

Digital Health Intervention of Healthy Indonesia Program with Family Approach: Does it Work?

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ABSTRACT

Background: The digital age holds out the promise of innovative technology. Along with the development of technology, healthcare management has been changing. Indonesia was implementing The Healthy Indonesia Program with a Family Approach (PISPK) that aimed at increasing access of families and their members to comprehensive health services, promotive, preventive, curative, and basic rehabilitative. Every household data related to 12 health indicators was digitally recorded and analyzed on a specific website to provide a database for determining suitable health and empowerment programs according to health problems experienced by the community. **Objectives:** This study aimed to assess the performance of The Healthy Indonesia Program with a Family Approach website in East Java Province, Indonesia. **Method:** The study design is cross-sectional with a descriptive exploratory study. Data was collected through an online survey utilizing Google Forms service and analyzed descriptively with a thematic content approach. **Result:** Respondents of this research involving 232 health workers from community health centers in East Java Province that running Healthy Indonesia with a Family Approach. This research result found that the PIS-PK website met the criteria of a digital health monitoring tool recommended by WHO with the score of Functionality (70.54%), Stability (62.89%), Fidelity (58.17%), Quality (73.81%), Implementation (77.41%), and Judgement (67.92%). **Conclusion:** Healthy Indonesia with Family Approach Website was beneficiary to be used as the baseline in designing and developing a community empowerment program targeting specific indicators at the community health center level. However, several issues were noticed including, stability, fidelity, privacy, and data governance that should immediately take into account to improve the website's performance.

Keyword: Digital, Empowerment, Health, Innovative, Monitoring.

INTRODUCTION

In the recent century, digital health intervention could connect healthcare systems and deliver health services to promote health outcomes for people in easy manner (Wootton and Bonnardot, 2015) The digital age holds out the promise of innovative technology and business models. Along with the development of technology and the competition in the business environment managing health care has been changing (Deloitte Indonesia, 2019). Digital health transformation is a critical agenda to encourage the realization of a Healthy Indonesia through the use of data and technology.

The Healthy Indonesia Program with a Family Approach (PISPK) is implemented by health centers by conducting family visits in their working areas (Indonesia Ministry of Health, 2016). This program

aimed at increasing access of families and their members to comprehensive health services (promotive, preventive, curative, and basic rehabilitative). The implementation of PISPK is guided by Ministry of Health Decree No. 39 of 2016, carried out in stages starting in selected areas (9 provinces). In 2017, the target achievement was accelerated so that in 2019 all provinces, districts, or cities reached 9754 health centers.

After the family visit, the health workers then record the family health status based on 12 indicators including family planning, mother giving birth in a health facility, complete basic immunization, exclusive breast milk, growth monitoring for toddlers, hypertension, tuberculosis, severe mental disorders, the National Health Insurance participation, smoking, and access to clean water, and sanitary latrines to determine their health status namely Healthy Family

(>0.8), Pre-Healthy Family (0.5 - 0.8), and Unhealthy Family (<0.5).

All of the recorded data should be input on The Healthy Indonesia Program with a Family Approach (PIS-PK) website. The use of the website helps monitor the family's health status and health problems faced by specific areas, families, and even individuals. As the health problem noticed by the health center, it will assist the health center and stakeholders to scheme adequate intervention to eliminate the problem. Health workers are also able to revise, add, and remove if there is an update from a family member such as newborns, deaths, and health status changes. The change in the indicators will also affect their health status. Prior studies reported the obstacles faced by health centers during the implementation of the PIS-PK (Novianti *et al.*, 2020; Trisna, 2021; Marta Nia, 2022) but limited information was available about the utility of the website of PIS-PK. This study aimed to assess the performance of The Healthy Indonesia Program with a Family Approach website in East Java Province, Indonesia.

METHODS

The study design is cross-sectional with a descriptive exploratory study. Data was collected through an online survey utilizing Google Forms service and analyzed descriptively with a thematic content approach. The total respondent involved in this study was 232 respondents from community health centers in East Java Province, Indonesia. The monitoring component was assessed following the guideline of WHO, namely functionality, stability, fidelity, and quality (WHO, 2016b). The researcher then included two more components implementation and judgment to assess the attitude and practice of the respondent related to the website. This study obtained ethical exemption from the Faculty of Public Health University of Jember No 283/KEPK/FKM-UNEJ/I/2023 on January 3rd, 2023.

RESULTS

Table 1. Respondent Characteristics

Characteristics of Respondent	n	%
Account Type		
Head of Health Center	11	4.74%
Admin of Health Center	149	64.22%
Supervisor	23	9.91%
Surveyor	49	21.12%
Age of Respondent		
21-30	71	30.60%
31-40	119	51.29%
41-50	34	14.66%
51-60	8	3.45%
Health Center Location		
Urban	47	20.26%
Rural	180	77.59%
Remote	5	2.16%
Data Collection Status		
Total Coverage	144	62.07%
Partial Coverage	88	37.93%
Education Level		
Diploma	102	43.97%
Bachelor	118	50.86%
Graduate	12	5.17%
Sex		

Characteristics of Respondent	n	%
Male	54	23.28%
Female	178	76.72%
Profession in Health Center		
Medical Doctor	7	3.02%
Public Health	81	34.91%
Midwifery	49	21.12%
Nurse	89	38.36%
Other Health Profession	4	1.72%
Non-Health Profession	2	0.86%

According to the table 1, most of the respondents were the admin of the website in the community health center (64.22%) while the least was head of health center (4.74%). The majority of respondents were in the thirties age group (51.29%) and the least was in the fifties (3.45%). As for the location of the health center, the majority of respondents were serving in rural areas (77.59%) and the least was serving in remote areas (2.16%). The data collection status was mostly

already total coverage or already survey all of the families in health center work areas (62.07%) and the rest still partially surveyed the family. Most of the respondents already hold a bachelor's degree (50.86%), followed by diplomas (43.97%), and graduate degrees (5.17%). The majority of the respondents originally work as nurses in health centers (38.34%), followed by public health practitioners (34.91%), and the least was from non-health-related professions (0.86%).

Table 2. Monitoring Components of Digital Health Intervention

Aspect of Monitoring	Score
Functionality	71.54
Stability	62.89
Fidelity	58.17
Quality	73.81
Implementation	77.61
Judgment	67.92



Figure 1. Monitoring Components of Digital Health Intervention

The score of each monitoring component was categorized into four categories following the quartile, worst, bad, enough, and good. According to Table 1, the functionality score of the website is in the third quartile (71.54) categorized that the website has enough function. The stability score was 62.89, categorized as stable enough. The fidelity score of the website was the lowest compared to other components with only 58.17 but it was categorized as enough. The quality of the website was categorized as enough (73.81), Implementation was good (77.61), and the judgment of the website from all of the respondents was categorized as enough (67.92).

Functionality

Functionality means the ability of digital health to perform the intended intervention (WHO, 2016b). The functionality of the PIS-PK website was assessed to measure whether the website could provide the intended intervention design including the user convenience, provide the 12 indicators result, provide a health status map, and provide the target data for specific health problems.

User convenience is one of the main functions that should be taken into account to develop digital health (Matenga-Ikihele *et al.*, 2022). The convenience helps the user to optimize the utility of digital health tools. The PIS-PK website provides 12 indicators result that could project the family status in a specific area, it is really helpful for the health center to design and consider health efforts that should be enforced to solve the health problem faced by the community. Even so, some inconveniences were also stated by the respondents.

"... It is an inconvenience because it is a website, to open on the mobile a bit stressful due to the screen display being a bit difficult to read compared to the mobile application."

"Health status map is perfectly displayed but the data used to create the map isn't the updated data."

"The website needs menu improvement, it is difficult to track people

with the same name and address."

"The analysis function is great but it is complicated for me"

Stability

The stability of digital health means the ability of digital health to perform consistently during use in normal conditions (WHO, 2016b). The research result reported that the stability score was 62.89 because the website was reported to have several problems. The data was not updated regularly and the website was reported facing several times errors or downtimes. Technical stability is one of the components that should be taking consideration to make sure that digital health tools are performed as intended especially in clinical effectiveness (Mathews *et al.*, 2019)

"The error almost occurred every month, it is such a wasting time"

"I already entry some of family data but it got lost without notice and cannot be tracked"

"Too much time spent for maintenance, I cannot open the website when I need to."

Fidelity

The fidelity of digital health means the ability of digital health to deliver the intended goal (WHO, 2016b). High fidelity of digital health tools is critical to generate and providing effective evidence (Guo *et al.*, 2020). However, the fidelity score of the PIS-PK website was the lowest among the other monitoring component at 58.17. It was reported that the user faced several problems while using the website, from the data changing after entry, to sudden errors during entry data, and another application was needed to assist the analysis.

"I got really frustrated with the sudden error"

"I need to use INARATA to analyze the updated data, the website was not updated regularly"

"I entry almost five hundred family data but one of the indicators is suddenly changing from

what I had an entry, such a wasting time for me”

Quality

Quality means the ability of digital health to meet or exceed user expectations (WHO, 2016b). Data quality has been the main issue in big data operationalization (Kruse *et al.*, 2016). Prior research reported that there was a gap in evaluating the quality of digital health software and the available research was not satisfactory enough to address the existing gap (Kokol *et al.*, 2022). This research only assessed the quality of the PIS-PK website based on the ability of the website to provide maps of the community based on health status, provide data related to family-facing health family and the data availability to be used as based data in designing community empowerment or health intervention program.

“The website provides base data for future program planning and design which is beneficial for us who worked in health centers”

“The available raw data was really beneficial but unfortunately it was not updated regularly which made us need to keep in contact with the Ministry of Health to update our data”

“The PIS-PK program was unuseful, wasting time, and the data was not matched with the other program. This program should be stopped.”

Data provided by the PIS-PK website was initially to be used as the base data for designing community empowerment programs or health interventions to improve community health status (Indonesia Ministry of Health, 2016). The result of the research reported that the implementation score according to the website users was good by 77.61. The data available from the website was used to design future health interventions, the website was used to monitor the health status improvement of the community, and

the health worker in the health center could easily decide the program target using raw data from the website. The judgment criteria were added to understand the attitude of website users related to the PIS-PK website. The score was reported as 67.92, the majority of the respondents agree that the website performance is satisfactory and beneficial however, the menu available on the website was not meeting their needs.

“The program is great but it would be better if an intervention menu was added to track the total family that has been receiving the intervention.”

“The website would be really great if the data was updated regularly and not facing much maintenance and errors. As a health worker, I need to open the website anytime and anywhere but the encounter errors really not helping.”

DISCUSSION

The Healthy Indonesia Program with Family approach was upheld with the implementation of three main pillars, healthy paradigm enforcement, strengthening health services, and implementation of national health services. It was implemented to improve the health services access of the community. The family was chosen as the focus of the Healthy Indonesia Program because the family has five functions, the affective function, socialization, reproduction, economics, and health care (Indonesia Ministry of Health, 2016).

The family was visited by a health worker then the health status was recorded on the PIS-PK website to know the family health status and map the health problem according to the 12 indicators faced by the family. The available of PIS-PK website aims as a database to map health problems and evaluate the health effort impact addressed to the specific family.

The website itself has several menus that are really complex from the recording data of the family after the visit,

updating data of the family, intervention received by the family, to the data analysis that can produce graphs and figures. The available website was really beneficial to accelerating the public health degree in Indonesia if it was meeting the criteria of good digital health including functionality, stability, fidelity, and quality (WHO, 2016b). Several previous types of research have been done mostly highlighting the difficulties of the PIS-PK program implementation in the field such as insufficient human resources, infrastructures, financing (Afrianti and Pujiyanto, 2020), server capacity (Trisna, 2021), lack of socialization, and delays in reporting (Nia, 2021). Not much data is available addressing the utility or performance of the PIS-PK website.

An initial study done in Nepal reported that there were several challenges, opportunities, and benefits while implementing digital health.

Digitize healthcare delivery and may improve the quality of health intervention (Guo *et al.*, 2020; Kuwabara, Su and Krauss, 2020; Butcher and Hussain, 2022; Kokol *et al.*, 2022) there are numerous challenges that hinder the rapid adoption of these technologies, including data quality and robustness, patient safety, ease of use, privacy concerns, and accessibility, and ethical challenges (Novillo-Ortiz *et al.*, 2018; Cummins and Schuller, 2020; Iyamu *et al.*, 2022; Parajuli *et al.*, 2022).

Privacy and data security have emerged as some of the most contentious issues in the conversation regarding digital health technologies (Sharma *et al.*, 2018; Cummins and Schuller, 2020). The usage of the PIS-PK website was really helping health centers to design an appropriate health intervention to address health problems faced by the community, however, the privacy issues have been growing since the family data contain sensitive information that the health worker could easily access and share, it is such a challenge to keep the information confidential. The lack of privacy protection could deliberate family fears of revealing private information about themselves (Fahey and Hino, 2020). That could lead to false information provided by the family members to prevent their information from being shared. It is necessary to develop family trust and confirm a commitment to take care of

However, the most challenges were inadequate technical facility and shortage of skilled workforce (Parajuli *et al.*, 2022). That was also faced by Indonesia during the implementation of PIS-PK. The sudden of errors indicating that the technical facility to run PIS-PK program was inadequate and the late update data also showing that there was shortage in skilled workforces. Study that has been done in America reported that 57.9% of the countries surveyed have a national eHealth policy or strategy, but among them only 26.3% have an entity that supervises the quality, safety and reliability regulations for mobile health applications (Novillo-Ortiz *et al.*, 2018). The result of the study indicates that challenges in implementing digital health not only occurred in developing countries also in developed country as well.

Digital health technologies have significant potential to revolutionize their privacy. Another challenge that is faced by digital health is data governance (Manteghinejad and Javanmard, 2021). It is noticed that almost all government agencies shifting to digitalization, however, a lack of privacy policy to protect the data has been noticed (WHO, 2016a). It is critical to set up a data governance policy to enforce the safety of data governance in digital health.

Evaluation of digital health impact entails a multidimensional approach employing mixed methods study to analyze health worker perspectives, patients or subject perspectives, the health system, cost-benefit, and cost-effectiveness of service delivery (Greaves *et al.*, 2018). The cost-effectiveness and sustainability of digital health should be noticed by the related stakeholders.

CONCLUSION

The utility of PIS-PK website is really helpful to assist health center in designing and developing appropriate health intervention to improve community health status and already serving four components of good digital health. However, several shortages were noticed by the users that hinder the optimal performance of the website to reach its goal in providing accurate data to plan or improve community health program or health intervention that targeting specific health indicators. The shortages should be resolved in timely manner to accelerate

the improvement of public health status in Indonesia. This study only highlighted the user perspective to monitor the performance of PIS-PK website. Further research still needed to assess other aspect of PIS-PK website in order to provide rounder evaluation of the PIS-PK impact improving community health status in Indonesia.

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Refusal of Smoking Among Male Adolescents in Sampang Madura: A Qualitative Study

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ABSTRACT

Background: The high prevalence of smoking among adolescents is a serious concern for society and the government. Many studies have been conducted to examine the reasons why adolescents start smoking and how to prevent smoking behavior among adolescents. In the midst of high rates of smoking behavior among adolescents, it is also very interesting to study smoking refusal among adolescents which can later provide information for prevention programs in helping adolescents avoid smoking behavior. **Objectives:** to describe the phenomenon regarding the rejection of adolescent smoking behavior. **Methods:** This research is qualitative research that uses in-depth interviews with 17 teenagers as informants. This research was conducted in the District of Sampang Madura from February 2021 to June 2021. The selection of informants then followed the information from the informants who completed the interview (snowball sampling). **Results:** Based on the results of the study it was found that adolescents who have peers who do not smoke tend to easily reject smoking behavior. Refusal to smoke by adolescents includes health factors, impact on quality of life, societal norms, and appearance. The existence of orders from the family environment to avoid smoking behavior was also mentioned by adolescents as a reason not to smoke. **Conclusions:** Adolescent rejection of smoking behavior can be used as a reference in smoking behavior prevention programs and also as material for evaluating intervention programs that can help adolescents to quit smoking.

Keyword: Adolescent, Qualitative, Preventive, Smoking, Tobacco control.

INTRODUCTION

The level of cigarette consumption in Indonesia is still quite high (Ritchie & Roser, 2022). The data shows that Indonesia is ranked first in the ASEAN countries with the highest smoking rate, and number three in the world (Databoks, 2019). The number of teenage smokers themselves has also increased every year, based on the 2019 Indonesia Global Youth Tobacco Survey (GYTS), as many as 18.8% of Indonesian youth aged 13-15 years are smokers (WHO, 2019). Consuming cigarettes in their teens can increase the risk of health problems. In addition, the addiction to nicotine that has been formed in their teens will make it difficult for smokers to get rid of this dependence. Attempts to quit smoking in their teens can reduce the health risks that may arise as a result of smoking behavior.

Much research has been done on smoking behavior by adolescents and the factors that influence it, and the role of the environment, such as family, friends, and people around, contributes to the formation of adolescent smoking behavior. Adolescents who have peers who smoke tend to have smoking behavior too, and this also applies to the family environment. Adolescents who live with family members who have smoking behavior tend to also have smoking behavior (Joung et al., 2016).

The massive smoking behavior carried out by adolescents and the support from the surrounding environment which is strong in maintaining this smoking behavior turns out that there are teenagers who choose to remain unaffected to smoke even though the strong influence of the surrounding environment can make them smokers. This phenomenon is very interesting to study, the phenomenon of teenagers' rejection of smoking behavior amidst the increasing number of teenagers involved in smoking habits and exposure to massive cigarette advertisements.

One factor that may explain this resistance is the change in public awareness regarding the health and risks of smoking. Information that is easily accessible through social media, the internet, and health campaigns has increased adolescents' understanding of

the negative effects of smoking on adolescent health (Kostygina et al., 2020). Teenagers are becoming more aware of the risks of serious diseases such as cancer, heart disease, respiratory problems, and the negative impact on the immune system (Masiero et al., 2018).

In addition, adolescents' refusal to smoke is also influenced by changes in social norms that lead to lifestyle. Many teenagers are currently active in sports activities, maintain a healthy diet, and focus on their physical and mental well-being. Smoking behavior is not in harmony with a healthy lifestyle, so teenagers are more likely to avoid or reject this habit. However, despite strong denial, there is still an increasing number of adolescents engaging in smoking behavior. One of the factors that influence this is massive exposure to cigarette advertisements. Tobacco companies often use marketing strategies that are attractive to teenagers, such as using celebrities, popular icons, or displaying pictures that look cool and attract the interest of teenagers which are freely marketed on the internet and can be easily accessed by teenagers (Bigwanto et al., 2022; Collins et al., 2019; Jackler et al., 2019). These advertisements can form wrong perceptions about smoking and interest youth to try or continue smoking.

Research on adolescents' denial of smoking behavior has the potential to make a significant contribution to efforts to prevent smoking among adolescents in creating a future generation that is healthier and smoke-free. This study involved 17 male adolescents as the main informants, who did not have smoking behavior and had never tried smoking before, but was surrounded by close friends and family who had smoking behavior. This study uses a qualitative approach to describe the phenomenon regarding the rejection of adolescent smoking behavior.

Despite strong resistance to smoking behavior, the number of adolescents engaging in smoking is still increasing. Research on adolescent rejection of smoking behavior is an interesting and relevant topic for research. Through a deeper understanding of the factors that influence adolescents' refusal to smoke, these results can develop more effective

prevention strategies, improve health campaigns aimed at adolescents, design better policies, and increase public awareness about the risks of smoking. In this context, this study aims to present research results that can provide valuable information about adolescent rejection of smoking behavior and its implications for efforts to prevent smoking among adolescents.

METHODS

This research is qualitative research that uses in-depth interviews to explore and explore adolescent resistance to smoking behavior, adolescent views on smoking behavior, and adolescent knowledge of smoking behavior. The researcher chose in-depth interviews for this research because they are often used as a qualitative interviewing approach that encourages understanding of individual experiences and opinions on a particular set of issues (Legard, R., Keegan, J. and Ward, 2003).

This research was conducted in the District of Sampang Madura. This research was conducted from February 2021 to June 2021. The criteria for informants in this study were male adolescents who were junior and senior high school students in the Sampang District area, aged between 10-19 years, did not have smoking behavior, and had never tried the product, or any type of tobacco. The selection of informants then followed the information from the informants who completed the interview (snowball sampling). Until the end of this research, there were 17 teenagers as informants.

The youth involved in the study were informed about the research objectives and research procedures. The researchers approached the participants and their parents (or guardians of students) by telephone before collecting data. Unless individuals were 18 years of age provided direct consent, written consent to participate in the study was obtained from the parents or guardians of the participants. A written informed consent form was distributed to parents by the school administration. A total of seventeen met the requirements to participate in this study. All correspondence with children and their

parents is handled by the school authorities.

Data collection was carried out directly using in-depth interviews conducted by DWS (first author). In this study, data collection was carried out using in-depth interview data sources with selected research informants. Researchers investigate data about the problem using a predetermined interview procedure. This technique was chosen because the researcher aims to identify the subjective meaning felt by research informants related to the problem being investigated, as well as to investigate the phenomenon of concern (Banister et al., 2011). In-depth interviews were conducted based on interview guidelines compiled based on previous studies (Creswell, 2016; Creswell & Poth, 2018).

In building informants' trust, researchers try to establish relationships with informants before conducting in-depth interviews. Telephones and informal meetings were used to communicate directly with all participants and their parents/guardians. Research objectives are determined, research information is provided, and students are assured that their identity will be kept confidential from the public, other students, and their teachers. Teachers and parents were not involved in data collection, allowing participants to freely explore their ideas and opinions. Due to the in-depth nature of the interviews, the researcher informed all potential informants that they could ask questions or present their points of view. The researchers also highlighted that their honest opinions and responses were valuable and welcome in this study.

Interviews were conducted at schools that had accessible rooms or in public spaces that had previously been mutually agreed upon between the researcher and the participants. The interview lasted between 40-60 minutes. In-depth interviews with each participant were conducted at least three times before it was considered sufficient for data saturation. This is also supported by previous research using in-depth interviews as a data collection approach. The researchers devised a discussion procedure based on the literature studied, and reviewed it in group sessions with multiple qualitative research

specialists before in-depth interviews. The researchers led the interview process using expert-validated methods. The interviews were audio-recorded and transcribed by two research assistants with master's degrees and experience in in-depth interviews and qualitative studies. To obtain comprehensive information about the views, attitudes, and feelings of adolescents towards smoking behavior, and about adolescent rejection of smoking behavior. The in-depth interviews began with questions about "Have they ever been asked to smoke". The next question is, "What things make them not to smoke?". The participants were then asked to describe their smoking habit in response to the question: "How do they perceive youth who smoke?" and "What does smoking behavior mean to them?".

Information from all interviews was collated and transcribed. To gain a complete understanding, the transcript was reviewed several times by two qualitative research experts and researchers. The data is then divided into meaningful units and labeled with codes (Guion, 2006). The codes are compared sequentially based on their similarities and differences and then formulated into categories and themes.

This study obtained ethical approval from the Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine, Public Health and Nursing Universitas Gajah Mada - Dr. Sardjito General Hospital, Indonesia, Ref: KE/FK/1390/EC/2021. Participants had the right to refuse to participate at any time. They knew the purpose of the study and that their identities are kept confidential.

RESULTS

The characteristics of the informants consisted of ten high school students and seven junior high school students involved in this study. The teenager had never smoked at all, nor had he ever tried any type of tobacco product. The teenager admitted that he often saw smoking behavior by people around him, such as friends, family members who smoked, and school members such as teachers, school guards, and school guests who smoked. Teenagers in this study also

said it was very easy to get cigarette products around them, one of which was a shop near the school. They also find cigarette advertisements very easily on the big roads leading to their school.

In direct content analysis, coding is done based on the research questions. The results of the interviews were classified into 3 themes and 11 categories. The appearance of the themes and categories produced in this study is shown in Table 1.

Table 1. Analysis of Adolescent Rejection of Smoking Behavior

Theme	Category	Coding	Quotation
Family and environmental conditions	Smoking family members	Father Uncle Brother None	"Smokers at home, only father, but not often. smoking is only done when there are guests" "no one smokes at home" "..... Uncle who smokes, but his house is a bit far from home, but sometimes he stays at home" "My older brother smokes, his smoking behavior is often done when hanging out with his friends outside, when he's alone at home sometimes he doesn't smoke" "no one smokes at home, mom doesn't like cigarette smoke"
	Teachers/school members who smoke	Some	"There are teachers who smoke, but not during teaching time" "school guard smoking" " Sometimes there are guests from outside the school who smoke in the school environment and we can see it"
	My closest friend smokes	Some None	"School friends who smoke a lot, usually come home from school to hang out at the shop near the square or gather at other friends' houses, if close friends are not around, on average they don't smoke" "I don't have close friends who smoke, but many of my classmates do, as far as I know, there are lots of boys who smoke"
	The most trusted person	Parent Friend	"Parents are the most trusted because they raised us" "There are close friends who are always a place to tell stories and are very close" "No one is trusted if you have a problem, you rarely tell anyone"
	Invite to smoke	Ever Never	"I was invited by a classmate, but I refused" "So far no one has ever taught me or offered me a cigarette"
	intention to smoke	None	"There was never a desire to smoke even though many of my friends at school smoked" "from the start, I didn't like cigarettes, the smoke alone was annoying"
Reasons not to	Parent	Forbid	"My parents have forbidden smoking from the start, so I obey"

smoke		Fear of being scolded	"I was afraid of being scolded by my parents if I smoked, from the beginning it had been forbidden not to smoke. my parents are crazy" "There is already a prohibition against smoking from my parents"
	Health	Coughs Easily hurt Fear of pain Smoke makes cough	"Smoking is injurious to health" "I don't want to get sick, just inhaling cigarette smoke I already feel tightness in my chest. The smell is very disturbing" "My friend who smokes a lot often coughs" "Smoking can make the body weak and susceptible to disease, at my school there was no counseling about the dangers of smoking, but there was an appeal during school lessons. cigarette smoke can be harmful to the lungs. and I believe smoking is not good for health" "cigarette smoke is very disturbing and can make bad breath"
	Ambition	Become a member of the TNI Basketball player	"I want to take care of my body so that it stays healthy because later I want to become a member of the TNI" "I like sports, and my goal is to become a basketball player" " I want to study hard, so I can study at 'Universitas Negeri'"
	Other activities	OSIS member Pramukan (Scout)	"OSIS members at school rarely have smoking behavior, here all members do not smoke" "Scouting children must be healthy, they must not smoke, the coach once gave information that smoking is a behavior that is detrimental to health"
Smoking behavior	Unhelpful behavior	Unhelpful behavior Annoying behavior	"cigarette smoke makes me uncomfortable, I hate cigarette smoke" "People who smoke carelessly annoying"
	Brat	Likes to fight Not polite Love racing have rude behavior	"Students who like to smoke, on average, are stubborn children, like to skip school, like to fight, and are rude" "here children who like to smoke include children who like wild racing" "Students who smoke are never neat, like people who never take a bath, always look messy"

Rejection of smoking behavior and smoking behavior itself was interpreted variously by the informants in this study. Most of the informants interpreted smoking behavior as negative behavior and behavior that did not bring benefits. They think smoking is a nest of diseases and bad behavior for teenagers to do because it is easy to cause disease. There were also informants in this study who had been asked/offered to smoke by schoolmates but refused because they knew that smoking was not good for their health. The refusal of smoking by adolescents in this study was based on the fact that they did not want to get sick, that smoking behavior was a source of disease, was prohibited by their parents, there was a goal, namely to pursue goals, and had other activities that made them not think about smoking behavior.

Informants who have members who smoke also admit that they are not tempted to join in smoking because they believe smoking is not good for their health and will make it difficult for them to pursue their goals and desire to become TNI. This also applies to the circle of informant friends. Informants who had friends who smoked did not make the informants smoke too, because most of these friends were classmates who were not very close to them.

DISCUSSION

Based on this study, adolescents' rejection of smoking behavior is based on adolescent awareness of the dangers of smoking itself. Smoking is interpreted by them as behavior that is not useful and can make them sick so that later it can hinder their goals or their desires. It was the intention based on this that made them not smoke. Adolescents who have a good understanding of the risks of smoking tend to have a strong intention to reject this behavior (Sutha et al., 2023). Access to information about the dangers of smoking, whether through education in schools, health campaigns, or other sources of information helps them understand the negative consequences of smoking and encourages them to stay away from it (Duncan et al., 2018; Mélard et al., 2020; Xu et al., 2020).

The smoking ban ordered by their parents was also stated by the informants as their reason for not smoking. Parents have a very significant role in the development of children's smoking activities in early adolescence (Susanto et al., 2020; Wang et al., 2019; Xu et al., 2020). Children and adolescents are still very dependent on their parents in several ways. Parents are guides and role models in the development of behavior in children and adolescents (Ruiz-Hernández et al., 2019). Several studies have shown that their children imitate the behavior of their parents who smoke (Aho et al., 2018; Glasser, 2018; Singh et al., 2020). The first thing that is needed to prevent smoking is that parents need to make rules for smoking bans. This regulation has an important role in instilling children and adolescents to stay away from smoking behavior. These rules will help strengthen the intention of teenagers to stay away from smoking behavior. Teenagers still have high respect for their parents, and consider parents as figures who must be obeyed, so the rules proclaimed by parents must be consistent and sustainable. Parents need to warn their children regularly to form anti-smoking children.

A prohibition from parents will continue to be selective in choosing friends. In this study, the youth said that many friends at their school who had smoking behavior had even offered them cigarettes, but not as close friends. In terms of family members who encouraged them to start smoking, they also highlighted the environment around their friends that influenced them to smoke. Friends invite them to try and then they become addicted. These findings are also consistent with previous research on smoking-related variables, which identified peer influence as a significant contributor, and also included having addicted friends, being given cigarettes, and the easy availability of cigarettes.

Teenagers in this study could see the negative impact on their friends who had smoking behavior, such as getting sick easily, looking messy, tending to be naughty, and skipping school. That view is what makes them not smoke. Teenagers tend to be influenced by their social environment (Levin-Zamir & Bertschi, 2018; Sawyer et al., 2018). If they see positive examples from people around

them who don't smoke, such as friends, family, or inspirational figures, this can influence their intention not to smoke. They see the negative impact smoking has on other people's lives and want to avoid the same risks. If the majority of their peers do not smoke, adolescents tend to feel pressured to do so. They want to be accepted and do not want to be different in their social group. Therefore, when group norms refuse to smoke, adolescents tend to have a strong intention to refuse smoking behavior.

Based on the results of this study, the desire not to smoke is supported by the desire to realize their goals, namely to stay healthy so they can achieve these goals. Teenagers may realize that refusing to smoke is a form of self-control. They choose to maintain health and freedom from potentially harmful addictions despite the massive temptations around them. This decision can build their self-confidence so that later they can achieve their goals. Teenagers develop a strong intention to refuse smoking behavior and choose to maintain health and lead a more productive and positive lifestyle. Teenagers realize that smoking can interfere with their ability to achieve their goals. Their aspirations become the motivation to refuse smoking to reach their full potential in achieving the success they dream of.

CONCLUSION

Teenage boys' rejection of smoking behavior is based on parental prohibition, negative image of smoking behavior, awareness of health risks, and motivation to achieve desired goals. Rejection of smoking behavior in adolescent boys from the results of this study can be used as a reference in smoking behavior prevention programs and also as material for evaluating intervention programs that can help adolescents to quit smoking.

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Paper-Based versus Mobile Apps for Colorectal Cancer Screening in COVID-19 Pandemic Setting

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ABSTRACT

Background: The incidence of colorectal cancer (CRC) in Asia has kept increasing in the last decade. The morbidity and mortality for CRC can be reduced with early detection; however, mass CRC screening with imaging modalities such as colonoscopy, CT scan, or MRI is unfeasible in developing countries such as Indonesia. Asia Pacific Colorectal Screening (APCS) is utilized to stratify individual CRC risk. Online screening via mobile application is an alternative method to ensure the continuity of community screening without risking COVID-19 transmission. **Objective:** We conducted a descriptive study to evaluate CRC risk using APCS in two different villages. **Methods:** This is a cross-sectional study involving 925 and 207 subjects in 2019 and 2020, respectively. The APCS survey in 2019 was done before COVID-19 pandemic with paper-based questionnaires and direct assessment by door-to-door approach. Meanwhile, the APCS survey in 2020 was done during COVID-19 pandemic using website and mobile apps available for Android and iOS. We gathered participants' characteristics and the APCS score in both groups and tabulated them. **Results:** In 2019, out of 925 subjects; 472 (51%) have been classified in average risk of CRC, 370 (40%) have been classified in moderate risk of CRC, and 83 (9%) have been classified in high risk of CRC. In 2020, out of 207 subjects; 106 (51.2%) have been classified in average risk of CRC, 86 (41.5%) have been classified in moderate risk of CRC, and 15 (7.3%) have been classified in high risk of CRC. **Conclusion:** Although there was a decrease in the participation of the screening program with mobile application in the pandemic era compared with paper-based questionnaires before the pandemic era, online screening using APCS in mobile applications is a preferred alternative for an effective screening method in this pandemic and possibly in the future in Indonesia.

Keyword: APCS, colorectal cancer screening, COVID-19 pandemic, mobile apps, public health service.

