrition improvements into human resource development and increasing the effectiveness of nutrition-based interventions (Prasetyo et al., 2019).

Eastern Indonesia experiences the highest prevalence of childhood malnutrition, with the 2023 Indonesian Health Survey reporting a stunting prevalence of 21.5% and a wasting prevalence of 8.5%. The survey also highlighted that East Nusa Tenggara has the highest rates of underweight children under two (18.8%) and that stunting and wasting rates are alarmingly high in South Papua (11.9%) and West Sulawesi (26.5%) (Seviana et al.,2024). A lack of dietary diversity remains a significant issue, with children consuming predominantly carbohydrate-based diets, often lacking sufficient protein, fruits, and vegetables (Jabri et al., 2020; Khan et al., 2020). Additionally, malnutrition in early childhood is exacerbated by inadequate breastfeeding and complementary feeding practices (Das et al., 2020; Stiller et al., 2020).

Previous research in Indonesia has focused mainly on maternal knowledge of complementary feeding and general child-feeding practices, especially in rural areas. These studies often examine mothers' awareness and understanding of proper feeding practices, identifying significant gaps contributing to childhood malnutrition, including stunting and wasting. For example, research conducted in West Java revealed that numerous mothers lacked awareness about the significance of incorporating a variety of food groups into their children's diets. As a result, children's diets were heavily based on rice and other carbohydrates, with limited protein intake, fruits, or vegetables, leading to nutrient deficiencies (Mauludyani & Khomsan, 2022).

This current study addresses a critical gap by focusing on dietary diversity and its predictors, specifically among children in Eastern Indonesia, an area facing significant nutritional challenges. Unlike previous studies, this research aims to uncover disparities in food diversity and explore factors influencing child nutrition in this under-researched region. The findings intend to identify actionable predictors to help guide effective nutritional interventions and policies tailored to support child health in Eastern Indonesia.

Materials and Methods

Study Setting, Design, and Participants

This research employed a cross-sectional study design, utilizing the 2017 Indonesia Demographic and Health Survey (IDHS) data. Secondary analyses were performed on this dataset, collected through a nationwide survey conducted by the Ministry of Health of the Republic of Indonesia in partnership with the National Population and Family Planning Board and the Central Statistics Agency. The study included all women aged 15 to 49 residing in Eastern Indonesia (East Nusa Tenggara, Maluku, North Maluku, Papua, and West Papua) with children under five. Sampling was done using stratification techniques and multistage randomization, resulting in a total sample size of 1,476 participants.

Ethics of Human Subject Participation: Ethical approval for this study was granted by the Indonesia Health Research Council and the Human Research Ethics Committee at ICF Macro International, which oversaw the IDHS. The study received authorization from the Independent Review Boards of New Era and ICF Macro International for all data collection instruments and procedures (Approval Number: Authletter_142047). Access to the dataset was obtained through the DHS program website. Informed written consent was secured from participants before interviews, with mothers or caregivers providing consent on behalf of their children.

Variable

Independent variable

The surveys conducted in this study focused on

dietary diversity, incorporating data on child-related and demographic factors. Child-related factors included age, breastfeeding status, sex, vitamin A supplementation, and a history of illnesses. Children's ages were grouped into three categories: infants (0-12 months), toddlers (13-36 months), and preschoolers (37-60 months). Mothers were asked whether their children were breastfed at the time of the survey. Respondents were asked whether the child had experienced diarrhea within the past 24 hours or two weeks before the interview to assess morbidity. Demographic factors encompassed maternal age (15-19, 20-34, and 35-49), place of residence (urban or rural), educational attainment (no education, primary, secondary, or higher), and wealth index (poor, middle, or rich).

Dependent variable

Minimum dietary diversity serves as an indicator of whether a child's diet meets adequate micronutrient requirements. Achieving minimum dietary diversity involves consuming foods from at least four distinct food groups. These include grains, roots, tubers, legumes, nuts, flesh foods (such as meat, poultry, fish, or organ meat), and vitamin A-rich fruits and vegetables (UNICEF &WHO, 2021). The required four food groups are selected from seven broader categories: grains, roots, and tubers (GRT); legumes and nuts; dairy products (milk, yogurt, cheese); flesh foods (meat, poultry, fish, or organ meat); eggs; vitamin A-rich fruits and vegetables (VAFV); and other fruits and vegetables (OFV). The dietary diversity score (DDS) evaluates dietary diversity and categorizes it as good or poor. A DDS is considered good when a child consumes foods from 4-7 groups and poor when they consume foods from only 1-3 groups (DDS 3 = poor; DDS 4 = good).

Statistical Analysis

The data for this study were analyzed using Statistical Package for THE Social Sciences (SPSS) version 21 (IBM, USA). To describe the sample characteristics, we used frequency distributions and percentages. At the same time, the chi-square test was employed to examine differences in characteristics such as maternal age, place of residence, education, wealth index, breastfeeding, vitamin A supplementation, and history of diarrhea. A collinearity test was also conducted to verify that the independent variables in the final regression model were not strongly correlated. The impact of various factors on the DDS was assessed using multinomial logistic regression, and the odds ratios with 95% confidence intervals (CI) were calculated. A significant effect between DDS and independent variables was considered when the P-value was less than 0.05.

Results

Characteristics of Respondents

Table 1 shows that sociodemographic factors significantly associated with the DDS include the number of children, place of residence, economic status, breastfeeding, and vitamin A intake, with p-values of 0.007, <0.001, 0.001, <0.001, and <0.001, respectively. In contrast, maternal age, education level, and diarrhea in children were not significantly related to DDS. In Eastern Indonesia, families typically have 3-5 children, accounting for 88.3%, and most live in rural areas, with 96.9% of the population residing there. Additionally, 86.3% of families in this region experience poverty. This situation is further compounded by the fact that 74% of children do not receive breastfeeding, and 91.4% do not receive vitamin A supplementation. The DDS is categorized as adequate for 15.1% of the population and inadequate for 84.9%.

Table 2 shows the results of the collinearity test of predictor factors, including the number of children, place of residence, economic status, breastfeeding, and vitamin A on DDS in children in Eastern Indonesia. This study shows that there is no strong relationship between the independent variables. Table 2 shows that the tolerance value for all variables is more significant than 0.10, and the variance inflation factor (VIF) value for all factors is less than 10.00. This study found no multicollinearity in the regression model, which indicates the basis for test decision-making.

Prediction of Food Diversity

Table 3 outlines the predictors of adequate DDS among children in Eastern Indonesia, highlighting key sociodemographic and nutritional factors. Families with 3-5 children have a somewhat higher likelihood of achieving adequate DDS compared to those with 6-12 children, although this association is not statistically significant (p=0.076). Families with 0-2 children showed no significant relationship with DDS adequacy (p=0.695).

Table 3 shows that sociodemographic factors that predict inadequate DDS are place of residence and economic status. Families living in urban areas have a 0.7 times risk of inadequate DDS compared to rural areas (p=0.026; 95% CI 0.47 – 0.95). Low-income families are twice as likely to have children with inadequate DDS as compared to wealthier families (p=0.012; 95%CI 1.14–2.99).

Breastfeeding status is a strong predictor; children who are not breastfed are significantly less likely to achieve adequate DDS than those who are breastfed (OR=0.489, 95% CI: 0.357–0.669, p<0.001). Additionally, children who do not receive vitamin A supplementation are more likely to have an adequate DDS than those who receive it (OR=1.865, 95% CI: 1.294–2.687, p=0.001).

Discussion

The relationship between family size and dietary diversity is influenced by several factors, which may help explain why families with 3-5 children show a trend toward achieving adequate dietary diversity score (DDS) compared to those with larger families,

Table 1. Sociodemographic characteristics and their relationship to Dietary Diversity Score (DDS)

Characteristics	DDS		
	Adequate	inadequate	p-value
Mother's age (n=1476)			
15 – 19	15/19%	64/81%	0.532
20 – 34	156/14.6%	912/85.4%	
35 – 49	52/15.8%	277/84.4%	
Number of children in the family (n=1476)			
0 – 2	130/17.7%	603/82.3%	0.007
3 – 5	72/11.7%	546/88.3%	
6 - 12	21/16.8%	104/83.2%	
Residence (n=1476)			
urban	80/20.7%	307/79.3%	<0.001
Rural	143/13.1%	946/96.9%	
Educational (n=1476)			
No education	7/12.1%	51/87.9%	0.070
Primary	45/12.2%	323/87.8%	
Secondary	121/15.2%	676/84.8%	
higher	50/19.8%	203/80.2%	
Wealth index (n=1476)			
poor	167/13.7%	1051/86.3%	0.001
Middle	19/17.4%	91/82.6%	
Rich	37/24.8%	112/75.2%	
Breastfeeding (n=1476)			
No	103/26%	293/74%	<0.001
Yes	120/11.1%	960/88.9%	
Vitamin A (n=1448)			
No	46/8.6%	487/91.4%	<0.001
Yes	175/19.1%	740/80.9%	
Had diarrhea (n=1444)			
No	187/14.8%	1076/85.2%	0.164
Yes	34/18.8%	147/81.2%	

Note: DSS adequate (15.1%), inadequate (84,9%)

Table 2. Results of predictor collinearity test that affects DDS

predictor	Collinearity statistics	
	Tolerance	VIF
Number of children	0.992	1.008
Resident	0.826	1.211
Wealth index	0.826	1.210
Breastfeeding	0.981	1.020
Vitamin A	0.993	1.007

DDS dependent variable; tolerance > 0.10 or VIF < 10.00

Table 3. Predictors of adequate diet diversity score (DDS) among children in Eastern Indonesia

Predictors	p-value	OR	95%CI	
			Lower bound	Upper bound
Number of children in the family				
0 – 2	0.695	0.896	0.518	1.150
3 – 5	0.076	1.672	0.948	2.950
6 – 12	Ref.	Ref.	Ref.	Ref.
Residence (n=1476)				
urban	0.026	0.670	0.471	0.954
Rural	Ref.	Ref.	Ref.	Ref.
Wealth index				
poor	0.012	1.851	1.144	2.993
Middle	0.225	1.510	0.777	2.935
Rich	Ref.	Ref.	Ref.	Ref.
Breastfeeding				
No	<0.001	0.489	0.357	0.669
Yes	Ref.	Ref.	Ref.	Ref.
Vitamin A				
No	0.001	1.865	1.294	2.687
Yes	Ref.	Ref.	Ref.	Ref.

Abrevation: OR = odd ratio

despite this study's finding not being statistically significant. Research suggests that, as family size increases, particularly in households with six or more children, financial and caregiving resources are often stretched, impacting the variety and quality of available foods. For example, Issahaku et al. (2023) and Ilori et al. (2024) found that, in low-resource settings, larger family sizes can lead to reduced food expenditure per person, making it more challenging to maintain a varied diet.

Conversely, families with fewer children, such as those with 3-5, may have a more balanced allocation of resources, potentially allowing for improved access to diverse foods (Batame, 2024; Cruz-Sánchez et al., 2024). This aligns with findings that dietary diversity often improves when household resources are sufficient relative to the number of dependents (Kolliesuah et al., 2023). Interestingly, the study found no significant association between DDS adequacy and families with only 0-2 children, which may reflect complex socioeconomic or cultural factors. In some cases, small family size correlates with limited resources, as smaller families may result from economic constraints, limiting dietary diversity (Casado et al., 2024).

This analysis underscores that while family size does play a role in dietary diversity, other factors—such as income, parental education, and community support systems—are critical mediators. Future research across diverse socioeconomic contexts could clarify these patterns and help design targeted interventions to enhance dietary diversity, especially for larger families in economically disadvantaged regions.

The findings in Table 3 highlight a strong link between sociodemographic factors—precisely residence and economic status—and inadequate DDS among children in Eastern Indonesia. Children in urban settings were found to have a 0.7 times lower likelihood of adequate DDS compared to those in rural areas. This trend reflects findings in other research, suggesting that despite better infrastructure in urban areas, urban families may face inconsistent access to affordable, diverse foods. Contributing factors include economic disparities, food deserts, and increased reliance on processed foods with lower nutritional value (Deng & Vicerra, 2024; Kolliesuah et al., 2023). By contrast, rural households often have closer access to home-grown or locally sourced foods, supporting a more varied diet (Mucioki et al., 2024).

Economic status also plays a significant role in dietary diversity. Low-income families were twice as likely to experience inadequate DDS as wealthier families. This association highlights the barriers to food diversity in low-income households, which are more vulnerable to food insecurity and less able to afford various nutrient-rich foods (Pradeilles et al., 2024). Economic constraints limit both the quantity and quality of food available, with children in these households particularly affected by dietary deficiencies, which can lead to malnutrition and stunting (Gutiérrez & Bartelt, 2024). In urban low-income settings, these issues are compounded by limited access to fresh produce, higher food prices, and a reliance on inexpensive, calorie-dense foods

with low nutritional value (Summerhayes et al., 2024). Understanding these factors underscores the importance of policies to improve food accessibility, affordability, and nutrition education for low-income urban and rural populations.

Breastfeeding status is a significant predictor of adequate DDS in children, with non-breastfed children being considerably less likely to achieve an adequate DDS than breastfed children. This finding aligns with existing research showing that breastfeeding supplies essential nutrients and influences long-term dietary habits and food preferences (Cheney et al., 2019). Breast milk provides a uniquely balanced nutrient profile that meets infants' developmental and immune needs, reducing the risk of malnutrition, particularly in low-resource settings (Corley, 2021). The link between breastfeeding and DDS highlights how breastfeeding can mitigate nutritional vulnerabilities by consistently consuming high-quality nutrients during critical early life stages (Carretero-Krug et al., 2024).

Interestingly, children who do not receive vitamin A supplementation are more likely to achieve adequate DDS than those who do. While this may seem counterintuitive, it may reflect that vitamin A supplementation programs are often targeted at children already at risk of or experiencing malnutrition. These children frequently come from households with lower overall dietary diversity, necessitating supplementation to address dietary vitamin A shortfalls (Chanie et al., 2021). This finding underscores the importance of integrating vitamin A programs with broader strategies to improve household food security and dietary diversity. By promoting breastfeeding and access to a varied, nutrient-dense diet, public health efforts can better address malnutrition and stunting in vulnerable populations across Indonesia and similar settings.

Strengths and Limitations

This research has several strengths. Big data support this research, so the findings of this study can describe food diversity in children in Eastern Indonesia. Another strength is the focus of research on food diversity, which is the main problem related to child nutrition in Indonesia; therefore, the findings of this study can be used as a basis for creating further policies to improve nutrition in children in Indonesia. The weakness of this study is that, given the data collected using a cross-sectional design, the possibility of causal inferences is limited, mainly due to the snapshot nature of the design. The data used in this study are retrospective self-reporting data.

Conclusion

This study reveals that sociodemographic factors—such as place of residence, economic status, breastfeeding status, and vitamin A supplementation—significantly impact dietary diversity among children in Eastern Indonesia. Children from urban, low-income families and those not breastfed are likelier to have inadequate dietary diversity scores, indicating that environmental and economic barriers are critical in accessing balanced nutrition. These findings emphasize the need for targeted nutrition programs that promote breastfeeding, enhance food security, and ensure better access to nutrient-dense foods.

For nursing services, these insights suggest a strong need for community health nurses to focus on nutrition education, particularly the benefits of breastfeeding and balanced diets for young children. Nurses can advocate for policies that improve food accessibility and nutrition support for at-risk families, especially those in low-income urban areas. In education, incorporating these findings into nursing curricula can equip future nurses with the skills to address nutritional needs in diverse settings. Further research on the effectiveness of specific interventions in urban and rural populations would provide valuable insights for designing targeted nutrition programs that help bridge gaps in dietary diversity and overall child health outcomes.

Declaration of interest

The authors declare no conflicts of interest.

Acknowledgments

The authors would like to thank IDHS for permitting the use of child health data in this study. The authors also thank the Dean of the Faculty of Health Sciences, University of Muhammadiyah Malang, who has provided support in completing this research.

Funding

This research received no specific grant from public, commercial, or not-for-profit funding agencies.

Data availability

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

Authorship

YBP designed the study, performed the statistical analysis, interpreted the findings, discussed them, and wrote a preliminary manuscript draft. SSW, ADL contributed to statistical analysis, interpretation of findings, and manuscript writing.

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Evaluation of the clinical nurse career path system in Indonesian Hospitals: Identifying areas for improvement and development

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Abstract

Background: The clinical nurse career path system significantly impacts nurses' professional growth, job satisfaction, and service quality. Evaluating its effectiveness is vital for enhancing human resource management.
Purpose: This study aimed to evaluate the nursing career path in Indonesia, identifying areas for improvement and development.
Methods: This study used a mixed-methods approach with nine participants and 339 samples. Surveys targeted clinical nurses, while interviews involved nursing management. Data was analyzed using descriptive statistics and thematic analysis.
Results: Managerial experiences revealed three themes: (1) implementation of the nurse career path as a mandatory accreditation process, (2) challenges in the implementation of the nurse career path, and (3) expectations for career path implementation. The process evaluation pinpointed areas for improvement, including organizing, internship programs, Continuous Professional Development (CPD), and career advancement. In product evaluation, 80.8% of nurses had good perceptions, with a 77% job satisfaction rate. Analysis showed a positive correlation between perception and job satisfaction ($P < 0.001$).
Conclusion: The clinical nurse career path in hospitals requires more attention, especially in areas such as human resources, which are not yet full-time, and leadership policies regarding rewards, regulations, and nurse placement in the implementation of career paths related to organizing, internship programs, CPD, and career advancement. Enhancing these aspects is vital for boosting nurses' job satisfaction and improving service quality and patient care.

Keywords: career path; clinical nurse; evaluation; hospitals

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 249-260

http://dx.doi.org/10.24198/jkp.v12i3.2543

Article Info

Received : May 07, 2024
Revised : October 14, 2024
Accepted : November 13, 2024
Published : December 25, 2024

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Citation

Firman, F., Erfina, E., & Saleh, A. (2024). Evaluation of the clinical nurse career path system in Indonesian Hospitals: Identifying areas for improvement and development. *Jurnal Keperawatan Padjadjaran, 12*(3), 249-260. http://dx.doi.org/10.24198/jkp.v12i3.2543

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Nurses are among the most prominent healthcare professionals in hospitals, and they play a crucial role in delivering quality nursing care. (Owens & Koch, 2015). Over time, the role of nurses has evolved to become more holistic, emphasizing organizational relationships, fostering innovation, and enhancing healthcare service quality (Allen, 2014). Nurses must be capable of integrating and utilizing various sources of information in their decision-making and nursing practices (Fukada, 2018). One way to enhance professionalism, the quality of nursing services, and job satisfaction is by developing a career path system (Bela & Sri, 2019; Coleman & Desai, 2019). Therefore, it is essential to establish a well-structured career path system for nurses, allowing them to grow based on their competencies and experiences while ensuring job satisfaction.

A nursing career path is a structured plan that supports the professional growth of nurses, builds an adaptive workforce, and enhances staff retention while ensuring high-quality patient care in the healthcare sector

(Nashwan, 2023). Nurses should be placed in work environments that align with their competency levels (Sandehang et al., 2019). Career paths are provided to nurses to offer encouragement or motivation and sustain professional development in nursing practice, which can lead to increased clinical levels, promotional opportunities, competency complexity, recognition, and acknowledgment (Ake et al., 2021). Thus, with the implementation of a nurse career path, it is hoped that the competency and professionalism of nurses will continue to improve in hospital services.

A nurse career path system has been implemented and developed in various countries, including Indonesia (Korman & Eliades, 2010; Park et al., 2014; Saputri et al., 2021). A significant step was taken by the Ministry of Health of the Republic of Indonesia in formulating and issuing Ministerial Regulations aimed at regulating and advancing the professional career path for clinical nurses (Ministry of Health, 2017). However, despite these steps being taken, challenges are still faced in implementing the system, including adapting to and integrating with the diverse needs of hospitals. Nurses also often require institutional and personal support to plan their careers and make career-related decisions (Luck et al., 2015). Moreover, the nurse career path is also perceived as inadequate in addressing job satisfaction (Pasang et al., 2018) and is still seen as primarily aimed at meeting accreditation standards (Sandehang et al., 2019). Therefore, it is essential to conduct evaluations to assess the implementation and impact of the system.

Program evaluation involves a comprehensive approach to critically assess various aspects of the program (Charette et al., 2022). Evaluating the nurse career path system is essential to ensuring that the program operates effectively in line with the established objectives and meets the needs and expectations of nurses. Through this evaluation, the strengths and weaknesses of the career path system can be identified, along with areas where further improvement and development are necessary to enhance efficiency, transparency, and fairness in the nursing career process. Previous studies in the United States, Korea, and Indonesia have examined the nursing career path system, emphasizing nurse satisfaction (Korman & Eliades, 2010; Park et al., 2014; Saputri et al., 2021). However, these studies mainly focused on outcomes, and limited studies evaluate the implementation process of the career path system. This research not only assesses outcomes but also examines the implementation process. The study aimed to evaluate Indonesian hospitals' clinical nursing career path system, considering both the process and nurses' perceptions and satisfaction levels and exploring managerial nursing experiences.

Materials and Methods

This study employed a mixed-methods approach. The researchers explored the experiences of managerial nurses using descriptive qualitative methods to gain a deep understanding of their experiences in implementing programs. This method provided rich and detailed descriptions of specific phenomena in management and identified emerging themes or patterns. The qualitative approach captured nuances and complexities that might not have been revealed through quantitative methods, enriching the quantitative evaluation data. A quantitative evaluation of processes and outcomes was then conducted to assess program implementation, nurses' perceptions, and job satisfaction. Combining these methods allowed for a comprehensive understanding of the research topic, with qualitative data providing context and depth, while quantitative data offered measurable results and broader applicability. This research was carried out in three hospitals in Makassar City, Indonesia: Hospital A is a provincial hospital, Hospital B is a district hospital, and Hospital C, which the Ministry of Health owns, is recognized as a Vertical Hospital. These three hospitals represent various types of hospitals in Indonesia. Makassar City was selected due to its role as a primary healthcare hub in eastern Indonesia and its diverse hospital ownership structures. Nine nurses' managers were chosen to be involved in the qualitative stage, and the 339 staff (Hospital A: 122, Hospital B: 113, and Hospital C: 104) participated in this study for the quantitative stage. Participants for the qualitative component were selected using purposive sampling. Inclusion criteria for the qualitative component were individuals in nursing managerial roles. For the quantitative part, the participants included nurses with over a year of experience in the clinical career path category and at levels I–V. To ensure representativeness, cluster sampling was employed to randomly select respondents from naturally occurring groups based on their departments, followed by convenience sampling to select accessible nurses in each department. Nurses in orientation programs and those who declined participation were excluded from both study components.

Measurement and data collection

Participants were contacted and informed about the purpose and research methods. Qualitative interviews were conducted using a semi-structured approach, beginning with general questions to build trust and establish rapport, followed by unstructured questions. The interview guide covered key topics, such as implementing a nurse career path system in hospitals, participants' expectations, challenges faced, and leadership policies related to career progression. The guide included a total of ten main questions, along with additional probing questions to elicit deeper insights. Two nursing management experts reviewed its content validity to ensure the interview guide's relevance and clarity. Each interview lasted 30 to 45 minutes, with participants engaging in one or two rounds of interviews as

Table 1. Demographic characteristics

Characteristics	Hospital A		Hospital B		Hospital C		Total	
	n (%)	Mean (±SD)	n (%)	Mean (±SD)	n (%)	Mean (±SD)	n (%)	Mean (±SD)
Participants (n = 9)								
Age		44.00 (±6.08)		45.67 (±1.15)		41.67 (±2.08		43.78 (±3.70)
Term of office		2.35 (±2.49)		2.00 (±3.46)		4.33 (±2.88)		2.89 (±2.79)
Gender								
Male	1 (33.3%)		2 (66.7%)		2 (66.7%)		5 (55.6%)	
Female	2 (66.7%)		1 (33.3%)		1 (33.3%)		4 (44.4%)	
Graduate								
Registered Nurse	0 (0.0%)		1(33.3%)		2 (66.7%)		3 (33.3%)	
Master of Nursing	2 (66.7%)		0 (0.0%)		0 (0.0%)		2 (22.2%)	
Master of Health	1(33.3%)		2 (66.7%)		0 (0.0%)		3 (33.3%)	
Doctor of Nursing	0 (0.0%)		0 (0.0%)		1 (33.3%)		1 (11.1%)	
Position								
Head of Nursing	1 (33.3%)		1 (33.3%)		1 (33.3%)		3 (33.3%)	
Chair of the nursing committee	1 (33.3%)		1 (33.3%)		1 (33.3%)		3 (33.3%)	
Chair of the sub-credentialing committee	1 (33.3%)		0 (0.0%)		0 (0.0%)		1 (11.1%)	
Chair of the sub-quality committee	0 (0.0%)		1 (33.3%)		1 (33.3%)		2 (22.2%)	
Respondents (n = 339)								
Age		39.20 (±7.52)		38.67 (±7.45)		37.81 (±5.46)		38.60 (±6.93)
Length of service		14.79 (±7.02)		12.51 (±8.57)		11.58 (±5.26)		13.05 (±7.23)
Gender								
Male	31 (25.4)		26 (23)		23 (22.1)		80 (23.6)	
Female	91 (74.6)		87 (77)		81 (77.9)		259 (76.4)	
Graduate								
Diploma Nurse	48 (39.3)		55 (48.7)		38 (36.5)		141 (41.6)	
Registered Nurse	73 (59.8)		58 (51.3)		65 (62.5)		196 (57.8)	
Master of Nursing	1 (0.8)		0 (0)		1 (1)		2 (0.6)	
Status								
Married	103 (84.4)		97 (85.8)		91 (87.5)		291 (85.8)	
Not married	19 (15.6)		16 (14.2		13 (12.5)		48 (14.2)	
Career path level								
Level I	10 (8.2)		30 (26.5)		32 (30.8)		72 (21.2)	
Level II	56 (45.9)		19 (16.8)		50 (48.1)		125 (36.9)	
Level III	54 (44.3)		51 (45.1)		22 (21.2)		127 (37.5)	
Level IV	2 (1.6)		13 (11.5)		0 (0)		15 (4.4)	

Table 2. Themes identified in exploring nursing managerial experience

Theme	Sub-Themes	Description	Representative Quotes
Theme 1: Implementation of Nurse Career Paths as a Mandatory Accreditation Process	Fulfillment of Hospital Accreditation Standards	The nurse career path is implemented primarily to meet hospital accreditation requirements.	"Related to the implementation of the career path of nurses in our hospital, it is one of the pieces of evidence at the time of accreditation every three years." (P1) "Yes, to be honest, initially it was because of accreditation requirements." (P5)
	Nurse credentialing is just a formality	Credentialing is perceived as a formality rather than a process that truly reflects nurses' competencies.	"Our credentialing process is still, as I mentioned before, a requirement or condition that we have to fulfill." (P3) "So, the implementation of the career path in our hospital merely signifies that the nurses have undergone assessment, completed credentialing, and received clinical authorization letters." (P2) "Credentialing seems to be just a mere formality. In fact, my colleagues working here are exceptional." (P5)
	Placement of nurses is not yet based on career-level	Nurse placement is not fully aligned with their career path levels due to room availability and policies.	"In reality, at our hospital, it often happens that staff with long-standing experience are more frequently placed in the outpatient clinic, even though they should be assigned to inpatient wards according to their career path levels, which are at levels 4 and 5." (P1) "…Furthermore, in nurse placement, they are not yet fully assigned based on their career path levels. Nursing departments often have considerations other than clinical authority, such as room availability and leadership policies." (P5) "…So, the placement of nurses is not entirely based on their career path levels, as it often involves considerations of room availability and policies set by the leadership." (P7)
Theme 2: Challenges in the implementation of the nurse career path system	No regulations on the nurse career path implementation in Horizontal Hospitals	Based on participant information, two hospitals, Hospital A and Hospital B, do not yet have regulations for implementing the nurse career path.	"When I took over the position, I had not seen any rules about the career path. So, I am currently trying to develop regulations for the future. Because, ultimately, if there is an inspection, they will ask about the standard reference for its implementation." (P2) "It seems that there is no specific regulation for this yet." It means we still refer to the general regulations of the Ministry of Health when placing nurses according to their competencies and tenure. However, we have not created specific regulations for this matter." (P4)
	Limited human resources	Nursing committee responsible for implementing career paths is not yet full-time	"Even though the nursing committee primarily focuses on its committee duties, both the chairperson and committee members still have responsibilities in their respective work units to provide patient care." (P1) "Colleagues assigned to the nursing committee still have dual roles as nurses in patient care units and management." (P4)
	Financial incentives remained unaffected at the Horizontal Hospital	Two hospitals have yet to implement a career path-based reward system for nurses, nor have they provided rewards for those managing the career path within the hospitals.	"The career path does not influence the rewards. Similarly, those of us on the nursing committee do not receive specific incentives for our role in managing the committee." (P1) "Yes, as for rewards, such as for the committee chair and the like, this is not specifically accommodated, and there are no points allocated for it in the remuneration system. However, for clinical nurses, though rewards, the values are still relatively low." (P5)

Cont. Table 2. Themes identified in exploring nursing managerial experience

Theme	Sub-Themes	Description	Representative Quotes
Theme 3: Expectation for career path implementation	Career advancement and work motivation enhancement	Participants indicated that the expected objectives of implementing a nurse career path in hospitals are to enable career advancement for nurses and boost work motivation	"So, they can maintain or develop their careers; this can be achieved through a career path system." (P2) "This way, colleagues feel challenged. They are highly motivated by the thought that reaching a higher level will directly impact their remuneration. Although the increase might not be very significant." (P7)
	Improved work performance and confidence	Participants stated that the expected goals of implementing a nurse career path in hospitals are to improve nurses' performance and confidence	"The essence is to improve the quality of service, enhance performance, and professionalism of a nurse so that they can maintain or develop their careers through a career path system." (P2) "Nurses with such competencies should be placed in suitable positions, as this will make them more confident and professional in delivering nursing care." (P4
	To improve the quality of health service	Participants indicated that the expected objective of implementing a nurse career path in the hospital is to improve the quality of hospital services	"The essence is to improve the quality of service, enhance performance, and professionalism of a nurse so they can maintain or develop their careers through a career path system." (P2) "Another goal we derived from the health minister's regulation is to enhance the professionalism of our nurse colleagues in carrying out their responsibilities." (P4)

needed. Six participants completed one round of interviews, while three required a second round to clarify their responses further. Participants also provided consent for follow-up contact to verify the information and ensure the accuracy of the researcher's interpretation of their experiences.

For the quantitative phase, in assessing the implementation of the career path, the researcher developed a checklist based on the Minister of Health Regulation concerning the development of clinical nurse professional career paths (Ministry of Health, 2017). This instrument consists of thirty-five assessment items, including organizing (6 items), orientation program (4 items), internship program (4 items), mapping of senior nurses (4 items), nurse assessment (4 items), credentialing process (4 items), re-credentialing process (2 items), CPD program (4 items), and career advancement program (3 items). Assessments were scored as follows: ten for excellent implementation or complete documentation, five for good implementation with minor deficiencies or areas for improvement, and 0 for unimplemented items. The instrument was validated with item-total correlation values ranging from 0.636 to 0.917 and had a Cronbach's alpha value of 0.974 to ensure reliability. The total scores were divided by the number of items to categorize the obtained scores, resulting in a score range between 0 and 10. Scores of 0-3.33 were considered poor, 3.33-6.66 moderate, and 6.66-10 good.

The Nurse Perception Questionnaire was adapted from Suroso (2011) and comprises forty questions that encompass career development (13 items), recognition (7 items), awards (7 items), promotions (6 items), and challenges (7 items). The Nurse Job Satisfaction Questionnaire was adapted from Saputri (2021) and includes thirty questions that address organizational culture and values (7 items), career opportunities (7 items), leadership (4 items), job activities (6 items), and compensation (6 items). Respondents provided answers using a four-point Likert scale, with scores ranging from strongly agree (score 4) to disagree (score 1) strongly. Both questionnaires were validated, achieving Cronbach's alpha values of 0.98 and 0.74, respectively. The total and dimension scores were calculated by dividing the total scores by the number of items, resulting in a score range between 1 and 4. Scores between 1-2 were categorized as poor, while scores between 2-4 were deemed good.

Table 3. Implementation of nurses' career paths

Variable/subvariable	n		Hospital A		n	Hospital B		n	Hospital C		Total	
		Mean	Category		Mean	Category		Mean	Category		Mean	Category
Implementation	35	250	7.14	Good	270	7.71	Good	305	8.71	Good	275	7.85	Good
Subvariabel:													
Organizing	6	30	5	Moderate	30	5	Moderate	55	9.17	Good	38.33	6.38	Moderate
Orientation programs	4	35	8.75	Good	40	10	Good	35	8,75	Good	36.67	9.16	Good
Internship program	4	15	3.75	Moderate	15	3.75	Moderate	20	5	Moderate	16.67	4.16	Moderate
Mapping old nurses'	4	30	7.5	Good	35	8.75	Good	35	8.75	Good	33.33	8.33	Good
Nurse assessment	4	40	10	Good	40	10	Good	40	10	Good	40	10	Good
Credentialing process	4	40	10	Good	40	10	Good	40	10	Good	40	10	Good
Re-credential process	2	20	10	Good	20	10	Good	20	10	Good	20	10	Good
CPD program	4	25	6.25	Moderate	30	7.5	Good	30	7.5	Good	28.33	7.08	Good
Career-level advancement program	3	15	5•	Moderate	20	6.67	Good	30	10	Good	21.67	7.22	Good

Note:
n: Number of statements on variables and subvariables
: Score value from the assessment of variables and subvariables

Data analysis

We employed both qualitative and quantitative methods to provide a thorough understanding of the research findings. For qualitative analysis, we utilized a 5-stage process (Creswell & Creswell, 2018); step 1 involved organizing and preparing the data using the Auris voice-to-text transcription application. Step 2 included thoroughly reviewing the data to grasp its context and identify patterns and themes. Step 3 consisted of coding relevant data segments with the OpenCode 4.03 application. Step 4 involved grouping data into themes based on similarities. Lastly, Step 5 entailed a detailed analysis of the themes to understand the phenomenon better, ensuring findings aligned with the research questions and were substantiated by the data. Quantitative analysis used SPSS Version 29 to understand Nurses' characteristics, career path implementation, perceptions, and job satisfaction. Bivariate analysis determined relationships with statistical tests like Kruskal-Wallis, Mann-Whitney, and Spearman, with a P-value of 0.05 for significance.

