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Jurnal Keperawatan Soedirman

Jurnal terbitan berkala dikelola oleh Jurusan Keperawatan Fakultas Ilmu-Ilmu Kesehatan Universitas Jenderal Soedirman

- THE ONLINE GAMING BEHAVIOUR OF UNIVERSITY STUDENTS UNDERGOING SELF-QUARANTINE
- DISCIPLINE STRATEGIES: PARENT'S EXPERIENCES FOR EARLY CHILDHOOD DEVELOPMENT IN NORTH EASTERN, THAILAND
- A SIMPLE MODEL FOR DESCRIBING NON-ADHERENCE TO MEDICATION IN TUBERCULOSIS PATIENTS IN A TROPICAL AREA, INDONESIA
- THE EFFECT OF PREGNANT WOMEN'S PARTICIPATION IN PREGNANCY CLASSES ABOUT BREASTFEEDING SKILLS: A QUASI-EXPERIMENTAL STUDY
- EDUCATIONAL INTERVENTION TO IMPROVE KNOWLEDGE AND ATTITUDES ABOUT THALASSEMIA PREMARITAL SCREENING SURVEYS AMONG MUSLIM SOCIETIES: A PILOT STUDY IN INDONESIA
- THE EXPERIENCE OF TYPE II DIABETES MELLITUS PATIENTS WITH EARLY SYMPTOMS OF HYPOGLYCEMIA: A PHENOMENOLOGICAL STUDY
- THE DETERMINANT FACTORS OF PATIENT SATISFACTION AMONG OUTPATIENT AND INPATIENT SERVICES IN A TYPE B HOSPITAL IN INDONESIA
- VALIDATION OF BRIEF MEASUREMENT OF RELIGIOUS COPING IN BAHASA INDONESIA (BRIEF RCOPE BI)

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A scientific journal

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Author Guidelines

Author Guidelines

Jurnal Keperawatan Soedirman

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Jurnal Keperawatan Soedirman is a scientific journal devoted to research and development publications in the field of nursing, such as surgical medical nursing, emergency, and critical nursing, nursing, maternity nursing, community nursing, gerontic nursing, nursing management, mental nursing, and other fields related. Articles can be original articles, case studies, systematic reviews, and meta-analyses in nursing fields.

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Researchers from Universities, Research Institutes, and Hospitals.

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Writing Guidelines

Coverage

Jurnal Keperawatan Soedirman includes research and developments in nursing fields, such as surgical medical nursing, emergency, and critical nursing, pediatric nursing, maternity nursing, community nursing, gerontologic nursing, nursing management, and other related fields.

Type of article

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The title section consists of:

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Abstract

The abstract should be concise, maximum of 200 words, written both in Indonesian and English. The abstract contains a summary of the research's background, objectives, methods, key results, and main conclusions. It should be avoided writing libraries or citations in abstracts and abbreviated abbreviations.

Keywords

Keywords in Indonesian and abstract English, containing 3-5 keywords. It should be avoided the use of abbreviations and words can cause many perceptions. It should be chosen the right words so that people can find related articles by entering keywords in the search.

Background

The introduction contains the objectives and hypotheses of the study accompanied by appropriate rearranges. Detailed literature writing and the conclusion of research results should be avoided in this section.

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This section contains tools and materials specifically used in the research as well as the workings of research methods undertaken. The workings that already existed in previous research, should be included in the reference and only modification if da which needs to be written in detail.

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The obtained result is then discussed by comparing it with the results of previous research. Other sources of references (of the previous research) are aimed at strengthening the argumentation of the results of research that has been done. The sources of references in the discussion must meet the scientific requirements (journal, textbook, or proceedings).

Conclusion and Recommendation

Conclusions from the results of research conducted delivered briefly and clearly

Acknowledgment

This section can be expressed thanks to institutions, experts, or other bodies that play an important role in the implementation of research undertaken.

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Math formula

Simple mathematical formulas should use a slash (/) to replace a horizontal line, for example, X / Y.

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The displayed image or picture must be clear, at least 300 dpi resolution. Images created with programs such as Microsoft Word® or Microsoft Powerpoint® can be delivered as-is.

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The title is written underdrawings, middle averages, capital letters at the beginning of a sentence. Avoid unusual use of abbreviations. The title pointer of the image is thick (for example, Figure 1. Influence Z on Y under X).

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The table is given a horizontal line in the header (first row) and the end of the table only, with no vertical lines.

Table title

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Type

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Example of writing

In writing

Single author

In one developmental study (Smith, 1990), children learned ...

or

In the study by Smith (1990), primary school children ...

or

In 1990, Smith's study of primary school children ...

Plural authors

The first citation: Masserton, Slonowski, and Slowinski (1989) state that ...

Next citation: Masserton et al. (1989) state that ...

Some references in a sentence

Several studies (Jones & Powell, 1993; Peterson, 1995, 1998; Smith, 1990) suggest that ...

Writing in the References

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Strunk, W., & White, E. B. (1979). *The guide to everything and then some more stuff*. New York, NY: Macmillan.

Gregory, G., & Parry, T. (2006). *Designing brain-compatible learning* (3rd ed.). Thousand Oaks, CA: Corwin.

Book chapter:

Bergquist, J. M. (1992). German Americans. In J. D. Buenker & L. A. Ratner (Eds.), *Multiculturalism in the United States: A comparative guide to acculturation and ethnicity* (pp. 53-76). New York, NY: Greenwood.

Journal with DOI:

Fatoni, A., Numnuam, A., Kanatharana, P., Limbut, W., Thammakhet, C., & Thavarungkul, P. (2013). A highly stable oxygen-independent glucose biosensor based on a chitosan-albumin cryogel incorporated with carbon nanotubes and ferrocene. *Sensors and Actuators B: Chemical, 185*(0), 725-734. DOI:10.1016/j.snb.2013.05.056

Journal without DOI (DOI not available):

Hermawan, D., Yatim, I. M., Ab Rahim, K., Sanagi, M. M., Ibrahim, W. A. W., & Aboul-Enein, H. Y. (2013). Comparison of HPLC and MEEKC for Miconazole Nitrate Determination in Pharmaceutical Formulation. *Chromatographia, 76*(21-22), 1527-1536.

Hamfi, A. G. (1981). The funny nature of dogs. *E-journal of Applied Psychology*, 2(2), 38 - 48. Retrieved from http://ojs.lib.swin.edu.au/index.php/fdo

Conference

Zusfahair, Ningsih, D. R., & Kartika, D. (2015). *The potency of Amylase Producing Bacteria in the Liquid Waste of Tapioca Factory*. Paper presented at the 1st Pharmacy International Conference, Purwokerto, Indonesia.

Online Newspaper:

Becker, E. (2001, August 27). Prairie farmers reap conservation's rewards. *The New York Times*. Retrieved from http://www.nytimes.com

Encyclopedia:

Brislin, R. W. (1984). Cross-cultural psychology. In R. J. Corsini (Ed.), *Encyclopedia of psychology* (Vol. 1, pp. 319-327). New York, NY: Wiley.

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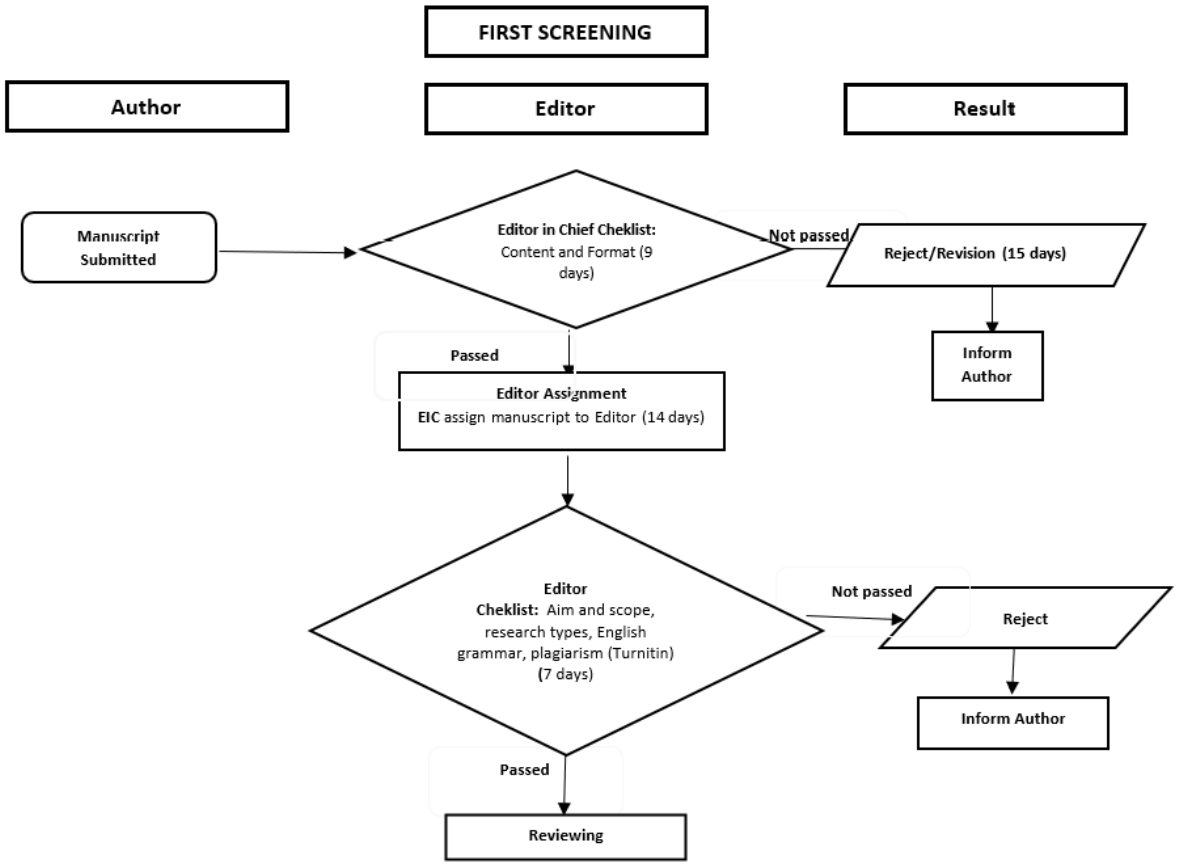
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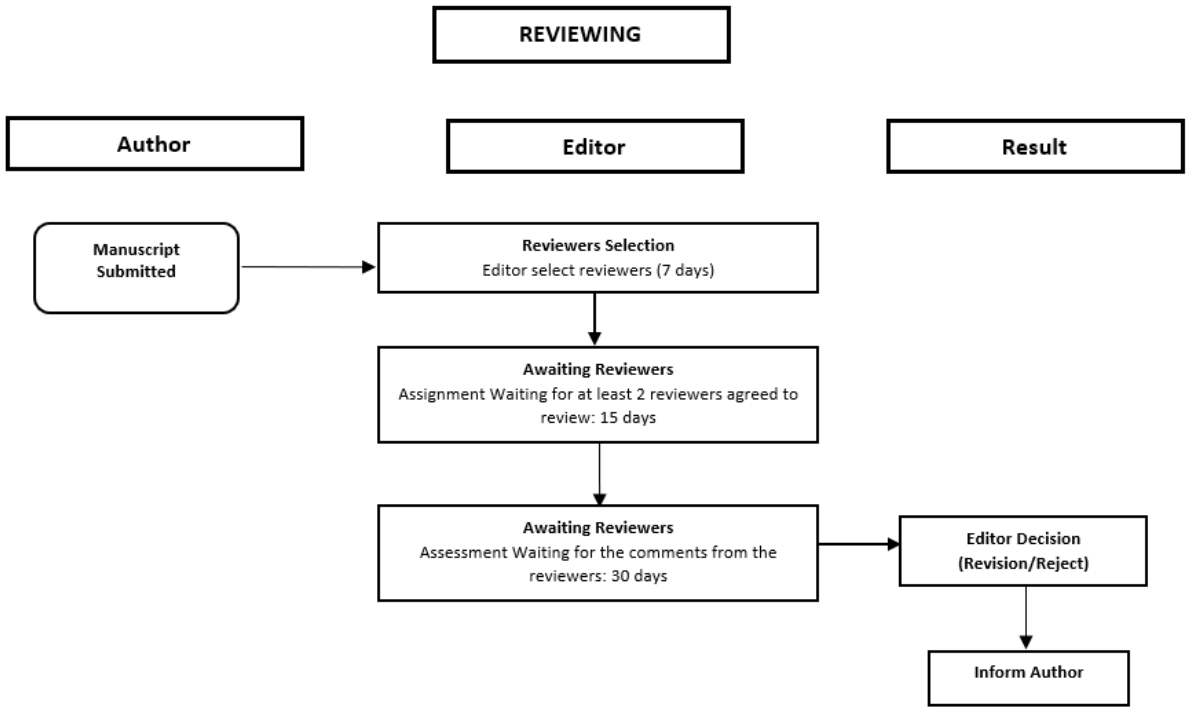
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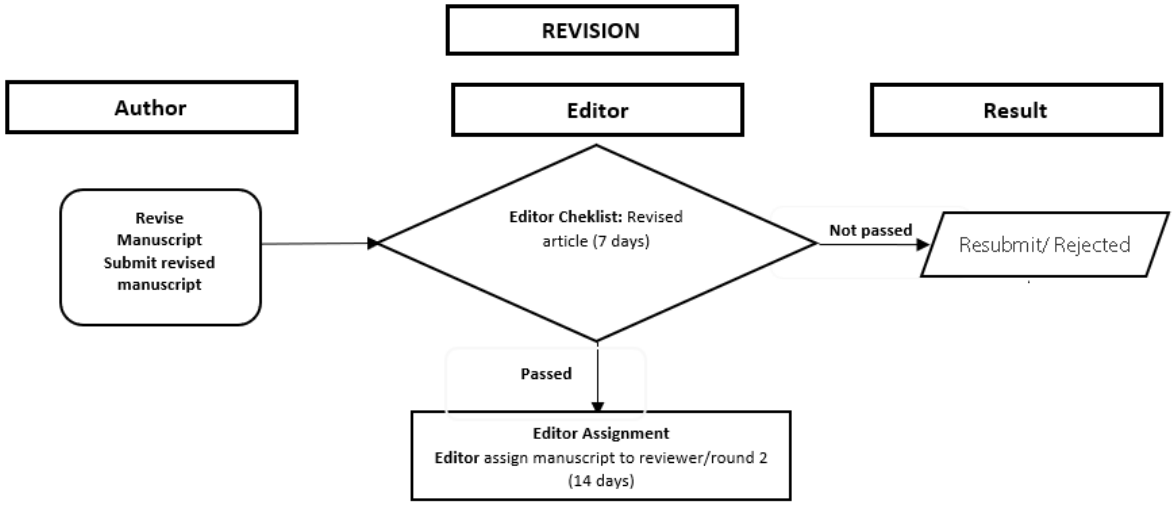

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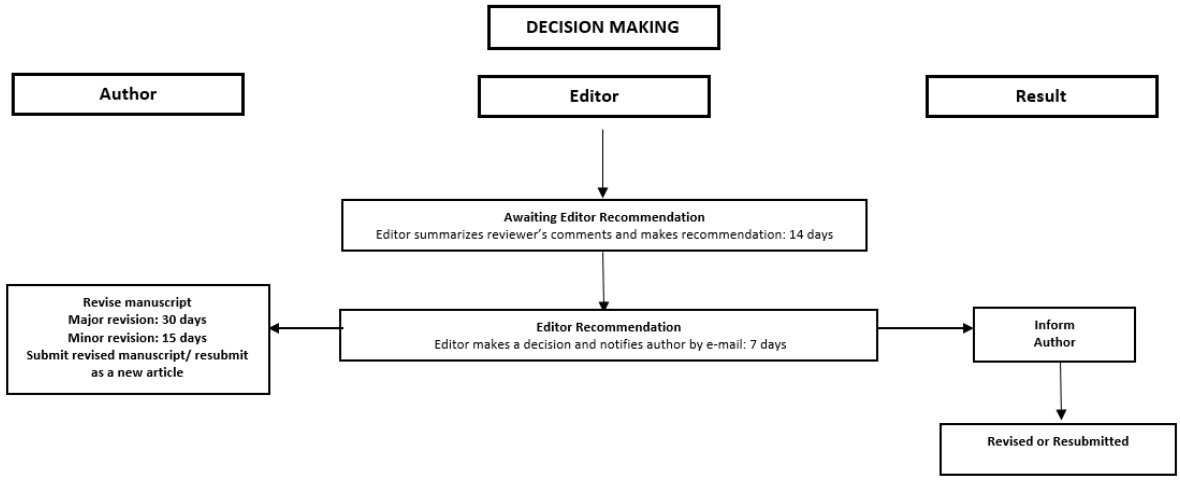