INTRODUCTION

Colorectal cancer (CRC) or colorectal adenocarcinoma arises from glandular epithelial cells of the large intestine due to mutation of genes that allows abnormal growth. This abnormally growing mass is usually benign at first but can evolve into a more malignant mass and thus becomes a carcinoma (Rawla, Sunkara and Barsouk, 2019). CRC is still one main

concern because the incidence of CRC in the world keeps increasing, especially in many developing countries. CRC is one of the most diagnosed cancers and it is also the third deadliest cancer. In 2018, there were 1.8 million new cases of CRC which makes up 11% of all cancer cases in the world (Fitzmaurice et al, 2017) Although CRC is more commonly found in North America and Europe population, the incidence of CRC has markedly increased in

Asia population in the past decade. The increasing incidence is influenced by the “western” way of life which involves red meat, alcohol, and tobacco consumption (Makassari, 2017; Kemenkes RI, 2018).

The successes in the prevention of CRC become the main factor to control CRC incidence as low as possible and prevent high rates of mortality. In developing countries, screening and early detection of CRC is always recommended not only for symptomatic patients, but for asymptomatic populations as well. However, mass screening is very limited in developing countries due to funding problems and financial situation of the general population (Arnold et al, 2017).

CRC can be screened earlier by various methods to allow identification of the disease. There are two commonly accepted methods for CRC screening: fecal occult blood test (FOBT) and visual examination. FOBT allows detection of hemoglobin or blood matters in feces as neoplasia tends to have frail vascular structure which results in minor hemorrhages. Meanwhile, visual examination via colonoscopy and flexible sigmoidoscopy allows direct observation on anatomical structure inside intestinal lumen (Rawla, Sunkara and Barsouk, 2019).

Asia Pacific Colorectal Screening (APCS) is an instrument to identify risk of colorectal neoplasia based on four criteria: age, gender, history of colorectal malignancy in family, and history of smoking. This instrument is made for the Asia region which specifically targets areas limited in both resources and funding to CRC screening. This instrument may help physicians to determine individuals to be prioritized to get CRC screening in asymptomatic populations. Some studies have already proven the association between APCS scoring result and CRC screening result (FOBT and colonoscopy method).

Although APCS is easily understandable and practiced, there is no published record of the use of APCS in Indonesia. We aimed to record and inform the use of APCS by conducting the mass screening of colorectal cancer risk in rural areas of Yogyakarta in Indonesia.

METHODS

This research was a cross-sectional study. The data were collected from screening and education events in the October to December 2019 (before COVID-19 pandemic) and other screening events from August to December 2020 (during COVID-19 pandemic).

Data collection in 2019 was carried out before the COVID-19 pandemic by paper-based questionnaires and a door-to-door direct assessment. We implemented a direct method by visiting the designated villages and giving education about CRC, as well as instructions about CRC screening using APCS paper-based translated to Bahasa Indonesia (Figure 1). A local health promoter was trained by the research team to assist us in a door-to-door approach for recruiting more participants to fill the survey form.

The program in 2020 was carried out during the COVID-19 pandemic so that the data collection was taken using the websites and mobile applications available on Android and iOS. We created a mobile app, “3D Kanker Kolorektal,” which provides education on CRC and self-screening with APCS questionnaire. The link for this Android (<https://play.google.com/store/apps/details?id=com.deteksi.kolorektal.apps>) and iOS

(<https://apps.apple.com/id/app/deteksi-dini-kanker-kolorektal/id1570965326>) application (Figure 2) was distributed to various chat groups and the local health promoter to further encourage people to use the application, also a website to supplement the education material from : <https://webkolo.klinikbedahdigestif.com>. All of the survey forms, educational material, as well as our social media can be accessed through <https://linktree.com/tumorususindonesia> (Figure 3). The participants of this study were randomly selected by public health promoters.

We gathered additional information outside the APCS questionnaire on subjects’ characteristics comprising of highest education level achieved, body weight and height, as well as history of illness and other comorbidities. Since this was a descriptive study, we collected all the data and tabulated them into Microsoft Excel sheets. There was no statistical analysis done for this study.

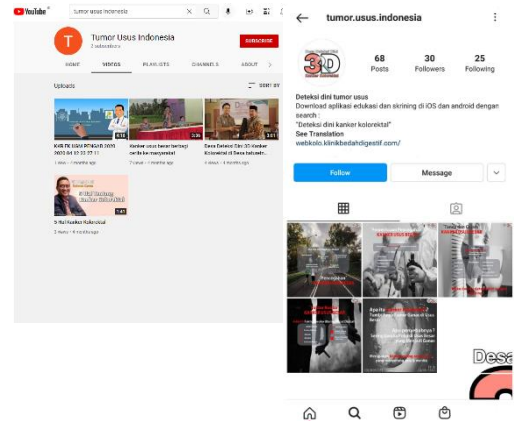


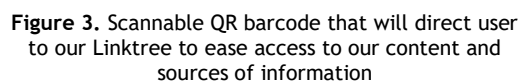
Figure 4. Online source of information using social media platforms such as YouTube and Instagram.



We collected the data from 925 subjects in Baturetno village for the program in 2019 and 207 subjects in Bangunjiwo village for the program in 2020. We tabulated them and the details can be found below.

In 2019, the number of female subjects was higher than male subjects which was 694 and 231, respectively. However, in 2020, the number of female subjects was fewer than the number of female subjects, which were 72 and 135, respectively.

Most of the participants in both surveys had a tertiary level of education. The participants in 2019 generally had a lower average of education level with 33.4% participants in primary and secondary level of education and 17.4% having university level of education. On the other hand, participants in 2020 had a higher average of education level with 8.7% in primary and secondary level of



education and 38.6% having university level of education.

Table 1. Baseline characteristics.

		2019	2020
Subjects (n)		925	207
Age group	<50	539 (58.3%)	185 (89.4%)
	50-70	354 (-)	22 (10.6%)
	>70	30 (3.2%)	0 (0%)
Sex	Male	231 (25.0%)	135 (65.2%)
	Female	694 (75.0%)	72 (34.8%)
Highest level of education achieved	Primary	188 (20.3%)	4 (1.9 %)
	Secondary	121 (13.1%)	14 (6.8%)
	Tertiary	422 (45.6%)	109 (52.7%)
	University	161 (17.4%)	80 (38.6%)
Family history of malignancy	Present	39 (4.2%)	9 (4.3%)
	Absent	886 (95.8%)	198 (95.7%)
Smoking	Yes	164 (17.7%)	73 (35.3%)
	No	761 (82.3%)	134 (64.7%)

In 2019, out of 925 subjects that we analyzed, 472 subjects (51%) were classified in average risk of CRC, 370 subjects (40%) in moderate risk, and 83 subjects (9%) in high risk. In 2020, out of 207 subjects that we analyzed, 106 subjects (51.2%) were classified in average risk of CRC, 86 (41.5%) subjects in moderate risk, and 15 subjects (7.3%) in high risk.

Table 2. The distribution of CRC risk derived from screening programs using APCS in 2019 and 2020.

		2019	2020
APCS CRC Risk	Low	472 (51.0%)	106 (51.2 %)
	Moderate	370 (40.0%)	86 (41.5%)
	High	83 (9.0%)	15 (7.3%)



Figure 5. (A) 2019 education with villager and local health promoter. (B) 2020 only attended with local health promoter

Many factors contribute to a person's risk of developing colorectal cancer. Genetics play an important role in the occurrence of colorectal cancer. Any incidence of colorectal cancer in the family means a higher risk to develop colorectal cancer. People with age 50 or above are at a significantly higher risk of developing colorectal cancer. However, it is still possible for younger people to also get colorectal cancer. The incidence of colorectal cancer may increase in the future because of a newly adopted lifestyle such as smoking, excessive consumption of red meat and processed meat, excessive alcohol consumption, and low fiber consumption. A history of gastrointestinal diseases such as polyps and intestinal inflammation is also a risk factor for colorectal cancer (Rawla, Sunkara and Barsouk, 2019). Therefore, APCS covers one of the few factors mostly associated with colorectal cancer which are age, family history, and smoking history. (Quach et al, 2018; Jiang et al, 2020) By using APCS, we can prioritize individuals with moderate and high risk to get examined as early as possible in hospitals. Individuals with moderate and high risk are eligible for further examination with simple tests such as fecal occult blood test and followed by CT scan or colonoscopy if the result of FOBT is positive. (Jiang et al., 2020)

From the analysis, the number of subjects in the two periods of time differs greatly: 925 in 2019 and 207 in 2020. In 2019, the number of participants was higher because we had a local health promoter who helped us to approach more people directly. This allowed a wider reach to the population to do the APCS screening. Hence, we got several subjects from each age group. Meanwhile, we strongly believe that the significantly lower number of participants in 2020 was influenced by few gadget possessions such as mobile phones, tablets, and computers among the residents.

The lack of supporting infrastructure makes people who live in rural areas less able to get maximum internet access. In 2019, APJJI launched an independent internet village program so the people in rural areas can access the internet via satellite technology (V-sat). Unfortunately, this program was stopped during the COVID-19 pandemic. Currently there are 12,500 of 82,000 villages in Indonesia that have not been connected to the internet (Buletin APJJI, 2021).

Furthermore, the age factor is also a handicap in accessing online information. People aged over 50 years have a very low knowledges of the gadget (Kamal et al, 2021), thus we have very few subjects for the 50-69 years old group and none for the 70 years old and above group.

The difference in the age group may be related with the difference in the highest education level of the people. There were more elderly people participating in the 2019 event than in 2020 and coincidentally there were more people with lower education levels in 2019. We believed that, in such rural areas, many of the elderly have a low education level as compared to the younger ones. In 2019, the survey was done by gathering and approaching the participants individually; therefore, reaching a higher number of elderly participants. In general, low educated people may correlate with low-income level and this was depicted in our survey event in 2020. The correlation between low education and low-income level is also reported in a study done by Nawi Ng et al. which showed that people with low levels of education and socioeconomic status had higher odds of having a poorer quality of life and health. Older people with low educational and socioeconomic status (SES) had 3.4 times higher odds of being in the worst quality of life quintile as compared to people with high education and high SES (Nawi Ng et al., 2010). In 2020, the survey was done via smartphones and gadgets. These low-income people may not have the suitable gadget or smartphones to use the survey application that we created. Therefore, we can see a very low number of participants in 2020 especially in the elderly category and in primary or secondary education level category.

In 2019, the number of female subjects was very high compared to the

male subjects. We believed that the disparity between the two genders was caused by the availability of women during the survey. Most women in rural areas are housewives and some of them work from home or close to their houses, while most men tend to work far from home; therefore, there were very few male subjects present at the time of the survey. However, in 2020, the percentage of male subjects was higher than female subjects compared to the previous year. We assumed that, in low financial families, more men possess the gadgets or smartphones to allow them to fill the questionnaire through the mobile apps. In Indonesia's 2020 population census, the population of male is larger than the population of female; however, in Daerah Istimewa Yogyakarta, the number of female was recorded more than the number of male population. The sex ratio at the age of 75 years and over which is 79 indicates that the number of elderly female population is greater than the number of male elderly population (Badan Pusat Statistik, 2020). Furthermore, the unemployment rate in Indonesia has increased during COVID-19 pandemic. Central Statistics Agency (BPS) in November 2021 released the fact that the unemployment rate increased tremendously. The data show that there is an increase of 7.46% of unemployment rate in male population as compared to an increase of 6.46% in female population (Ramadani et al., 2022). The increasing male unemployment rate may be one of the factors causing a higher number of male subjects participating in the 2020 survey.

Despite the difference in number of subjects and other criteria, the trend for CRC risk classification was very similar between the 2019 and 2020 period. Although the number of participants did not represent the real proportion of the population, we can at least deduce that the CRC risk in the rural population roughly follows the percentages shown in the result section because the two surveys was done in two different places with two entirely different settings but showing very similar numbers.

From the two events in 2019 and 2020, we realize that online education and screening is not as effective as a live event that is delivered directly. Online-based education and screening discourages low-

income people from participating due to lack of suitable gadgets and smartphones. Offline events attract more participants and allow them to inquire more information and clarify their confusions directly. On the other hand, online form of surveys and data collection will be much more effective in urban areas due to easier access to smartphone, computers, and stable internet connection as well. The online form of surveys can reach a greater population when done in the city (Nugraha and Susilastuti, 2021).

During the current pandemic situation, we have no permission to organize an offline event as the government has imposed a ban on non-urgent social gatherings and, therefore, an online measure is our only choice to continue the previous year's event.

Paper-based case reports are the most commonly used data collection in field-based research studies. In this approach, the data collected are recorded on paper before being turned into digital. (Ley et al., 2019) This method has several advantages over the automated methods, which is data collection is not limited to a certain place, it is easier to be produced, modified, and implemented. Moreover, the potential of data loss is less compared to the automated data collection (Ahmed et al., 2018). Despite its easy implementation, the paper-based data system has some risk of errors both during data collection and digitization. Alongside an increase in the development and use of computer technology, electronic data collection is increasingly being used for healthcare implementation and research. Electronic data collection has several advantages compared to paper-based collection, including enabling large volumes of data to be collected and stored securely and avoiding the need to carry and store bulky paperwork (Dickinson et al., 2019). Electronic data collection has become a well-accepted alternative compared to paper-based data collection (Ley et al., 2019). This method is effective for data collection during the pandemic due to the restriction of social mobility in which data collection cannot be performed from door-to-door.

Based on a big data review conducted by the Indonesian Central Statistics Agency on the impact of COVID-19, people have begun to reduce their activities to visit

public places since the enactment of WFH policy on March 17, 2020. In fact, the mobility has decreased drastically after the official PSBB program was issued on April 10, 2020. The people's activity to retail commerce and recreational places was decreased up to 70%. Moreover, the using of public transportation also decreased by about 79% (BPS, 2020). If possible, a hybrid approach of both online platform and door-to-door approach is the optimal measure for next screening events during this pandemic.

The Asia-Pacific Colorectal Screening (APCS) scoring system has been shown to be highly effective for mass CRC screening purposes. A study in Vietnam has shown that APCS is useful in identifying CRC incidence in people with irritable bowel syndrome, allowing patient stratification for colonoscopy priority (Quach et al., 2018) Furthermore, a study in China proved that APCS is very effective in detecting colorectal neoplasia in outpatient and asymptomatic patients in China where it is not feasible to conduct colonoscopy screening for the whole population at risk (Jiang et al., 2020) However, the APCS scoring system has a major flaw. The screening points overlook many other significant risk factors for CRC such as diabetes, types of diet and exercise habits, alcohol consumption, etc. (He et al., 2019). Based on many studies, people aged 50-75 years old are considered the population with high risk of CRC and, therefore, require an annual screening more than just with APCS but with fecal immunochemical test (FIT). People with present family history of colorectal cancer should undergo the screening earlier, starting from 40 years old of age. In addition to APCS, many studies recommend annual or biannual testing of fecal occult blood test (FOBT) or FIT and, if possible, colonoscopy for a more accurate and effective CRC screening (Rex et al., 2017; Bnard et al., 2018).

CONCLUSION

Through our study, we can conclude that direct approach with paper-based surveys is a more effective way in conducting screening in rural areas. Despite the low participation rate, colorectal cancer screening by using APCS which is integrated in mobile apps, is still proven useful. Mobile apps and other forms

of online screening may become a preferred alternative for a safe screening method in this pandemic and possibly in the future.

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The Certainty of Health Students to Receive Covid-19 Vaccination in Jayapura City in 2022

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ABSTRACT

Background: Covid-19 vaccination among health students is an example of a social change agent or role model. Health students must be certain and able to use their knowledge. As a result, it is vital to investigate the likelihood of health students receiving Covid-19 immunization as a form of government support for the health program from the Republic of Indonesia. **Objectives:** To find out the certainty of health students to receive the Covid-19 vaccination in Jayapura City in 2022. **Methods:** A descriptive survey was carried out to perform quantitative research at Cenderawasih University in Jayapura City in August 2022. A total of 270 samples were collected using the probability sampling method. The instrument utilized was a questionnaire containing questions concerning health students' opinions about adopting the Covid-19 immunization, which was delivered via Google form. The data was edited, coded, entered, and tabulated before being presented in tabular form and narrated. SPSS was used to perform a univariate analysis of the data. **Results:** There were 190 respondents (70.4%) who were confident in receiving the Covid-19 vaccination, whereas there were 80 respondents (29.6%) who were unsure. Fear of adverse effects such as fever and pain was the most common reason for being unsure about the Covid-19 vaccine, cited by 56 respondents (97.5%), while comorbidity was cited by only two respondents (2.5%). **Conclusions:** There are still health students who are not sure about the Covid-19 vaccination. Health students need KIE (communication, information, and education) among health students regarding the necessity of the Covid-19 vaccine.

Keywords: Certainty, Covid-19 vaccination, Health students, Jayapura.

INTRODUCTION

Towards a new normal life, one of the requirements is that people have received the Covid-19 vaccine. The acceptance of the Covid-19 Vaccine by the community will have a good impact on shaping community safety. The vaccinated human body will benefit, namely, stimulating the immune system, reducing the risk of transmission, reducing the severe impact of the virus, and achieving *herd immunity*. Indonesia managed to enter the top 5 countries with the highest number of vaccinations in the world. Recording vaccination coverage of 166.65 million targets, Indonesia ranks 4th after China, India, and the United States, then followed by Brazil in fifth place (Kemkes RI, 2022).

Based on the SE of the Governor of Papua number: 440/7736/SET concerning micro-based PPKM and the acceleration of Covid-19 vaccination in Papua Province. Data on Covid-19 vaccination acceptance in Papua is highest in Merauke district at 64.4%, followed by Mimika district at 57.7% and Jayapura City at 57.3%. The city of Jayapura has a heterogeneous population with a population of 300192 in 2020. Jayapura City is a study destination city for students and students who want to study from various districts in Papua Province. As the capital of Papua province, of course, community activities have greatly increased, so there needs to be efforts to protect the community during the Covid-19 pandemic, therefore the Jayapura city government also

participated in carrying out Covid-19 vaccination and involved health and non-health partners to organize vaccinations for at-risk target groups, dose I coverage reached 58.70% and dose II reached 35.69 (82,743 people, while for the provision of Covid-19 vaccination targets in the city of Jayapura reached 231,863 people including those aged 12-17 years (antaranews.com, 2021).

Community health students must have professionalism, dare to *risk reduction*, have *financial protection* skills, and be able to mobilize social machinery and mobilize bureaucratic machinery. Professional work methods are required in the form of counseling skills, communication, sociology, small groups, community development, and empowerment. In an effort to create professionalism, public health students need self-protection in preventing the Covid-19 outbreak because students are a risk group if they do not implement 3M (wearing masks, washing hands, and maintaining distance) in preventing and receiving the Covid-19 vaccine, it will have an impact on their health Being targeted and (Charisma Agustin, 2019). *role models*, Students must be able to be an example for the community in the surrounding environment. Public health students in answering their competencies are applying health knowledge received during education, one of which is to carry out health communication contained in efforts to empower the community, with the aim of making people independent in their health (Riki Yudha, 2016) Receiving the Covid-19 vaccine voluntarily and independently is the result of communication and community empowerment efforts, thus students must be able to receive the Covid-19 vaccine before, making persuasive communication to the community. Based on student data active at Cenderawasih University, there are 30693 students, while in FKM the number of students in 2022 is 2804 students (SIKAD, FKM uncen 2020).

Shimaa M. Said's 2021 study on Vaccine hesitancy: Beliefs and barriers associated with COVID-19 vaccination among Egyptian medical students, showed that most participating students (90.5%) felt the importance of the COVID-19 vaccine, 46% were hesitant to vaccinate, and the same percentage (6%) received or refused the vaccine with certainty. Most students were concerned about vaccine side effects (96.8%) and ineffectiveness (93.2%). The most confirmed barriers to COVID-19 vaccination are the lack of data on vaccine side effects (potential 74.17% and unknown 56.31%) and insufficient information regarding the vaccine itself (72.76%) (Saied Et AL., 2021).

Student confidence in Covid-19 vaccination is the ability of every student in an effort to receive Covid-19 vaccination. Health students should have the ability to receive Covid-19 vaccination so that they can affect the surrounding community. The Covid-19 pandemic situation has not reduced enthusiasm and hope in studying, online learning continues to be the only learning media used so that students continue to gain knowledge. Over time, the pandemic situation has become endemic, but you still have to do 3 M and the mandatory Covid-19 vaccine until stage 3, namely *Booster*. The confidence that a person has, can make someone go to real action, namely receiving Covid-19 vaccination (Saied Et AL., 2021).

The purpose of the study was to find out the confidence of health students to receive the Covid-19 vaccination, the belief in the right place to receive the vaccine, the belief in sharing vaccination information with the community, and the reasons for not being sure about receiving the Covid-19 vaccination. The benefits obtained through this research are university policies. High in making decisions for face-to-face learning. Convinced or unsure need scientific proof, so research needs to be done, to measure certainty in every health student in supporting government programs.

METHODS

Quantitative type of research with a descriptive survey approach, the research was conducted in August 2022 with a research location at the Faculty of Public Health, Cenderawasih University, Jayapura City, Papua province. The population in this study the number of active students 2804 consists of a total of 270 samples. The research instrument consists of characteristic questions; age, gender, religion, residence, JKN ownership, and questions from research variables about respondents' beliefs about Covid-19 vaccination instruments spread with *goggle form*). Univariate analysis is

performed to obtain an overview of each variable. This research uses human subjects so it has been carried out according to research ethics issued by the ethics commission of the Faculty of Public Health, Cenderawasih University with number 13/KEPK/FKMUC/2022 on 2 Maret 2022.

RESULTS AND DISCUSSION

Characteristics of Respondents

Frequency Distribution Table based on age, gender, religion, place of residence and JKN leaders on beliefs to receive Covid-19 vaccination for health students in the city of Jayapura in 2022 (N= 270).

Table 1. Characteristics of Respondents.

Variable	Criterion	N	%
Characteristic:			
Age	17-20 years	182	67,4
	21-25 years	88	32,6
Gender	Man	86	31,1
	Woman	186	68,9
Religion	Protestant Christianity	190	70,4
	Islam	48	17,8
	Khatolik	32	11,9
Residence	Parent/guardian	148	54,8
	Kos	83	30,7
	Boarding house	39	14,4
JKN Ownership	No BPJS	104	38,5
	There is BPJS	160	59,3
	Private	6	2,2

(Data Source: Primary data, 2022)

The table above shows that most age is 15-19 years old there are 182 respondents (67.4%), the female gender is more at 186 respondents (68.9%), Protestant Christianity is the most at 190

respondents (70.4%), where most respondents live is living with their parents/guardians 148 respondents (54.8%), JKN ownership is the most which have BPJS there are 160 respondents (59.3%).

Covid-19 Vaccination confidence variables

Table 2. A place to receive Covid-19 vaccination.

Variable	Criteria	n	%
Covid-19 Vaccination Sites	Puskesmas	161	59.6
	Doctor/Midwife/Private Hospital	52	19.3
	Office/workplace	14	5.2
	Educational Institutions such as Universities	26	9.6
	Posyandu	5	1.9

Not yet vaccinated	11	4.1
Educational Institutions such as Universities	1	0.4

(Data Source: Primary data, 2022)

The table above shows that four Covid-19 vaccination services, namely puskesmas with the most 161 respondents (59.6%) and the lowest, namely in educational institutions such as universities 1 respondent (0.4%).

More women believe that receiving the COVID-19 vaccination can improve the body's health system in a community. This is because women are more likely to be open to the development of information on vaccinations in the community. In addition, women are more exposed to information about the Covid-19 vaccination through associations or daily activities, although the side effects of the Covid vaccine are more often felt by women, this is not an obstacle not to participating in receiving the Covid-19 vaccine (Athiya Adibatul Will1, 2022). The difference in the number of men and women in a community can affect the receipt of information and efforts to increase their intellectual abilities,

Decision-Making and Consideration In decision making men and women (Primary & Chaniago, 2018). have differences, men think more critically and while women think more logically, so this material also affects the decision in their belief in Covid-19(Yanti Et Al., 2020). Research on the confidence in Covid-19 vaccination is in line with research by the Indonesian Ministry of Health, in 2020 40% of women who have received the Covid-19 vaccine throughout Indonesia (Ministry of Health RI, 2020). Research shows that respondents are still unsure about Covid-19 vaccination, as health students who will carry out the role of health promoters, should have the right beliefs about health issues and should fully support government programs in the health sector. The uncertainty of health students indirectly affects the social environment where they live, in the variable place of residence, most respondents live together with parents/guardians, meaning that the respondent's uncertainty has a double meaning, on the one hand, respondents can be influenced by their families or also respondents who can influence people

who live together in one house, as well as religion which is believed to have an impact on the process worship and must apply health protocols in its implementation. (Angelica Rawung Et Al., 2022).

Health students refused to be vaccinated (66.13%) because they were unsure of the safety of the vaccine. There are also those who question halal and its effectiveness, and fear side effects. Those who say vaccination is contrary to their religious teachings are very few (9.27%). This finding confirms that the phenomenon of refusal to vaccinate is not due to religious beliefs, but rather to non-religious matters. There are questions about halal, but it is not the main reason. This finding corroborates the results of the National Survey of the Ministry of Health, et al. (2020), which shows the religious element as the smallest reason in its percentage (balitbangdiklat.kemenag.go.id/, 2021).

Belief is a factor in oneself according to L. Green's theory in factor predisposing, the stronger a person's belief in an object, the greater the effort made to maintain his belief behavior. Efforts can be seen by trying to get Covid-19 vaccination in the right place, namely the Puskesmas. Puskesmas is one of the health facilities that is considered capable of providing good services in an effort to achieve Covid-19 vaccination. Regulation of the Minister of Health No. 84 of 2020 concerning the implementation of vaccination in the context of overcoming the Covid-19 pandemic article 16 paragraph 2 states that puskesmas, can provide Covid-19 vaccination services (Ministry of Health, 2020). It means that respondents in determining where to receive vaccinations are in accordance with government guidelines.

Covid-19 vaccination must be able to solve the pandemic problem in the world, therefore there is a need for joint movement so that the Covid-19 vaccination program in Indonesia can be successful and evenly distributed from Sabang to Merauke. As a *role model* in the community, health students must be

able to create behavior change by continuing to carry out IEC (communication, information, and education) to the public to continue to implement health protocols and believe that by receiving the Covid-19 vaccination, the Indonesian people must be healthy. In this study, there are still weaknesses in the development of information sources related to Covid-19 vaccination and the advantages of obtaining accurate data from all respondents with various tribes in Papua.

CONCLUSION

There were 190 health students who were sure to receive the Covid-19 vaccination (70.4%) and those who were not sure to receive 80 respondents (29.6%). The advice given is the need for IEC (communication, information and education) about the importance of Covid-19 vaccination among health students and the role of key figures such as religious leaders, youth leaders and heads of BEM, MPM at the University level and BEM and DPM at the Faculty level in supporting the vaccination program in the city of Jayapura.

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Effectivity of Pregnancy Paper Fan and Android Notification System Toward Knowledge, Attitude, and Adherence of Pregnant Women on Iron Supplements Consumption

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ABSTRACT

Background: Anemia during pregnancy is a kind of problem that most expectant mothers are dealing with. Consuming iron supplements is one kind of solution to lower the cases of anemia. However, the number of anemia in expectant mothers in West Sumatra is still high, 43% of them experience anemia in pregnancy and 52% of them did not adhere to consuming iron supplements. **Purpose:** Creating two kinds of media to motivate expectant mothers in consuming iron supplements, which are pregnancy paper fan and an Android notification system installed on their mobile phones, as well as to determine the effectivity of both media on knowledge, attitude, and adherence on consuming iron supplements. **Methods:** The population of this research is expectant mothers with a number of sample 110 respondents, where 55 respondents were intervened with pregnancy paper fan and 55 respondents were intervened by an android notification system. **Results:** The result of the bivariate analysis shows that the Android notification system has a significant impact on the adherence, knowledge, and attitude of expectant mothers on consuming iron supplements during pregnancy. However, the pregnancy paper fan has a significant impact only on knowledge and the adherence of expectant mothers on consuming iron supplements, while there is no significant impact on attitude toward consuming iron supplements. **Conclusion:** The use of the Android Notification System is effective on knowledge, attitudes, and compliance of expectant mothers on consuming iron supplements.

Keywords: Adherence, Android Notification System, Attitude, Knowledge, Pregnancy paper fan.

INTRODUCTION

World Health Organization (WHO) classified that one of the major global problems is the adherence on iron supplement consumption (World Health Organization, 2016). where 20%-50% of patients estimated not taking their treatments or medicines appropriately (P. Virtudes, M. Sala-gonz, no date). Anemia is one of the biggest problems occurred on expectant mothers, especially during pregnancy, where WHO reported that 40% of expectant mothers globally experience anemia during pregnancy. The consumption of iron supplement most likely to be a solution to intervene the causes of anemia. Based on this assumption, government developed a program as a solution to overcome this problem, where the Government of West

Sumatera implemented a program on providing costless iron supplements for expectant mothers (K. Padang, 2017). However, the problem of anemia on expectant mothers still exists. Research shows that there are 52% of respondents with nonadherence on iron supplements consumption during pregnancy, which caused 43% anemia occurred during pregnancy in West Sumatera (Manda, 2012; Matsuo, 2015; Yurnila, 2016).

Nonadherence on iron supplements consumption may be caused by several factors, such as therapy-related factors, condition-related factors, health system factors, social-economic factors, as well as patient-related factors, such as knowledge and attitude (World Health Organization, 2016).

Internet usage in Indonesia has been growing rapidly, which

approximately 85% of the total internet users in Indonesia accessing internet by mobile phones, while the rest use PCs and laptops, research proves that there is effectiveness of using smartphone to improve adherence of patients to consume medications. Besides, in this current technology era, health medication reminder application has becoming popular to improve people's health. However, there is no media that links technology or media to educate expectant mother on iron supplements consumption during pregnancy (L. Dayer, S. Heldenbrand, P. Anderson, P. O. Gubbins, 2013; B. Jennifer, Alfonso, 2016; Rahayu and Lestari, 2018).

During pregnancy, expectant mothers mostly dealing the change of the body, physiology and also their metabolism system (Prawirohardjo, 2010; C. Piérard-franchimont, T. Hermanns-lê, 2016). This condition was not comfortable for expectant mother, especially in Padang, West Sumatera where the tropical climate and the air temperature is dry, which will definitely increase the metabolism process (S. Nugroho, no date; UNISDR, 2017). Due to this condition, pregnancy paper fan was made as an innovation related to the condition of metabolism on expectant mother that can be used daily.

Based on this background, it is implemented an identification on effectiveness of pregnancy paper fan and android notification system toward knowledge, attitude and adherence of expectant mothers on iron supplements consumption during pregnancy.

METHODS

The first media used on this research was pregnancy paper fan, is a double-sided manual fan created from paper, developed based on the information related to the identification of problems that occur at the research site which obtained through previous qualitative research. First side consisted of information related to iron supplement, anemia, side effect of iron supplement, instruction of iron supplement consumption, as well as treatment to side effect of iron supplement. The other side of the fan contained of table of 14 days daily checklist for iron supplement

consumption. Furthermore, the pregnancy paper fan was provided with a pen to fill the checklist table.



Figure 1. Pregnancy Paper Fan.

The second media used on this research was an Android notification system called 'Notifikasi TTD', a mobile application which provided the information related to iron supplement, anemia, instruction of iron supplement consumption, side effect of iron supplement, as well as a daily report checklist as found in pregnancy paper fan. The difference between Notifikasi TTD and pregnancy paper fan is that this Android notification system can provide notification to the user as a reminder of iron supplement daily consumption.

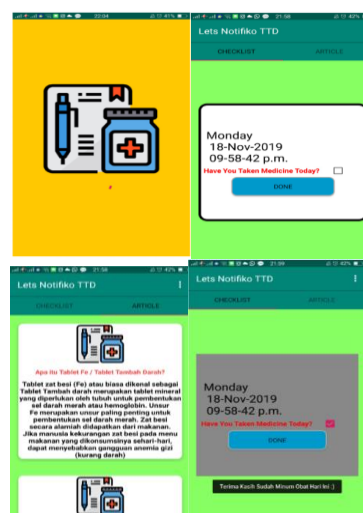


Figure 2 Android Notification System 'Notifikasi TTD'.

This is a quantitative-research with the pre-experimental approach with two-group pre-test and post-test design. The data was collected on June - November 2022. Of 18,365 population of expectant

mothers, samples were selected through non random sampling with a consecutive technique, resulting 110 eligible samples which fulfill the inclusion criteria, which are expectant mother that consume iron supplement, literate ability, willing to be respondents, has downloaded the Notifikasi TTD Android application on smarthphone (for group of expectant mothers with notification system intervention). Samples were divided into two groups of interventions, where 55 samples were intervened with pregnancy paper fan, while the other 55 samples were intervened with Notifikasi TTD, which both groups then will be measured on effectiveness of both media to knowledge, attitude and adherence on iron supplements consumption.

The data as collected through pre-test and post-test before and after intervention by using questionnaires to determine knowledge and attitude of respondents on iron supplements consumption. While adherence of iron supplements consumption was determined by using the database report on the Notifikasi TTD from their individual smarthphone—for the Android groups—and daily checklist report on the pregnancy paper fan—for the paper fan groups.

This study was ethically approved by Research Ethics Committee of Faculty of Medicine, Andalas University in the form of Letter of Statement No. 404/KEP/FK/2019.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents.