Trustworthiness/rigor

Trustworthiness ensures that the research findings accurately reflect the participants' perspectives. Various strategies were employed to enhance this study's credibility, including credibility, transferability, dependability, and conformability (Denzin & Lincoln, 2018). Regarding credibility, interview transcripts were shared with participants for verification, allowing them to review and confirm that the transcriptions accurately represented their discussions. Participants received copies of the transcripts to ensure their thoughts and experiences were captured correctly, and the results indicated that they felt their perspectives were adequately represented. Additionally, expert validation was sought through conversations with peers—fellow nurses experienced in conducting qualitative research—to reinforce the validity of the findings. Transferability was ensured by meticulously analyzing and incorporating all relevant data into the findings. Dependability was maintained by utilizing multiple data collection tools, such as a smartphone for voice recorders with 250 GB connected to a wireless microphone, field notes, and demographic forms. Conformability was upheld through systematic data collection and analysis, including audit trails to verify the consistency of the data. Themes were confirmed through a systematic coding process, triangulation of findings from various sources, and member checking, allowing participants to validate

Table 4. Frequency distribution of nurses' perception of career path and nurses' job satisfaction (n=339)

Variable/subvariable		Hospital A (n=122)		Hospital B (n=104)		Hospital C (n=113)		Total	
		n	%	n	%	n	%	n	%
Perception of career path	Perception								
	Good	94	77	82	78.8	98	86.7	274	80.8
	Poor	28	23	22	21.2	15	13.3	65	19.2
	Subvariable:								
	Career development								
	Good	110	90.2	97	93.3	98	86.7	305	90
	Poor	12	9.8	7	6.7	15	13.3	34	10
	Award								
	Good	61	50	57	54.8	89	78.8	207	61.1
	Poor	61	50	47	45.2	24	21.2	132	38.9
	Recognition								
	Good	93	76.2	83	79.8	78	69	254	74.9
	Poor	29	23.8	21	20.2	35	31	85	25.1
	Promotion								
	Good	92	75.4	80	76.9	88	77.9	260	76.7
	Poor	30	24.6	24	23.1	25	22.1	79	23.3
	Challenge								
	Good	116	95.1	100	96.2	105	92.9	321	94.7
	Poor	6	4.9	4	3.8	8	7.1	18	5.3
Nurses' job satisfaction	Job satisfaction								
	Good	89	73	80	76.9	92	81.4	261	77
	Poor	33	27	24	23.1	21	18.6	78	23
	Subvariable:								
	Organizationallculture and values								
	Good	116	95.1	101	97.1	110	97.3	327	96.5
	Poor	6	4.9	3	2.9	3	2.7	12	3.5
	Career opportunities								
	Good	84	68.9	73	70.2	88	77.9	245	72.3
	Poor	38	31.1	31	29.8	25	22.1	94	27.7
	Leadership								
	Good	106	86.9	95	91.3	85	75.2	286	84.4
	Poor	16	13.1	9	8.7	28	24.8	53	15.6
	Work activities								
	Good	82	67.2	52	50	38	33.6	172	50.7
	Poor	40	32.8	52	50	75	66.4	167	49.3
	Compensation								
	Good	45	36.9	39	37.5	83	73.5	167	49.3
	Poor	77	63.1	65	62.5	30	26.5	172	50.7

Table 5. Relationship between perception and characteristics of respondents with job satisfaction (n=339)

Variables/ Characteristics	Job satisfaction				P Value
	F	%	Mean (±SD)	Min-Max	
Perception			r = 0.460		<0.001***
Age			r = 0.100		0.065***
Length of service			r = 0.090		0.099***
Gender					
Male	80	23.6	82.05 (±6.86)	65-101	0.085**
Female	259	76.4	83.71 (±7.16)	67-102	
Education					
Diploma Nurse	141	41.6	82.72 (±6.87)	65-102	0.380*
Registered Nurse	196	57.8	83.76 (±7.31)	68-102	
Master of Nursing	2	0.6	83.00 (±0.00)	83-83	
Status					
Married	291	85.8	83.36 (±7.22)	65-102	0.576**
Not married	48	14.2	83.08 (±6.50)	72-97	
Career path level					
Level I	72	21.2	82.79 (±8.15)	67-102	0.244*
Level II	125	36.9	82.78 (±6.95)	65-101	
Level III	127	37.5	82.83 (±6.57)	72-102	
Level IV	15	4.4	86.00 (±7.39)	71-98	

* Test Kruskal-Wallis. ** Test Mann-Whitney *** Test Spearman

that the identified themes accurately reflected their experiences.

Ethical Considerations

All participants gave informed consent, both verbally and in writing. The researcher was committed to maintaining the confidentiality of personal information and interview data, ensuring participant anonymity. This research was approved by the Research Ethics Committee of the Faculty of Public Health, Hasanuddin University, with approval number 4855/UN4.14.1/TP.01.02/2023.

Results

Characteristics

In the qualitative study, nine participants (44% female, 56% male) with an average age of 43.78 years were involved. They held various nursing roles, with an average tenure of 2.89 years. The quantitative study had primarily female respondents (76.4%), averaging 38.60 years old, with 13.05 years of work experience. Most were registered nurses (57.8%), married (85.8%), and at career levels II (36.9%) and III (37.5%). (Table 1).

Themes identified in exploring the experience of nursing management

In exploring the nursing managerial experience, three themes emerged related to nurses' career path implementation in Makassar city hospitals: (1) the implementation of nurse career paths as a mandatory accreditation process, (2) challenges in the implementation of the career path system, and (3) expectations for career path implementation (Figure 1). These themes highlight that the career path is often driven by accreditation requirements, with challenges such as lack of specific regulations and limited resources in the horizontal hospitals, alongside the absence of career path-based financial incentives. Despite these challenges, there are clear expectations that the career path system will eventually support career advancement and improve work motivation. We have developed a themes matrix to provide a comprehensive view of the findings, as shown in Table 2. This matrix identifies the key themes and sub-themes related to implementing the nurse career path, challenges faced, and expectations for its implementation.

Career path implementation in process evaluation

The nurse career path across the three hospitals

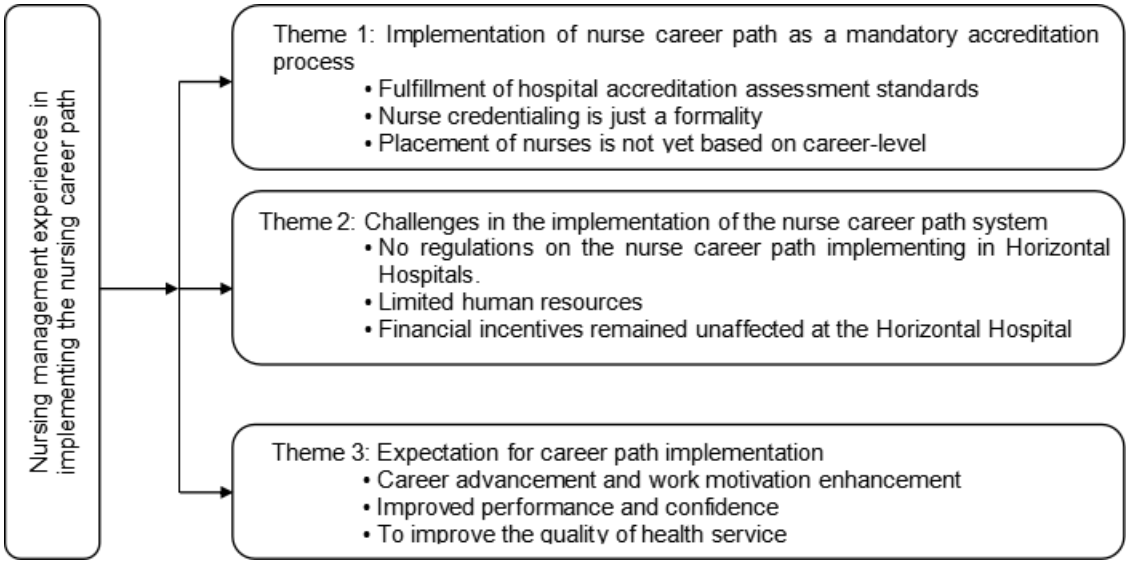

Figure 1. Illustrates the themes explored in nursing management experiences regarding the implementation of the nursing career path system

averaged a good score of 7.85. Hospital C scored highest at 8.71, followed by Hospital B at 7.71 and Hospital A at 7.14. Hospital C excelled in organizing with 9.17, while Hospitals A and B rated moderate at 5. All hospitals scored well in various areas except for internship programs and CPD, which averaged moderate scores. Career advancement was moderate for Hospital A and good for Hospitals B and C. Details are in Table 3.

Nurses' perceptions and job satisfaction with product evaluation

Our product evaluation assessed nurses' perceptions of and job satisfaction with the three hospitals. The majority perceived the nurse career path as good (80.8%). Hospital B stood out for career development (93.3%), while Hospital C excelled in reward policies (78.8%). Recognition levels were higher in Hospitals A and B (76.2% and 79.8%) than in Hospital C (69%). Promotion perceptions were consistent, ranging from 75-78% across hospitals, with positive views on career challenges, particularly at Hospital B at 96.2%. Regarding job satisfaction, the overall rate was 77%. Hospital C led 81.4%, followed by Hospital B at 76.9% and Hospital A at 73%. Organizational culture received a good rating of 96.5%. However, job activities were notably poor at Hospital C (33.6%), and compensation was poor at Hospital A (36.9%). This analysis pinpoints areas for improvement, such as job activities, compensation, and career path perception across the hospitals. Further details can be found in Table 4.

The relationship between perceptions and demographic characteristics with nurses' job satisfaction

The study found a moderate positive correlation between nurses' career path perceptions and job satisfaction ($r=0.460$, $P < 0.001$). Nurse characteristics like age, tenure, and education did not significantly impact satisfaction, suggesting they are not key factors influencing job satisfaction in the studied hospitals (Table 5).

Discussion

To our knowledge, this study evaluated the implementation of nurses' career path systems. Managerial experiences revealed three main themes influencing the implementation of the nurse career path: firstly, the adoption of the nurse career path as a mandatory accreditation process. Implementing the nursing career path in hospitals has been primarily driven by the need to meet hospital accreditation assessment standards rather than considering the primary goals set by the Republic of Indonesia's Ministry of Health regulations. This approach has raised concerns about the effectiveness and impact of the system, with fears that the nursing career path is merely a formality aimed solely at achieving accreditation (Sandehang et al., 2019). Furthermore, the nurse credentialing process tends to be viewed as mere formality, overlooking the importance of meticulously assessing nurses' clinical competencies in determining clinical authority. Research by Chappell et al. (2021) indicates that nurse credentialing has been shown to enhance competencies, directly impacting patient care quality. This underscores the importance of strengthening the role of Nurse credentialing as a determinant of clinical authority and increasing awareness of the actual value of the credentialing process to ensure that nurses' clinical capabilities are accurately reflected in the determination of clinical authority. The latest findings highlight that nurse placement is not yet fully optimized and balanced based on career path levels, indicating the need for attention to appropriate

placement to enhance healthcare service efficiency and effectiveness (Nurlina et al., 2018). Therefore, this study emphasizes the need for a more holistic approach to the implementation of the nursing career path, which not only meets accreditation standards but also enhances professionalism, service quality, and nurse job satisfaction

Secondly, there are challenges in implementing the nurse career path system. The study revealed various challenges encountered in implementing this system. The first challenge, the absence of implementation regulations for the nurse career path in horizontal hospitals, posed a significant hurdle. Precise regulations would guide and provide the necessary direction for the system's implementation (Ackerly et al., 2013). Hospitals find it challenging to implement the career path consistently and effectively without proper regulations. Thus, the rules for implementing the career path reflect the hospitals' efforts to create a work environment that supports professional growth. The second challenge, another obstacle, was the lack of full-time staff managing the nurse career path. Career management requires special attention from nursing management, and having full-time staff can aid in designing and implementing effective career strategies (Afriani et al., 2017). Adequate staffing in the nursing committee and departments significantly influences the career path's execution, emphasizing the importance of understanding the career path's value in enhancing nurse performance (Knoche & Meucci, 2015). The third challenge was that the financial reward system for nurses was not uniform. This inconsistency can create uncertainty and inequality among nurses within the same career path, potentially diminishing their motivation to improve performance (Opio et al., 2022). A specific financial reward system for management and clinical nurses reflects a strategy to motivate and retain a critical hospital workforce (Ge et al., 2021). However, it is essential to note that the implementation of this reward system varies across hospitals, requiring efforts to balance and ensure fairness in the financial reward system for nurses. These findings indicate that implementing the nurse career path faces several challenges. To enhance the effectiveness and success of the program, collaboration between hospital management parties is crucial to effectively addressing these challenges.

Thirdly, expectations for the career path implementation; from interviews with nursing management, several anticipated benefits emerged. The first expectation is that implementing a nursing career path boosts nurses' work motivation and overall career development. With a clear career path, nurses are anticipated to be more motivated, aiming for better performance and ultimately enhancing productivity and service quality (Ayalew et al., 2019; Bela & Sri, 2019)—the second expectation is that the career path is expected to elevate nurses' performance and confidence. Clear achievement targets and skill development opportunities can boost nurses' confidence in executing their tasks, potentially enhancing service quality and patient satisfaction (Tabriz et al., 2024). Lastly, implementing the nursing career path will improve overall hospital service quality. With more skilled and confident nurses, healthcare services are expected to rise, creating a safer, more efficient, and higher-quality patient care environment (Nashwan, 2023). Thus, effective implementation promises significant benefits for nurses, hospitals, and patients, emphasizing the need for continuous support in career development to optimize these advantages.

The nursing career path implementation is generally exemplary but needs refinement. Organizing issues stem from unclear regulations in hospitals A and B and inadequate oversight of internship programs across the three hospitals. CPD programs require more precise criteria for level advancements, and some hospitals lack a career-level-based reward system. Improving these areas should enhance the career path's effectiveness and quality. These findings align with previous research indicating that CPD in career paths can enhance nurses' job perception and satisfaction. (Hariyati & Igarashi, 2017). Moreover, studies by Ackerly et al. (2013) emphasize the need for clear regulations to support employee career development in the healthcare sector. Concerning the lack of reward increase with career advancement, this is consistent with Opio et al. (2022) highlighting the influence of reward practices on healthcare service providers' performance.

Nurses in the three hospitals generally had positive perceptions, but areas like rewards needed improvement, especially in hospitals A and B, where scores were lower (50% and 54.8%) compared to hospital C (78.8%). This aligns with research emphasizing rewards' role in career perceptions (Fawzi et al., 2018; Pasang et al., 2018). Job satisfaction was high at 77%. However, certain aspects, especially work activity and compensation, needed improvement. This suggests a need for further evaluation of work activity structures and compensation programs in each hospital. An analysis of the relationship between nurse characteristics and job satisfaction revealed no significant correlation between demographic factors and job satisfaction. However, an important relationship exists between career-level progression and job satisfaction. This finding is consistent with prior research indicating that demographic characteristics do not always directly correlate with nurse job satisfaction (Ming et al., 2023). However, contrasting studies by Gadirzadeh et al. (2017) suggest that demographic factors, particularly gender and education, influence nurse job satisfaction. The analysis also revealed a significant positive relationship between perception and job satisfaction. This underscores the vital role of perception regarding career advancement in influencing nurse job satisfaction (Ahn & Choi, 2023). These findings highlight the importance of these

factors in creating a motivating work environment that enhances nurse job satisfaction.

Limitation of study

This study's limitations include its focus on three government hospitals in Makassar, excluding private hospitals, and its failure to assess individual nurse performance in alignment with their professional levels.

Conclusion

The study evaluates nursing career path implementation in hospitals, revealing critical issues such as human resources not yet full-time, a focus on accreditation standards, and inconsistencies in financial reward systems. Despite good assessments, organizing, internship programs, CPD, and career progression need improvement. Nurses generally perceive the system positively, but recognition is a primary concern. The study also found a positive correlation between nurses' perception and job satisfaction, emphasizing the need for ongoing support to improve nurses' careers and performance.

Acknowledgment

The author would like to thank the Directorate General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia, for funding the research and publication of this article. We would also like to express our gratitude to all parties who participated in this research, especially the management of the three hospitals in Makassar where the study occurred and all participants and respondents who generously gave their time.

Authors contribution

Each author (AS, EE, FF) has contributed significantly to conceptualization, design, data acquisition, analysis, and interpretation. FF prepared an initial manuscript draft and underwent critical revision by all authors. All authors granted final approval of the published version.

Conflict of interest

The authors declare no conflicts of interest.

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Family caregiver burden in schizophrenia: A structural equation model of caregiver, patient, environmental, and family function factors

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OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 261-269

http://dx.doi.org/10.24198/jkp.v12i3.2599

Article Info

Received : August 27, 2024
Revised : October 23, 2024
Accepted : November 13, 2024
Published : December 25, 2024

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Citation

Sustrami, D., Suhardiningsih, A.V.S., Setyowati, A., Fauk, N.K., & Arifin, H. (2024). Family caregiver burden in schizophrenia: A structural equation model of caregiver, patient, environmental, and family function factors . *Jurnal Keperawatan Padjadjaran, 12*(3), 261-269. http://dx.doi.org/10.24198/jkp.v12i3.2599

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Abstract

Background: Families play a critical role in the care and support of individuals with schizophrenia. However, this responsibility often leaves caregivers with significant physical and psychological burdens.
Purpose: The study aimed to evaluate the family caregiver, patient, environmental factors, and family function as predictors of family caregiver burden in schizophrenia patients.
Methods: This study used a cross-sectional design. The population consisted of family caregivers of schizophrenia patients who had experienced at least one episode in the past year, lived in the same house, and had been caregivers for at least one year. We recruited 220 family caregivers of schizophrenia patients. The variables in this study were family caregiver, patient, environmental factors, family function, and caregiver burden. The data was collected using a self-report questionnaire and analyzed using partial least squares.
Results: Most respondents were predominantly between the ages of 46 and 65. The model showed that caregiver burden was influenced by the patient factor (t= 4.259, path coefficient: 0.088), environment factor (t= 6.540, path coefficient: 0.288), and family function (t= 10.977, path coefficient: 0.497). These findings showed that family function was the dominant factor in caregiver burden.
Conclusions: Patient factors, environmental factors, and family function significantly affected the family caregiver burden, except for the family caregiver factor. This model can help family caregivers decrease their burden by managing family functioning.

Keywords: burden; caregiver; family; schizophrenia

Introduction

Schizophrenia is a severe mental disorder that has become a significant global health concern. (Vos et al., 2016) including in Indonesia (Ministry of health, 2018). Schizophrenia is recognized as one of the leading causes of disability, presenting health, social, and economic burdens on patients and families (Harvey & Strassnig, 2019). Emotional and behavior disorders among schizophrenia patients can lead to high dependence on family caregivers (Harvey & Strassnig, 2019). Family is the most critical element in caring for schizophrenia patients; however, they often experience a physical

and psychological burden (Aubeeluck & Luximon-Ramma, 2020; Chen et al., 2019; Kamil & Velligan, 2019)

Most schizophrenia patients live with their families, who are responsible for their care. Family will assist in fulfilling activities of daily living and the needs of schizophrenia (Tamizi et al., 2020). This activity becomes a burden among family caregivers from mild to severe (Sustrami et al., 2022). The burden experienced by caregivers can hurt patients, such as unmet patient needs (Chong et al., 2023), such as physical and psychological health problems (Gater et al., 2014; Tamizi et al., 2020). Strategies are needed to empower caregivers by involving families to manage the stress caused by caring for patients. Previous studies mentioned that e-health and psychoeducational interventions can support informal caregivers, enhancing health literacy and knowledge about the disease. However, these studies focused on cancer patients and the knowledge of caregivers. (Kusi et al., 2023; Li et al., 2018). These studies did not mention environmental factors and family function.

A model is crucial in providing health professionals with foundational data to assess family burden and develop strategies to empower families. A model can be used to predict factors that affect caregiver burden. One of the existing models of caregiver empowerment is the caregiver empowerment model (CEM). This model defines family empowerment as increasing the family's ability to assess, influence, and manage situations by using family resources to reduce burden (Jones et al., 2011). The model considers how the background of caregiver burden influences their burden. Other theories mentioned that family function is needed for supporting family members (Epstein et al., 1978); patient factors with schizophrenia, such as age, sex, severity of illness, and relapse, are the factors that affect caregiver burden (Sustrami et al., 2023). Additionally, environmental factors are needed to reduce caregiver burdens, such as stigma and healthcare providers (Sustrami et al., 2023). Thus, this study aimed to test the comprehensive conceptual framework for predicting caregiver burden among family members who become caregivers of schizophrenia.

Materials and Methods

This study employed a cross-sectional design to examine the factors influencing family caregiver burden, using the Caregiver Empowerment Model (CEM) framework. The research aimed to identify and analyze key variables—such as the characteristics of the caregiver, the patient's condition, environmental influences, and family dynamics—that contribute to the overall burden experienced by caregivers of schizophrenia patients. By focusing on these multiple dimensions, the study sought to provide a comprehensive understanding of the challenges faced by caregivers.

Participants and settings

This study utilized convenience sampling to recruit family caregivers from the Psychiatric Hospital Surabaya in Indonesia, a hospital that maintains an outpatient clinic for schizophrenia patients. Data collection took place between August and December of 2022. All participants were family caregivers of schizophrenia patients who had experienced at least one occurrence annually, lived in the same household for at least one year, possessed the ability to read and write, and were proficient in using and operating mobile phones. The schizophrenia patients in the study were aged between 18 and 65 years, and the family caregivers agreed to participate as respondents. A total of 220 family caregivers were recruited for this study. According to Tabachnick et al. (2007), Kline (2015), and Chou and Bentler (1995), a structural equation model (SEM) can yield statistically valid results with a sample size of 200 or more or five cases per free parameter in the model.

Ethical Consideration

The process was evaluated and approved for ethical compliance by the Institutional Review Board (IRB) of Psychiatric Hospital in Indonesia (ethical clearance number: 070/4920/102.8/2022). Our commitment to data protection includes strictly preserving anonymity, particularly for personal information.

Data collection and procedure

After receiving approval from the hospital's director and head nurse, we introduced ourselves and thoroughly explained the study to the participants. Once we obtained signed informed consent forms, we distributed the online self-report questionnaire via Google Forms. The participants were allotted 30 minutes to complete the entire questionnaire. They were also informed that participation was voluntary and that they could withdraw from the study at any point after reviewing the questionnaires. As an incentive, participants who fully completed the questionnaire were rewarded with an e-money voucher.

Instruments for Data Collection

The original authors granted permission to adapt all the questionnaires. The demographic questionnaire asked the participants to provide information on age, gender, patient relationship, and length of care.

Family Caregiver Factor

The caregiver factors assessed included the caregiver's education, relationship with the schizophrenia patient, monthly fixed income, duration of caregiving, and knowledge about schizophrenia, evaluated through ten distinct items. The knowledge component covered several domains, including the definition of schizophrenia, its effects, and treatment options. Since we developed the questionnaire ourselves and based on previous

Table 1. Distribution of characteristic family caregiver

Variables	Frequency	Percentage (%)
Age (years)		
18-25	23	10.5
26-45	77	35.0
46-65	120	54.5
Gender		
Female	124	56.4
Male	96	43.6
Patient relationship		
Parents	57	26
Spouse	35	15.9
Children	52	23.6
Sibling	52	23.6
Another family member	24	10.9
Length of Care (year)		
≤ 3	48	21.8
4-5	58	26.4
6-10	64	29.1
>10	50	22.7

Table 2. Factor loading of the variables

	Family caregiver factor (X1)	Patient Factor (X2)	Environment factor (X3)	Family function (Z)	Caregiver burden (Y)
X1.1 Age	0.863				
X1.2 Gender	0.880				
X1.3 Education	0.834				
X1.4 Family status	0.854				
X1.5 Income	0.894				
X1.6 Knowledge	0.912				
X2.3 Length of illness		0.993			
X2.5 Severity of illness		0.993			
X3.1 Stigma			0.828		
X3.2 Social support			0.935		
X3.3 Healthcare services			0.891		
Z1.2 Problem-solving				0.960	
Z1.4 Affective response				0.960	
Y1.1 Emotional					0.860
Y1.2 Physical					0.930
Y1.3 Social					0.907
Y1.4 Financial					0.919

Table 3. Convergent validity, composite reliability, and Cronbach alpha of the variables

Variable	AVE	Composite reliability	Cronbach Alpha
Family caregiver factor (X1)	0.819	0.951	0.938
Patient factor (X2)	0.718	0.993	0.986
Environment factor (X3)	0.783	0.916	0.862
Family function (Z)	0.636	0.959	0.914
Caregiver burden (Y)	0.706	0.947	0.926

Table 4. R^2 of Variable

Variable	R-Square
Family function (Z)	0.824
Care burden (Y)	0.841

Table 5. F^2 of Variable

Variable	Family function (Z)	Caregiver burden (Y)
Family caregiver factor (X^1)	1.269	0.002
Patient factor (X^2)	0.064	0.375
Family function (Z)		0.464

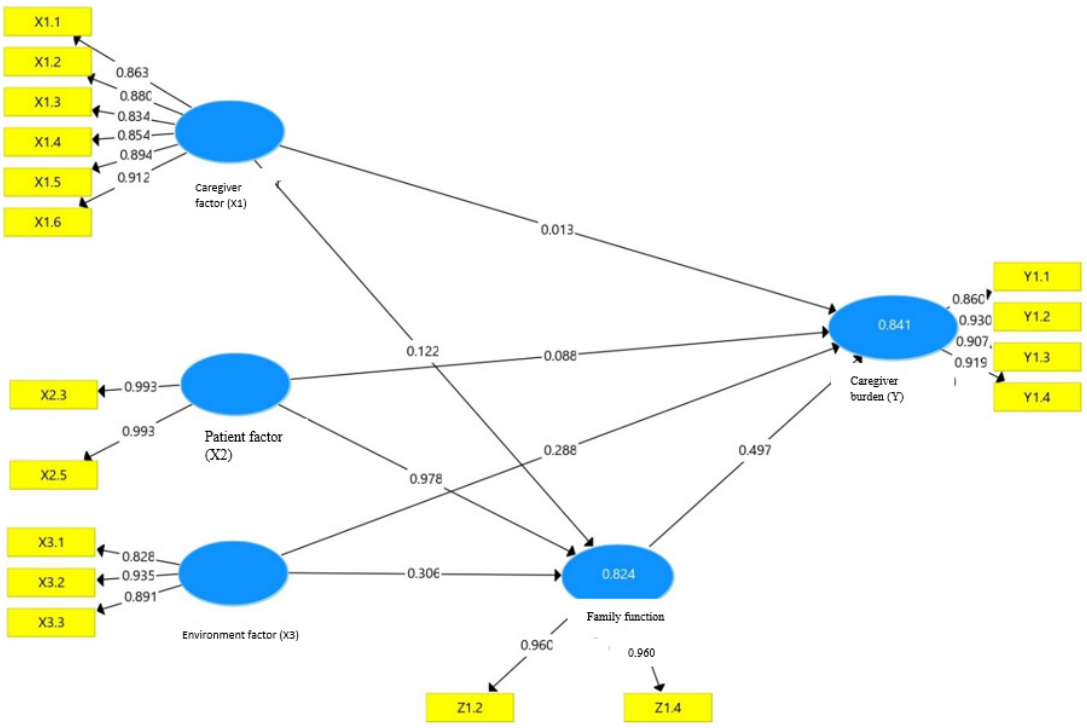

Figure 1. Factor that affects family care burden in schizophrenia

study (Sustrami et al., 2023) We used Cronbach's alpha and AVE to assess reliability and convergent validity. Convergent validity was necessary to determine whether the items within a construct were highly correlated and measured the same underlying construct. The questionnaire's Cronbach's alpha was 0.926, and the AVE was 0.731.

Patient factor

The patient factors assessed included the duration of schizophrenia and the frequency of relapses (defined as the number of relapses in one year). The Brief Psychiatric Rating Scale (BPRS) was used to measure the severity of psychiatric symptoms, such as depression, anxiety, hallucinations, and unusual behavior (Hofmann et al., 2022; Overall & Gorham, 1962). The BPRS consists of 18 items, completed by a physician based on the patient's condition. The symptoms are rated on a Likert scale, where 1 indicates no symptoms, two mild, three moderate, and four severe, with higher scores reflecting greater severity of schizophrenia symptoms. The variables included indicators such as the duration and severity of illness. A mental health nurse interviewed the patient using this tool. The Cronbach's alpha for the questionnaire was 0.87 (Hofmann et al., 2022), and criterion validity, as measured by Pearson's correlation coefficient, was $r = 0.53$ ($p < 0.01$) (Hofmann et al., 2022).

Environment factor

The environmental factors assessed included stigma and health services. The domains of stigma were labeling, stereotypes, separation, and discrimination. It was developed based on stigma (Goffman, 2009; Liu & Huang, 2018). The domains of health services encompassed the distance from the home to the healthcare center, transportation, and the availability of medical devices at the healthcare center (Fitryasari et al., 2021). The total number of items in this questionnaire was 16. The Cronbach's alpha for the entire questionnaire in this study was 0.996, and convergent validity was evaluated using AVE. The Average Variance Extracted (AVE) was 0.869.

Family function

The family functioning questionnaire utilized the McMaster Family Assessment Device (Epstein et al., 1983), which includes the domains of problem-solving, communication, roles, affective responses, affective involvement, and behavior control. This questionnaire consists of 41 questions (Ryan et al., 2012). The questionnaire in this study was deemed valid, with a p-value ≤ 0.05 and r > r table. The Cronbach's alpha for the entire questionnaire in this study was 0.995.

Caregiver burden

Caregiver burden was a modification of the Zarit Burden Interview (Zarit et al., 1980). The questionnaire is structured based on 22 questions. The questionnaire was adapted and translated into Bahasa based on World Health Organization (WHO) guidelines (WHO, 2014). The Cronbach alpha of this questionnaire was 0.761, and the r value was 0.361> r table, which means it is reliable and valid.

Data Analysis

The statistical indices in a structural equation model (SEM) will perform adequately when the sample size is 200 or more or five cases per free parameter in the model (Chou, 1995; Kline, 2023; Tabachnick et al., 2013). The total sample in this study was 200. Data were analyzed using the Partial Least Square (PLS) to investigate the outer model, inner model, and hypothesis testing. The outer model explored the relationship between latent variables and the indicators. The indicator is valid if the average variance extracted (AVE) value >0.5. Moreover, it analyzes the inner model to predict the relationship between latent variables. It was evaluated by R2 (R-square) for the dependent variable. Grading system for R2 values: 0.00 to 0.19; weak, 0.00 to 0.39: moderate, 0.40 to 0.59: substantial, 0.60 to 0.79: strong, and 0.80 to 1.00: extreme (Hair et al., 2006). The Goodness of Fit (GoF) test was used to explain the relationship among variables in the model. It was obtained by multiplying the square root of the average commonalities by the square root of the average R-squared values. F square was used to evaluate effect size. It was categorized as 0.02: small, 0.15: moderate, and 0.35 significant (Wong, 2013). The final stage was to overview the Hypothesis. It was evaluated by t-statistic and p-values. We used T-statistic > 1.96 and p value > 0.5.

Results

Demographic

Table 1 shows the characteristics of the respondents. Most (54.5%) were between 46 and 65 years old. We divided age based on the development stage. (Erikson, 1998): young adults (18-25 years old) were 10.5%, middle-aged adults (26-45 years old) were 35%, and older adults (46-65 years old) were 54.5%. Most respondents were female (56.4%). Regarding relationships with family, the respondents were the patient's parents (26%). In addition, the length of care was 6-10 years (29.1%).

Outer model

The outer model is analyzed by measuring its validity and reliability, namely convergent validity and composite reliability. Convergent validity is assessed from the loading factor. This value will be accepted if the loading factor value is above 0.7. Table 2 shows the loading factor values possessed by each indicator.

Table 3 showed convergent validity, composite reliability, and Cronbach alpha for each variable. Convergent validity was evaluated with Average Variance Extracted (AVE). The AVE value should

be≥0.5. It means that the construct can explain 50% or more of the item variance (Sarstedt et al., 2021). The final AVE value for all variables is > 0.5. Composite reliability for all constructs > 0.70. Cronbach alpha values for all constructs are above 0.60. Thus, it can be concluded that all constructs are reliable.

Inner model

Table 4 shows R2 and Communalities to evaluate the inner model. R2 was also used to measure the contribution of exogenous variables to endogenous variables. R2 of family function was 0.824. It means that 82.4% of family function was contributed by caregiver factor (X1), patient factor (X2), and environment factor (X3) (Figure 1). R2 of caregiver burden was 0.841. It means that the patient factor, environment factor, and family function affected caregiver burden by 84% (Figure 1). The family caregiver factor and patient factor had a significant effect size on family function. Patient factors and family functions significantly affect caregiver burden (Table 5). The GoF in the model was 0.642.

Overview of path analysis

Figure 1 shows that caregiver burden was influenced by the patient factor (t= 4.259, path coefficient: 0.088), environment factor (t= 6.540, path coefficient: 0.288), and family function (t= 10.977, path coefficient: 0.497). These findings show that family function was the dominant factor in caregiver burden.

Discussion

We examined factors affecting family caregiver burden in schizophrenia, including caregiver factor, patient factor, environmental factor, and family function. All of these variables affected the caregiver burden, except the caregiver factor. However, the caregiver factor was a predictor of family function.

Although caregiver factors like age, gender, education, and income were not directly associated with caregiver burden, they were found to predict family function significantly. This indicates that while these characteristics might not directly influence the burden, these factors are essential for maintaining family function. For example, older caregivers with higher caregiving experience might have better coping mechanisms that enhance family function (Blinka et al., 2022). Based on existing data, most of the respondents were aged 46-65 years, female gender, and had a senior high school education level. The data also showed that most respondents have incomes less than the minimum wage, become caregivers for 6-10 years, and have good knowledge in terms of schizophrenia but less understanding in terms of the effect of schizophrenia and therapy of schizophrenia. Previous studies mentioned that family caregivers must be able to involve all family members, have a strategy for facing stressors, and reduce stress during treatment to increase family function (Ribé et al., 2018). The involvement and understanding of all family members regarding schizophrenia patients will increase family function.

The patient factors—including the frequency of relapses, severity of schizophrenia symptoms, and patient dependence on daily living—are critical in determining the level of caregiver burden. Most respondents had been sick for 6-10 years. The results of the study showed that most schizophrenia patients experienced relapses one to four times in one year. Frequent relapses in schizophrenia are associated with significant emotional, physical, and financial strain on caregivers. The results of this study were similar to previous research which mentioned that families would experience a burden when patients often experience relapses and rehospitalization (Wang et al., 2017). Earlier research also states that clinical symptoms are a predictor of caregiving burden; it can cause distress among family members (Hegde et al., 2019). Caregivers of patients with severe symptoms are often faced with challenging behaviors, such as hallucinations or delusions, which require constant monitoring and management. This can be highly disruptive to the caregiver's personal life, as they may need to ensure that the patient does not harm themselves (Khanna et al., 2022). This research also shows that the level of dependence of schizophrenia patients on daily living activities is in the partial category. This condition affected the burden on caregivers (Hajebi et al., 2019).

The study results indicated that environmental factors significantly impacted caregiver burden. These factors were measured through three key indicators: stigma, social support, and health services. Schizophrenia patients often face stigma (Krupchanka et al., 2018) and lacked adequate social support (Da Silva et al., 2020; Tristiana et al., 2019), both of which can lead to relapses (Da Silva et al., 2020) and contribute to the caregiver's burden (Wang et al., 2017). On the positive side, the availability of health services was satisfactory. Previous research has shown that professional healthcare providers can help lessen the perceived burden on family caregivers of schizophrenia patients (Ribé et al., 2018). In summary, access to quality health services can help reduce caregiver strain and enhance family functioning.

The results showed that family functioning significantly influenced the caregiver's burden. The family function factor has indicators of problem-solving, communication, roles, affective responses, affective involvement, and behavioral control. However, the results indicated that family functioning was generally weak, particularly in caregiver communication with patients and other family members, emotional involvement, and behavioral control. The primary goal of family functioning is to meet the social, psychological, and biological needs of all members (Epstein et al., 1978). Weak communication and emotions increase stress and negatively affect the well-being of both

caregivers and patients. According to the McMaster Model of Family Functioning, these six components are essential. Effective family functioning is closely tied to the psychological well-being of caregivers for individuals with schizophrenia (Clari et al., 2022; Hsiao & Tsai, 2015). Therefore, caregivers need to understand the role of family functions.

This study acknowledged several limitations, particularly regarding the families' ability to care for members with schizophrenia. The focus was limited to measuring family factors, patient factors, environmental factors, and family functioning. However, it did not account for the family's current stage of development, which could influence their caregiving capacity. Since different stages of family development may impact how well they support individuals with schizophrenia, future research should explore this variable. Despite these limitations, the study successfully identifies key factors that contribute to caregiver burden, emphasizing that addressing these factors can help reduce the burden on caregivers.

Conclusions

Patient factors, environmental factors, and family function affect family caregiver burden. The patient factors consisted of duration of illness and frequency of recurrence. Environmental factors consisted of stigma and health services. In addition, family function consists of problem-solving, communication, roles, affective responses, affective involvement, and behavioral control. Management of these factors was needed to assess the burden among family caregivers in schizophrenia. Understanding the factors contributing to caregiver burden highlights the need for interventions to enhance coping mechanisms based on patient factors; health services should be responsive to mitigate caregiver burden and to improve family functioning such as good communication.

Declaration of Interest

No conflict of interest has been declared.