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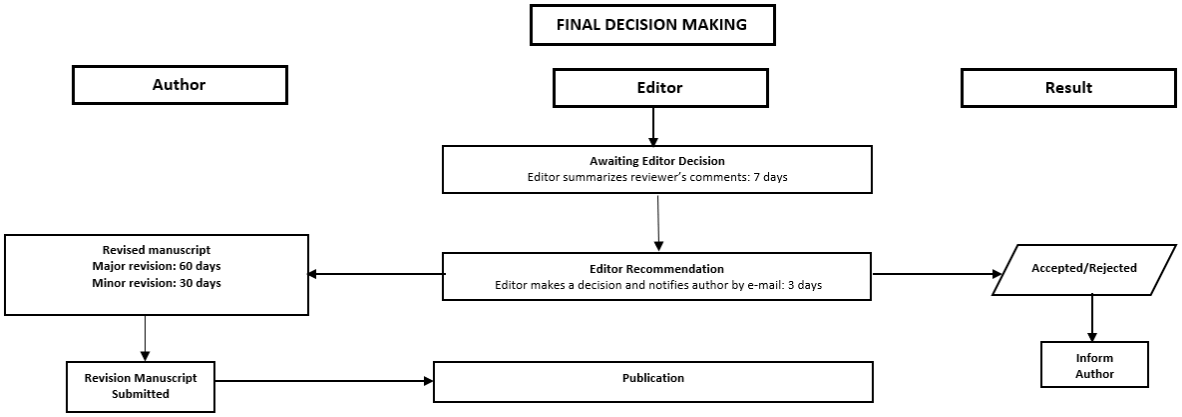

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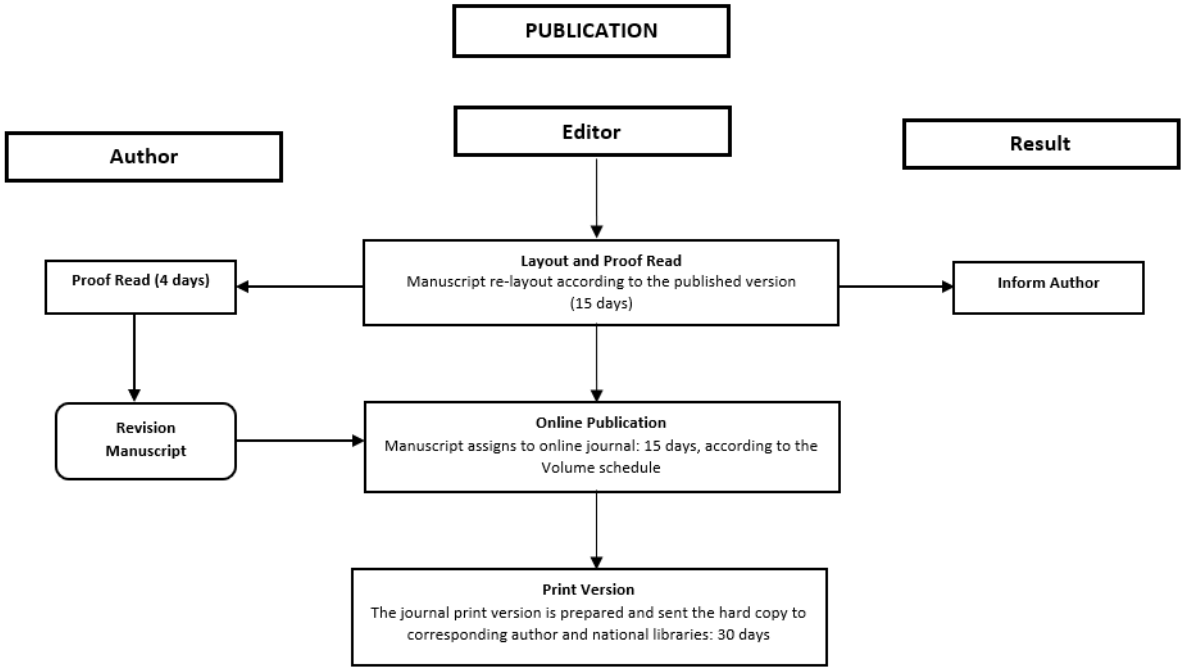

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ORIGINAL ARTICLE

GENDER, REGION, AND BACKGROUND-RELATED FACTORS INFLUENCING ADOLESCENT DISEASE-PREVENTION BEHAVIOR DURING THE COVID-19 PANDEMIC IN INDONESIA

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ABSTRACT

Raising awareness about disease prevention behavior in adolescents is an effective measure for reducing the transmission of COVID-19. This study aimed to examine adolescent disease-prevention behavior during the COVID-19 pandemic in Indonesia and identify its associations with gender, region, and background-related factors. This was a cross-sectional study that involved 492 respondents between the ages of 12 to 18 years and currently attending junior high school or senior high school. The Mann–Whitney *U* test and Kruskal–Wallis *H* test was used. The findings indicated that the mean age of the respondents was 15.77 (SD = 1.42), the majority of the respondents were girls (76.4%), and most were living in Eastern Indonesia (81.5%). Girls placed a significantly higher effort for prevention than boys for self-precaution, social distancing, and following coughing and sneezing etiquette, with mean (SD) values of 21.48 (SD = 2.79), 20.40 (SD = 2.89), and 17.73 (SD = 2.44), respectively. Gender and region also had significant correlations with reported self-protection, social distancing, and self-immunity enhancement behavior ($p< 0.05$). It can be concluded that COVID-19-prevention measures practiced by adolescents differ according to gender, region, education level, both parents' education level, and the father's occupation.

Keywords: Adolescents; COVID-19; factors; preventive behavior

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INTRODUCTION

The first case of coronavirus disease 2019 (COVID-19) was detected in Indonesia on March 02, 2020. By July 2020, Indonesia has the third-highest number of confirmed cases in Southeast Asia, standing at 74,018 cases, along with 3,535 deaths (Dezan Shira & Associates, 2020). Previous studies have also reported a higher COVID-19 incidence in adolescents and adults than in children (Cavalcante Pinto Júnior et al., 2021), a higher incidence in adolescents than in adults (Rumain et al., 2021), and similar seroprevalence in adolescents and adults (Viner et al., 2021). Furthermore, the mortality rate of COVID-19 was found to be higher in patients aged ≥ 10 years who were categorized with severe symptoms upon admission to a tertiary referral hospital in Indonesia (Dewi et al., 2021).

Adolescents have a higher risk of contracting the coronavirus infection if they are in an immune-compromised state, malnourished, have medical comorbidities, or have poor hygiene (Kar et al., 2020). COVID-19 can be transmitted to others by emitting liquid particles such as aerosols and droplets from the nose or mouth when the infected individual coughs, sneezes, or speaks (WHO, n.d.). The key factor in mitigating the spread of the disease is compliance with infection control protocols. Previous research suggests that young adults may exhibit low compliance with COVID-19 transmission control (Barari et al., 2020).

Those between the ages of 10 and 24 have a higher potential to spread the virus due to their need for social interaction, peer acceptance, and susceptibility to peer influence (Andrews et al., 2020). Moreover, young people tend to look healthy even though they are infected because they have an innate immune system response that allows their bodies to swiftly react to pathogens (Mallapaty, 2021)

The Indonesian government issued a policy on May 28, 2020, that the country would adopt a *new normal* as a transition mechanism to encourage a return to normal economic and social activities (Muhyiddin, 2020). However, the implementation of this policy without encoding it into law has led to new problems such as violations of COVID-19 prevention norms and public disobedience (Mokodongan et al., 2021).
Research indicated that adolescents had lower compliance with the government's anti-virus rules due to low trust (Nivette et al., 2020). Therefore, it is vital to increase awareness and promote positive behavior to change these adolescents' health practices (Dardas et al., 2020).

Prevention efforts against COVID-19 are widely applied in various regions in Indonesia. Cultural diversity in each region has an important role in the efforts taken to deal with the outbreak (Ayuningtyas et al., 2020). A study stated that among the people of Central Java, there are social phenomena related to public disobedience in implementing health protocols due to cultural transformations resulting from the adaptation of the new normal (Widisuseno & Sudarsih, 2021).

The most effective preventive behaviors against COVID-19 are physical distancing, avoiding touching the eyes, nose, and mouth, wearing a medical mask, and coughing or sneezing into a bent elbow or tissue (WHO, 2020b). A previous study from South Korea reported that wearing a mask was the most common preventive behavior among adolescents and social distancing was the lowest (Park & Oh, 2021). Moreover, evidence from Ethiopia revealed that older adolescents practiced more preventive measures than younger adolescents. These measures include improving the body's immunity, paying attention to the disease, restricting movement, sensitization to actions in the community, and substance use toward the outbreak of COVID-19 (Feyisa, 2021). However, existing research has not explained in detail the relationship between the components of preventive behavior and other related factors.

Furthermore, different countries also have different cultures and community habits. Research on preventive behavior in adolescents is important as their development requires socialization with peers and has the potential to spread COVID-19. Therefore, this study aims to examine the disease prevention behavior of adolescents during the COVID-19 pandemic and identify its association with gender, region, and background-related factors in adolescents.

METHOD

Study design

This is a quantitative research that used a descriptive survey method with a cross-sectional approach. Descriptive research was used as it aims to determine the prevalence of an event (Dahlan, 2018). This study was conducted using an online research platform.

Sample

The sample in this study was 492 teenagers who were selected by the convenience sampling technique. The inclusion criteria in this study included being 12–18 years of age or currently attending junior high school or senior high school, using a smartphone, having at least one social media application (e.g., WhatsApp, Instagram, Facebook, or Telegram), and able to use Google Forms. The exclusion criterion was respondents who did not submit the questionnaire.

Data collection

Data were collected via an online questionnaire that was distributed between October 14 to November 09, 2020. The study was conducted in the Eastern (Sulawesi, Bali, Nusa Tenggara, Maluku) and Western regions of Indonesia (Java, Sumatra, Kalimantan).

Instrument

The questionnaire was made using Google Forms and sent to the respondents through social media. The 19-item instrument consists of four types of questions that measure preventive behavior, i.e., self-disease prevention behavior, immunity enhancement, social distancing, and following coughing and sneezing etiquette. These behaviors were recommended in the COVID-19 prevention and control protocol published by the Ministry of Health, as part of the Directorate General of Disease Prevention and Control in Indonesia.

For the questionnaire, the Likert scale ranging from 1 to 5 (never to always) was used. A validity test on the 19 questions was performed using the Pearson Product Moment correlation. An r count value of one and r count > r table was also obtained, and this supports the validity of the instrument. A Cronbach's alpha value of 0.757 was also obtained, showing it to have good reliability.

Data analysis

The data were analyzed by calculating the frequency distributions of the respondent's characteristics and reported COVID-19-prevention behavior. Non-parametric statistical tests were used to assess the relationship between any two variables. The Mann–Whitney *U* test was used to examine the differences in the reported disease prevention behavior of adolescents with different characteristics, where the dependent variable was ordinal, and the independent variable comprised two categorical groups. The observations were not normally distributed. The Kruskal–Wallis *H* test was also used to evaluate group differences in instances where there were more than two independent groups. All groups had the same distribution. The results were judged as significant if the *p-value* < 0.05.

Ethical consideration

This research was approved by the Ethics Committee of the Hasanuddin University Faculty of Medicine with the ethical number: 499/UN4.6.4.5.31/PP36/2020.

RESULTS

The respondents' ages ranged from 12 to 18 with a mean (SD) of 15.77 (1.42). The total number of respondents was 492. A majority of the participants (453 respondents) obtained COVID-19 information from social media (92.1%) and 401 respondents resided in East Indonesia (81.5%). The majority had parents with a junior or senior high school education: 251 (51%) fathers and 270 (54.9%) mothers. As for parental occupation, 370 respondents (75.2%) had employed fathers and 335 respondents (68.1%) had mothers who were homemakers (Table 1).

Table 1. Respondents' characteristics and parental background (n = 492)

Characteristic	n (%)	Mean (SD)
Characteristics of respondents		
Age		15.77 (1.41)
Gender		
Boys	116 (23.6)	
Girls	376 (76.4)	
Grade		
Junior high school	214 (43.5)	
Senior high school	278 (56.5)	
Source of COVID-19 information	453(92.1)	
Media (print/electronic/social)	39 (7.9)	
Family/friends/health provider		
Region*		
East Indonesia	401(81.5)	
West Indonesia	91 (18.5)	
Parental characteristics		
Father's Education		
University	172(35.0)	
Junior/senior high school	251(51.0)	
Elementary school	69 (14.0)	
Mother's Education		
University	161 (32.7)	
Junior/senior high school	270 (54.9)	
Elementary school	61 (12.4)	
Father's occupation		
Government/private employee	370 (75.2)	
Farmer/laborer/fisherman	104 (21.1)	
Died	18 (3.7)	
Mother's occupation		
Working	157 (31.9)	
Housewife	335 (68.1)	

Abbreviation: COVID-19, Coronavirus Disease 2019; SD, Standard Deviation

**The research location during the measurement for East Indonesia consisted of Sulawesi, Bali, Nusa Tenggara, and Maluku, and West Indonesia consisted of Java, Sumatera, and Kalimantan*

The mean values for the four components of adolescent disease prevention behavior were compared. Self-protection had the highest mean (SD) score of 21.18 (3.08%), with a 95% CI of 20.91–21.45, followed by social distancing (20.19 [3.08], 95% CI: 19.91–20.46), immunity enhancement (19.59 [2.71], 95% CI: 19.35–19.83), and following coughing and sneezing etiquette (17.60 [2.65], 95% CI: 17.37–17.84) (Table 2).

Table 2. Adolescent disease-prevention behavior during the COVID-19 pandemic

Behavioral Components	Mean (SD)	95% Confidence Interval
Self-protection	21.18 (3.07)	20.91-21.45
Immunity enhancement	19.59 (2.71)	19.35-19.83
Social distancing	20.19 (3.08)	19.91-20.46
Application of coughing and sneezing etiquette	17.60 (2.65)	17.37-17.84

Abbreviation: COVID-19, Coronavirus Disease 2019; SD, Standard Deviation

The data was analyzed by evaluating the relationship between individual characteristics and adolescent preventive behavior in response to COVID-19. Significant associations were found between gender, region, and three of the components of COVID-19-disease prevention behavior, i.e., self-protection, social distancing, and self-immunity enhancement (*P-value* <0.05). Furthermore, the respondents' education level had a significant correlation with immunity enhancement (*P*-value = 0.002). Regarding parental background, the father's education level was found to be associated with social distancing and the father's occupation was associated with self-protection and social distancing. However, the source of COVID-19 information and the mother's occupation did not have statistically significant relationships with the adolescents' disease prevention behavior (Table 3).