N o.	Variable	Pregnancy Paper Fan		Notifikasi TTD		Total	
		n	%	n	%	n	%
1	Age						
	<20 Years Old	3	5.4 %	4	7.3%	8	7.3%
	20-35 Years Old	45	80.4 %	42	76.4%	86	78.2%
	> 35 Years Old	7	12.5%	9	16.4%	16	14.5%
	Total	55	100%	55	100%	110	100%
2	Occupation						
	Teacher	0	0%	2	3.6 %	2	1.8%
	Honorary Employee	1	1.8%	5	9.1 %	6	5.5%
	Housewife	46	82.1%	35	63.6 %	81	73.6%
	Employee	2	3.6%	3	5.5 %	5	4.5%
	Entrepreneur	0	0%	1	1.8 %	1	0.9%
	Civil Servants	0	0%	2	3.6 %	2	1.8%
	Private Employee	6	10.7%	4	7.3 %	10	9.1%
	Private Sector	0	0%	3	5.5 %	3	2.7%
	Total	55	100%	55	100%	110	100%
3	Educational Background						
	Elementary School	2	3.6%	0	0%	2	1.8%
	Junior High School	5	9.1%	8	14.5%	13	11.8%
	Senior High School	25	45.4%	15	27.3%	40	36.4%
	Vocational High School	7	12.7%	11	20.0%	18	16.4%
	Diploma 1	3	5.5%	0	0%	3	2.7%
	Diploma 3	6	10.9%	4	7.3%	10	9.1%
	Bachelor Degree	7	12.7%	17	30.9%	24	21.8%
	Total	55	100%	55	100%	110	100%
4	Number of Gravid						
	Primigravida	23	41.8%	31	56.4%	54	49.1%
	Multigravida	31	56.4%	24	43.6%	55	50%
	Grandemultipara	1	1.8%	0	0%	1	0.9%
	Total	55	100%	55	100%	110	100%

Based on the results of the analysis, it is obtained that majority of respondent on pregnancy paper fan group intervention aged of 20-35 years old (80.4%), while majority of respondent on Notifikasi TTD group intervention aged of 20-35 years old (76.4%). Moreover, it is obtained that majority of respondent on

pregnancy paper fan group intervention with the occupation as housewives (82.1%), while majority of respondent on Notifikasi TTD group intervention with the occupation as housewives (63.6%).

It is obtained that majority of respondent on pregnancy paper fan group intervention with the educational background of high school (45.4%), while

majority of respondent on Notifikasi TTD group intervention with the educational background of high school (27.3%). Furthermore, It is obtained that majority of respondent on pregnancy paper fan group intervention with the number of gravid as multigravida (56.4%), while majority of respondent on Notifikasi TTD group intervention with the number of gravid as primigravida (56.4%).

Table 1. Result of Paired Sample T-Test.

No	Variable	p-value
1	Knowledge before and after use pregnancy paper fan	0.030
2	Attitude before and after use pregnancy paper fan	0.438
3	Adherence before and after use pregnancy paper fan	0.000
4	Knowledge before and after use Notifikasi TTD	0.006
5	Attitude before and after use Notifikasi TTD	0.000
6	Adherence before and after use Notifikasi TTD	0.000

Based on the results of the analysis, it is obtained that pregnancy paper fan is effective to improve knowledge and adherence of expectant mother related to iron supplement consumption ($p\text{-value} \leq 0.05$). However, pregnancy paper fan is not effective to attitude of expectant mother related to iron supplement consumption ($p\text{-value} > 0.05$). On the other side, it is obtained that Notifikasi TTD is effective to improve knowledge, attitude and adherence of expectant mother related to iron supplement consumption ($p\text{-value} \leq 0.05$).

Knowledge is the result of curiosity through sensory processes that influenced by several factors, such as education and facilities, which has a very important role in shaping behavior. Research showed that behavior change which caused by the knowledge improvement will last longer than behavior without knowledge improvement (Notoatmodjo, 2012, 2014; Donsu, 2017; Wawan and Dewi, 2017; Saadah, Suparji and Sulikah, 2020). In

addition, research by Ekayanthi (2020) shows that there was an effect of education on adherence to taking iron tablets and increasing Hb levels in pregnant women (Ekayanthi and Purnamasari, 2020), this statement explains that knowledge may be important on improving adherence of iron supplement consumption.

Based on the result, it is obtained that both pregnancy paper fan and Notifikasi TTD significantly effective to improve knowledge on both treatment group ($p\text{-value} \leq 0.05$), eventhough Notifikasi TTD ($p\text{-value} = 0.006$) has more significance compared to pregnancy paper fan ($p\text{-value} = 0.030$). This research is in line with other researches which shows that comprehensive program may have significant impact on knowledge of research subjects (Gibney *et al.*, 2009). Furthermore, the utilization of Android system possibly make it easier to be understood by research subject (Handoyono and Rabiman, 2020).

Attitude is individual tendency on stimulus by accepting, rejecting, or being indifferent, which may be different on every individual due to factors such as knowledge, habits and beliefs, (Sabri, 2010; Purwanto, 2014; Rahmah, 2016). To pursue a positive behavior change, comprehensive education and motivation enhancement are needed (Putri and Pritasari, 2017), which means that it is essential to improve attitudes as an effort to develop the expected behavior change.

Based on the statistical analysis, it is obtained that Notifikasi TTD is significantly effective on improving attitude of expectant mothers on iron supplement consumption ($p\text{-value} = 0.000$), while pregnancy paper fan is ineffective on improving attitude of expectant mothers on iron supplement consumption ($p\text{-value} = 0.438$).

This research is in line with other research conducted by Syahrina, et. al. (2020), which shows that educational Android application Edu-Anemia is effective on improving attitude of iron supplements consumption (Syahrina, Gambir and Petrika, 2020).

Notifikasi TTD contains information of iron supplement and anemia in pregnancy. The use of Android application by expectant mothers expected to be useful as a reminder on daily supplement consumption as well as knowledge and

attitudes towards iron supplement consumption.

Based on the statistical test, both pregnancy paper fan and Notifikasi TTD is effective to improve adherence on iron supplement consumption ($p\text{-value} \leq 0.05$). However, it is known that Notifikasi TTD is more effective on improving adherence of expectant mother on iron supplements consumption, with an increase in average compliance from 5 tablets per day to 10 tablets per day. While on pregnancy paper fan, it can only increase the compliance of expectant mothers on consuming iron supplements by an average of 5 tablets per day to 9 tablets per day. This result concludes that Notifikasi TTD is 1 point more effective than the use pregnancy paper fan.

This research is in line with other research conducted by Lestari (2015), which shows that health education and message reminder is effective on improving adherence of iron supplement consumption. Other research by Krismawati, et. al. (2022) also shows that Aplikasi Sahabat Ibu Hamil (ASIH) is effective on improving adherence of expectant mothers on iron supplement consumption (Lestari, 2015; Krismawati, Widjanarko and Rahfiludin, 2022).

CONCLUSION

Notifikasi TTD has significant impact on knowledge, attitude and adherence of expectant mothers on iron supplements consumption during pregnancy. However, pregnancy paper fan only has significant impact on knowledge and adherence on iron supplements consumption during pregnancy, while there is no significant impact on attitude. It is suggested that Notifikasi TTD can be used as an alternative in educational activities and antenatal care services, especially on the antenatal visits of expectant mothers who consumes iron supplement.

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The Relationship of Adolescent Self-Control with Covid-19 Health Protocol Adherence (Survey of Adolescents in Palembang City)

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ABSTRACT

Background: COVID-19 is a health problem that is currently a global concern caused by SARS-CoV-2 infection. South Sumatra Province has a percentage of COVID-19 mortality rate of 5.92%, which exceeds the national mortality percentage of 4.1%. Elimination of COVID-19 cases is one of the implementations of the Sustainable Development Goals (SDGs) which aims to end the epidemic of infectious diseases by 2030. Adolescents are faced with the ability to control their attitudes well in order to be consistent in action and achieve emotional maturity and character building. **Objectives:** to analyze the relationship between adolescent self-control and compliance with COVID-19 health protocols. **Methods:** analytical observational method with a quantitative approach with a cross-sectional design. This study's respondents were 100 samples using the voluntary sampling method. Information was collected online via Google form in February 2021. Data were analyzed using a simple linear regression test. **Results:** Univariate results showed that compliance with the COVID-19 health protocol was 53%. There was a significant relationship between behavioral, cognitive, and decision control on compliance with the COVID-19 health protocol. Linear regression results show a moderate and positive relationship between behavioral control ($r = 0.274$), cognitive control ($r = 0.425$), and decision control ($r = 0.473$) to compliance with COVID-19 health protocols. **Conclusions:** Adolescents in Palembang City have good self-control so that they can modify and control behavior, manage information, and choose actions on COVID-19 protocols.

Keywords: Adolescent, Covid-19, Good health and well-being, Health protocols compliance, Self-control.

INTRODUCTION

The current issue that has become a global polemic, namely Corona Virus Disease-19 (COVID-19) caused by the SARS-CoV-2 virus, has become a global concern. (Juhwan, 2020) The disease was first reported in December 2019 in Wuhan, Hubei Province. (Susilo *et al.*, 2020) On 12 March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic and an international public health emergency. (Amornsriwatanakul *et al.*, 2022) A recent study reported 16.7% low mental health well-being among adolescents in ASEAN, which interferes with daily activities. (Güner and Hasanoğlu, 2020) COVID-19 was first reported in Indonesia on March 2, 2020, with two cases. (Muhamad, 2021) Confirmed cases in Indonesia as of March

31, 2020, totaled 1,528 cases with 136 deaths and a mortality rate of 8.9%. This is the highest rate in Southeast Asia. (Susilo *et al.*, 2020) The percentage of COVID-19 cases is increasing every day. The disease affects everyone regardless of age, gender, and other individual characteristics. (Herliandry *et al.*, 2020)

Data from the Ministry of Health of the Republic of Indonesia as of January 18, 2021, found the number of positive cases of COVID-19 amounting to 917,015 cases, 745,935 cases recovered and 26,282 cases died. This number puts Indonesia at the 19th highest number of COVID-19 cases in the world. (Santoso, 2020) South Sumatra Province is the province with the most confirmed positive COVID-19 patients on the island of Sumatra. South Sumatra has a mortality rate of 5.92%, which exceeds the

national mortality rate of 4.1%. Confirmed positive cases of COVID-19 as of February 7, 2021, in South Sumatra reached 14,724 cases with 716 of them dying. Palembang City is the city with the highest percentage of cases in South Sumatra Province with 7,095 confirmed positive cases and 315 deaths.

Elimination of COVID-19 cases is one of the implementations of the Sustainable Development Goals (SDGs) which aims to end the epidemic of infectious diseases by 2030. However, public awareness in implementing health protocols is still a challenge. An interview study conducted by Padang State University found that most people do not understand the concept of New Normal and the importance of implementing health protocols, which causes people to be less compliant with government appeals about the dangers of COVID-19. People think COVID-19 is just an ordinary virus, so people are less enthusiastic about it. (Nafa, 2020)

COVID-19 not only affects adults and the elderly, but also affects children and teenagers. (Purwanto *et al.*, 2020) According to a report from the Centers for Disease Control and Prevention (CDC), children and adolescents are more at risk of COVID-19-related complications. One of the causes is neglecting to implement health protocols. (Iptidaiyah, Kadir and Junaidin, 2020) Data collected from February 2020 to July 2020 found that 70% of the 121 cases of children and adolescents who died from COVID-19-related complications were aged 10-20 years. (Anggraeni and Safitri, 2020)

The COVID-19 pandemic has had a devastating impact on adolescents globally, especially students who have experienced decreased academic performance, lack of physical activity, lack of nutritional intake and other mental health disorders. (Rahman *et al.*, 2022). One's response to an epidemic/pandemic may vary from person to person. Studies suggest that respondents experienced increased fear (79%), anxiety (83%) and depression (38%) during the COVID-19 pandemic. Health protocol policies cause teenagers to miss out on some big moments in their lives and everyday moments, such as chatting with friends and attending school. (Sholihah *et al.*, 2022) At first, some teenagers may feel that this is their chance to take a vacation. However, over time the impact of the pandemic has

affected the mentality of teenagers. With self-control, it is hoped that adolescents will be able to control feelings, thoughts and actions to resist internal and external urges so that a person can act correctly. (Titisari, 2018) Efforts to cultivate self-control for adolescents need to be implemented properly.

Self-control will control adolescents not to engage in risky behaviors such as violating health protocols, smoking and alcohol consumption. (Perdana and Setiyawati, 2019) Jelita and Aslamawati's research found that the majority of adolescents during the COVID-19 pandemic in DKI Jakarta had low self-control. (Jelita and Aslamawati, 2019) Adolescents are faced with the ability to control their attitudes well in order to be consistent in their actions, achieve emotional maturity and character building through education, religion and family. The role of individual characteristics such as age, gender, level of education and economic status also affect the subsequent behavior of adolescents. (Wulandari *et al.*, 2020)

Based on the background description above, this study discusses the relationship between adolescent self-control and compliance with COVID-19 health protocols (survey of adolescents in Palembang City). The purpose of this study was to analyze the relationship between adolescent self-control and compliance with COVID-19 health protocols.

METHODS

This research has passed ethical review with No: 080/UN9.FKM/TU.KKE/2021. This research was conducted in February 2021 using a quantitative approach with an observational cross sectional study research design, which is a research design that studies the dynamics of the correlation between the independent variable and the dependent variable by taking measurements at a moment or one time. (Besral, 2007; Sugiyono, 2013) The population in this study were adolescents in Palembang City. The sampling technique was done by voluntary sampling with sample determination based on inclusion and exclusion criteria which resulted in 100 samples. Inclusion criteria included adolescents aged 19-24 years and willing to fill out the questionnaire voluntarily. For respondents who filled out the

questionnaire incompletely and did not include a telephone number were exclusion criteria. The independent variable is self-control (behavioral control, cognitive control and decision control) with the dependent variable being COVID-19 health protocol compliance.

This study uses a questionnaire consisting of 41 questions and refers to the self-control theory by James R. Averill in 1973.(Averill, 1973) The results of the questionnaire validity test show that all questions have a calculated r value greater than the r table value so that they are declared valid. The Cronbach's Alpha value is 0.926, which means that the questions contained in this research questionnaire are considered reliable ($0.926 > 0.6$). The

questionnaire was distributed via google form in the Palembang City area. The data obtained were then analyzed using univariate analysis and bivariate simple linear regression test with SPSS version 20 statistical processing application.

RESULTS AND DISCUSSION

This study was conducted on 100 adolescents aged 19-24 years who were selected and qualified by the inclusion and exclusion criteria and filled out a questionnaire (google form). The results of the frequency distribution of respondent characteristic data are presented in the following table:

Table 1. Overview of sample characteristics of adolescents aged 19-24 years regarding self-control of compliance with COVID-19 health protocols in Palembang City.

Sample characteristics	Number (n)	Percentation (%)
Gender		
Male	37	37
Female	63	63
Education level		
Not graduated from high school	1	1
High school graduate	71	71
Not graduated from university	2	2
University graduate	26	26
Parental income		
≤ Rp, 1.000.000	9	9
>Rp,1.000.000 - ≤ Rp, 3.000.000	33	33
>Rp, 3.000.0000	58	58
Age		
19	14	14
20	27	27
21	44	44
22	11	11
23	2	2
24	2	2

Table 1 shows that the majority of samples are female (63%), the most recent education is high school graduate (26%), the most sample parents' income is above Rp. 3,000,000 (58%) and the most sample age is 21 years old (44%).

The average distribution of behavioral control, cognitive control and decision control of adolescents aged 19-24 years in Palembang City after conducting a normality test showed that all self-control variables (behavioral control, cognitive control and decision control) were normally distributed (p -value > 0.05) so that the mean and standard deviation values could be interpreted. The mean value and standard deviation of the

behavior control variable, cognitive variable, and decision control variable were 36.06 (SD = 3.984), 39.88 (SD = 3.991), 40.90 (SD =5.511) respectively.

While the average distribution of health protocol compliance for adolescents aged 19-24 years in Palembang City after conducting a normality test, the results of the COVID-19 health protocol compliance variable were normally distributed (p -value > 0.05) so that the mean and standard deviation values could be interpreted. Mean value of COVID-19 health protocol compliance variable is 45.07 with a standard deviation of 5.030. The frequency distribution of COVID-19 protocol compliance variable was 53% compliant and 47% compliant, which

means that the highest proportion was in the compliant group with a difference of 6%.

Table 2. Correlation and regression analysis of behavioral control, cognitive control and decision control on compliance with COVID-19 health protocols in adolescents aged 19-24 years in Palembang City

Variable	r	r ²	Line equation	p-value
Behavioral control	0.274	0.075	Compliance = 32.575 + 0.347 (BC)	< 0.006
Cognitive control	0.425	0.180	Compliance = 23.725 + 0.535 (CC)	< 0.000
Decision control	0.473	0.224	Compliance = 26.944+0.432 (DC)	< 0.000

Based on table 2, the relationship between behavioral control and compliance with the COVID-19 health protocol among adolescents in Palembang City shows a moderate and positive relationship ($r=0.274$), meaning that the more one's ability to control behavior increases, the higher the level of compliance with the COVID-19 health protocol. Results showing a moderate relationship and positive pattern were also found in the cognitive control variable ($r=0.425$) and decision control ($r=0.473$). The behavioral control coefficient value with a determination of 0.075 means that the regression line equation obtained can explain 7.5% of the variation in the level of compliance or the line equation obtained is good enough to explain the behavioral control variable. Similarly, the cognitive control variable with a coefficient value of 0.180 which explains 18% of the variation in the level of compliance to explain the cognitive control variable and the coefficient value of the decision control variable 0.224 which explains 22.4% of the variation in the level of compliance or the line equation obtained is good enough to explain the decision control variable.

The results of statistical tests on behavioral control (<0.006), cognitive control (<0.000), and decision control (<0.000) show a p-value <0.05 so that the statistical test rejects H_0 and it can be concluded that there is a relationship between each variable (behavioral control, cognitive control and satisfaction control) with compliance with the COVID-19 health protocol.

From the line equation obtained, it is also possible to predict the dependent variable (adherence to COVID-19 health protocols) with independent variables (behavioral control, cognitive control and decision control). For example, if you want to know compliance with the COVID-19

health protocol if you know the behavioral control score is 45, then:

$$\text{Compliance} = 32.575 + 0.347 \text{ (BC)}$$

$$\text{Compliance} = 32.575 + 0.347 (45)$$

$$\text{Compliance} = 48.19$$

The regression prediction cannot produce an exact number as the result above, but the estimate depends on the value of the 'Std. Error of the estimate' (SE) which is 4.861. Thus, the variation of the dependent variable = Z (SE). The Z value is calculated from the Z table with a 95% confidence level and the Z value = 1.96, so the variation is $1.96 (4.861) = \pm 9.52756$. So with a 95% confidence level for behavior control with a score of 45, it can be predicted that compliance with COVID-19 health protocols is between 38.66244 until 53.71756.

In this study, there was moderate and positive relationship between behavior control and compliance with COVID-19 health protocols among adolescents in Palembang City. The coefficient value with determination states that the regression line equation obtained can explain 7.5% of the variation in the level of compliance or the line equation obtained is good enough to explain the behavior control variable. The statistical test results show that there is a significant relationship between behavior control and compliance with the COVID-19 health protocol.

The results of this study are in line with the results of research conducted by Nabila and Noor which states that there is a high correlation between behavior control and student compliance, which means that the higher the behavior control, the higher the student compliance. (Nabila and Noor, 2016) The similarity of these results may be influenced by other factors such as the ability of respondents to control their behavior in receiving information, regulating implementation and modifying

stimuli which of course is also influenced by the characteristics of each respondent. Behavior control is a response displayed by someone when in the field and it is the implementation behavior in the field that really determines whether someone can control their behavior or not. Controlling behavior related to health is certainly influenced by many factors, including knowledge, perceptions, emotions, motivation, and the environment. (Titisari, 2018) Exploration of public health behavior can be seen from various components, including perceptions of disease susceptibility, barriers to prevention efforts, benefits, encouragement, and individual perceptions of their ability to make prevention efforts. (Bunga and Fatimah, 2020)

The relationship between cognitive control and compliance with the COVID-19 health protocol in this study also shows a moderate and positive relationship. The regression line equation obtained can explain 18% of the variation in the level of compliance or the line equation obtained is good enough to explain the cognitive control variable. The results of the statistical test show that there is a significant relationship between cognitive control and compliance with the COVID-19 health protocol.

When a person knows the situation faced by him or her at this time (COVID-19 pandemic), adolescents can know their condition for sure and think of various possibilities that can occur in dealing with this situation. (Bariyyah Hidayati and ., 2016) After all this information is collected, adolescents can determine the conditions currently being faced and can determine various alternatives to take the chosen action so that they are accepted by their environment and can avoid negative consequences that might arise. (Sari, Shilihah and Atiqoh, 2020) With knowledge, an adolescent can also choose alternative behaviors that can be displayed. (Buana, 2020) The results of this study are in line with Nabila and Noor's research which states that there is a relationship between cognitive control and compliance. The data means that the higher the cognitive control, the higher the compliance. (Nabila and Noor, 2016) Kusumadewi's research also states that cognitive control affects a person's compliance. When a person's cognitive control ability is high, the individual is able

to process information and interpret the events around him. (Kusumadewi, Hardjajni and Nanda, 2012)

Decision control variables also showed a moderate and positive relationship with adherence to COVID-19 health protocols. The regression line equation obtained can explain 22.4% of the variation in the level of compliance or the line equation obtained is good enough to explain the decision control variable. There is a significant relationship between decision control and compliance with the COVID-19 health protocol.

An adolescent has the ability to choose and determine the right decision to take actions that do not harm themselves and others or make things worse through various considerations. (Sary, 2017) Nabila and Noor's research states that there is a relationship between decision control and compliance. That is, the higher the student's decision control, the higher the level of compliance. Students will choose action decisions where they can avoid negative consequences. (Nabila and Noor, 2016) The results of this study are also in accordance with McKendry's opinion that compliance is a person's tendency or willingness to fulfill and also accept requests, either those that come from a leader or those that are absolute as rules or orders. (Amsar, 2020) Therefore, one of the factors that support compliance is the ability to control decisions. (Marsela and Supriatna, 2019)

Self-control is one of the factors that influence the number of COVID-19 cases and mortality rate in adolescents. Other factors that also play an important role include population density, transmission areas, the presence of comorbid underlying diseases, and productive age. (Ikbar, Ghiffari and Silvana, 2021) In this study, these factors were not examined, thus becoming a limitation in this study.

CONCLUSION

There is a moderate and positively patterned relationship between behavioral control, cognitive control, decision control on compliance with the COVID-19 health protocol which indicates that part of the adolescent population in Palembang City is able to modify and control behavior, manage information and choose actions well. The other factors that influence

mortality rate were not examined in this study. Schools and universities are expected to be able to collaborate with government and private agencies to empower adolescents as role models by utilizing youth organizations as a forum for education and dissemination of COVID-19 information.

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Family Support in the Tradition of Mappanetta' Isi as an Effort to Maintain Dental Health in the Bugis Community in South Sulawesi

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ABSTRACT

Background: Dental and oral health is very important because it is one of the highest indicators of individual health and disease that people complain about so various ways are done by individuals to maintain dental health both medically and traditionally. Various traditions of caring for teeth have been carried out for generations by the community, one of which is Mappanetta' isi which is a traditional way of the Bugis community in South Sulawesi in maintaining dental health. **Objective:** To analyze family support in the Mappanetta' isi tradition as an effort to maintain dental health in the Bugis community in South Sulawesi. **Method:** research is descriptive qualitative with an ethnographic approach using observation techniques, in-depth interviews and documentation during the research. Informants consisted of 1 community leader as a key informant, 1 health officer and family as support and 4 maininformants of purposively selected research with the criteria of the Bugis community who preserve the tradition of mappanetta' isi. The data that has been collected will bereduced, catagorized and presented in narrative form. Data analysis with taxonomy, data validity plan using triangulation. **Results:** It was found that the preservation of the mappanetta' isi tradition could not be separated from family support or other social support. The role of the family is always to introduce and carry out the tradition to its generation using simple tools, thisstrengthens the instillation of values and beliefs of the Bugis community in Wajo Regency on mappanetta' isi dental care. **Conclusion:** Family support is a factor in the preservation of the mappanetta' isi tradition, so that the custom can be accepted and is still practiced today.

Keywords: Bugis, Dental care, Mappanetta'Isi, Wajo.

INTRODUCTION

The health of the oral cavity is part of the overall health of the body in the body health system because the mouth is the initial entrance of food into the body. Bad effects, if the oral cavity is not healthy, can cause various diseases such as cardiovascular and respiratory diseases and abnormalities in the respiratory teeth. The proportion of dental and oral health problems in Indonesia is also still high at 57.6% while in Sulawesi it is around 68.9%, which then has an impact on the prevalence of tooth loss in Indonesia which is also still Quite large at 24.52%, and cavities at 45.3%². This shows that the prevalence of tooth loss still requires serious attention, corroborated by tooth loss data reaching 23% at the age of >60 years while 7% at the age of >20 years³.

The complexity of dental problems and their treatment has caused various responses from the community in

the search for treatment both modern and traditional. Although the era has been sophisticated, until now dental care is still traditionally preserved for generations by the community in locality and has become a characteristic of andarea. The inheritance of local culture that has become a value of trust in the community and preserved by its generation is a way to honor its predecessors, this tradition is held as true (Hindaryatiningsih, 2016) (Ushuluddin, NO DATE) (Asrina, 2018). Traditions related to dental care are always maintained and not easily eroded because of the support from family or social environment where the individual grows and develops. Toothless dental system in communities in Tlahap, Banjarnegara, and Nginang villages in Gianyar Bali has become a tradition that has survived because of strong communication and interaction, forming a structure and positive value embraced by its conservationists

(Agustino, 2015) (Sutana, 2021) (Syahrani, 2020).

Attention to dental health is very important but it is necessary to note the impact that can be caused if done without expertise and just preserving tradition. Data released by Basic Health Research in 2018 stated that there is a high proportion of dental and oral health problems in Indonesia at 57.6%, while in South Sulawesi there are 68.9% which has an impact on the prevalence loss of teeth and cavities. One of the reasons is that people usually check their teeth if they experience complaints that cannot be treated by themselves. The traditional habit of caring for teeth that is still carried out in the Bugis community in South Sulawesi is *Mappanetta' isi* (repairing/strengthening the position of teeth). The tradition of *mappanetta' isi* is not only carried out when a person is still a child but until adulthood, the tradition is still carried out because it is believed to strengthen and tidy the arrangement of teeth. This tradition is introduced and carried out by parents to children since childhood, especially for those who have grown permanent teeth by biting firmly into the cloth that has been wrapped so that the teeth of the upper and lower jaws meet while rubbing left and to the right and back each morning, usually for a week and can be repeated at any time. Based on the data obtained that there is pain and soreness felt after doing *mappanetta' isi*, this could be due to strong pressure when biting the cloth. However, this did not last long and the next morning *mappanetta' isi* The contents can be restarted.

This study is important to conduct to analyze family support on the preservation of *Mappanetta' tradition of contents* associated with dental health. In modern medicine, if the pressure is applied continuously without knowing how much energy is given, it will result in the occurrence of *Trauma From Occlusion* (TFO) or occlusion trauma to the patient's teeth, muscle mass disorders and jawbone or dental periodontal tissue that can result in periodontal tissue injury.

Based on the previous background description, the purpose of this study is to analyze family support in the *Mappanetta' isi* tradition as an effort to

maintain dental health in the Bugis community in South Sulawesi.

METHODS

Using qualitative (Bungin, 2020) methods to interpret and analyze in depth family support for *mappanetta'isi* as a cultural tradition of local wisdom of the Bugis Tribe in Wajo Regency in maintaining dental health. Data were obtained through observation, *in-depth interviews* and documentation related to *mappanetta's content* activities during the study. The research was located in Wajo Regency, South Sulawesi. Data types and sources

Primary data: obtained directly at the research site by using interview guidelines and observation sheets as well as measuring the degree of tooth shakiness (measurement data on the results of the study).

Purposive selection of informants: 1 key informant is a religious figure and community leader, 4 main informants are people who carry out *mappanetta'isi* activities, and 1 supporting informant is a dentist.

Secondary data in the form of dental patient visits and dental and oral diseases obtained from the Health office, books and related journals.

Data Collection: Observations related to the direct implementation of *mappanetta'isi* and the interaction of each party involved, *In-depth interviews* on three categories of informants regarding tradition, support beliefs Family and impacts or complaints related to the activities of *Mappanetta ISI* and documentation related to the implementation of the *Mappanetta ' ISI* tradition.

Data analysis Using thematic analysis to find patterns of meaning from data that has been collected, validity of data using source triangulation, engineering triangulation and time triangulation. Extension of observations will be made if additional data are required.

RESULTS AND DISCUSSION

The research was conducted in March-May 2023 in Wajo District, South Sulawesi with 4 main informants, 1 supporting informant, namely the local dental health officer and 1 key informant,

namely a local community leader.
Characteristics of informants as follows:

Table 1. Informant Characteristics Based on Age, Occupation and Recent Education

No.	Informant	Age	Work	Education Last	informati on
1.	D	51	IRT	Junior HS	IB
2.	NH	20	Student	Bachelor	IB
3.	UK	17	Student	Senior HS	IB
4.	H	15	Student	Junior HS	IB
5.	MI	51	Self employed	Bachelor	IK
6.	YSW	24	Dentist	Bachelor	IP

Source: Primary data (2023)

Based on table 1, it can be described that the age of informants who carried out the *mappanetta'* content tradition during the study was not only children but until adolescence and parents were still doing it, this asserts that if an individual's habits are considered positive for him, then they will be preserved. Based on work and education, it is illustrated that the *tradition of mappanetta' isi* developed in the Bugis community in this study and formed habits and values for its conservationists regardless of the level of education and occupation.

The results of research on family support for the preservation of the *mappanetta' isi* tradition were generally introduced by their parents who also still maintain the custom, as revealed by informants:

"Mappanetta' isi ini saya lakukan karena saya percaya supaya tidak cepat sippo (ompong) gigi dan dulu saya selalu diingatkan oleh orang tua dan sekarang juga saya selalu ingatkan anak dan cucu saya" (D, 51 tahun).

The same was expressed by another informant:

" Saya mappanetta' isi setiap bangun tidur pagi sejak kelas 6 supaya gigiku kuat, tidak cepat ompong seperti yang dikatakan dan dilakukan oleh orangtua saya"(NH, 20 tahun).

The system of inheritance of traditions carried out by parents will be carried out by their children especially if it is easy to practice as revealed by informants:

"Saya diajarkan oleh nenek caranya yaitu melilit-lilitkan sarung lalu diletakkan diantara gigi atas dan gigibawah kemudian digigit sekuat-kuatnya sambil nenek saya menarik sarung tersebut kekiri dan kekanan supaya gigi rata dan rapat, kira-kira selama 1-2 menit. Awalnya terasa kram dan pegal tapi lama kelamaan sudah biasa dan sekarang saya masih kadang mappanetta' isi" (H, 15 tahun).

The *tradition of mappanetta' isi* is a hereditary tradition and is not a good thing for some Bugis people, especially in Wajo Regency, as expressed by local community leaders:

"masalah mappanetta'isi ini sudah lama dikenal oleh masyarakat, karena sudah ada informasi secara turun temurun dari orangtua, karena menurut mereka ini sangat bagus, kalau tidak salah umur 5 tahun sudah diperkenalkan pada anak jikabaru bangun kadang menggunakan sarung yangdililit, ada juga menggunakan ujung bantal sebagai tempat menggigit" (Mi, 51 tahun).

The traditions accepted and carried out by the community in this study are responded medically by health workers who are dentists, as follows:

"Saya selalu mendengar tentang mappanetta' isi ini dan belum ada keluhan dari yang melakukannya. Belum pernah ada penelitian mengenai menggigit secara keras dapat menguatkan gigi. Secara medis, tekanan yang kuat bisa saja berdampak terjadinya ankilosis berupa menyatunya akar

gigi dengantular alveolar. Tradisi itu baik selama tidak merugikan sang anak, edukasi yang diberikan orang tua adalah dapat dilakukan dengan memberikan informasi bahwa untuk menyehatkan gigi

ada banyak prosedur dental yang bisa dilakukan” (YSH, 24 tahun).

The results of measurements made based on the wobble of the teeth according to Miller can be seen in the table.

Table 2. Distribution of Informants based on tooth wobble according to Miller.

No.	Informant	Degree			
		0	1	2	3
1.	D		V		
2.	NH		V		
3.	UK		V		
4.	H		V		
5.	N		V		

Source: Primary data (2023)

Information:

1. Degree 0 → no physiological wobble/unsteadiness
2. 1st degree → mild wobble: < 1 mm horizontal movement in the facial-lingual direction
3. 2nd degree → moderate wobble: > 1 mm horizontal movement in the facial-lingual direction
4. 3rd degree → of heavy wobble: > 1 mm horizontal movement in the facial-lingual and/or mesiodistal direction and movement in the vertical direction.

Based on table 2, regarding the frequency of informants based on tooth shak, according to Miller, obtained from

5 people as informants, it was found that in general, all informants had 5 degrees of tooth shambles, category 1, namely mild tooth wobble. This happens because the average informant conveys doing *mappanetta'isi* and routinely to the dentist 2 times a year so that the process of tooth growth and development is still well maintained.

Based on the information that has been described, it can be concluded the theme and meaning obtained from family support for the *mappanetta tradition* content, as follows:

Table 3. Family support based on emerging themes and meanings

Tema	Makna
Family Support	<ul style="list-style-type: none"> • Introduced and taught by family (parents, grandparents) since childhood • Performed in the morning • Strengthens teeth • Teeth are not easily toothless, teeth are strong and not easily toothless • Can be done at any time

Maintain dental health as part of overall body health by caring for dental health and oral cavity regularly. Many diseases are caused by dental problems, including gum disease, rapid tooth loss and even heart disease. If someone experiences complaints in their teeth, usually treatment efforts are carried out in various ways both medically and traditionally. The sophistication of

facilities, human resources for dental care are not Immediately eliminate the tradition that is entrenched in society in caring for teeth.