Acknowledgment

We would like to thank all the respondents Indonesia

Funding

This study has no funding

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Effect of breathing relaxation on stress related to COVID-19 pandemic among older adults in nursing homes: A pre-experimental study

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Abstract

Background: Older adults in nursing homes are facing more mental health consequences due to the COVID-19 pandemic situation. Assessment of the appropriate intervention in declining the level of stress related to pandemic situations among institutionalized older adults is critical.
Purpose: This study was conducted to evaluate the effect of breathing relaxation on stress related to the COVID-19 pandemic among older adults in nursing homes.
Methods: A pre-experimental with a one-group pretest-posttest design was used in the present study. Thirty older adults were recruited using the purposive sampling method. The Perceived Stress Scale (PSS-10) related to COVID-19 was used to identify the level of stress among older adults. Twenty minutes of breathing relaxation were conducted once a day for 1-week from January 6 to January 12, 2021. The intervention was taught and guided by the researcher in small groups of 5-7 older adults based on the number of residents in the homesteads.
Results: Of 30 participants, 60% were female, and the mean age was 72.80 (SD=8.50) years. The average length of stay in the nursing home was 8.10 (SD=8.75) years. The older adults in nursing homes who performed breathing relaxation once a day for one week significantly decreased their stress related to the COVID-19 pandemic (t = 4.881, ρ = .000).
Conclusion: Based on this finding, breathing relaxation therapy could be promised as one of the interventions that could reduce the stress level associated with COVID-19 among older adults in nursing homes.

Keywords: COVID-19; frail older adults: nursing homes; psychological stress; relaxation therapy

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 327-334

http://dx.doi.org/10.24198/jkp.v12i3.2261

Article Info

Received : March 19, 2023
Revised : December 21, 2024
Accepted : December 23, 2024
Published : December 30, 2024

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Citation

Betan, Y., Jenau, B., Djogo, H.M.A., & Rumbo, H. (2024). Effect of breathing relaxation on stress related to COVID-19 pandemic among older adults in nursing homes: A pre-experimental study. *Jurnal Keperawatan Padjadjaran, 12*(3), 327-334. http://dx.doi.org/10.24198/jkp.v12i3.2261

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Older adults are severely hit in terms of mortality due to Coronavirus Disease 2019 (COVID-19). In the United States of America, compared to 18 to 29 years old, the rates of hospitalization and death are four and thirty times higher respectively in 50 to 64 years old. The rates also significantly increased in those who are 65 years and older (Centers for Diseases Control and Prevention, 2021). The cases are similarly reported in other countries such as China (Wang et al., 2020), and India (Mudgal & Wardhan, 2020). Italy has been hit very hard with high mortality rates of COVID-19 among older adults especially in long-term care facilities (Amore et al., 2021). A cohort study in the United Kingdom shows a significantly increased proportion of deaths in care homes for older people between March and June 2020 compared with 2016 (Hollinghurst et al., 2021). In Indonesia, the case fatality rate of COVID-19 among older adults is about 15% as of 9 September 2020. This percentage is quite high (Komazawa et al., 2021).

Older adults are aware of their heightened susceptibility to COVID-19, and this awareness has led to feelings of anxiety and fear surrounding the potential contraction of the virus (Age UK, 2020). Fear of the COVID-19

pandemic among older adults can have an impact on long-term psychological effects to the occurrence of stress. This condition can result in lowering the immune system that is already weakened among older adults (Banerjee, 2020). Moreover, the older adults in nursing homes are facing more mental health consequences due to the pandemic situation such as an impressive rate of loss of their loved ones, ban on visitors to nursing homes, social isolation, and omitted group activities (Skoog, 2020). A brief report from Italy showed that the older adults in nursing homes are often seen crying repeatedly due to losing their friends or roommate within the nursing home (de Leo & Trabucchi, 2020). Another piece of literature highlights that emotional anxiety and loneliness are the main psychological consequences for nursing home residents caused by COVID-19 (Mo & Shi, 2020). Further, a preliminary study conducted by researchers in one of the Indonesian government nursing homes in November 2020 also showed that out of all residents (61 older adults), most of the older adults reported that they fear being exposed to COVID-19, and felt lonely due to activity restrictions. The situation can lead to institutionalized older adults' feelings of abandonment, loneliness, stress, and more downheartedness, which can compound the pre-existing diseases (de Leo & Trabucchi, 2020; Skoog, 2020). Despite the studies focus on the psychological consequences of COVID-19 among older adults in nursing homes, there have been limited studies evaluating the appropriate intervention in declining the level of stress related to pandemic situations among institutionalized older adults during such unprecedented global crises.

The relaxation method is among the non-pharmacological interventions that have been established as effective in lowering the level of depression, stress, and anxiety. Various relaxation methods are available, and among them, Benson's Relaxation Technique (BRT) stands out as a widely recognized and easily accessible approach. BRT is used as a theoretical framework for the present study. BRT is characterized by inducing a profound state of physical relaxation that primarily engages the parasympathetic nervous system, reducing an individual's physiological and emotional reactions to stress. (Benson et al., 1975). BRT was initially performed to lower blood pressure in hypertensive patients with twice daily relaxation during two months (Benson et al., 1975). However, this relaxation technique has been widely studied to reduce psychological problems in respondents with various disease backgrounds. For instance, a recent cluster-randomized trials study revealed that there was a statistically significant reduction in perceived stress among hemodialysis patients. This study shows that respondents who performed twice a day Benson's breathing relaxation technique for 10 minutes during a one-week intervention can reduce the score of perceived stress (Abu Maloh et al., 2023). Another example, a randomized controlled study showed that a 2-week intervention period of Benson's relaxation technique was effective in modulating immune activity and reducing the negative effects and psychological distress of older adults in nursing homes (Reig-Ferrer et al., 2014). Extant literature also disclosed that Benson's relaxation method was effective in reducing depression, anxiety, and stress of undergoing hemodialysis patients (Abu Maloh et al., 2022; Heidari Gorji et al., 2014; Meawad Elsayed, 2019) as well as in multiple populations such as women with high-risk pregnancy (Araújo et al., 2016), patients in emergency care (Ibrahim et al., 2019), parents of children with leukemia under chemotherapy (Pouraboli et al., 2019), and patients undergoing coronary angiography (Tahmasbi & Hasani, 2016). Therefore, the breathing relaxation intervention in this study was based on Benson's relaxation techniques (Benson et al., 1974, 1977).

Further, a previous study showed that breathing relaxation is a useful non-pharmacological therapy particularly in reducing anxiety and improving sleep quality among nursing staff during the COVID-19 pandemic (Liu et al., 2021). However limited research has explored the application of this intervention for older adults in nursing homes who represent a highly vulnerable population facing unique stressors during the pandemic such as grieving the loss of a loved one and isolation (Skoog, 2020). Additionally, during social isolation and activity restriction, non-group or individual activities such as breathing relaxation can be more effective in preventing the rapid spread of COVID-19 in nursing homes (Mo & Shi, 2020). This present study addressed this gap by evaluating the potential of breathing relaxation techniques to reduce stress related to COVID-19 in older adults residing in nursing homes. By shifting the focus from healthcare providers, and other patient populations examined in previous studies to elderly residents, this study not only expands the scope of application for breathing relaxation but also contributes valuable insight into its feasibility for improving mental health in a high-risk population during public health crises. Specifically, this study aimed to assess the effect of breathing relaxation on stress related to COVID-19 pandemic among older adults in nursing homes.

Materials and Methods

Design

A pre-experimental with a one-group pretest-posttest design was used in the present study.

Setting and sample

This study was conducted in an Indonesian nursing home in Kupang City, East Nusa Tenggara Province. During the study process, the researcher conducted a COVID-19 test and the results were negative. The researcher also used preventive equipment and took strict precautions. These were done to prevent the spread of COVID-19 infection. The researcher also explained in detail the procedures done by the researcher to avoid the possibility of anxiety related to the transmission of COVID-19 felt by respondents.

The researcher approached the respondent during routine health checks carried out by the health team in the nursing home.

The study population is 61 older adults. G Power 3.1.7.9. was used to calculate the sample size using a 0.57 effect size (Manzoni et al., 2008), a power level of 0.80, and an alpha of 0.05. Based on the calculation, the minimum sample of this study was 27 respondents. Then, the researcher added 10% to anticipate the participant dropout. Therefore, the total sample of this study was 30 respondents. The purposive sampling was used to recruit the older adults in the nursing home who met the following inclusion criteria: 1) age between 60-90 years old; 2) willing to participate in this study by signing the informed consent; 3) having at least 12 months living in the nursing home; 4) having no consumption of stress medication; 4) having no experience of stressful events recently screened by the researcher using a modified Stressful Life Events Screening Questionnaire from a previous study (Allen et al., 2015); 5) having no illnesses at the time of data collection process; 6) having ability to listen. The older adults who have a psychiatric illness; physical illness specifically chronic diseases including diabetes mellitus, chronic kidney diseases, heart failure, and cancer; and cognitive impairment diagnosed by a physician were excluded from this study. In this study, sixty-one older adults were screened for eligibility and only thirty-four respondents were found to be eligible with the remaining subjects exhibiting instances of fever during the study period, instances of hearing impairment, and had not resided in the nursing home for 12 months yet. Then, out of thirty-four eligible respondents, 4 respondents were excluded due to cognitive impairment diagnosed by a physician. Thirty participants who met the inclusion criteria and were willing to participate in this study were asked to sign the informed consent.

Instruments

The researcher adapted the Perceived Stress Scale (PSS-10) from a previous study (Pedrozo-Pupo et al., 2020) with granted permission to identify COVID-19 related stress of the older adults in nursing homes. Each Item is ranging from 0 for “Never” to 4 for “Very often”. Items 1, 2, 3, 6, 9, and 10 are negative items and are scored from 0 to 4. Items 4, 5, 7, and 8 are positive items and are scored reversely from 4 to 0. A higher score indicated a higher perceived COVID-19-related stress on the older adults. The original questionnaire was in English, and a forward translation procedure was employed. Two independent translators translated the questionnaire into the Indonesian language. To ensure translation accuracy, the initial translation was independently back-translated by two other independent translators. The back-translators were individuals who were unaware of the intended concepts being measured by the questionnaire, in order to prevent bias.

Prior to data collection, the questionnaire’s validity was assessed by three experts in the fields of mental health nursing and gerontology, using the Content Validity Index Item (CVI-I). The experts rated each item’s relevance and clarity using a 4-point rating scale from 1 for “irrelevant” to 4 for “very relevant”. The results of CVI-I were 0.86 indicating that the questionnaire was valid. Additionally, the questionnaire’s reliability was assessed by administering it to thirty older adults residing in a different nursing home, who were not part of the participant group in this study. Cronbach’s alpha was used to calculate the internal consistency of the questionnaire. The result of Cronbach’s alpha was 0.97 indicating that the questionnaire was reliable to measure the level of COVID-19-related stress.

Intervention

Prior to conducting the intervention, the researcher explained the objectives and procedures of this study. Stress-related to the COVID-19 pandemic of respondents was assessed before and 1 week after the intervention, each for about 30 minutes. The Perceived Stress Scale related to the COVID-19 pandemic questionnaire was read by the researcher to each respondent. Based on the answers of respondents, the researcher fills out the questionnaire. The older adults were taught about essential skills of breathing relaxation for one session. Thereafter, twenty minutes of breathing relaxation techniques from Herbert Benson (Benson et al., 1974, 1977) were conducted once a day in the morning for 1 week guided by the researcher from January 6 to January 12, 2021. The intervention was given for 20 minutes with the following instruction:

1. Assume a comfortable seated position, maintaining posture without stiffness or tension; 2. Deeply relax the head, neck, shoulders, back, arms, buttocks, thighs, and legs; 3. Gaze straight ahead, then gradually close their eyes; 4. Inhale slowly, fostering relaxation and tranquility; 5. Breathe normally; . Maintaining to focus their thoughts and concentration on the inhalation and exhalation of breath through the nostrils; 7. Aware of breathing by focusing attention on the sensation of air moving in and out of the body while breathing through the nostrils; 8. Maintain to feel the expansion and contraction of the abdomen during inhalation and exhalation; 9. Feel the coolness and warmth of the air entering and exiting the nostrils during breathing; 10. Observe any arising thoughts; 11. If carried away by thoughts, simply observe where the thoughts lead and return focus to the breath; 12. Maintain concentration on the inhalation and exhalation of breath through the nose; 13. Aware of the relaxed state of the head, neck, shoulders, arms, back, buttocks, thighs, and feet; 14. Acknowledge that their feet are firmly planted on the floor; 15. Return to their initial state of awareness and slowly open their eyes; 16. Rise from the seated position slowly to prevent falls and gradually move their head, neck, shoulders, and legs.

Before the intervention sessions, the participants were also asked to have breakfast and a meal at least 2 hours since the digestive process can intercede in the incoming relaxation response (Benson et al., 1977). The researcher taught and guided the breathing relaxation method for 1 week of intervention in each of the respondents' homesteads. The researcher was in a separate room that was limited by the glass during the intervention sessions to prevent the spread of COVID-19 at that time. In this nursing home, there are several homesteads. The intervention was implemented in small groups of 5-7 older adults based on the number of residents in homesteads. At the end of the intervention, the researcher said thank you to all participants as an appreciation of their willingness to participate in this study.

Data collection

This study was conducted from January 5 to 12, 2021. Pre-test data collection regarding stress related to the COVID-19 pandemic was carried out for 1 day on January 5, 2021, then from January 6 to 12, 2021, a breathing relaxation intervention was conducted. Finally, post-test data collection was carried out on the last day after completing the intervention.

Data analysis

Descriptive statistics were used to analyze the mean, standard deviation, number, and percentages of the respondents' characteristics. A paired t-test was used to evaluate the effect of breathing relaxation on perceived stress associated with COVID-19 pandemic among the older adults in the nursing home. The significance level was two-tailed and was considered at a ρ value less than .05.

Before conducting the Paired t-test, the researcher performed a test of data normality using the Shapiro-Wilk test because the sample size in this study consisted of 30 individuals. Based on the test results, it was found that the pre-test and post-test data had a normal distribution with ρ -values of 0.07 for the pre-test data and 0.26 for the post-test data.

Ethical consideration

The present study was approved by the Ethical Commission of the Faculty of Health, Citra Bangsa University (EC No. 005/A/2020). The researcher explained the objectives and procedures of this study to all participants. All participants involved in this study signed the informed consent.

Results

The nursing home had 61 residents. Thirty older adults met the inclusion criteria and completed all sessions of the intervention. The characteristics of respondents are shown in table 1. Of 30 participants, 60% were female, and the mean age was 72.80 (SD=8.50) years. The average length of stay in the nursing home was 8.10 (SD=8.75) years. Most of the participants graduated from elementary school

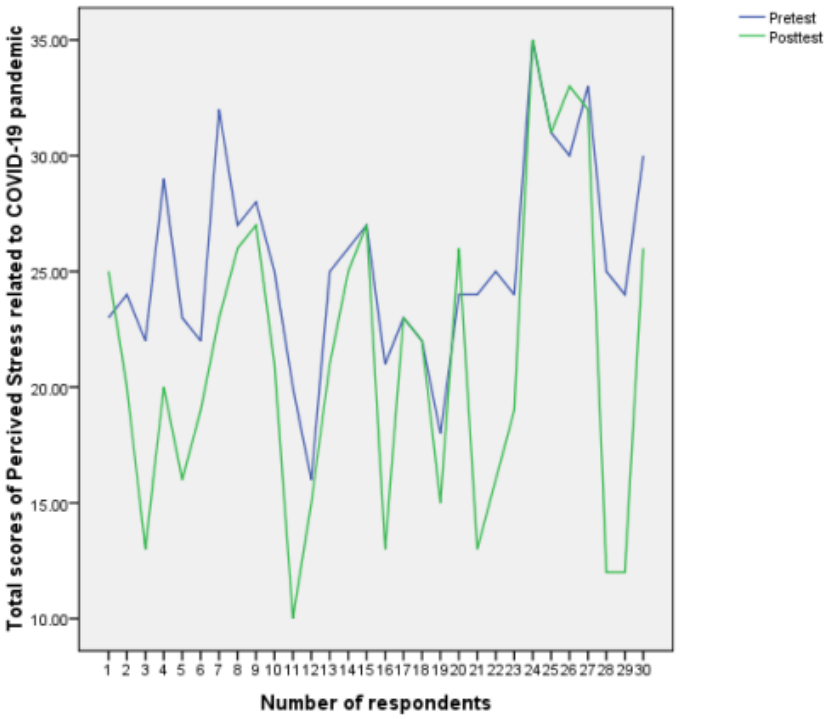

Figure 1. Line graph of perceived stress related to COVID-19 pandemic of pre-test and post-test (N = 30)

Table 1. Descriptive statistics of respondents' Characteristics (N = 30)

Variables	n	%
Age, years (Range, Mean ± SD)	(60-89, 72.80±8.50)	
Length of stay in the nursing home, years (Range, Mean±SD)	(1-36, 8.10±8.75)	
Gender		
Female	18	60
Male	12	40
Education Level		
Uneducated	5	17
Elementary school	14	46
Junior high school	5	17
Senior high school	6	20
Previous employment status		
Unemployed	14	47
Employed	16	53

Table 2. Effect of breathing relaxation on perceived stress related to COVID-19 pandemic among older adults in nursing homes (N = 30)

Variable	M ± SD		t	ρ
	Pre-test	Post-test		
Overall perceived stress related to COVID-19 pandemic	25.26 ± 4.33	21.20 ± 6.83	4.881	0.000

(see table 1).

Further, results indicated that perceived stress related to the COVID-19 pandemic of the older adults in the nursing home (t = 4.881, ρ = .000) decreased significantly after 7 days of breathing relaxation intervention. The average perceived stress related to the COVID-19 pandemic among older adults in the nursing home decreased from 25.26 (SD=4.33) in the pre-test to 21.20 (SD=6.83) in the post-test (see Table 2). The line graph in Figure 1 shows the comparison between pre and post-test total scores of perceived stresses related to the COVID-19 pandemic among older adults. The lowest score of the pre-test was 16, whereas the post-test was 10. The highest score for the pre-test and post-test was 35.

Discussion

During the COVID-19 pandemic, psychological issues such as stress have become common among older adults living in institutional settings. The objective of this study was to assess the potential effect of breathing relaxation using the Benson Relaxation Technique to reduce the perceived stress associated with COVID-19 among older adults residing in nursing homes. This research employed a pre-experimental (pre-post) design with purposive sampling. According to the paired t-test analysis, there was a notable and statistically significant decrease in perceived stress levels after participants engaged in breathing relaxation sessions once a day for a duration of one week.

Further, the results of this study showed that the mean score for the pre-test was 25.26. Based on the previous study, scores equal to or higher than 25 were categorized as high perceived stress related to COVID-19 (Pedrozo-Pupo et al., 2020). This confirms that before the intervention of breathing relaxation, the average older adults in the nursing home in this study had high perceived stress associated with the COVID-19 pandemic. This might be related to the increasing number of people with COVID-19 infection in early January 2021 in Indonesia. As reported by the National Task Force for COVID-19, the total number of infected people increased from 109,963 cases on December 31, 2020, to 110,679 on January 3, 2021 (The COVID-19 National Task Force, 2021). Another possible reason for this finding might be related to the restrictions on regular activities in the nursing home during the COVID-19 pandemic such as spiritual group activities, exercise group activities, and recreational activities. The older adults are only allowed to carry out activities in their homesteads and are not allowed to visit their friends in other homesteads. The results of this study underlined the need for psychological support and intervention for older adults in the nursing home during the pandemic situation.

Moreover, the purpose of this study was to evaluate the effect of breathing relaxation on stress associated with the COVID-19 pandemic among older adults in nursing homes. The current study highlights the significance of breathing relaxation therapy in decreasing the total scores of perceived stresses related to the COVID-19 pandemic among older adults in nursing homes. During the practice of breathing relaxation, the sympathetic nervous

system becomes inhibited, leading to a decrease in the body's oxygen consumption. This, in turn, promotes muscle relaxation, contributing to a sense of calm and comfort. As the relaxation process unfolds, the oxygen supply to the brain increases, and the parasympathetic system becomes dominant. This shift allows individuals to feel more at ease and empowers them to effectively manage mental symptoms such as stress (Benson et al., 1975, 1977). When individuals engage in breathing relaxation, there are potential biases that can emerge (Benson et al., 1974, 1977). Firstly, to elicit a favorable relaxation response, it's essential to reduce muscle tension. To account for the potential bias of this factor, participants were instructed to sit in a comfortable position. Additionally, the digestive process can influence the effectiveness of the relaxation response. Thus, in this study, the intervention was administered to participants at least two hours after they had breakfast and finished eating. Furthermore, a tranquil setting with minimal external distractions is vital for a successful relaxation experience. Therefore, participants in this study were instructed to close their eyes and the intervention was conducted in a quiet room, located within their homesteads (Benson et al., 1974, 1977).

This finding is also consistent with a recent study about tele-yoga involving breathing intervention that disclosed that there was a significant reduction in the perceived stress level of 54 participants who completed the intervention. The previous research also noted that after 4 weeks of tele-yoga intervention, 36% of participants reported feeling calm and relaxed, 23% of participants felt less tired and energetic, and 18% of participants felt refreshed (Jasti et al., 2020). Unfortunately, this tele-yoga intervention might be difficult to implement among older adults in nursing homes due to limited skills in using such technology, limited body strength, and a limited certified yoga teacher.

In the current study, the results showed that as a single intervention method, breathing relaxation significantly reduces the level of perceived stress among institutionalized older adults. Breathing relaxation is a simple exercise, easy to learn, and economical intervention that can be implemented for older adults under any circumstances. Therefore, this intervention could be used as a daily practice during social isolation and activity restriction to improve the psychological well-being of older adults in nursing homes. Furthermore, this study aligns with a prior research study on the effectiveness of breathing exercises in reducing stress levels among patients with SARS-CoV-2 infection who were under institutional isolation. The previous study demonstrated that a 7-day controlled breathing program had a positive effect in reducing stress levels among respondents aged 17-70 years old (Mahendru et al., 2021).

The findings of this pre-experimental study imply that breathing relaxation could be a promising, non-invasive, and low-cost intervention to reduce stress levels among institutionalized older adults during pandemics. As a pre-experimental study, this finding could serve as a groundwork for future research, particularly experimental or quasi-experimental design. To strengthen the evidence base, future research should employ more robust designs, such as randomized controlled trials or quasi-experimental methods, to confirm the effectiveness of breathing relaxation techniques and establish causality. Further, this finding can be used by healthcare professionals, particularly those working in nursing homes with older adults to introduce breathing relaxation as a regular implementation of stress reduction interventions.

The strong point of this study is that, to the best of our knowledge, it is the first pre-experimental investigation to employ the Benson Relaxation Technique in reducing stress levels associated with COVID-19 among older adults in Indonesian nursing homes. The findings can inform preparedness for managing mental health in future similar situations or public health crises. However, like many other studies, this research had its limitations. This study was conducted solely in one government-run nursing home in East Nusa Tenggara, Indonesia. As a result, the findings of this study cannot be generalized to encompass all older adults in nursing homes across Indonesia.

Conclusions

Based on this finding, the authors concluded that relaxation therapy could be promised as one of the interventions that could reduce the level of stress associated with COVID-19 among older adults in nursing homes. Therefore, this study highlights the potential for integrating breathing relaxation into routine care for older adults.

Declaration of Interest

The authors have declared no conflict of interest

Acknowledgment

The authors acknowledge Mrs. Fepy Thresna Feoh, M.Kep for her invaluable input on this study. We would also like to express our gratitude to all the participants for their valuable time and participation in this research.

Funding

This research was not financially supported by any dedicated grants or funding from public, private, or non-profit organizations.

Data Availability

The datasets produced and examined during the present study can be obtained from the corresponding author upon a reasonable request.

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“Plants brought back to life”: An exploration of female adolescent survivors’ experiences of sexual abuse, healing and resilience

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Abstract

Background: Sexual abuse is a significant issue for adolescent girls in the Philippines. This study explores the experiences of survivors, focusing on their journeys of healing and resilience.
Purpose: This study aimed to investigate effect of mindfulness-based Asmaul Husna on the overall adaptive functioning of individuals with schizophrenia.
Methods: This Interpretative Phenomenological Analysis study aimed to understand the lived experiences of Filipino adolescent girls who survived sexual abuse through four key questions, namely: 1) How did each participant perceive their experience? 2) What coping mechanisms did they employ to deal with the trauma? 3) How did the abuse impact their self-perception and purpose in life? 4) What symbols or meanings do they associate with their experiences?
Results: The analysis identified six superordinate and sixteen subordinate themes. These included: 1) sense of loss – participants described a deep sense of loss due to the abuse; 2) healing as a process – healing was perceived as a gradual and ongoing journey; 3) supportive environment – supportive relationships played a crucial role in coping; 4) growing faith in God – faith emerged as a significant source of strength; 5) reclaiming the sense of self – regaining a sense of self-worth was a central aspect of healing; and 6) altruism – the desire of helping others emerged as a meaningful way to cope.
Conclusion: The participants’ experiences can be likened to a resilient plant that, despite facing near-destruction, revives with renewed strength. Family dynamics played a crucial role in the girls’ experiences of abuse. A culture of silence and fear emerged as a significant theme in their narratives. Additionally, the ambiguity and conflicting emotions surrounding accountability for perpetrators within close families posed complex challenges. This research provides valuable insights into the experiences of sexually abused Filipino adolescent girls, informing nursing practice. The findings enable nurses to offer culturally sensitive, trauma-informed care and develop targeted support interventions. Incorporating these insights into nursing education will enhance students’ competencies in trauma response, cultural sensitivity, and therapeutic communication with abuse survivors, leading to improved assessment protocols and care strategies.

Keywords: child sexual abuse; female adolescents; healing; resilience

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 287-298

http://dx.doi.org/10.24198/jkp.v12i3.2555

Article Info

Received : May 31, 2024
Revised : December 12, 2024
Accepted : December 18, 2024
Published : December 25, 2024

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Citation

Jarabe, M. L. T., & Rahayuwati, L. (2024). “Plants brought back to life”: An exploration of female adolescent survivors’ experiences of sexual abuse, healing and resilience. *Jurnal Keperawatan Padjadjaran, 12*(3), 287-298. http://dx.doi.org/10.24198/jkp.v12i3.2555

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Child sexual abuse (CSA) is a complex and pervasive global issue that requires extensive research across multiple dimensions. Despite an increase in reported cases of sexual abuse in recent years, experts believe that the actual prevalence of CSA is likely underreported. This underreporting is largely attributed to the significant emotional challenges victims face when considering disclosure (Boumpa et al., 2024). CSA occurs in various

settings, with perpetrators including family members, partners, peers, and strangers.

Child Sexual Abuse (CSA) is a severe form of abuse that exploits a child's vulnerability for the sexual and emotional fulfillment of one or more persons deemed as having authority or may be physically stronger (Carandang, 1996; Protacio-Marcelino et. al., 2000; Srgoi, 1989; Shapiro & Domnniak, 1990, as cited in Brilliantes-Evangelista, 2013). Parks et al. (2001) characterized CSA as a form of sexual oppression, highlighting the correlation between CSA and oppressive dynamics. They further posited that oppression is intertwined with societal forces and structures that perpetuate a culture of patriarchy and heterosexism. As such, it is imperative to confront and challenge the cultural and societal underpinnings of sexual abuse.

In the Philippines, rape is the leading form of child sexual abuse, followed by incest and inappropriate touching. The Council for the Welfare of Children reported a 33 percent incidence rate for incest in 2016. The 2016 Philippine National Baseline Study on Violence Against Children found that 17.1 percent of surveyed children aged 13 to 18 had experienced some form of sexual violence (Council for the Welfare of Children & UNICEF Philippines, 2016). The study, which involved 3,866 participants, also found a 13.7 percent prevalence of sexual violence in homes among the same age group. For girls, the most common perpetrators were brothers, stepbrothers, and stepsisters. The study also highlighted a low disclosure rate of sexual abuse despite the high occurrence among respondents.

CSA victims often face severe psychological and behavioral issues throughout their lives, such as depression, substance abuse, eating disorders, dissociation, somatization, anxiety disorders, PTSD, psychotic and schizophrenic disorders, and suicidal tendencies, among others (Boumpa et al., 2024; Haffejee & Theron, 2017). CSA during adolescence can lead to emotional expression difficulties, altered self-perception due to guilt and shame, feelings of distrust, and isolation (Robinaugh & McNally, 2011; Roth et al., 1997; Yehuda et al., 2001). According to Fonagy (2003), the trauma suffered by CSA children has been observed to impede the development of self-agency.

However, the impact of CSA varies according to some studies. Some victims do not develop PTSD or behavioral issues (Collishaw et al., 2007; Domhardt et al., 2015; Marriott et al., 2014; McElheran et al., 2012). Resilience can mitigate CSA's impact (Luthar et al., 2000). Positive internal attributes like perseverance, self-efficacy, and relationship competence can foster positive adaptation (Himelein & McElrath, 1996; Lev-Wiesel, 2000). Supportive relationships and therapy can also aid recovery (Arias & Johnson, 2013). However, further research is required to understand survivors' healing processes from CSA. Some individuals respond differently to the impact of CSA. Some victims may not experience PTSD or other behavioral problems due to their naturally high resilience – however, positive internal attributes such as perseverance, self-efficacy and relationship competence decline.

While extensive research has been conducted on the impacts of sexual abuse on survivors (Boumpa et al., 2024; Collin-Vézina et al., 2013; Collishaw et al., 2007; Maniglio, 2009; Osmeña & Barrera, 2021), there is a significant gap in the study of healing and resilience, particularly in adolescents who have experienced CSA. The existing literature emphasizes the necessity of focusing on female adolescents, considering the role of gender in increasing vulnerability to sexual abuse and its potential influence on resilience (Dartnall & Jewkes, 2012). The social construction of gender - including gender-biased roles, social inequality, cultural and parental practices, and inadequate legal systems - significantly heightens women's and girls' susceptibility to abuse and impacts their help-seeking behaviors (Haffejee & Theron, 2017).

There have been notable studies conducted in the Philippines on CSA and child resilience, and this research builds upon and integrates findings from these studies. Bautista et al.' s (2001) seminal work identified fourteen resilience themes among Filipino children who experienced various forms of abuse. The current study expands on several of these themes, particularly focusing on spirituality, social support, and the ability to construct meaning from the experience. Calma-Balderrama's (2009) quantitative research on resilience factors in sexually-abused pre-adolescents and adolescents provides valuable foundation for the current study. While Calma-Balderrama identified verbal ability, spirituality, and adult support as resiliency factors, the current study offers rich qualitative data on how these elements manifest in the lives of the participants as female adolescent CSA survivors. The narrative approach employed by Osmeña and Barrera (2021) in their study of female Filipino CSA survivors is complemented by this research using IPA approach. Their identification of three narrative types (tragic resistance, rescued slave, and, heroic saga) provides a framework for understanding these diverse ways to conceptualize their experiences. The current study builds on this by exploring how these narratives influence survivors' coping mechanisms and long-term resilience development.

The study by Karen Anne C.Q. (2024) on the effectiveness of logotherapy-based interventions for promoting posttraumatic growth among Filipino adolescent CSA survivors offers valuable insights into potential therapeutic approaches. While the current study does not focus on specific interventions, the findings on resilience and coping mechanisms can inform the development of culturally appropriate therapeutic strategies.

The study's focus on female adolescent CSA survivors addresses a specific gap in the literature, complementing broader studies on child abuse by Bautista et al. (2001), research on male survivors by Pestaño (2016), and Filipino youth resilience by

Casillas (2022).

The current study delves into the experiences of sexually abused Filipino adolescent girls, exploring how adversity from sexual abuse may foster resilience. The research focuses on 1) the participants' experiences, 2) their coping mechanisms, 3) the meanings they assign to their experiences, and 4) the influence of their CSA experiences on their self-perception and sense of purpose.

This study holds particular significance for the nursing profession as it provides insights into the experiences of sexually abused Filipino adolescent girls, which can inform more culturally sensitive and trauma-informed nursing care approaches. Understanding their coping mechanisms and resilience development can help nurses better support similar patients and develop targeted interventions.

The findings of this research can be integrated into nursing education programs to enhance students' understanding of trauma response, cultural competency, and therapeutic communication with adolescent sexual abuse survivors. This knowledge can lead to improved nursing assessment protocols and more effective care strategies for this vulnerable population.

Materials and Methods

Design

This study employs Interpretative Phenomenological Analysis (IPA) to describe and interpret the phenomenological data and information on the lived experiences of Filipino adolescent girls who have been sexually abused. Through in-depth interviews, the study provides rich descriptive accounts of their experiences. An idiographic presentation and interpretative approach were used to make sense of the phenomenon and derive meanings from the participants as they gleaned from the critical life

Table 1. Participants' Profile

Participant/age	Age at the time of abuse	Number of times abused	Perpetrator	Shelter/Center
Melissa, 17	9, 13, 17	Multiple	Mother/prostitution, priest, uncle, uncle's unidentified companion	Religious
Audrey, 16	16	Once	Partner of stepsister	Religious
Deny, 14	10	Multiple	Father	NGO
Nica, 15	10	Multiple	Step-grandfather	NGO
Janice, 15	11	Multiple	Uncle	NGO
Hapi, 14	13	Multiple	Pimp, sex trafficking	NGO
Jewel, 18	12, 17	Multiple	Two uncles	LGU

Table 2 Superordinate and Subordinate Themes

Superordinate Theme	Subordinate Theme
Experiencing the sense of loss	Loss of sense of self
	Betrayal of trust
	Feelings of ambiguity and ambivalence
Healing as a process	Past the painful stage
	Still fighting
Having a supportive environment is important	Support from friends, family, and others.
	Caring and enabling environment
Growing faith in God	God has a plan.
	God listens and makes the burden light.
Reclaiming the sense of self	Overcoming fear to act
	Overcoming fear of stigma
	Experience made them strong and independent.
	Reclaiming dignity
Wanting to help girls like them (Altruism)	To give comfort and inspiration
	Pay forward.
	Mobilize resources

event as propounded on by Reid et al. (2005) and Smith (2004). The study provides an understanding of healing and resilience after child sexual abuse, underscoring crucial factors that enable survivors to adjust positively. The data were collected between July and November 2020.

This study employs Interpretative Phenomenological Analysis (IPA), a qualitative research approach developed by Jonathan Smith and colleagues. IPA is firmly rooted in the phenomenological tradition, which focuses on studying experiences from the individual's perspective. However, IPA extends beyond pure phenomenology by incorporating two additional key elements: idiographic and hermeneutics.

Phenomenology, as developed by Edmund Husserl and expanded by Martin Heidegger, emphasizes understanding lived experiences and how individuals make sense of these experiences. IPA builds on this foundation by adding an idiographic focus, which involves detailed examination of each individual case before moving to more general claims. This idiographic approach allows for a deep exploration of personal experiences while also acknowledging the uniqueness of each individual's perspective.

Furthermore, IPA incorporates hermeneutics, or the theory of interpretation. This aspect recognizes the active role of the researcher in making sense of the participants' experiences, creating what Smith et al. (2009) term a 'double hermeneutic' - the researcher trying to make sense of the participant, who is trying to make sense of their experience.

In the context of this study on Filipino adolescent girls who have experienced sexual abuse, IPA allows us to delve deep into their personal experiences, perceptions, and meanings attributed to these traumatic events. This approach enables us to capture the essence of their lived experiences in a way that honors their individual stories (idiographic) while also identifying potential shared themes. Simultaneously, it acknowledges the interpretative process involved in understanding these experiences (hermeneutics), recognizing that our understanding is shaped both by the participants' accounts and our own interpretative engagement with their narratives. The decision to use a qualitative approach, specifically Interpretative Phenomenological Analysis (IPA), instead of questionnaires, was based on several key considerations. IPA offers a depth of understanding that allows for rich, detailed exploration of participants' experiences, uncovering nuanced meanings and interpretations that might be missed by surface-level questionnaire data. Given the sensitive nature of sexual abuse, this qualitative approach provides a more flexible and empathetic method of data collection, allowing participants to express themselves in their own words. IPA's idiographic focus aligns well with our aim to understand each participant's unique experience, which is crucial given the complex nature of trauma responses. Additionally, as the experiences of Filipino adolescent girls who have been sexually abused are not extensively documented in the literature, IPA's exploratory nature allows for unexpected themes to emerge. Finally, IPA's flexible approach enables the capture and exploration of cultural nuances, which is essential when studying experiences within the specific cultural context of Filipino adolescents.