Table 3. The association between characteristics and adolescent disease-prevention behavior during the COVID-19 pandemic (n = 492)

Variable	Self-protection		Immunity enhancement		Social distancing		Application of coughing and sneezing etiquette	
	Mean (SD)	*P-value*	Mean (SD)	*P-value*	Mean (SD)	*P-value*	Mean (SD)	*P-value*
Gender[a]		0.001*		0.001*		0.019*		0.254
Boys	20.22(3.67)		20.28(2.75)		19.51(3.53)		17.18(3.22)	
Girls	21.48(2.79)		19.38(2.66)		20.40(2.89)		17.73(2.44)	
Education grade[a]		0.572		0.002*		0.772		0.877
Junior high school	3.07(.21)		20.00(2.75)		20.21(3.25)		17.65(2.52)	
Senior high school	3.07(.18)		19.27(2.64)		20.17(3.12)		17.56(2.76)	
Source of COVID-19 information[a]		0.716		0.557		0.211		0.250
Media (print/electronic/social)	21.25(3.12)		19.52(2.57)		20.59(2.77)		17.87(2.73)	
Family/friends/health provider	21.81(2.18)		19.90(2.34)		20.97(2.49)		17.39(2.16)	
Father's education[b]		0.134		0.368		0.031*		0.438
University	21.41(2.92)		19.68(2.66)		20.52(3.07)		17.41(2.76)	
Junior/senior high school	21.23(3.03)		19.65(2.58)		20.18(3.02)		17.72(2.54)	
Elementary school	20.43(3.47)		19.16(3.20)		19.36(3.19)		17.65(2.78)	
Mother's education[b]								
University	21.40(2.76)	0.508	19.80(2.52)	0.096	20.60(3.09)	0.022*	17.63(2.65)	0.570
Junior/senior high school	21.11(3.26)		19.61(2.75)		20.09(3.11)		17.50(2.75)	
Elementary school	20.89(2.93)		18.92(2.93)		19.49(2.80)		17.97(2.19)	
Father's occupation[b]		0.009*		0.212		0.027*		0.340
Government/private employee	21.35(3.09)		19.72(2.67)		20.38(3.09)		17.68(2.63)	
Farmer/laborer/fisherman	20.51(2.94)		19.13(2.89)		19.62(3.01)		17.26(2.79)	
Died	21.56(2.92)		19.67(2.09)		19.56(2.85)		18.00(2.25)	
Mother's occupation[a]		0.801		0.065		0.107		0.551
Employee	21.17(3.01)		19.90(2.55)		20.46(3.15)		17.55(2.60)	
Housewife	21.19(3.09)		19.44(2.77)		20.06(3.04)		17.63(2.68)	
Region[a]		0.03*		0.03*		0.022*		0.184
East Indonesia	21.03(3.13)		19.46(2.76)		20.01(3.16)		17.50(2.76)	
West Indonesia	21.84(2.69)		20.18(2.35)		20.96(2.58)		18.04(2.09)	

Abbreviation: COVID-19, Coronavirus Disease 2019; SD, Standard Deviation
[a] Evaluated using Mann–Whitney U test
[b] Evaluated using Kruskal–Wallis H test
**Considered significant value P <0.05*

DISCUSSION

This study found that the most commonly practiced disease prevention behavior done by adolescents during the COVID-19 outbreak was self-protection. We defined self-protection as maintaining hand hygiene by using an alcohol-based hand sanitizer or soap and water, wearing a medical mask, and avoiding touching one's eyes, nose, and mouth. Our finding is supported by a global study that showed an improvement in personal protective measures such as hand washing, mask-wearing, and reducing face-touching behavior during the COVID-19 pandemic (Machida et al., 2020) (Chen et al., 2020).

Following coughing and sneezing protocols such as covering the nose and mouth with disposable tissue, or the inside of the elbow were less commonly practiced in our sample. Previous research has shown the potential of coughs and sneezes to spread respiratory viral infections, as they generate approximately 3,000 and 40,000 airborne droplets, respectively (Dhand & Li, 2020).

Gender was found to have a significant correlation with self-protection, social distancing, and enhancement of COVID-19-immunity. It was found that girls were more likely than boys to protect themselves against the spread of COVID-19 and avoid physical contact with others. This is consistent with previous studies which stated that the majority of female secondary school students adopted better behavior and had a higher level of knowledge on hand hygiene and personal protection than their male counterparts (Guzek et al., 2020). This also includes mask-wearing and physical distancing during the pandemic (Ningsih et al., 2021). Nevertheless, in our study, boys reported more behaviors that increase the body's immune response compared to girls. Previous literature has found that the immune response to the coronavirus differs between sexes, with males having weaker immune responses (i.e., antibodies and T-cells) to infection than females (Gadi et al., 2020) (Takahashi et al., 2020).

Furthermore, there were differences in behavior between those residing in different regions. Respondents from western Indonesia had the highest mean score for performing disease prevention behavior and reported significantly more self-protection, social distancing, and self-immunity behaviors than those residing elsewhere (P <0.05). This result contrasts a previous study that found no relationship between regions in Indonesia and attitudes toward COVID-19 (Muslih et al., 2021). Our research was conducted in October 2020, when the western Indonesian provinces of DKI Jakarta, East Java, West Java, and Central Java had the highest numbers of confirmed cases; those of DKI Jakarta, East Kalimantan, South Kalimantan, and East Java had the highest mortality rates (WHO, 2020a). Another study reported an association between regional COVID-19 morbidity and routine adolescent hand-washing, such as before and after meals, before and after using the restroom, and after handshaking (Skolmowska et al., 2020).

A relationship was also observed between parental education and social distancing practices. On average, teenagers of parents with a university-graduate educational level or equivalent, applied more social distancing. This result contrasts with the findings of a previous study that stated that parental education had no significant association with adolescent social distancing. This research is supported by Astuti et al., (2022) that the parental education has a significant influence on preventing the spread of COVID-19 in children. Whereas city lockdowns, parental rules, and social responsibility were associated with greater social distancing. The results of our study may be caused by a majority of educated parents helping their adolescent children to structure their time to balance physical activity and sedentary behaviors (Muñoz-Galiano et al., 2020). Parental support and attention to location and activity types may help to control their children's physical activity during the pandemic (Yomoda & Kurita, 2021). Moreover, the frequency of parent-adolescent conversations about COVID-19 has been found to influence adolescents' adherence to COVID-19 health disease prevention behaviors over the first year of the pandemic (Peplak et al., 2021).

The limitation of this study is that the data were collected via an online questionnaire, so the possibility of bias may occur as some of the target populations are not represented. However, several previous studies have been conducted with the same because direct sampling through surveys in communities or schools is not possible due to social distancing (Riiser et al., 2020) (Bazaid et al., 2020) (Meier et al., 2020).

CONCLUSION

This study found that self-protection was the most commonly reported disease prevention behavior in adolescents during the pandemic in Indonesia. The COVID-19-prevention measures practiced by adolescents differ according to gender, region, as well as the parent's education level and occupation. Hence, we suggest that interventions to increase disease prevention behavior should be targeted at boys and that action by parents is needed to limit the physical activities of adolescents, which would in turn limit the spread of COVID-19.

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ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN COVID-19 PREVENTION MEASURES AND QUALITY OF LIFE OF ELDERLY PATIENTS WITH HYPERTENSION DURING THE COVID-19 PANDEMIC

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ABSTRACT

Cardiovascular diseases, including arterial hypertension, are common comorbidities among the elderly due to COVID-19. This study aimed to determine the relationship between COVID-19 prevention measures and the quality of life for the elderly with hypertension during the COVID-19 pandemic. This was a descriptive correlation study that applied a cross-sectional approach that involved 133 respondents who were selected using the convenience sampling technique. Data were collected using questionnaires from the WHOQOL-BREF and COVID-19 prevention. The collected data were processed using the Chi-Square test. The results showed that the number of elderly participants who took positive and negative efforts in preventing COVID-19 transmission was almost equal, with a slightly higher number of participants taking positive efforts, with a total of 69 people (51.9%). There was also a higher number of elderly participants with a good quality of life, with 71 people (53.4%). The results indicated a relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic, with a p-value of 0.008. Therefore, it can be concluded that prevention efforts in the form of health behaviors for the elderly with certain chronic diseases comorbid with COVID-19 can affect their quality of life.

Keywords: COVID-19; elderly with hypertension; prevention measures; quality of life

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INTRODUCTION

Hypertension is a life-threatening, chronic, and non-communicable cardiovascular disease. It is also one of the main health problems in the elderly. As a disease that lasts for a lifetime which patients could not fully recover from, it is a silent killer (Indonesia's Ministry of Health, 2019). Kjeldsen *et al*. (2014) and Zhang (2015) explained that people in all age groups, including the elderly, are considered to be hypertensive if their blood pressure is persistently ≥ 140/90 mmHg after more than 2 examinations.

Many people with hypertension do not show complaints or symptoms. However, this condition may become a complication that causes death, with a prevalence rate that tends to increase with age (Indonesia's Ministry of Health, 2019). The prevalence of hypertension at the world level was 22%, of which more than 50% is experienced by the elderly (World Health Organization, 2019 in Indonesia's Ministry of Health, 2019). This situation also occurs in Indonesia. According to the Basic Health Research 2018 report, the prevalence of hypertension in Indonesia reached 34.1% and tends to increase with age (Indonesia's Health Research and Development Agency, 2018). The prevalence of hypertension in the 45-54-year age group is 45.3%, 55.2% in the 55-64-year age group, and 63.2% in the 65-74-year age group. Furthermore, the > 75-year age group has a 69.5% prevalence of hypertension (Indonesia's Ministry of Health, 2019).

This high prevalence of hypertension also occurs in Riau Province, as the region has a 29.14% prevalence of the disease, of which >50% of the patients with hypertension are the elderly (Indonesia's Ministry of Health, 2019). Data from the Pekanbaru Health Office stated that hypertension was the

second most common disease in Pekanbaru in 2020 and was experienced by 19,026 people (Pekanbaru Health Office, 2020).

According to Gunawan *et al*. (2021), elderly individuals with comorbid diseases are at a high risk of being infected with COVID-19 and have a higher risk of death. The most common comorbid disease experienced by the elderly is hypertension.

Based on data from the Center for Disease Control and Prevention (CDC), the 65 years and over age group has the highest mortality rate due to COVID-19 globally with a percentage of 76.1% (Centers for Disease Control and Prevention, 2021). Moreover, data from the Indonesian Basic Health Research described that hypertension is the highest comorbid condition of COVID-19 in the world, including in Indonesia, at 56.6% in the USA, 58.3% in China, 49% in Italy, and 50.5% in Indonesia (Indonesia's Ministry of Health, 2020). Moreover, data from Indonesia's COVID-19 Handling and National Economic Recovery Committee (2020) indicated that hypertension is a comorbid disease that is mostly found in COVID-19 sufferers (i.e., 50.5%) and is one of the potential factors for death due to COVID-19 based on comorbidities.

The high risk of COVID-19 in the elderly with hypertension will certainly cause anxiety and result in mood and emotional disturbances. This may lead to social interaction disorders due to the social restrictions enforced to prevent the transmission of this virus. In the elderly, this affects their quality of life.

Quality of life, according to the World Health Organization (WHO), is a person's perception in the context of culture and norms of where the person lives. It is related to goals, expectations, standards, and concerns during his/her life. Quality of life covers four aspects, namely, physical, psychological, social, and environmental aspects (Putri *et al*., 2015). Moreover, the quality of life of the elderly is influenced by their level of health, spirituality, self-esteem, and social support (Dewi, 2016; Rossyana Dewi, 2013).

A study conducted by Trevisol (2011) showed that individuals with hypertension have a low or poor quality of life compared to those with normal blood pressure. The findings from Bhandari *et al.* (2016) also supported this finding in their study regarding the quality of life of patients with hypertension in Kathmandu. The results of the study indicated that patients with hypertension had low quality of life and that this condition was in line with the patients' increasing age. The study was conducted in 2016, therefore, the results may indicate a worse condition if it was conducted during the COVID-19 pandemic.

The condition can be influenced by the behavior or efforts of the elderly, especially in preventing COVID-19. This is supported by a study conducted by Sari *et al*. (2017) which found a significant relationship between healthy living behavior and the quality of life of the elderly. According to the Director of Health Promotion and Community Empowerment of Indonesia's Ministry of Health, the Decree of Indonesia's Minister of Health (2020), the public must adapt their behavior to prevent the transmission of COVID-19. The behavior can be changed by being disciplined in following COVID-19 protocols, such as wearing a face mask, washing hands with soap in running water, and conducting social distancing or social restrictions by maintaining a minimum distance of 1 meter from other people. In addition, the WHO also recommends improving immunity by living a healthy lifestyle through the consumption of nutritious food, regular exercise, obtaining sufficient rest, stress avoidance, maintaining a clean house, and getting vaccinated (World Health Organization, 2020).

In this modern era, young adults are more familiar with technology than their elder counterparts. Therefore, they would rely on technology to conduct their daily activities from home, without the need to travel. Conversely, senior citizens tend to find it difficult to use technology, making them experience more extreme impacts during social restrictions. These impacts include feelings of loneliness, anxiety, and depression (Australian Psychological Society, 2020). But close contact with others who assist them may increase their risk of contracting COVID-19. Moreover, impaired cognitive function often occurs in elderly patients, making it difficult for them to understand the importance of implementing hygiene protocols. Consequently, their risk of contracting COVID-19 is higher. This is supported by a study conducted by Yang *et al.* (2020) in China, which indicated that the elderly are less likely to engage in appropriate COVID-19 prevention behaviors.

Furthermore, a preliminary study conducted in May 2021 by the Pekanbaru Health Office showed that the highest number of cases of hypertension in the elderly was found in the working area of the Rejosari Health Center. The results of interviews with eight elderly patients with hypertension indicated the following findings: seven of them stated that they were aware of the changes that had occurred during the pandemic: they tended to be more sensitive, slept a lot, lacked activity, rarely or even never went out of the house, were lazy to wear masks, and never checked their health condition. They also experienced anxiety due to their hypertension and their increased risk of contracting and dying from COVID-19. Only one out of eight elderlies said that there had been no change in their physical, psychological, and social aspects during the COVID-19 pandemic even though he rarely left the house and was lazy to use a face mask when meeting people.

Therefore, this research aims to study "the relationship between COVID-19 prevention measures and quality of life for the elderly with hypertension during the COVID-19 pandemic". To the best of our knowledge, this topic has never been studied, and this is the first research focusing on this topic that at the Rejosari Health Center in Pekanbaru city. A previous study has examined the relationship between living a healthy lifestyle and health promotion in the elderly with their general quality of life. In contrast with the study, the objective of this study was to determine the relationship between COVID-19 prevention measures and the quality of life for the elderly with hypertension during the COVID-19 pandemic.

METHOD

Study design

This was a descriptive correlation study with a cross-sectional approach. This research was conducted from August to December 2021.

Sample

A total of 133 respondents were selected using the convenience sampling technique. The inclusion criteria of the respondents were elderly hypertensive patients in the COVID-19 pandemic, able to communicate well, active and independent, and living in the working area of the Rejosari Health Center. The Slovin formula was used to calculate the minimum number of samples.

$n = N / (1 + (N \times e^2))$

N = population size
n = sample size
e = sampling error (0.05)

Instrument
Data in this study were collected using a questionnaire entitled the *World Health Organization Quality of Life – BREF* (WHOQOL-BREF) which has been standardized and validated. According to the WHO (2012) in Kiik *et al*. (2018), this instrument measures four important components, i.e., physical, psychological, social, and environmental relationships, consists of 26 question items and uses a Likert scale with a rating of 1 to 5. Furthermore, Caballero *et al*. (2013) in Kiik *et al*. (2018) stated that this WHOQOL-BREF instrument has good reliability as indicated by a Cronbach's alpha value of between 0.84 and 0.88, and good validity as shown by the *r*-value of 0.75. These results indicate that the questionnaire used is valid and reliable. In addition, another instrument was used to collect data on COVID-19 prevention measures, and this was compiled based on a literature review. The instrument was also in the form of a questionnaire which consisted of 19 questions regarding the application of health protocols, food intake, activity, exercise, and vaccinations. This instrument was tested and declared to be valid and reliable.

Data collection
This study was performed in Pekanbaru, specifically in the working area of the Rejosari Health Center which has the highest population of elderly patients with hypertension in the region. The initial stages of data collection included explaining the purpose of this study to the family of the respondents and distributing informed consent forms. If the families agreed, the respondents underwent the data collection process. In these stages, the researchers were assisted by enumerators and local health cadres.