There are many habits that grow and develop in society related to health, as well as in South Sulawesi which consists of several tribes and customs and is still preserved today. One of the customs that is still carried out in the Bugis community is *mappanetta' isi* which

began in childhood. *Mappanetta' isi* is a traditional dental treatment to be strong and not easily toothless, done with Biting the upper and lower teeth using a holster, usually done in the morning. The trick, by twisting the tip of the sheath and then bitten while the upper and lower teeth are back and forth back and forth the same thing is done left and right, the goal is to make the jawbone more solid so it is not easy to shake.

Another benefit felt by people who have mappanetta 'isi is not easy to experience dental rice disorders in old age. Masalah gigi terutama Periodontal including loss in old age is indeed the most common complaint and is usually caused by a lack of attention to dental and oral hygiene and care (Mappanetta, 2023) (Sari, 2015).

Based on the results of the study, it was found that the habit of *mappanetta' isi* because it has been felt the benefits by the previous people in the Bugis community, there is a sense of satisfaction and trust in dental care Traditionally in order for the tooth structure to be strong, so it was continued by subsequent societies. According to Sutana (Wilson, 2019) (WHO, 2022) the nature of his research on the Nginang tradition reveals that people's charities determine their usefulness, habits in the activities of a tradition show that society manifests self in the context of time and space. Associated with this study, activities carried out for generations are efforts to preserve culture expressed orally and behavior aimed at maintaining healthy teeth and gums. If it is associated with the theory of behavior formation by L. Green¹⁴, Family is a reinforcing factor in behavior, especially if there are facilities that support the formation of such behavior as well as the tradition of *mappanetta' isi*.

The role of the family in the formation of behavior is very influential on the individuals in the family, the values taught will be internalized and become habitual patterns that will be passed on to their generations. Family is the most important part and is the first source of support in social life that a person receives (Yusselda, 2016). As well as family functions expressed by Friedman that families provide informational, instrumental, judgmental support and emotional support so that modeling or

inheritance of behavior occurs in the home environment (Friedman, 2010).

In the *mappanetta' isi* tradition, the family performs its function by providing emotional support in the form of attention and concern for their children, informational support related to introducing and providing information and Understanding of *mappanetta' isi*, instrumental support in the form of facilitating the implementation of these habits by using materials in the house such as sarong cloth as a basis for biting, as well as assessment support in the form of motivation and direction to children to take care of their teeth so that they are neatly arranged, and not easily shaken with *meppanetta' filling*. In the process of inheriting cultural values and traditions in the family environment played by parents by carrying out habits that will be seen, noticed and internalized by children so that they feel These cultural values and carried out from generation to generation (Hindaryatiningsih, 2016).

CONCLUSION

Based on the results of the study, it can be concluded that the role of family support in the preservation of *mappanetta' content* is in the form of a process of socializing values by introducing, practicing, sharing experiences and paying attention to the aesthetics of their children's teeth So that it is internalized and functions into a habit from generation to generation.

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Is Health Education on Anemia Increasing Iron Supplementation Consumption in Adolescent Girls?: A Systematic Review

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ABSTRACT

Background: Approximately 1.62 billion people worldwide suffer from anemia, and about half of all anemia can result from iron deficiency. Adolescence is also considered the golden time for interventions to control anemia. It is also the right time to create a nutritional foundation for the labor of a child in the future. Nutrition education in schools has been shown to be effective in improving young people's knowledge, attitudes, and practices regarding anemia prevention. **Objectives:** This study aims to analyze the effects of iron supplementation and nutritional education on anemia in adolescent girls and the correlation with iron supplementation consumption so that anemia can be prevented as early as possible since adolescent **Discussion:** This study showed that health education on anemia increasing adolescents' knowledge and also weekly Iron-Folic Acid Supplementation (WIFS) with health education can be effective in reducing the prevalence of anemia in adolescent girls by increasing the Hb level. **Conclusions:** These studies conclude that nutritional education increased the level of knowledge, attitude, and practice of adolescent girls and also led to an increase in Hemoglobin levels which can prevent anemia. Health education on anemia increase knowledge and practice of iron supplementation among adolescent girl. Increasing knowledge and practice in consuming iron supplementation will also increase the level of hemoglobin.

Keywords: Adolescent, Anemia, Health education, Iron supplementation.

INTRODUCTION

Approximately 1.62 billion people worldwide suffer from anemia, and about half of all anemia can result from iron deficiency (McLean *et al.*, 2009). Children, pregnant women, and women of childbearing age are severely affected. The number of non-pregnant women of childbearing potential affected by anemia increased globally from 464 million in 2000 to 578 million in 2016 (WHO, 2018). Africa and Asia are the most affected, with a prevalence of over 35%, so more efforts are needed to contain the problem. In developing countries, anemia is a major public health problem not only for pregnant women and children, but also for adolescent girls (Sari, Herawati, Dhamayanti and Hilmanto, 2022). Adolescence, the transition to adulthood, is characterized by intense growth leading to the behavioral and sexual maturity of the individual. It is the second growth spurt of life when girls go through various experiences. Adolescents have an increased need for food, especially iron.

Adolescence is also considered the golden time for interventions to control anemia. It is also the right time to create a nutritional foundation for the labor of a child in the future (Kamalaja, Prashanthi and Rajeswari, 2018). The thing that makes young women vulnerable to anemia is menstruation that occurs every month. Adolescent girls who suffer from anemia are at risk of developing anemia during pregnancy. This will have a negative impact on the growth and development of the fetus in the womb-like appears to increase the risks of stunting premature delivery, low birth weight, and infant death, (Means, 2020) and has the potential to cause complications in pregnancy and childbirth, and even cause the death of mother and child (Abu-Ouf and Jan, 2015). According to the World Health Organization (WHO), the world prevalence of anemia ranges from 40-88% and the incidence of anemia in young women in developing countries is around 53.7% (Kemenkes, 2018).

One of the developing countries

that still suffer from anemia is Indonesia. Anemia among Indonesian women of childbearing age (15-49 years) increased from 21.6% in 2018 to 22.3% in 2019 (Sari, Herawati, Dhamayanti and Hilmanto, 2022). Anemia is characterized by an absence of functional hemoglobin. Anemia is estimated to affect about a quarter of the world's population and is more common in young children and women of childbearing age. Anemia has serious health consequences and is a major contributor to the global burden of disease (Kassebaum *et al.*, 2014). Anemia is a direct indicator of malnutrition and dietary iron deficiency and is a serious public health problem for adolescent girls. Adolescent girls are more susceptible to iron deficiency and anemia due to increased growth, reduced dietary iron absorption, low dietary iron bioavailability, and higher incidence of infections, parasitic infections, and menstrual bleeding. Iron deficiency anemia is more common in adolescent girls than in adolescent boys. (This is due to excess iron loss during menstruation (Juffrie, Helmyati and Hakimi, 2020). In addition, the risk of anemia in adolescent girls is increased by illiteracy, ignorance, and lack of knowledge about iron deficiency (Habeeb, 2018) (van Zutphen, Kraemer and Melse-Boonstra, 2021).

A weekly iron supplementation is a preventive approach aimed at improving and maintaining a woman's iron status before pregnancy and preventing anemia during pregnancy. Regulation of the Minister of Health of Indonesia number 88 of 2014 on standards for blood addition tablets for women of pregnant age and pregnant mothers stipulates that blood supplement tablets for women of childbearing age are given once a week and once a week. Women of childbearing age are given 1 (one) time a week and 1 (one) time a day during menstruation so that in one year women of childbearing age consume approximately 52 blood supplements.

According to the 2018 Basic Health Research by the Ministry of Health of the Republic of Indonesia, it was found that adolescent girls who consumed blood supplement tablets <52 grains amounted to 98.6%, while adolescent girls who consumed blood supplement tablets \geq 52 grains only amounted to 1.4%. Blood

supplement tablets have been routinely distributed to junior and senior high school girls. However, there are still female students who do not take the blood supplement tablets because they feel nauseous, do not like the smell of tablets, are afraid of the side effects of blood supplement tablets, and so on. This can occur because the knowledge of adolescent girls may be still lacking regarding the consumption of blood-added tablets. Because there are still adolescent girls who have less knowledge about blood-added tablets and are not compliant in consuming them (Saridewi *et al.*, 2019).

Therefore, health education is needed to increase the knowledge, attitudes, and actions of young women regarding the consumption of iron tablets in order to prevent anemia (Angadi and Mahabalaraju, 2016). Moreover, nutrition education is a long-term strategy as it builds good nutritional status (Sharma *et al.*, 2020). A community-based intervention study in India was conducted with 300 adolescent girls aged 13-17 years who were evenly divided into intervention and control groups. The anemia nutrition education program was conducted only for her 4 months in the intervention group. Results showed a significant positive effect on hemoglobin levels in the intervention group and her KAP score status (Kamalaja, Prashanthi and Rajeswari, 2018).

Similarly, a randomized controlled trial (RCT) was conducted in the Gaza Strip, Palestine, in which 89 girls aged 15-19 years were divided into control and intervention groups. In the intervention group, she participated in nutrition education lectures for 3 months. Pre-test and post-test results showed scores for good knowledge and positive attitudes, with significantly improved acceptance of preferred practices in the intervention group (Jalambo *et al.*, 2017). In Ethiopia, a cross-sectional, community-based study was conducted with 1,323 girls. Ages 10-19. Self-reported, less than half of the sample knew anything about anemia, and approximately one-third knew about the association between iron-rich dietary intake and anemia (Endris *et al.*, 2022).

This study aims to analyze the effects of iron supplementation and nutritional education on anemia in adolescent girls and the correlation with

iron supplementation consumption so that anemia can be prevented as early as possible since adolescence.

METHODS

A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement guideline to identify research on the association between health education on anemia with iron supplementation consumption. The search

was conducted in PubMed, Wiley Online Library, and DOAJ with several inclusion criteria; cross-sectional study, human studies junior high school and senior high school students published in English, between 2018 to 2023, p-value and methods were described. The search terms were 'Iron Supplementation', 'Anemia', 'Health education', and 'Adolescent'. Studies with respondents who is a pregnant woman were excluded from this systematic review.

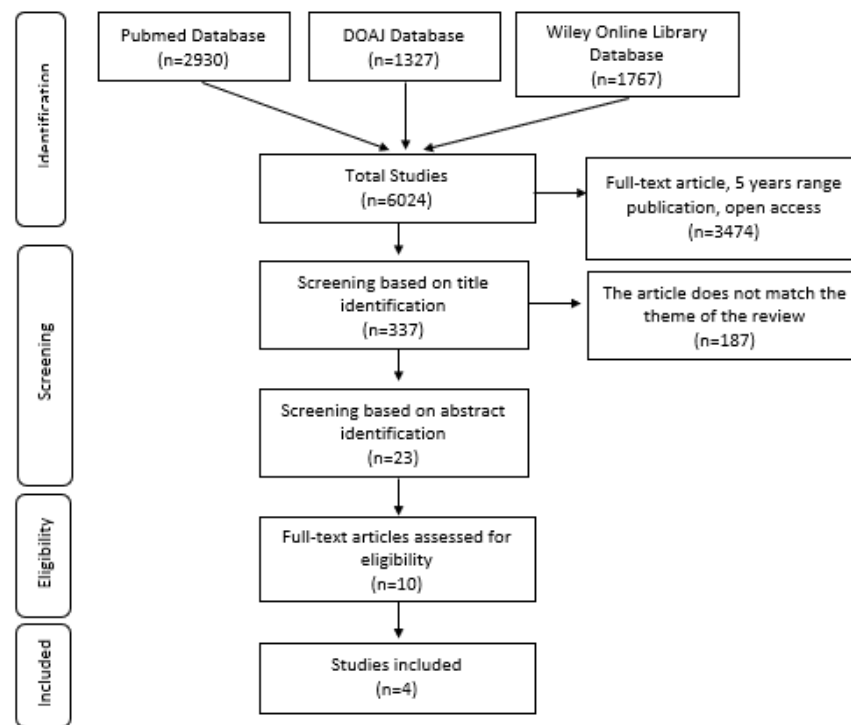


Figure 1. Flow of method.

RESULTS AND DISCUSSION

Table 1. Result of research.

No.	Study References	Study	Subject	Summary of Result
1.	Singh, <i>et al.</i> , 2020	Comparative Study	210 adolescent senior secondary schools	There was a significant decrease in the prevalence of anemia in both the intervention group and the control group after the health education intervention was carried out. And also the collaboration between Weekly Iron-Folic Acid Supplementation (WIFS) with once-a-month of health education was found to be effective in reducing the prevalence of anemia in adolescent school girls.
2.	Jalambo, <i>et al.</i> , 2018	Randomized control trial	131 iron-deficient female adolescents	Supplementation of iron tablets every week for 3 months and

			aged 15-19 years	health education interventions are considered to be able to increase hemoglobin levels in adolescent girls. Meanwhile, adolescent girls who only received iron tablets without being given health education experienced a decrease in hemoglobin and ferritin levels.
3.	Ghadam, <i>et al.</i> , 2022	Randomized clinical trial	176 adolescent students girls aged 10-19 years in the city of Saravan were selected randomly.	Nutrition education interventions presented with a new method, namely digital games can significantly increase the knowledge, attitudes, and actions of young women in consuming iron tablets and followed by an increase in Hb and ferritin levels.
4.	Madestria, <i>et al.</i> , 2021	Quasi-experimental design	124 respondents of female student in 7th grade and 8th grade.	The intervention group that was given educational videos and changes in blood supplement tablet packaging experienced significant changes in knowledge, attitudes, and intentions to consume iron supplement tablets. Likewise with adolescent girls in the control group who only received health education interventions in the form of videos, there were also changes in knowledge, attitudes, and intentions in taking iron tablets.

The results of this study showed that health education on anemia increased adolescents' knowledge. The program for giving iron tablets has been promoted for a long time in Indonesia, but one of the obstacles to this program is the lack of knowledge (Putri, Djuari and Dwilda, 2023). There are still adolescent girls who have less knowledge about blood-added tablets and are not compliant in consuming them (Putri, Djuari and Dwilda, 2023).

In concordance with the results of this study, a recent trial in Indonesia showed that nutrition education affected improving knowledge about exclusive breastfeeding (Setyowati, Rohaya and Rahmawati, 2023). Another study about the effect of mobile health education regarding anemia among female students implies that adolescents' knowledge increased significantly in three months after the intervention (Sari, Herawati, Dhamayanti, Ma'ruf, *et al.*, 2022). Study about health education for obesity risk reduction among junior high school student state that participants in the intervention group had better knowledge regarding physical activity and diet (Rizvi, Kumar, Kulkarni, & Kamath, 2022). Thus, it can be concluded that health education

is very important to increase the knowledge of adolescent girls about anemia. So, they can understand how to prevent anemia itself.

This research also shows that weekly Iron-Folic Acid Supplementation (WIFS) with health education can be effective in reducing the prevalence of anemia in adolescent school girls by increasing the Hb level (Singh, Rajoura and Honnakamble, 2020). Besides that, adolescent girls who only received iron supplementation decreased their Hb and ferritin levels. This shows that health education can increase adolescents' actions to consume iron tablets and eat nutritious foods so as to increase their hemoglobin level and prevent anemia. Therefore, to change people's living habits to be healthier we need health education. So that it does not only force someone to carry out an activity but slowly changes it by increasing knowledge, and attitude, then the final achievement is action to create healthy habits that last longer (Ghadam *et al.*, 2023). Health education has also experienced development, not only using counseling methods that might make adolescent girls bored or uninterested. An example is using digital games, videos, and modifying the packaging of blood-boosting

tablets(Ghadam *et al.*, 2023)(Madestria *et al.*, 2021).

Another recent study about health education intervention on brucellosis state that after given health education there were statistically significant reduction in the risk behaviors practices like raw milk consumption, help animals give birth without a gown, dispose of the product after delivery in the trash(Ghugey, Setia and Deshmukh, 2022). This is also state in a research about health education on oral health of school children that there is a statistically significant positive change in dental practice score in the participant who received verbal and audio-video sessions about oral hygiene(Makhdoom, Malik and Mohammad, 2022).

Lastly, a study about education on breastfeeding mothers towards heavy metals transferred from breast milk state that the mean score of the mothers practice in the intervention group after training significantly increased ($P < 0.05$)(Marzban *et al.*, 2022).

Based on the results of the several studies above, it can be concluded that health education, especially in this discussion regarding anemia, is important to give to adolescents. So that teenagers do not just only receive iron tablets. However, they also need to be educated about anemia and how to deal with it so they understand better and are willing to take iron supplementation.

CONCLUSION

This systematic review conclude that health education on anemia increase knowledge and practice of iron supplementation among adolescent girl. With increasing knowledge and practice in consuming iron supplementation will also increase the level of hemoglobin, which can prevent anemia in adolescents. We suggest further research to be able to find the most effective educational tools to increase knowledge and practice of adolescent in iron supplementation.

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The Socio-cultural Context of Barriers to Exclusive Breastfeeding Practices among Mothers in Karanganyar District Central Java Province

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ABSTRACT

Background: Exclusive breastfeeding has an important role in preventing stunting among children due to chronic malnutrition. According to Indonesia Health Profile 2020, approximately 33.9% of children under six months were not exclusively breastfed. One of the challenges to achieving successful exclusive breastfeeding comes from socio-cultural aspects. **Method:** This mixed-methods study examined the socio-cultural context of barriers to exclusive breastfeeding among mothers. For a cross-sectional study in Karanganyar District, Central Java Province, a total of 706 participating mothers with children aged between 6-59 months were interviewed using a structured questionnaire in 2021. In addition, in-depth interviews with mothers were conducted to enrich the findings related to the obstacles in giving exclusive breastfeeding. **Result:** The binary logistic regression found that male children (AOR= 1.64, 95%CI (1.06, 2.56), children living in low-income households (AOR= 2.48, 1.25, 4.92), children with low-educated mothers (AOR= 8.84, 95%CI (3.83, 20.36), children with working mothers (AOR= 6.45, 95%CI (3.79, 10.98), children with pre lacteal feeding (AOR= 5.67, 95%CI (2.33, 13.75) were more likely to have nonexclusive breastfeeding. This study also revealed that 36,1% of mothers in Karanganyar District gave honey as pre-lacteal feeding to the newborn, which hindered exclusive breastfeeding practices. The qualitative approach also confirms this finding. **Conclusion:** Therefore, it is important to strengthen health promotion programs related to exclusive breastfeeding to mothers and the family through the life cycle approach based on the local context.

Keywords: Exclusive breastfeeding, Inter-generation health problems, Mixed-methods study, Socio-cultural, Stunting.

INTRODUCTION

The World Health Organization (WHO) mentioned breastfeeding as a cost-effective investment to increase child health and survival (Gayatri & Dasvarma, 2020; WHO, 2017). Infants should be exclusively breastfed for the first six months of life in addition to their continuation with the addition of complementary foods for two years (Asemahagn, 2016; Kandeel et al., 2018). Exclusive breastfeeding is when an infant receives only breast milk without additional water or solid food in the first six months of life, except for vitamins, mineral supplements and medicine (Motee & Jeewon, 2014; WHO, 2017).

Breast milk has been shown to contain the necessary nutritional needs of the infant with immunological and anti-inflammatory properties that protect

children against various infections and diseases (Godfrey & Lawrence, 2010; Islam et al., 2018; James & Lessen, 2009). There has been growing evidence that nonexclusive breastfeeding increases the risk of child mortality due to diarrhea and pneumonia more than twofold among infants aged 0-5 months (Kandeel et al., 2018). Furthermore, previous studies revealed that children who received exclusive breastfeeding for less than six months were more likely to be stunted than children who received exclusive breastfeeding for six months (Aguayo & Menon, 2016; Berhe et al., 2019; Bukusuba et al., 2018; Chirande et al., 2015). For short- and long-term consequences, stunting among children due to chronic malnutrition was related to a lower immune system in infants and an increased risk of chronic diseases during adulthood, such as diabetes and

cardiovascular disease (Aguayo & Menon, 2016; Black et al., 2008; Black et al., 2013). Thus, evidence suggests long-term health benefits of breastfeeding, including reduced risks of non-communicable diseases and increased benefits to human capital in adulthood (Bhattacharjee et al., 2021).

Despite the benefits, the proportion of exclusively breastfed children remains low in many low- and middle-income countries [LMICs] (Bhattacharjee et al., 2021; Olufunlayo et al., 2019). Evidence shows that most mothers started to exclusively breastfeed their babies at birth and the rate declined greatly about two or more months (Mascarenhas et al., 2006; Qasem et al., 2015). A cross-sectional study conducted in southern Brazil showed a 72.5% overall breastfeeding rate and 43.7% exclusive breastfeeding among infants younger than 6 months of age (do Nascimento et al., 2010). Other studies in Tanzania and Uganda showed that 19% and 48% of mothers practiced exclusive breastfeeding of their infants up to the age of four months (Bukusuba et al., 2018; Chirande et al., 2015). In Indonesia, 66.1% of infants were exclusively breastfed in 2020 (Kementerian Kesehatan, 2021). The proportion of exclusive breastfeeding appeared to vary significantly between regions within Indonesia. Specifically, some provinces (e.g., West Papua, Maluku, and North Sumatera) are still have a percentage of exclusive breastfeeding below the national average.

Several studies have identified a variety of factors that may influence the practice of exclusive breastfeeding. Among the socioeconomic factors, household income, mother education, and mother employment status are documented as significant factors of exclusive breastfeeding (Adugna et al., 2017; Kandeel et al., 2018; Swigart et al., 2017). Health-related factors for exclusive breastfeeding, such as mode of delivery, have also been found to be related to the practice of exclusive breastfeeding (Adugna et al., 2017). Furthermore, Indonesia contains rich cultures that could influence breastfeeding practice among mothers. Therefore, it is necessary to identify the socio-cultural context that becomes a barrier to the practice of exclusive breastfeeding.

This mixed methods study aims to examine the socio-cultural context of barriers to exclusive breastfeeding among mothers in Karanganyar District, Central Java Province. Despite this, Indonesia's exclusive breastfeeding percentage remains unsatisfactory. The goals were specifically to: 1) improve exclusive breastfeeding in Indonesia; 2) examine breastfeeding knowledge, including exclusive breastfeeding, among mothers and family, and 3) identify barriers to exclusive breastfeeding in relation to socio-cultural factors.

METHODS

Study Design and Location

This mixed methods study design with primary data was collected in Karanganyar District, Central Java Province, between June to November 2021. The district is approximately 565 kilometers (km) from Jakarta, the capital of Indonesia, with a total area of approximately 773.8 km². The estimated population of this district was 931,963 people and approximately 7.56% of them were children under 5 years of age (BPS Kabupaten Karanganyar, 2020). There are 17 subdistricts with 177 villages, of which 53 are rural areas and 124 are urban areas. This district has 21 primary health care units (PHCUs) or *Puskemas* [*Pusat Kesehatan Masyarakat*] distributed in all sub-districts and one type C hospital. The two main sectors that support the district's economy are industry (the food and textile industry) and agriculture (BPS Kabupaten Karanganyar, 2020).

Source of Population and Study Sample

The source of the population of this study was all children aged 6 to 59 months who were registered in medical records in all 21 PHCUs in the 17 sub-districts. However, during the data collection period, 11 subdistricts were designated as red zones due to the Covid-19 pandemic. Therefore, the sample population included children aged 6 to 59 months in 10 PHCUs in 9 sub-districts. A total of 706 children (296 children with exclusive breastfeeding and 410 children with nonexclusive breastfeeding) aged 6 to 59 months were selected as the study sample from medical records using a simple random sampling method.

In addition, in-depth interviews with 10 mothers in Karanganyar District were conducted to enrich the findings related

to the obstacles in giving exclusive breastfeeding.

Data Source and Population

For a cross-sectional study in Karanganyar District, Central Java Province, a total of 706 participating mothers with children aged between 6-59 months were interviewed using a structured questionnaire from June to November 2021. Furthermore, 10 couples, husband and wife, in the same study area were interviewed for qualitative data.

Variable Selection and Measurement

Exclusive breastfeeding practices, the dependent variable in this study, was measured as a binary variable (yes and no). According to the WHO (2016), infants receiving only breast milk for the first six months were classified into the "yes" group. A total of seven independent variables were included (1) child sex, (2) household income, (3) mother education, (4) mother employment status, (5) place of residence, (6) mode of delivery, and (7) prelacteal feeding.

Regarding the measurement of independent variables, child sex was treated as a binary variable (male and female). Household income is defined as entire income of all family members in a household and will be measured as ordinal variable with three levels (low= ≤ 2 million IDR, middle= > 2 million- < 3.5 million IDR, high= ≥ 3.5 million IDR). Mother education was measured as an ordinal variable with three levels (1 = junior high school or below, 2 = high school, and 3 = college or above). Mother employment status was

treated as a binary variable (working and non-working). This study measured place of residence as a binary variable (urban and rural). The classification of urban and rural areas is identified following the BPS-Statistics Indonesia (BPS, 2010). The mode of delivery was measured as a binary variable (normal delivery and caesarean section). Lastly, prelacteal feeding practice was treated as a binary variable (yes and no). If mothers gave prelacteal feeding to the newborn (e.g., honey, sugar), they were categorized in the "yes" group.

Statistical Analysis

For statistical analysis, descriptive statistical analysis was performed to summary the study sample and variables. Since the dependent variable, exclusive breastfeeding was a binary variable (yes and no), binary logistic regression (BLR) was performed to analyse the association between selected independent variables and exclusive breastfeeding (Hosmer & Lemeshow, 2020). The statistical significant level was set at p -value < 0.05 and IBM SPSS Statistics Version 26 software was utilized for all statistical analyses conducted in this study.

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

The result of descriptive statistical analysis for a summary of the study sample and variables are shown in Table 1.

Table 1. Descriptive statistics analysis for the study variables and exclusive breastfeeding practice.

Variables	Overall group		Exclusive breastfeeding group		Nonexclusive breastfeeding group		p -value
	n	%	n	%	n	%	
Child sex							
Male	367	52	134	36.5	233	63.5	0.002*
Female	339	48	162	47.8	177	52.2	
Household income							
Low (≤ 2 million IDR)	286	40.5	66	23.1	220	76.9	0.000*
Middle (> 2 million- < 3.5 million IDR)	213	30.2	107	50.2	106	49.8	
High (≥ 3.5 million)	207	29.3	59.4	123	40.6	84	

IDR)							
Mother education							
Low (junior high school level or below)	212	30.0	24	11.3	188	88.7	0.000*
Middle (high school level)	299	42.4	141	47.2	158	52.8	
High (college level or above)	195	27.6	131	67.2	64	32.8	
Mother employment status							
Working	342	48.4	103	30.1	239	69.9	0.000*
Non-working	364	51.6	193	53.0	171	47.0	
Place of residence							
Rural	275	39.0	74	26.9	201	73.1	0.000*
Urban	431	61.0	222	51.5	209	48.5	
Mode of delivery							
Normal	494	70.0	235	47.6	259	52.4	0.000*
Caesarean section	212	30.0	61	28.8	151	71.2	
Prelacteal feeding							
Yes	255	36.1	6	2.40	249	97.6	0.000*
No	451	63.9	290	64.3	161	35.7	

Note: *= statistically significant at p-value <0.05.

The proportion of exclusive breastfeeding and nonexclusive breastfeeding was 41.9% and 58.1% respectively. From the total sample of 706 children aged between 6-59 months, male (52%) and female (48%) children were almost equally represented in the sample. For household income, 40.5% of children belonged to low-income households, 30.2% and 29.3% were middle- and high-income households, respectively.

Regarding the education of mothers, the majority (42.4%) of mothers had completed middle level (high school), while 30.0% and 27.6% of mothers had completed junior high school or below and high level (college or above), respectively. For mother employment status, of the total, 48.4% of mothers were working and more than half (51.6%) of mothers were non-working. Approximately three-fifths (61%) of the children lived in urban areas, while the other two-fifths (39%) were in rural areas.

One in 3 (30%) had caesarean section in the delivery mode. Regarding prelacteal feeding, 36.1% of mothers gave prelacteal food to their children.

Table 3.1 also presents the Chi-square test to compare the statistical difference of the community variables between children who received exclusive and nonexclusive breastfeeding. For child sex, male children were more likely not to get exclusive breastfeeding than female children. The prevalence of nonexclusive breastfeeding was significantly higher among children from low-income than high-income households.

This study found that the prevalence of nonexclusive breastfeeding was found higher among children with lower-educated mothers. Specifically, mothers with junior high school or below had a higher chance of not giving exclusive breastfeeding than those with high school or above. For mother employment status, a higher proportion of nonexclusive breastfeeding was found among working mothers than non-working mothers. The results indicated that the prevalence of

nonexclusive breastfeeding was significantly higher in children who lived in rural areas than children in urban areas. For the mode of delivery, mothers who delivered babies through caesarean section were more likely to practice nonexclusive breastfeeding than mothers who had a normal delivery.

Result of Exclusive Breastfeeding Practice Analysis

The study finding of binary logistic regression (BLR) for factors associated with nonexclusive breastfeeding practice is presented in Table 3.2. In the BLR model, six variables were significantly related to exclusive breastfeeding, which were child sex, household income, mother education, mother employment status, mode of delivery, and prelacteal feeding.

Table 2. Results of BLR on factors associated with nonexclusive breastfeeding practice.

Variables	Nonexclusive breastfeeding children group	
	Adjusted OR	95% CI
Child sex		
Male	1.649	(1.060 - 2.565)*
Female	1.000	
Household income		
Low (≤ 2 million IDR)	2.483	(1.252 - 4.924)*
Middle (> 2 million- < 3.5 million IDR)	1.393	(0.765 - 2.536)
Rich (≥ 3.5 million IDR)	1.000	
Mother education		
Low (junior high school level or below)	8.841	(3.837 - 20.367)*
Middle (high school level)	2.704	(1.522 - 4.805)*
High (college level or above)	1.000	
Mother employment status		
Working	6.454	(3.792 - 10.985)*
Non-working	1.000	
Place of residence		
Rural	1.231	(0.727 - 2.084)
Urban	1.000	
Mode of delivery		
Normal	0.194	(0.119 - 0.316)*
Caesarean section	1.000	
Prelacteal feeding		
Yes	5.672	(2.338 - 13.755)*
No	1.000	

Reference = exclusive breastfeeding children group
OR odd ration, 95% CI 95% confidence interval
*p value < 0.05

In the final model, child sex was positively associated with nonexclusive breastfeeding. It indicated that male children were more likely not to receive exclusive breastfeeding 1.64 times more than their female counterparts. Household income was positively related to nonexclusive breastfeeding practice. Children living in low-income households were more likely not to receive exclusive breastfeeding than children in high-income households.

Mothers with junior high school or below (low-level) and high school (middle-level) education level were positively related to nonexclusive breastfeeding practice. Specifically,

lower-educated mothers were more likely not to practice exclusive breastfeeding than higher-educated mothers. There was a positive correlation between mother's employment status and nonexclusive breastfeeding. Children of working mothers were 6.45 times more likely not to practice exclusive breastfeeding than children of non-working mothers. The model showed that the mode of delivery was negatively related to nonexclusive breastfeeding practice. Mothers with normal delivery were more likely to practice exclusive breastfeeding than those who underwent a caesarean section. Prelacteal feeding was positively related to nonexclusive breastfeeding. Mothers who gave prelacteal feeding were 5.67 times more likely not to give exclusive breastfeeding than mothers who

did not give prelacteal feeding to their children.

The qualitative findings showed some sociocultural factors during the exclusive breastfeeding practice that potentially influenced the continuation of breastfeeding. There is a common belief that a child's health is determined by their size. Even if the child is obese, the larger his or her physique is deemed healthier. This perspective is common among society in Indonesia and significantly impacts the exclusive breastfeeding practice. Insufficient breast milk is perceived as a problem for the health of babies and they need additional food, such as formula or even solid food, so that the babies do not feel hungry.

The respondent experienced this situation where the baby was exclusively breastfed and had a relatively small body size. In this case, the mother-in-law or sister-in-law suggested consuming formula milk to make the baby gain weight and become bigger.

"The main obstacle was the family. My husband's sister has suggested that I feed the baby formula to make him plump. My husband, on the other hand, has always defended me, claiming that overweight is bad". (Interview with private employee)

Quantitative findings in Karanganyar District showed that the reasons mothers did not practice exclusive breastfeeding were lack of breast milk supply (58.8%) and crying babies due to hunger even after breastfeeding (51.2%). Interestingly, approximately 41.5% of working mothers reported that a shorter period of maternity leave (three months) affected the exclusive breastfeeding practice of the baby.

Some mothers in the study area revealed that nonexclusive breastfeeding was triggered by the midwife's recommendation for supplementary baby formula milk (26.3%). The lack of support from health providers was also an obstacle to practising exclusive breastfeeding, as found in the qualitative study in Medan City.

"I received baby formula milk as a present from the midwife. I knew that the present was not for free. I have paid for it together with the delivery service fee. How could I throw it away when I knew the price

of baby formula milk was not cheap? As I said, I have not received this present for free. So, I just decided to give my baby formula milk, which is much easier to prepare for. I do not need to wake up to breastfeed in the middle of the night. I will ask my husband to prepare formula milk and give it to the baby". (Interview with housewife).

Another mother's perspective also gave the same explanation about the association between formula milk and satiety. The respondent told about the experience during meeting other parents whose babies are not exclusively breastfed.

"My baby was insufficient if he had not received formula milk". (Interview with government officer).