Participants and Setting

We purposefully selected seven participants for in-depth interviews based on the following criteria: 1) a female adolescent, 12 to 19 years old; 2) a survivor of sexual abuse; and 3) currently in the care of a residential facility or a protection center. The primary researcher recruited the participants through her professional networks. Two participants came from a religious order-run sanctuary in Quezon City, Metro Manila. A nongovernmental organization in the Province of Bulacan referred four participants. The Mayor's Office of Quezon City, a local government unit (LGU) in Metro Manila referred the last participant. We gave them pseudonyms in the study to protect their identities. The demographic information summarizes the essential characteristics of the participants.

Data collections

Data were collected through seven semi-structured one-on-one interviews each lasting between 60 and 90 minutes. The research ethics committee reviewed and approved the interview questions designed by the main researcher. These were informed by the research objectives and the participants' contexts. The intent was to enable participants to share their experiences and stories in their own words. The process began with the researcher introducing herself, including affiliation and contact details. This was followed by a detailed explanation of the study, its objectives, and how the participant's contribution would be beneficial. The assent/consent form was reviewed with each participant, and they were informed of their right to withdraw from the interview or research at any time without justification. The researcher informed the participants that the interview would be audio-recorded, with their permission sought. Any questions from participants were answered. The participants were asked about their current age, the age at the time of abuse, the identity of the perpetrators, and the frequency of the abuse. The interviews were conducted at facilities where participants receive care to provide privacy and a safe environment for sharing. However, due to COVID-19 community quarantine restrictions, one interview was conducted at a participant's home when access to the Quezon City Protection Center was limited.

Data analysis

The researcher analyzed the data following the steps recommended by Smith et al. (2012) for conducting IPA. These steps included 1) reading and re-reading, 2) making explanatory, descriptive,

linguistic, and conceptual notes, 3) developing emergent themes, 4) seeking connections among emergent themes, 5) moving on to the next case, and 6) identifying patterns across cases or levels of interpretation.

The researcher transcribed all the audio-recorded interviews. Each transcription was verified for accuracy then read and re-read three times before beginning to take notes and make initial comments. This process helped the researcher recall specific interview details and gain a sense of the participant's state of mind during the interview. It also allowed for careful attention to the language participants used. When the notes or comments were side by side with the more relevant portions of the transcript, these were transformed into concise and pithy statements. This stage enabled the identification of emergent themes, representing a *"slightly higher level of abstraction" or "psychological conceptualization",* as mentioned by Smith et al. After identifying these themes, the researcher sought connections among the emergent themes and organized them based on conceptual similarities, providing each with a descriptive label. The researcher repeated this process for each transcript (Pietkiewicz & Smith, 2014). To consolidate the emergent themes for each case, a table was created. This facilitated the identification of patterns across cases, leading to the discovery of superordinate themes.

The researcher then began writing the narrative for each case, forming the idiographic presentation. This involved taking the identified themes and writing them up one by one. The theme was written up using extracts from the interview, followed by analytic comments on the important experiential items. Direct quotes from the participants were used to ensure the interpretation was accurate in making meaning from their experiences.

The researcher identified and bracketed emerging themes during the analysis of each case and continued this process until all narratives were complete. The researcher then searched for patterns of meanings (for example, similarities and differences) across the cases to form the emerging insight.

Ethical consideration

The Research Ethics Committee of Miriam College granted ethical approval for the study on June 08, 2020. Participants were fully briefed on the research and gave consent before data collection. They decided to participate voluntarily and were informed they could withdraw anytime without justification.

Trustworthiness

To ensure the quality and rigor of this qualitative study, Lincoln and Guba's (1985) trustworthiness criteria were implemented throughout the research process. The following strategies were employed to establish credibility, transferability, dependability, and confirmability:

Credibility

Several measures were taken to enhance the credibility of the findings. Prolonged engagement was achieved through in-depth interviews with participants, allowing for a deep understanding of their experiences. Member checking was conducted by sharing interview transcripts and initial interpretations with participants to verify accuracy. Peer debriefing sessions with the research adviser and panel members helped challenge assumptions and refine interpretations. Triangulation was implemented through the use of multiple data sources, including interviews, researcher's reflective journal, and field notes.

Transferability

To facilitate transferability, thick descriptions of the research context, participant characteristics, and study settings were provided. Detailed accounts of the participants' experiences and the research process enable readers to assess the applicability of findings to other contexts. The selection criteria and recruitment process were thoroughly documented to provide context for the study population.

Dependability

An audit trail was maintained throughout the research process, documenting all methodological decisions, data collection procedures, and analytical steps. The research adviser and panel members reviewed the research process at various stages to ensure consistency and thoroughness. Regular consultations with the research team helped maintain the stability of the findings over time.

Confirmability

To establish confirmability, the researcher maintained a reflective journal documenting personal insights, potential biases, and decision-making processes throughout the study. The audit trail included raw data, analysis products, process notes, and personal notes, allowing for transparency in how conclusions were reached. The research adviser and panel members reviewed the analysis process to ensure findings were grounded in participants' experiences rather than researcher bias.

Results

Please remember the following information regarding the participants in the study:

seven adolescent girls were interviewed in-depth. Their demographic characteristics are summarized in Table 1. At the time of the study, they were under the care of a residential facility or protection center operated by a religious congregation, nongovernmental organization, and local government unit. To protect their identities, they are referred to in the study using the pseudonyms Melissa, Jewel, Audrey, Nica, Janice, and Hapi. All the participants come from low-income households. The topics of the in-depth interviews

covered different aspects of the phenomenological experience, namely, 1) recounting the abuse, 2) coping strategies and sources of support, 3) impact on identity and purpose, and 4) meanings and symbolic interpretations. The superordinate and subordinate themes are shown in Table 2. Six superordinate themes emerged from the interviews: 1) Experiencing the sense of loss, 2) Healing as a process, 3) Having a supportive environment is important, 4) Growing faith in God, 5) Reclaiming the sense of self, and 6) Altruism.

The metaphor of a dying plant being brought back to life captures the emerging insight of this study. The shared experience of the participants emphasizes two important facets. The first is the sense of loss associated with the abuse, and the second is the journey of overcoming this adversity to reclaim their lives. Their collective story is captured by the symbolism of a dying plant, that given the right care and environment, aspires to blossom with renewed optimism and vitality.

Superordinate theme 1: Experiencing the sense of loss.

This theme indicated the sense of loss experienced by the participants as victim-survivors of CSA, which can be likened to a death-like loss. This manifested in several ways, captured in the three subordinate themes. First, the violation of their bodies destroys their sense of self. Second, the abuse often comes from trusted family members or adults, compounding the loss with a profound sense of betrayal and grief. Finally, the complex family dynamics and societal norms surrounding CSA create feelings of ambiguity and ambivalence, making it difficult to confront and make perpetrators accountable.

"It was so painful. I lost my dignity as a woman…. I felt my world crumbling, hope had slowly slipped away…I felt like I lost my life. I lost my motivation to go to school. I would just be staring blankly into space." (Melissa, 17 years old)

"I was so sad when it happened to me, especially the first time my uncle raped me. It pained me that I stopped going to school for a year." (Jewel, 18 years old)

"It's so painful. I feel so devastated. I'm no longer clean… I think about it all the time because my uncle said it so. He said I'm dirty just like any other prostitute." (Janice, 15 years old)

"It is difficult to accept, and it is painful that my father did that to me….I didn't think he could ever do that to me…There are times I want to die, take my own life because of what happened." (Deny, 14 years old)

"I thought of putting my uncle in jail, but I am worried for my two young cousins. No one will look after them and send them to school. Their mother left them. What if they ask why I sent their father to jail? I don't know what to tell them." (Melissa, 17 years old)

This superordinate theme delves into the profound sense of loss experienced by victim-survivors of childhood sexual abuse (CSA). The theme is characterized by three key aspects that intertwine to create a complex emotional landscape. Firstly, victims often experience a deep loss of self, describing feelings of diminished dignity, self-worth, and identity due to the violation of their bodies. Secondly, the abuse, frequently perpetrated by trusted family members or adults, compounds this sense of loss with intense feelings of betrayal and grief. Lastly, the complex family dynamics and societal norms surrounding CSA create a sense of ambiguity and ambivalence, making it extremely challenging for victims to confront the abuse and hold perpetrators accountable. These interrelated aspects collectively contribute to the overwhelming sense of loss that permeates the experiences of CSA survivors.

The participants' quotes vividly illustrate these experiences, highlighting the devastating impact of CSA on their lives, including disrupted education, suicidal thoughts, and struggles with self-image. The theme also touches on the complicated decision-making process victims face when considering reporting their abusers, especially when familial relationships are involved.

Superordinate theme 2: Healing as a process

This theme revealed healing as a continuous journey for the participants as CSA survivors. While some feel they have overcome the most painful aspects, recovery remains a work in progress. Two distinct subordinate themes surface from the participants' narratives relating to healing as a process. Most participants expressed they have moved past the painful stages of their experiences, suggesting healing has begun. On the other hand, some articulate a sense of an ongoing struggle to overcome the hurt and pain inflicted by the abuse.

"Hmmm…it's like, I'm somewhat past the painful stage. It is not as painful as before… I feel I'm safe here. I'm not afraid to be near men. Nothing bad will happen now that I'm in the shelter… I'm no longer staring blankly into space, not talking to myself. I can now do things I'm supposed to do, like doing the chores. I think I have improved, I'm back to my hobbies." (Melissa, 17 years old)

"Unlike before, I don't get so emotional anymore when I recall the experience. But I can say I'm only partially healed because the case is yet to be decided by the court. I still have some trauma, but I'm trying to move on." (Jewel, 18 years old)

"Uhhmm…I'm still hurting a lot… I don't know, but I'm learning to fight…because they're helping me fight." (Janice, 15 years old)

This superordinate theme explores the ongoing journey of healing experienced by CSA survivors. The narratives reveal two key aspects of this process: some participants feel they have progressed beyond the most painful stages, while others continue to struggle with the aftermath of their abuse. This theme highlights the non-linear nature of healing,

showing that recovery is a gradual and individual process. The participants' experiences align with previous research on the various stages of healing from CSA, demonstrating both the progress made and the challenges that persist. Their accounts provide valuable insights into the complexities of recovery and the importance of continued support throughout the healing journey.

Superordinate theme 3: Having a supportive environment is important.

This theme indicated the importance of supportive environments in healing and recovery. As Melissa alludes to the plant's revival and the importance of proper care from people around, "I am just like the dying plant that was cared for. No one would think it can survive, but it did!" Two key subordinate themes emerged, the significance of social connections, and the nurturing condition provided by the shelter.

"They would always comfort me each time I was abused and beaten up by my father. They were always there for me, encouraging me to fight and never give up…They said I should only think about my studies… I should be strong. They say I'm smart and I can do it. That's why I'm trying to be strong." (Deny, 14 years old)

"It was my teacher who helped me. At first, I was afraid to tell her what was happening when she asked me, but she told me to trust her. She told me not to be afraid." (Janice, 15 years old)

"The sessions help me release my emotions. I want to talk to someone to pour out my feelings, it makes me feel a lot better… to not give up on life. My friends here in the shelter and Sister Dina tell me I can walk past my experience. They give me encouragement and support, and that's why I believe I can do it. I will rise above my sad experience." (Melissa, 17 years old)

This superordinate theme emphasizes the crucial role of a supportive environment in the healing and recovery process for survivors of abuse. It highlights two key aspects: the importance of social connections and the nurturing conditions provided by shelters. The theme is illustrated through powerful testimonials from survivors, demonstrating how encouragement from friends, teachers, and shelter staff has been instrumental in helping them overcome their traumatic experiences and find strength to move forward. These supportive relationships and environments have been pivotal in fostering resilience, providing emotional release, and instilling hope for a better future among the survivors.

Superordinate theme 4: Growing faith in God.

This theme indicated the role of faith in the lives of the participants, especially in their healing after the abuse. Two subordinate themes emerge within this. First is their belief in a higher plan, which gives them hope and optimism. This belief helps them make sense of their difficult experiences and become hopeful for the future. The second theme is their idea that their prayers are heard, which gives them comfort.

"The session with Sister Dina and the other girls gave me the insight I should not succumb or give in to negative thoughts. I realized I was strong. I will be able to transcend my sad experiences and my problems. This is God's plan for me…I can feel how I'm loved by the sisters in the shelter. They assure me. I can say this is changing me and is bringing me back to God. I think God wants me to be ok, He gave me Sister Dina." (Melissa, 17 years old)

"Despite what happened, I realized God wants me to see that there's goodness in the world, and me. It's not the end of me. I cannot undo whatever happened, but I can still make something good for myself and others like me." (Audrey, 16 years old)

"I prayed to God for guidance so I can make everything right. Then it just happened! I was able to speak confidently to the judge. At first, I was so afraid, but when I called on to God I did it!" (Nica, 15 years old)

The superordinate theme *"Growing faith in God"* explores how faith plays a crucial role in the healing process of abuse survivors. This theme is supported by two subordinate themes: belief in a higher plan and the comfort derived from feeling their prayers are heard. Participants' accounts reveal how their faith provides them with hope, optimism, and strength to overcome their traumatic experiences. Their belief in God's plan helps them find meaning in their suffering and envision a positive future. Additionally, the participants express how their prayers give them comfort and confidence, particularly in challenging situations. These experiences of faith contribute significantly to their healing journey and personal growth after abuse.

Superordinate theme 5: Reclaiming the sense of self.

This theme revealed the personal experiences and interpretations of the participants as they strive to re-establish their sense of self or agency, amidst challenging circumstances, captured in the metaphor used by Melissa, *"I'm like a plant that is about to die, but persists to survive!"* They have had to navigate social and gender norms that foster fear and silence. The narratives surfaced the following subordinate themes from the individual participants: overcoming fear to act, overcoming fear of social stigma, understanding that their experiences have made them strong and independent, and reclaiming their dignity.

"My older sibling was afraid to escape fearing our mother's male companions would hurt us, kill us. It was me who found a way for us to escape… I tell myself every day not to be swayed by fear. I must act so I can lift myself and pursue my dreams." (Melissa, 17 years old)

"I'm a fighter now… I'm no longer affected by what others think of me. I cannot control what they think of me or us, and it doesn't matter anymore.

It's not my problem if they're stuck in that thinking. I don't want to waste my energy thinking about that anymore." (Jewel, 18 years old)

"I can say I'm not the weak one anymore. No one can trample on me or violate me anymore. I can handle things now on my own… I tell myself to be strong! To just hold on!" (Deny, 14 years old)

"I would like to finish my studies and prove them wrong. I want to show them I'm not weak or someone they can throw their prejudices to." (Audrey, 16 years old)

This theme explores how participants strive to reclaim their sense of self and agency in the face of adversity. Despite encountering social and gender norms that promote fear and silence, these young individuals demonstrate resilience and determination. They share experiences of overcoming fear, challenging social stigma, recognizing their inner strength, and reclaiming their dignity. The participants' narratives reveal a journey of personal growth, from feeling vulnerable to becoming empowered individuals who refuse to be defined by their past experiences or others' perceptions. This theme highlights the transformative power of resilience and the importance of self-belief in overcoming trauma and societal prejudices.

Superordinate theme 6: Wanting to help girls like them (Altruism).

This theme indicated the participants' desire to help girls like them. This is manifested in three subordinate themes: sharing their stories for inspiration, offering support, and actively fighting against abuse. They see helping others as integral to their healing, transforming their experiences into sources of strength and action.

"I want to share my story to others, to inspire them not to give up on life… I will finish my studies and pay forward. I want to return the kindness by donating to shelters assisting girls and women like me who are victims of abuse. I will tell them not to succumb to fear, not to lose hope and instead re-channel their energies to improving their lives." (Melissa, 17 years old)

"I want to help girls like me who experience abuse. The social workers who helped me are my inspiration. I want to become a social worker someday to help them get the services. As a social worker, I can help them seek justice and fight for their rights." (Jewel, 18 years old)

"I will be the one to comfort them this time. I will share with them my experience. I will tell them they should not be defined by what happened… They'll be able to walk past the abuse, and there will be people who will help them do this." (Deny, 14 years old)

This superordinate theme explores the participants' altruistic desire to assist other girls who have experienced similar abuse. The theme is characterized by three key aspects: the willingness to share personal stories as a source of inspiration, the intention to offer support to fellow survivors, and the commitment to actively combat abuse. For these young women, the act of helping others becomes an integral part of their own healing process, allowing them to transform their traumatic experiences into sources of strength and positive action. Their testimonies reveal a deep sense of empathy, resilience, and a strong desire to create positive change, demonstrating how they've found purpose and empowerment through their commitment to supporting others in similar situations.

Discussions

The findings of this study illustrate the views and insights of Filipino adolescent girl survivors of CSA on their experiences of sexual abuse, healing, and adaptation. Two important facets are highlighted in the lived experiences of the participants, one is the sense of loss they felt from the adversity likened to a dying plant, and the other is the journey toward healing and reclaiming their lives, thus likening it to the plant surviving with renewed hope and vitality. Seven participants, survivors of CSA aged 14 to 18, participated in the in-depth interviews.

Six superordinate themes emerged from the interviews: (1) Experiencing the sense of loss, (2) Healing as a process, (3) Having a supportive environment is important, (4) Growing faith in God, (5) Reclaiming the sense of self, and (6) Altruism.

The first superordinate theme of experiencing the sense of loss indicated by the participants was primarily linked to the violation of bodily integrity further compounded by the betrayal of trust and shattered relationships. This finding mirrors Miller et al.'s (2006) study which emphasized that victims of CSA undergo a deep sense of loss. This loss is accompanied by psychological trauma and the breakdown of significant relationships, especially when the abuse comes from family members.

In Filipino society, the family, as the primary social institution, imparts crucial cultural values—including respect for parental authority, obedience, and family cohesion (Jocano, as cited in Alampay & Jocson, 2011). Members are bound by deep respect and gratitude, leading to familial obligations and expectations. Even in dysfunctional families, there is an expectation to uphold the family's cohesion and morality. These cultural values play a pivotal role in understanding child sexual abuse within this context.

Participants conveyed their healing as a continuous journey, some past the most painful stages while others have difficulty progressing. This mirrors Draucker et al.'s (2011) findings that healing from sexual abuse is not a linear process, but a life-long journey influenced by various factors. Each participant's path is unique, often complicated by additional childhood maltreatment and familial dysfunction, including physical abuse, neglect, alcohol misuse, and prostitution, aligning with the findings of previous studies (Ramiro et al., 2010; Saunders, 2003; Williams, 2003). Individual traits

like resilience, humor, and environmental support significantly contribute to their healing processes (Arias & Johnson, 2013; Edmond et al., 2006; Haffejee & Theron, 2019).

Participants stressed the crucial role of supportive networks, including friends and family who believed their stories. This belief and sustained support helped reduce their emotional distress, facilitated understanding of their experiences, and spurred necessary action. In collectivist cultures, informal support networks are often the first point of contact during adversity, more than formal institutions. Fear of stigma or lack of accessible services deters victims of domestic violence, such as sexual abuse, from seeking immediate help. Most participants accessed protective services and safety through these informal networks.

Participants also indicated that the nurturing environment in the shelters went beyond ensuring their safety and protection, it promoted their healing process. They described feeling relieved as though a significant weight had been removed. The shelters fostered their recovery through a range of activities and interventions. These findings indicate that the support the participants obtained from the shelters helped them in their positive adjustment and in looking at life more optimistically, contributing to a healthier sense of self. Findings like these are important in considering resilience development in youth who experience adversity such as sexual abuse (Archer, 2006; Arias & Johnson, 2013; Phasha, 2010). Therefore, support from informal networks and organized institutions contributes to the participants' healing and adjustment. This aligns with resilience research, highlighting such supports as critical to fostering resilience in youth facing adversities (Masten, 2007; Ungar, 2011).

Participants indicated the significant role faith in God has in making sense of their experience. The belief that God has better plans for the participants helps them draw strength amidst difficulty and maintain hope and optimism. Meanwhile, the belief that God listens to them provides comfort. This finding demonstrates the influence of faith on the participants' coping and recovery, emphasizing the connection between spirituality and the healing journey of the survivors. This link between spirituality and the recovery journey is corroborated by various studies (Bogar & Hulse-Killacky, 2006; Draucker et al., 2011; Knapik et al., 2008; Phasha, 2010). These studies underscore the perception and experience of faith or spirituality at every stage of the healing process. As demonstrated by the participants, faith or spiritual awakening is a crucial component of their healing journey.

The fifth superordinate theme captures the personal experiences and interpretations of the participants as they strive to regain their sense of self and agency amidst challenging circumstances. They have had to navigate social and gender norms that foster silence. Their narratives indicated overcoming fear and stigma, understanding that their experiences have made them strong and independent, and reclaiming dignity. These findings are similar to other studies which suggested that when girls can find meaning, they have less negative appraisals about the abuse experience and can view it differently, thereby minimizing the impact and consequently adjusting in more positive ways (Haffejee & Theron, 2019).

The participants expressed a determination to improve their lives, demonstrating that their experiences with abuse do not define them. They have individual and collective goals, and their forward-looking mindset indicates personal control and self-regulation. The participants envision themselves remaining in the shelters, pursuing their education, and ultimately working towards their dream careers. They also express aspirations to start their own families and help girls who have faced similar situations. These findings align with other studies that highlight the feelings of strength, maturity, hope, and optimism that often emerge in survivors of CSA. They view their experiences as lessons and opportunities for personal growth and change, a chance to reclaim their identities (Himelein & McElrath, 1996; Phasha, 2010).

The sixth superordinate theme revolves around the participants' desire to support girls who have experienced similar situations. Participants' intention to show altruism could be seen as agentic, especially considering their experiences of abuse and subsequent awareness of the vulnerability of women and girls to sexual abuse and other forms of violence. Altruism is often identified as a significant aspect of the healing process. Many studies indicate that survivors of sexual abuse frequently engage in altruism as a response to their experiences (Draucker et al., 2011). As the participants progress in their healing journey, they envision and commit themselves to charitable endeavors.

Strength and Limitation

One of the key strengths of this study is its focus on the cultural context of Filipino adolescent girls who have survived sexual abuse. By addressing a significant gap in the literature that has primarily centered on Western populations, the research enriches our understanding of how cultural factors influence healing and resilience. This emphasis on cultural context allows for a more nuanced exploration of the survivors' experiences, which is crucial for developing effective interventions.

Additionally, the study highlights the intricate emotional journeys of survivors, providing valuable insights into their feelings and responses to trauma. This focus on emotional complexity can inform more tailored and effective interventions that address the specific needs of survivors. The practical applications of the findings are also noteworthy; they extend to various sectors, including social services, education, community interventions, and mental health care. By offering actionable recommendations, the study guides professionals in

developing culturally sensitive and trauma-informed practices that support survivors in their recovery.

Moreover, the research advocates for a holistic approach to recovery by emphasizing the importance of informal support networks and community-based programs. This perspective fosters resilience among survivors by engaging both individuals and their communities in the healing process.

However, the study does have limitations. One primary concern is its generalizability. The focus on a specific demographic—Filipino adolescent girls from low-income households—means that the findings may not be applicable to all survivors of child sexual abuse, particularly those from different socioeconomic backgrounds or cultural contexts.

The sample size and diversity also present limitations; it may lack representation from various geographic areas or experiences related to different types of abuse. A more diverse sample could provide a broader understanding of survivor experiences across different contexts. Additionally, the qualitative nature of the study may introduce biases based on participants' subjective interpretations of their experiences. While this approach yields rich, detailed insights, it may also limit the objectivity and reproducibility of findings.

Lastly, the temporal context in which participants' experiences and healing processes are described may be influenced by specific societal attitudes toward sexual abuse or changes in support systems over time. Consequently, the findings may reflect a particular moment that could evolve with changing societal dynamics.

In summary, while this study offers significant strengths in enhancing our understanding of child sexual abuse within a Filipino context and providing practical implications for various fields, it also faces limitations regarding generalizability and potential biases inherent in qualitative research methods.

Implication of the Study

The findings from this study, which gathered insights from Filipino adolescent girls who survived sexual abuse, significantly enhance our understanding of child sexual abuse, healing, and resilience within a cultural context that has been underrepresented in existing research. By highlighting the complex emotional journeys of survivors, this study addresses a critical gap in the literature, particularly as previous studies have predominantly focused on Western settings. This research is particularly relevant for the nursing profession, as it underscores the necessity for culturally sensitive approaches in nursing care for survivors of sexual abuse.

Significance to Nursing Practice

The insights gained from this study can inform nursing professionals on how to better support survivors through tailored interventions that consider their unique emotional and cultural experiences. Understanding the intricate emotional landscapes of these survivors enables nurses to develop more effective therapeutic strategies that not only address immediate health concerns but also promote long-term healing and resilience. This is vital as nurses often serve as frontline caregivers who can facilitate recovery by fostering a supportive environment.

Moreover, the findings emphasize the importance of trauma-informed care practices. Nurses equipped with knowledge about the specific challenges faced by survivors from low-income backgrounds can advocate for and implement care protocols that are both sensitive and appropriate. This approach can lead to improved health outcomes and empower survivors by providing them with tools to manage their emotions effectively.

While the study offers invaluable insights, it is crucial to recognize its limitations in generalizability. The experiences of participants from low-income households may not reflect those of all survivors of child sexual abuse. Therefore, nursing professionals must remain aware of the diverse backgrounds and experiences of their patients to provide individualized care.

The implications extend beyond individual patient care, they also inform broader systemic changes within healthcare settings. By integrating these findings into training programs for nursing students and ongoing professional development, educators can prepare future nurses to engage compassionately and effectively with survivors. This includes fostering an understanding of the role of informal support networks and community resources that can aid in recovery.

In conclusion, this study not only sheds light on the resilience and healing processes among Filipino adolescent girls who have experienced sexual abuse but also serves as a critical resource for nursing professionals. By applying these insights, nurses can enhance their practice, contribute to better health outcomes for survivors, and advocate for culturally competent care within healthcare systems.

Declaration of Interest

None

Acknowledgment

The authors extend their gratitude to the institutions and individuals whose collective efforts made this research possible. The study's success is a testament to the invaluable cooperation of the participants who selflessly shared their time, experiences, and insights, thereby enriching the research with their unique perspectives.

Funding

No funding support was obtained for the study.

Data Availability

The datasets generated during the current study are not publicly available due to the topic's sensitive nature but are available from the corresponding author upon reasonable request.

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Spiritual mindfulness combination with self-regulation on the effect to vital sign and anxiety reduction among pneumonia survivors

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Abstract

Background: Pneumonia has become a scary disease since the emergence of the COVID-19 pandemic. The severity of pneumonia often causes sufferers to experience fear and causes the disease to worsen, resulting in the patient's hemodynamics becoming unstable, this condition need an intervention to make the condition better.
Purpose: The purpose of this study was to analyze the effect of spiritual mindfulness combined with self-regulation in dealing with anxiety and improving vital signs in pneumonia patients.
Methods: A experimental quantitative research using a quasi-experimental with pre and post-test control group design between August - October 2024 in the regional hospitals in Gresik Regency, East Java, Indonesia. Total 62 respondents recruited using consecutive sampling which were then divided into intervention and control groups. Spiritual mindfulness intervention combined with self-regulation was given with a frequency of 2 times a day for 7 full days. Vital signs measured included blood pressure, respiratory rate, pulse and SpO2 which were observed through the researcher's observation sheet and anxiety was measured using the Zung Self-Rating Anxiety Scale (SRAS). Data were analyzed using paired t-test and independent t-test, also Wilcoxon signed rank test and Mann Whitney test.
Results: Spiritual mindfulness combination with self-regulation has effect to vital sign included blood pressure, respiration rate, pulse, oxygen saturation and anxiety of patient with pneumonia (p=0.000). The measurement showed the best changes or decreases in the intervention group, while the control group did not show much difference.
Conclusion: Spiritual mindfulness combination with self-regulation is the effective intervention for vital sign and anxiety in pneumonia patients.

Keywords: anxiety; pneumonia; self-regulation; spiritual mindfulness; vital sign

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 316-326

http://dx.doi.org/10.24198/jkp.v12i3.2619

Article Info

Received : October 11, 2024
Revised : December 10, 2024
Accepted : December 18, 2024
Published : December 29, 2024

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Citation

Ayatullah, D., Prayoga, D.H., & Priyantini, D. (2024). Spiritual mindfulness combination with self-regulation on the effect to vital sign and anxiety reduction among pneumonia survivors. *Jurnal Keperawatan Padjadjaran, 12*(3), 316-326. http://dx.doi.org/10.24198/jkp.v12i3.2619

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Pneumonia is an exudative lung infection that can be caused by parasites, fungi, bacteria, or viruses (Matiz et al., 2020) and is one of the most deadly respiratory infections (Fan & Cui, 2024). Pneumonia has become a scary disease since the emergence of the COVID-19 pandemic, COVID-19 pandemic which has lasted for approximately 2 years has become a global health crisis because this virus is able to attack all levels of the world very quickly (Mo et al., 2020). The severity of pneumonia often causes sufferers to experience fear and causes the disease to worsen, resulting in the patient's hemodynamics becoming unstable (Çağlar & Kaçer, 2022). Based on the results of research conducted on people in China, it shows that the psychological impact of fear of pneumonia is more dangerous

than the disease. The population in China showed 53.8% experienced severe psychological effects, 16.5% severe depressive symptoms, 28.8% severe anxiety symptoms, and 8.1% severe stress levels. The patient's psychological fear causes anxiety which results in disturbed sleep patterns, feelings of restlessness and fear that the disease cannot be cured, so that the psychological response becomes more frightening than the disease itself (Li et al., 2020).

Based on data from the Global Burden of Disease (GBD), lower respiratory tract infections, including pneumonia, affect 487 million people worldwide, with prevalence increasing over the past 5 years (Wu et al., 2021b). The prevalence of pneumonia in Indonesia increases every year, and the morbidity and mortality rates are the highest compared to other developing countries (Putri et al., 2021). The East Java Provincial Health Service in 2022 report shows that 76,697 patients are suffering from pneumonia and Gresik Regency is in third place with 6,800 cases (Puspitasari et al., 2023). Data from the 10 most common cases of infectious diseases in one of the regional hospitals in Gresik Regency showed that pneumonia was ranked second with a total of 287 cases and more than 50% of patients experienced worsening conditions due to excessive anxiety and stress from hospitalization.

Anxiety is a psychological problem that is often found in patients with pneumonia. Several studies have been conducted to measure the prevalence of anxiety in pneumonia patients. A study in China found that 38.7% of pneumonia patients experienced anxiety symptoms. Another study by Pakhale showed a higher figure, with 45.2% of pneumonia patients reporting significant levels of anxiety (Pakhale et al., 2021). In a meta-analysis covering 15 studies concluded that the average prevalence of anxiety in pneumonia patients was 41.3% (95% CI: 36.8% - 45.9%) (Liu et al., 2020). Variations in prevalence rates may be due to differences in measurement methods, populations studied, and other contextual factors. However, these data indicate that anxiety is a significant problem and requires attention in the management of pneumonia patients (Pakhale et al., 2021)

Anxiety in pneumonia patients results in restlessness and worry, and causes unstable vital signs (Hasina et al., 2021). Triggers for anxiety disorders are prolonged stress and maladaptive body responses (Wu et al., 2021a). Anxiety conditions in pneumonia patients if they last a long time can trigger activation of the sympathetic nerves which causes tachycardia, increased respiratory rate, blood pressure and narrowing of the airways (Mo et al., 2020). Treatment of pneumonia is not only focused on treating physical conditions but also involves psychological aspects, in accordance with the psychoneuroimmunology theory which states that psychological responses will improve the patient's immune system (Alimuddin, 2020).

Anxiety in pneumonia patients has so far been treated using pharmacological therapy and supportive non-pharmacological therapy is needed (Rahi et al., 2023), because it is easier, safer, cheaper, more enjoyable and does not cause dependency effects (Alsubaie et al., 2020). Many non-pharmacological therapies such as aromatherapy, music therapy, guided imagery, autogenic, virtual reality have been proven to reduce patient anxiety, but do not affect vital signs (Argyriadis et al., 2024). Based on several studies, it has been shown that spiritual mindfulness and self-regulation therapy have a significant influence in reducing anxiety and vital signs in patients and provide a calmer impact on patients with chronic diseases (Alimuddin, 2020; Puspitasari et al., 2023; Wang et al., 2021; Zhang et al., 2020).

In recent years, there has been growing interest in both spiritual mindfulness and self-regulation as separate practices for improving mental well-being and personal growth (Argyriadis et al., 2024; Bringmann et al., 2021). However, there exists a gap in our understanding of how these two approaches can be effectively combined to create a more holistic and powerful method for personal development. Spiritual Mindfulness provide a practice that involves cultivating awareness of one's thoughts, feelings, and surroundings with a focus on spiritual or existential aspects of life (Bechard et al., 2021). Self-Regulation becomes the ability to monitor and manage one's own behavior, emotions, and thoughts in relation to situational demands (Birditt et al., 2021). The self-regulation concept focuses on the ways individuals direct the course of their development as they select and pursue goals and modify goal pursuit based on personal and environmental opportunities and constraints. Spiritual mindfulness that is fully oriented towards the concentration of individual thoughts is in line with self-regulation which also focuses on the regulation of the individual's self, researchers are interested in combining the two concepts (Byrow et al., 2020). While research is needed to confirm, the combination of spiritual awareness and self-regulation can provide increased intelligence and emotional regulation such as providing focus to individuals, so that individuals show their ability to concentrate and be confident in dealing with illness (Hodge et al., 2020; Marciniak et al., 2020). Individuals can also improve their ability to align actions with personal values and spiritual beliefs because through spiritual awareness the combination of self-regulation can grow the patient's spiritual soul and be more confident in getting closer to God. Through all of that, resilience will be formed which makes them more resilient in facing life's challenges and more effective in managing individual stress (Sugama & Kakinuma, 2020; Xing et al., 2020).

Spiritual mindfulness combined with self-regulation will affect several areas in the brain, including the pre-frontal cortex (attention area) which can reduce emotional responses, activate the

amygdala and affect the response of the midbrain as a regulator of breathing and heart rate as well as blood pressure, so that the patient's psychological coping will form an adaptive condition of the patient's self (Cahyani et al., 2022; Puspitasari et al., 2023). The concept of spiritual mindfulness focuses on the psychological aspects of patients in the form of conscious breathing to reduce patient anxiety accompanied by providing motivation in the form of sentences and statements of support and religious beliefs which are expected to increase awareness, inner peace and self-acceptance of patients towards the disease conditions they are experiencing (Sugama & Kakinuma, 2020). Meanwhile, self-regulation itself focuses on individual coping in modulating thoughts, emotions and actions to solve health problems to achieve goals maximally and optimally (Nursalam et al., 2020a; Zhang et al., 2020). The purpose of this study was to analyze the effect of spiritual mindfulness combined with self-regulation in dealing with anxiety and improving vital signs in pneumonia patients.

Material and Methods

Design

This type of research uses experimental quantitative research using a quasi-experimental with pre and post-test control group design. The study aims to evaluate vital signs and anxiety of pneumonia patients with spiritual mindfulness intervention combined with self-regulation. The study was conducted in two groups, namely the control group and the intervention group, which were determined according to the criteria and the selection of respondents was carried out randomly according to respondents in the inpatient room with pneumonia cases. This research was conducted between August - October 2024 by taking samples of pneumonia patients in the inpatient room of one of the regional hospitals in Gresik Regency, East Java, Indonesia.