Data analysis
The collected data were then processed in univariate and bivariate analyses using the SPSS software. The statistical test employed was the chi-square test. This was used to determine the relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic.

Ethical consideration
This study has received ethical approval from the Ethics Committee for Nursing and Health Research, Faculty of Nursing, the University of Riau with the Number: 216/UN.19.5.1.8/KEPK.FKp/2021, dated July 31, 2021.

RESULTS

Characteristics of elderly patients with hypertension
The frequency distribution of the characteristics of elderly patients with hypertension based on age, sex, education, marital status, occupation, and condition of hypertension (n = 133) is presented in Table 1.

Table 1. The frequency distribution of the characterristics of elderly patients

Characteristics	n (%)
Age	
60-74	106 (79.7)
75-90	27 (20.3)
Sex	
Male	50 (37.6)
Female	83 (62.4)
Education	
None	3 (2.3)
Elementary school	46 (34.6)
Junior high school	34 (25.6)
Senior high school	41 (30.8)
College	9 (6.8)
Marital Status	
Married	106 (79.7)
Widow/ widower	27 (20.3)
Working status	
Work	41 (30.8)
Not work	92 (69.2)
Length in suffering from hypertension	
< 5 Years	57 (42.9)
≥ 5 Years	76 (57.1)
Classification of hypertension	
Mild	20 (15)
Moderate	84 (63.2)
Severe	29 (21.8)

Table 1 shows that the majority of the respondents were aged 60-74 years, at 106 people (79.7%). Of which most were female, at 83 people (62.4%). Based on their education, most of them had a low level of education (junior high school and below), at 83 people (62.5%). Moreover, according to marital status, a majority of them were married, 106 people (79.7%). For the respondents' length of suffering from hypertension, most of them have suffered from hypertension for ≥ 5 years, at 76 people (57.1%). Furthermore, most of them had moderate hypertension at 84 people (63.2%).

The efforts taken by elderly patients with hypertension in preventing COVID-19 transmission

Table 2. The frequency distribution of the efforts taken by elderly patients with hypertension in preventing COVID-19 transmission

COVID-19 prevention measures	n (%)
Positive	69 (51.9)
Negative	64 (48.1)

Table 2 exhibits that the number of elderly patients who took positive and negative efforts in preventing COVID-19 transmission was almost equal, where those who took positive efforts were slightly higher at 69 people (51.9%).

The quality of life of elderly patients with hypertension during the COVID-19 pandemic

Table 3. The frequency distribution of the quality of life of elderly patients with hypertension during the COVID-19 pandemic

The quality of life of the elderly	n (%)
Physical dimension	
Good	62 (46.6)
Poor	71 (53.4)
Psychological dimension	
Good	37 (27.8)
Poor	96 (72.2)
Social dimension	
Good	74 (55.6)
Poor	59 (44.4)
Environmental dimension	
Good	72 (54.1)
Poor	61 (45.9)
Quality of Life (in general)	
Good	71 (53.4)
Poor	62 (46.6)

Table 3 shows that the quality of life of the majority of elderly patients with hypertension during the COVID-19 pandemic was poor based on the physical and psychological dimensions, totaling 71 (53.4%) and 96 people (72.2%), respectively. However, based on the social and environmental dimensions, their quality of life was good, totaling 74 (55.6%) and 72 people (54.1%), respectively. Furthermore, for quality of life as a whole, 53.4% (71 people) of elderly patients with hypertension had a good quality of life.

The relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension

Table 4. The relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic

COVID-19 prevention measures	Quality of Life of the elderly		Total	*p*-value
	Good	Poor	n (%)	0.008
	n (%)	n (%)		
Positive	45 (65.2)	24 (34.8)	69 (100)	
Negative	26 (40.6)	38 (59.4)	64 (100)	

The Chi-square test results show that there is a relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic with a p-value of 0.008.

DISCUSSION

As indicated in Table 1, the majority of our elderly respondents were female. Data from the Central Statistics Agency (2020) indicated that the life expectancy rate of citizens aged 60 years and over in Indonesia is considered high with a percentage of 64.29% and is expected to continue to increase every year. The results of a study conducted by Arifin *et al*. (2016) presented that the majority of hypertension sufferers were aged 60 years and over with a higher prevalence in women. Moreover, in Indonesia, the highest comorbid disease experienced by the elderly is hypertension (Gunawan et al., 2021).

In addition, Akbar *et al.* (2020) also found that elderly patients who suffer from hypertension are generally female (82.8%). This occurs because women experience menopause and a decline in hormones in the endocrine system, such as estrogen and progesterone. The decrease in estrogen hormone results in low levels of HDL (High-Density Lipoprotein) cholesterol and high levels of LDL (Low-Density Lipoprotein) cholesterol which affects the process of atherosclerosis. This condition can increase blood pressure in women (Riyadina *et al*., 2017).

Most of the elderly patients with hypertension in this study had a low level of education. This finding is in line with a study conducted by Herlinah *et al*. (2013) which found that the majority (79.8%) of the patients with hypertension had low education levels (junior high school and below). According to Anggara & Prayitno (2013), an individual's level of education affects their lifestyle as it may contribute to smoking habits, alcohol consumption, food intake, and physical activity that may have adverse effects on blood pressure in the elderly.

Based on marital status, most of the respondents in this study were married, A study conducted by Hanum & Lubis (2017) found that the majority of the hypertension sufferers in their study were also married.

For the length of suffering from hypertension, most of the elderly patients in this study have suffered from hypertension for ≥ 5 years. This is in line with the results of a study conducted by Prasetyorini *et al*. (2012) which also found that the majority of hypertension patients in their study have been suffering from hypertension for > 5 years. Furthermore, based on the severity, most of the elderly respondents in this study had moderate hypertension.

This study's results indicate that some of the elderly respondents have made positive efforts in implementing the health protocols set by the government and took several other preventive measures to prevent COVID-19 transmission, such as improving their body's immune system, maintaining environmental cleanliness, and willingness to get vaccinated (Decree of Indonesia's Minister of Health, 2020). The results of this study are in line with a study conducted by Al-Hanawi *et al.* (2020) which showed that they tend to perform good actions in preventing COVID-19 compared to younger people. This shows that the elderly are starting to care about their health. However, this behavior is influenced by self-efficacy, education level, as well as support from their families (Eunju Lee & Euna Park, 2017).

This study found that a majority of the respondents in this study had a poor quality of life based on the physical dimension. This is because they have had hypertension for more than five years. Indonesia's Ministry of Health (2019) describes hypertension as a lifelong chronic disease and a silent killer. The results of this study are in line with a study conducted by Santiya Anbarasan (2015) which showed that the quality of life of the majority of their elderly respondents based on the physical dimension was poor (71.7%). Furthermore, in this study, from the psychological dimension, the quality of life of the majority of the elderly respondents was also poor. However, based on the social and environmental dimensions, the quality of life of the elderly patients in this study was good. These findings are supported by a study conducted by Rossyana Dewi (2013) who discovered the same pattern. For the quality of life as a whole, the majority of the elderly patients with hypertension had a

good quality of life. This finding is in line with a study conducted by Santiya Anbarasan (2015).

Table 4 shows that there is a relationship between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic. These findings are based on the results of the chi-square test which indicated a *p*-value of 0.008 (< 0.05). This means that COVID-19 prevention measures correlate with the quality of life of elderly patients with hypertension. Sari *et al*. (2017) also found a significant relationship between healthy living behavior and the quality of life of the elderly, in which healthy behavior can result in an adequate quality of life and possibly a longer life. As stated by Ong-Artborirak & Seangpraw (2019), if one shows good self-care behavior, they will have good health which can lead to an increase in the person's quality of life.

Furthermore, the results of a study conducted by Li *et al*. (2018) indicated a relationship between a healthy lifestyle and the quality of life of elderly patients with hypertension. Continuous family support is expected necessary to maintain elderly's health, including their adherence to the treatment when they have disease (Iskandar et al., 2019). Nevertheless, the quality of life and healthy lifestyle must continuously improve. This finding is also in line with a study conducted by Lestari & Zakiah (2020) which concluded that the health behavior of the elderly affects their quality of life, in which poor health behavior may worsen their quality of life. They added that healthy behavior, especially in the elderly, must be comprehensive and continue to be improved and taught.

CONCLUSION AND RECOMMENDATION

A relationship was found between COVID-19 prevention measures and the quality of life of elderly patients with hypertension during the COVID-19 pandemic. It can be concluded that prevention efforts in the form of healthy behaviors for the elderly can affect their quality of life with certain chronic diseases that are comorbid with COVID-19. Therefore, nurses in health centers need to provide health education about various efforts to prevent COVID-19 transmission to the elderly with hypertension and their families to improve their quality of life.

This study was conducted using only questionnaires without observation guidelines related to the efforts taken to prevent COVID-19 in elderly patients with hypertension and their quality of life during the COVID-19 pandemic.

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ORIGINAL ARTICLE

THE USE OF A SCORECARD TO EVALUATE THE PUBLIC'S COMPREHENSION OF COVID-19: A PILOT STUDY

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ABSTRACT

The rapid spread of information and infodemic might result in public confusion and hinder the handling of the COVID-19 pandemic. Public comprehension of COVID-19 as part of health literacy is an important determinant to filter hoaxes from facts. Therefore, a scoring card called the Karlivid (the COVID-19 literacy and public vaccination scorecard) was developed to evaluate the individual's comprehension level of COVID-19. A pilot study was conducted with this scoring card. The participants were recruited via consecutive random sampling by using emails from the researcher's contact list (n=92). A total of 78.3% of the respondents were considered to have an adequate comprehension level. Approximately 77% of all respondents agreed that this card could help them know their comprehension level, 81.5% agreed that this card could improve their comprehension, 81.5% agreed that the items in this card could help them screen facts from hoaxes, and 81.5% agreed that the language used was easily understood by the laypersons. Therefore, the Karlivid is a valid and reliable scorecard that can be used to evaluate public comprehension of COVID-19. Most of the respondents also had a good level of comprehension of this assigned topic.

Keywords: Comprehension; COVID-19; health education; karlivid; vaccine

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INTRODUCTION

Literacy can be defined as an individual's capability to write and read as well as the ability to synthesize information and knowledge in managing daily life. Since the development of the internet, reliable information can be more easily obtained by filtering correct the sources. Digital literacy has become a necessity to filter hoaxes and falses (Sianturi et al., 2021). Eisenberg, Johnson, and Berkowitz (2010) created the information literacy model called "The Big 6 Skills". This is formed by formulating the problems, identifying the information needed, developing a strategy of information mining to determine good information sources, organizing and presenting the information, and evaluating the efficiency and effectiveness of the mined information. Additionally, Shapiro and Hughes (1996) in their article titled "Information Literacy as a Liberal Art" stated that information literacy can be used as a foundation to build a literacy model that can be adjusted to users' needs (Shapiro & Hughes, 1996).

In Indonesia, literacy on COVID-19 and its vaccination still need to be nurtured. Previous studies conducted in Semarang (n=400) and the greater Jakarta area (n=839) have shown that public compliance with health protocols and government regulations is still quite low, causing outbreaks in several areas (Erawati, 2021; Rosha et al., 2021). Some people are hesitant to receive the COVID-19 vaccines due to various reasons, i.e., the conspiracy theory of certain parties to monopolize the vaccine and the potential side effects of vaccination (Akther & Nur, 2022; Rahmawati et al., 2021; Z.

Yang et al., 2021). These reasons lead to the public's distrust of the COVID-19 vaccine, thereby hindering government targets to achieve wider vaccination coverage to achieve herd immunity (Batrinca & Treleaven, 2015; Okan et al., 2020).

These phenomena are believed to arise from the unpredictable nature of COVID-19 and an ongoing pandemic of quickly-spreading misinformation and hoaxes—so-called infodemic—via various platforms including the internet. Furthermore, news on how people who have been vaccinated could still be infected may alter the perception of the COVID-19 vaccination (Ifroh & Asrianti, 2020; Sagan et al., 2021; Sridhar, 2020).

Conversely, the growing number of novel phrases that arise during the pandemic can be posed as additional challenges for laypersons, i.e., positivity rate, confirmed antigen swab and/or RT-PCR, variants of mutations, m-RNA based-vaccine versus weakened virus based-vaccine, social and physical distancing, spike proteins, SARS-Cov2 virus, and cytokine storm (Adhikari et al., 2020; Hu et al., 2021). Validated information must be obtained via government channels and/or scientific journals. However, the availability and growing development of research on these topics have been vast and dynamic. Thus, people need to know how to correctly screen the information they obtain. Therefore, this pilot study was conducted to determine the validity and reliability of the self-developed scorecard (Karlivid) as a measuring tool for people's comprehension of COVID-19 (Harapan et al., 2020; Rachmani et al., 2019).

METHOD

Study design

This study used a cross-sectional survey to determine the respondents' comprehension of COVID-19. Data were obtained via the self-filled scoring card. The development of the scoring card and the analysis of the responses of respondents were performed between October 2021 and February 2022.

Sample

The respondents were openly recruited via email by consecutive sampling methods. The email addresses were obtained through the researcher's contact list. The inclusion criteria were healthy adults aged more than 18 years old, able to read and comprehend the survey, native speakers of Bahasa Indonesia, have internet access, and agree and consent for the results to be published anonymously. In this study, a sample-to-item ratio of 10:1 was used with a minimum of 90 participants selected (Memon et al., 2020).

Instrument

A scorecard containing 9 questions related to COVID-19 and its vaccination was developed by a team of medical doctors and students. The contents of the instruments were developed from several published works of the literature (Adhikari et al., 2020; Erawati, 2021; Harapan et al., 2020). All items on the scorecard were selected to assess the public's health comprehension of COVID-19, where content validity and face validity were carefully performed (Adhikari et al., 2020; Erawati, 2021; Harapan et al., 2020). A total of 2 questions were scored from 2-0 (0=disagree, 1=neutral, 2=agree), while the other 7 questions were scored from 0-2 (0=agree, 1=neutral, 2=disagree). The 9 questions were formulated to capture the respondents' comprehension of COVID-19 and its vaccination; each question was pre-tested and thus could be understood by laypersons and completed by them anonymously. The total point was then summed; an individual with a total score of 12 or more was considered to have an adequate comprehension level, while a lower score was considered inadequate (Wijaya & Kloping, 2021). The language used in this card is Bahasa Indonesia as the main target was to provide a self-assessment of an individual's comprehension of COVID-19 among Indonesian people. The English translation is shown in Table 1.

Table 1. The scorecard on COVID-19 and its vaccination information literacy (a self-sufficient method to gauge your comprehension of the aforementioned topics)

No.	Question	Value	Score
1	Comorbidities are diseases and/or abnormal conditions, such as being overweight, obesity, hypertension, diabetes mellitus, cancer, and autoimmune disorders, and these might affect the illness severity of COVID-19.	Agree=2, Neutral=1, Disagree=0.	
2	Information on COVID-19 and its vaccination is dynamic and follows updated situations and conditions.		
3	It is not mandatory for individuals who have been confirmed with COVID-19 to uphold health protocols due to acquired immunity.	Agree=0, Neutral=1, Disagree=2.	
4	Vaccination makes a person immune to the disease.		
5	The infection risk of COVID-19 does not affect the number of people who have been vaccinated.		
6	The brand of the COVID-19 vaccine determines its effectiveness due to the country that produced the vaccine.		
7	COVID-19 vaccination is not needed for people who had influenza and/or pneumonia vaccination.		
8	It is not mandatory for individuals who have been vaccinated with COVID-19 to uphold health protocols (wearing a face mask, washing hands, physical distancing, and avoiding crowds) due to their body's immunity.		
9	Any information on COVID-19 and its vaccination from the internet is correct.		
	TOTAL (More than 12: good, less than 12: insufficient)		

Four questions were asked to determine the usefulness of Karlivid, i.e., whether they agreed that this card could help them determine their comprehension level, whether they agreed that this card could improve their comprehension, whether they agreed that the items in this card could help them screen facts from hoaxes, and whether they agreed that the language used were easily understood by laypersons.