Due to cultural traditions, some respondents reported giving prelacteal feeding (e.g., honey, sugar) to the newborn in the first three days of birth. Interestingly, most mothers who practice prelacteal feeding believed that applying honey and sugar could bring happiness to a newborn's future life.

"Her grandma taught me that applying honey or something sweet on the lips of the baby will bring happiness in their future life". (Interview with housewife)

In addition, some cultures in Indonesia, which come from the old generation, babies need to eat solid food (e.g., bananas or porridge) other than breast milk before the babies reach six months. The old generation usually applied this practice and suggested their children do as they did with their babies in the past.

"You ate a banana when you were two weeks old, and you have no problems with it. You are now healthy and growing." (interview government officer).

This mixed methods study investigated the socio-cultural context of barriers to exclusive breastfeeding among mothers with children aged 6-59 months in Karanganyar District, Central Java Province. The results of this present study showed that various factors determine the

prevalence of exclusive breastfeeding. Child sex was significantly associated with the practice of exclusive breastfeeding. Specifically, female children were more likely to be exclusively breastfed than their male counterparts. A similar finding was found in a study conducted in Nigeria and India (Agho et al., 2011; Kazmi et al., 2021). This could be due to the fact that male children are more valued among Javanese families. In addition, mothers believed that male children must be strong, as they would become breadwinners in the future. Interestingly, this gendered cultural perception prevents mothers from giving exclusive breastfeeding rather than introducing complementary foods early (Agho et al., 2011), as mothers feel that male children need more foods than breast milk to keep them strong and healthy.

Our study found that mothers in low-income households were more likely to practice nonexclusive breastfeeding than those in high-income households. Studies conducted in Kenya and Somalia reported similar findings in which household income is positively correlated with exclusive breastfeeding (Jama et al., 2020; Murage et al., 2011). The observed association could be due to the role of household income in improving exposure to various media that can improve mothers' knowledge on exclusive breastfeeding practice. In addition, this evidence from qualitative findings was associated with the socio-cultural aspect. The perception of mothers that they lack breast milk supply and that babies cry after breastfeeding were the common reasons for discontinuing exclusively breastfeeding. This perception led to supplementing infant formula milk, and mothers tended to stop exclusively breastfeeding (Lewallen et al., 2006). Furthermore, this study found that health professionals provided free formula milk in hospitals as a package for maternal discharge after delivery. Although the government has imposed restrictions on the supply of formula milk by health providers and penalties for those who violate the rules, the practice still exists in some health facilities in Indonesia.

This study revealed that mothers who attended high school or lower were less likely to exclusively breastfeed their children than those who attended college or higher. The finding is consistent with

the results of studies conducted in Egypt and Ethiopia (Asemahagn, 2016; Kandeel et al., 2018). This could be attributed to the role of education in improving awareness of the importance of exclusive breastfeeding practice for child health (Asemahagn, 2016). In addition, mothers with higher education had better awareness of attending antenatal care (ANC) services, in which mothers had more contact with health professionals and were more aware on the benefits of exclusive breastfeeding (Habtewold et al., 2019).

Regarding mother employment status, non-working mothers practiced relatively better exclusive breastfeeding than working mothers. This finding was similar to the study conducted in Brazil and Ethiopia (Alemayehu et al., 2009; Mascarenhas et al., 2006). Working mothers can be relatively overloaded with their work activities; thus, limiting their contact time with children and hindering exclusive breastfeeding practice (Alemayehu et al., 2009). This finding suggests the importance of providing facilities for breastfeeding mothers in the workplace.

In terms of mode of delivery, nonexclusive breastfeeding was more prevalent in children whose mothers had a caesarean delivery. This could be attributed to attempts to overcome breastfeeding and lactation difficulties within the first hour after caesarean delivery, which can take longer than a normal mother's delivery due to the long recovery period (Llorente-Pulido et al., 2022; UNICEF, 2018). In the present study, cultural differences in rural and urban areas could have hindered the practice of exclusive breastfeeding among mothers, and this is similar to studies done in Ethiopia and Egypt (Adugna et al., 2017; Ghwass & Ahmed, 2011).

Furthermore, particularly in the Indonesian setting, mothers have even more variety of breastfeeding practices due to culture and tradition. This study found that some mothers believed that introducing solid food to their babies before six months could improve their health. At the same time, it is acceptable when mothers apply something sweet (e.g., honey or sugar) on the newborn lips. According to their belief, applying something sweet on a newborn's lips was considered to bring good fortune to the

newborn's life. Previous studies in Indonesia also found that putting honey on the lips of newborns increases their immunity (Arsyati & Rahayu, 2019). These practices can impede the practice of exclusive breastfeeding.

Families' knowledge and attitudes on breastfeeding may contribute to exclusive breastfeeding success (Alianmoghaddam et al., 2018). Family members, particularly grandmothers, became barriers to exclusive breastfeeding practices among mothers. A study in Malawi indicated that grandmothers often make critical decisions on early introducing complementary foods (Kerr et al., 2008). The finding suggests that grandmothers should be involved in nutrition programs to enhance the knowledge of mothers and promote better practices of exclusive breastfeeding.

There are some limitations to this study. First, the research locations cover only Karanganyar District, Central Java Province; therefore, the culture and tradition are limited to the study area. Furthermore, recall bias is a problem, since it takes a relatively long time for mothers to remember, but we hope the recall problem does not differ.

CONCLUSION

This study found that male children, children living in low-income households, children of mothers with low education levels, children of working mothers, children of mothers with caesarean sections, and children with prelacteal feeding were more likely to have nonexclusive breastfeeding practice. In addition, sociocultural aspects significantly influence the perspective and attitude towards the practice of exclusive breastfeeding among mothers. Therefore, the findings of this study reflect the importance of education for mothers to improve their knowledge and awareness of the importance of exclusive breastfeeding practices for their child's health.

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The Culture of Drinking Herbal Medicine in Pregnant Women: A Phenomenological Study

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ABSTRACT

Background: Pregnant women who drink herbal medicine can increase the risk of meconium amniotic fluid, and meconium amniotic fluid is a risk factor for asphyxia in newborns.

Objectives: Identify three forms of culture in drinking herbal medicine in pregnant women, namely the mother's values and ideas about drinking herbal medicine, herbal drinking activities, and material on the culture of drinking herbal medicine. **Methods:** This research is a qualitative method with a phenomenological approach. Informants in this study consisted of pregnant women and key informants consisted of families of pregnant women, cadres, ustadzah, midwife and herbal medicine providers. **Results:** The cultural forms of drinking herbal medicine include: 1) Values and Ideas. Drinking herbal medicine for pregnant women still practiced because of their subjective norms and normative beliefs from the surrounding environment. All informants believed that herbal medicine could provide benefits rather than negative effects, and only midwife stated that herbal medicine had negative effects, namely meconial amniotic fluid, even asphyxia. 2) The activity of drinking herbal medicine. Pregnant women drink herbal medicine from the beginning of pregnancy until delivery. The frequency of taking herbal medicine was various. Religious figures and community leaders have an important role in the culture of drinking herbal medicine. 3) Herbal ingredients. The herbs consumed by each informant were different, there were informants who consumed homemade herbs and bought them at the market. **Conclusions:** The culture of drinking herbal medicine still carried out because the local community's belief about the benefits of herbal medicine is still high, and lack public knowledge about the effects of drinking herbal medicine on pregnant women.

Keyword: Herbal medicine culture, Phenomenology, Pregnant women.

INTRODUCTION

Utilization of traditional health services, especially herbal medicine in the world is still high. 88% of countries confirm the use of herbs and regulate their use (World Health Organization, 2019). The National Report of Riskesdas 2023 show that 49.0% of households use herbal medicine in Indonesia (Febriyanti et al., 2022). East Java is a province that ranks second highest in the utilization of ready to eat herbal medicine and homemade herbal medicine (Kemenkes, 2018). Sumenep Regency is one of the regencies in East Java that uses the most herbal medicine, ranks second for homemade herbal medicine and ranks sixth for

prepared herbal medicine (Kemenkes, 2018).

Herbal medicine is a ready-to-drink herbal medicine that is circulating in the market and has been registered with BPOM, while homemade herbal medicine is herbal medicine that is made by the household itself (Kemenkes, 2018). Herbal medicine in Sumenep Regency is used by all ages, from children to adults, including pregnant women. According to the initial survey conducted qualitatively, it is known that pregnant women in Sumenep Regency still drink herbal medicine. However, quantitatively, data on pregnant women who drink herbal medicine cannot be found in the Health Service Profile data.

The prohibition against drinking herbal medicine for pregnant women has been listed in the MCH book published by the Ministry of Health on page 19(Kemenkes, 2023). Based on an initial survey conducted by qualitative method to midwives at the Kalianget RSI Hospital and the Ganding Health Center midwives, it was stated that the culture of drinking herbal medicine is still carried out by pregnant women in Sumenep Regency because of recommendations from pregnant women's families.

The results of other studies, drinking herbal medicine during pregnancy is a risk factor for asphyxia in newborns(Anggraeni et al., 2017). Asphyxia is a failure to breathe in the fetus due to impaired oxygen flow from the placenta(KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR HK.01.07/MENKES/214/2019, 2019). Herbal medicine consumed by pregnant women can cause meconial membranes(Ningsih, 2021; Rini et al., 2020), so that the amniotic fluid is thicker and more colored, and makes it difficult for the fetus to breathe because the oxygen supply from the placenta is reduced(Kosim, 2016), resulting in asphyxia in newborns(KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR HK.01.07/MENKES/214/2019, 2019). According to other studies, there is a significant relationship between meconium-contaminated amniotic fluid and the incidence of asphyxia(Anggriani, 2017).

Ganding Health Center is a Puskesmas with asphyxia rates increasing from 2020 to 2021. The incidence of asphyxia at Ganding Health Center was 17 cases in 2020, and increased to 28 cases in 2021. Based on data from the KIA Polyclinic Profile of the Ganding Health Center, the meconial amniotic rate in Ganding Community Health Center in 2021 there will be 28 cases and in 2022 there will be 15 cases. The purpose of writing this article is to identify the culture of drinking herbal medicine at the Ganding Community Health Center, Sumenep Regency.

METHODS

This research is qualitative research with phenomenological approach. Data collection was carried out using two data collection techniques, namely in-

depth interviews and observation. In-depth interviews were conducted with informants, namely pregnant women who drink herbal medicine, and key informants, and observations were made with people who make herbal medicine, namely herbal medicine providers, in order to find out how herbal medicine is made. The number of informants (pregnant women who drank herbal medicine) in this study were three consisting of pregnant women in the 1st, 2nd and 3rd trimester respectively. The number of key informants in this study were four people, consisting of midwives, community leaders (cadres), Religious figures, and herbal medicine sellers. Determination of informants with purposive techniques. Criteria for informants are pregnant women who consume herbal medicine and have ID cards in the working area of the Ganding Health Center. The criteria for key informants are all people who are directly related to pregnant women in the herbal medicine culture, for example midwife, posyandu cadres, herbal medicine sellers, and local religious leaders.

The research was conducted at the Ganding Health Center from January to May 2023. This research passed the research ethics review No. 202/HRECC.FODM/II/2023. This study identified three cultural manifestations in drinking herbal medicine, namely the form of values and ideas, the form of activity, and the form of material(Pujaastawa, 2015). The instruments in this study used interview guidelines, observation guidelines, field notes and voice recorders. Checking the validity of this data uses a data credibility test, namely source triangulation and technical triangulation, as well as using a confirmability test(Mekarisce, 2020). Data analysis using Interpretative Phenomenological Analysis (IPA) (Love et al., 2020).

RESULTS AND DISCUSSION

Consumption of herbal medicine is a culture for the people of Madura(Andriyanti & Wahjudi, 2016). The existence of herbal medicine in the Madurese community is still high. Especially for women, drinking herbal medicine is a habit and has been socialized since childhood(Satriyati et al., 2019). Sumenep Regency is one of the regencies on Madura Island. Especially at the Ganding Health Center, herbal medicine is

still used to treat complaints of joint pain, diabetes, back pain and also health care for women.

The first form of culture is values and ideas (Pujaastawa, 2015). Values and ideas are everything that considered important and even used as a way of life. Values and ideas can be seen from the norms that apply in the surrounding environment and also the informants' beliefs about drinking herbal medicine in pregnant women (Pujiono & Sahayu, 2021). Belief can be seen from informants' beliefs about the benefits and negative effects of drinking herbal medicine during pregnancy.

Most of the pregnant women in the Ganding Health Center consume herbal medicine. The reason herbal medicine is consumed by pregnant women is because of the norms that apply around it. The norm in question is the obligation to drink herbal medicine during pregnancy. The following is a statement regarding this matter.

"In this area it seems like it has to be hahaha because it has been passed down from generation to generation, so it's hard to get rid of.. Continue to be scolded by the elderly if you don't do it.. If something happens behind, for example, it's hard to be born, you get scolded" (IU 1, 29 years).

According to the informant, it was stated that if the informant did not drink herbal medicine, she would be discriminated against by the surrounding environment, such as being scolded by her parents. If anything happens to the mother's womb, then what is at issue is the mother's refusal to drink herbal medicine. The following is a statement regarding this matter.

"Just for example, if something happens later, for example, when you were born, it was rather difficult, so your parents would definitely bring it up there (don't drink herbal medicine), get scolded" (IU 1, 29 years).

The Planned of Behavior theory explained that behavior can be formed due to subjective norms (Glanz et al., 2015). Subjective norms in this case are the environment of pregnant women who urge mothers to drink herbal medicine because

drinking herbal medicine in that environment is a 'common' thing to do. Subjective norms are influenced by normative beliefs (Glanz et al., 2015). Normative beliefs in this case are environmental beliefs of pregnant women to influence pregnant women to drink herbal medicine.

Herbal medicine taken by pregnant women as prevention. Pregnant women consumed herbal medicine before experiencing symptoms or complaints. Informants also believe that drinking herbal medicine makes birth easier. The following is a statement regarding this matter.

"...Before you feel sick or when you're not sick, you drink herbal medicine. So that you can take care of it in the future. Yes so what, birth take easy" (IU 2, 30 years old)

There are other benefits of drinking herbal medicine, besides making the delivery process smooth. Other benefits expected by the informants are improving the health of the baby and the mother, no body odor, no miscarriages, and no fishy delivery blood. The following is an informant's statement regarding this matter.

"...So that the baby and mother are healthy, don't smell, don't bleed, like that. If you talk about fishy blood, miss, it's ugly even though the person was beautiful" (IU 1, 29 years old).

According to the informant, fishy delivery blood was something that should not happen, because according to the environment around the informant, if the delivery blood was fishy, the neighbors would talk about it. This is a subjective norm and normative belief from the environment around pregnant women. The benefits felt by the informants turned out to be comparable to the expected benefits. The benefits felt from drinking herbal medicine during pregnancy are that the body feels fresh or not weak and the stomach feels 'cooler'. The following is a statement regarding this matter.

"It feels better for the body, for the baby too. If there is movement, the movement is more active" (IU 2, 30 years old).

"It means to be cold, to the womb,

to the baby to be cold.. cold” (IU 3, 45 years old).

The negative effects of drink herbal medicine on pregnant women only understood by midwife. Midwife stated that herbal medicine can have negative effects for pregnant women, namely cloudy membranes to asphyxia. Based on other studies, drinking herbal medicine in pregnant women can cause asphyxia (Anggraeni et al., 2017). The following is the midwife's statement regarding this matter.

“Sometimes it affects the amniotic fluid, it can get cloudy. Then the baby can also be asphyxiated. Actually, if the amniotic fluid is clear, if there is a mixture of chemicals, or if it's rich in herbs, it becomes a bit thick like that. Usually it's clear, clear. Then it's clear like that. If it's cloudy, the baby sometimes sucks the amniotic fluid too, so it's hard for baby to breathe...” (IK 1, 37 years old).

In contrast to midwife' state, all informants including cadres and religious leaders (ustadzah) did not know about the negative effects of herbal medicine, they understood that herbal medicine only provided benefits. According to the informants, herbal medicine has no effect because the ingredients were natural. The following is an informant's statement regarding this matter.

*“Herbal medicine has no effect, it's natural..” (IU 3, 45 years old)
“For an effect like that, yes, it doesn't exist, it's even healthier...” (IK 2, 41 years old)*

Informants' statements in this study are inversely proportional to other studies. According to another study, drinking herbal medicine during pregnancy has negative effect, namely meconial contaminated amniotic fluid (Gallo et al., 2023). Meconial contaminated amniotic fluid in birthing mothers is at risk of 8.55 times experiencing asphyxia in newborns (Gebreheat et al., 2018). According to other studies, asphyxia in newborns is related to BBLR (Babies with low birth weight) (Ango et al., 2023).

The second form of culture can be seen from the activities (Pujaastawa, 2015). The definition of activity is the

activity of drinking herbal medicine for pregnant women, including the period during which pregnant women drink herbal medicine, the frequency of drinking herbal medicine, and supporting factors for pregnant women drinking herbal medicine, for example the support factor from community leaders and local religious leaders. The period for drinking herbal medicine in pregnant women is from the beginning of pregnancy until the delivery process. The following is a statement regarding this matter.

“That's how I was from the start of my pregnancy who drank until I gave birth” (IU 2, 30 years old)

The frequency of drinking herbal medicine in pregnant women is how much pregnant women drink herbal medicine. Informants' statements regarding the frequency of drinking herbal medicine varied. There were informants who stated that herbal medicine was taken twice a month and there was also a statement that herbal medicine was drunk once every week, even twice every week. The following is a statement about this.

“..You can do it once a week..” (IU 2, 30 years old)

“..But usually closer to delivery more often” (IU 1, 29 years old)

“..But it should be once a week or two. More is better” (IK 2, 40 years old)



Figure 1. Herbal ingredients of IU 1.

Based on informants' statements regarding the frequency of drinking herbal medicine, this is in accordance with other studies in Zambia. The results of this study found that frequency of pregnant women drinking herbal medicine varied, pregnant women taking herbal medicine when there was an opportunity (47.7%), every day (37.2%), twice or more times a week (10.5%) (El Hajj et al., 2020). According to

the informant's statement, it was stated that the closer to delivery, the more frequent the frequency of taking herbal medicine, because it is for preparation for childbirth. This is consistent with research in Bangladesh. This study states that pregnant women drinking herbal medicine are more common in third trimester pregnant women, because in this trimester the fetus develops very rapidly (Jahan et al., 2022).

Community leaders and religious leaders in this study were very influential in the culture of drinking herbal medicine for pregnant women. This can be proven by the support of religious leaders in promoting herbal medicine to mothers who become guardians of students in their environment. Here is a statement about it.

"But sometimes the student's parents bring herbal medicine here, sis. Yes, ask me to offer it to the parents of other students. Yes I offer that..." (IK 3, 37 years old).

Likewise with the posyandu cadres at the Ganding Health Center, the informant stated that if a pregnant woman drank herbal medicine, the cadre would support her, for example by providing information to pregnant women about the right herbal medicine for pregnant women to drink. The following is a statement about this.

"What do you do, for example there are pregnant women who drink herbal medicine, that's supported, I would suggest drinking this herbal medicine, and this..." (IK 4, 41 years old).



Figure 2. Herbal ingredients of IU 2.

The results of the statements of key informants, religious leaders and

community leaders, the social support provided one of the factors that pregnant women still drink herbal medicine. There are two types of social support obtained from religious leaders and community leaders, namely information support and instrumental support (Wurisastuti & Mubasyiroh, 2020). Information support in this study was information assistance provided by cadres to pregnant women. Instrumental support from religious leaders to promote herbal medicine. The results of another study found that social support from husbands, friends, and health workers had an effect on the behavior of pregnant women in preventing HIV (Thaha et al., 2020).

The third form of culture is material form (Pujaastawa, 2015). The material form is the physical form of culture that can be observed by the five senses. An example of material form in the culture of drinking herbal medicine is herbal ingredients, and herbal processing. The following are the herbal medicines that IU 1 drank.

The picture shows that IU 1's herbal medicine ingredients are homemade, and are made from ingredients that are at home. The following is IU 1's statement regarding herbal ingredients and processing of herbs that are commonly taken.

"At least black rhizome, turmeric, aromatic ginger and ginger, yes betel leaf, you experience all of that... For me, I clean it, wash it as usual, throw the skin away and then boil it..." (IU 1, 29 years old).

Informants stated that herbal medicine taken during pregnancy was one type of herbal medicine. The herbal medicine above, according to the informant, has the benefit of maintaining the health of the baby and the mother, makes the mother's body odorless, and the blood of the delivery is not fishy. According to other studies, black rhizome (*Curcuma aeruginosa*) functions to increase immunity and body resistance (Sari et al., 2016). Turmeric (*Curcuma longa*) functions for wound healing, anti-inflammatory, and therapy for acne (Illamola et al., 2020). Aromatic ginger (*Kaempferia galanga*) has the function for accelerating wound healing in childbirth and facilitating breastfeeding (Jalil, 2019). Ginger (*Zingiber officinale*) has useful for reducing

the frequency of nausea and vomiting in pregnant women in the first trimester (Indrayani et al., 2018). Betel leaf (*Piper betle*) has the benefit of killing bacteria and fungi and can react in the body (Nayaka et al., 2021).

The next informant was third trimester pregnant woman, the type of herbal medicine that IU 2 drank was one type of herbal medicine, homemade herbal medicine. The following are herbal ingredients that IU 2 drank.

The picture shows that IU 2 has drinking homemade herbal medicine. Herbal medicine made by IU 2 consists of curcuma, turmeric, and sugar. The following is IU2's statement regarding herbal ingredients and herbal processing.

"The material was taken from the fence. Turmeric, ginger, brown sugar, sometimes granulated sugar. Yes, make it by myself hahaha. It's estimated, no need for measurements, it's estimated" (IU 2, 30 years old).

The informant stated that making herbal medicine did not require definite measure or dose. The informant made herbal medicine with estimated dose (self-taught). According to the informant, the benefits of drinking herbal medicine were for smooth delivery, the weight of the fetus in the stomach develops according to the month, and the body feels 'cooler'. The results of other studies, turmeric (*Curcuma longa*) functions as an anti-inflammatory, antimicrobial, antidepressant, anticancer, maintaining the cardiovascular system (Sandy & Susilawati, 2021). Temulawak (*Curcuma xanthorrhiza*) functions to reduce blood pressure in pregnant women who have gestational hypertension (Nurjanah & Sari, 2023).

The next informants are pregnant women in the second trimester with a gestational age of five months. The following are the herbs consumed by IU 3.



Figure 3. Herbal ingredients of IU 3.

Based on the picture of herbal ingredients, this informant drank four different types of herbal medicine, three were homemade herbs and one was prepared herbal medicine. The informant stated that the four herbs were taken alternately. The following is an informant's statement regarding herbal ingredients and how to drink herbal medicine.

"Alternately, alternating, what herbs and what day, for example, monday was turmeric, in two weeks I drank jasmine leaves" (IU 3, 45 years old).

The first types of herbal drank were jasmine flower leaves (*Jasminum sp*), lime leaves (*Citrus aurantifolia*), and lime water (*Calcium carbonate*). According to the informant, the benefit of this herb that you don't have body odor. There were no benefits of drinking jasmine leaves for pregnant women in other studies. Regarding limes, there is another study which says that complaints of emesis (nausea) have decreased after drinking limes for 3 consecutive days (Damayanti & Jannah, 2022). The water content of lime deposits contains calcium carbonate which helps the formation of neonatal bone mass or increases the baby's weight and reduces the risk of hypertension (Irwinda, 2020).

The second type of herbal medicine consumed by IU 3 is black rhizome (*Curcuma aeruginosa*) and native chicken eggs. According to informant, this herbal medicine has the benefit of not having a miscarriage. There are no specific research results regarding the consumption of black rhizome and free-range chicken eggs. However, black rhizome has function to heal perineum on postpartum women (Wahyuningrum et al., 2018), and raw native chicken eggs are not recommended for consumption by pregnant women (Khoirunnisa et al., 2017).

The third type of herbal medicine taken by IU 3 was turmeric (*Curcuma longa*) and buds from betel leaves. According to the informant, the benefits of this herbal medicine were the fetus to be 'cooler' in the stomach, make the fetus healthy, make the mother's body healthier. However, no other studies have revealed the benefits of betel shoots, because what is usually used as herbal medicine was the leaves (Mudjijono et al., 2014). The

function of turmeric according to other studies is to improve skin conditions and anti-inflammatory, not specific for pregnant women (Ahmed et al., 2018).

The last type of herbal medicine drank by IU 3 was anton-anton muda. The herbal ingredients listed in the herbal medicine packaging were 15% sintok (*Sintok cortex*), 5% pulosari (*Alyxiae cortex*), 10% kemukus (*Cubebae fructus*), and 5% Separantu (*Sindora fructus*). When observation, the herbal medicine provider did not know about the herbal ingredients. The method of processing herbal medicine according to herbal medicine providers was that herbal medicine powder brewed and mixed with 3 syrups or flavours, including grape flavour, honey flavour, and beras kencur flavour. Consumption of high-sweetened instant drinks has risk factor for pregnant women. Improper way of eating in pregnant women can cause hypertension in pregnant women (Juniartati & Marsita, 2021).

CONCLUSION

The first form of culture was values and ideas. Informants believe that drinking herbal medicine during pregnancy must be done because there was normative belief in the surrounding environment, and informants believe that the benefits of herbal medicine are higher than the negative effects. The second form of culture was the activity of drinking herbal medicine. Pregnant women drink herbal medicine during early pregnancy until delivery. The frequency of drinking herbal medicine for each pregnant woman was different. Religious leaders and community leaders have an important role in the culture of drinking herbal medicine.

The third form of culture is material of herbal medicine. The material of herbal medicine for each informant was different, some drank the finished herbal medicine and some made it themselves. The informant made herbal medicine according to what she believed about the benefits of herbal medicine for her pregnancy.

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The Role of the Animation Film “Kanca Cilik” in Increasing Student’s in Relation to Mental Health Help-Seeking Behaviour

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ABSTRACT

Background: Mental health problems in adolescents or grade school students saw an increased prevalence in 2018 compared to 2013. Some causes of such an increase were poor knowledge and low self-efficacy in relation to help-seeking behaviour in adolescents, especially those attending rural schools. Preventive and promotive efforts can be applied to increase knowledge and self-efficacy in relation to help-seeking behaviour in adolescents. Using a film for health promotion is highly suitable for altering the behaviour of adolescents. **Objective:** This study aims to analyse differences in the levels of mental health knowledge and self-efficacy among students in rural schools in relation to help-seeking behaviour using the animated film “Kanca Cilik.” **Methods:** This study used a quasi-experimental, time-series design and a control group. The population of this study consisted of 156 students aged 12-19 years who attended rural schools. Sampling was conducted using the purposive sampling technique. **Results:** The characteristics of respondents of the intervention and control groups had a p value > 0.05 . The knowledge and self-efficacy of the intervention group in relation to help-seeking behaviour had a p value < 0.05 . Meanwhile, the knowledge and self-efficacy of the control group in relation to help-seeking behaviour had a p value > 0.05 . **Conclusion:** There was an equality of respondent characteristics in the intervention and control groups. There was a difference in the mean values before and after film screening intervention, but there was no difference in the control group.

Keywords: Film, Knowledge, Mental Health, Self-efficacy.

INTRODUCTION

Mental disorders and other health problems now affect all aspects of life. In a 2021 annual survey, nearly 29% of adults were projected to experience mental health problems. According to the survey, mental health problems make up the most common global health problems, with nearly 3.8% of the world's population affected by depression. Currently, an estimated 280 million cases of depression have occurred globally. However, the majority of people with mental health problems do not use any professional health services for treatment (Risksdas, 2018).

The behaviour of seeking mental health services is called help-seeking behaviour (Mortal, 2018). In various developing countries, this behaviour is still minimally practiced (Prawira, 2020). In these countries, only one in five people with depression prefers to take modern medications, while the rest do not take any treatment at all (Umubyeyi et al,

2016). The planet-wide COVID-19 pandemic that took place in the years from 2020 to 2022 had resulted in an increase in mental health problems (Widnall et al, 2022). Forty-one studies on COVID-19-related mental health problems revealed that a person with mental health problems due to the COVID-19 pandemic experienced delays in finding mental health assistance (Mustikawati, 2021).

In Indonesia, the number of cases of mental disorders increased to 6.1% in 2018 among depressed 15-year-olds and older individuals. In that year, only 9% of the population received treatment from professionals, while the remaining 91% did not undergo any treatment⁶. The results of a survey at a tertiary institution in Indonesia revealed that out of 629 students who experienced mental health problems, 40.1% sought formal mental health assistance, 33.6% sought informal mental health assistance, and 26.3% did not seek any mental health assistance. In 2018, another survey was conducted on a

group of adolescents, and it was found out that 180 of them did not know that there were psychological or mental health services available, perceived a stigma towards mental health services, and lacked an understanding of campaigns regarding mental health services (Jung et al, 2017).

The help-seeking behaviour is an adaptive coping mechanism done by someone with mental health problems. One of the obstacles to this help-seeking behaviour is the stigma surrounding mental disorders and mental health services (Dal Bosco et al, 2021). Stigma, distinguished into self-stigma and public stigma, creates obstacles to gaining knowledge and developing self-efficacy in seeking mental health assistance. A lack of knowledge related to mental health problems may deter a person from behaving properly in seeking mental health assistance (Alfianto, 2019). Several studies in Indonesia unveiled that a person with mental health problems is seen as being possessed by a spirit. Thus, it is a public belief that they should seek mental health assistance from traditional leaders or "*orang pintar*" (people believed to possess supernatural powers), which constitutes an informal source of assistance. Some people in isolated places or rural areas even give up seeking mental health assistance altogether and, instead, resort to the use of *pasung* (physical confinement, usually with shackles, rope, etc.) (Guntur, 2022).

Studies regarding adolescents' knowledge of mental disorders or mental health problems are scarce. Many adolescents do not think of mental health problems as important (O'Reilly et al, 2018). They assign more importance to physical health than to mental health. This has set an obstacle to the search of mental health assistance. A study in 2019 showed that adolescents prefer talking to their peers to seeking mental health services (van de Toren et al, 2020). They do not seek formal mental health services to address mental health problems. In addition, a study with 538 adolescent respondents regarding help-seeking behavior that was conducted in 2022 stated knowledge/literacy and awareness or self-efficacy factors hinder adolescents from seeking help (Siddique, 2022). School-age adolescents tend to choose formal services such as seeing a doctor or

professional staff. Therefore, knowledge and self-efficacy play an important role in changing help-seeking behavior (Sanghvi, 2022).

Someone who has good knowledge and self-efficacy will be able to improve his health status (Alfianto, 2015). Therefore, it is necessary to make some efforts to conduct health promotion, whose types and methods currently vary. Health promotion is able to influence a person into behaving better (Wijayanti, 2022). One of the health promotion methods currently on the rise and well-liked by adolescents is to use content such as films. Research findings showed that health promotion media greatly influence the prevention of reproductive health problems in adolescents. There are a diversity of film types that can be used as media for health promotion (Susanto et al, 2020) one of which is animated films that are useful and suitable for all age groups. It is expected that the use of an animated film for health promotion will improve literacy about the prevention of health problems (Botchway & Simpson, 2018).

The animated film "*Kanca Cilik*" is a film containing education about help-seeking behavior that uses the peer education approach (Ramadhani, 2023). This approach is highly appropriate for youth, especially as some adolescents in a country also show strong social behavior in preventing mental health problems through peer relationships. This animated film has a philosophy about peers telling each other stories of their own (Harianti, 2021). This behavioral education film tells adolescents to seek mental health assistance through formal and informal approaches. This study attempted to analyze the effectiveness of the health promotion intervention using the animated film "*Kanca Cilik*" on self-efficacy in seeking mental health assistance among adolescents attending rural schools. The problem formulated for this study was how the animated film "*Kanca Cilik*" affected self-efficacy in seeking mental health assistance among adolescents attending rural schools. This research is a promotive and preventive effort of health promotion on the importance of seeking mental health assistance in the school environment.

METHODS

This study uses a quasi-experimental time-series design with a control group. The population in this study consisted of 156 adolescents who were attending rural schools in Bantur District, Malang Regency, and 87 of them were used as sample. Sampling was conducted using the purposive sampling technique. The inclusion criteria in this study were adolescents aged 13-19 years, attending rural schools, living with or without mental health problems, and participating in the intervention activity until the end. The research was conducted at the location of one of the Islamic education foundations in Bantur District from January to February 2023.

The measuring instruments used in this research were the Mental Health Knowledge Questionnaire (MHKQ) and the General Self-Efficacy Scale (GSE). These instruments were translated into the Indonesian language by English language and mental health experts. The MHKQ has 20 close-ended questions with answers including true, false, and don't know. Each question item is added up to a total score between 0 and 20, with higher results indicating higher knowledge of mental health. The first indicator of the MHKQ is the characteristics of mental health and mental disorders (1, 2, 3, 4, 7, 8, 11, 12, 15, and 16), the second indicator is belief in the epidemiology of mental disorders (4, 5, 6, 9, 10, 13, and 14), and the third indicator is the awareness of mental health promotion activities (17 to 20) (Yin et al, 2020). The MHKQ was tested for validity and reliability, with a Cronbach's alpha of 0.912. The second instrument, the GSE, consists of 10 statement items on a Likert scale (1 = not true at all, 2 = hardly true, 3 = almost untrue, and 4 = exactly true). The GSE indicators include emotion, optimism, and satisfaction with a performance. The total score of 10-40 is obtained by adding up all statement

items (Schwarzer & Jerusalem, 1995). The higher the value the better the efficacy. The GSE was tested for validity and reliability, with a Cronbach's alpha of 0.872.