Sample and Setting

The sample included 62 respondents recruited using consecutive sampling which were then divided into intervention and control groups. The treatment group in this research design was given a spiritual mindfulness intervention combined with self-regulation, while the control group was given independent nursing actions to reduce anxiety consisting of distraction and relaxation and improve vital signs according to hospital standards. The criteria for determining respondents were patients aged >18 years, conscious, cooperative and able to communicate fluently, patients with one of the changes in the results of vital sign examinations (blood pressure, respiratory rate, pulse and SpO2) not within normal limits, patients experiencing anxiety (mild, moderate and high) and not in acute or emergency conditions. Pneumonia patients who met the criteria for prospective respondents were then given an explanation of the research procedure until they understood it and then at the end of the session, the researcher asked for informed consent from the patient as a sign that the patient agreed to be a research respondent.

Variable, Instruments and Data Collection

The provision of spiritual mindfulness intervention combined with self-regulation was given through direct action accompanied by a guidebook and audio to guide patients in the Exercise and make them more relaxed. The choice of a combination of spiritual mindfulness and self-regulation intervention was chosen because patients who experience anxiety due to pneumonia need positive self-reinforcement and provide a religious-based approach to make patients more confident that God Almighty is with them. Spiritual mindfulness intervention combined with self-regulation was given with a frequency of 2 times a day in the morning before activities and in the afternoon before resting for 7 full days, the intensity of therapy was light and provided a relaxing effect on patients so that anxiety improved, and the administration time was carried out for 15 minutes. Vital signs measured included blood pressure, respiratory rate, pulse and SpO2 which were observed through the researcher's observation sheet and anxiety was measured using the Zung Self-Rating Anxiety Scale (SRAS) instrument which evaluates physiological, psychological, cognitive and affective responses. The Zung SRAS anxiety questionnaire consists of 22 questions using a Likert scale, answers very rarely feel given a value of 1, sometimes feel given a value of 2, often feel given a value of 3 and a value of 4 for the category always feel. The final interpretation for anxiety is categorized into normal conditions, mild, moderate and severe anxiety. All questionnaires have been tested for validity first with 32 respondents, all questions show valid results, the calculated r value is between 0.772 to 0.985 so that it is greater than the r table value of 0.306. While the questionnaire shows reliable with Cronbach's Alpha value was 0.995. Respondents who have agreed to the informed consent were then divided into treatment groups and control groups, during the study all respondents have followed the study until completion and none have dropped out. Before spiritual mindfulness combined with self-regulation was given, the respondents' blood pressure, respiratory rate, pulse, SpO2 and anxiety levels were measured first. For 7 days the respondents received the intervention given by the researcher and during that time the respondents' responses were also observed by the researcher. On the 7th day after the respondents were given spiritual mindfulness combined with self-regulation, at that time measurements were also taken for blood pressure, respiratory rate, pulse, SpO2 and anxiety of pneumonia patients.

Data Analysis

This study was analyzed using descriptive and

Table 1. Sociodemographic characteristics of respondents (n=64)

Characteristics of Respondent	Intervention Group	Control Group
Ages		
19 – 30 years	1 (3.1)	5 (15.6)
31 – 40 years	2 (6.3)	3 (9.4)
41 – 50 years	7 (21.9)	8 (25.0)
51 – 60 years	11 (34.4)	7 (21.0)
60 years and above	11 (34.4)	9 (28.1)
Gender		
Male	16 (50.0)	19 (59.4)
Female	16 (50.0)	13 (40.6)
Education Level		
Elementary school	5 (15.6)	4 (12.5)
Junior High	2 (6.3)	0 (0.0)
Senior High	21 (65.5)	25 (78.1)
University	4 (12.5)	3 (9.4)
Marital Status		
Divorced dead	1 (3.1)	1 (3.1)
Divorced alive	3 (9.4)	3 (9.4)
Not married	1 (3.1)	2 (6.2)
Married	27 (84.4)	26 (81.3)
Job		
Unemployed	6 (18.8)	1 (3.1)
Housewife	9 (28.1)	8 (25.0)
Private Employee	11 (34.4)	6 (18.8)
Entrepreneur	4 (12.5)	17 53.2)
Student	1 (3.1)	0 (0.0)
Civil Servant	1 (3.1)	0 (0.0)

Table 2. Results of vital signs and anxiety values of pneumonia patients before and after intervention (n=64)

Variable	Intervention group		Control Group	
	Pretest	Posttest	Pretest	Posttest
Systolic Blood Pressure	140.38±24.563	123.81±22.657	116.97±23.760	114.19±19.529
Diastolic Blood Pressure	78.06±11.595	69.97±8.090	69.09±17.519	66.41±13.970
Respiratory Rate	21.38±0.942	20.13±0.492	21.38±1.385	95.81±15.991
Pulse	95.94±19.579	83.59±17.324	102.66±18.363	20.88±1.129
Saturation	97.09±1.634	99.83±1.431	97.94±1.343	98.06±1.162
Anxiety				
Normal	0 0.0	8 25.0	0 0.0	0 0.0
Mild	5 15.6	16 50.0	2 6.3	4 12.5
Moderate	19 59.4	8 25.0	24 75.0	20 62.5
Severe	8 25.0	0 0.0	6 18.8	8 25.0

Table 3. The effect of spiritual mindfulness combined with self-regulation on vital signs and anxiety.

Variable	Intervention group			Control Group		
	(Mean ± SD)	Effect size	p	(Mean ± SD)	Effect size	P
Pre and Post Systolic BP Test	16.563±12.43	0,751	0.000*	2.781±14.659	5,271	0.291*
Pre and Post Diastolic BP Test	8.094±8.84	1,093	0.000*	2.688±11.206	4,169	0.185*
Pre and Post Pulse Rate Test	12.344±10.89	0,882	0.000*	6.844±14.952	2,185	0.115*
Pre and Post Respiratory Rate Test	1.250±0.984	0,787	0.000*	0.500±1.016	2,032	0.209*
Pre and Post SPO2 Test	-1.031±1.492	-1,449	0.000*	-0.125±1.497	11,976	0.640*
Pre and Post Anxiety Test	67.09±6.306	0,094	0.000**	52.16±11.64	0,223	1.000**

*** Paired t-test ** Wilcoxon signed rank test**

Table 4. Inter-group test of the influence of spiritual mindfulness combined with self-regulation on vital signs and anxiety

Variable	Intervention group			Control Group			p value
	Mean	Min	Max	Mean	Min	Max	
Pretest							
Systolic Blood Pressure	134.50	92	196	116.97	74	169	0.560*
Diastolic Blood Pressure	78.06	57	105	69.09	38	106	0.131*
Pulse Rate	95.94	54	142	102.66	74	155	0.860*
Respiratory Rate	21.38	20	22	21.38	20	24	0.211*
SPO2	97.09	93	100	97.94	96	100	0.198*
Anxiety	67.09	57	77	45.34	27	66	0.888**
Posttest							
Systolic Blood Pressure	123.81	85	177	114.19	70	150	0.036*
Diastolic Blood Pressure	69.97	54	92	66.41	41	90	0.001*
Pulse Rate	83.59	48	130	95.81	75	149	0.034*
Respiratory Rate	20.13	20	22	20.88	20	24	0.000*
SPO2	98.13	95	100	98.06	96	100	0.035*
Anxiety	52.16	31	74	50.69	27	98	0.000**

* Independen t-test ** Mann Whitney test

inferential analysis. Compliance test for normal distribution was applied using Kolmogorov–Smirnov test with the results of blood pressure, respiratory rate, pulse, and SpO2 data were normally distributed and anxiety scores showed non-normal distribution. Descriptive values such as means, standard deviations, frequencies and percentages were analyzed with frequent distribution. The effect of spiritual mindfulness combined with self-regulation to vital sign was analyzed using paired t-test for paired samples and independent t-test for two independent samples. While the effect of spiritual mindfulness combined with self-regulation on anxiety was analyzed using Wilcoxon signed rank test for two paired samples and Mann Whitney test for two independent samples. Statistically significant this study uses p value <0.05. The analyzes were conducted with SPSS® for Windows® version 22.0.

Ethical Consideration

This research has obtained ethical feasibility from the Ethics Commission of the Ibnu Sina Hospital, Gresik Regency with certificate number 071/060/437.76/2024 by observing the ethical principles of beneficence, anonymity, and confidentiality and respecting human dignity. The researcher ensures that respondents participate in the study voluntarily without causing any harm from the researcher and all data related to respondents is kept completely confidential by the researcher.

Result

Table 1 shows the results of the characteristics of the research respondents who have participated in the research until completion. In the intervention group, it was shown that the most dominant age was 51-60 years old as much as 34.4% and age> 60 years with the same number of 34.4%. The gender of the respondents was the same between men and women as much as 50.0%, the highest level of education was at the high school level as much as 65.6%, the marital status was 84.4% married and 34.4% were private employees. While in the control group, it was shown that 25.0% were 41-50 years old, the most gender was male as much as 59.4%, the education level was 78.1% high school, the marital status was 84.4% married and 56.3% were unemployed (Table 1).

Measurement of research variables of anxiety and vital signs showed the best changes or decreases in the intervention group, while the control group did not show much difference. The intervention group showed a significant decrease in systolic blood pressure, namely from 140.38 mmHg to 123.81 mmHg, diastolic blood pressure also showed a greater decrease, namely decreasing from 78.06 mmHg to 69.97 mmHg. Respiratory frequency showed a decrease to 20.18 x / minute and the average pulse rate was around 83.59 times / minute, oxygen saturation also showed an improvement of 99.83%. The results of anxiety measurements also showed better results in the intervention group, anxiety after being given the intervention did not show any severe anxiety at all and showed 25.0% moderate anxiety and 50.0% mild anxiety, while those who were no longer anxious were 25.0%. In the high anxiety control group, there was a significant increase from 18.8% to 25.0%, respondents with moderate anxiety also still showed a fairly high number, namely 20 pneumonia patients (62.5%) (Table 2).

Paired test on the group showed that the intervention group on the variables of systolic blood pressure, diastolic, pulse rate, respiratory rate, oxygen saturation and anxiety showed a significant effect as evidenced by the p value <0.05. While in the control group did not show a significant effect on all variables, including changes in variable values were also not too large. So it can be shown that the test of the influence of spiritual mindfulness combined with self-regulation on vital signs and anxiety is effective (Table 3).

Table 4 shows the statistical test for between groups, the purpose is to evaluate the pre of each group and the post of each group, so that a more significant value result will be obtained between pre and post. The test results show that all pretest data show p>0.05, so it does not affect the value of the variable before the intervention is given, while the variable after the intervention shows a significant difference with a value of p<0.05.

Discussion

The levels of anxiety experienced by pneumonia patients in this study ranged from mild to severe anxiety. However, most respondents with pneumonia experienced moderate anxiety. Anxiety is a normal psychological symptom caused by threatening and unexpected situations such as pneumonia. In patients with pneumonia, conditions especially severe anxiety can have an impact on worsening hemodynamics (Sands et al., 2021; Schulte-Frankenfeld & Trautwein, 2022). Anxiety will stimulate the nervous system so that it affects the work of the autonomic nerves in increasing heart performance, so that the heart rate rhythm will increase, central blood pressure will also increase, including the respiratory system will be faster because the need for oxygen increases (Sugama & Kakinuma, 2020; Wu et al., 2021b). Excessive anxiety and lasts for a long time can cause congestion in the emotional realm and make the patient always restless, this is an alarm of the body that causes hemodynamic instability (Zhang et al., 2020). Anxiety has a close impact on the psychological condition of the patient, negative reactions that arise in response to clinical manifestations of pneumonia can include changes in concentration, changes in vital signs, irritability, stress, insomnia, decreased productivity, and interpersonal conflict. The patient's physical condition, namely the body's immune system, has an impact on the patient's psychoneuro, according to the science of psychoneuroimmunology, apart from the physical symptoms of pneumonia, pneumonia also poses the threat of negative psychological impacts and worsens stress symptoms, thus affecting changes in the patient's vital signs (Puspitasari et al., 2023).

The level of anxiety and changes in vital signs of pneumonia patients are influenced by several factors, one of which is the sociodemographics of respondents. In general, different ages have different perceptions of health impacts, anxiety responses that impact on vital signs and coping of each individual (Sands et al., 2021). A person's age will determine how individuals assess and give perceptions about how to address a problem about their health (Rechtman et al., 2020). Most of the respondents in this study were in the late adulthood to advanced age group, which is associated with low negative perceptions of health, resulting in severity in this group when compared to younger ones (Bechard et al., 2021). In line with research that has been conducted, age affects individuals in providing a psychological response to their illness (Birditt et al., 2021; Xing et al., 2020). A positive psychological response will affect the physical examination results of each individual.

The results of this study are in line with previous

studies that showed that education and occupation factors affect changes in vital signs and anxiety in dealing with pneumonia. Other studies also added that lower education levels affect knowledge about health conditions, thus patients' knowledge about pneumonia disease will provide a positive perception of how individuals manage themselves to face pneumonia disease (Chen et al., 2022). A high level of education can affect a person's cognitive and affective abilities in shaping health perceptions and behaviours. Good cognitive and affective abilities will affect increased awareness, understanding of information, and preventive actions to maintain health when individuals are diagnosed with pneumonia (Ye et al., 2022). In addition, the level of education also affects a person's ability to make judgements from the information obtained and then affect the intention or desire to make efforts to improve their health status.

The condition of low income or instability of economic conditions is one of the factors that affect a person's health perception, resulting in anxiety and changes in vital signs of pnumonia patients. In line with previous research, it is revealed that low income is significantly related to the perception of health of each individual (Lee et al., 2021). Low health perceptions can be triggered by a lack of knowledge in groups of people who have low income (Byrow et al., 2020). Poor economic conditions create stressors for individuals. This will cause patients not to focus on recovery from pneumonia, but to think about their economic and work conditions when they are sick (Gong et al., 2020). In addition, unstable economic conditions are one of the causes of individuals' reduced ability to access health facilities, fulfil nutritional needs, and implement health protocols, which will have an impact on the psychological stressors of patient anxiety.

The results showed a significant effect of spiritual mindfulness therapy combined with self-regulation on anxiety and vital signs in pneumonia patients, namely the intervention group compared to the control group. Based on the mean pretest and posttest scores, most of the treatment groups experienced a decrease in anxiety levels and improvement in vital signs after being given a spiritual mindfulness intervention with a combination of self-regulation. The decrease in anxiety levels and improvement in vital signs was characterised by a decrease in anxiety symptoms, patients looked more comfortable, relaxed, and the physical examination of patients showed increasingly better changes (Norweg et al., 2024).

The results of this study are in line with other studies that have shown that spiritual mindfulness interventions have an effect on anxiety levels and changes in vital signs (Dehghan et al., 2021). Previous research has shown that self-regulation interventions can significantly reduce feelings of anxiety and can improve physical examination results (Łakuta, 2020). Another study mentioned that mindfulness with good self-regulation will affect the focus of attention, control, and stress, concluding that in general mindfulness meditation practice can affect the reduction of physiological symptoms of stress (Schulte-Frankenfeld & Trautwein, 2022). Another opinion states that the provision of spiritual mindfulness interventions focused on mindful attention to breath is effective in the regulation of unpleasant emotion regulation and negative coping, decreasing amygdala activation and increasing prefrontal integration (Raugh & Strauss, 2024). This led to changes in vital signs in pneumonia patients.

Practising spiritual mindfulness and self-regulation can help one to have a healthier life and be less anxious, less depressed, have a better outlook on life, improve relationships with others, increase self-esteem, improve the resilience function of the human body and can reduce one's likelihood of using illegal drugs (Krygier, 2022). In breathing exercises that are full of spirituality and good self-regulation, the individual's attention will be directed to the physical sensations associated with breathing that combine with spirituality (Sands et al., 2021; Schulte-Frankenfeld & Trautwein, 2022). When the mind wanders to thoughts other than the breath, the individual will consciously feel the thoughts but only to the extent of feeling them and gently refocus on the sensation of breathing. This is because the provision of spiritual mindfulness and self-regulation therapy will enhance relaxation and comfort through the suppression of threatening stressors as a result of the stress and anxiety experienced.

Spiritual mindfulness combined with self-regulation is more about the aspect of focusing strategies to deal with cognitive problems and reactivating the power of the mind to reduce emotional distress (Grossman, 2022). The therapy is able to help individuals to withdraw from personal problems and inner conflicts with its spiritual approach (Dehghan et al., 2021; Krygier, 2022). During the process of spiritual mindfulness and self-regulation several events occur that influence each other, including the experience of being present, which as an experience, spiritual mindfulness and self-regulation become very subjective, but in general spiritual mindfulness and self-regulation is the ability to maintain the quality of awareness, acceptance, spirituality, coping and attention at all times (Aryawati et al., 2024; Hodge et al., 2020; Liu et al., 2020). Next is awareness, where with this awareness, it is suggested that individuals have a greater ability to reflect and respond in a healthy way to their experiences when symptoms of the disease appear (Hagger & Orbell, 2022). Acceptance, which is being able to accept what is happening without judging, rejecting, or avoiding the pneumonia disease (Dehghan et al., 2021). Attention, which is accepting with awareness that patients with pneumonia can maintain focus on what arises without becoming distracted or losing what is on the mind (Xing et al., 2020). And finally the transformation process, where through spiritual

mindfulness combined with self-regulation one gains direct access to powerful inner and spiritual resources for insight, transformation and healing (Sugama & Kakinuma, 2020). The application of this intervention makes the patient calmer so as to facilitate the process of self-regulation and acceptance which will further impact on reducing anxiety and improving vital signs.

The impact that occurred during the process of spiritual mindfulness therapy combined with self-regulation was very influential in reducing anxiety levels and improving vital signs. When a person feels anxious, the body system will work by increasing the work of sympathetic nerves in response to stress. The sympathetic nervous system works through activation of the adrenal medulla to increase the release of epinephrine, norepinephrine, cortisol and decrease nitric oxide (Sugama & Kakinuma, 2020). This will cause changes in body responses such as increased heart rate, breathing, blood pressure, increased blood flow to various organs and increased metabolism. Spiritual mindfulness techniques combined with self-regulation will stimulate the brain area, namely the prefrontal cortex which is the centre of emotion regulation and assessment to instruct emotional reactions which the body will then respond to by feeling accepting and non-judgmental (Dhamayanti & Yudiarso, 2020). In the hypocampus and amygdala in addition to areas for regulating emotions as well as areas of openness, blackout, and reinforcement that will provide instructions to open up more so that individuals are able to release themselves in awareness, refrain from internal reactivity and be able to increase self-acceptance so as to reduce anxiety (Nursalam et al., 2020b; Pakhale et al., 2021).

This study was conducted in an inpatient ward of a regional public hospital with different accompanying medical diagnoses, clinical symptoms of different pneumonia diseases, low, medium and high anxiety categories. So, in conducting research, it is necessary to provide a detailed and complete explanation of the disease, so as not to get direct rejection and be willing to become research respondents. The confidentiality of the respondents, the effect and impact of the intervention and the compensation of time are the full responsibility of this study.

Conclusion

Spiritual mindfulness combination with self-regulation has effect to vital sign included blood pressure, respiration rate, pulse, oxygen saturation and anxiety of patient with pneumonia. The measurement showed the best changes or decreases in the intervention group, while the control group did not show much difference. The intervention group showed a significant decrease in systolic blood pressure, diastolic blood pressure respiratory frequency, and oxygen saturation. The results of anxiety measurements also showed better results in the intervention group, anxiety after being given the intervention did not show any severe anxiety.

Acknowledgement

The completion of this research cannot be separated from the assistance of various parties including all respondents at the Regional Hospital of Gresik Regency, East Java, Indonesia who have participated in the research from beginning to end. The researcher also thanks the Ministry of Research and Higher Education of the Republic of Indonesia which has provided financial assistance, Gresik University, Muhammadiyah University of Surabaya which has provided support and facilities in conducting the research. The Faculty of Health Sciences, especially the nursing department which has provided the opportunity to develop themselves, and all parties who have contributed during the research, without the assistance of all parties, the researcher would not have been able to complete this research.

Declaration of interest

The author declares that in research activities and in the preparation of research manuscripts to scientific publications there is no conflict of interest with any party, so that the articles written can be published in full by all authors involved in the research manuscript.

Funding

This research received research funding from the Ministry of Education, Culture, Research and Technology with research master contract number 0459/E5/PG.02.00/2024 and research derivative contract number 109/E5/PG.02.00/2024.

Data Availability

Data availability is available online via the researcher's email, for readers who need data related to the research, they can contact the corresponding author

Reference

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The unmet needs of palliative care among patients with non-malignant chronic illness in Indonesia: A phenomenology study

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Abstract

Background: People with chronic illness tend to report multiple and complex symptoms that decrease their ability to meet their needs and quality of life (QoL). As an approach to address people with chronic illness, palliative care (PC) in Indonesia is still primarily focused on people with chronic malignancies. This results in that paradigm meaning the spectrum of palliative care is interpreted narrowly only for cancer or end-of-life (EOL) patients.
Purpose: This study explores the experience and needs of patients diagnosed with non-malignant chronic illness toward their illness to identify the need for palliative care.
Methods: Semi-structured interviews were conducted on seven patients with non-malignant chronic illness. An ECOG adaptation palliative patient score developed by Dr. Cipto Mangunkusumo National General Hospital (RSCM) was used to screen the participants. Only participants with a palliative score of four or higher (≥4) were interviewed. All data were recorded, transcribed, and analyzed using Colaizzi's method.
Results: There are six major interrelated themes with one sub-theme emerging from this qualitative study that uniquely match with the illness trajectory of non-malignant chronic patients. The themes are: (1) negative feelings that cannot be described at the time of diagnosis; (2) ignorance of the disease process (sub-theme: late realization that illness cannot be cured); (3) helplessness during the medication/treatment process; (4) shame of being a burden to family and surroundings; (5) limited access and support ; and (6) family and God as motivation and hope reinforcement to recover at the end of illness stage.
Conclusion: People with non-malignant chronic illnesses complain of several challenges, which are not much different from those with cancer. Therefore, patients with non-malignant chronic illness also have a similar need for palliative care. A deeper and broader assessment of palliative care should also be implemented in patients with non-malignant chronic illness after the early diagnostic process.

Keywords: chronic illness; emotions; humans; noncancer; palliative care

Introduction

Along with world development in various aspects, it was reported that life expectancy increased to 73.6 years in 2022 and continues to increase; therefore, it is predicted that the individual age will reach 78.2 years in 2050 (Schumacher et al., 2024). The increase of life expectancy is believed to be a trigger for the surge of non-communicable and chronic illnesses incidences in various parts of the world, such as ischemic heart disease, which is projected to remain the leading global cause of death until 2050, followed by stroke, COPD, Alzheimer's disease, chronic kidney disease, hypertensive heart disease, and colorectal cancer (Schumacher et al., 2024). Deaths caused by chronic illness indicate that the demographic trend that affects most adults

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 299-307

http://dx.doi.org/10.24198/jkp.v12i3.2397

Article Info

Received : October 21, 2023
Revised : August 24, 2024
Accepted : December 11, 2024
Published : December 25, 2024

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Citation

Merduaty, R.C., Nuraini, T., & Sihwastuti, S. (2024). The unmet needs of palliative care among patients with non-malignant chronic illness in Indonesia: A phenomenology study. *Jurnal Keperawatan Padjadjaran, 12*(3), 299-307. http://dx.doi.org/10.24198/jkp.v12i3.2397

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

imposes a burden of its own in many sectors. It is undeniable that disabilities often accompany the condition of individuals with chronic illnesses in carrying out their daily activities (National Center on Birth Defects and Developmental Disabilities & Centers for Disease Control and Prevention, 2020).

Unfortunately, patients with non-malignant chronic illness are often being left untended by the health system due to the unclear illness trajectory (Bostwick et al., 2017). Meanwhile, a similar burden is reported as to those living with cancer (Dalkin et al., 2016). Several previous studies have shown that patients with chronic illness (other than cancer) who receive palliative care, either in the form of intervention alone or treated specifically in the palliative unit, survive longer than those who do not (Rocker et al., 2016). However, the palliative paradigm is still narrowed to only end-of-life cases and cancer patients (Quinn et al., 2021). Consequently, it impedes the better prognosis of people living with non-malignant chronic illness. Therefore, this study aimed to see what patients with non-malignant chronic illness actually experience and need in response to their disease trajectory. Hopefully, it can capture how palliative care should be initiated and implemented in the future.

Materials and Methods

Design

This study used a qualitative method with a phenomenological approach. Searching the meaning is the characteristic of this approach, and can be an effective method to study the meaning of experience in a particular group of people (Grossoehme, 2014). Understanding a complex phenomenon involved in behavior and communication of patients with non-malignant chronic illness is expected to be broadened by phenomenological approach (Neubauer et al., 2019).

Participants and Setting

Participants in this study were selected using a purposive sampling technique with the criteria established by researchers: (1) patient with non-malignant chronic illness diagnosis (validated by medical record); (2) has been screened and recommended to receive palliative care services; (3) patient is conscious and does not have neurological deficit. Patients with communication barrier were excluded. Sihwastuti (ST) and primary nurses in internal medicine and neurology inpatient wards assisted RCM in identifying patients with those criteria and screened them with the adaptation of the Easter Cooperative Oncology Group (ECOG) palliative patient screening score developed by the Dr. Cipto Mangunkusumo National General Hospital (RSCM). Only participants with a palliative score of four or higher (≥4) were interviewed. Saturation was achieved after six participants were interviewed. One more participant was added to enrich participants' heterogeneity.

Ethical Consideration

Ethical issues in this study have been anticipated by obtaining consent before collecting data through interviews. The research team explained the information about the study after screening eligible participants. Confidentiality of participant data and transcribed interview recordings were kept in a limited access cloud folder. This study was approved by the Faculty of Nursing Research Ethics Board (no.263/UN.F12.D/HKP.02.04/2018 on 26th June, 2018) and RSCM-Faculty of Medicine at the Universitas Indonesia (no. 0693/UN2.F1/ETIK/2018 on 16th July 2018).

Data Collection

RCM was responsible for conducting semi-structured interviews. To complete RCM's responsibility, she was assisted by ST as a research team member and also team leader of palliative care nurses in RSCM. RCM has completed her bachelor's degree in nursing and took qualitative research method and bioethic training to improve her capacity in conducting this research. RCM used her experience as a primary nurse during her internship in the internal medicine ward for learning the characteristics of participant. The length of the interview varied between 25 and 45 minutes, depending on the participants' circumstances at the time. The interviewer, RCM, made sure to ask and explore all the questions with the participants, though there were some participants who could not provide answers for extended periods. Interviews were recorded using the researcher's mobile phone recorder for later transcription. During the interview, RCM was also accompanied by ST as a palliative care team leader to anticipate any physical discomfort which might emerge due to palliative condition.

In conducting the interviews, RCM approached patients who fitted the criteria, explained the objectives of study, and asked patient's consent to participate in this study. After consent was obtained, participants were asked seven questions about their feeling and experience after being diagnosed with non-malignant chronic illnesses. RCM asked participants to tell their story when first time diagnosed, their feelings after being diagnosed, their understanding about the illness, life changes in their life after diagnosis, their expectations for when the illness worsens, their fear during illness, and how much their family know about their expectations and fears.

Data Analysis

The recorded data from the interviews that had been transcribed verbatim were then analyzed using the Colaizzi method, beginning with the familiarization phase and ending with verification. Transcriptions were read several times until RCM and TN were fully immersed with the experience of the participant. This aligns with Grossoehme's (2014) explanation, which describes the importance of re-reading

Table 1. Characteristic of Participant

Characteristics	Number (n)	Percentage (%)
Age		
18-25 years old (y.o.)	4	57.1
26-35 (y.o.)		
36-55 (y.o.)	1	14.3
55-65 (y.o.)	1	14.3
>65 (y.o.)	1	14.3
Sex		
Woman	3	42.9
Man	4	57.1
Medical Diagnose		
Heart Failure	1	14.3
Renal Failure	1	14.3
Chronic Obstructive Pulmonal Disease		
Stroke or Neurological Disorder	1	14.3
Diabetes Mellitus	1	14.3
Liver Cirrhosis		
Others (HIV/AIDS, SLE, TBC, hematological disorders)	3	42.9
Years (living with diagnosis)		
< 5 years	3	42.9
5-10 years	3	42.9
>10 years	1	14.3
Rehospitalization History (in last 1 year)		
More than once	5	71.5
None	2	28.6

the transcribed interview to get a sense of the whole data. RCM continued identifying significant statements from all participants. Bracketing was applied to formulate meaning in every identified statement, until themes were developed. RCM and TN had brainstorming to write full a description of theme-related phenomenon, then condensed it into a concise narrative to be verified by participants. Applying the Colaizzi method to analyze the data of phenomenology research facilitates the researcher to have a clear and logical process in creating the fundamental structure of explored experience (Wirihana et al., 2018). It also ensures the dependable findings of phenomenology research (Northall et al., 2020).

Trustworthiness

To ensure trustworthiness of this study, RCM performed data triangulation to the research throughout the data analysis process. During data analysis, RCM and TN together re-read and recoded the transcription. Triangulation was also conducted after themes and narrative description of each theme were developed. RCM involved three participants in reading the study results and asking whether the results aligned to the perceptions and experiences conveyed during the interview. Previously, RCM, TN, and ST as investigators in this study performed researcher triangulation to obtain similar perceptions regarding the themes and its description.

Results

In this study, researchers managed to obtain heterogeneity in participants regarding age distribution and chronic illness diagnoses. Unfortunately, prospective participants who obtained a score of at least 4 of ECOG palliative screening tool adaptation and met criteria were most in the young adult range. Those with a higher score of ECOG palliative screening tool adaptation, afforded more potential patients but these were in an impossible condition to be interviewed because of their illness. Selected participants had a score of four or more with a chronic illness diagnosis other than cancer (Table 1).

Based on the qualitative data analysis carried out, eighty-six significant statements were found and coded into 129 keywords, until six interrelated main themes and one subtheme were identified inductively. In addition, the relevance of these

themes was identified based on the illness trajectory of chronic illness experienced by the participants.

Only one theme emerges from analysis during this first stage of illness trajectory-time of diagnosis. Most participants report their feeling and emotion after knowing their diagnosis for the first time. Some of them might know their diagnosis after experiencing several symptoms a long time ago, while others just reported their health decline in a short time.

Theme 1: Negative Feelings That Cannot Be Described

Shocked, sad, anxious, and disappointed are some negative feelings that emerged, and were admittedly difficult for the participants to describe the first time they were diagnosed with a chronic illness. One participant said that *"Well, I feel sad, anxious, and so on because we have never heard of dialysis like that"* (Participant 3), and another one said, *"Yes, I'm disappointed. How on earth, I'm surprised to get a disease like this. Someone said SLE was a lifelong disease, there was no cure yet. So, I am shocked"* (Participant 7).

The second stage of illness trajectory is when participants try to be adaptive to all the symptoms, medication, and treatment related to their diseases. Negative and positive themes represent participants' responses to their illness.

Theme 2: Ignorance of the Disease Process

Not surprisingly, in the early days of treatment, almost all participants said they knew nothing about the disease process and its treatment. One of the statements was *"I don't know, I searched it myself, I don't understand. Still don't understand"* (Participant 6).

Another statement was, *"Well, I didn't understand anything before, then I was like this when I was like junior high school. I got sick like this. What do I do? Just be thankful… I didn't know before the effect of this disease, how did it affect me. I didn't know before, so I used to, just like taking regular medication"* (Participant 2).

Subtheme: Late realization that illness cannot be cured

The longer participants were living with their illness, a new realization emerged that the illness cannot be fully recovered. Not many know that the definition of chronic illness is a condition that generally affects individuals for three months or more, which may worsen over time, and cannot be cured but can be controlled (Bernell & Howard, 2016). However, the chronic illnesses suffered differed from the understanding of the disease or the participants' previous knowledge. Treatment carried out by the participants regularly over a long period also failed to cure their disease.

"Finally, I decided to go to Harapan Kita Heart Hospital to be checked, and now I can have surgery. Basically, I also get treatment every month, but over time there is also a feeling of pain in the heart and a heavy chest. It turns out that it is the result of the kidneys too. The kidneys are also treated with no inheritance. The only thing is, they have to be operated on so that the kidneys are washed with blood. Yesterday it was immediately dialysis. Then the heart is the only thing that has to be operated on" (Participant 5).

"Well, the mouth ulcers have been given an ointment, vitamin C, but it still doesn't heal, right? I gave the abothyl, it did not recover. The mouth ulcer has not healed for almost three months. It kept getting better, until 10 days there, I could go home. But before going home, the doctor said, 'You have to continue to seek treatment,' he also said, 'you have to take medication regularly.' I asked, 'until when?' the doctor replied 'for a lifetime'" (Participant 1).

Theme 4: Helplessness During the Medication/Treatment Process

Based on the definitions that have been described previously, chronic illness suffered by participants cannot be cured and may worsen at any time. Therefore, participants often undergo regular check-ups or repeated treatment for their non-malignant chronic illness symptoms.

"I dropped because I was tired from 2011 to 2013, I'm bored with taking medication. So, I wasted the medicine. Yes, bored, depression. It's bored to take medicine, I just wasted it" (Participant 1).

"And what I feel now is the worst moment during illness because I can't walk now, so it's helpless" (Participant 7).

"So all the diseases are there so that I am suffering terribly, but still I will go on for surgery. These are all serious kidney and heart diseases. I am not just tired but suffering too. Just waiting in line at the ER for 10 hours. For Harapan Kita, thank God it's good, even if to get a room you have to fight. Sometimes it's sad, but instead of not having a place it is better to be placed anywhere" (Participant 5).

"Tired of being treated constantly, want to be healthy. Tired because the body continues to receive injections, and continues to take medication. The injections continue to cause pain. My mom really knows that I'm afraid of being injected" (Participant 6)

Theme 5: Shame of Being a Burden to Family and Surroundings

Most of the chronic illnesses suffered by the participants resulted in the persistence of certain physical symptoms that interfere with daily activities. This condition is recognized to make participants feel different from those around them. The inability of participants to carry out normal activities as usual also made participants fully dependent on their families to fulfil their daily needs. Therefore, participants expressed feelings of fear and embarrassment during their diagnosis of chronic illness, it became a burden for their family and surroundings.

"There are a lot of fear. Feeling different from my *friends, such as posture for example. When I was in junior high school, I could play soccer, exercise, wake up in the morning, run, but now my activities are just around the house and helping my parents. You can't be tired, you have to take care of your body"* (Participant 2).

"Gradually I didn't want to work, I didn't want anything. My stomach is fat. The first year I was not fat, but 2 years later my stomach was fat like a 9 months pregnant belly. I am embarrassed, even in the office I am embarrassed. Not feeling energetic. Initially the power was reduced until now it is not powerful at all" (Participant 3).

"I used to be able to work, earn money. Now I can't work anymore, have to rest at home, can't be tired. I will immediately drop if I am feeling tired. I have to rest at home" (Participant 7).

Theme 6: Limited Access and Social Support

Participants in this study said that often limited access is one of the things that became a separate factor in undergoing treatment with chronic illness. Inequality in health service units, the amount of funding, and less optimal information from health workers were among things patients acknowledged they often found. One participant said *"The explanation should be accurate. What is the pain, what is the cause, take the medicine that really matches the disease, don't give too much medicine"* (Participant 1). In addition, another said, *"I live in Depok, so in a nearby hospital not so far from my house to hospital. So that my transfusion is closer"* (Participant 2). Another participant said *"We do not need to pay for dialysis but the medicine needs to be paid"* (Participant 3).

Therefore, it can be concluded that the lack of information and health facilities burdens the participants undergoing long-term care related to their chronic illness.

Theme 7: Family and God as Motivation and Hope Reinforcement to Recover

In the end, all participants in this qualitative study always rely upon God Almighty. This belief facilitates every effort to improve their health, even though the participants know their illness will not be completely cured.

"I wish I wanted to take the effort to recover but I believe that if the disease is what God loves, health is also made by God, yes, but still Allah" (Participant 4).

"Yes, if you have this disease, you have to be sincere, just lillahi ta'ala (because of God). In the future, if it is, it will definitely be cured, just pray. Yes, keep up the spirit. Yes, even though there is no cure, you must keep on going. There are still many friends who get SLE too, right. There is still mother who encouraged me" (Participant 6).