Data collection

The electronic version of the scorecard was uploaded as a Google Form, and the hyperlink was attached to the

Instagram page called @covid19center_fkunair. The responses were collected from November 1st until November 30th, 2021, via a Google Form. This scorecard was also uploaded to https://COVID-19fkua.blogspot.com/ alongside its Instagram page. On these 2 platforms, updated news on COVID-19 and its vaccination was screened from the Indonesian Government's official websites, i.e., https://covid19.go.id; the Instagram account of @satgas covid19.id; infocovid19.jatimprov.go.id; lawanCOVID-19.surabaya.go.id; https://kemkes.go.id; an official application with national-based coverage called PeduliLindungi application; as well as peer-reviewed scientific articles on the Pubmed and Science Direct databases. Thus, it is expected that internet users who are looking for information related to COVID-19 can find our Blogspot page and fill out the scorecard.

Data analysis

Incomplete responses or multiple takers were excluded. The statistical analysis of the results and survey items was conducted using SPSS 17.0 (IBM, Chicago, IL, USA). Descriptive analysis was performed on the sociodemographic aspects of all respondents, in addition to their individual opinions on the Karlivid. The frequency of each item's response was also calculated for males and females. A Chi-square test was performed to determine any differences between sex groups with the significance level defined as a p-value of <0.05 (SPSS 17.0, USA).

Ethical considerations

This study was targeted as a community service activity and ethical clearance was obtained from the Faculty of Medicine, Universitas Airlangga No.145/EC/KEPK/FKUA/2021, dated 26-07-2021. Informed consent was obtained by clicking the agreement button.

RESULTS

The development of Karlivid as a scorecard to evaluate individual comprehension of COVID-19 took approximately one month before its upload to a research blog (https://COVID-19fkua.blogspot.com/). Public comprehend sion of COVID-19 is vital for individuals to understand their health situation during the pandemic and act accordingly. In this study, the age of the respondents was between 18-30 years. Sex difference has been reported to affect these values (Flor et al., 2022; Galasso et al., 2020; Rosha et al., 2021) and therefore analyzed in our pilot study. All items have passed the validity test (n=76, r table of 0.05 is 0.223) and the reliability test (n=76, r table of 0.05 is 0.223, Cronbach's alpha > 0.6). All respondents agreed that the items were easily understood by laypersons (81.5%). After completion of the scorecard, the respondents claimed that they understood the importance of COVID-19 and its vaccination (77%); the items in the scoring cards helped them to become aware of the importance of news screening on the assigned topics (81.5%); and that the scorecard was useful for increasing their comprehension level on COVID-19 and its vaccination (81.5%). After these steps, we recruited respondents for the pilot study to evaluate public comprehension levels via Karlivid. The total number of respondents was 92 (29 males and 63 females).

It was observed that 73 respondents had an adequate level of health comprehension (79.3%). The frequency of each response for each item was analyzed to understand potential differences in the comprehension levels amongst these respondents. For item number 1 (comorbidities are diseases and/or abnormal conditions such as being overweight, obesity, hypertension, diabetes mellitus, cancer, autoimmune disorders, and these might affect the illness severity of COVID-19), 76% of respondents agreed; for the 2nd item (information on COVID-19 and its vaccination is dynamic and follows the updated situations and conditions), 90% agreed; for the 3rd item (it is not mandatory for individuals who have been confirmed with COVID-19 to uphold the health protocols due to acquired immunity), 16% agreed. For item number 4 (vaccination makes a person immune to the disease), 32% agreed; for item number 5 (the infection risk of COVID-19 does not affect the number of people who have been vaccinated), 40% agreed and 45% disagreed; for item number 6 (the brand of COVID-19 vaccine determines the vaccination effectiveness due to the country that produced the vaccine), 42% agreed. Next, for item number 7 (COVID-19 vaccination is not needed for people who had influenza and/or pneumonia vaccinations), 67% disagreed; for item number 8 (It is not mandatory for individuals who have been vaccinated with the COVID-19 vaccination to uphold health protocols, e.g., wearing face masks, washing hands, physical distancing, and avoiding crowds, due to their body's immunity), 94% disagreed; for item number 9 (any information on COVID-19 and its vaccination from the internet are correct), 86% disagreed. Furthermore, there are no statistically significant differences in the response type of each item between men and women (p>0.05). The analysis of the participant's responses is shown in Table 2.

Table 2. Analysis of the participant's scorecard responses (Karlivid)

No	Question	Respondents	Frequency (n, %)			P-Value (Chi-square)
			Agree	Neutral	Disagree	
1	Comorbidities are diseases and/or abnormal conditions such as being overweight, obesity, hypertension, diabetes mellitus, cancer, and autoimmune disorders, and these might affect the illness severity of COVID-19.	Male	23	4	2	0.49
		Female	47	14	2	
	Total		70 (76%)	18 (20%)	4 (4%)	
2	Information on COVID-19 and its vaccination is dynamic and follows the updated situations and conditions.	Male	27	2	0	0.61
		Female	56	5	2	
	Total		83 (90%)	7 (8%)	2 (2%)	
3	It is not mandatory for individuals who have been confirmed with COVID-19 to uphold health protocols due to acquired immunity.	Male	7	3	19	0.37
		Female	8	6	49	
	Total		15 (16%)	9 (10%)	68 (74%)	

No	Question	Respondents	Frequency (n, %)			P-Value (Chi-square)
			Agree	Neutral	Disagree	
4	Vaccination makes a person immune to the disease.	Male	9	3	17	0.93
		Female	20	5	38	
	Total		29 (32%)	8 (8%)	55 (60%)	
5	The infection risk of COVID-19 does not affect the number of people who have been vaccinated.	Male	12	4	13	0.96
		Female	25	10	28	
	Total		37 (40%)	14 (15%)	41 (45%)	
6	The brand of the COVID-19 vaccine determines its efficacy due to the country that produced the vaccine.	Male	14	9	6	0.31
		Female	25	15	23	
	Total		39 (42%)	24 (26%)	29 (32%)	
7	COVID-19 vaccination is not needed for people who had influenza and/or pneumonia vaccination.	Male	3	9	17	0.40
		Female	3	15	45	
	Total		6 (7%)	24 (26%)	62 (67%)	
8	It is not mandatory for individuals who have been vaccinated with COVID-19 vaccination to uphold health protocols (wearing face masks, washing hands, physical distancing, and avoiding crowds) due to their body's immunity.	Male	2	2	25	0.16
		Female	1	1	61	
	Total		3 (3%)	3 (3%)	86 (94%)	
9	Any information on COVID-19 and its vaccination from the internet is correct.	Male	1	4	24	0.66
		Female	3	5	55	
	Total		4 (4%)	9 (10%)	79 (86%)	

DISCUSSION

In this study, a higher percentage of the respondents had adequate health comprehension of COVID-19 and its vaccine compared to those with inadequate comprehension. This is in line with a study conducted during the early pandemic period of the COVID-19 pandemic in Indonesia (Triyanto & Kusumawardani, 2020). However, contrary to a previous survey about COVID-19 health literacy conducted in East Kalimantan (Ifroh & Asrianti, 2020), we found no significant differences in the type of responses between men and women who answered each item in the scorecard; both groups generally had a good understanding of the subjects. In terms of the usefulness of the scorecard, most respondents agreed that this card contained items with easily understood language and could raise their awareness of the importance of filtering any information regarding COVID-19 and its vaccination. Most of them also agreed that by filling in this card, they obtained a general idea of their health comprehension level and gained some good information as well.

Literacy regarding COVID-19 and its vaccination can be affected by several factors, including education level and the individual's experience on the related topics. Moreover, the language and content of the information also play a vital role. Other factors determine this literacy, such as the individual's environment, their technology adeptness, their personal needs and interests, socio-culture, habits, and beliefs (Li & Liu, 2020; Pechrapa et al., 2021; P. Yang et al., 2021). A reading habit can be developed to help people raise their literacy on certain subjects, including COVID-19 and its vaccination. Nowadays, for many people, the internet is their main source of information. While almost unlimited data might be sought via the internet, filtering facts from hoaxes can be quite a challenge. Furthermore, the confirmation of information to authority and/or field experts may be difficult, especially for the elderly and children (Brashier & Schacter, 2020; Herrero-Diz et al., 2020).

In this study, we explored balanced opinions on whether the brand of certain vaccines would determine their efficacy. However, this result must be taken wisely due to the relatively small sample and the limited variables studied. People's opinions might also change due to the availability of news and data they obtain, and the data on the COVID-19 vaccine is still growing.

Information literacy is a part of a basic process that is required to produce a high-quality workforce in various departments including in the social, political, economic, and cultural areas (Tilvawala et al., 2009). At the individual level, this soft skill is particularly useful because adequate health literacy on COVID-19 and its vaccination would determine how a person reacts in daily life. For example, it would affect how they would uphold health protocols as a form of protection for themselves as well as for others and to become vaccinated despite what other people may think or say. This attitude could be spread to others and might be good for the growth of new values, a new way of thinking, and a new way of life (Saad-Roy et al., 2020).

This study found that the larger part of respondents had a good comprehension of how comorbidities may lead to worse COVID-19 symptoms. They mostly agreed that the dynamic nature of information regarding COVID-19 and its vaccination must be taken into consideration, that vaccination could raise their immunity against COVID-19, and that health protocols must be upheld by all, including those who have contracted the disease and those whose have been vaccinated. However, lots of these people have not yet comprehended

the importance of vaccination as a vital part of the public effort to reduce the risk of infection from COVID-19, thus decreasing the positivity rate (WHO, 2021).

In Indonesia, the distribution of the COVID-19 vaccine has been a national project that started in February 2021. This activity is provided via health facilities in all district areas in Indonesia, with priority given to health providers and public servants, followed by all clusters of the community and children up to six years old (Isbaniah et al., 2020). By January 2022, according to the Ministry of Health's report (Kemenkes RI, 2022), approximately 180 million 1st doses and 125 million 2nd doses of the COVID-19 vaccine have been administered in Indonesia. At the beginning of January 2022, the third dose of booster vaccine has also been provided to the public. Although this may seem like a large statistic, the end target is a long way to go, as the country's total population reaches approximately 270 million people spread over the archipelago. The vaccination was given for free as part of the government's program to combat the disease (Rahmanti et al., 2021; Setiati & Azwar, 2020). By knowing the information literacy levels on these topics, people would be more aware of the situation and hopefully would act accordingly.

This was a pilot study that served dual purposes, namely, to build the Karlivid scorecard with items that had acceptable validity and reliability levels, and to also determine the public's initial comprehension of the COVID-19 virus on a small scale.

There are several limitations to our study. Firstly, this research has a relatively small number of respondents due to its nature as a pilot study. The content of the blog is also still evolving to include various types of educational methods on these subjects. Moreover, a consecutive random sampling approach was applied and the majority of the respondents were between the ages of 18-30 years old. In this study, the difference of each item was analyzed only between sexes, while other factors, i.e., age group, educational level, economic status, occupation, and digital literacy level, could also be taken into consideration for its relationship with health literacy.

CONCLUSION AND RECOMMENDATION

We succeeded to develop the Karlivid scorecard with good validity and reliability levels. This scorecard is novel in Indonesia and was uploaded to a research blog. In this pilot study, we observed good comprehension levels regarding COVID-19 among the majority of the respondents, which suggests a positive value for the current quality of public health literacy. Future studies with a larger number of respondents are necessary to evaluate the Indonesian people's health literacy on COVID-19.

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DISCLOSURE STATEMENT

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ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN PERCEIVED WORKLOAD AND ORGANIZATIONAL JUSTICE TOWARD NURSES' INTENTION TO LEAVE THEIR PROFESSION

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ABSTRACT

Perceived workload and organizational justice are significantly correlated with nurses' intention to leave. However, limited studies have used a large sample to investigate this association. Therefore, this study aims to identify the association between perceived workload and organizational justice on nurses' intention to leave. A cross-sectional online survey was conducted among 278 nurses by the simplified snowball sampling technique method from five hospitals in Surabaya, East Java Province, Indonesia. Adjusted odds ratios (AORs) and multiple linear regression were employed for data analysis. Perceived workload had increased intention to leave by 0.251-fold (95% CI = 0.20 to 0.31; p = <0.001). In addition, individuals with a high score of organizational justice are negatively associated with intention to leave -0.144 (95% CI = -0.19 to -0.10; p = <0.001) after the covariate variable has been adjusted. This study found a significant independent correlation between perceived workload and organizational justice toward nurses' intention to leave. This suggests that nurses are more likely to consider leaving their jobs when they perceive a more significant workload and receive less organizational justice through policies and practices that intend to replenish resources.

Keywords: Intention to leave; organizational justice; nurses; perceived workload

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INTRODUCTION

The global nursing shortage has been a significant issue and a growing concern for the healthcare system (Bourgault, 2022; Marć et al., 2019). The position's escalating turnover rate is one of the primary causes of nursing shortage (Al Zamel et al., 2020; Burmeister et al., 2019), and central to predicting turnover is the nurses' intention to leave (Slater et al., 2021). Turnover is frequently superseded by intentions to leave the organization (Huang et al., 2019). Notably, the intention to leave is a thinking process that includes decision-making about leaving a job position. Although this is one of the stages taken before employees resign, it does not always lead to actual leaving (Chao et al., 2015; Sharififard et al., 2019). Previous studies revealed that globally, there are various rates for an employee's intention to leave, such as 18.29% in China (Huang et al., 2019) and 21% in the United States (Koehler & Olds, 2022). Furthermore, intention to leave rates varies from 15.1% to 44.3% in developing countries (Duffield et al., 2014). In Indonesia, previous studies revealed that approximately 26.50% (Lukman et al., 2020) to 55.79% (Dewi et al., 2020) of nurses had the intention to leave. Interestingly, no extensive research with a large sample has explored the factors contributing to the high level of intention to leave among nurses in Indonesia. Thus, a study investigating the reasons behind nurses' intention to leave their profession in Indonesia is of high importance.

Perceived workload goes beyond staffing measurements to capture nurses' perceptions and experiences, as it also provides a thorough assessment of nurses' work from their perspective and personal experiences (Dhaini et al., 2022; Magalhães et al., 2017). Perceived workload as a multidimensional concept describes the time required to complete a task as well as its mental and physical demands

(Smith & Smith, 2017). Moreover, workloads that affect the health and work-life balance satisfaction of nurses are some of the factors considered before leaving the occupation (Holland et al., 2019; MacPhee et al., 2017). However, no study with a large sample size has explored the relationship between perceived workload and intention to leave among nursing, especially in Surabaya, East Java Province, Indonesia.

Organizational justice is one of the key factors behind the intention to leave among nurses (Fardid et al., 2018). Furthermore, organizational justice may extend beyond nurse retention and has major implications for both organizational and nursing staff (Xu et al., 2020). In other words, nurses who perceive greater organizational justice are more committed to their organizations and are less likely to leave their hospitals (Hashish, 2020; Mengstie, 2020). Consequently, identifying the relationship between organizational justice and its influence on nurses' intention to leave an organization should be further explored.

The correlation between perceived workload and organizational justice on intention to leave has also been found in developing and developed countries, such as the United States and Canada. However, the different cultural perspectives of perceived workload and organizational justice conduction may prevent the applicability of other studies' effects on Indonesian nurses. Previous studies have found that cultural differences could still impact organizational justice (Hashish, 2020) and workload (Viotti et al., 2018) as it relates to workplace misconduct as well as intention to leave. Moreover, perceived workload and organizational justice were found to be significantly correlated with nurses' intention to leave, but limited studies have used a large sample size to investigate this association. Therefore, the relationship between organizational work justice and workload on the intention to leave among nurses in Indonesia is important to examine. This study investigates the effect of perceived workload and organizational justice regarding the intention to leave among Indonesian nurses at five hospitals in Surabaya, East Java Province, Indonesia.

METHOD

Study design

A cross-sectional design was used to investigate the effect of perceived workload and organizational justice regarding the intention to leave among Indonesian nurses at five hospitals in Surabaya, East Java Province, Indonesia.