This research measured knowledge and self-efficacy twice for each episode of the film. The intervention group was taken to screen the first episode of the film that focused on the behaviour of seeking mental health assistance from peers, the second episode that focused on the behaviour of seeking mental health assistance from parents, and the third episode that focused on the behaviour of seeking mental health assistance from professionals/doctors. At the end of each episode, the respondents' knowledge and self-efficacy were measured. The control group was measured twice before and after the screening of the three episodes. After the intervention was administered, a data analysis was carried out using the t-test, given that the data on knowledge and self-efficacy were normally distributed (with values of 0.619 and 0.505). A homogeneity test was conducted using the Levene's test, with values of 0.800 (> 0.05) and 0.682 (> 0.05) for knowledge and self-efficacy, respectively, indicating that the sample was homogeneous. Additionally, a chi-square test was also carried out. This research received an ethical approval from the Chakra Brahmanda Lentera Institute, with approval letter No. 0170/028/II/EC/KEP/LCBL/2023.

The methods section contains a clear description of the instruments and the research scheme and methods used, which can be useful for other researchers in the case that they intend to replicate and check for validity if necessary. Additionally, references should be given to the methods used. Studies using animal or human subjects must include research ethical approval.

RESULTS AND DISCUSSION

Table 1. Respondents' characteristics (n=87)

Characteristics	Intervention	Control	p
Age			
12-15 Years	21 (48.8%)	16 (36.4%)	0.562
16-19 Years	22 (51.2%)	28 (63.6%)	
Gender			

Male	12 (27.9%)	14 (31.8%)	0.461
Female	31 (72.1%)	30 (68.2%)	
Level of Education			0.671
Junior High School	17 (39.5%)	13 (29.5%)	
Vocational High School	26 (60.5%)	31 (70.5%)	
Mental Health Experience in the Past Three Months			0.710
None	12 (27.9%)	15 (34.1%)	
Anxiety	11 (25.6%)	15 (34.1%)	
Smoking	4 (9.3%)	7 (15.9%)	
Stress	2 (4.7%)	1 (2.3%)	
Difficulty Concentrating	4 (9.3%)	2 (4.5%)	
Gaming	1 (2.3%)	1 (2.3%)	
Anger	2 (4.7%)	1 (2.3%)	
Difficulty Sleeping	7 (16.3%)	2 (4.5%)	0.414
Experience Seeking Mental Health Assistance			
Don't Know	15 (34.9%)	20 (45.5%)	
Never	26 (60.5%)	21 (47.7%)	
Once	2 (4.7%)	3 (6.8%)	0.390
Mental Health Information Source			
Mass Media	4 (9.3%)	11 (25%)	
Internet	31 (72.1%)	32 (72.7%)	
Internet	8 (18.6%)	1 (2.3%)	
A Certain Person			

Table 1 provides data on the characteristics of the respondents who received the animated film “Kanca Cilik” intervention and the control group respondents. Based on the table, most of the respondents were aged 16-19 years, female, and with the latest education level of vocational high school. Most of the respondents experienced no health

problems in the last 3 months, never sought mental health assistance, and gained mental health information from the Internet. The overall characteristics of the respondents in both the intervention and control groups were evenly distributed as evidenced by p values > 0.05.

Table 2. Differences in the levels of knowledge and self-efficacy of the intervention and control groups before and after intervention (n=87)

groups before and after intervention (n=67)			
Variable	Mean \pm SD	t	p
Knowledge of the intervention group (n=43)			
Pretest	11.23 \pm 5.042	4.567	0.000
Posttest	13.79 \pm 4.554		
Self-efficacy of the intervention group (n=43)			
Pretest	23.91 \pm 6.233	6.929	0.000
Posttest	29.60 \pm 4.676		
Knowledge of the control group (n=44)			
Pretest	15.70 \pm 3.377	0.142	0.391
Posttest	15.81 \pm 4.565		
Self-efficacy of the control group (n=44)			
Pretest	28.67 \pm 6.007	2.079	0.337
Posttest	31.19 \pm 4.344		

Table 2 shows that the average levels of knowledge and self-efficacy of the intervention group increased before and after intervention. The same was also true to the control group, but the two groups had different p values.

Mental health is important for every individual. It should be managed from

pre-marriage to old age. It is important to maintain the quality of health, especially mental health, during these phases of life (Keliat, 2019). In some cases, the onset of psychiatric problems appears in adolescence, which is often where the prodromal phase starts. This phase will continue into early adulthood. Someone who is not able to carry out mental health management properly in his/her

adolescence will experience a symptom called early psychosis. It is an early symptom indicating the development of schizophrenia (Damanik, 2019).

The main prevention effort from an early age is to carry out health promotion about mental health in schools (Källmén & Hallgren, 2021). Schools are attended by teenagers, who are at high risk for psychiatric problems such as depression, which may lead to suicide (Källmén & Hallgren, 2021). Some of the factors that cause mental health problems in adolescents are knowledge and environmental factors such as support from peers, family, and teachers. Cases of bullying, sexual violence, and physical violence are currently the biggest factor in a teenager's experience of psychiatric problems (Richter et al, 2022). Besides, nowadays, there is a stigma developing in society surrounding psychiatric problems or mental disorders, which we often experience and encounter. The stigma that arises in these cases can hinder accelerated healing or the maintenance of positive coping mechanisms for survivors of mental problems or disorders (Abuhammad & Al-Natour, 2021).

The stigma held in society about mental disorders or increased psychiatric problems can also discourage someone from seeking mental health assistance from either professionals or non-professionals (Stangl, 2018). This phenomenon is still frequent in urban areas. We still encounter cases such as people believing in shamans or *orang pintar* on family members who have mental disorders or the confinement of people with mental disorders in *pasung* in urban areas (Doll, 2021). The main factor in this problem is that the family or caregiver feels ashamed or unable to care for the family member who has mental disorders²⁹. It is for this reason that stigma often arises in society against someone who consults a psychiatrist for having a mental disorder. This is a common occurrence in developing countries (Kohrt, 2020).

These cases reflect that there is a lack of knowledge and self-efficacy in relation to help-seeking among adolescents. A person's lack of knowledge is closely related to his/her inability to show a response, a change, or a pattern of human dysfunction. Adolescents' low knowledge of mental health problems and

especially efforts to prevent mental health problems will have an impact on their self-management throughout their lives (Sezgin & Punamäki, 2020). Self-management itself is also influenced by how they regard the importance of help-seeking behaviour. It is true that very few among adolescents in rural areas care about mental health problems. Many people in the village think that people who experience mental problems acquire the mental problems from spirits, predecessors by hereditary means, or other people who have evil intentions against them. This results in adolescents in the village not having a clear understanding of mental health and lacking help-seeking behavior (Ayuwatini, 2018).

The lack of knowledge in adolescents also affects their self-efficacy in seeking mental health assistance (Kumboyono & Alfianto, 2020). Self-efficacy itself means a person's ability to carry out a responsibility or task to achieve a goal. If self-efficacy is changed for the better by knowledge, confidence will arise in the person's abilities to produce something optimally. Self-efficacy is also important in encouraging the person to act in preventing health problems³⁴. With clear beliefs and goals, the person will have good self-efficacy. Conversely, if the person has insufficient knowledge of his/her help-seeking behavior, then his/her self-efficacy will not be maximized or optimal. This will result in the behavior of seeking mental health assistance continuously being considered unattractive or not a priority in his/her life.

A variety of methods can be applied to improve a person's behavior in seeking mental health assistance. One such method that is currently liked by or appealing to some teenagers and children is to use a film (Sowa, 2018). In many cases today, health education is carried out using audio-visual media to optimize the prevention of health problems, as in the COVID-19 pandemic last year. Health promotion is often carried out using audio-visual media, such as films or public service advertisements. The use of films as health promotion media is considered a novelty widely accepted by society. A number of health institutions currently provide education through films or digital posters. Now, people on nearly all levels

of society, both in villages and cities, are able to easily access health services via smartphone applications (Nastiti, 2021).

Animated films can be enjoyed by people of all ages. They used to be primarily enjoyed by children only, but now they are also preferred by teenagers. They have a significant impact, especially on the level of knowledge of someone who is especially good with imaginations. Many people think that watching animated films will give a child-like impression to a person. However, in reality, animated films are often regarded as futuristic, making them well-liked by teenagers and even adults (Sri Nurani et al, 2022). Through this animated film intervention, respondents experienced changes in both their level of knowledge and self-efficacy in seeking mental health assistance. Therefore, it is concluded that the animated film intervention used in this study was highly effective as a medium for health promotion for the intervention group.

CONCLUSION

There is a similarity in respondents between the intervention group who screened the animated film "Kanca Cilik" and the control group. Both groups experienced increased knowledge and self-efficacy in seeking mental health assistance, but there were differences in the value of knowledge and self-efficacy between them. It was concluded that the animated film "Kanca Cilik" was effective in increasing the knowledge and self-efficacy of village students in seeking mental health assistance. In other words, animated films offer an alternative method of health promotion in the prevention of mental health problems in schools and communities. So that the method of health promotion through an animated film is an alternative choice in preventing mental health problems at school or in the community. Therefore, through health promotion the film can be used as a mental health school health program in improving life skills and preventing mental health problems in schools.

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The Flow of Social Environmental Determinants of Disabilities on Lepers in Tuban City

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ABSTRACT

Background: Leprosy is a neglected tropical disease considered rare in most areas despite having a relatively high incidence in some countries. **Objective:** Analyze the flow of determinants of the social environment that can affect the occurrence of disability in lepers and their impacts. **Method:** Research using a qualitative approach. The research was conducted in Tuban Regency, East Java Province. The informant selection technique uses a purposeful sampling technique. Data analysis uses triangulation techniques. **Results:** The frequency of leprosy in Tuban Regency tended to decrease from 2014-2019. Leprosy distribution occurred in 18 sub-districts; Lepers were found every month in 2019 with various characteristics of lepers that cause the emergence of leprosy and disability in leprosy. The total number of informants in this study was seven informants. Determinants of disability in lepers include informant characteristics and social environment, including knowledge, contact history, family support, self-confidence, and impact. **Conclusion:** In this study, the social environment that most impacts the occurrence of disability in lepers is the informant knowledge factor. Informant knowledge is influenced by education, a large network of friends, and technological literacy. Education will show the type of informant work, and the type of work will determine the income of the informant; income determines economic status. Economic status contributes to food intake, medication seeking, and the home's physical condition. The duration of leprosy treatment will affect the worsening of the disability if good self-care is not carried out and always use PPE when doing activities. **Keywords:** Disabilities, Environment, Knowledge, Leprosy, Social.

INTRODUCTION

Leprosy is a neglected tropical disease considered rare in most areas, although it has a relatively high incidence in some countries, (Jariyakulwong, Julianon and Saengboonmee, 2022). The emergence of leprosy is an interaction between various causative factors, namely individual factors (host), *Mycobacterium leprae* leprosy bacteria (agent), and the environment, through a process known as the chain of transmission which consists of 6 components, namely the cause, source of transmission, how to get out of the source

of transmission, how to enter the host and the host. By knowing the process of infection or the chain of disease transmission, appropriate interventions can be carried out to break the chain of transmission, (Kemenkes RI, 2019).

Poor management of leprosy cases can cause leprosy to become progressive, causing permanent damage to the skin, nerves, limbs, and eyes (Kemenkes RI, 2019). Leprosy is a public health concern related to disability, deformity, stigma, and discrimination of affected individuals, (Chokkakula *et al.*, 2020).

The presence of G2D at the time of diagnosis indirectly indicates delayed

detection, due perhaps to poor awareness in the community about the early signs of leprosy and the importance of seeking treatment, (World Health Organization (WHO), 2020). The distribution and spread of endemic leprosy are closely related to the social determinants of health that cause inequality, which include poor housing conditions, low education, low income, gender inequality and ethnic-racial inequality, (Ramos *et al.*, 2021).

There are 127 countries (out of 221 countries) that provided leprosy data to WHO in 2020. The registered leprosy prevalence (number of cases on treatment at the end of 2020) was 129,192, at a rate of 16.6 per billion population. Globally, 127,396 new cases were reported, for a case detection rate of 16.4 per million population. The highest proportion of both cases registered for treatment (61.1%), and new cases detected (66.6%) were in Southeast Asia. Brazil, India and Indonesia continue to report >10,000 new cases each, (WHO, 2021).

Throughout 2020, there were 8,629 new cases detected among children, equivalent to 6.8% of all new cases. Southeast Asia accounted for 62.3% of all new child cases, with India reporting 3,753 and Indonesia 1,126 new child cases. Of all new cases of G2D leprosy, 308 (4.3%) occurred in children. Another 68 countries reported 7,198 new cases of G2D. Over a third (37.7%) reported from Southeast Asia, 33.9% from Africa and 22.4% from America, (WHO, 2021).

There are 23 global priority countries for leprosy, accounting for 121,358 new cases or 95.3% of all new cases globally, corresponding to a rate of 40.3 per million population. India (65,147 new cases), Brazil (17,979 new cases), and Indonesia (11,173 new cases) accounted for 83.21% of new leprosy cases detected worldwide in 2020, (WHO, 2021).

In 2020 in Indonesia, there were 10,976 new cases of leprosy, with 4.03 per hundred thousand population and 12,254 registered cases of leprosy. There were 1,229 new leprosy cases in PB and 9,747 new leprosy in MB. There were 1,134 cases of leprosy in children <15 years (10.33%). There were 6,915 cases of male gender and 4,061 cases of female. The level of disability 0 is 9,176 cases (83.60%), and the level of disability 2 is

673 cases (6.13%). The level 2 disability rate per one million population is 2.47. There were 19 cases (1.68%) of leprosy in children <15 years with level 2 disability, (Kemenkes RI., 2022).

East Java contributed the highest number of new leprosy cases, with the main spread on Madura Island and the North Coast of Java. There were 1,696 cases with a new case finding rate of 4.22 per hundred thousand population. There were 90 new cases of PB-type leprosy and 578 new cases of MB-type leprosy. There were 1,280 (75.47%) for grade 0 disability and 164 cases (9.67%) for grade 2 disability, with a grade 2 disability rate per one million population of 4.08. There were 98 cases of leprosy in children <15 years (5.78%), and leprosy in children <15 years with level 2 disability, there were 5 cases (5.10%), (Kemenkes RI., 2022).

Tuban in 2020 was included in the top 10 regencies/cities in East Java with the highest cases of leprosy; there were 66 new cases of leprosy (8 of them were new cases of child leprosy), and 101 cases of leprosy were registered. There were 46 new cases of male leprosy and 20 new cases of female leprosy. There were four new cases of PB-type leprosy and 62 new cases of MB-type leprosy. New leprosy with grade 0 disability was 44 cases (66.7%), and grade 2 disability was 4 cases (6.1%). One new case of child leprosy <15 years old, (Dinas Kesehatan Provinsi Jawa Timur, 2022).

Several factors influence the implementation of leprosy management, which is not yet optimal, among others; the community has not fully received information about leprosy and has the assumption that leprosy cannot be cured because of the disability it causes; lack of ability of puskesmas staff in early detection and management of leprosy sufferers; inadequate MDT management; lack of cross-program and cross-sector involvement in leprosy management; stigma and discrimination are still high; and the magnitude of the problem of controlling other diseases such as tuberculosis and HIV. This affects the lack of attention to leprosy prevention, (Kemenkes RI, 2019). So do not be surprised if leprosy is one of 17 neglected tropical diseases (NTD). This requires world attention because the incidence rate is high, (WHO, 2016).

WHO treatment of leprosy (MDT) began in 1985 by recommending three-drug regimens, namely rifampicin, dapsone, and clofazimine, for all leprosy patients, with a treatment duration of 6 months for PB leprosy and 12 months for MB leprosy, (Jariyakulwong, Julanon and Saengboonmee, 2022). The National Leprosy Eradication Program (NLEP) conducts an active case detection campaign involving social health activists and other public health volunteers. In April 2016, WHO launched a global leprosy strategy which aims to further reduce the burden of leprosy at both global and local levels with the main targets: Zero G2D (Disability level 2) in children diagnosed with leprosy; reduce new leprosy cases with G2D to < 1 per million population; and zero countries with laws that allow discrimination due to leprosy, (Reddy *et al.*, 2022).

Many studies have shown that healthcare organizations are characterized by network decentralization, provision of additional screening, surveillance of contacts, health promotion measures, and active case tracing to be a determinant of diagnosis and, therefore, of increasing coefficients, at least in the short term. In the long term, a marked and sustainable reduction of endemic diseases is expected, (de Sousa *et al.*, 2020), (Sato *et al.*, 2021).

Given the above information, it is necessary to carry out further research to understand the occurrence of disabilities in leprosy patients in Tuban. The condition of leprosy sufferers who tend to close themselves to people they have never known is due to the psychological burden they experience, such as stigma against themselves and/or those around them, so the research approach used is qualitative. Through a personal approach and assistance from the officer in charge of the leprosy program at the health centers, it is expected to obtain an analysis of the path of social-environmental determinants that can affect the occurrence of disabilities in leprosy sufferers and their impacts. For this reason, it is necessary to conduct a study entitled **"Flow of Social Environmental Determinants of Disabilities on Lepers in Tuban Regency."**

METHODS

The research was conducted in 4 sub-districts (5 health centers) out of 20 (33 health centres) in Tuban Regency, East Java Province. The research subjects were leprosy cases of the MB type with disability levels 1 and 2, totalling 17 subjects.

Research informants were determined according to inclusion and exclusion criteria. Inclusion criteria included new treatment status, diagnosis with leprosy for more than five months, type of MB leprosy, level I and II disability, disability score of more than 1, aged more than 15-10 years, open to new people, and willing to become informants. Exclusion criteria include limitations such as being blind and deaf and living alone or neighbours who are next to/around the house are not relatives.

The condition of leprosy sufferers who tend to close themselves to people they have never known is due to the psychological burden they experience, such as stigma against themselves and/or those around them, so the research approach used is qualitative. Through a personal approach and assistance from the officer in charge of the leprosy program at the health centers, it is expected to obtain an analysis of the flow of social-environmental determinants that can affect the occurrence of disabilities in leprosy sufferers and their impacts; so that the informant selection technique used is the purposive sampling technique. Data collection methods were obtained through in-depth interviews with informants and research-supporting subjects. The research instrument was field notebook, camera, and a closed questionnaire using Indonesian about the characteristics of the informants and the social environment, including knowledge, contact history, family support, self-confidence, and impact. Data analysis uses triangulation techniques, and data presentation uses narrative text, image, and tables.

RESULTS AND DISCUSSION

The frequency of leprosy in Tuban

Regency tends to decrease from 2014-2019. This trend is shown in Images 1:

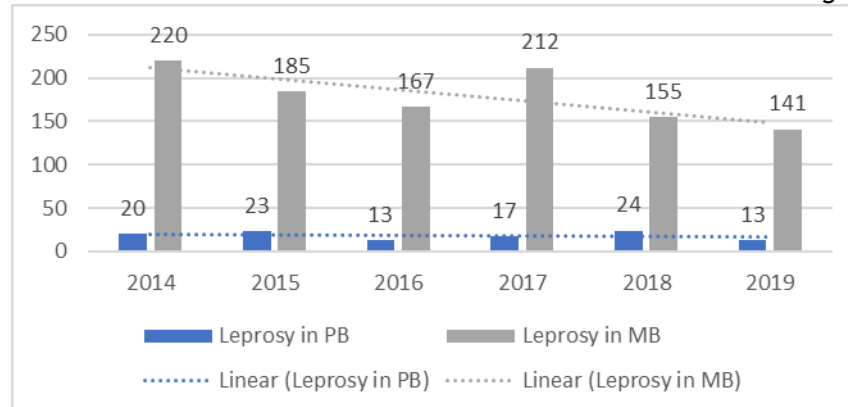


Figure 1. Bar chart of PB and MB leprosy distribution by year in Tuban Regency in 2014-2019. Source: Secondary Data from The Tuban Regency Health Office, 2019 processed.

The distribution of leprosy occurs in 18 districts (27 health centres) out of 20 districts (33 health centres) in Tuban Regency, East Java Province. Leprosy sufferers were found every month in 2019 with various characteristics of leprosy sufferers, which led to the emergence of leprosy and disabilities in leprosy sufferers. The determinants of disability in leprosy patients include the characteristics of the informants and the social environment, including knowledge, contact history, family support, self-confidence, and impact. The results of this study will be distributed in tabular form.

Table 1. Characteristics of research informants.

	Total (n=7)
Gender	
Man	6 (85.71%)
Woman	1 (14.28%)
Age	
10-19	2 (28.57%)
20-19	0
30-39	2 (28.57%)
40-49	0
50-59	2 (28.57%)
60-69	1 (14.28%)
Marital status	
Marry	4 (57.14%)
Single	3 (42.85%)
Education	
No school	2 (28.57%)
Didn't graduate from elementary school	1 (14.28%)
Elementay school	3 (42.85%)
Junior High School	1 (14.28%)
Income per month	
<UMK	6 (85.71%)

>UMK 1 (14.28%)

Number of occupants of the house

One person	0
Two persons	1 (14.28%)
Three people	3 (42.85%)
Four people	1 (14.28%)
Five people	2 (28.57%)

Table 2. Access to the informant health centre.

	Total (n=7)
Distance from home to the health centre	
±3-5 km	2 (28.57%)
±6-10km	2 (28.57%)
±10-20 km	3 (42.85%)
Travelling time	
10-30 minutes	7 (100%)
Cost to the health centre	
Rp. 10,000.00	7 (100%)

The total number of informants in this study was seven informants. The sex of the informants was 6 (85.71%) male and 1 (14.28%) female. There were 2 (28.57%) informants aged 15 years, aged 36-38 years; there were 2 (28.57%) informants, and aged 59-60 years, there were 3 (42.85%) informants. In finding leprosy, there were 2 (28.57%) informants with active detection status and 5 (71.43%) informants with voluntary discovery status. Level 1 disability was 1 (14.28%) informant and 6 (85.71%) informants with level 2 disability. RFT treatment status there were 3 (42.85%) informants and 4 (57.14%) informants still undergoing MDT.

Informant educational status; There were 2 (28.57%) informants who did not go to school, 1 (14.28%) did not graduate from elementary school, 3 (42.85%) had

passed elementary school, and 1 (14.28%) graduated from junior high school. There was 1 (14.28%), informant who did not work, 1 (14.28%) housewife informant, 1 (14.28%) farmer informant, 1 (14.28%) factory worker, there was one student (14.28%) informant, and there was 1 (14.28%) informant who chose to drop out of school. There were 4 (57.14%) informants with married status and 3 (42.85%) with single status. All informants rode motorbikes to seek treatment at the puskesmas alone or accompanied by their children, 3 (42.85%) informants and 4 (57.14%) other informants accompanied by their wives, fathers/mothers and siblings.

Table 3. History of leprosy Informants.

	Total (n=7)
Discovery state	
Volunteer	5 (71.42%)
Active	2 (28.5%)
Been feeling sick for a long time	
<1 year	1 (14.28%)
>1 year	6 (85.71%)

Table 4. The informant's history of disability.

	Total (n=7)
Level disability	
1st-degree disability	1 (14.28%)
2nd-degree disability	6 (85.71%)
Treatment status	
RFTs	3 (42.85%)
Not RFT yet	4 (57.14%)
Disability conditions before MDT	
Ulcers all over the body	7 (100%)
The right/left hand is stiff and numb	5 (71.42%)
Fingers that are not straight	2 (28.5%)
Feet numb	2 (28.5%)
Disability conditions during MDT	
Ulcers all over the body	7 (100%)
The right/left hand is stiff and numb	5 (71.42%)
Fingers that are not straight	2 (28.5%)
Feet numb	2 (28.5%)

Research in Brazil, India, and Bangladesh reveals that age, poor sanitation, socioeconomic conditions, past food shortages, food insecurity, household contact, manual labour, crowded

households, inequality, poor health care, and low education are leprosy risk markers, (Dwivedi *et al.*, 2019). There were 5 (71.42%) informants who did not correctly explain the meaning of leprosy, and 2 (28.57%) informants did not know the definition of leprosy even though all informants during their first visit to the health centre took part in the leprosy program had been explained by the person in charge of the leprosy program. There were 5 (71.42%) informants who did not know the causes of leprosy and 2 (28.57%) informants who knew the causes. There were 6 (85.71%) informants who did not know the signs and symptoms of leprosy, and 1 (14.28%) informant knew the signs and symptoms of leprosy.

Table 5. Knowledge of leprosy informants.

	Total (n=7)
Leprosy definition	
Not true	5 (71.42%)
Don't know	2 (28.5%)
Causes of leprosy	
Know	5 (71.42%)
Don't know	2 (28.5%)
Source of transmission of leprosy	
Don't know	7 (100%)
Methods of transmission of leprosy	
Don't know	7 (100%)
Signs and symptoms of leprosy	
Know	1 (14.28%)
Don't know	6 (85.71%)
Free leprosy drug knowledge	
Don't know	7 (100%)
The impact of breaking up leprosy drugs	
Don't know	7 (100%)

How they manage their lives depends on how they interpret their illness and give meaning to their existence, (Rahman *et al.*, 2022). Various studies across India have reported lower levels of knowledge and awareness among most people, (Reddy *et al.*, 2022). Follow-up efforts should be continued even after completing MDT. In addition, many are lost to follow-up because they stop being evaluated regularly by healthcare professionals. They are taught self-care and advised to return if their symptoms recur or worsen. Some individuals do not receive timely treatment or follow-up because of their age, lack of knowledge, poor perception of symptoms, stigma, or inability to go to

a health centres due to distance and economic hardship. The deteriorating status of leprosy and physical disability is not managed because they are ostracized from their environment, (Rahman *et al.*, 2022)(Banna *et al.*, 2022).

Dysregulation of the immune system of leprosy sufferers is related to poor nutritional status, failure of health services to reduce the stigma of leprosy, low number of vaccinations, low nutritional status, inappropriate breastfeeding, and low environmental hygiene and sanitation, including clean water facilities, type of floor, humidity, intensity sunlight, ventilation, and residential aspects that can be found in several endemic areas, (Ramona *et al.*, 2021).

Informants' knowledge is influenced by education, the number of friendship networks, and technological literacy. Education will indicate the type of work of the informant, the type of work will determine the informant's income, and income will determine the economic status. Economic status contributes to food intake, treatment seeking, and physical housing conditions. The length of time seeking treatment for leprosy will affect the severity of the disability if good self-care is not carried out and always use PPE when doing activities.

Symptoms of leprosy may appear within a year, but for some people, symptoms may take 20 years or more to occur, (Farag *et al.*, 2022). House contacts with leprosy cases are at the highest risk, (Tió-Coma *et al.*, 2021). Households with greater population density facilitate transmission through close contact, (da Paz *et al.*, 2022).

Leprosy is associated with poverty, indicating that the comorbidities of poverty can promote leprosy transmission, (Dennison *et al.*, 2021). In this study, there were 2 (28.57%) informants who had a history of family contact, 1 (14.28%) of informants had a history of contact with neighbours, and 1 (14.28%) of informants had a history of contact with peers. Or colleagues, and 3 (42.85%) informants had no contact history with family or neighbours.

Table 6. Contact history of leprosy informants.

Total (n=7)	
Leprosy contact	
Family	2 (28.5%)

Neighbour	1 (14.28%)
Peers/Colleagues	1 (14.28%)
No contact	3 (42.85%)
Examination of contacts (suspect/BTA+ after the informant	
There are suspects after informants	1 (14.28%)
There are no suspects after the informants	6 (85.71%)

Many studies suggest that *Mycobacterium leprae* can be found in the environment and may have a role in continuing disease transmission. Cleanliness is always associated with disease because it drastically smoothes and prevents the risk of exposure, (Turankar *et al.*, 2019). Additional socioeconomic factors that reflect exposure to contact tangles and increased levels of deprivation, such as urbanization and household density, have also been associated with an increased risk of leprosy detection, (Pescarini *et al.*, 2020). Delays in diagnosing and treating leprosy and its complications can result in permanent deformities, (Ortuño-Gutiérrez *et al.*, 2021) and social exclusion (van Hooij *et al.*, 2021).

Post-exposure prophylaxis (PEP) with a single dose of rifampicin (SDR) reduces the risk of developing leprosy among contacts of leprosy patients (Barbieri *et al.*, 2022). Several villages in the working area of the health centers in Tuban Regency refused when the program officer in charge of the leprosy program carried out chemoprophylaxis activities; the residents claimed that they were healthy and did not feel sick, so they refused to be given and take a single dose of rifampicin. In several villages where the health centers work's, it receives and takes a single dose of rifampicin, which requires good cooperation between residents and staff.

Despite advances in treatment and political commitment at a global level with reductions in the worldwide leprosy burden, further reduction of the leprosy burden is met with enormous challenges. This challenge consists of three prongs, including further reductions in new cases, registered prevalence, and social stigma and exclusion through the prevention and management of disability. The full involvement of endemic communities and people with leprosy is fundamental in

reducing the burden of leprosy, (Tabah *et al.*, 2018).

The existence of contact before the informant determines the cause of the infection of the informant. Informants can become a new home transmission source to the family if they do not immediately carry out a leprosy MDT treatment program. The intense relationship with informants influences the occurrence of leprosy in new patients, the size of the house, the physical condition of the house, and food intake related to immunity.

The first person to know that an informant has leprosy is a family member; there are 6 (85.71%) informants and 1 (14.28%) informant whose neighbours know when the informant has signs and symptoms of leprosy. There were 3 (42.85%) informants for treatment accompanied by their children, 1 (14.28%) informant for treatment accompanied by his wife, 1 (14.28%) informant for treatment by his mother and sometimes his junior high school teacher, 1 (14.28%) the informant was seeking treatment accompanied by a sibling or brother-in-law. There was 1 (14.28%) the informant was seeking treatment accompanied by his father.

Table 7. Family support to informants

Total (n=7)	
The person who first knew the informant had signs and symptoms of leprosy	
Family	6 (85.71%)
Neighbour	1 (14.28%)
Family members accompanying treatment	
Child	3 (42.85%)
Wife	1 (14.28%)
Mother	1 (14.28%)
Father	1 (14.28%)
Siblings	1 (14.28%)

The existence of support from the family gives sufferers the hope of enthusiasm for recovery. The government's free medical treatment program for leprosy should not affect families providing moral, material and social support to sufferers. In this study, all lepers received full support from their families.

The demand for a speedy recovery became the motivation for the informants. Roles and responsibilities also

accompany the demands before being diagnosed with leprosy and after being diagnosed with leprosy. Most leprosy sufferers choose to rest completely or only when a reaction occurs. This resulted in changing roles and responsibilities, which were originally able to help the economy in the family by working after being diagnosed with leprosy to taking complete rest so that income was reduced, which impacted economic status. Furthermore, economic status affects the food consumed daily and the house's physical condition.

The existence of family support will bring hope to the spirit of recovery to the informants. Furthermore, demands, roles, and responsibilities are important in raising hopes for a speedy recovery. Roles and responsibilities before and after being diagnosed with leprosy can affect employment, income, and economic status.

Self-concept will affect the informant's self-confidence. Then, self-confidence will impact the informants' ability to interact well. The existence of social interaction is also influenced by ability. The length of friendship, experience, and age influence's ability.

Leprosy is a disease of public health concern associated with disability, deformity, stigma, and discrimination of affected individuals, (Chokkakula *et al.*, 2020). Stigma can be divided into applied stigma and perceived stigma. Prejudice and discrimination against patients by family members deprive them of emotional and material support, (Tembei *et al.*, 2022). Overcoming leprosy is how people manage stressful or traumatic situations to maintain their emotional well-being, (Rahman *et al.*, 2022).

There were 2 (28.57%) informants that their school-age children had no talent. Unlike the productive age informants, there were 5 (71.52%) of their informants who tended to be skilled and had many talents. This is because the informants of productive age have conditions that force them to be skilled in finding talent to work so that they can fulfil their daily needs independently. Psychological problems for lepers are a very serious threat because the consequences can go beyond the disease itself. Leprosy stress creates a psychological burden because it impacts physical, psychological and social

conditions, affecting all life processes, (Nasir *et al.*, 2022).

Table 8. Confidence of informants.

Total (n=7)	
Difficulty doing activities	
Have no difficulty doing activities	6 (85.71%)
Have difficulty exercising	1 (14.28%)
Social interaction	
Informant relationship with family, neighbours, peers, and good co-workers	7 (100%)
The views of family, neighbours, peers and co-workers on informants were favourable	7 (100%)
Self-description	
Just looking at him normally	6 (85.71%)
Seeing himself is different	1 (14.28%)
Role and responsibility before being diagnosed with leprosy	
Head of family and work	3 (42.85%)
Wife and work	1 (14.28%)
Child and work	1 (14.28%)
Children and students	2 (28.5%)

There were six informants (85.71%) who had no difficulties in their activities and 1 (14.28%) who sometimes still had difficulties. All informants did not limit their activities when the leprosy reaction did not recur. All views of family, neighbours, peers or co-workers tend to be normal and treat informants like other members, neighbours and friends. This is because they see that the informant can still carry out activities like a normal human being without any restrictions, and special treatment is required due to the illness they are experiencing.

There were 6 (85.71%) informants who saw themselves as normal by accepting the pain they were experiencing and 1 (14.28%) who saw themselves as different from the others. All informants did not have an unconscious attitude that could harm their physical and psychological condition of the informants and the conscious attitude carried out by all informants, namely obedient treatment and routine

self-care.

Self-care is important for individuals affected by leprosy to encourage them to change their behaviour to adapt to the permanent damage caused by the disease. Self-care in leprosy is a daily activity that requires the active involvement of individuals to care for themselves, reduce the number of ulcers, prevent further damage, improve their physical health and increase self-confidence and self-esteem, (Rahman *et al.*, 2022).