"What makes me survive is because I wanted to do that, want to do activities, want to take a walk, want to meet friends again. Since this illness, I am alone at home, I have no friends, I just watched TV. Yes, want to play again" (Participant 7).

Discussion

This study aims to explore experience and needs of patients diagnosed with non-malignant chronic illness toward their illness, which will be a foundation to identify palliative care needs in that group. Since most study in palliative care is conducted in patients with cancer, experience of patients with a non-cancer chronic illness will be a new perspective in developing palliative care for non-cancer chronic area, especially in Indonesia. Non-cancer chronic illnesses, such as cardiovascular illness, stroke, and renal failure, are reported as catastrophic diseases in Indonesia, which burdens health budget and annually increases the disability-adjusting population. Knowing their experience, expectation, and fear when diagnosed and living with the illness is essential to identify their needs of care. Despite different illness trajectories between cancer and non-cancer patients, both suffered from their illness and complain of similar complex needs. Six themes describe the actual needs of patients with non-malignant chronic illness, including physical, psychological, social, economy, and even spiritual domain. This aligns with the palliative care domain developed by National Consensus of Palliative Care.

The challenge of people living with non-malignant chronic illness begins once diagnosis is delivered by the healthcare provider or even long before a diagnosis known. Unclear physical complaints might be felt by patients with non-malignant illness before the diagnosis is known whether in a short or long timeframe. The more intense the physical complaints, thee more daily life was affected, and it pushes them to know what actual health problems they have. Some patients with a non-malignant illness might need to undergo varied diagnostic tests to finally know the diagnosis, and it proves a greater burden on the physical, psychological, and even economic aspects of a patient's life. As illness diagnosis is revealed, patients who might already have suffered lengthy physical symptoms and diagnostic procedures might feel indescribable negative emotions, such as fear, and being anxious, disappointed, and sad. These negative emotions emerge because the participants are in a healthy, prime, and productive condition in their daily lives when they are diagnosed with a non-malignant chronic illness, so this moment becomes a frightening specter for their lives (Brzoza et al., 2022). In terms of disappointment, this emotion perhaps arises due to premature termination (Sommerfeld, 2022). Lack of discussion between patients, family, and healthcare professionals (HCP) and their experience of such critical times may lead to disappointment during diagnosis.

Participants start living with the disease by entering the next non-malignant chronic illness

course stage. The sudden diagnosis process and the incomplete explanation from the HCP gave the participants an incomplete understanding of the chronic illness process they suffered. The participants' ignorance continued over time for treatment because of factors such as loss of productivity due to the symptoms (Van Wilder et al., 2021) and recurrent consultation with the physician. Ignorance manifests boredom during the complex treatment, and symptoms might be faced by patients with non-malignant chronic illness and trigger people's negative reaction to incompliance with all health procedures (Van Wilder et al., 2021). Meanwhile, ignorance could be influenced by the level of knowledge regarding their chronic illness. Patients with non-malignant chronic illness with lower knowledge of their disease would have a lower quality of life (Casariego et al., 2019), including ignorance as a negative emotion. It can be implied that most of this study's participants tend to ignore their condition because they have to deal with complex treatments and symptoms without sufficient information regarding the disease.

After being diagnosed with a chronic illness, participants were still shaken by various negative feelings, and tried to adapt to their physical condition by following a series of treatments. After more symptoms were experienced during non-malignant chronic illness, participants realized or became aware that their disease is incurable. Awareness of patient's chronic illness was formed due to their experience facing all symptoms (Hocking et al, 2013). Meanwhile, those with no symptoms tend to be unaware of their condition. Realization or awareness of the status of living with incurable disease brings several benefits for patients, such as reducing futile treatment, facilitating advance care planning, and improving illness acceptance (Ozdemir et al., 2022, 2023). It is expected that, by accepting their illness, participants will show a better attitude toward understanding the chronicity of the disease and involve more in health-promotion behavior (Brzoza et al., 2022).

Stress, depression, resignation, and fatigue are some forms of expression of participant helplessness during repeated treatment in the hospital. Greater pain or unmanageable physical symptoms of patients with a non-malignant chronic illness would lead to poorer functional status and manifest in powerlessness and helplessness. The existence of cognitive bias of participants regarding their chronic illness may also lead to helplessness. Therefore, clear communication between HCP and patients during the treatment should be improved. However, helplessness due to poorer functional status may affect their dependency on family or others in managing their condition (Van Wilder et al.,2021). Patients with a non-malignant chronic illness tend to be different physically and fail to meet society's expectations, making them feel guilty and burdened to others. Congruently, feeling of helplessness and being burdensome is the root of the feeling of shame experienced by these patients. Shame among people living with chronic illness is an energetic failure of the body (Stage, 2022). Unfortunately, shame makes them always feel inferior and turn to isolate themselves rather than reaching for help (Trindade et al., 2020).

The challenge of patients with a non-malignant chronic illness worsens due to the limited access to healthcare, social, and financial support. Patients with a non-malignant chronic illness who come from lower socioeconomic status tend to have lower access to financial and social networks that may help them during stressful conditions on their disease trajectory (Van Wilder et al., 2021). Even patients who come from good socioeconomic status might be burdened by their non-malignant chronic illness. Consistent physical and psychological symptoms, regular check-ups, or exacerbation period potentially make their productivity decline. Patients can not earn money because they need to resign from their job. Worse still, family members as caregiver also need to resign to take care of the patient. This unfortunate condition can be somewhat alleviated by national healthcare insurance from Social Security Agency on Health (BPJS). However the referral system is somehow quite stressful for patients with a non-malignant chronic illness, who are burdened with physical discomfort.

Patients with non-malignant chronic illness who feel shame to their family and friends might disturb their connection with society. Sometimes, family also try to confine the illness of their family members to their surroundings. Feeling shame and fear to burden others might be a main reason why patients and family with non-malignant chronic illness become more closed. This condition makes patients and family with non-malignant chronic illnesses reluctant to ask for help when they need transport, health logistics, or financial support when an emergency situation arises. Meanwhile, there might be also situations where society reluctantly welcomes patients and family with non-malignant chronic illnesses. In several remote areas in Indonesia, living with chronic illness, regardless of the causes, can be a curse for the family. Therefore, when situations worsen, no one from the surroundings can provide the support. A more unfortunate condition is when the neighborhood area does not have proper physical facilities (transportation system) to facilitate patients with a non-malignant chronic illness to get treatment quickly. Furthermore, palliative care, which should be facilitated for these people to improve their quality of life, is still limited. Thus, those conditions may lead to this theme emerging.

Ultimately, faith in religion and God among patients with a non-malignant chronic illness is the resource of their eternal hope to cope with suffering (Klimasiński et al., 2022). Their faith in God is represented by prayer as an expression of spirituality. While praying, patients with non-malignant chronic illnesses can have a moment of serenity and silence. In this moment, they can have

a little bit of time to reflect and maintain their sanity amidst life's challenges due to their illness. Prayer among patients with non-malignant chronic illnesses is not only a medium for asking for recovery from their chronic illness (Jors et al., 2015) but also plays a role in positively transforming their experience by expressing gratitude (Hamilton et al., 2019). The spiritual drive is key for patients with non-malignant chronic illnesses to interpret their condition to have a more positive meaning and boost their self-care management and compliance with treatment (Pham et al., 2020).

Reflecting on the exposure to these needs, patients with non-malignant chronic illnesses are not much different from cancer patients. However, the narrow paradigm that has long developed in the healthcare environment is that palliation only applies to cancer patients. From the beginning of chronic illness trajectory, patients with non-malignant chronic illnesses also require palliative care. The disease process tends to be long, and the uncertain trajectory of a chronic illness may be a barrier for HCP to introduce palliative care from the start. Therefore, a deeper and broader assessment related to palliation should also be implemented in patients with non-malignant chronic illnesses.

Limitations

There were difficulties in obtaining appropriate participant characteristics regarding the inclusion criteria set. Determination of palliative status for patients outside of cancer in the hospital is still uncommon. Palliative referral in the hospital for adult patients is often done when the patient's prognosis is very poor (end of life), so it is challenging to find palliative patients with adequate communication skills. This condition made it difficult for this study to find participants, so only seven patients were involved. In general, the proportion of diseases varied. However, there were limitations to finding female participants with a non-malignant diagnosis who were undergoing or being referred to palliative care. In addition, this study has limitations in generalizing the range of chronic illness duration suffered by participants due to the various diagnoses and research methods used. Although individuals with the same chronic illness experience the same stressor, each individual has different adaptation mechanisms depending on their physical and psychosocial factors. This made the researchers unable to divide the participants into duration groups based on their disease trajectories.

Conclusions

Non-malignant chronic illness does not only have an impact on physical changes. There is a more complex dimension to the needs of such patients. Negative feelings, such as anxiety, fear, and disappointment, are the first problems that arise when the diagnosis is communicated. The lack of information and openness from health workers regarding chronic illness conditions that turn out to be incurable led to the realization that patients came late and it often made patients depressed, tired, and helpless. The inability of patients with non-malignant chronic illnesses to carry out normal daily activities also often makes them embarrassed and afraid to burden their surroundings. This is exacerbated by the lack of access, facilities, and high care costs, making it difficult for them to undergo treatment. Therefore, patients often raise unrealistic hopes for recovery by making God and their families a source of strength to undergo a long care and healing process. Reflecting on the exposure to these needs, patients with a non-malignant chronic illness are not much different from cancer patients. However, the narrow paradigm that has long developed in the healthcare environment is that palliation only applies to cancer patients. Therefore, a deeper and broader assessment related to palliative care should also be implemented in patients with non-malignant chronic illness.

Declaration of Interest

I confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

Acknowledgment

I thank to Faculty of Nursing Universitas Indonesia as a sponsor of this research through Grant of Young Scholar 2018.

Funding

Funding for this research was provided by Faculty of Nursing Universitas Indonesia.

Data Availability

All data are available as part of the article and no additional source data are required

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Older adults' lived experiences with bamboo bed handicrafts in improving their quality of life

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Abstract

Background: Improving the quality of life for older adults is crucial in Northeast, Thailand, where most have low health literacy and live in substandard conditions. They are more likely to age alone or with a spouse with less support overall.
Purpose: This study aimed to explore how the older adults had lived experiences using local wisdom, knowledge, and skill of bamboo bed handicrafts to improve their quality of life and strengthen the community.
Methods: This research study used a descriptive design based on Husserl's qualitative phenomenological philosophy. Participants were purposively chosen. The semi-structured interview guide was created. The twelve key informants, aged 61 to 78 years, had knowledge and experience of making bamboo bed crafts and were interviewed face-to-face in their home environment by consent. Seniors with cognitive impairment met the exclusion criteria. Guba and Lincoln's trustworthiness criteria were used. The content analysis used the Colaizzi method.
Results: This study found four main themes: 1) Meaningful life 2) Happy life 3) Happy society and 4) Coping with deteriorating physical health through resilience adaptation.
Conclusion: Nurses should enhance quality of life for older adults by supporting their psychological well-being through self-acceptance, coping, resilient adaptation, and continued activity.

Keywords: lived experiences; meaningful life; older adults; quality of life

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 240 - 248
© The Author(s) 2024
http://dx.doi.org/10.24198/jkp.v12i3.2534

Article Info

Received : April 22, 2024
Revised : October 03, 2024
Accepted : November 13, 2024
Published : December 25, 2024

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Citation

Sangsuk, N., Meethien, N., Khamenkan, K., Wongkruasorn, W., Prongprathet, J., & Shangyom, D. (2024). Older adults' lived experiences with bamboo bed handicrafts in improving their quality of life. *Jurnal Keperawatan Padjadjaran, 12*(3), 240-248. http://dx.doi.org/10.24198/jkp.v12i3.2534

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Thailand has been considered an aged society since 2005. The social aging population was predicted to increase from 10.78 million in 2020 to 15.59 million in 2030 (Tantirat et al., 2020). Senior citizens in Thailand serve as role models for the younger generation by fostering Thai culture and local wisdom (Ratana-Ubol, 2021). Older adults in various districts of Thailand use their local wisdom and skills to produce OTOP (one tambon, one product) goods, hoping to improve their quality of life and boost rural communities' economies. Participating in this local entrepreneurship had the potential to improve not only their financial situation but also their mental well-being (Ratanasiripong et al., 2022).

However, the study of socioeconomics critical issues to older adults' well-being in Thailand found that they depended on government old-age allowances, had low living standards, and had little formal education (Anantanasuwong, 2021). Seniors with low income were more likely to be anxious in the past, present, and future (Somrongthong et al., 2017). Low self-esteem would be a common feature among older adults who had low monthly incomes or became jobless (Sadjapong & Thongtip, 2023).

Even though giving healthy seniors the chance to work again would help them avoid relying on their families and the government, many senior workers are still unemployed. The Thai government attempted to establish the primary welfare system for informal workers to close the legal gaps and improve their quality of life. These, however, were ineffective in safeguarding

informal laborers (Tongkachok et al., 2021).

In Northeast Thailand, many older adults completed elementary school. Three-quarters had inadequate health literacy, less than half had a good quality of life (Sirisuwan et al., 2021); they mainly had poor living standards and tended to be alone or with a spouse with less support in their old age. They relied on the old-aged allowances from the government (Anantanasuwong, 2021).

This research study community, a subdistrict in Mahasarakham province, Northeast Thailand, has already encountered a super-aged society. In 2021, there were 24.94% of people aged 60 and over in this community. The bamboo bed handicrafts the villagers have passed down from generation to generation demonstrated their exceptional local wisdom. Many older adults are informal laborers who make bamboo bed handicrafts to improve their quality of life. In the capacity of nurse educators who contribute to the community's artistic and cultural preservation, the researchers aimed to discover how their lived experiences in using local wisdom knowledge and skill of bamboo bed handicrafts affects the quality of life of older adults.

Materials and Methods

Design

This research study used a descriptive design based on Husserl's descriptive qualitative phenomenological philosophy which encompasses bracketing, reflexivity, analyzing, interpretation, and intuition (Gill, 2020), to obtain deep insight into how older adults perceive and make sense of their world by using local wisdom and skill of bamboo bed handicrafts for their quality of life.

Participants and Setting

Purposive sampling was chosen among the senior citizens of a district, Mahasarakham province, Thailand. Researchers sought out seniors who fulfilled the inclusion criteria for the sample after discussing the study's goals with community leaders. The inclusion criteria included the age of all those over 60, regardless of their gender, educational attainment, or socioeconomic status, they consented to participate in the study, gave the researcher permission to record audio from conversations, took pictures, record videos about the process of making bamboo handicrafts, and had excellent communication and expression skills in Thai or local language. The decision to take part in the study would be respected. The key informants, six men and six women all older than 60, ages 61 to 78 years, had knowledge and experience making bamboo bed crafts since they were young. They could discuss the phenomenon based on their own experiences. By consent, they agreed to participate in in-depth interviews. They allowed the researchers to record video and audio during interviews. The exclusion criteria included seniors with cognitive impairment informants who needed to withdraw from the research and requested not to participate.

Ethical consideration

The ethics committee approved the study involving human subjects, Mahasarakham University, Thailand (approval number:146-161/2023). With the informants' consent, the researchers scheduled a time to interview on the topics. To protect the confidentiality of the informants, researchers did not reveal any personal information. Codes were used to present the information. Throughout the study, the informants had ample opportunities to ask questions and had the option to reschedule or terminate the interview.

Data collection

The semi-structured interview guide was created for the study's topics and issues using open-ended questions (Ruslin et al., 2022). There were: *"Can you describe what it means to your experience that the quality of the elderly's life is good or bad?"*; *"Can you describe how your experience making bamboo bed handicrafts influences your quality of life?"*; If the issue in question was delicate or complex, the researchers could ask more in-depth questions to get more information and clarification (Naz et al., 2022) such as *"Could you please elaborate a bit more on that?" "How do you feel about that?"*

The researcher team had prior experience operating in Northeastern Thai local communities. They speak and understand the Thai Isaan language quite well. Using the technique of phenomenological reduction, the first author conducted interviews to assess the participants' experience of the phenomenon. All interviews were undertaken from May 2023 to August 2023.The researcher asked for a convenient date, time, and location for the key informants to conduct the interview. Participants were interviewed face-to-face in their home environments. An interview lasted 40 – 60 minutes based on the convenience of participants. During the interview, the researcher used non-directive formulations and expressions compatible with the participant's Thai Isaan language. To fully comprehend the context of the interview, audio and video recordings were made, along with field notes from observations about the environment, surrounding characteristics, and non-verbal cues. When the data became saturated, the researcher stopped collecting more. The participants' answers were consistent, and there were no new issues from the additional interviews. The researchers used the code "Person A-L" to protect the identity of the participants.

Data analysis

Researchers simultaneously gathered and analyzed data throughout the study. The researchers used the bracketing method (Dörfler & Stierand, 2021) to set aside personal theories, presumptions, and assumptions and refrain from judging biased opinions to analyze the elderly's lived experiences.

Table 1 Participant's characteristics data

Person	Sex	Age (yrs.)	Education	Occupation	Lives with	Health Status
A	Male	66	Grade 4	Farmer, Bamboo bed maker	Wife	Back pain, Blurred vision
B	Female	69	Grade 4	Farmer, Bamboo bed maker	Husband	Back pain
C	Male	74	Grade 4	Farmer, Bamboo bed maker	Wife, Neice	Back pain, Blurred vision
D	Female	61	Grade 4	Bamboo bed maker (Work for hire)	Husband(Stroke patient)	Living with HIV/AIDS >20 yrs
E	Female	78	Grade 4	Vender, Bamboo bed maker (Stop working)	Husband	Gall stone, coronary heart disease
F	Male	67	Grade 4	Farmer, Bamboo bed maker	Wife	Head injury (after removing intracerebral clot, then normal)
G	Female	66	Grade 4	Farmer, Bamboo bed maker	Son, Daughter	Healthy
H	Male	71	Grade 4	Farmer, Bamboo bed maker	Wife, Daughter, Granddaughter	High blood pressure and cholesterol
I	Male	74	Grade 4	Farmer, Bamboo bed maker	Wife, Daughter	Alcohol drinking
J	Female	74	Grade 4	Farmer, Bamboo bed maker (Stop working)	Husband, daughter	Back pain with herniated disc
K	Female	74	Grade 4	Farmer, Bamboo bed maker (Stop working)	Alone	Back pain
L	Male	68	Grade 4	Farmer, Bamboo bed maker	Wife, daughter, Grandson	Blind Left eye, Right eye cataract

Table 2. Themes, Categories from the elderly's lived experiences

Themes	Categories
1. Meaningful life	1.1 Struggling life through overcoming hardship
	1.2 Making ends meet and avoiding becoming a burden
2. Happy life	2.1 Living with flexible time
	2.2 Being stay at home happily
3. Happy society	3.1 Being together working together
	3.2 Being helpful and supportive of one another.
4. Coping with deteriorating physical health through resilience adaptation	4.1 Staying to be active while slowing down

The content analysis using the Colaizzi method (Gumarang et al., 2021).The methodological triangulation involved observing participants in their work environment and conducting in-depth interviews. All interviews were transcribed verbatim. Two researchers read all transcriptions several times and performed verbatim analysis, extracting significant statements carefully, and creating formulated meanings from significant statements. The investigator triangulation was applied, with each data set analyzed independently and then compared findings. After researchers agreed on formulated meanings, themes were formed with groups of theme clusters that reflected the issues of older adults' lived experiences. Researchers developed an exhaustive description to explain the discovered phenomenon and produced the fundamental structure to describe the studied phenomenon. The findings were sent

to key informants for member checking to confirm the accuracy and validity of their data before a research summary report was drafted. To confirm the findings, a peer audit was established by an experienced qualitative researcher. The last step of the data analysis process involved translation into English after each quote, explaining themes.

Trustworthiness

To ensure the validity of the findings, Guba and Lincoln's trustworthiness criteria were used (Enworo, 2023). The veracity of the information was confirmed to establish credibility and to ascertain whether the researcher and the informant had the same understanding. Dependability was established by researchers' systematic data collection, verification of the information's accuracy, independent data analysis, deep reflection, and debate to consider the issues. Researchers meticulously documented each transcript to ensure confirmability, and with the benefit of an explainable coding schema, they could locate the original data. Finally, to ensure transferability, researchers explored the experiences of older adults in a particular group with bamboo handicraft skills. While readers can use research findings in comparable contexts, they cannot make generalizations to other populations.

Results

The participants all completed their fourth grade of elementary school. They lived with their families and spouses; only one lived alone. They struggled with a range of health issues, such as back pain, blurred vision, HIV, herniated discs, gallstones, and cataracts. Only one participant had a healthy status. The data on the participants' characteristics is shown in Table 1. Based on the older adults' experiences, the results were grouped into seven categories and then condensed into four main themes as shown in Table 2

Theme 1: Meaningful life

The elderly reflected their values, goals, and priorities to improve their quality of life through their lived experience with meaningful life in two categories included: 1) Struggling life through overcoming hardship, 2) Making ends meet and avoiding becoming a burden.

1.1Struggling life through overcoming hardship

Older adults deal with a meaningful life by struggling to overcome hardship without stress. They feel steady and view the difficulties as challenges. Although they required a lot of work in the past, such as multiple jobs to earn money, working hard without labor-saving devices, and tiresomely carrying bamboo beds on their backs down alleyways to sell them, their minds were stronger. Hardship gave their life meaning. The examples of the participants' statements were described in a sense of pride as follows:

"…The drought in the area prevented farming from being successful. I had to work many jobs. Making charcoal, riding tricycles for hire, selling cows, and building bamboo beds were all going on to earn money in many ways… Since I lacked a planer, I sharpened the bamboo wood with my knife… I hurriedly got up at three in the morning, loaded the bamboo bed onto my back, and walked downtown to sell it. That's how hard my life is. I haven't stopped making bamboo beds since then, but I can't carry a bed like that…" (Person H)

"…I must get up early at two in the morning to buy wood, chop it myself, and carry all pieces of cut wood from the garden out to the truck. When I finished making bamboo beds, I spent the entire day carrying them to various locations along the alleyways to sell them. If no one buys it, I have it back. It's hard work. (Person C)

1.2 Making ends meet and avoiding becoming a burden.

The older adults avoided becoming a burden by making ends meet with bamboo bed handicrafts. Rather than merely relying on an ageing allowance, they must work to earn their own money for their expenses without troubling their children. The following are example statements:

"…I made bamboo beds because they allowed me more money to buy some food without bothering my son and daughter. Because they had higher housing costs, car and home payments, kids' tuition, water and electricity bill payments, and other expenses. I will make a bamboo bed to earn money until I cannot." (Person F)

Theme 2: Happy life

The elderly participants reflected on their lived experiences with a sense of happiness and improved their own quality of life by making bamboo beds. In the first instance, their happy lives were the result of their liberated lives. In the second, they stayed at home happily.

2.1Living with flexible time

The older adults reflected that they lived with a flexible time at home. They raised cows, farmed, and made bamboo beds in their leisure time. They could visit their relatives even on their lazy days. Instead of rushing, they were skillfully making bamboo beds. The examples of statements are as follows:

"I must go to the farm and plant groundnuts, corn, and banana trees. On lazy days, I go for walks to my relative's houses and return to make bamboo beds at home. When I make bamboo beds, I do it quickly and diligently and do not go anywhere." (Person K)

"…I make bamboo beds in my spare time. If I plant rice in the rice field, I won't have time to make bamboo beds. Occasionally, I must gather grass for the cows. When I got back to making bamboo beds, it was midday. I keep doing it without stopping when I have free time. (Person A)

2.2Being stay at home happily.

The older adults talk about how happy lives they had. They liked to work indoors at home, think positively, be able to rest and reach for a hammer or knife to make bamboo beds without staying still. These are the provided examples:

"…At home, the elderly happily hammer nails into bamboo wood to make beds. Usually, my wife and her cousins take a seat here at my home. They jointly hammer nails into bamboo wood to make bamboo beds…" (Person C)

"…When I'm not feverish, I'm happy. I'm not serious, I can make bamboo beds for fun. Stay at home and enjoy working indoors. Just staying still, It's boring. For me, working is beneficial. I will catch the cash if I grab a hammer or a knife. (Person D)

"…Making bamboo beds, I am at home. When I have time, I make bamboo beds. When I need a break, I take one…" (Person I)

Theme 3: Happy society

The participants shared two categories reflecting their lived experience of a happy society: 1) Being together, working together, and 2) Being helpful and supportive of one another.

3.1 Being together, working together.

The participants reflected that making bamboo beds was a long-standing tradition of their grandparents' generation. Every step of the way, the family members have assisted one another. Example statements:

"…Making bamboo beds has been a part of this community since my grandparents' generation. My father made bamboo beds to support me and my siblings financially. My family members help each other build the bamboo beds, carry the wood from the truck into the pile, sharpen bamboo, and hammer nails." (Person E)

"…We have been helping each other to make bamboo beds since our parents' generation. Growing up, kids should assist their parents. My mother took care of her small children. I had to assist my parents with making bamboo beds and looking after my younger sisters after school. After my spouse passed away, I started making bamboo beds to support my kids financially. Until my children grow up, I make bamboo beds with them…" (Person G)

3.2 Being helpful and supportive of one another.

The older adults stated that the villagers are very supportive and helpful. They purchase and deliver bamboo wood for the elderly, assist in finishing bamboo beds on time, and gather them up for sale as stated below:

"…The villagers in this community drive trucks to the Yasothon and Ubon Ratchathani provinces, where they purchase bamboo wood. Anyone in need of wood can place an order, it will be purchased and delivered to that residence…" (Person A)

"…If I have not enough cash to purchase the bamboo wood, I can borrow money from my relatives, then repay when I get paid from selling bamboo beds…" (Person B)

"…If I cannot finish making bamboo beds in time to order, I ask someone in this village to help me make them, then I give them wages, ice cream, and drinking water. They assist and are kind to me. (Person F)

"…Nowadays, after the bamboo beds are finished being made to order, regular customers will come to pick them up at our house..." (Person H)

Theme 4: Coping with deteriorating physical health through resilience adaptation

The older adults share only one category of their lived experiences, how they deal with their declining physical health with coping and adaptation as follows:

4.1 Staying to be active while slowing down

The older adults reflected that although they became weaker and deteriorated physical health, they cope and adapt by staying active even as they slow down. These are example statements:

"... As I get older, I lose strength and get easily tired. I cannot lift the bamboo beds. My eyes had a slight mistiness. Sometimes, I used a hammer to hit my finger instead of bamboo wood (laugh). As time passes, someone stops making bamboo beds because they grow old. I haven't stopped doing it, just slowly down…" (Person A)

"…Nowadays, I stop to make bamboo beds for a while because of my less healthy body. My right eye has cataracts, and my left eye has a broken cornea. My doctor attempted to change my left cornea, but it was unsuccessful. I could not lift anything heavy, not even a sack of grass. I farm, raise chickens and cows, and make Thai bamboo chicken coop for sale. I had muscle pain from walking over 5 kilometers to my rice field. It's natural to age. (Person L)

Discussion

This study aimed to discover how older people used their lived experiences to apply traditional wisdom, knowledge, and skills about bamboo bed handicrafts to enhance their quality of life. According to the results, four main themes included: 1) Meaningful life 2) Happy life 3) Happy society and 4) Coping with deteriorating physical health through resilience adaptation. A meaningful life is typically the result of exceptional happy or unhappy experiences. (Murphy & Bastian, 2020). When the elderly's work positively affected their lives and families, it became meaningful. A meaningful life was not synonymous with a happy life. Overcoming obstacles could foster a sense of worth and significance in one's actions for other people (King & Hicks, 2021). Living a meaningful life was inherently moral (Fuhrer & Cova, 2023). It was suggested that elderly people who led meaningful lives were in good spiritual health (Lou, 2021).

According to the study's findings, older adults had meaningful life experiences in terms of psychological well-being. They accepted their life even though it was difficult. They had life satisfaction and recognized the challenges that they had overcome hardship by working hard, struggling multiple jobs to make ends meet, performing labor-intensive tasks without the use of labor-saving devices, and laboriously carrying bamboo beds down alleyways on their backs to sell them. These emotional experiences demonstrate their ability to deal with problems and limitations. They feel self-acceptance when satisfied with their prior lives and embrace their good and bad qualities. Self-acceptance is one aspect of psychological well-being (Seifert, 2005). To live a better life, overcoming hardship was the most essential (Matthys et al., 2021).

In addition, older adults can stay independent and avoid becoming a burden by making bamboo beds to make ends meet. Because of the increasing cost of living, relying solely on the government's elderly allowance was insufficient to survive. A financial hardship made one more susceptible to mental health issues (Frankham et al., 2020)The study's participants did not put financial pressure on their sons and daughters. However, to be healthy and realize their full potential, older adults must work.

Making a bamboo bed was a mentally demanding job that required a good memory and attention span of active seniors. With greater inactivity, older people's cognitive abilities decline (Sarabia-Cobo et al., 2020). Elderly who did not work or participate in any activity were more at risk of poverty (Meemon et al., 2022). Poverty and a decline in healthy aging were positively correlated (Nie et al., 2021). If there were elderly members who require care, an economic burden could arise in the families, which could affect their financial status (Nortey et al., 2017). When caring for the elderly, caregiver stress and fatigue are concerns (Tumanggor et al., 2021). An unhealthy coping strategy would stress the caregiver more (Kabaya et al., 2023). The increasing need for caregiving in households with elderly members may lead to a higher caregiver burden (Phetsitong et al., 2019).

This study found the happy lives of elderly participants resulted from their flexible time lifestyle and indoor work at home. The working conditions, income, and living situation of the elderly all affected how happy they were (Ahmed & Mohamed, 2022). The participants reported enjoying farming, cow-raising, visiting relatives, and making bamboo beds. They felt their lives were fulfilled. They were happy when they thought positively. Seniors could stay active into their later years if they could work to preserve their happiness and sense of fulfillment in life (Ramia & Voicu, 2022). Positive self-perception leads to higher levels of happiness and life satisfaction in seniors (Vilkhu & Behera, 2019). Being internally happy and content with life, both past and present, was another way to be successful in aging (Estebsari et al., 2020).

Not only a happy life but also a happy society that the participants reflected. Making bamboo beds was one of the tasks that the villagers and family members in the study's community had been helping and supporting one another. Helping one another solved many societal issues, whether in small one-on-one interactions, at work, or through changes in policies. Giving people the chance to support one another could increase happiness (Aknin & Whillans, 2021). The social support received from family networks was positively correlated with older adults' quality of life (Gallardo-Peralta et al., 2022). Family support and burden impact the quality of life (Rekawati et al., 2022). With more family interaction, older adults living alone or with their families displayed higher happiness levels (Hwang & Sim, 2021). Seniors lead happier lives when they engage in social activities and support one another (Shah et al., 2021). They would be happier if they pursued happiness in a socially responsible manner (Doh & Chung, 2020). Independence, physical activity, self-awareness, attitude, financial security, social support, and community involvement are factors that have been linked to healthy aging (Abud et al., 2022).

Declines in functional ability were linked to aging. The research participants stated that their bodies become weaker as they age and deteriorate in physical health. They cope and adapt by staying active even as they slow down. According to the World Health Organization (WHO), acquiring and preserving functional ability that promotes well-being is known as "healthy aging." Exercise plays a critical role in improving functional ability and disease prevention (Izquierdo et al., 2021). The participants still had physical activities such as walking over 5 kilometers to the rice field, working on farms, raising cows and chickens, and making bamboo beds. They had not worked out according to their fitness regimen. Aging who followed fitness programs focused primarily on balancing and functional exercises were less likely to fall (Sherrington et al., 2020). Physical activity could promote healthy aging in terms of cognitive function, psychological well-being, and independent functioning for those experiencing cognitive decline (Nuzum et al., 2020). Elderly who were physically active had a lower risk of depression, dementia, Alzheimer's disease, as well as cardiovascular and all-cause mortality. They also had a lower risk of fractures, activities of daily living disability, and functional limitation (Cunningham et al., 2020). This research participants exhibit their mental well-being by coping and resiliently adapting to deteriorated physical health. Resilience and coping were predictors of well-being in adults (Mayordomo et al., 2021).

The limitation of this study was that the samples were homogeneous in terms of low—to middle socioeconomic position among elderly people living in Isaan semi-rural culture. These similarities may limit the diversity of perspectives and the quality of

data.

Conclusion

Bamboo bed handicrafts are meaningful for elderly life in the study's context. Nurses can improve the quality of life for older adults by supporting their psychological well-being through self-acceptance, coping, resilient adaptation, and continued activity. Nurse should assist the elderly to find meaning in life, live happiness and fulfilling lives, and build powerful relationship with others.

Declaration of Interest

The authors declare that there was no conflict of interest and no competing financial interest or personal relationship could have influenced any of the work described in this article.

Acknowledgment

We are grateful to the villagers in the study's community for their response in completing the research study in accordance with the goals of this phenomenological study. I would like to thank my anonymous reviewers for their insightful feedback on the manuscript.

Funding

We express our gratitude to the Faculty of Nursing at Mahasarakham University in Thailand for providing this research funding.

Data Availability

The research's data originates from informants interviews. The data are available on request from the corresponding author.

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The effect of psychoeducation-based on transtheoretical model on depression in patients with coronary heart disease

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Abstract

Background: Depression is the most common psychological condition among patients with coronary heart disease (CHD). Although psychoeducational programs (PEPs) based on the Transtheoretical Model (TTM) have shown promise for psychiatric patients, their application among individuals with medical conditions, particularly cardiovascular disease, remains limited—especially in Indonesia.
Purpose: This study aimed to assess the effectiveness of a TTM-based PEP intervention in reducing depression among CHD patients.
Methods: A quasi-experimental design was employed, involving 80 CHD patients hospitalized in the coronary care unit (CCU) of a private hospital in West Java, Indonesia, in 2022. Participants in the intervention group attended seven sessions, each lasting 60 to 90 minutes. Depression symptoms were measured using the Hamilton Depression Rating Scale (HDRS). An ANOVA was performed to compare pre- and post-intervention mean HDRS scores and subscale scores between the two groups. After accounting for attrition, the final analysis included data from 76 patients.
Results: The participants had a mean age of 59.39 years (SD = 11.10) and a mean disease duration of 4.05 years (SD = 1.69). A paired t-test showed a significant reduction in the mean HDRS score of the intervention group, from 13.79 ± 2.84 pre-intervention to 10.16 ± 2.16 post-intervention ($p < 0.0001$). Most HDRS subscale scores also decreased significantly, except for insomnia, somatic/genital symptoms, and weight loss. ANCOVA confirmed significant differences between the two groups in overall HDRS scores.
Conclusion: The findings suggest that TTM-based PEP is effective in reducing depression among CHD patients. Incorporating such programs alongside standard treatments is recommended for enhanced patient outcomes.

Keywords: coronary heart disease; depression; psychoeducation; transtheoretical model

Introduction

Coronary Heart Disease (CHD) is the leading cause of death worldwide, accounting for 36% of all fatalities, double the mortality rate of cancer (Li et al., 2020). In Indonesia, the mortality rate from CHD stands at 26.4%, with a prevalence of 1.5%. It is projected that the number of cases will rise to 23.3 million by 2030 (Ministry of Health, 2020). CHD, also referred to as ischemic heart disease, involves arterial blockages and functional impairments in the coronary arteries, leading to myocardial ischemia and hypoxia (Ulbricht & Southgate, 1991). Patients with CHD often experience significant physical and psychological challenges, including reduced health-related quality of life (QOL), which correlates with higher mortality and an increased risk of recurrent cardiac events (Barham et al., 2019; Birks, 2006). Furthermore, CHD has strong associations with psychosomatic disorders and poor mental health outcomes (Goldston & Baillie, 2008).