Setting and sample

Primary data was collected by using a clinical-based survey of a representative sample of respondents from five hospitals, consisting of two public hospitals and three private hospitals in Surabaya, East Java, Indonesia. The inclusion criteria were nurses who provided direct patient care, have been employed as nurses for more than six months, and volunteered to participate willingly. Unit managers and clinical resource nurses were excluded from this study because they dictated organizational policies, processes, and procedures. Moreover, they oversee registered nurses but do not provide direct patient care.

To estimate the sample size, G-Power Version 3.1 was used with Cohen's effect size of 0.37 (Mengstie, 2020), an alpha level of 0.05, and a power value of 0.8. The sample size generated was 187 participants. Considering an estimated attrition rate of 20%, we elevated our total sample size to 224 participants. However, after the data collection process, our final sample size reached up to 278 participants.

Data collection

The online survey was distributed through a Google Form that was shared through a social media platform, i.e., WhatsApp, to the head of nursing and some nurses in the target hospitals. The respondents were chosen by using a simplified snowball sampling technique and were requested to forward the invitation to their colleagues; the survey was predicted to take 15 minutes to complete. During the data collection period from 20 February 2022 to 20 March 2022, a variety of methods was utilized to obtain as many respondents as possible from the target hospitals. A total of 278 nurses filled out the Google Form survey.

The Google Form survey had four sections: (1) Before allowing participants to proceed with the survey questions, the first section informed them of the study's objectives and eligibility requirements. Next, the respondents indicated their informed consent by checking the box "Agree", which confirmed that they understood the authorization information and met the inclusion and exclusion criteria. This section also indicated the respondents' decision to participate voluntarily and acknowledgment that they have the freedom to withdraw at any time; (2) The second section comprised of questions correlated to sociodemographic factors; (3) The third section contained several questionnaires regarding perceived workload, organizational justice, and intention to leave. Finally, the last page expressed our gratitude and encouragement for all individuals who completed the survey to persuade their colleagues to participate by forwarding the link to the online survey.

Measurements

Demographic characteristics and work-related variables

The demographic and work-related variable questions contained age, gender, marital status, educational level, total years worked at the current hospital, work department, income, total bed count, type of hospital, and religion.

Nurses' intention to leave

This study used the nurses' level of adaptation (Kim & Leung, 2007) and modification (Zahednezhad et al., 2021) to measure their intention to leave. Three question items were assessed on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores representing higher intention to leave work. Kim and Leung (2007) reported that Cronbach's alpha of the questionnaire in American, Korean, Chinese, and Japanese samples were 0.92, 0.91, 0.92, and 0.93, respectively. In previous studies, Cronbach's alpha was used to measure the reliability of the scale and was estimated to be 0.90 (Zahednezhad et al., 2021). Therefore, for this present study, the Cronbach's alpha used was 0.88.

Organizational justice

The organizational justice measure was used to explore nurses' perceptions of organizational justice (Niehoff & Moorman, 1993). This study used an adaptation of the organizational justice questionnaire which contains 22 questions and used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Previous studies have found that higher scores indicate a greater perception of justice and implementation in a nursing population with a Cronbach's alpha of 0.80 (Zahednezhad et al., 2021). Thus, the Cronbach's alpha used for this study was 0.90.

Perceived workload

The perception of quantitative workload was evaluated using Spector and Jex's (1998) five-item questions with a five-point scale. The responses to each question ranged from 1 (less than once each month) to 5 (multiple times per day) (Spector

& Jex, 1998). Higher scores indicate a high level of workload status. Previous studies have found that a Cronbach's alpha of 0.77 indicates acceptable reliability. Therefore, for this research, the Cronbach's alpha was 0.88.

Data analysis

The frequency (n), percentages (%), and distribution of the demographic characteristics and determining factors between groups were calculated. Continuous variables were also examined with an independent t-test, Pearson's correlation, or Spearman's rank correlation, as applicable, using means and standard deviations (SD). Furthermore, Z-scores for skewness and kurtosis were used to assess the normality of the data, and Z-scores of <3.29 were considered to have normal distribution (Kim, 2013; Rias et al., 2020). Multicollinearity was assessed using a variance inflation factor (VIF) of <10 (García et al., 2015; Kurniasari et al., 2021). This study had a maximum VIF of 3.76, this indicates that our data has a low impact on multicollinearity. The adjusted coefficients and 95% confidence intervals (CIs) were derived by applying a multiple linear regression for the intention to leave due to exposure of interest. This is done after controlling for potential confounding variables such as age, gender, marital status, educational level, total years worked at the current hospital, area of practice, nationality, salary, and working hours per week.

Ethical consideration

The Ethical Review Board of Institut Ilmu Kesehatan STRADA Indonesia analyzed and approved the protocol to guarantee that the rights of the participants were fully protected (No : 2875/KEPK/II/2022). The respondents were well-informed about the objectives of the research. After the written informed consent from each participant was obtained, all data were gathered and handled with confidentiality and anonymity.

RESULTS

Table 1 shows the participants' demographic characteristics. In total, 51.8% of this study's participants were female participants and 81.7% were Moslems. Furthermore, a total of 86.0% of participants had a higher educational level of bachelor's or postgraduate degree. Most participants were between 20-31 years old (44.6%), single (79.5%), worked at a public hospital (65.1%), have had 10-20 years of work experience (43.9%), and have had a total bed count of >251 beds (57.2%). Except for education, there were significantly different in levels of anxiety in all sociodemographic variables (all $p<0.05$).

Table 1. Comparison of participants' sociodemographic characteristics and intention to leave (n = 278)

Variables	Total participants	Intention to leave	
	n (%)	Mean (SD)	*p*-value [a]
Age (years)			
<20-31	124 (44.6)	7.35 (3.06)	
31-40	53 (19.1)	8.83 (2.85)	0.001 [b]
>41	101 (36.6)	5.13 (2.31)	
Gender			
Male	134 (48.2)	5.11 (5.72)	0.001
Female	144 (51.8)	4.05 (4.43)	
Religion			
Moslem	227 (81.7)	3.68 (4.01)	<0.001
Non-moslem	51 (18.3)	4.93 (5.44)	
Education			
Diploma	39 (14.0)	6.95 (2.08)	0.720
Bachelors/postgraduate	239 (86.0)	6.81 (3.23)	
Type of hospital			
Public	181 (65.1)	5.65 (2.42)	<0.001
Private	97 (34.9)	9.03 (3.02)	
Marital status			
Single/divorced	221 (79.5)	6.62 (3.21)	0.031
Married	57 (20.5)	7.61 (2.49)	
Income (IDR)			
<4.375.479	79 (28.4)	9.34 (2.11)	<0.001
≥4.375.479	199 (71.6)	5.83 (2.85)	
Department			
Non-intensive care and emergency	226 (81.3)	7.20 (3.14)	<0.001
Intensive care and emergency	52 (18.7)	5.19 (2.22)	
Work experience (years)			
<5	79 (28.4)	7.92 (3.86)	0.002 [b]
5-9	50 (18.0)	6.56 (0.61)	
10-20	122 (43.9)	6.45 (3.29)	
≥ 20	27 (9.7)	5.81 (0.83)	
Total bed			
≤100	70 (25.5)	8.29 (2.62))	<0.001
101-250	49 (17.6)	6.12 (3.11)	
> 251	159 (57.2)	6.40 (3.09)	

Note: IDR, Indonesian Rupiah; SD, standard deviation. Data were presented as mean ± SD, frequency, and percentage, and p-values were calculated using [a] independent sample t-test and [b] one-way ANOVA. A p-value of <0.05 indicates statistical significance.

The values of the AOR and 95% CIs of perceived workload, organizational justice, and intention to leave among respondents are presented in Table 2. Perceived workload had an increased intention to leave by 0.251-fold (95% CI = 0.20 to 0.31; p = <0.001) after adjusting for the covariate variable. In addition, individuals with a high score of organizational justice were found to be negatively associated with intention to leave -0.144 (95% CI = -0.19 to -0.10; p = <0.001) after adjusting for the covariate variable.

Table 2. AOR and 95% CIs for perceived workload, organizational justice, and intention to leave among the respondents (n = 278)

Variables	Unadjusted OR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Perceived workload	0.247 (0.17 to 0.33)	<0.001	0.251 (0.20 to 0.31) *	<0.001
Organizational justice	-0.155 (-0.20 to -0.11)	<0.001	-0.144 (-0.19 to -0.10)	<0.001

Note: Adjusted beta-coefficients and 95% CIs were estimated using multiple linear regression after adjusting for age, gender, marital status, educational level, total years worked at the current hospital, work department, income, total bed count, type of hospital, and religion.

DISCUSSION

This study demonstrated that a high score of perceived workload is significantly related to a high score of intention to leave. In line with this study's findings, a previous study in Canada revealed that perceived workload is significantly correlated with escalated intention to leave among nurses (Holland et al., 2019). It is well-documented that nurses' perceptions of their workload have a negative impact on their well-being, and the retention of this workforce is becoming a significant concern. Moreover, high-involvement work practices mitigate the negative effect of heavy workloads on nurse health (Holland et al., 2019). A previous study that investigated 33,659 nurses from 488 European hospitals revealed that basic nursing tasks were neglected due to increased workload. The inability to perform fundamental nursing tasks as a vital indicator of quality patient care was also associated with lower job satisfaction and higher turnover (Kutney-Lee et al., 2013). Interestingly, according to previous studies, the nursing staff's intention to leave has been linked to long shifts of caring for patients with mental disturbances, as well as social or physical health issues (Gómez-Urquiza et al., 2017; Phillips, 2020). Moreover, a previous study in Indonesia found that workload was significantly associated with the intention to leave the profession in private hospitals in North Sumatra (Subramania, A., & Ramli, C., 2019). These findings imply that the improvement of the management of workload systems can decrease the nurses' intention to leave the profession and vice versa. In this study, the high score of perceived workload was significantly associated with the participants' intention to leave their profession.

The results of this study revealed that organizational justice is correlated with the participants' intention to leave. Our findings are consistent with a previous study conducted in six teaching hospitals in Tehran, Iran, which showed that the level of perceived organizational justice was a significant factor in influencing an employee's decision to remain in or leave a healthcare occupation. Additionally, among healthcare professionals, nurses are said to receive the least perceived organizational justice and have the highest intention to leave their current position (Zahednezhad et al., 2021). According to a study conducted by Yanchus et al. (2015) on the mental health of 11,726 health care professionals including nurses, psychiatrists, and social workers, justice was directly significantly correlated with the intention to leave their profession. This suggests that the hospital's environmental factors were associated with the organizational justice of the nursing staff and their intention to leave. From a clinical perspective, these findings may be helpful for hospitals to develop strategies for minimizing their staff's intention to leave to ensure continuity of care (Yanchus et al., 2015).

Interestingly, the empirical basis for previous studies revealed that some nursing managers could use evidence-based guidelines to develop their organization's justice environment to boost nurses' job satisfaction and retain the current nursing staff. In addition, nursing administrators must be mindful of the effects of nurses' conceptions of justice on their job happiness, intention to leave, and other outcomes, such as a decline in quality-of-care services and patient satisfaction. In this regard, a nursing manager's exclusive focus on fair human resource management may not suffice as the results and outcomes of these procedures should also be fair. In addition to seeking fair processes, nurses must also obtain equitable compensation and be treated with dignity and fairness in their interpersonal interactions (Zahednezhad et al., 2021).

Several limitations should be considered when interpreting our findings. Due to the study's cross-sectional design, participant follow-up, the estimation of the turnover rate, and its association with the desire to leave were not feasible. In addition, the data gathering instrument was a self-reported questionnaire, which may be affected by social desirability bias. Further studies should implement a larger sample size and sampling of nurses from diversified healthcare organizations to increase the generalizability of the results.

CONCLUSION AND RECOMMENDATION

It is clear from this study's findings that an increasingly demanding work environment strains the perceived organizational justice and the workforce's ability to recover among nursing at five hospitals in East Java Province, Indonesia. Therefore, management must address these issues before highly skilled nurses leave their profession. Current research suggests that nurses are more likely to consider leaving their jobs when they perceive a more significant workload and receive less organizational justice through policies and practices that replenish their resources. This research suggests that policymakers should prioritize initiatives that strengthen organizational support to enhance the well-being of nurses. As a result, management education could benefit from additional research focused on balancing these frequently competing needs of organizational justice and workload.

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ORIGINAL ARTICLE

NURSES' EXPERIENCE OF ETHICAL DILEMMA AT THE END-OF-LIFE CARE IN THE INTENSIVE CARE UNIT

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ABSTRACT

One of the aims of the care service in the Intensive Care Unit (ICU) is to prepare patients in end-of-life conditions to die in a dignified manner. This can be challenging due to decision-making problems and result in a dilemma. Therefore, this study explores the ethical dilemmas experienced by nurses that provide end-of-life care in the ICU. The qualitative phenomenological methodology was used to describe the ethical dilemmas nurses face during these conditions. The data were collected through in-depth interviews and were analyzed using Colaizzi. Purposive sampling was used to select a total of eight participants, i.e., ICU nurses, who have treated end-of-life patients. Four themes were obtained from this study, namely, "the dilemma between the family's decisions and continuing care", "patient's life expectancy and the family's hope", "DNR decisions and the nurse's confidence", and "the family's understanding of the information provided". This study recommends that the assessment of end-of-life status in critical care areas, especially the ICU, should be conducted as soon as possible to have a clearer purpose for the care provided.

Keywords: End of life; ethical dilemma; ICU; nursing

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INTRODUCTION

The Intensive Care Unit (ICU) handles critical patients due to illness, trauma, or other disease complications. The unit focuses on life or organ support that often requires intensive monitoring (Jones & Griffiths, 2014). It also aims to provide the best services to maintain the patient's life and for dying care (Fernandes & Moreira, 2012). The ICU ward is very complex because it is a life-saving area that requires health workers to apply ethics in situations that need quick decision-making (Park et al., 2015). The decision-making process could be very difficult when the patient or their family needs to decide things related to the lifesaving aspect of the patients (Span-Sluyter et al., 2018). This situation creates an ethical dilemma situation for health workers, especially nurses.

Ethical dilemmas can occur when nurses know the required actions to save the patients, but they are unable to do so due to various considerations, one of which is the socio-cultural problem of the patient's family (Holt & Convey, 2012). Moreover, the decisions taken could also conflict with the moral beliefs of the health team (Santiago & Abdool, 2011). The ethical dilemmas that often occur in the ICU ward are related to end of life care (Sorta-Bilajac et al., 2011).

End-of-life care is part of palliative care for end-of-life patients (Krau, 2016). This care service aims to improve the patient's quality of life and to prepare them to die in a dignified state (Servillo & Striano, 2008). End-of-life care for patients who have experienced critical conditions, especially for patients in the ICU room, has improved due to developments and technological advances (Vanderspank-Wright et al., 2011). Nevertheless, end-of-life care in ICU services is challenging because the ethical dilemmas faced by nurses and doctors make it difficult for them to make medical decisions (Sorta-Bilajac et al., 2011). The aspects that contribute to this condition include religious factors, beliefs, education, and language factors related to the communication used. Unfortunately, the difficulties in making these decisions also have negative effects on patients and their families (Curtis & Vincent, 2010).

The long-standing ethical dilemmas faced by nurses will also be a factor that causes mental fatigue and can interfere with their professional practice, thereby leading to suboptimal care (McAndrew et al., 2011). Moreover, issues due to ethical dilemmas can increase patient suffering and the cost of care (Wiegand et al., 2015). Therefore, this study aims to explore the ethical dilemmas experienced by nurses providing end-of-life care in the ICU.

METHOD

Study design

This is qualitative research with a phenomenological approach. Phenomenology is the study of how individuals understand their life experiences so that they can reflect on them psychologically (van Manen, 2016). This approach aims to explain the structure or essence of the life experience of someone who experienced a phenomenon by identifying the meaning and accurately describing their life experience (Maxwell & Reybold, 2015).

Participants

The participants involved in this study were eight ICU nurses who were selected by using the purposive sampling method. The sample selection was assisted by the head nurse of the ICU with the following inclusion criteria: nurses with more than two years of work experience in the ICU, a minimum education of Diploma III in nursing, can communicate and work well, and have experience caring for end-of-life patients at least twice in the last two years. After discussing the selection of participants with the ICU head nurse, the researchers made a time contract.