The results of this study indicate that all informants do not have certain demands in their lives. So that they lead a quiet life; according to the elderly informants, they are sufficient to make ends meet because their children are already married. The informants at school age did not have any specific demands because, at school, they chose to be ordinary students, such as not joining organizations and others.

The results of this study indicate that all informants have accepted the current conditions. This is shown by their motivation to recover by routinely checking and taking medicines at the puskesmas, doing good and proper self-care, and following the recommendations and prohibitions of the officer in charge of the leprosy program at the health centers.

Health services mainly focus on curative treatment and the biophysical impact of disease but less on psychosocial and economic aspects. Due to chronic leprosy, studying the life experiences of affected individuals will allow us to understand more deeply the effects of the disease, how they seek help and adhere to treatment, and cope with the disease, (Rahman *et al.*, 2022).

Impact on the body includes changes in urine colour and skin colour. Every drug must have side effects. Rifampicin rarely causes side effects because it is only given once a month. The appearance of symptoms is a change in the colour of the urine to yellow or even red. This is only temporary. Sufferers need to be notified so they are not surprised (Ministry of Health RI, 2019). The results of this study indicate that the side effect felt by all informants after taking the drug was that the urine turned yellow. Handling the side effect of changing urine colour after taking

rifampin, namely *reassurance* (soothing the patient with the correct explanation) and counselling, (Kemenkes RI, 2019).

Serious side effects when drinking lampren include skin and mucosal hyperpigmentation (skin changes to brown), dryness, ichthyosis, pruritus, acneiform eruptions, skin rashes, and photosensitivity reactions. Hyperpigmentation side effects will disappear 6-12 months after the lampren is stopped. The side effects of lampren can usually be tolerated so that treatment does not need to be stopped, (Kemenkes RI, 2019).

The side effects of rifampicin are flu-like symptoms (*flu-like-syndrome*), such as fever, chills, and bone pain which can be given symptomatic treatment, (Kemenkes RI, 2019). The results of this study indicate that the effect on the body after taking the drug by all informants is that all body skin turns black (hyperpigmentation) and often feels chills when there is a reaction to leprosy or exposure to the night wind. Handling the side effect of changing urine colour after taking rifampicin is *reassurance* (calming the sufferer with the correct explanation) counselling, (Kemenkes RI, 2019).

Psychosocial impacts occurred on school-age informants and productive-age informants. The results of this study indicated that there was 1 (14.28%) informant who felt scared, uneasy, and offended when at school; this is because the informant still remembers and always screams uneasy and is afraid to meet the teacher who reprimands him due to ignorance of changes in skin colour which are quite prominent among his friends due to the illness experienced by the informant. There was 1 (14.28%),

informant who felt embarrassed or uncomfortable going to school with his niece, so the informant was too lazy to go to school, resulting in him not wanting to go to school anymore and choosing to stop going to school. Self-acceptance from the social environment of the informant's current condition will lead to self-confidence. It is proven that 2 (28.57%) school-age informants have good social interactions with their peers outside the school environment.

The results of this study showed that there were 2 (28.57%) male informants of reproductive age who felt ashamed and tended to close themselves off from the social environment, such as neighbours, peers, and co-workers, before undergoing the leprosy MDT treatment program and began to be confident and open oneself with the social environment when the ulcers on the body begin to heal and finish the leprosy MDT treatment program (RFT). It is proven that when the ulcers began to heal, the informants began to open themselves to the social environment; however, the mental rehabilitation efforts of the officer in charge of the leprosy program would not be successful without emotional support from the family and social environment.

The social environment determinants that become the fundamental problem of disability in leprosy are the characteristics of the informants and the social environment, including knowledge, contact history, family support, self-confidence, and impact.

Analys flow of social environmental determinants of disabilities on lepers in Tuban Regency.

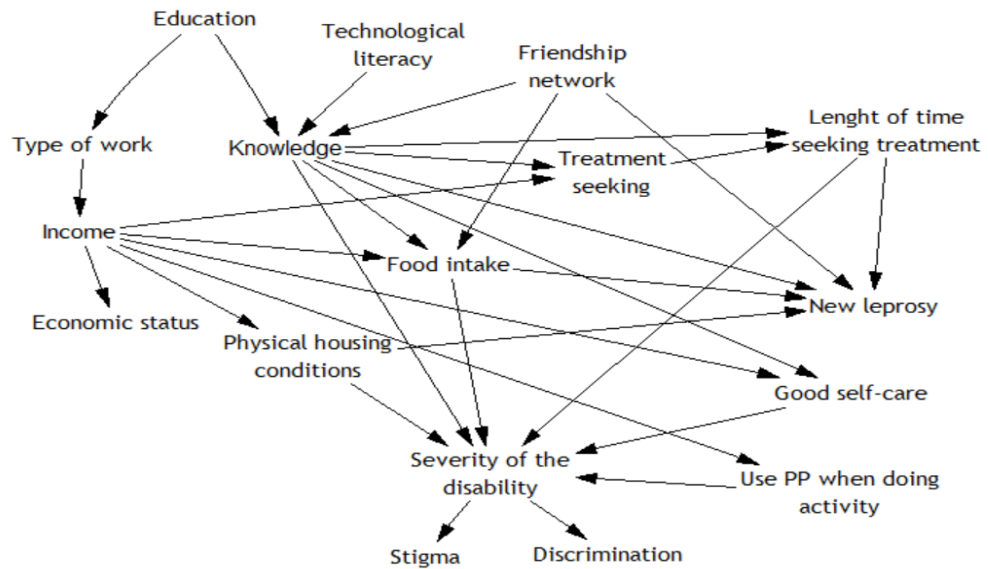


Figure 2. Flow of social environmental determinants of disabilities on lepers in Tuban Regency.

Informants' knowledge is influenced by education, the number of friendship networks, and technological literacy. Education will indicate the type of work of the informant, the type of work will determine the informant's income, and income will determine the economic status. Economic status contributes to food intake, treatment seeking, and physical housing conditions. The length of time seeking treatment for leprosy will affect the severity of the disability if good self-care is not carried out and always use PPE when doing activities.

Efforts that should be made so that global and national targets in preventing level 2 disability in leprosy include the following:

1. Government

a. Public Health Office

- 1) Providing facilities related to the needs of officers holding the leprosy program in handling BPJS or assistance with leprosy assessment results that require immediate surgery, self-care needs, and PPE for leprosy sufferers.
- 2) Establish cooperation in early detection and eradication of leprosy with Penta helix collaboration starting from the Social Service, sub-district government, village government, RW and RT.

b. Social services

- 1) Ensuring leprosy sufferers are included in poor community programs such as rice rations, BPJS, and other social assistance.

- 2) Helping to increase the economy of leprosy sufferers following the results of the assessment of the health office and puskesmas.

2. Health Center

- a. Improving nerve examinations in leprosy patients for preventive action on the occurrence of leprosy defects.
- b. Coordinate with the sub-district government, village government, RW and RT to detect and eradicate leprosy as early as possible.
- c. Increase outreach activities for new leprosy sufferers and their families and neighbours in the environment of leprosy sufferers during ICF and community activities.
- d. In puskesmas that have not yet formed KPD, it is hoped that they will form it soon to teach self-care to new leprosy sufferers.
- e. Submit as soon as possible to request a referral to the Sumberglagah Leprosy Hospital in Mojokerto Regency when sufferers need a referral.
- f. Form leprosy cadres of 4 people per health centre with a total of 132 people for cadre from the Health Office.

3. Public

- a. Eliminate stigma and discrimination against leprosy sufferers by having good social interactions with leprosy sufferers.
- b. Immediately check with the puskesmas when you find family members, neighbours, peers, and/or co-workers if you find signs and symptoms of leprosy.

The limitation of this study is that interviews with informants and supporting subjects were only conducted once. Observations were made to look at the conditions around the informant's house. The results of this study can only be used in other areas if some similar situations and conditions follow this research.

CONCLUSION

In this study, the social environment that had the most impact on the occurrence of disability in leprosy patients was the informant's knowledge factor. Informants' knowledge is influenced by education, the number of friendship networks, and technological literacy. Education will indicate the type of work of the informant, the type of work will determine the informant's income, and income will determine the economic status. Economic status contributes to food intake, treatment seeking, and physical housing conditions. The length of time seeking treatment for leprosy will affect the severity of the disability if you do not take good self-care and always use PPE when doing activities.

The existence of contact before the informant determines the cause of the infection of the informant. Informants can become a new home transmission source to the family if they do not immediately carry out a leprosy MDT treatment program. The intense relationship with informants influences the occurrence of leprosy in new patients, the size of the house, the physical condition of the house, and food intake related to immunity.

The existence of family support will bring hope to the spirit of recovery to the informants. Furthermore, demands, roles, and responsibilities are important in raising hopes for a speedy recovery. Roles and responsibilities before and after being diagnosed with leprosy can affect employment, income, and economic status.

Self-concept will affect the informant's self-confidence. Then, self-confidence will impact the informants' ability to interact well. The existence of social interaction is also influenced by ability. The length of friendship, experience, and age influence's ability.

Impact on the body; changes in urine and skin colour experienced by informants can be handled by counselling the officer in charge of the leprosy program. Impact on psychosocial; self-acceptance from the social environment to the informant's current condition will lead to self-confidence and good social interaction. The feeling of shame and the tendency to withdraw from the social environment is due to ulcers on the informant's body. It is proven that when the ulcers started to heal, the informants started to open up to the social environment.

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Teacher Empowerment to Prevent Oral Health Problems Related to Anemia in Adolescent Girls at SMPN 41 Surabaya

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ABSTRACT

Background: An epidemiological study at SMPN 41 Surabaya revealed that approximately 50% of 7th and 8th-grade adolescent girls have poor daily eating behavior. Around 19 female students (63.3%) experience oral health problems related to anemia during menstruation. According to the Theory of Reasoned Action (TRA), subjective norms were found to have the most influence on forming intention toward good daily eating behavior. Subjective norms refer to the influence or pressures from the surrounding environment. Within the school environment, teachers play a role as one of the subjective norms that affect the decision-making of female students regarding their daily eating behavior. **Aims:** To empower teachers to conduct examinations for anemia symptoms and clinical signs of oral health problems during menstruation among adolescent girls and to record their findings in the manual book. **Methods:** This program provides counseling and training on examining anemia symptoms and oral health problems to 23 teachers, utilizing a manual book as a medium. The effectiveness of the activity was evaluated using pre-test and post-test assessments. The scores obtained from both tests were analyzed using paired sample tests to assess the teachers' knowledge and skills improvement. **Results:** Based on the scores obtained from the pre-test and post-test assessments, it was found that the level of knowledge and skills of the teachers after the empowerment (Mean= 73.26; SD= 10.72) was higher compared to before the empowerment (Mean= 61.95; SD= 15.5). Statistically, it was determined that teacher empowerment significantly ($p < 0.05$) improved their knowledge and skills in examining anemia symptoms and oral health problems. **Conclusion:** Empowering teachers through counseling and training significantly enhances their knowledge and abilities in examining anemia symptoms and oral health problems.

Keywords: Anemia symptoms, Daily eating behavior, Empowerment, Menstruation, Oral health problems.

INTRODUCTION

Anemia is a decrease in the number of red blood cells or hemoglobin in the bloodstream, often occurring in adolescent girls due to menstruation. Menstruation is a physiological process that usually lasts for 28 days but can vary in each individual. Nutrition plays an essential role in the menstrual process. Imbalanced nutrient intake can cause menstrual disorders in adolescent girls, such as experiencing pain at the beginning of menstruation and

decreased appetite. If left untreated, adolescent girls are at risk of experiencing malnutrition and anemia, which can also impact irregular menstrual cycles (Guyton & Hall, 2014; Wahyudi & Nugrahati, 2022). During menstruation, bleeding can cause a daily loss of approximately 5 mg or more of iron. If not properly managed, such as maintaining a healthy diet and using additional supplements, menstruation can lead to iron deficiency and increase the risk of anemia in the future (Amalia & Tjiptaningrum, 2016; Mirza *et al.*, 2020;

Sherwood, 2014). Anemia affects oral and dental health by disrupting the transportation of oxygen and nutrients to the cells. This results in disturbances in the function of mitochondrial enzymes, which affect cell differentiation and proliferation. As a result, the oral epithelial tissue becomes thin and loses normal keratinization, making the individual more susceptible to oral and dental health problems. In another phase, anemia can also reduce saliva production, leading to disruptions in saliva function and causing dry mouth (Mersil, 2021). The disturbances that occur in oral and dental health due to the condition of anemia can disrupt eating patterns. These eating pattern disruptions can also interfere with the intake of essential nutrients adolescent girls need for reproductive development and maturation and can have long-term effects, such as iron-deficiency anemia and even malnutrition (Dinetti *et al.*, 2022).

From previous epidemiological research, it has been found that adolescent girls with poor eating behaviors are more likely to have oral and dental health problems related to anemia symptoms during menstruation. Of 60 female respondents, 50% (30 respondents) had poor eating behaviors. Among the 30 respondents with poor eating behaviors, 83% (25 respondents) experienced menstrual disorders. Out of the 25 respondents with menstrual disorders, 84% (21 respondents) had symptoms of anemia. Among the 21 respondents with anemia symptoms, 90% had oral and dental health problems. Based on odds ratio calculations, adolescent girls with daily poor eating behavior are 1.52 times more likely to have menstrual phase disorders compared to those with good daily eating behaviors. Adolescent girls with menstrual phase disorders are 3.5 times more likely to have anemia symptoms compared to those without menstrual disorders. Furthermore, adolescent girls with anemia symptoms are 9.5 times more likely to have oral and dental health problems compared to those without anemia symptoms.

According to the Theory of Reasoned Action, several aspects influence the daily eating behavior of adolescent girls during menstruation, namely intention, attitude, and subjective norms (Montano *et al.*, 2015). Previous epidemiological research found that having a good intention towards daily eating provides a two-fold likelihood

of exhibiting good behavior. A positive attitude towards daily eating also provides a two-fold likelihood of having good intentions. A positive subjective norm, including social support from parents, teachers, and friends, provides a four-fold likelihood of having good intentions. Therefore, subjective norm plays the most significant role in promoting good daily eating behavior in adolescent girls. Furthermore, if the subjective norm of adolescent girls is unfavorable, their daily eating behavior tends to be less optimal.

Anemia occurring in adolescent girls can have significant implications for their health. It can impact the reproductive health of adolescent girls, who will eventually become mothers. Anemia diagnosis can only be confirmed through a hemoglobin level test conducted in a laboratory. However, in Indonesia, only a few adolescent girls seek healthcare services when they do not have any health complaints. This indicates the need for innovative approaches to conducting screenings for anemia symptoms that can be done anytime and anywhere, utilizing the available resources (Devita *et al.*, 2021).

One effort to reduce the risk of oral and dental health problems related to anemia symptoms during menstruation is to strengthen social support in the environment. This support can come from parents, peers, and teachers. Enhancing social influence can be done by providing teachers with an understanding of anemia symptoms during menstruation to prevent oral and dental health disorders. The role of teachers in identifying anemia symptoms in adolescent girls is crucial as an initial step in preventing more serious illnesses. Teachers can provide information about anemia, its symptoms, how to recognize them, and preventive measures. Additionally, teachers can perform simple examinations on menstruating adolescent girls to detect anemia symptoms, such as observing signs of weakness, fatigue, lethargy, tiredness, and paleness, as well as checking the condition of the oral cavity for mouth ulcers, bleeding gums, and gum swelling.

METHODS

The empowerment program in this research involves training teachers to

examine anemia symptoms and provide information about the symptoms and their prevention, with the aim of shaping good behavior. The program utilizes an educational approach and targets all teachers at SMPN 41 Surabaya including headmasters, school health unit teachers, and homeroom teachers. Subjective norm interventions on teachers are carried out because teachers possess the knowledge and skills to educate and educate, in addition to their workplace, which is at school, being a place for implementing health promotion programs (Dewhirst *et al.*, 2014). The total participants in this program are 29 teachers. Based on the preliminary research we have conducted, 19 out of 30 adolescent girls who experience menstruation have oral health problems related to symptoms of anemia, and one aspect that plays a role in reducing this is the teacher's role as a health promotor. The goal of the program is to enhance the teacher's role in decreasing the prevalence of oral health problems related to anemia symptoms by giving them the ability to perform examinations on their students. Teachers are responsible for conducting anemia symptom assessments, educating adolescent girls about general health conditions and oral cavity health, and promoting good daily eating behavior. The implementation stages of the empowerment program activities include program planning. The community empowerment program is designed based on the findings of an epidemiological study conducted in May 2023. The community empowerment program is developed after determining priority issues using the USG method. The program activities conducted so far include training teachers on examining anemia symptoms and oral and dental health disorders in adolescent girls. Next, program preparation begins with presenting the findings of the epidemiological study with guidance from faculty advisors from the Department of Public Dental Health at the Faculty of Dental Medicine, Universitas Airlangga, and the dentist from Puskesmas Tambakrejo. Discussions regarding the empowerment program plan are held with faculty advisors from the Department of Public Dental Health, Universitas Airlangga, and the dentist from Puskesmas Tambakrejo, and advocacy is conducted

with representatives from the school/teachers of SMPN 41 Surabaya.

After the program design is approved, the preparation continues by creating empowerment and health promotion materials. In addition to the materials, preparations are made for the content and technical arrangements for the activities on the implementation day. The approved empowerment and health promotion materials are then printed and duplicated. Program planning and preparation are carried out to ensure the smooth implementation of the program. The empowerment program is conducted face-to-face using educational methods and simulation for 7th and 8th-grade teachers at SMPN 41 Surabaya on Thursday, June 15, 2023, in the Teacher's Room of SMPN 41 Surabaya. Teachers are trained to conduct physical and non-physical examinations. Physical examinations include examining eyelids, palms, and nails, while non-physical examinations involve taking anamnesis regarding the health of adolescent girls. In addition, teachers are also trained to understand indicators of anemia symptoms, such as fatigue, paleness, dizziness, and difficulty concentrating. Subsequently, an evaluation of the implemented program is conducted. The empowerment program evaluation is done through a post-test, where participants answer questions related to the previously delivered material. The success indicators are objectively assessed based on the post-test results.

RESULTS AND DISCUSSION

The activity starts with providing materials about anemia, the procedure for examining anemia symptoms, oral and dental health, and the procedure for examining oral and dental health disorders to the teachers at SMPN 41 Surabaya. After that, a question and answer session and practice for examining anemia symptoms and oral and dental health disorders are conducted among the teachers. The success criteria for this empowerment program are when teachers have the knowledge and ability to conduct examinations for anemia symptoms and oral and dental health disorders in adolescent girls.

The empowerment program was conducted offline on Thursday, 15th June 2023, at SMPN 41 Surabaya. The number of target respondents who intervened in this

empowerment program is 23 teachers. The evaluation results were obtained from the pre-test and post-test scores conducted after the materials' presentation and

training among teachers. The pre-test and post-test questions consisted of 10 multiple-choice questions.

Table 1. The difference in mean scores of the pre-test and post-test of the empowerment program.

Evaluation Variable	Mean	Standard Deviation	Normality Test	Paired T-Test
<i>Pre-test</i>	61,95	15,50	0,154	0,001*
<i>Post-test</i>	73,26	10,72	0,181	

Table 1 shows that the mean pre-test score is 61.95 (SD 15.50), and the mean post-test score is 73.26 (SD 10.72). The Shapiro-Wilk test was used to test for normality. The pre-test and post-test scores were normally distributed ($p > 0.05$). Therefore, a parametric paired t-test was conducted. In the paired t-test,

the p-value was < 0.05 ($p = 0.001$), indicating that the hypothesis is accepted or there is an influence of the training program on the examination of anemia symptoms and oral and dental health disorders on the teachers' ability to perform the examination.



The activity started with the participants (A) completing the pre-test. The pre-test consisted of questions regarding examining anemia symptoms through the conjunctiva, palms, nails, and oral and dental health. The activity continued with delivering materials about anemia and the physical examination of anemia symptoms (B). Participants were also provided information about oral and dental health disorders related to anemia (C). After the presentation of the materials, the session proceeded to a question and answer session (D). Some questions raised by the participants were as follows: "Is there a simple way to test Hb levels without laboratory examination?", "What is the normal Hb value used to assess whether someone has anemia or not?", "Are there any differences in Hb levels between males and females?", "Is there any research indicating a relationship between anemia and canker sores?", "Is there a genetic influence on the occurrence of persistent canker sores?", "What is the relationship between anemia and dry mouth? Because usually there are no complaints related to anemia, but the mouth feels dry?" Participants were allowed to demonstrate the physical examination of anemia symptoms and the examination of oral and dental health disorders (E, F). The session concluded with a post-test to assess the participant's level of understanding (G), and the activity ended with a symbolic presentation of media materials to a representative of the teachers (H).

The activity was conducted offline or face-to-face on June 16, 2023, for teachers at SMPN 41 Surabaya. The implemented program was a training program on examining anemia symptoms and oral and dental health disorders for teachers. Prior to the presentation of the materials, a pre-test was conducted, followed by the presentation of the materials, a question and answer session, and practice examinations among the teachers. After completing this series of activities, in the end, the teachers filled out a post-test regarding the materials and training that were provided. The number of teachers who attended the training activity was 23.

The Theory of Reasoned Action can be used as a predictor in determining a person's behavior based on their intention. There are two aspects that can influence

intention: attitude and subjective norms (Tambi & Hurai, 2022; Ajzen, 1995). In this empowerment program, the intervention focuses on subjective norms, which refer to the influence or support from the surrounding environment towards a specific behavior. Based on previous epidemiological research, it has been shown that subjective norms have a higher likelihood than attitudes in shaping intentions. These findings are consistent with the study conducted by Paul et al. (2016), which states that when individuals receive encouragement or positive feedback regarding a specific action from people around them, they are more likely to have a positive intention to engage in that behavior.

In the previous epidemiological research, we found out that intention has a greater probability ($OR=4$) in creating intention towards good behaviour compared with attitude. In addition to being one aspect of subjective norms, teachers also play an important role in the success of a health promotion program. Schools are an ideal setting for implementing health promotion programs. Teachers have a role in health promotion programs. Providing training to teachers is an important step in shaping them as health promoters (Dewhirst *et al.*, 2014). Another reason why teachers are the target of this empowerment is related to the sustainability of this program. A study by Herlitz *et al.* (2020) shows that sustainability relies on schools that develop and retain teachers with knowledge, skills, and motivation to continuously promote health in ever-changing circumstances. This indicates that despite changes in the school student population, teachers are irreplaceable and can continue to fulfill their role in promoting health within the school environment.

The pre-test score resulted in an average score of 61.95 ($SD = 15.50$) for all respondents, while the post-test score had an average score of 73.26 ($SD = 10.72$), indicating an increase in the post-test average compared to the pre-test score. The Shapiro-Wilk normality test was conducted, and the results indicated that the pre-test and post-test data were normally distributed, as the significance values were greater than 0.05 (pre-test: sig. = 0.154 and post-test: sig. = 0.181). Therefore, a parametric paired t-test was

conducted. The paired t-test resulted in a significance value of 0.001.

Based on the parametric test, it was found that there is a significant difference between the post-test scores and the pre-test scores. This indicates that providing materials and training to teachers can significantly improve their skills and abilities in examining symptoms of anemia and dental and oral health disorders. Through the enhanced ability of teachers to conduct examinations for anemia symptoms and dental and oral health disorders, teachers are expected to fill out the provided manual book consistently. The data obtained can serve as a reference for schools or health centers in providing iron supplementation tablets for adolescent girls in need. Schools and health centers can conduct regular training for teachers, making it a routine program implemented by both the school and the health center.

In order to evaluate several factors influencing the program, we use the SWOT analysis which has the capability in determining both internal and external factors influencing the strategy of the program (Puyt et al, 2020). The SWOT analysis of this empowerment program includes several factors. The strength of the program are that no similar program has been conducted before at SMPN 41, which provides training to teachers on early detection of anemia symptoms and oral health disorders. The materials are delivered by competent experts, ensuring the accuracy of the information. The content is presented in plain language that the teachers easily understand, and the media used have user-friendly interfaces, facilitating the data entry process. On the other hand, weaknesses of the program include the potential disruption of teachers' regular activities, reliance on individual teachers' willingness to use the provided media, and the burden felt by teachers who already have a heavy workload. There are opportunities for collaboration with third parties such as Puskesmas Tambakrejo and FKG Unair, which can enhance the accreditation of SMPN 41 and allow the program to be adapted and implemented by other schools to improve teachers' skills in early detection of anemia symptoms and oral health disorders. However, a threat to the program is the lack of support from the school regarding funding and

infrastructure, which may hinder the implementation of the activities.

The SWOT analysis strategy of this empowerment program includes the following strategies: Strength-Opportunity (S-O), which involves conducting the program on a larger scale by engaging other third parties such as the health department and education department. Weakness-Opportunity (W-O) strategy suggests that the activities can be carried out outside of regular teaching hours to avoid disrupting the school's schedule and teachers' activities.

Strength-Threat (S-T) strategy focuses on organizing the program regularly at predetermined times and covering lightweight topics to prevent teachers from feeling overwhelmed while conducting student examinations. Weakness-Threat (W-T) strategy emphasizes the need for effective advocacy with the school and health center, ensuring they clearly understand the program to be implemented.

CONCLUSION

The training program on examining symptoms related to anemia and dental and oral health disorders can significantly enhance teachers' abilities to examine these issues among adolescent girls. The ultimate goal of this program is for teachers to perform regular examinations and input the data into the provided media. This way, the data obtained can serve as a valuable reference for the health center and school in providing additional blood tablets.

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Relevancy of the “Health Belief Model” on Behavior in Seeking Treatment among Families of Patients with Mental Disorders in the Work Area of the Public Health Center Taman Sidoarjo East Java

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ABSTRACT

Background: Mental health is a part that is related to health and wellness. One of the indicators in *Gerakan Masyarakat (GERMAS)* [“society movement”] stated that people with mental disorders should be treated and not abandoned. Nevertheless, nowadays it is still common to find people with mental disorders that do not receive proper medical care. **Aims:** The aim of this research is to measure cues to action and self-efficacy of the family behavior in seeking treatment for people with mental disorders within the work area of the Public Health Centre Taman Sidoarjo. **Method:** This research utilized the observational method with the cross-sectional study design and was analyzed with the Health Belief Model (HBM) theory approach. **Result:** The statistical analysis results using the Pearson Chi-Square test with a significance level of < 0.05 showed a p-value of 0.034 for perceived susceptibility and severity, a p-value of 0.180 for a perceived threat, p-value of 0.009 for perceived benefit, a p-value of 0.696 for perceived barriers, a p-value of 0.555 for self-efficacy, and p-value of 0.099 for cues to action. Based on these results, it can be concluded that perceived susceptibility, severity has a positive relationship with the family behavior in seeking treatment, which means the more perceived susceptibility, and severity increases, the more the family behavior in seeking treatment for people with mental disorders increases. **Conclusion:** Likewise, perceived benefit has a positive relationship with the family’s behavior in seeking treatment. However, perceived threat, perceived barriers, self-efficacy, and cues to action have no relationship with the family behavior in seeking treatment for people with mental disorders.

Keywords: Cues to action, GERMAS, HBM, People with mental disorders, Self-efficacy.

INTRODUCTION

The World Health Organization (WHO) mentioned that health is a comprehensive condition of health, physical, mental, and social wellness, not merely just a condition of no disorders and disability (WHO, 2003). Mental health is a part that is related to health and wellness. The Laws of the Republic of Indonesia mentioned mental health in Law No. 18 of 2014 as an individual who is able to develop physically, mentally, spiritually, and socially thus the individual realizes their capabilities, can handle pressure or stress, can work productively,

and can give a contribution to their community (Kementerian RI, 2014).

The population in the work area of the Public Health Centre Taman Sidoarjo according to the Sidoarjo Government Central Bureau of Statistics forecast (Inter-Censal Population Survey) for 2020 amounted to 153,650 people, with 43,169 households or 3.6 people/household on average. The estimated rate of population growth in the last 5 years is an average of 1.84%/year. The high population growth rate is likely caused by the increasing number of immigrants. This is due to the

Public Health Centre Taman area being an industrial area and very close to the urban area of Surabaya.

The average population density in the Public Health Centre Taman area is 7,684 people/km². The population density is almost 2.44 times of the Sidoarjo District, namely 3,104 people/km². The population of villages in the Taman Subdistrict varies greatly, for example Ketegan Village and Wonocolo Village are the most densely populated urban areas with population densities of 22,991 and 22,321 people/km². These villages have quite a high industrial potential and are directly bordered by the city of Surabaya. Meanwhile, the rural or urban village with the lowest population density is Bohar Village with an average population of 2,823 people/km², and is a village that has an area of 1.8 km² with a population of 5,017 people.

The Public Health Centre Taman has several main programs such as: 1) Health Promotion and Community Based Health Efforts, 2) Environmental Health Efforts, 3) Efforts to Improve Nutrition, 4) Maternal and Child Health, 5) Family Planning, 6) Eradication of Infectious Diseases, 7) Treatment, 8) Dental and Oral Health Efforts.

Many other programs implemented by the Public Health Centre Taman refer to the Activity Program of the Public Health Centre Sidoarjo District, with the types of services as follows: 1) General Practice Polyclinic, 2) TB and Leprosy Polyclinic, 3) Dental Polyclinic, 4) 24-Hour Services or ER, 5) Pregnancy and Gynecology Practice Services, 6) Family Planning Polyclinic Services, 7) Integrated Management of Sick Toddlers Polyclinic Services, 8) Physical and Mental Health Polyclinic, 9) Immunization Services, 10) Elderly Polyclinic Services, 11) Supporting Examination Services (Laboratory, USG, ECG), 12) Nutrition Corner Services, 13) Labor and Gynecology Inpatient Services, 14) General Inpatient Services, 15) Refraction Services, 16) Medicine Room Services, 17) Sanitation Clinics.

In 2013 and 2014, the number of visits to general practitioners in the Public Health Centre Taman was low, and the number of people living with mental disorders found in the work area of the Public Health Centre Taman was far below the Basic Health Research 2013 target (the total of people with mental

disorders 0.22% of the population). Achievement of services for people with mental disorders in 2014 amounted to 15.4% of the target of 100%. Whereas, one of the 12 Gerakan Masyarakat (GERMAS) ["society movement"] is a person with mental disorders and is being treated and not abandoned. However, there are still people with mental disorders who do not get good medical services. This is all due to the lack of public knowledge about the importance of people with mental disorders to get treatment and the social stigma about people with mental disorders (Puskesmas Taman, 2020).

As an effort to overcome the problems regarding people with mental disorders, the Public Health Centre Taman has formed care cadres for people with mental disorders to improve community mental health services and increase community involvement for attaining people with mental disorders who are independent and qualified as whole human beings. The success of care cadre formation for people with mental disorders was indicated by the increase in the number of people with mental disorders within the work area of the Public Health Centre Taman, which in 2014 was only 48 people, but in 2018 there were 206 people. In addition, there was an increase in the number of visits among people with mental disorders at the mental health polyclinic of the Public Health Centre Taman, namely as many as 40 visits in 2014 and 1,159 visits in 2018 (Puskesmas Taman, 2020).

The increase in visits could be influenced by cooperative family behaviour in seeking medical assistance at the mental health polyclinic of the Public Health Centre Taman. There are three factors that may influence family behaviour in seeking treatment for people with mental disorders. These three factors are predisposing factors, enabling factors, and reinforcing factors. Predisposing factors consist of self-stigma, education, knowledge, economy, values, beliefs, and culture; Enabling factors consist of alternative medicine and medical costs; Reinforcing factors consist of family support, support from health workers, and influential figures. This research analysed educational factors, self-stigma, trust, alternative medicine, medical costs, distance to health facilities, family support, and

support from health workers. The purpose of this research is to measure cues to action and self-efficacy of family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo.

METHODS

This study utilized the observational method with the cross-sectional study design. The research location was in Taman Subdistrict, Sidoarjo District, covering 15 villages.

The population was 209 people with mental disorders, and the research sample was calculated using the Slovin formula with a total sample of 70 respondents. The sampling technique was simple random sampling with a lottery system. Error tolerance of 5% (0.05). The respondents consisted of families of patients with mental disorders. The time of the research was on May 20th, 2022 - June 3rd, 2022. Data collection was carried out simultaneously with the visit

of mental health cadres to each patient's house in each village. Each village had 2 cadres whose job was to visit and report to the public health centre. The data collection instrument was a questionnaire. The dependent variable of the research was the behaviour in seeking treatment of the family. Whilst the independent variables were perceived susceptibility and severity, perceived threats, perceived benefits, perceived barriers, self-efficacy, and cues to action. Calculation of the questionnaire score used scores as follows: Favourable Answers of Strongly Disagree (STS) = 1, Disagree (TS) = 2, Agree (S) = 3, Strongly Agree (SS) = 4; Unfavourable Answers of Strongly Disagree (STS) = 4, Disagree (TS) = 3, Agree (S) = 2, Strongly Agree (SS) = 1. After that, the score results would be categorized into: High if $x > \text{average}$ Low if $x \leq \text{average}$. Data analysis applied the Pearson Chi-Square test with a significance level of <0.05 .

RESULTS AND DISCUSSION

Table 1. Characteristics of people with mental disorders in families and families in the work area of the Public Health Centre Taman Sidoarjo.