Depression is the most prevalent psychological issue among CHD

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 279-286

http://dx.doi.org/10.24198/jkp.v12i3.2629

Article Info

Received : October 25, 2024
Revised : December 07, 2024
Accepted : December 11, 2024
Published : December 25, 2024

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Citation

Lindayani, L., Yosep, I., Purnama, H., Mutiar, A., & Putri, A.D. (2024). The effect of psychoeducation-based on transtheoretical model on depression in patients with coronary heart disease. *Jurnal Keperawatan Padjadjaran, 12*(3), 279-286. http://dx.doi.org/10.24198/jkp.v12i3.2629

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

patients (Kurnia & Sholikhah, 2020). A longitudinal cohort study involving 2,325 patients with stable CHD revealed that depressive and anxious symptoms increased the likelihood of mortality (Doering et al., 2010). In China, the prevalence of depression among CHD patients ranged from 8.2% to 35.7% in men and 10.3% to 62.7% in women (Li et al., 2020). Similarly, in Indonesia, 22% of CHD patients reported mild depression, 15% moderate depression, and 3% severe depression (Nuraeni et al., 2016). Depression and insufficient social support are among the most common psychological responses in individuals with cardiovascular diseases, contributing to higher healthcare costs and increasing the risk of disease recurrence or worsening (Dehdari et al., 2009; Taylor-Rodgers & Batterham, 2014).

Various alternative therapies such as music therapy, relaxation techniques, therapeutic massage, and guided imagery have proven effective in alleviating anxiety and distress in patients with acute and chronic conditions (Chan et al., 2009). Additionally, psychological interventions, including cognitive behavioral therapy (CBT), psychoeducational programs (PEPs), and support systems, have demonstrated effectiveness in addressing psychological issues like anxiety and depression (Taylor-Rodgers & Batterham, 2014). PEPs, in particular, have gained attention as an essential strategy for addressing psychological challenges in patients. These interventions aim to modify patients' thoughts and behaviors by providing a safe environment to express emotions, build hope, enhance self-awareness, and apply newly acquired insights (Ågren et al., 2012; Morokuma et al., 2013; Paranthaman et al., 2010).

Several studies have explored the impact of PEPs on mental health. For instance, Luciano et al. (2011) found that PEPs improved mobility, pain management, fatigue, and mental health issues, including anxiety and depression, in patients with fibromyalgia. Similarly, Guo et al. (2013) reported that cancer patients undergoing radiotherapy benefited from CBT and supportive environments, which reduced anxiety and depression, leading to improved QOL and physical health. However, a meta-analysis by Dusseldorp et al. showed no significant impact of PEPs on anxiety (10 studies) or depression (13 studies) among CHD patients (20 studies). Likewise, Hartford et al. found that telephone-based psychological training for nurses did not significantly reduce anxiety in patients recovering from coronary artery bypass grafting (CABG) surgeries (Hartford et al., 2002). Similarly, Johnston's research on education and psychological counselling after myocardial infarction found no significant effect on depression symptoms (Johnston et al., 1999). These mixed findings suggest that further research is needed to assess the effectiveness of psychological interventions for CHD patients.

Recent studies suggest that psychoeducational interventions based on the Transtheoretical Model (TTM) offer promising outcomes for managing depression in CHD patients (Li et al., 2020). The TTM is an integrative model of behavior change that supports interventions aimed at modifying harmful behaviors. It divides behavior change into five distinct stages: pre-contemplation, contemplation, preparation, action, and maintenance (Prochoska & Velicer, 1997). In the pre-contemplation stage, individuals show no intention of changing their behavior. During contemplation, they begin to recognize the need for change and consider taking action. In the preparation stage, individuals make initial steps toward change, followed by concrete behavior changes during the action stage. Finally, the maintenance stage involves sustaining these changes to prevent relapse (Prochaska, 2008). The TTM's structured, gradual approach makes it adaptable across different age groups, enhancing its relevance for behavior change interventions (Li et al., 2020).

Most research on TTM-based psychoeducational programs has focused on individuals with psychiatric conditions, with limited studies targeting those with medical illnesses, including CHD. However, healthcare professionals are increasingly recognizing that effective treatment for chronic diseases must address both physical and psychological aspects to optimize patient outcomes (Dashtbozorgi et al., 2009; Eker & Harkın, 2012). Psychoeducational programs grounded in the TTM framework hold potential for enhancing the functional health of CHD patients by addressing their psychological needs alongside physical care (Taylor-Rodgers & Batterham, 2014; Tofighiyan et al., 2010). This study aims to evaluate the effectiveness of a TTM-based psychoeducational intervention in reducing depression among patients with CHD.

Materials and Methods

Design

This study was conducted using quasi-experimental design at June to August 2022.

Sample and setting

This study was conducted in the coronary care unit (CCU) of a private hospital in West Java, Indonesia. The inclusion criteria were as follows: participants had to be between 20 and 65 years old, willing to participate, capable of answering questions and attending meetings, without a history of angioplasty or neurological disorders, and able to read and write in Bahasa. Exclusion criteria included participants withdrawing from the study or experiencing acute or urgent medical or psychological disturbances. To further reduce bias, individuals with substance dependence or diagnosed mental or psychological disorders were also excluded. The sample size for this study was determined using G*Power version 3.1, a widely used software for statistical power analysis (Faul et al., 2007). We set the following parameters

Box 1. Content of the psychoeducation based on TTM Program for CHD Patients

Sessions

Session I: Pre-contemplation
Gaining an understanding of coronary heart disease (CHD), as well as its causes, treatments, and implications for patients.

Session II: Contemplation
Introducing and listening participants' feelings and problems related depression, risk of depression.

Session III: Preparation
a) Asking and listening to the patient to determine how much they know about depression management
b) Describe and provide strategies for preventing and managing depression in patients
b) Describe and provide strategies for preventing and managing depression in patients
d) Facilitate a Q&A session if the patient has any questions about depression prevention or treatment.

Session IV: Action
Training on depression management: relaxation and distraction

Session V: Action
Training on problem-solving skills

Session VI: Action
Training on skills to deal with depression

Session VIII: Maintenance
Concluding remarks, going over the training materials again, and hearing from patients all figure into this phase

Table 1. Demographic comparison between intervention and control group (n=76)

Variables	Total (n=76)	Intervention Group n=38 (%)	Control group n=38(%)	p-value
Age in year, Mean ± SD	59.39 ± 11.10	59.42 ± 12.62	59.37 ± 9.70	0.079
Duration of disease in year, Mean ± SD	4.05 ± 1.69	4.11 ± 1.76	4.00 ± 1.66	0.930
Sex				
Male	40 (52.6)	12 (31.6)	14 (73.7)	0.516
Female	36 (47.4)	26 (68.4)	5 (26.3)	
Marital status				
Married	62 (81.6)	30 (78.9)	16 (84.2)	0.330
Unmarried	14 (18.4)	8 (21.1)	3 (15.8)	
Education level				
Elementary school	12 (15.8)	12 (31.6)	0 (0)	0.014*
Junior high school	8 (10.5)	2 (5.3)	6 (15.8)	
Senior high school	30 (39.5)	12 (31.6)	18 (47.4)	
University	13 (34.2)	12 (31.6)	14 (36.8)	
Employment status				
Yes	28 (36.8)	4 (21.1)	20 (52.6)	0.313
No	48 (63.2)	15 (78.9)	18 (47.4)	

Note: *: significant

Table 2. Depression and its dimension before and after intervention in intervention and control group (n=76)

Variables	Pre-test	Post-test	t	p-value
	Mean ± SD	Mean ± SD		
Total score of HDRS				
Intervention group	13.79 ± 2.84	10.16 ± 2.16	-11.795	0.000*
Control group	13.58 ± 2.34	13.84 ± 2.00	1.564	0.135
Domain score				
Mood dan Depression				
Intervention group	2.74 ± 1.04	1.31 ± 0.93	-2.964	0.008*
Control group	2.25 ± 1.14	2.31 ± 1.14	-0.460	1.000
Feeling of guilt				
Intervention group	2.74 ± 1.25	0.89 ± 0.11	-2.964	0.000*
Control group	2.71 ± 1.37	2.26 ± 1.14	-1.321	0.320
Suicide				
Intervention group	1.74 ± 1.04	1.26 ± 0.93	-2.964	0.008*
Control group	1.26 ± 1.14	1.26 ± 1.14	0.000	1.000
Insomnia				
Intervention group	2.47 ± 1.26	2.37 ± 1.30	-0.809	0.429
Control group	2.89 ± 0.87	2.95 ± 0.84	0,39375	0.578
Work and activity				
Intervention group	1.24 ± 0.57	0.34 ± 0.11	-2.964	0.000*
Control group	1.65 ± 0.41	1.16 ± 1.14	-0.321	0.678
Retardation				
Intervention group	2.58 ± 1.50	2.00 ± 1.29	-3.012	0.007*
Control group	2.42 ± 1.26	2.42 ± 1.34	0.000	1.000
Retardation				
Intervention group	2.58 ± 1.50	2.00 ± 1.29	-3.012	0.007*
Control group	2.42 ± 1.26	2.42 ± 1.34	0.000	1.000
Agitation				
Intervention group	1.57 ± 0.25	0.69 ± 0.11	-3.231	0.001*
Control group	1.24 ± 0.43	1.05 ± 0.76	-0.890	0.632
Somatic dan Genitalia symptoms				
Intervention group	1.95 ± 1.02	1.84 ± 0.83	-0.438	0.667
Control group	1.89 ± 0.56	1.89 ± 0.56	0,25625	0.716
Hypochondriasis				
Intervention group	0.89 ± 0.65	0.89 ± 0.65	0.000	1.000
Control group	0.95 ± 0.52	0.95 ± 0.52	0.000	1.000
Loss of weight				
Intervention group	0.68 ± 0.94	0.47 ± 0.69	-1.287	0.215
Control group	0.26 ± 0.45	0.26 ± 0.45	0.000	0.000*
Insight				
Intervention group	1.11 ± 0.31	0.05 ± 0,23	-11.339	0.000*
Control group	1.05 ± 0.23	1.05 ± 0.23	0.000	1.000

Note: p-value obtained from paired t test; *: significant

Table 3. Difference of total score HDRS among intervention and control group

Source	Type III Sum of Square	df	Mean Square	F	p-value
Corrected Model	187.5	2	93.8	111.8	0.000*
Between group	122.2	1	122.2	145.7	0.000*
Error	29.3	35	0.84		

Note: *: significant

for a two-tailed test: an effect size (Cohen's d) of 0.5, a significance level (alpha) of 0.05, and a power (1 - beta) of 0.80. These parameters are commonly chosen in behavioral and social sciences to detect a medium effect size with sufficient statistical power. Based on these inputs, the calculated sample size for independent groups was 76, with 38 participants allocated to the intervention group and 38 to the control group. This study utilized a convenience sampling technique, a non-probability sampling method that involves selecting participants who are readily available and willing to participate (Etikan et al., 2016). Convenience sampling is often used in clinical or behavioral studies where the focus is on accessibility and feasibility rather than generalizability (Bornstein et al., 2013). Although this sampling method limits the generalizability of findings, it is effective for exploratory studies aiming to establish foundational insights.

Variable

The intervening variable in this study was psychoeducation based on the transtheoretical model, with depression as the dependent variable.

Instruments

The demographic data collected included participants' age, sex, education level, marital status, employment status, and duration of illness.

The Hamilton Depression Rating Scale (HDRS), originally developed by was originally developed by Max Hamilton, a British psychiatrist, in 1960, is a 17-item questionnaire designed to assess various symptoms of depression. These symptoms include mood, feelings of guilt, suicidal ideation, insomnia, work and activity levels, psychomotor retardation, anxiety, somatic and sexual problems, hypochondriasis, weight loss, and insight. Items related to mood, guilt, suicidal ideation, work and activity, psychomotor retardation, agitation, anxiety, hypochondriasis, and weight loss were evaluated using a four-point Likert scale. In contrast, somatic and genital symptoms, as well as insight and insomnia, were assessed using a three-point Likert scale. The Cronbach's alpha for the Bahasa version of the HDRS was 0.74, indicating acceptable internal consistency (Apriani et al., 2018).

Intervention

Each group session for the intervention group lasted between 60 and 90 minutes, with a total of seven sessions conducted. The PEP-based intervention, grounded in the Transtheoretical Model (TTM), was adapted from (D'Souza et al., 2010; Karamlou, 2010; McGillion et al., 2008). The PEP-based TTM intervention provided to the experimental group addressed topics such as lifestyle, depression management, problem-solving, and relaxation techniques. The content was developed based on the information outlined in Box 1.

A certified nurse facilitated every meeting. At the end of each session, participants received take-home assignments to work on at their own pace. At the beginning of the following session, participants' experiences with the previous assignment were reviewed and discussed, followed by the distribution of new materials. The investigator contacted participants in the intervention group weekly for 10–15 minutes to monitor their progress, answer questions, and coordinate upcoming sessions. After completing all seven sessions, participants in the intervention group were asked to fill out the study questionnaire again.

Patients in the control group received only standard medical care along with an AHA pamphlet on basic cardiac care (Mohammadi et al., 2006). They completed the study questionnaire at the time of enrolment and again seven weeks later.

Data collection

Participants were fully informed about the study's purpose, design, and the voluntary nature of their participation. Written informed consent was obtained from all participants before they took part in the study. The research process began with the collection of demographic information from the participants. Meanwhile, the primary outcome measurements for both groups were gathered simultaneously.

Data analysis

Socio-demographic factors between the two groups were compared using the Chi-square test, while the Kolmogorov-Smirnov test assessed the normality of the variable distributions. An independent samples t-test was conducted to examine differences in mean age between the groups. To compare the mean HDRS questionnaire scores before and after the intervention, a paired-samples t-test was used. Furthermore, ANOVA was applied to compare the mean HDRS scores and subscale scores across both groups before and after the intervention. A p-value below 0.05 was considered statistically significant for all tests. Data analysis was performed using IBM SPSS Statistics, version 20.0.

Ethical consideration

This research received ethical approval from STIKep PPNI's Research Ethics Commission on 3 May 2022

(No.087/KEPK/STIKep/PPNI/Jabar/III/2022). After gaining ethical approval, the researcher, assisted by the head nurse of the CCU, approached eligible patients. The researcher explained the research procedures and sought informed consent from the respondents.

Results

Two participants from the intervention group were excluded from the analysis due to inconsistent participation, reducing the total number of participants to 78. In the control group, one participant passed away, and another was excluded for not completing all the required information on the post-test questionnaire. Consequently, data from a total of 76 participants were included in the final analysis. The average age of the participants was 59.39 years (SD = 11.10), and the mean duration of illness was 4.05 years (SD = 1.69). Most participants were male (52.6%), married (81.6%), had completed high school (39.5%), and were either unemployed or underemployed (63.2%). No statistically significant differences in demographic characteristics were found between the intervention and control groups (see Table 1).

The paired t-test revealed a significant difference in the mean overall HDRS scores of the intervention group before and after the intervention, with mean scores of 13.79 ± 2.84 and 10.16 ± 2.16, respectively ($p < 0.0001$). In contrast, the control group showed no significant changes between the beginning and end of the study, as indicated by a p-value of 0.135 (see Table 2). Most HDRS subscales demonstrated a significant reduction following the intervention, except for insomnia, somatic and genital symptoms, and weight loss.

An ANCOVA test was conducted to compare the average HDRS scores between the two groups. The results revealed significant differences, with a p-value of < 0.0001 (see Table 3).

Discussion

The results of this study demonstrate that psychoeducation based on the Transtheoretical Model (TTM) can have a positive impact on reducing depression among patients with coronary heart disease (CHD). Similar research conducted in China revealed a significant difference in depression levels between the intervention and control groups (Wang et al., 2018). TTM-based psychoeducation supports CHD patients by providing tools to manage, treat, and prevent depression (Lee et al., 2020). It can be delivered individually or in groups, aiding patients in rehabilitation and reducing the likelihood of recurring health problems when managing similar conditions (Chen & Xu, 2021). Psychoeducation also plays a vital role in helping individuals with physical and mental health challenges overcome psychosocial issues through structured health education (Smith et al., 2019).

The primary aim of this study was to implement psychoeducation based on TTM to help participants develop healthy lifestyle strategies aligned with the stages of change. There are five-stage process—precontemplation, contemplation, preparation, action, and maintenance—offers a structured approach that enhances the effectiveness of psychoeducation by helping patients systematically overcome obstacles (Farrona, 2015). Through this framework, patients can better navigate emotional and behavioral challenges associated with depression. In this research, TTM-based psychoeducation addressed key psychological components, such as helping patients identify and describe their emotional states and sources of stress that could trigger depression. This approach also highlighted stressors related to CHD prognosis and the impact of poor management when symptoms arise. It emphasized recognizing depression-related behaviors and provided patients with practical techniques to reduce depressive symptoms.

The effectiveness of these programs is closely tied to the patient's knowledge level. Research indicates that individuals with a greater understanding of their condition and coping strategies are more likely to engage in effective self-management than those with limited knowledge (Lee et al., 2020). Thus, improved knowledge correlates with stronger coping abilities, reinforcing the importance of psychoeducation in managing depression (Wang et al., 2018). Consequently, it is recommended that psychoeducation programs be used in conjunction with other treatment modalities to maximize outcomes.

However, this study faced several limitations. One significant limitation was the absence of a blinded approach, which may have introduced bias. Furthermore, the duration of participant follow-up was relatively short, limiting the ability to assess long-term outcomes. Another constraint was the inability to control for the participants' psychological state during questionnaire completion. Additionally, the researchers could not monitor external sources of information or emotional support the participants may have accessed outside of the study, potentially influencing the results.

Conclusion

The results of this study indicate that psychoeducation based on the Transtheoretical Model (TTM) has a promising effect on reducing depression in individuals with coronary heart disease. TTM-based psychoeducation acknowledges the varying stages of change (precontemplation, contemplation, preparation, action, and maintenance). This framework allows for stage-specific strategies, ensuring that the psychoeducational content is relevant and engaging. For instance, individuals in the precontemplation stage benefit from raising awareness about the link between depression and

CHD, while those in the action or maintenance stages are supported with strategies to sustain positive changes, such as adherence to exercise or stress management routines. Psychoeducation grounded in TTM promotes cognitive restructuring and behavioral activation, which are essential in combating depressive symptoms. Patients are guided to recognize maladaptive thought patterns and replace them with constructive coping mechanisms. This approach empowers individuals to adopt healthier lifestyles, such as regular physical activity, dietary modifications, and stress reduction techniques, which are known to alleviate depression.

The findings suggest that TTM-based psychoeducation is a practical and effective intervention for CHD patients experiencing depression. Healthcare providers should consider incorporating TTM principles into routine care, ensuring that psychoeducational interventions are tailored to the individual's readiness for change. Furthermore, integrating TTM with existing cardiac rehabilitation programs can enhance their effectiveness in addressing mental health challenges. Future research should explore the long-term effects of TTM-based psychoeducation on depression and CHD outcomes, as well as its scalability and adaptability in diverse healthcare settings. Additionally, investigating the integration of digital tools or mobile applications to deliver stage-specific psychoeducation could enhance accessibility and engagement. Given the significant psychological needs of patients with coronary heart disease, it is recommended that such interventions be integrated into standard cardiac care plans and included in medical and nursing education curricula.

Declaration of Interest

The author declares no conflict of interest.

Acknowledgment

The researcher would like to thank STIKep PPNI Jawa Barat for facilitating and funding this research through the university research grants

Funding

This research has received funding from a research grant held by STIKep PPNI Jawa Barat.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Unresponsive feeding practices in overweight and obese suburban preschool-aged children: A qualitative case study

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Abstract

Background: Irresponsible feeding behavior is the cause of being overweight in early childhood.
Purpose: This study aimed to investigate the dietary habits of preschool-aged children residing in a suburban region of Indonesia characterized by a significant prevalence of obesity among children aged five and below.
Methods: This study was a case study design conducted in South Tangerang, Banten Province, Indonesia, involving six moms who had toddlers with overweight to obese nutritional status. The number of six participants was decided after the saturation coding of the fifth participant, and then one more participant was interviewed to ensure that the data was genuinely saturated. The mothers were selected to participate in the study and were interviewed in depth. The researcher also observed the participants' eating behavior. The analytical framework was used in this research, and then the interview transcripts were analyzed using thematic analysis.
Results: The four themes found were 1) The inability to respond to internal cues of satiety, 2) Distraction at mealtimes, 3) Unhealthy food in emotional eating, and 4) Mothers practice persuasive feeding.
Conclusion: The children show unresponsive feeding behavior, which notably contributes to the prevalence of overnutrition during early childhood. Community health professionals should strengthen their efforts to improve feeding behaviors among mothers to address the nutritional status of preschool-aged children.

Keywords: children; feeding behavior; obesity; overweight; preschool-aged

OPEN ACCESS

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 335-344

http://dx.doi.org/10.24198/jkp.v12i3.2524

Article Info

Received : March 12, 2024
Revised : September 22, 2024
Accepted : October 02, 2024
Published : December 25, 2024

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Citation

Astuti, A., Winahyu, K.M., Putri, Z.P., Mulmuang, S.P., & Kartini, K. (2024). Unresponsive feeding practices in overweight and obese suburban preschool-aged children: A qualitative case study. *Jurnal Keperawatan Padjadjaran, 12*(3), 335-344. http://dx.doi.org/10.24198/jkp.v12i3.2524

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Obesity, a multifaceted and increasingly prevalent health problem, is becoming more common among younger age groups, including toddlers and preschool-aged children. The historical factors contributing to obesity in early children include genetic predisposition, socioeconomic situations, and lifestyle choices (Sahoo et al., 2015). However, an additional crucial element in the formation of obesity is feeding practices. (Redsell et al., 2021). A technique that has garnered significant attention is known as "responsive feeding." Responsive feeding is a principle that aims to develop a harmonious caregiving strategy where food is given to a child based on their hunger cues (Black & Aboud, 2011). However, if misunderstood or misused, it can unintentionally worsen the occurrence of obesity.

Proper nutrition has a crucial role in the development of preschool-aged children by promoting physical growth and influencing long-term food habits. Responsive feeding is a belief that preschool-aged children have intrinsic abilities to manage their food intake spontaneously (Pérez-Escamilla et al.,

2021). Hence, the principle of responsive feeding is based on the belief that children can naturally regulate their eating while the caregiver responds to the cue of hunger. It highlighted that responsive feeding is not just a behavior but a structured approach. Furthermore, previous studies highlighted the role of responsive feeding in maintaining adequate eating patterns, reducing obesity, and promoting optimal growth and development in preschool-aged children (Srivastava et al., 2022; Winahyu et al., 2023). Caregivers need to recognize and respond correctly to their children's hunger and satiety cues. Ideally, establishing a positive eating environment is the foundation for developing trust between the children and caregiver while ensuring the child's nutritional requirements are adequately fulfilled.

This study describes responsive feeding as a caregiving approach, including recognizing and responding to preschool-aged children's hunger and satiety cues. However, an unclear definition of responsive feeding could lead to misunderstandings of cues, sociocultural context, or caregiver worries, leading to unresponsive feeding practices (Black & Aboud, 2011). For instance, caregivers tend to give food to a crying child rather than solve the real problems that are causing preschool-aged children distress, such as tiredness, boredom, or discomfort. As time passes, the practice could teach preschool-aged children that there is a link between food and emotional solace, which could lead to huge food consumption without hunger (Jalo et al., 2019).

Besides misinterpreting signals, provided food size and type are important considerations. It is crucial since nutrition status could affect the health status of the children (Rahayuwati et al., 2019). Foods that are high in calories but lacking in nutrients may be favored due to their rapid calming impact (Farrow et al., 2015). Moreover, excessive calorie intake is caused by consuming foods that possess appealing flavors and textures that could temporarily relieve a disturbed toddler (Blaine et al., 2017; Farrow et al., 2015). Furthermore, weight gain in preschool-aged children could be caused by the limited gastric capacity for excessive consumption of energy-dense foods (Vijayvargiya et al., 2020).

One factor linked to the feeding process is the environmental setting. For instance, several distractions, including television or technological devices, could impair the capability to detect satiation signaling. Distracted preschool-aged children influence the ability to identify and communicate the emotion of satiety, leading to unconsciously prolonging feeding sessions beyond their level of fullness. Furthermore, an essential factor to be considered in responsive feeding is the caregivers' connection with food. (Black & Aboud, 2011) Responsive feeding underlines the caregiver's approach to children's hunger and satiety cues, leading to enhanced self-regulate eating and promoting their growth and development. Parents and guardians who employ food as a coping mechanism may inadvertently demonstrate these behaviors in their preschool-aged children. Emotion-driven feeding situations arise from the experiences of caregivers and their association with food.

Therefore, supporting a child's natural ability to control food intake by employing inappropriate responsive feeding could unintentionally create early-onset obesity. Several factors influence deviation from the main principles of responsive feeding, including environmental setting, misinterpretation of cues, the nature and method of food provided, and the attitude of caregivers towards food. As researchers explore deeper into the case studies related to obesity in preschool-aged children, this study aims to examine, understand, and characterize the complex nature of unresponsive feeding in obese preschool-aged children. Unresponsive feeding is a caregiver approach to responding inappropriately to preschool-aged children's hunger and satiety cues during feeding. Recognizing and dealing with unresponsive feeding patterns is crucial, as they have a substantial impact on the emergence of childhood obesity.

Methods

Design

This study selected a case study approach to conducting qualitative research. A case study approach comprehensively explores specific events in a holistic setting. This research examines the emerging young child obesity trend, explicitly focusing on unresponsive feeding behaviors.

Participants and Setting

The setting of this study is South Tangerang City, a suburban area with a high prevalence of obese preschool-aged children. According to Demographic Health and Surveys 2018 in Indonesia, eight percent of children were obese, and 13 of 35 provinces have several obese children above the national average (Ministry of Health Republic of Indonesia, 2018a). One of the cities in Indonesia that has several children with high overweight nutritional status is Tangerang Selatan City (5,89%) (Ministry of Health Republic of Indonesia, 2018a). Based on the report from the Ministry of Health Republic of Indonesia (2018b), Tangerang Selatan City is the city with the highest number of overweight children in Banten Province.

The study's sample or participants were chosen through a purposive sampling technique. The study's inclusion criteria encompass the following: 1) Mothers who have children aged 25-59 months and who are classified as overweight or obese, 2) Mothers who actively engage in the direct feeding of their children, 3) Mothers and their children residing in South Tangerang City, 4) Mothers who possess verbal communication skills, and 5) Mothers who express a willingness to partake in the research study. The research study's exclusion criteria include children receiving direct breast milk consumption.

The initiation of the participant selection process

involved elucidating the research objectives, the established criteria for prospective participants, and an overview of the research procedure, including the protection of participants' rights, as conveyed to the South Tangerang City Health Service. This procedure constitutes a crucial stage in acquiring authorization to conduct research. The researchers assessed the nutritional status of individuals affected by overweight and obesity using data collected from the Community Health Center in the South Tangerang City working area. Upon acquiring data about children who fulfilled the specified inclusion criteria, the researchers established communication with local health cadres, who were identified as crucial individuals for the participants. The researchers sought parental consent to conduct interviews in the presence of health professionals.

The sample size for this study consisted of six individuals. The data collection process involved interviewing five individuals. Data saturation was achieved after these interviews, indicating that no new information or themes emerged. An additional interview was conducted to confirm the data saturation level further. However, no new coding or themes were identified during this interview, confirming that data saturation had been reached.

Ethical consideration

This research upholds ethical principles that protect participants: autonomy, non-maleficence, beneficence, and justice (Streubert & Carpenter, 2011). The researcher maintained the principle of autonomy by conveying complete information related to research, including guarantees of confidentiality. Participants who received complete information then voluntarily marked the informed consent sheet. The researcher practiced non-maleficence by giving participants the freedom to schedule an interview. The researcher applied the principle of beneficence by not forcing the participant to continue the interview if the interest was not from the participant. The researcher established the principle of anonymity by not writing the participant's name for research purposes. The researcher replaced the names not written with the code 'P' followed by a number, indicating the order in which the participants were interviewed. This study has also been granted ethical approval from the Research Ethics Committee of Faculty of Health Science, Universitas Islam Negeri (UIN) Syarif Hidayatullah with number Un.01/F.10/KP.01.1/KE.SP/06.08.017/2023.

Data collection

Data was collected from January to May 2023 at the Community Health Center in the South Tangerang City working area, a suburban area of Indonesia. Data was collected through in-depth interviews directly with each participant, each lasting 40-70 minutes. One researcher conducted interviews to maintain the validity of the research data. The researcher also observed three children who were participating while eating.

The interviewer used an interview guide the researcher had previously prepared based on theories about responsive feeding adapted from Mallan and Miller (2019) and Sall et al. (2020). The researcher used the interview guide for bracketing. Moreover, the researcher wrote field notes when conducting interviews and observations. The expressions of the mothers when interviewed, differences in the information provided between what was conveyed, and the child's behavior during observation were documented in field notes.

Data analysis

The theoretical framework guiding this study is based on Bowlby's Attachment Theory, which outlines a foundational explanation of how a parent-child relationship influences the developmental and emotional state of the child (Ali et al., 2021). Attachment is primarily thought to form during childhood, although it can be established across the lifespan. These behaviors, often called cues, are supposed to be evolutionarily designed to keep caregivers close or facilitate the maintenance of closeness (Flaherty & Sadler, 2011). This framework aligns with the feeding experience as it relates to behaviors that play an essential role in attachment development. Bowlby's theory argues that a caregiver is as essential to a child's emotional health and development as nutrition is to physical health (Benoit, 2004). Positive behaviors that cultivate secure attachments, such as responding to children's hunger cues, are often part of the patterns around frequent feeding (Hodges et al., 2013). While feeding, children may make coordinated offers of interaction with a parent or caregiver, which promotes connection. When caregivers respond to preschool-aged children's signals during nourishing, the children's skills are supported, children are less likely to become overweight, and positive parent-infant intuitions are encouraged (Coyne et al., 2022).

The proposed methodology for data analysis involves employing an inductive thematic analysis approach. According to Yin (2014), one of the analysis methods in a typical multiple-case study is called within-case analysis, typical of thematic analysis between cases or cross-case analysis. In essence, thematic analysis is carried out between cases to provide some background of the case events found. This is in line with the opinion of Creswell and Poth (2018) that researchers focus on several key issues not to generalize between cases but to understand each case through thematic analysis.

The inductive thematic analysis means that the data derives from the theme (Naeem et al., 2023). This approach entails transcribing the interview proceedings, coding the data, and organizing it into categories. Pattern matching was utilized to analyze the case study. It compared the observed pattern (themes) from the interview with the pattern based on existing literature. Through this iterative process, significant themes were identified and derived from

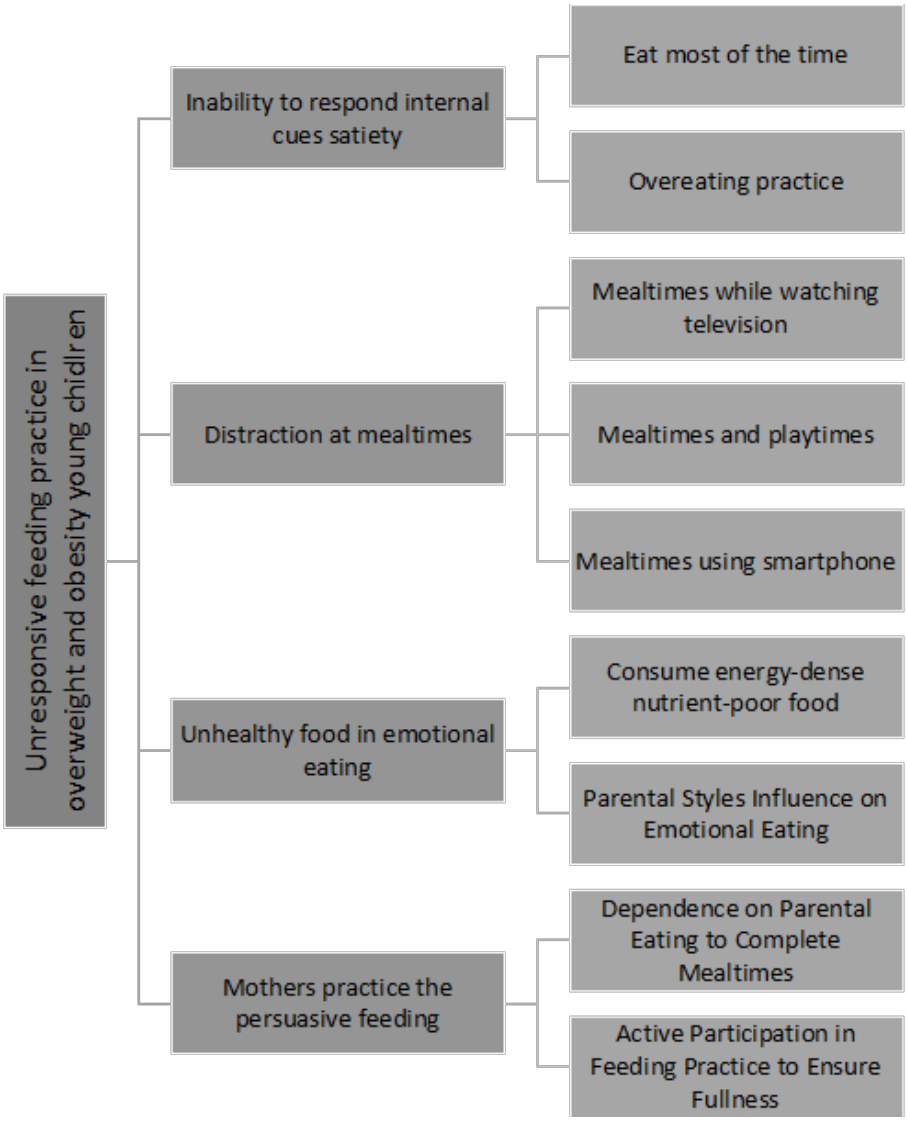

Figure 1. Thematic Tree

the content of the collected interviews. Moreover, a thematic analysis was used since it systematically identifies, analyzes, and reports the data's themes (the pattern) (Braun & Clarke, 2006; Guest et al., 2012). In addition, the in-depth interviews between the interviewers and participants were documented using a voice recorder. Once the interview is completed, the research team transcribes it verbatim. Moreover, a member of the research team proceeded to identify significant statements. The study team, serving as interviewers, transcribed these statements into coding format.

Trustworthiness

The coding that arises will be discussed with another research team member. Subsequently, the interviewer will initiate further communication with the participant to conduct member checking, a process aimed at verifying the alignment between the momentarily generated coding and the information provided by the informant. Upon confirming that the subject's intended meaning has been accurately coded, the interviewer will conclude the session with the participant. Upon discovering novel coding techniques, the interviewer will proceed with the interview process until coding saturation is achieved.

The research team employed cross-checking to determine whether redundant or overlapping coding may be consolidated or merged and subsequently to ascertain whether additional data was incorporated based on the observations. Subsequently, individual study teams proceeded with their respective categorizing processes. Upon the conclusion of the individual categorization procedure, the research team convened to engage in a comprehensive discussion regarding the categories as an integral component of the triangulation process. The process continued by discussing the resulting sub-themes and themes. This study's methodology and theoretical framework are considered a vigorous

structure for analyzing responsive feeding in preschool-aged children.

Results

There are four significant themes resulting from data analysis. By integrating Bowlby's Attachment Theory with inductive thematic analysis, this research offers a comprehensive understanding of the relevant variables affecting responsive feeding practices. Hodges et al. (2013) suggested that forming an attachment bond provides comfort, security, and nourishment. The necessity for comfort and security is evident in the reciprocity exhibited by parents in response to their child's cues. Consequently, the identified themes are anchored in the three fundamental pillars of young child feeding: the child's perception of comfort and security, which is oriented towards meeting their nutritional requirements. These themes are listed in Figure 1. Theme Tree. Six participants were included in this study. The characteristics of the participants are shown in Table 1.

Theme 1. Inability to respond to internal cues, satiety

Subtheme 1. Eat most of the time

Many participants said their children were free to eat at any time. Mothers tend to give food whenever the child asks for food. Children are still given solid food during curfew. Children are not accustomed to recognizing hunger and fullness. The following participant information proves this:

"If he (the toddler) has not fallen asleep by 11 or 10 PM, it is highly likely that he will seek food. The occurrence is irregular, as individuals occasionally request sustenance as their primary concern, prompting my provision of nourishment to them (laughs)" (P5)

" If he's still hungry, he'll ask for more. It's not time to eat yet... There's plenty of food, sis. For example, I don't eat enough. I'm the one who stocks up on food, so that's my fault too because I work and stay away a lot, so I'm used to giving him peace and quiet." "Comfort is with food in the sense that when the mother is working, buying this or eating that, she gets used to it that she will ask for food if the stock of food runs out, she says she wants that." (P4)

Too much food can make a child vomit. Several participants mentioned it. The child does not want to stop eating, and as a result, the child vomits. That's when the child wants to stop eating.