Data collection

The data was collected using an in-depth interview approach, and the interviews were conducted in the ICU headroom. Before conducting the interview, the researchers met the respondents to explain the plan and purpose of the research. After they agreed to participate in the interviews, the researchers made a contract of where and when the interviews will be held. The interview was conducted for approximately 40-60 minutes. The research instrument included interview guidelines and voice recording devices.

The interview began with introduction, signing of the informed consent form, and asking research questions regarding the ethical dilemmas experienced by nurses when providing end-of-life care in the ICU. The interview process was done 1-2 times for each participant, in which the first meeting explored the nurses' experiences related to the ethical dilemmas they felt when providing end-of-life care in the ICU. Meanwhile, the second meeting clarified the data that were obtained, and the participants were asked again if there were other things that they would like to add or convey. At the final stage of the study, the researchers informed the participants about the findings and conclusions. The interview and participant recruitment stopped after 8 interviews to the point of data saturation.

Data analysis

Data analysis was performed with the Colaizzi method approach. Each interview recording was transcribed. The transcriptions were then returned to the participants to be validated if there is information that the participant wants to add or remove if it does not reflect their experience. All participants agreed with each transcription. Furthermore, the encryption is read repeatedly by the researcher to find the essence of the participant's expressions and determine important statements that follow the objectives of this study. The important statements were then formulated into more general meanings and then formulated into a theme group.

Trustworthiness

In maintaining the rigor of the research and ensuring the credibility of the findings, the researchers used member checks. Reliability was achieved by maintaining the consistency of the same main questions in data collection per interview guidelines. Conformity was achieved by writing down what the participants expressed and then writing direct quotations from the transcribed data. Lastly, the researcher provided a detailed description of the research process and setting. This allows anyone interested in transferring data findings to determine whether or not such a transfer is possible (Lincoln & Guba, 1985).

Ethical considerations

This study went through several ethical consideration processes including obtaining ethical approval from the ethics committee of the Faculty of Medicine, Padjadjaran University with the ethical clearance number 201 / UN6.KEP / LC / 2019, regarding informed consent, anonymity, confidentiality, beneficence, and justice.

RESULTS

Based on the results of data analysis using the Colaizzi method approach, 4 themes were identified in this study.

The dilemma between the family's decisions and continuing care

The first theme found in this study is the existence of an ethical dilemma between the sustainability of care and family decisions. Almost all participants revealed that when a patient was treated for their end-of-life condition, families often experience dilemmas. They wish to continue the treatment, but it is constrained by the cost of care. The following is a relevant statement from a participant:

> "Perhaps the most common thing here is, for example, families have objections in funding, but actually the patient still has hope, actually in my heart it feels like something is up in my mind ..." (P 1.4)

Other participants also revealed that the family's decision will affect the continuity of further care, as shown in the following statement:

> "... but in terms of family members, they have decided to turn it off, so what we have done so far, and what we will do in the future is not optimal, ..." (P 3.2)

Other participants also expressed a similar statement:

> "... On the one hand, we know that this patient is still able to survive, and the patient's life expectancy is still there, but on the other hand the family took the decision to take the opposite action" (P.4.22)

Patient's life expectancy and their family's hope

Some participants expressed experiencing a dilemma when faced with conditions when the family no longer had any expectations regarding care for the patient, even though the patient still had a high life expectancy.

> "When it comes to making decisions, even though the patient's life expectancy is still there, the family would sometimes state to DNR (Do Not Resuscitate). So, even though we have explained the patient's progress, we will still respect the family's decision ..." (P.4.18)

Other participants also revealed that sometimes feelings of a dilemma arise when the expectations of the family differ from the life expectancy of the patient. An example would be when the patient has a low life expectancy, but the family has high expectations, as stated by a participant:

> "... for example, BSD (Brain Stem Death) patients want to maximize their family life, but the life expectancy is gone, so we like to pity the patient, so it is like we are obstructing the patient ... it's like we are torturing the patient" (P 6.16)

DNR decisions and the nurse's confidence

The next theme that emerged in this study is when nurses' beliefs conflict with the termination of care. Most participants expressed that a common dilemma that they face is related to their contrasting beliefs regarding the decision to terminate care, as expressed by one participant:

> "...On the one hand, we know that if, for example, this patient is given this procedure, he can still survive and the patient's life expectancy is still there, but on the other hand, the family makes the decision to end the treatment." (P 4.32)

Other participants also expressed a similar statement:

> "...well, we will bring that to reality. Sometimes there are families of patients who receive the term. They want their family to recover, so whatever I do, even though if you look at it medically, the patient's quality of life is low" (P 5.10)

The family's understanding of the information obtained

Several participants revealed that they would experience an ethical dilemma when explaining information related to the patient's development to their families. The information conveyed by health workers, doctors, and nurses tends to be poorly understood by the families. The participants stated their experiences in the following statements:

> "What frequently occurs is that after the patient's condition has been explained to the family by the medical team, the family will decide on the subsequent course of treatment. However, when that treatment is administered, the family frequently inquires once more to the nurse about the reason for the subsequent treatment and the procedure administered. Occasionally, after being given a further explanation, the family would refuse the action to be taken (P 7.3).

Another participant also revealed the following statement.

> "..., due to the family's lack of understanding of the information provided, sometimes when an immediate decision is needed, the family seems confused on how to behave and hamper the care provided" (P 8.4)

DISCUSSION

The dilemma between the family's decisions and continuing care

The patient's family plays the role of an advocate for their ill family members (Kydonaki et al., 2014). They also act as a guarantor of the rights of critical patients and assume responsibility for decisions related to their care and treatment (Padilla Fortunatti, 2014). The problems that arise would be related to making treatment decisions, as sometimes nurses cannot predict when the family will decide on the next treatment and how long they would need to wait until the family has made their decision (Hidayat et al., 2021). This study also found that most participants revealed that the decisions taken by the family will affect the continuity of care in patients and whether nursing actions will be continued or stopped.

In end-of-life care, the medical team sometimes has difficulty predicting the patients' length of treatment. This will in turn affect the cost of care that must be issued by the family (Selph et al., 2008). Other studies have also revealed that family decisions related to moral issues that occur in the family can sometimes help or complicate nurses in the process of further treatment follow-up (Chaves & Massarollo, 2009).

Patient's life expectancy and their family's hope

The decision-making process for DNR by the medical team could sometimes be rejected by the patient's family. This is influenced by the family's high expectations of the patient's recovery, in which the family expresses the desire that the patient can still receive maximum therapy, including CPR at the time of cardiac arrest (Amestiasih et al., 2015). The medical team must still respect all family's decisions or rejections (General Medical Council, 2014). Statements from this study's participants also revealed similar results, in which the family refused the DNR labeling despite the patient's low life expectancy.

It is often difficult for family members to make decisions on behalf of their loved ones as they may worry that their family member has suffered or that they give up too quickly, and they often harbor feelings of doubt, regret, and guilt (Adams et al., 2014). Family members who become responsible for the patient's decisions tend to also experience emotional distress related to their extended family's approval regarding the patient's death or any changes in their functional status and quality of life (Majesko et al., 2012).

DNR decisions and the nurse's confidence

The next theme is the decision to interrupt a treatment that is contrary to the nurses' beliefs. This ethical dilemma occurs when nurses face obstacles that prevent them from taking actions that are contrary to their moral beliefs (Santiago & Abdool, 2011). Such conditions could occur due to moral pressure, which could also lead the actions taken to be sub-optimal (Arianto et al., 2018). This condition is also often found when there is a treatment interruption process after the DNR decision-making process (Brizzi et al., 2012).

Caring for DNR patients is not easy, giving the DNR labels to patients can create a dilemma for nurses (Lingard et al., 2008). The dilemma can be influenced by the nurses' personal experience. It is more likely to occur in those who encounter DNR patients who eventually die during treatment. This dilemma is often felt by nurses who lack experience, knowledge, and information related to DNR. The limitations and inadequacy of DNR information affect the effectiveness of the delivery of dignified care (Piers et al., 2010).

Nurses must respect all decisions made by the family. They must act as an advocate for the patient or their family, provide correct and relevant information, and provide the best nursing care before the death process (Kon et al., 2016). The end-of-life care provided must also uphold the dignity and respect of the patient (Rosser & Walsh, 2014).

The family's understanding of the information provided

The communication dilemma felt by nurses is not only related to the attitude displayed by patients' families when dealing with them, but also to the nurses' psychological and physical

conditions. This is because when they are tired or are facing personal problems, nurses could often forget their appearance when communicating with patients' families (Arumsari et al., 2017). This condition can cause miscommunication.

Miscommunication between the family and the medical team also results in a misunderstanding of the decision-making process and consequently, the care provided to the patients (Flannery et al., 2016). Inadequate sources of information can affect the ineffectiveness of providing dignified care (National Institute for Health and Care Excellence, 2013). Communication problems in providing information related to the patient's prognosis to the family will influence the decision-making in the continuation of care. Moreover, misunderstandings occurring between the medical team and the doctor will result in treatment inconsistencies (Shorideh et al., 2012).

The limitation of this study is that during the interview the respondents could not leave the ICU ward. Hence, during the interview, they were sometimes disturbed by the activities of other nurses in the room.

CONCLUSION AND RECOMMENDATION

This study showed that there were four themes of ethical dilemmas felt by nurses working in end-of-life care in the ICU. These predicaments include the dilemma between the family's decisions and continuing care, the patient's life expectancy and their family's hope, DNR decisions and the nurse's confidence, and the family's understanding of the information provided. Each theme is interrelated as the dilemma is felt when family and medical decisions on patient care do not align with the nurses' applicable ethical values. This in turn results in the nurses' experience of moral distress. The results of this study also showed that nurses, especially those in the critical care area, experienced moral suffering because they had to take actions that do not follow their moral judgment. This results in an ethical dilemma that affects the quality of end-of-life care services provided.

Therefore, it is recommended for the hospital to form a special team to handle end-of-life cases to ensure the goals of care are achieved and ultimately improve the quality of care provided to end-of-life patients.

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ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN PSYCHOLOGICAL STRESS WITH BREASTFEEDING FREQUENCY AND BREASTMILK VOLUME DURING THE COVID-19 PANDEMIC

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ABSTRACT

Breastfeeding mothers have limited access to healthcare facilities during the pandemic, thus raising their risk of psychological stress. This study aimed to analyze the correlation between psychological stress with breastfeeding frequency and breastmilk volume. A cross-sectional survey was conducted with 120 exclusively breastfeeding mothers. The Perceived Stress Scale (PSS) was employed as a stress assessment indicator measuring tool. The measurement of breastmilk volume was performed using a manual breast pump two hours before or after the baby suckles to restore milk production. The frequency of breastfeeding was calculated by adding up the number of times the baby is breastfed in a day. The chi-square test was used in this study. It was found that 68 respondents (56.7%) reported experiencing mild to moderate stress. Stress levels were found to have a significant connection with breastfeeding frequency and breastmilk volume ($p < 0.05$). The respondents who experienced severe stress have a 2.63-times higher risk for breastfeeding <8 times/day and 33.2 times higher risk of producing breast milk <100cc than respondents who experienced mild-moderate stress. Concerns about the psychological stress of breastfeeding mothers highlight the critical need for good mental health and broader help from families during the pandemic.

Keywords: Breastfeeding; COVID-19; psychological stress

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INTRODUCTION

Breastfeeding support for mothers is the current public health priority during the COVID-19 epidemic. Many investigations have found no evidence of SARS-CoV-2 transmission through breastmilk in SARS-CoV-2 patients (Chambers C et al., 2020; Dumitriu et al., 2021; Groß R et al., 2020). Furthermore, the SARS-CoV-2 antibodies found in breastmilk have a strong immunological response to the virus. This clinical research supports global recommendations for women to continue breastfeeding during the pandemic to boost infant health and immunity (Fox et al., 2020; Pace et al., 2021; UNICEF, 2020; van Keulen et al., 2021; WHO, 2020).

From March to August 2020, the COVID-19 outbreak in Indonesia resulted in severe social restrictions and stay-at-home regulations. Since then, the incidence of SARS-Cov-2 cases has been relatively low, but then grew in the same year and the second wave of COVID-19 occurred, prompting the implementation of a policy of Enforcement of Community Activity Restrictions in May-August 2021 (John Hopkins University, 2020). For breastfeeding mothers, policies related to the pandemic in Indonesia (such as the lockdown) have resulted in a reduction in direct assistance from spouses, extended family, and professional services. These factors, in addition to financial uncertainty, can lead to psychological stress.

Furthermore, the mental health and well-being of breastfeeding mothers are a public health concern, particularly during the current pandemic conditions (Ceulemans M et al., 2020; Spatz et al., 2021; Taylor et al.,

2021). In this situation, support for new mothers' breastfeeding is severely limited, especially in terms of acquiring access and adapting to the environment during the epidemic. These conditions have caused mothers to have an excess of parental obligations, including their role in the family. Thereby contributing to why mothers are disproportionately affected by the pandemic and lockdown (Snyder & Worlton, 2021; Wenham et al., 2020).

Numerous studies have proven that the psychological state of breastfeeding mothers will decrease their breastfeeding quality (Krol & Grossmann, 2018; Shiraishi et al, 2020; Witten et al, 2020). Previous research has shown that a lack of support was noticed from the home environment's health community network. However, these studies did not explore psychological stress and its impact on breastfeeding mothers (Gonçalves-Ferri et al., 2021). Another study investigated the content of breastmilk in mothers who experienced stress during the pandemic (Juncker et al., 2022; Ziomkiewicz et al., 2021). Nevertheless, there are limited studies that have measured the effect of psychological stress on breastfeeding frequency and breastmilk volume during the pandemic. This study aimed to investigate the possible correlation between breastfeeding mothers' psychological stress to breastfeeding frequency and breastmilk volume.

METHOD

Study design

A cross-sectional study was conducted in Yogyakarta's Special Region from January to March 2021. A municipality and four district cities were selected for this investigation. Eligible participants were approached at their residences by using a list of names provided by the Public Health Care (PHCs), and convenience sampling was utilized to recruit them.

Sample

The sample size was not calculated, and a consecutive sampling method of sample selection was used. This study was comprised of a total of 120 mother-infant dyads with babies under the age of six months. Mothers who gave birth after more than a 37-week gestation period, had a baby weighing >2500 grams, had never formula fed their babies, and were impacted by the pandemic (experienced financial problems, e.g., layoffs, lower monthly wages, and lower daily earnings) were eligible for this study. The exclusion criteria included mothers who had undergone breast surgery, experienced postpartum problems, such as hemorrhagic postpartum or postpartum infection, or if the infant had neonatal abnormalities, such as labioschisis or labiopalatoschisis, or a history of admission to a neonatal critical care unit.

Instrument

Mother's age, parity type, employment status, and education level were the demographic variables assessed in this study. The Perceived Stress Scale (PSS) was employed as a stress assessment indicator measuring tool. The respondents' level of unpredictability, uncontrollability, and overburden in their lives was measured using a 10-item scale. The results obtained then measured the respondents' level of stress, from mild-moderate stress (total score 1-26) and severe stress (total score >26) (Andreou et al., 2011; Cohen & Williamson, 1988; Cohen et al., 1983; Okinarum et al., 2020) The respondents were asked how often they felt specific emotions during the COVID-19 pandemic over the previous month, with four positive words and six negative words on the list. A higher score would indicate a stressed person.

The measurement of breast milk volume was conducted by using a manual breast pump two hours before or after the baby suckles to restore the mother's milk production. Before feeding the baby, both breasts were pumped for 30 minutes or until there were no release of milk after pumping for two minutes. This pumping process were repeated three times per day, and the average was calculated. Breast milk volume was measured by using a measuring tube in cc units. The frequency of breastfeeding was calculated by adding up the number of times the baby was breastfed in a day, which could be 8 times per day or more than 8 times per day (Morton et al., 2009; Parker et al., 2015).