Characteristics of Families of People with Mental Disorders	Frequency	Percentage
Age		
17-25	1	1,4
26-35	8	11,4
36-45	18	25,7
46-55	10	14,3
56-65	20	28,6
> 65	13	18,6
Total	70	100,0
Treatment performed on family members		
Kyai only	23	32,9
Shaman only	17	24,3
Kyai and Shaman	7	10,0
Health Facility	23	32,3
Total	70	100,0

Source: Primary Data

HBM domains of perceived susceptibility and perceived severity, perceived threat, perceived benefit, perceived barriers, cues to action, and

self-efficacy with family behaviour in disorders.
seeking treatment for people with mental

Table 2. Analysis of HBM domain with family behaviour in seeking treatment for patients with mental disorders.

HBM Domain	Family Treatment Seeking Behaviour				Total		P value	r count
	Good (N)	%	Insufficient (N)	%	N	%		
Perceived Susceptibility, Severity							0.034	0.253
High	15	65.2	8	34.8	23	100		
Low	18	38.3	29	61.7	47	100		
Perceived Threat							0.180	
High	10	37.0	17	63.0	27	100		
Low	23	53.5	20	46.5	43	100		
Perceived Benefit							0.009	0.314
High	16	69.6	7	30.4	23	100		
Low	17	36.2	30	47	47	100		
Perceived Barriers							0.696	
High	14	50.0	14	50.0	28	100		
Low	19	45.2	23	54.8	42	100		
Self-Efficacy							0.555	
High	12	52.2	11	47.8	23	100		
Low	21	44.7	26	55.3	47	100		
Cues to Action							0.099	
High	19	57.6	14	42.4	33	100		
Low	14	37.8	23	62.2	37	100		

Source: Primary Data

In regard to the relationship between perceived susceptibility, severity and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo, the results of statistical analysis from the Pearson Chi-Square test with a significance level of <0.05 obtained a p-value of 0.034. The p-value is less than 0.05, which means that there is a relationship between perceived susceptibility, severity and family behaviour in seeking treatment for people with mental disorders. Based on the the Pearson Correlation test, an r count of 0.253 was found, which indicates that the variable of perceived susceptibility, severity toward the family behaviour variable in seeking treatment has a relationship with the degree of weak correlation and the form of the relationship was positive, signifying that the higher the perceived susceptibility, severity, the higher the family behaviour in seeking treatment for people with mental disorders and vice versa, the lower the perceived susceptibility, severity, the lower the family behaviour in seeking treatment for people with mental disorders.

The formation of a weak correlation degree can be caused by the p-value of perceived susceptibility of 0.067 and the

p-value of perceived severity of 0.011, thus the combination of each of these

variables has a relationship with a weak correlation between perceived susceptibility, severity and family behaviour in seeking treatment for people with mental disorders.

The relationship between perceived threat and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo, based on the results of statistical analysis, obtained a p value of 0.180. The p value is greater than 0.05, which means that there is no relationship between perceived threat and family behaviour in seeking treatment for people with mental disorders. The absence of this relationship can be because changes in the behaviour of people with mental disorders in socializing is not a threat for families to immediately bring people with mental disorders to health facilities.

The relationship between perceived benefit and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo, based on the results of statistical analysis, obtained a p-value of 0.009. The p-value is less than 0.05, which means that there is a relationship between perceived benefit

and family behaviour in seeking treatment for people with mental disorders. Based on the Pearson Relationship test, an r count of 0.314 was found which indicates that the perceived benefit variable on family behaviour variable in seeking treatment has a relationship with the degree of weak correlation and the form of the relationship was positive or the higher the perceived benefit, the higher the family behaviour in seeking treatment in people with mental disorders and vice versa.

Next, the analysis results of the relationship between perceived barriers and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo are shown. Based on the statistical analysis results, a p -value of 0.696 was obtained. The p -value is greater than 0.05, which means that there is no relationship between perceived barriers and family behaviour in seeking treatment for people with mental disorders. The absence of this relationship can be because families perceive that social stigma, costs, and distance are not obstacles in seeking treatment for people with mental disorders.

Related to the relationship between self-efficacy and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Center Taman Sidoarjo, it is explained in the table above that the statistical analysis results show a p -value of 0.555. The p -value is greater than 0.05, which means that there is no relationship between self-efficacy and family behaviour in seeking treatment for people with mental disorders. The absence of this relationship can be because the family feels they are able to care for and to recognize signs of recurrence experienced by family members who suffered from mental disorders.

The analysis results of the relationship between cues to action and family behaviour in seeking treatment for people with mental disorders in the work area of the Public Health Centre Taman Sidoarjo show a p -value of 0.099. The p -value is greater than 0.05, indicating that there is no relationship between cues to action and family behaviour in seeking treatment for people with mental disorders. This can be because counseling

provided by health workers is not something with the capability of triggering families to seek treatment for family members who suffered from mental disorders.

Relationship between Perceived Susceptibility, Severity and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is a relationship between perceived susceptibility, severity and family behaviour in seeking treatment. This is in line with research conducted by (Ferdian, 2017) which suggested that there was a relationship between perceived susceptibility and perceived severity with HIV/AIDS transmission prevention behaviour with a significance value of 0.002 for perceived susceptibility and 0.012 for perceived severity respectively.

The existence of a relationship between perceived susceptibility, severity and family behaviour in seeking treatment can be caused by low family knowledge that is able to be seen from the level of family education which may affect one's understanding of information. Low education will affect the ability to absorb and digest the information provided. Understanding is the ability to grasp the meaning of a message and get the point (Nasriati and Oktobriani, 2019).

Relationship between Perceived Threat and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is no relationship between perceived threat and family behaviour in seeking treatment. This is because the family is not aware of how a very significant change in behaviour among people with mental disorders could be a sign or symptom of a mental disorder. Therefore, due to this, the family does not immediately seek treatment for family members who suffer from mental disorders.

Based on research by (Purwanti, 2020) regarding family planning visits to the threat of the baby boom in the Covid-19 Era, it was found that knowledge was related to family planning visits with a significance value of 0.000. Thus, it can be interpreted that knowledge influences individual behaviour in acting to avoid threats. On the other hand, it is in line with (Lestari, 2019) which implied that

there was a relationship between knowledge and the behaviour of washing hands with soap with a significance value of 0.009.

Relationship between Perceived Benefit and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is a relationship between perceived benefit and family behaviour in seeking treatment. This is in line with research conducted by (Prihantini, Yunitasari and Pradanie, 2018) which showed that there was a relationship between the perceived benefit of breast cancer patients with a significance value of 0.031. Family belief in the recovery and self-control of people with mental disorders is what families expect of the benefits that people with mental disorders get when being treated at health facilities.

In addition, family support is also needed in healing people with mental disorders. Based on research by (Oktaviana and Ratnawati, 2022), it was proven that the majority of families provided support in the form of emotional support (empathy and caring), instrumental (cost assistance, service assistance, time assistance), and monitoring of taking medication for family members who experienced mental disorders. Most families received support from health workers including regular visits to inject and administer drugs, as well as monitoring patient.

Apart from recovery, self-control is also what the family of people with mental disorders hopes for so that people with mental disorders can control themselves when they are in a state of relapse. Based on research of (Daryanto *et al.*, 2022) regarding self-control by hallucinatory patients, it was found that the patient's ability to control hallucinations is influenced by family knowledge about caring for family members who experienced hallucinations and the provision of good family support for patients.

Relationship between Perceived Barriers and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is no relationship between perceived barriers and family behaviour in seeking treatment. This is evidenced by the

existence of research on efforts to prevent DHF by (Attamimy and Qomaruddin, 2017) which found that there was no relationship between perceived barriers and efforts to prevent DHF in the community in the working area of the Sukorame Health Centre, Mojoroto Subdistrict, Kediri City with a significance value of 0.144.

The absence of a relationship between perceived barriers and family behaviour in seeking treatment can be because the treatment fee is covered by the Social Security Agency on Health and the distance between the health facility and patient's house is easy to travel. Proven by research of (Setiawan, 2018) which suggested that families of patients with mental disorders preferred to bring their family members to public health centres because the medicine was free of charge.

Furthermore, referrals to mental hospitals are issued by public health centres when patients with mental disorders have severe symptoms. Aside from the free treatment, public health centres also visit patients' homes to see the condition of mental patients firsthand. Visits by public health centres aid families of people with mental disorders thus they do not have to bring the family members who have mental disorders to the public health centres.

In addition to costs and distance to health facilities, community stigma is also not an obstacle for families in seeking treatment for family members who suffer from mental disorders. This research is not in line with research by (Anwar and Syahrul, 2019) which stated that social stigma greatly influenced the lives of leprosy patients both psychologically and mentally. A lot of leprosy patients felt ostracized, so they preferred to stay indoors. As a result, many leprosy patients did not receive optimal treatment thus the condition got worse until it caused permanent disability.

There is no relationship between stigma and perceived barriers because the surrounding community has received mental health education from the public health centre and mental health cadres. This is evidenced by (Daryanto *et al.*, 2022) which suggested that there was a relationship between the provision of education and reduced negative family

and community stigma against mental disorders with a significance value of 0.000. Therefore, it is beneficial for families and communities to increase knowledge about stigma and reduce the stigma of mental disorders.

Relationship between Self-Efficacy and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is no relationship between self-efficacy and family behaviour in seeking treatment for people with mental disorders. This can be because of the active activities of psychiatric cadres in carrying out sweeps in their area so as to help families recognize symptoms or signs of mental disorders experienced by their family members and motivate families to continue to care for people with mental disorders.

This statement is proven by research of (Wasliah and Romadonika, 2022) which implied that there was a relationship between the role of Integrated Healthcare Centre cadres in providing complete basic immunization in the Griya Interbis Indah residential area. It suggests that the existence of cadres who are close to the community can be a motivator for families of people with mental disorders to be able to care for their family members who suffer from mental disorders.

According to the research results of (Kusumawaty, 2020), an increase in knowledge and ability to care for patients was related to many things. The first factor was the form of demonstration on how to care for people with mental disorders; second, was the factor of respondents who have seen and learned how to treat. In addition, various family ages and educational levels also determined success in treating people with mental disorders.

Relationship between Cues to Action and Family Behaviour in Seeking Treatment for People with Mental Disorders

The results show that there is no relationship between cues to action and family behaviour in seeking treatment for people with mental disorders. This is evidenced by research of (Zulkarni, Yosmar and Yuliagus, 2019) which proved that there was no relationship between cues to action and family behaviour in

self-medication, with a significance value of 0.847.

The absence of a relationship between cues to action on family behaviour in seeking treatment for people with mental disorders can be because families of people with mental disorders find it difficult to access information through gadgets, since most of the respondents were elderly, namely 56-65 years old with the last education of high school. Therefore, the role of health workers is needed to always provide educational information about mental disorders to families and the community so that they can increase their knowledge and attitudes in caring for and seeking treatment for people with mental disorders.

CONCLUSION

According to the research results, it can be concluded that perceived susceptibility, severity has a positive relationship with family behaviour in seeking treatment, which means that as perceived susceptibility, severity increases, the behaviour of families in seeking treatment for people with mental disorders increases. Likewise, perceived benefit has a positive relationship with family behaviour in seeking treatment. However, perceived threats, perceived barriers, self-efficacy, and cues to action have no relationship with family behaviour in seeking treatment for people with mental disorders.

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Holistic Therapy to Improve Quality of Life in Chronic Disease Patients

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ABSTRACT

The concept of healthy-sick is no longer only related to the bio-psycho-social-spiritual aspects but also includes the physical and mental aspects. Chronic disease is a long-term and often incurable condition that requires continued management. Medical care, such as medication and surgery, is vital in managing chronic diseases. Non-medical treatments, such as positive thinking, a healthy diet, and fasting, can also significantly impact managing chronic diseases. Writing this article uses a library study or literature review. A holistic approach to health care can improve patient outcomes by improving physical and mental health, promoting better care coordination and communication, improving self-management skills, addressing psychosocial and spiritual needs, and providing patient-centric care.

Keywords: Chronic diseases, Holistic, Medical, Non-medical.

INTRODUCTION

The health field now sees humans mechanistically and dichotomously, considering the human physical body and the external human body as two different things. However, this view is beginning to change with the development of science, especially in health. Human health is now more spiritual and seen as a whole and balanced. Thus, the concept of healthy-sick is not only related to bio-psycho-social-spiritual aspects but also includes physical and mental aspects. (Emy et al., 2021) Chronic diseases are long-term and often incurable conditions that require ongoing management. Medical treatments, such as drugs and surgery, are essential in managing chronic diseases. However, non-medical treatments, such as a positive mindset, a healthy diet, and fasting, can also significantly impact chronic disease management. (Gibson et al., 2012)

The purpose of this study is to provide an overview of improving the quality of life of chronic disease patients according to some of the literature found. This study aims for health workers, in particular, and the public, in general, to recognize that a holistic approach is needed in caring for patients with chronic diseases. According to systematic reviews, positive psychological functioning, including optimism and hope, influence

health effects in treating chronic diseases (Schiavon et al., 2017). Positive thinking can affect cardiovascular and immune system health, short- and long-term surgical outcomes, and recovery and healing (Sunardi S & Sujito S, 2019).

Healthy eating can help prevent, delay, and manage heart disease, type 2 diabetes, and other chronic diseases. A balanced and healthy diet includes fruits, vegetables, whole grains, lean proteins, and low-fat dairy products and limits added sugars, saturated fats, and sodium. In addition, studies have shown that fasting reduces inflammation and, in turn, improves chronic inflammatory diseases (Gibson et al., 2012)

Proper fasting can help build healthy resilience and reduce several risk factors, such as obesity and metabolic syndrome, which have been considered risk factors for worsening outcomes from COVID-19. Fasting can reduce inflammation and oxidative stress, improve cardiovascular function, and enhance immune function (IFM, 2020).

Holistic care aims to use traditional medical practices and complementary and alternative medicine (CAM) to help patients with chronic diseases lead healthier and happier lives. Holistic care may include nutritional counseling, stress management, physical therapy, acupuncture, and other modalities such as supernatural healing methods such as

hypnosis or hypnotherapy methods, where the patient's recovery is determined by the psychic's ability to explore the patient's subconscious mind and to bring the patient's mind to a particular state of hypnosis so that he or she can receive particular healing suggestions (CDC, 2023).

A holistic approach to healthcare involves caring for the whole person and considering all aspects of their well-being, promoting collaboration and communication between patients and healthcare providers, coordinating care among different providers and settings, and taking into account cultural and social factors that may affect a patient's health and wellness. Seventy-six leprosy cases have been identified through laboratory tests conducted at Damian Hospital. Thirty-three leprosy cases received holistic treatment and anti-leprosy medical drugs. 19 of the 33 leprosy patients treated with holistic treatment were cured. Holistic treatment complemented with modern anti-leprosy drugs can cure patients and improve their quality of life (Weraman, 2017).

METHODS

The writing of this article uses a literature study or literature review of 14 kinds of literature. A literature study collects data or information by using theoretical studies or other references relevant to the subject under study. The literature study used books, journal articles, articles on online media, and references on philosophy and medical vs. non-medical treatments for chronic diseases. The type of secondary data is data obtained from literature studies. In philosophy, medical vs. non-medical treatments for chronic diseases are discussed with data and information from literature studies.

RESULTS AND DISCUSSION

A holistic approach to healthcare refers to an approach that considers the whole person, including their physical, mental, emotional, and spiritual health, rather than just focusing on one particular aspect of their health or symptoms. This approach aims to treat the whole person rather than just a disease or condition

and focuses on prevention, well-being, and treatment (MENEZES, 2020)

Holistic healthcare is evolving towards considering a comprehensive model of the human being. Holistic healthcare defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity," as the World Health Organization's (WHO) Constitution affirmed.

Holistic healthcare is person-centered, which means focusing on the patient, including self-care and the participation of family members to achieve the desired outcome. The proposed educational methodology promotes the cultivation of self-esteem as a transversal issue. It contributes to a paradigm shift towards total personal development and humane and social professional practice (Wamboldt, 2023)

Holistic health care can create positive change in communities by addressing immediate medical needs and long-term public health challenges. A holistic approach to health care that includes medical care, family planning and hygiene advice, and addressing humanitarian needs such as clean water and proper hair care can improve the health and well-being of disadvantaged communities (Emy et al., 2021).

A holistic approach to healthcare involves treating the whole person, considering all aspects of their physical, mental, emotional, and spiritual well-being, rather than just treating the symptoms of illness. To achieve this, healthcare practitioners must follow ethical principles, aim for holistic practice, and follow ethical guidelines. Holistic healthcare aims to promote health and well-being rather than just treating disease (Schiavon et al., 2017; Weraman, 2017).

In a holistic approach to healthcare, patients are considered active participants in their care, and healthcare practitioners act as guides and facilitators. This approach emphasizes the importance of collaboration and communication between patients and healthcare providers and coordination and continuity of care across different providers and settings.

A person-centered approach is a crucial component of a holistic approach to healthcare. This approach focuses on

patients' unique needs and preferences and involves working with patients to develop a personalized care plan that addresses all aspects of their well-being. This approach is essential for people with chronic illnesses who receive care from multiple providers in multiple settings.

Holistic healthcare also considers cultural and social factors affecting a patient's health and well-being. For example, there may be variations in the definition and meaning of health among cultures. Visible immigrant minority women may experience barriers to accessing healthcare, including discrimination, and there may be paradigm clashes between Western biomedical principles and Eastern holistic approaches to health. Indigenous men with a prison history may experience colonial trauma and associated mental, physical, emotional, and spiritual wounds stemming from systemic oppression (Sunardi S & Sujito S, 2019).

A holistic approach to healthcare can benefit patients with chronic conditions in several ways. By focusing on the whole person, not just the symptoms of the disease, a holistic approach can lead to improved overall health and well-being, reduced symptoms, and better management of the condition.

Research has shown that a holistic approach to healthcare can lead to better patient outcomes in several ways (Iqbal et al., n.d.; Jacob et al., 2020; Sugano et al., 2022).

1. Improves physical and mental health: Integrative medicine, which combines conventional and complementary therapies, has been shown to improve mental and physical health in patients with chronic pain syndromes. This approach can lead to better symptom management, reduced pain intensity, and improved quality of life.
2. Better Care Coordination and Communication: A holistic approach to healthcare encourages better communication and collaboration among healthcare professionals, leading to more coordinated care for patients with chronic conditions. Collaboration between professionals is essential for patients with complex chronic conditions, as it ensures that their therapy plans are appropriately coordinated and that all aspects of their care are considered.

3. Improving self-management: A holistic approach to healthcare can also help patients develop better self-management skills, allowing them to manage their conditions more effectively. A holistic approach can lead to better control of chronic conditions, reduced hospitalizations, and better overall health outcomes.
4. Addressing psychosocial and spiritual needs: A holistic approach to healthcare recognizes the importance of addressing patients' psychosocial and spiritual needs alongside their physical health. A holistic approach can lead to a more comprehensive understanding of the patient's experience and better support for their emotional well-being.
5. Patient-centred care: A holistic approach to healthcare emphasizes the importance of patient-focused care, where healthcare providers consider the individual needs, preferences, and values of each patient. A holistic approach can lead to more personalized and effective treatment plans, better patient satisfaction, and better health outcomes. The results showed that patient satisfaction is influenced by patient characteristics: age, education, occupation, ethnicity, and social and economic factors. In addition, the factors that influence patient satisfaction are the attitude of paramedics and administrative services. Linder Pelz in states that patients
6. Satisfaction is an upbeat assessment of the various dimensions of service. The assessment can be made in the form of a small part of the service, for example, one type of service from a series of ambulance or hospital services, all types of services provided to cure the patient, to the overall service system in the hospital.
7. Reducing healthcare costs: By addressing all aspects of a patient's health and well-being, a holistic approach to medical care can potentially reduce health costs associated with chronic conditions[6]. A holistic approach can be achieved through better symptom management, reduced hospitalization, and improved overall health.

While medical treatment is essential for managing chronic fatal diseases, non-medical treatments such as a positive mindset, healthy diet, fasting, and holistic care can also significantly impact chronic disease management. Therefore, a combination of medical and non-medical treatments can be beneficial (Rosenkranz et al., 2020)

A holistic approach to healthcare can lead to better patient outcomes by improving physical and mental health, promoting better care coordination and communication, improving self-management skills, addressing psychosocial and spiritual needs, and providing patient-centered care. Traditional approaches may need to be more effective in achieving these outcomes. Therefore, healthcare providers should consider adopting a holistic approach to provide more comprehensive and patient-centered care to their patients (Manalu et al., 2021).

CONCLUSION

A holistic approach to healthcare focuses on the whole person rather than just treating the symptoms of the disease. This approach can improve overall health and well-being, reduce symptoms, and better manage chronic conditions. In contrast, traditional approaches to healthcare are more disease-oriented, focusing primarily on treating the symptoms of disease rather than addressing the underlying causes or overall health of the patient.

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Implementation of Health Education Counseling on Breast Self-Examination (BSE) with Android Media on Breast Cancer Prevention Behavior in Balikpapan

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ABSTRACT

Breast cancer is a frightening disease for women. The prevalence of breast cancer in Indonesia is 109 per 100,000 population. The most cancer in East Kalimantan in 2014 was breast cancer with 179 people and in 2015 it rose to 424 people, this case experienced an increase of 56.28%. The aim of the researchers was to implement breast self-examination health education counseling (BSE) with Android media on breast cancer prevention behavior in Balikpapan. This research method is a quasi-experimental study with a one-group pre-test and post-test design. The sample in this study was 2 groups of cadres totaling 50 people, each 25 people in the control group and 25 in the intervention group with ages 18-55 years. The results of the study showed an increase in knowledge (good 48%, enough 40%, less 12%) and increased behavior about BSE (good 44%, enough 48%, less 8%), there was a difference in knowledge before and after being given BSE counseling using android media (p -value = 0.362). There are differences in behavior before and after being given the BSE counseling treatment using Android media (p -value = 0.607). Conclusion: Providing counseling using Android media provides better benefits.

Keywords: Android Media Extension, Behavior, BSE, Knowledge.

INTRODUCTION

Breast cancer is a frightening disease for women. Although now there is the best treatment, but the fight against breast cancer is not always successful. This is because there is still a lack of attention from women in understanding breast cancer in order to avoid breast cancer and how to detect it early (Setiati, 2009).

According to (WHO, 2008), the prevalence of breast cancer in Indonesia is 109 per 100,000 population (Kartika Adyani et al., 2022). In Indonesia, breast cancer is the second most common cancer suffered by women after cancer of the mouth or cervix. Breast cancer is the most feared disorder, generally, women who attack are over 40 years old, however, young people can get this cancer (Mardiana, 2009).

Based on data from the East Kalimantan Provincial Health Office (2016), the most common cancer in East Kalimantan in 2014 was breast cancer with 179 people, and in 2015 it rose to 424 people, this case experienced an increase of 56.28%. (Bisnis.com, 2016). One of the causes, many patients come for treatment at an advanced stage, this is due to a lack of awareness for early detection of breast cancer (Hayati et al., 2023).

The level of public awareness is still lacking and there are erroneous myths about breast cancer that cause delays in breast cancer treatment, providing information about breast cancer with appropriate promotional and preventive methods in implementation is a strategic step in an effort to improve public health and knowledge so that women are able early detection of breast cancer (Oryza, 2022).

This early detection can be done by means of breast self-examination (BSE). This prevention is the most possible early detection intervention and has many advantages including being easy and practical. If BSE is done routinely and periodically, breast cancer can be detected early so that further treatment can be obtained more quickly and accurately. However, the BSE examination has not received much attention, many people do not even know about it (Dianada, 2009).

According to the results of Dewilestianingrum's research (2013), regarding breast self-examination in young women at SMK Negeri I Badegan, Ponorogo Regency, 7 respondents (6.5%) had good knowledge of BSE and 57

respondents (53.3%) had sufficient knowledge and less as many as 43 respondents (40.2%).

One of the efforts to introduce and increase public knowledge about BSE is through health education outreach activities. Health education counseling is an educational activity carried out by disseminating information or messages conveyed, so that people are aware, believe, and want to do it. To achieve maximum results, it is necessary to use appropriate counseling methods and media according to the objectives of the counseling. One of the extension media used is Android, a form of audio-visual media (Adimuntja et al., 2022).

Muara Rapak Health Center in Balikpapan is a health center that provides health services to the community, but the services provided are mostly curative and preventive services that still receive more attention. This is because there are still people or cadres who do not know about or receive health education about breast self-examination (BSE) for early detection of breast cancer (Hayati et al., 2023).

Health education should be provided to the community, groups, and individuals, through health workers and cadres who can assist the community around their environment, but this is rarely done, especially regarding examinations (BSE) because the readiness of cadres or health workers is still lacking. Therefore researchers are interested in conducting research with the title Implementation of providing health education counseling on self-breast examination (BSE) to cadres using android media on breast cancer prevention behavior in cadres at the Muara Rapak Health Center, Balikpapan (Muchtaridi et al., 2021).

METHODS

This research is a quasi-experimental study with a one-group pre-test and post-test design. The research subjects were women of reproductive age (18-45 years) in the PKM Muara Rapak area using survey and observation data. The total number of subjects is 50 respondents. The use of android media that combines audio and visual or combines visual media and hearing media. So that the more the five senses are used, the stronger and clearer the knowledge and information obtained for the implementation of

providing health education counseling on self-breast examination (BSE) to cadres on breast cancer prevention behavior at the Muara Rapak Health Center, Balikpapan. Data collection was obtained through a questionnaire given to respondents using a data collection technique in the form of a questionnaire. This questionnaire was carried out by circulating a list of questions and a questionnaire form as a form of instrument. Submitted in writing to the respondent to provide feedback, information and answers. Subjects filled out informed consent as a form of their willingness to participate in the study. Sampling technique with Random Sampling. The inclusion criteria in this study were women of reproductive age and still menstruating, willing to be respondents. Exclusion criteria in this study were women who had no menstruation, menopause, and consumers who did not participate in counseling activities. The analysis used in this study is univariate analysis and bivariate analysis. Univariate analysis aims to explain or describe the characteristics of each research variable, while bivariate analysis aims to determine the relationship between the two variables, namely the dependent variable and the independent variable. The dependent variable is internal factors (perception, motivation, intelligence, and knowledge) and external factors (environment). The independent variable is health education and the factors that influence it. This research has received ethical approval No. LB.02.01/7.1/2735/2019 from the Poltekkes Kemenkes Kaltim.

RESULTS AND DISCUSSION

The characteristics of the total majority of these 50 subjects show that the majority of respondents were aged 20-35 years 76%, with a junior high school education level of 36%.

Table 1. Respondent characteristics.

No	Respondent Characteristics		N = 50	
			Total	%
1	Age			
	a	20 - 35 years	38	76
	b	36 - 50 years	12	24
Total			50	100
2	Education			
	a	Elementary School	7	14
	b	Junior High School	17	34
	c	Senior High School	18	36
	d	University	8	16
Total			50	100

From the results of the univariant analysis it was found that the knowledge of cadres in the PKM Muara Rapak area before being given health education about the BSE examination was mostly in the good category, namely 11 respondents (44%) and after being given health education about BSE examination, the frequency of the good

category was 14 respondents (56%). This proves that there is an increase in results after the counseling is carried out, which means that the respondents who were given the counseling questionnaire listened to, followed, and paid attention to the counseling given properly.

Table 2. Univariant analysis results.

Knowledge	Before		After	
	Frequency	Percent	Frequency	Percent
Less	8	32	3	12
Enough	6	24	8	32
Good	11	44	14	56
Total	25	100	25	100

It is known that the behavior of cadres in the PKM Muara Rapak area before being given health counseling about the BSE examination was mostly in the good category, namely, 3 respondents (12%) and after being given health education about the BSE examination the frequency of the

good category remained with 3 respondents (12%). Knowledge Results of Pre and Post-Health Intervention Groups. It can be said that the respondents did not pay too much attention to the counseling given.

Table 3. The behavior of non-control group cadres regarding BSE examination before and after health counseling in public health service Muara Rapak Balikpapan.

Behavior	Before		After	
	Frequency	Percent	Frequency	Percent
Less	4	16	7	28
Enough	18	72	15	60
Good	3	12	3	12
Total	25	100	25	100

It is known that the knowledge of cadres in the PKM Muara Rapak area before being given health counseling about BSE examination was mostly in the good category, namely 6 respondents (24%) and after being given health education about

BSE examination, the frequency of the good category increased by 12 respondents (48%). This proves that there is an increase in results after the counseling is carried out, which means that the respondents who were given the counseling questionnaire listened to, followed, and

paid attention to the counseling given properly.

Table 4. Knowledge of control group cadres about BSE examination before and after health counseling in public health service Muara Rapak Balikpapan.

Knowledge	Before		After	
	Frequency	Percent	Frequency	Percent
Less	13	52	3	12
Enough	6	24	10	40
Good	6	24	12	48
Total	25	100	25	100

It is known that the knowledge of cadres in the PKM Muara Rapak area before being given health education about the BSE examination was mostly in the good category, namely 2 respondents (8%), and after being given health education about the BSE examination, the frequency of the good category increased by 11 respondents

(44%). This proves that there is an increase in results after the counseling is carried out, which means that the respondents who were given the counseling questionnaire listened to, followed, and paid attention to the counseling given properly.

Table 5. The behavior of intervention group cadres regarding BSE examination before and after health counseling in public health service Muara Rapak Balikpapan.

Behavior	Before		After	
	Frequency	Percent	Frequency	Percent
Less	6	24	2	8
Enough	17	68	12	48
Good	2	8	11	44
Total	25	100	25	100

From the results of the bivariate analysis, the results of the McNemar test obtained p value = 0.362, thus the p-value is greater than alpha (5%) so that H_0 is

accepted, meaning that there is no effect on differences in knowledge about BSE examination before and after.

Table 6. Knowledge of non-intervention group Pre-test and Post-test cadres about BSE examination in public health service Muara Rapak Balikpapan.

		After Knowledge				p-value
		Less	Enough	Good	Total	
Before Knowledge	Less	1	1	6	8	0,362
	Enough	0	4	2	6	
	Good	2	3	6	11	
	Total	3	8	14	25	

It is known that the results of the McNemar test obtained a p-value = 0.607, thus the p-value is greater than alpha (5%) so H_0 is accepted, meaning that there is no effect on differences in behavior regarding

BSE examinations before and after. Because this group was not given a supporting Android application regarding the BSE examination.

Table 7. The behavior of control group Pre-test and Post-test cadres about BSE examination in public health service Muara Rapak Balikpapan

		After Behaviour				p-value
		Less	Enough	Good	Total	
Before Behavior	Less	1	3	0	4	0,607
	Enough	6	10	2	18	
	Good	0	2	1	3	
	Total	7	15	3	25	

It is known that the McNemar test results obtained p value = 0.008, thus the p-value is smaller than alpha (5%) so H_0 is

rejected, meaning there is an influence on differences in knowledge about BSE examination before and after.

Table 8. Knowledge of intervention group Pre-test and Post-test cadres about BSE examination in public health service Muara Rapak Balikpapan.

		After Knowledge				p-value
		Less	Enough	Good	Total	
Before Knowledge	Less	2	7	4	13	0,008
	Enough	0	3	3	6	
	Good	1	0	5	6	
	Total	3	10	12	25	

It is known that the results of the McNemar test obtained a p-value = 0.022, thus the p-value is smaller than alpha (5%) so H_0 is rejected, meaning there is an

influence on differences in behavior regarding BSE examination before and after.

Table 9. The behavior of cadres Pre-test and Post-test intervention groups regarding BSE examination in public health service Muara Rapak Balikpapan.

		After Behaviour				p-value
		Less	Enough	Good	Total	
Before Behavior	Less	1	0	5	6	0,022
	Enough	0	12	5	17	
	Good	1	0	1	2	
	Total	2	12	11	25	

The results of this study are in line with research conducted by Bale, et al (2017) the ability to perform BSE before being given treatment was in the bad category, namely 43 people (100%) and after being given treatment, it was included in the good category, namely 17 people (39.5%). The results of statistical testing showed that there was an effect of BSE health counseling on the ability to perform BSE with a significant value of 0.000.

This study was also supported by research by (Hayati et al., 2023), that the results showed that there were differences in changes in knowledge in the experimental group with a mean (49.22) greater than in the control group I (17.36),

($p = 0.000$) and for changes in attitude in the experimental group (33.46) was greater than in the control group (25.94), ($p = 0.000$) so that there was a significant difference in health education using videos in BSE on increasing knowledge and attitudes in young women (Kartika Adyani et al., 2022).

According to (Nanda, et al, 2015) reveals changes in knowledge can be influenced by certain factors, some of which are education, mass media, socio-cultural, and economic, environment, experience and age. Researchers assume that BSE counseling with android media provides changes in increased knowledge of respondents which in the end results in changes in behavior, especially breast

cancer prevention behavior. Health promotion media is one of the means or efforts that can be used to display health messages or information to be conveyed to the public so that they can increase their knowledge which is ultimately expected to change their behavior in a positive direction or support health (Inayah et al., 2023).

According to the Information Technology Law, information is a technique for collecting, preparing, storing, manipulating, announcing, analyzing, and disseminating information with a specific purpose. Information obtained, both formal and non-formal, can have a short-term effect resulting in a change or increase in knowledge. This is consistent with what happened to cadres at PMK Muara Rapak Balikpapan, that health education about BSE is information obtained informally but is able to increase this knowledge. Another source that influences the knowledge of respondents is that the majority of respondents often access health information, including information about BSE through the Internet (Kartika Adyaniet al., 2022).

CONCLUSION

The results of this study were an increase in knowledge and behavior about BSE after being given BSE counseling using Android media, the results of the analysis showed that there were differences in knowledge and behavior before and after being given BSE counseling using android media.

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