"Yes, he can, if he's full, he can spit out (vomit) everything that's inside what he eats." (P3)

"...I don't want to eat too much because I know that after eating, he always ue (vomits) he always spits out more (food) because when he's finished eating, he moves a lot, and it immediately comes out again (the food)." (P5)

Subtheme 2. Overeating practice

All participants stated that their children ate large amounts, whether of main food or snacks. The child seemed to want to continue eating even when the caregiver tried to stop him.

" don't know how much my child likes to eat. In fact, I want to stop, but he keeps wanting to eat. Sometimes, ma'am, he adds more, and I say, 'That's enough, he's full.' No, Koko (the child) will still want to eat. Keep going. Finally, if it's like that, I'll distract him, let's just go out, we've finished eating. Because of how old he is, he's two years old and he really likes snacking and eating. The milk has started to decrease, well, but when the milk starts to decrease, he eats like crazy. that's how it is, ma'am." (P2)

Some participants stated that every time they ate at a restaurant known for its large portions, their children could finish 1 portion; sometimes even adults don't always finish it. The child's mother did not expect that a child under the age of 5 would be able to eat that much food.

Theme 2. Distraction at mealtimes

Subtheme 2.1. Mealtimes while watching television

Participants frequently mention their enjoyment of eating while watching television. Some participants claimed that if they let their children watch television, they would eat more. Several participants were aware that eating while watching TV was inappropriate. Still, they continued to do so since getting their children to eat was challenging if they were not watching television. This information can be found in the participant statements listed

Table 1. Characteristics of the partisipants (n=6)

Participant's code	Gender	Age (months)	Body weights (kg)	Body heights (cm)	Nutritional status (Weight for height)
P1	Male	59	25.2	105.5	Obese
P2	Male	53	29.1	106.5	Obese
P3	Male	34	17	95	Overweight
P4	Male	44	34	101	Obese
P5	Female	53	22.8	104	Obese
P6	Female	42	25	111	Overweight

below.

"When you eat, talk, or watch TV." That is, in fact, not permitted. You should sit, but that's difficult right now." (P2)

"...if you bribe him while watching TV, he will even charge at him (laughs)." (P5)

Subtheme 2.2. Mealtimes and playtimes

Apart from watching television, playing is another alternative activity for youngsters to do while eating. Some games are played by running around, riding bicycles, taking a kiddie ride (odong-odong), or simply walking around.

"Sometimes we flirt, then ride an odong-odong and (eat) like that..." I used to take it for a walk or ride my bicycle in the mornings. Yes, I rode and was pushed by a bicycle." (P5)

"Invited to play, so he only wanted to eat like that, he played, then he finished like that... While riding a bicycle in that manner." (P6)

Subtheme 2.3. Mealtimes using smartphone

Some participants stated that some of their children would eat only if they turned on the video on their cellphone. Apart from that, sometimes children also play light games on cellphones.

"For example, if I feed him without giving him a cellphone, he doesn't want it. In the end, it's getting worse. For example, if he wants to eat, why does he have to have a cellphone? Previously, he didn't, but now it's like this." (P1)

Theme 3. Unhealthy food in emotional eating

Subtheme 3.1. Consume energy-dense, nutrient-poor food

This subtheme describes the habits of children who often consume processed foods or unhealthy snacks, such as meatballs, dim sum, nuggets, and French fries. Participants also mentioned that children often finish snacks in large quantities at once, indicating an uncontrolled emotional eating pattern.

"In the afternoon, sometimes the dumpling maker passes by. So, I just gave it to you. Yes, if now (1 portion of dumpling) is gone... If it's a snack, this is the most. If it's like this, the best snacks are sausages, nuggets, and potatoes. Two (fried) potatoes were finished (in one meal). In the past, snacks were sometimes potatoes, fried potatoes, he wanted them, he held them himself." (P1)

"His snacks are Yupi and milk. Yes, he buys UHT chocolate milk (Can finish 3 in a day, how many times) the big one (250 ml), right?" (P3).

Subtheme 3.2. Parental Styles Influence on Emotional Eating

This sub-theme focuses on the influence of parents who tend to give food that children want as a form of fulfilling their desires without considering nutritional value. Parents also often choose to provide snacks when children ask, strengthening children's emotional eating patterns.

"For me, I also happen to like cooking. Sometimes, he likes dim sum models, so I make them myself. Then, like fish balls, I make them myself. Then, like chocolate, I give him that occasionally, but only occasionally. I stock food in the refrigerator; suddenly it is finished by itself." (P2) "...like martabak (folded stuffed pancake), then sometimes he costs 15 thousand for meatballs or dim sum (1 portion for an adult) and ends up eating the dim sum himself, ha ha that is why sometimes his father likes to buy him what he wants. If on the street they say I want this and that, oh well, it ends up being eaten like that. So, it is more like what he wants." (P5).

Theme 4. Mothers practice persuasive feeding

Subtheme 4.1. Dependence on Parental Eating to Complete Mealtimes

This subtheme describes the child's dependence on the mother to feed him to ensure the food is finished. The subtheme is reflected in the participant's statement, which indicates that they did not allow the child to eat alone due to concerns that the child might not eat properly or finish the meal.

"Yes, sit down, eat. Later, run again, but yes, 'aa sit', while being told slowly yes, finally sit down like that, but it is not right away, at most how long. There are times when it takes a while before he wants to. Yes, still, going around yes after that, while I feed him yes finished". (P1)

"Because there are different people, so if the child does not want to eat, just let it be. For us, we feed him; we are patient. Suppose we must eat in the morning, afternoon, and evening. For others, if the child does not ask for food, we do not give him food. For us, we must eat; we have to finish it. Eating takes a long time, not fast, unless we feed him quickly because we force him, right?" (P6)

Subtheme 4.2. Active Participation in Feeding Practice to Ensure Fullness

This subtheme describes how mothers directly feed their children to ensure that the child eats according to the portion that the mother expects. Mothers need to feed their children so that food can be consumed optimally, as reflected in the quote that children should be fed to ensure their stomachs are full.

"More like eh I have never let him eat by himself eh more when he eats by himself, it does not go into his mouth, so it is better to feed him so that his stomach is full too." (P5)

Discussion

The study addresses the research objective to investigate, comprehend, and describe the

dynamics and nuances of unresponsive feeding in overweight and preschool-aged children. The present research has discovered and categorized four primary themes, which will be further examined and addressed in the subsequent sections.

The first theme "Inability to respond internal cues satiety" indicates a considerable proportion of parents let their children have the autonomy to determine their mealtimes, providing food upon request, and even during traditionally designated fasting periods, such as curfew hours. Responsive feeding practices encourage the children's ability to respond to internal satiety cues (Miller et al., 2020). In examining the connection between the theoretical framework and the phenomenon of successful parent-child attachment, a previous study indicates that one primary contributing factor is how the parent responds to the cues and signals the child provides (Benoit, 2004). The responsiveness facilitates secure attachment, supporting preschool-aged children to self-regulate food intake and develop healthy eating behaviors. The correct interpretation of the hunger and satiety cues from the child and the correct response from the parent allows preschool-aged children to manage their food intake (Lutter et al., 2021). The absence of mutual interactions between parent and child could lead to disregard for the internal hunger and satiety of the child with growing autonomy and a drive for self-regulation, thus raising the risk of being overweight (Blake-Lamb et al., 2016). Parents who demonstrate a permissive approach to feeding practices are linked with providing comfort to children through food to avoid conflict, leading to ignoring the development of organized eating habits (Kiefner-Burmeister & Hinman, 2020). Significant issues might arise due to employing the approach—for instance, preschool-aged children struggle to manage their food consumption autonomously. Moreover, potentially unstable dietary habits could be influenced by obesity or other metabolic diseases (Pace et al., 2019).

Furthermore, the overeating practice emphasizes the increasing issue of food consumption among children. For instance, children consume significant portions of high calories regularly. Moreover, children's poor inhibitory control and attentional deficit could make them especially drawn to these enticing signals. As such, children with lower emotional self-regulation might demonstrate a reaction to specific cues due to the relationship with the rewarding behavior of consuming delicious food (Yeum et al., 2023). Thus, there is a lack of synchronization between food and psychological signs, wherein preschool-aged children may struggle or despair in reacting to satiety signals (Redsell et al., 2021). Some situations could accidentally facilitate the feeding practice trend of caregivers. For instance, provide full-of-energy snacks, large amounts of food portions, or cultural beliefs that link large quantities of food with better nutrition (Redsell et al., 2021).

Moreover, the second theme, "Distraction at mealtimes," showed that several activities, including watching TV or playing while eating, could lead to unmindful ingestion and a lack of attention to hunger cues (Khot et al., 2022). As Adise et al. (2018) stated that external food stimuli might influence high delightful food consumption as preschool-aged children create reward-based responses. Distraction hinders the ability of people to perceive fullness appropriately, leading to huge food consumption and risk of obesity (Trofholz et al., 2019). Parents' media utilization while feeding their children is a prevalent practice that constitutes a fundamental aspect of the typical infant's daily routine during the initial year of their life. Nevertheless, there is considerable variation in feeding practices (Coyne et al., 2022). The findings emphasize the importance of mindful eating habits and a regular eating schedule in reducing massive food consumption.

For the third theme, "Unhealthy food in emotional eating," this study's findings have some consequences beyond the direct health outcomes of preschool-aged children. As such, feeding practice could influence long-term maladaptive eating habits. This finding is consistent with Bowlby's theory, which states that minimal interaction between children and parents can trigger children's impulsive, emotional behavior, particularly concerning food portions (Ali et al., 2021; Benoit, 2004). Moreover, large amounts of food consumption, exceptionally high calories but low nutrients, might influence the development of obesity in preschool-aged children, leading to other metabolic and psychological problems (Calcaterra et al., 2023; Trofholz et al., 2019). For instance, emotional eating, in which food is consumed to console or calm people rather than to give satiety, could manifest in overeating (Shireen et al., 2022). Emotional eating is characterized by the consumption of less healthy and energy-dense snacks. Providing more nutritious foods at home could prevent children from bingeing on emotionally unhealthy foods, instead supporting children to eat more nutritiously (Haycraft, 2020).

The fourth theme is "Mothers are practicing persuasive feeding." Notably, the development of self-regulated eating could be influenced by regular direct feeding practices in preschool-aged children (Wood et al., 2020). Most preschool-aged children have acquired motor skills to feed themselves. This stage of development is crucial since it facilitates the journey of independence. Moreover, self-regulation ability in food consumption could be caused by their caregivers' persistence in food provision, hindering their ability to differentiate between hunger and satiety signals (Redsell et al., 2021; Wood et al., 2020). While the caregiver tends to oversee food choices and reluctance to adopt responsive feeding practices, it will lead to reduced children's self-control and capacity to eat independently. Efforts to enhance children's autonomy in feeding themselves are notable for fostering favorable attitudes toward nutritious consumption and promoting children's self-reliance (Bergamini et al., 2022). Early maternal

encouragement to eat (persuasive feeding) was positively associated with a child's enjoyment of food and a 'good' appetite. In contrast, it was prospectively associated with children's tendency to overeat one year later (Miller et al., 2020). Thus, feeding practice by caregivers for children over three years needs to be explored more since it could restrict the development of their skills, independence, and healthy food awareness.

The consequences for nursing can be derived from a qualitative study on unresponsive feeding patterns. Nurses can utilize this knowledge to augment patient education, providing guidance to parents regarding the identification and appropriate response to their child's hunger signals and emphasizing the significance of adhering to scheduled mealtimes. Furthermore, these insights might be integrated into developmental monitoring practices to facilitate the acquisition of appropriate self-feeding abilities in youngsters. Nurses can provide nutrition counseling that effectively targets the issue of portion sizes and snack quality, hence mitigating the development of distracted eating behaviors. This study highlights the crucial significance of nurses in preventing obesity by emphasizing the early detection of children at risk, fostering interdisciplinary cooperation to develop comprehensive treatment strategies, and advocating for legislation that encourages healthy eating habits. Furthermore, nurses can utilize this knowledge to enhance the effectiveness of screening tools for assessing feeding behaviors and guide families toward suitable resources, thus making a valuable contribution to the broader endeavor of promoting healthier eating settings and enhancing pediatric health outcomes. Promotion and education related to feeding practices and exceptionally responsive feeding need to be intensified among parents in urban societies to avoid overnutrition in preschool-aged children.

The current study presents valuable perspectives and a comprehensive comprehension of unresponsive feeding behaviors. However, it is crucial to realize the limits related to generalizability, potential biases, and the difficulties in replicating the findings. The themes identified in this study serve as a significant basis for future research endeavors. One potential avenue for additional investigation could be mixed-methods studies that incorporate quantitative measures to solve certain constraints that have been observed.

Conclusions

This study investigated the dynamics and nuances of unresponsive feeding in overweight and obese preschool-aged children, identifying four primary themes. First, the inability to respond to internal cues of satiety. Many parents allow preschool-aged children to determine mealtimes, leading to irregular eating patterns and potential overfeeding. Second, Distraction at mealtimes, such as TV or play during meals result in unmindful eating and excessive food consumption. Third, unhealthy food in emotional eating, where food is used to console rather than satisfy hunger, can lead to obesity and other health issues. Fourth, mothers practice persuasive feeding. The practice could hinder children's ability to self-regulate their food intake. Responsive feeding practices generally encourage children to recognize and respond to internal hunger and satiety cues, promoting healthy eating behaviors. Addressing distractions, emotional eating, and persuasive feeding practices is essential for reducing obesity risk in children. Future studies must focus on interventions that help parents adopt responsive feeding practices to improve children's health outcomes.

Declaration of Interest

The author declares no conflict of interest in this research.

Acknowledgment

The authors would like to thank the extended family of the Faculty of Health Sciences, Universitas Muhammadiyah Tangerang for their support towards the achievement of this research grant.

Funding

The authors would like to express gratitude to Muhammadiyah Research Grant (RisetMU) for providing support to facilitate the study project.

Data Availability

None

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Thrombosis of the inferior vena cava and acute kidney injury in dengue shock syndrome: A rare case with unique nursing challenges

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Abstract

Background: Dengue Shock Syndrome (DSS) is a severe complication of dengue fever that can lead to life-threatening conditions such as thrombosis and acute kidney injury (AKI). These rare complications highlight the importance of early recognition and multidisciplinary management to improve clinical outcomes.
Purpose: This case study aims to report and discuss the clinical management and outcomes of a patient with DSS complicated by inferior vena cava thrombosis and AKI, focusing on nursing interventions and therapeutic strategies.
Methods: This manuscript reports a case by utilizing the patient's baseline data, clinical progression, and treatment outcomes. A middle-aged male patient presented to the emergency department with high fever, shock, and signs of plasma leakage. Laboratory and imaging findings confirmed DSS with AKI and inferior vena cava thrombosis. The patient received fluid resuscitation, inotropic support, anticoagulation therapy, and multidisciplinary care, including close nursing monitoring.
Results: After seven days of hospitalization, the patient showed significant improvement, with resolution of shock, normalization of platelet count, and recovery of renal function. Comprehensive nursing care, including vital sign monitoring, medication management, and patient education, played a pivotal role in the recovery process. At a follow-up visit on day 12, the patient demonstrated full recovery with no complications.
Conclusion: This case highlights the importance of early diagnosis and a multidisciplinary approach, including cautious anticoagulation therapy, to effectively manage DSS with thrombosis and AKI. Integrating nursing interventions and strict monitoring were crucial to achieving positive clinical outcomes. This report provides valuable insights into managing similar cases in endemic areas.

Keywords: dengue shock syndrome; thrombosis; acute kidney injury; inferior vena cava; anticoagulants

Jurnal Keperawatan Padjadjaran (JKP)

Volume 12(3), 345-350

http://dx.doi.org/10.24198/jkp.v12i3.2641

Article Info

Received : November 10, 2024
Revised : December 27, 2024
Accepted : December 29, 2024
Published : December 30, 2024

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Citation

Prabowo, N. A., Sari, Y., Putri, D. P., Habibah, S. N., Rachmah, A., & Hartono, H. (2024). Thrombosis of the inferior vena cava and acute kidney injury in dengue shock syndrome: A rare case with unique nursing challenges . *Jurnal Keperawatan Padjadjaran, 12*(3), 345-350. http://dx.doi.org/10.24198/jkp.v12i3.2641

Website

http://jkp.fkep.unpad.ac.id/index.php/jkp

E-ISSN: 2442-7276
P-ISSN: 2338-5324

Introduction

Dengue shock syndrome is a severe form of dengue infection caused by the dengue virus transmission through an infected Aedes mosquito. Each year, there are an estimated 50 to 100 million cases of dengue fever, as reported by the World Health Organization (WHO). Out of these cases, 500,000 go on to develop DHF, leading to 22,000 deaths, mostly children (Sanyaolu, 2017). Indonesia ranked first in deaths due to DHF with 22.55 per 100,000 person-years (Harapan et al.., 2019). Due to the mortality and endemic that occurs, it is important to understand the complications of infection with dengue fever,

including shock, acute renal failure and thrombotic events. Dengue dengue has been associated with glomerular damage and the presence of antigens in tubular epithelial cells. Epidemiological data show that AKI develops in about 13.3% of cases of dengue fever (Khalil et al.., 2012; Oliveira & Burdmann, 2015).

Thrombosis of the inferior vena cava (IVC) is a poorly understood condition with many clinical manifestations. IVC thrombosis is a severe condition with a high mortality rate. Vena cava thrombosis (presumptive IVCT) accounted for just 1.3 per cent of all hospitalized patients diagnosed with venous thrombosis (Lin et al.., 2021). Virchow's Triad can explain the mechanism that leads to IVC thrombosis. This Triad comprises blood flow stasis, endothelial damage, and hypercoagulability (Hollingsworth & Mead, 2022).

In DHF, plasma leakage occurs. Release of chemical cascades during infection can cause activation and contraction of actin filaments of endothelial cell capillaries. The condition make the linkage proteins between endothelial cells enter the cell widen the gap between cells, and then cause plasma leakage. The combination of these mechanisms causes dengue shock syndrome (Ministry of Health Indonesia, 2021). Dengue shock syndrome, accompanied by acute kidney injury and thrombus in the inferior vena cava, is fatal. The pathophysiology of AKI in dengue involves a complex interplay of direct viral effects, hemodynamic changes, and secondary complications such as rhabdomyolysis. The resultant renal failure can be fatal due to its association with severe disease manifestations and the complications that arise from impaired renal function. Patients with acute kidney injury (AKI) may experience exacerbated risks due to altered pharmacokinetics and the potential for increased bleeding complications. Management is tricky because anticoagulants such as heparin can induce bleeding and thrombocytopenia. Anticoagulants, such as low-molecular-weight heparin (LMWH) or unfractionated heparin, are often indicated in patients with confirmed IVC thrombosis. However, the decision to initiate anticoagulation must be weighed against the risk of bleeding, particularly in patients with severe thrombocytopenia. Here, we describe our cases and the successful management of this patient with the administration of heparin and strict monitoring of signs of bleeding. The role played by health professionals, especially nurses, in the early diagnosis, intensive surveillance and management of these challenging complications in cases such as Dengue Shock Syndrome (DSS) is crucial. They are responsible for vital sign monitoring and clinical decision-making through communication with other disciplines. They also have an essential role in maintaining fluid, watching for signs of bleeding, and medication administration in therapy success.

In addition, the biopsychosocial implications of nursing practice in DSS cases need to be considered. In addition to establishing effective health systems, continuous education and training for healthcare personnel are also required to respond to the challenges posed by tropical diseases, especially DSS, in areas where it is endemic, like Indonesia. However, increasing the abilities of healthcare providers to identify and mitigate DSS complications like inferior vena cava thrombosis and acute kidney injury will substantially improve care quality and clinical outcomes. The purpose of this case report is to describe and discuss an uncommon but essential presentation of dengue shock syndrome complicated by inferior vena cava thrombosis and acute renal failure. We hope this report can provide documentation of these severe complications, increase diagnostic awareness, improve treatment strategies and help guide clinical outcomes so that future management can be established with data from similar cases.

Ethical consideration

This case report was conducted with the patient's informed consent, ensuring that the patient understood the purpose and scope of sharing medical information for educational and research purposes. The report maintains the anonymity and confidentiality of the patient's data. Institutional guidelines were followed to ensure ethical compliance in reporting this case, and no harm was posed to the patient during data collection and publication. The study adhered to the ethical principles outlined in the Declaration of Helsinki regarding medical research involving human subjects.

Case Presentation

A middle-aged male patient presented to the emergency department with complaints of high fever, weakness, nausea, vomiting, and epigastric pain that had persisted for five days. He also reported reduced urination, with no urination in the last 10 hours. Physical examination revealed hypotension (blood pressure: 80/50 mmHg), tachycardia (pulse: 110 beats/min), respiratory rate of 24 breaths/min, a temperature of 38°C, petechiae on the hands and feet, mild hepatomegaly, cold extremities, and epigastric tenderness.

Initial laboratory tests showed thrombocytopenia (80 × 10^3/μL), hematocrit of 30%, leukocytosis (13.51 × 10^3/μL), elevated creatinine (3.2 mg/dL), and urea (113 mg/dL). Dengue serology was positive for IgM and IgG, confirming dengue infection. Based on clinical and laboratory findings, the patient was diagnosed with dengue shock syndrome (DSS) complicated by acute kidney injury (AKI) and inferior vena cava thrombosis.

The patient was admitted to the intensive care unit and received immediate fluid resuscitation with Ringer's lactate, followed by inotropic support (epinephrine) due to persistent shock. Additional therapies included antibiotics (ceftriaxone), proton

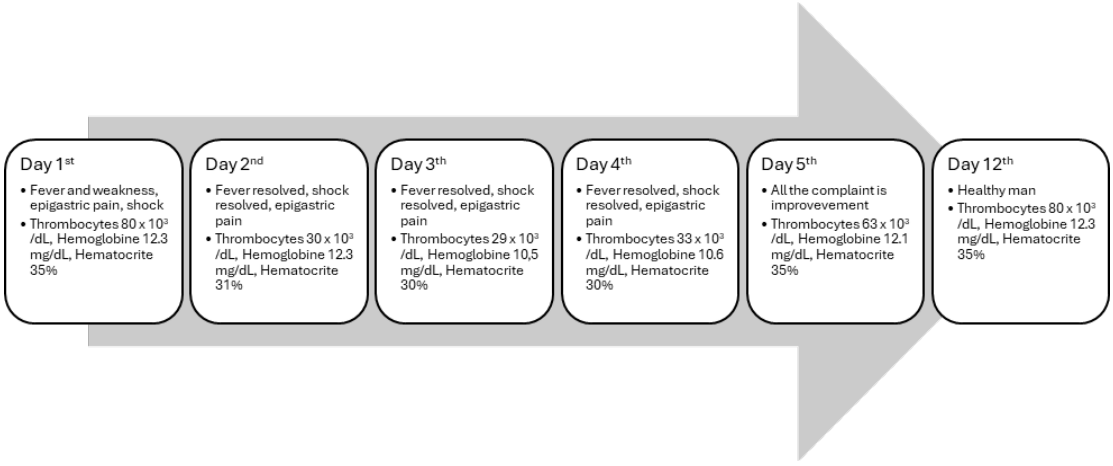

Figure 1. Scheme of the patient's disease course during the stay in the hospital. On the fifth day of treatment, the patient is discharged, and on the 12th day, the patient makes a polyclinic visit with data on improvements in clinical and laboratory conditions

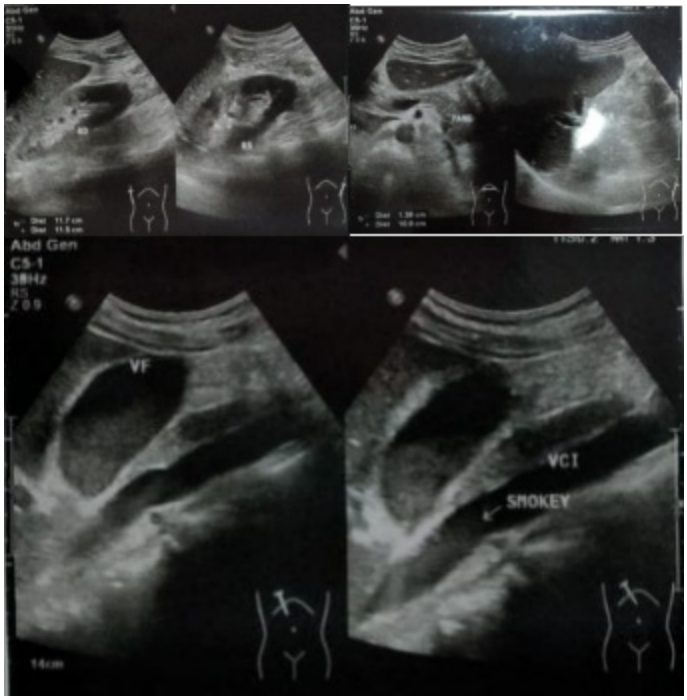

Figure 2. Abdominal ultrasonography of the patient shows that the right kidney (RD) and left kidney (RS) size and normal eco structure, and the boundaries of the cortex and medulla are clear. An isolusen image in the veena cava inferior with a smokey appearance that indicates a picture of the vena cava inferior thrombus

pump inhibitors (omeprazole), methylprednisolone, anticoagulation with unfractionated heparin, and supportive measures such as sucralfate and ondansetron.

On the second day of hospitalization, ultrasound imaging revealed normal kidney structure but showed a smokey appearance in the inferior vena cava, indicative of thrombosis. Over the next few days, the patient's condition gradually stabilized. Fever resolved, platelet counts improved, and renal function began to normalize. By the fifth day, his platelet count increased to 33 × 10^3/μL, and his hematocrit stabilized at 30%.

Further evaluation on the seventh day showed that the initial shock was resolved, and the patient's general condition, vital signs, and platelet levels improved. On the last day of treatment, platelet levels were 63 x 103 per dL and 35% hematocrit, as illustrated in Figure 1. On the seventh day, the patient was discharged in a stable condition. He was prescribed warfarin (2 mg/day) for continued anticoagulation therapy and was advised to follow up for monitoring. At a follow-up visit on the twelfth day, the patient reported no complaints, and laboratory tests showed normal platelet (434 × 10^3/μL) and creatinine levels (0.75 mg/dL), confirming

full recovery.

Abdominal pain in patients with dengue infection gives rise to many possible causes. In the anamnesis, there is no previous history of gastritis. Although most causes of abdominal pain in dengue are due to the effect of dr hepatomegaly, there are still many other causes, such as cholecystitis or pancreatitis. Ultrasonography in the abdomen was performed to exclude it. Therefore, it is necessary to have supporting examinations for a decrease in the frequency of urination, and an increase in creatinine can signal the presence of acute renal failure. For further reasoning, an abdominal ultrasound examination is performed to see abdominal to see if there is kidney damage or not, and a re-creatinine test is after the patient recovers. Ultrasonography examination of the abdomen shows a picture of the presence of the right kidney, and the left kidney is still normal. There is no visible picture of obstruction in the kidney. The kidney's normal size and structure and the renal cord's boundaries are still clear. Another image found is an isolated image of the inferior vena cava and a smokey appearance image that supports the presence of inferior vena cava thrombus, as in Figure 2.

Fever with thrombocytopenia, shock conditions, plasma signs of leakage such as increased hematocrit, and positive dengue antibody examination indicate that dengue shock syndrome occurs in the patient. The abdominal ultrasound results show the presence of inferior thrombus vena cava. Angiography examination cannot be done because of contraindications such as acute renal failure. The subsequent investigation was the D Dimer examination obtained a result of D Dimer 1567 ng/mL (normal levels <500 ng / mL). These developments in the diagnosis of inferior thrombus vena cava. Creatinine re-examination becomes normal, and kidney ultrasound results are obtained by normal kidneys, thus supporting the diagnosis of acute renal failure.

Patients get dengue treatment with warning signs guidelines (Ministry of Health Indonesia, 2021). The therapy is administering ringer lactate fluid seven ccs per kg body weight (kgBW) in 1 hour. The evaluation shows that the patient is still in a state of shock. After that, ringer lactate 30 ccs / kgBW is carried out in 30 minutes. The condition was still so, so the epinephrine inotropic was given at 0.1 mcg per kgBW per minute. Another drug administration carried out is ceftriaxone antibiotic 2 g per day i.v. (intravenously), omeprazole 40 mg per 12 hours i.v., sucralfate ten cc per 8 hours orally, ondansetron 8 mg per 8 hours i.v., Heparin 80 unit per B.W and 18 unit per kgBW per hour methylprednisolone 62.5 mg/dL. After discharge, the patient takes warfarin 2 mg per day.

Nurses played a vital role during the treatment in managing the patient's care and facilitating recovery. They continuously monitored the patient's vital signs, including blood pressure, heart rate, respiratory rate, and temperature, to detect any signs of hemodynamic instability or worsening shock. Nurses ensured the accurate administration of intravenous fluids, such as Ringer's lactate, to manage shock and address dehydration due to plasma leakage. They were responsible for administering all prescribed medications, including epinephrine, ceftriaxone, omeprazole, heparin, methylprednisolone, and other supportive therapies, while closely monitoring for side effects and therapeutic responses. Given the risk of bleeding associated with thrombocytopenia and anticoagulation treatment, nurses carefully observed for signs of bleeding, such as bruising or petechiae. They ensured the safe administration of heparin and, later, warfarin. They also provided emotional support to the patient and family, addressing their concerns and explaining the care plan to enhance understanding and compliance. Additionally, nurses ensured the patient maintained proper nutrition and hydration, adjusting dietary recommendations as the patient's condition improved. They served as a crucial link between the patient and the medical team, promptly reporting changes in the patient's condition to facilitate timely adjustments to the treatment plan. Toward the end of the hospital stay, nurses educated the patient about the safe use of warfarin, including dietary considerations and the importance of follow-up visits, while ensuring the patient understood their discharge plan. Their comprehensive care and attention to detail significantly contributed to the patient's recovery.

Results

After one week of hospitalization, the patient was discharged. One week later, the patient visits the outpatient polyclinic. At the examination of the visit, the patient did not feel any complaints. In the laboratory, tests obtained normal hematocrit (31%), normal platelets (434 x 103 per dL), and normal creatinine levels (0.75 mg / dL).

During the five days of hospitalization, nursing care was pivotal in the patient's recovery. Nurses continuously monitored vital signs, including blood pressure, pulse, respiratory rate, and temperature, to detect any signs of hemodynamic instability or worsening shock. They administered intravenous fluids such as Ringer's lactate to manage dehydration and plasma leakage and ensured precise delivery of medications, including epinephrine, ceftriaxone, omeprazole, methylprednisolone, and anticoagulants like heparin.

Due to the patient's thrombocytopenic state, close observation for bleeding complications, such as bruising or petechiae, was maintained. Nurses provided timely feedback to the medical team, enabling adjustments to the treatment plan when necessary. They also supported the patient emotionally, offering reassurance and educating him about the disease and its treatment. By the fifth day, the patient showed significant improvement, with resolution of shock, stabilization of hematocrit

levels, and an increase in platelet count to 33 × 10^3/µL.

On the seventh day, the patient was discharged in stable condition with clear instructions for home care, including warfarin management and follow-up visits. Nursing interventions were instrumental in ensuring the patient's smooth recovery and preparedness for discharge.

Discussion

Various mechanisms have been suggested to elucidate the pathogenesis of renal impairment in dengue fever. In patients with this condition, the capillaries leak, and so some fluid seeps from the bloodstream, leading to shock with diminished renal perfusion and acute tubular necrosis. Severe hypotension, hemolysis, rhabdomyolysis, and shock have all been identified as immediate contributory causes of AKI in dengue from the case series cited above. In addition, cases of AKI have been seen that need to be clearly explained (Khalil et al.., 2012; Oliveira & Burdmann, 2015).

There are several mechanisms through which dengue could result in thrombotic events. The dengue virus disrupts this anti-coagulation pathway by downregulating the formation of the thrombomodulin-thrombin-protein C complex. It thereby leads to impaired production of activated protein C, which, together with reduced concentrations in proteins C and S as well as antithrombin III, has been associated with DSS featuring capillary leakage. Although thrombotic complications may occur at all levels of dengue severity from DF to DSS, they are more commonly associated with DSS cases. Long-lasting shock in Dengue Shock Syndrome (DSS) may induce and accelerate the onset of disseminated intravascular coagulation (DIC) or microthrombi. These are relatively common conditions, but they have not usually been associated with thrombosis of larger vessels. But the more severe the dengue infection, the greater its association with thrombotic events. Furthermore, the dengue virus upregulates thrombomodulin expression in endothelial cells and activates them into a prothrombotic state (Azeredo et al.., 2015; Nugraha et al.., 2022).

Reports of dengue cases with venous thrombosis have been previously reported in the femoral vein. This case has a therapeutic dilemma due to severe thrombocytopenia 12.000/dL and thrombus in the iliofemoral veins. After administering unfractionated heparin at a dose of 500 IU per hour and re-examining the next day, platelets increased to 58.000/dL (Ranasinghe et al.., 2020). Other case reports mention that dengue coincides with portal vein thrombosis, in which 7000/dL close thrombocytopenia occurs. Heparin's low molecular content in these patients is pronounced after platelet levels above 70000/dL (Gonzalez et al.., 2022). Da Costa et al. reported that 5.4% of thrombotic events in critically ill dengue cases include four DVTs and one mesenteric vein thrombosis (da Costa Campos et al.., 2012). Other reports showed the dengue complexity as in patients with dengue shock syndrome (DSS), acute liver failure, kidney injury, infective endocarditis and deep vein thrombosis were present. The management in these cases entailed 60 mg of enoxaparin subcutaneously every 12 hours along with 5 mg of warfarin daily. The warfarin dose was titrated to 6 mg daily to achieve an international normalized ratio (INR) between 2 and 3. When the INR was in range, enoxaparin was stopped, and warfarin continued for 3 months (Samarasekara & Munasinghe, 2018).

This Case emphasizes how healthcare professionals, particularly nurses, should be alert to such serious sequelae of DSS as inferior vena cava thrombosis and acute kidney injury. Nurses are the first line of defence for monitoring patient status, initiating timely interventions, and modifying care plans to meet the constantly changing needs of critically ill patients. During the treatment, the nurses played a crucial role in ensuring the success of the therapy by closely monitoring for signs of bleeding, a critical risk in managing dengue shock syndrome with thrombocytopenia and anticoagulation therapy. They carefully observed for bruising, petechiae, or other indications of haemorrhage while ensuring precise administration of anticoagulants like heparin and warfarin. Their vigilance and timely reporting of any changes to the medical team allowed for prompt adjustments in treatment, ultimately preventing complications and supporting the patient's recovery. This meticulous attention to bleeding risk was key to the patient's successful outcome.

Conclusions

The successful management of this case highlights the importance of early recognition of complications, timely administration of fluid resuscitation and inotropic support, and the cautious use of anticoagulants under close monitoring for bleeding, emphasizing a multidisciplinary approach to ensure optimal outcomes in severe dengue shock syndrome. Case in point is with the right treatment, the patient can recover from emergency as we see in this patient. The use of heparin in thrombocytopenic conditions represents a challenging yet essential intervention, requiring meticulous monitoring to balance the benefits of preventing thrombosis against the risks of bleeding.

Declaration of Interest

The authors declare no conflicts of interest related to this case report.

Acknowledgment

The authors would like to express their gratitude to the medical staff of UNS University Hospital, who have helped directly and indirectly manage this patient and provide the best possible service during treatment.

Funding

This study was funded by Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM) Universitas Sebelas Maret (UNS), contract no 196.2/UN27. 22/ PT.01. 03/2024.

Data Availability

The data supporting this case report's findings are included in the document. All other data will be available upon reasonable request to the correspondent author within patient confidentiality standards.

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