Data collection

All PHCs were visited in Yogyakarta to obtain data on the number of breastfeeding mothers. The mothers were then contacted to determine whether they were eligible to be respondents based on the inclusion and exclusion criteria. After confirming that they were eligible and agreed to be respondents, each respondent's house was visited to collect data.

A form was used to collect and record data on the frequency of breastfeeding for 24 hours. Due to the pandemic conditions at the time of the study, the researchers were not permitted to repeatedly contact respondents in person. Thus, the respondents were asked to complete a form for each breastfeeding session. Then, the researchers provided a standardized electric breast pump to be used by the respondents. After pumping their breasts, the respondents were instructed to take a photo of their expressed breast milk results and placed them in a measuring cup provided by the researcher. The findings were then recorded on the form.

Data analysis

Both univariate and bivariate methods were used in the data analysis project. The frequency distribution of the variables from the univariate analysis was obtained. The Chi-square test was also employed in the bivariate analysis to investigate the correlations between variables.

Ethical considerations

This study has been approved by The Research Ethics Committee, Faculty of Health Sciences, Universitas Respati Yogyakarta, Indonesia, with the number: 219.3/FIKES/PL/X/ 2020.

RESULTS

The majority of respondents in this study were primiparas, aged 20-35 years, unemployed, and have a good level of education. Based on the stress measurement conducted using PSS, it was found that a higher number of respondents experienced moderate-severe stress than mild stress. In addition, the majority of respondents breastfeed their children 8 times/day. However, regarding the volume of breastmilk, most respondents had a breastmilk volume of <100cc (Table 1). The stress experienced by the respondents has a significant relationship to the frequency of breastfeeding and their breastmilk volume (p-value < 0.05) (Table 2 and Table 3). Based on the results of the Odds Ratio (OR), the respondents who experience severe stress have a 2.613-times greater risk for breastfeeding <8 times/day (Table 2) and are 33.213 times at greater risk of producing breastmilk <100cc than respondents who have mild stress (Table 3).

Table 1. Participants' characteristics (n=120)

Variables	n	%
Age		
<20	22	18.3
20-35	70	58.3
>35	28	23.3
Parity		
Primiparous	78	65
Multiparous	42	35
Employment status		
Unemployed	76	63.3
Working	44	36.7
Educational level		
Junior high school	8	6.7
Senior high school	78	65
Diploma or above	34	28.3
Stress level		
Mild-moderate	68	56.7
Severe	52	43.3
Breastfeeding frequency		
<8 times/day	35	29.2
≥8 times/day	85	51.8
Milk Volume		
<100 cc	62	51.7
≥100 cc	58	48.3

Table 2. The relationship between stress level and breastfeeding frequency (n=120)

Variables	Breastfeeding frequency		p-value	OR	CI 95%
	<8 times/day	≥8 times/day			
	n (%)	n (%)			
Stress level					
Mild-moderate	14 (40.0)	54 (63.5)	0.031	2.613	1.165-5.860
Severe	21 (60.0)	31 (36.5)			

Table 3. The relationship between stress level and milk volume (n=120)

Variables	Milk Volume		p-value	OR	CI 95%
	<100 cc	≥100 cc			
	n (%)	n (%)			
Stress level					
Mild-moderate	15 (24.2)	53 (91.4)	0.000	33.213	11.216-98.355
Severe	47 (75.8)	5 (8.6)			

DISCUSSION

Previous studies have shown that breastfeeding mothers are more susceptible to mental illnesses (Jiang et al., 2022; Krol & Grossmann, 2018). The COVID-19 outbreak in Indonesia has exacerbated this vulnerability. While breastfeeding, mothers frequently feel a strong feeling of obligation to provide the best possible care for their infants. However, they may experience stress due to their dread of meeting new people and becoming infected with the virus and spreading it to their infants (Ceulemans et al., 2020; Vassilopoulou et al., 2021). Due to social restrictions, the COVID-19 pandemic may have had an impact on these mothers, such as their spouses losing their jobs, reduced income, and lack of aid from family members for breastfeeding. Therefore, breastfeeding women may experience stress as a result of this indirect impact (Brown & Shenker, 2021; Spatz et al., 2021).

Furthermore, previous research has shown that parity and education level have a consistent impact on stress in breastfeeding mothers (Hendaus et al., 2018; Shiraishi et al., 2020). In contrast, age has been found in multiple studies to have no meaningful link with a mother's breastfeeding behavior (Khasawneh & Khasawneh, 2017; Witten et al., 2020). Some respondents are between the ages of 20 and 35, which is the best age for giving birth and breastfeeding to lower the risk of stress. Scientific literature has indicated that a lower risk of bearing babies is seen in a maternal age of 20-30 years (Bellieni, 2016; Gossett et al., 2013).

The majority of the respondents in this research had a high school education or higher. Mothers with a higher level of education have more opportunities to learn about the benefits of breastfeeding, which increases their enthusiasm to nurse their newborns (Khasawneh & Khasawneh, 2017; Shiraishi et al., 2020).

Next, the majority of the respondents are primiparous. Compared to primiparous mothers, multipara mothers were also more likely to exclusively breastfeed since they had experience with the benefits of breastfeeding on their babies' growth and development. Furthermore, our findings support the contention that among multiparous mothers, it is the breastfeeding experience rather than the childrearing experience that influences later breastfeeding practices (Bai et al., 2015). In primiparous mothers, pressure from family and societal conventions or culture might damage the mental health of primiparous moms, leading them to opt not to breastfeed their babies (Hendaus et al., 2018; Shiraishi et al., 2020).

According to the majority of breastfeeding mothers who participated in this study, occupation can also impair the

efficiency of exclusive breastfeeding. Past studies have suggested that working mothers who breastfeed have trouble maintaining exclusive breastfeeding due to their hectic schedules and inability to bring their babies to work. Moreover, if the household does not have a maid, the duty of being a housewife exacerbates this problem as mothers would become too exhausted to breastfeed their children after doing chores (Ejie et al., 2021; Hendaus et al., 2018).

In this study, 52 people reported experiencing severe stress. Previous research has shown that COVID-19 harms the mental health of breastfeeding mothers. Breastfeeding women can face sadness and anxiety symptoms in addition to stress (Ceulemans et al., 2020). Stress on breastfeeding mothers will affect the quality of breastfeeding if it is not recognized and managed (Gila-Díaz et al., 2020).

Furthermore, the findings of this study show that there is a correlation between breastfeeding mothers' stress with the frequency of breastfeeding and the volume of breastmilk they produce. In comparison to sociocultural influences, employment, and family, breastfeeding women's psychological aspects have the greatest influence on breastfeeding patterns. Psychological factors (stress) have been shown in various nations to shorten the duration of breastfeeding (Gila-Díaz et al., 2020; Shiraishi et al., 2020). According to this study, mothers who are under a lot of stress have a greater risk of breastfeeding <8 times/day and producing breastmilk of <100 cc (average per day; three times expressing breastmilk). Breastfeeding frequency has been proven to be negatively affected by stress (Foligno et al., 2020). Although prior research has demonstrated that stress has no direct effect on decreasing breastmilk volume (Shiraishi et al., 2020), the hormone cortisol rises in response to stress in the mother. Cortisol levels under mild stress will aid the mother to adapt to and even resolve the stressor. The excessive rise of cortisol levels during moderate-to-severe stress interferes with the normal functioning of the hypothalamic-pituitary-adrenal (HPA) axis. This dysfunction will make the mother more vulnerable to physical disease and increase her risk of developing more serious mental illnesses. This will consequently jeopardize the mother's dedication to breastfeeding. Moreover, high cortisol levels in stressed nursing mothers will cause the cortisol levels in their infants to also rise (Spratt et al., 2016).

Previous research has shown that mothers who are committed to breastfeeding might lessen their stress levels (Krol & Grossmann, 2018; Mizuhata et al., 2020). The level of oxytocin in the mother's blood rises after she breastfeeds. Oxytocin is responsible for limiting the release of cortisol, which means that when a mother is breastfeeding, cortisol, as well as the mother's stress, is managed, and the amount of cortisol in the baby is reduced (Shiraishi et al., 2020). As a result, stress management in breastfeeding mothers is a critical action that needs to be conducted by mothers, families, and healthcare providers. This is because breastfeeding support increases the confidence of breastfeeding mothers and has a positive impact on achieving exclusive breastfeeding (Kartikasari et al., 2020).

The limitation of this research is this study used the same model of standardized manual breast pump, but various pumping methods were used; some only used the manual breast pump, while others also combined technique by hand. This could have an effect on the overall volume, resulting in a relatively large value in its OR.

CONCLUSION AND RECOMMENDATION

This study presents the most recent information on the influence of the COVID-19 pandemic on breastfeeding mothers' stress levels, as well as the impact on breastfeeding frequency, and breastmilk volume. During the pandemic, our data revealed a relationship between stress levels and breastfeeding frequency and breastmilk volume. Breastfeeding mothers' elevated levels of stress, which continue throughout the pandemic, can limit breastfeeding frequency and milk supply. This cross-sectional study of breastfeeding mothers during the COVID-19 pandemic found that family and community support should still be provided to reduce psychological stress to achieve exclusive breastfeeding and improve the well-being of breastfeeding mothers.

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ORIGINAL ARTICLE

THE PERSPECTIVES OF NURSES AND HIV-POSITIVE WOMEN ON A SELECTED MODEL OF PREGNANCY DECISION-MAKING PROCESSES IN NORTHEAST THAILAND

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ABSTRACT

Many women living with HIV intend to become pregnant. This is especially true for women who have received ARV treatment for a certain period. The purpose of this study was to explore the perspectives of nurses and Thai pregnant women living with HIV on pregnancy decision-making processes. This is a descriptive and qualitative study. Small group discussions were conducted with five nurses working with HIV-positive women and in-depth interviews were conducted with five Thai HIV-positive pregnant women. A model of the pregnancy decision-making process was provided to participants for the discussion. The nurses' and women's perspectives on the model can be divided into two themes: 1) The perspective of the selected model and its five sub-themes, namely: 1.1) How the substantive model reflects the pregnancy decision-making process; 1.2) Complexity; 1.3) Usability; 1.4) Strength; 1.5) Weaknesses, in addition to the perspectives of women and nurses on the application of the model. The model reflects the real-life experiences and decision-making processes of Thai women with HIV, where each category shows the trail of the women's decision-making process. However, the model is complex and requires substantial explanation. From the participant's point of view, the model reflects the barriers to the practices and services provided.

Keywords: Decision-making; developing model; pregnancy with HIV; midwives

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INTRODUCTION

Several studies gathered internationally and in Thailand have shown that many women living with HIV express the need to have a child and intend to get pregnant (Cater et al., 2013; Firth et al., 2012; Hernando et al., 2014; Huntington et al., 2013; Kownaklai & Hayter, 2022; Loutfy et al., 2012; Liamputtong & Haritavorn, 2014a). This is especially true for women who, after receiving ARV medication for a period of time, experienced improved health and returned to feeling strong as they were before infected (Rujkorakarn & Kownaklai, 2010). This has led these women to think about having sexual intimacy and intercourse with partner and to have children (Carter & Kraft, 2013; Kownaklai & Hayter, 2022).

International studies have discovered several reasons why women living with HIV intend to have a child. These reasons include them believing that their infection rate is very low, trusting anti-virus medication and medical advancement, as well as trusting their healthcare provider's information and guidance on managing their being healthy (Demissie et al., 2014; Gruskin, 2012: Rujumba et al., 2013; Thurling & Harris, 2012). Other reasons include the need to be a mother and that after becoming pregnant they could not have an abortion since it is against their religious beliefs. However, the most significant factor was shown to be the desire to have a child with a partner (Demissie et al., 2014; Hernando et al., 2014; Liamputtong & Haritavorn, 2014a). The research conducted in Thailand, it was explored that women living with HIV believe that having a child is like a blessing, they represent succession of family task, and the most significant factor was the partner's desire for a child (Kownaklai & Hayter, 2022: Liamputtong & Haritavorn,2014a). Surprisingly, many women became pregnant by hiding their HIV status from a partner

because they feared that their partner would leave them (Kownaklai et al., 2022: Liamputtong & Haritavorn, 2014b: Ross et al., 2012).

In the Thai context, currently, Thailand's standard of care for pregnant women with HIV has considerably improved. The Ministry of Health announced a policy and guidelines to prevent mother-to-child transmission for healthcare professionals across the country. These guidelines consist of providing pre-counseling and post-counseling about the HIV test for women and couple, and keeping the results strictly confidential. Pregnant women who have positive HIV results will be treated with potent ART following the standard guidelines. Infants who born to mothers with HIV positive will receive ART and artificial formula milk and will also receive a blood test for HIV infection at the age of 6, 12 and 18 months after birth. Furthermore, women, infants, and partners who contracted with HIV will receive antiretroviral treatment according to their progression of CD4 count, viral load or symptoms, as well as monitoring of their health, taking combination of ART and continuous follow-ups (Anamai, 2020; Department of Health, 2020).

In Thailand, there is no law to enforce an HIV-positive man or woman to disclose their HIV status to their partner(s) before marriage or having a child. This is unless it is related to medication/treatment or other reasons and after permission is granted from the person living with HIV. Thai pregnant women are recommended to the hospital and ANC to confirm their pregnancy and receive antenatal care. At the ANC, women will undergo an HIV screening. Once their HIV status is confirmed by staff members, they would be advised to have their partners take an HIV test. These clinic visits and advice are signals for these women to tell their partners about their HIV status– either themselves or with the support of nurses in the clinic. However, this advice is provided as a recommendation– there is no obligation for them to do so.

The authors of this study generated a pregnancy decision model in 2018 to understand how Thai women make their pregnancy decisions concerning their HIV-positive status (Kownaklai et al., 2018). This substantive model consists of six categories of factors; category 1) concealing HIV status from the partner; category 2) desire to have a child; category 3) becoming pregnant; category 4) keeping or terminating a pregnancy; category 5) accepting a decision, and category 6) adapting to a decision. The original study is found that the main concerns of women living with HIV in deciding to have a child are balancing fear as well as concealing their HIV status and the information that they have in each decision-making step. Based on the research findings, a unique process of decision-making that is related to personal and Thai social beliefs was determined.

Recommendation from this study, suggests that healthcare professional should pay greater attention to counseling women living with HIV and their partners by giving sufficient contraceptive information to prevent unplanned or unwanted pregnancies, to support and guide the women who want and plan for pregnancy in advance of this happening, and to help women deal with HIV disclosure issues related to morality and the rights of the couples. Moreover, respect and support must be provided to women living with HIV regarding their right to have a child if they choose to do so. As a result, the view of stakeholders such as nurses, midwives, and other health care professionals on this model and how it can assist them is an important topic to research.

METHOD

Study design

This qualitative study was developed from the first author's Ph. D. program which generated a substantive model on "the pregnancy decision-making processes in Thai pregnant women living with HIV". This study's main purpose was to extend this work by seeking to validate and develop the model using the perspectives of ante-natal professionals.

Research aim and question

The study aimed to explore the perspective of nurses on the model of pregnancy decision-making processes in Thai pregnant women living with HIV. The research question was how do nurses and women critique a decision-making processes model of Thai pregnant women living with HIV?

Design

Descriptive qualitative research was used to observe and engage with information-rich Thai pregnant women who are living with HIV and their nurses. They were asked to share their experiences and views about the decision-making processes among HIV-positive pregnant women and how to service them (Creswell, 2007; 2009). This type of descriptive qualitative research captured information from 10 participants as they reflected on their experiences and perceptions of a phenomenon within a Thai context.

Setting and participants

The study occurred in the antenatal care and counseling unit of a tertiary hospital in northeast Thailand from August to December 2021. The inclusion criteria to participate in the study were pregnant women who were (1) aged ≥ 18 years and considered to contract HIV before becoming pregnant, and (2) received ANC and counseling services at the study hospital at all gestational ages, (3) as well as nurse-midwives who provided service care for HIV-positive pregnant women in ANC and counseling services at the study hospital.
Purposive sampling was used to recruit participants for the study from nurse-midwives and HIV-positive women at antenatal care who met the inclusion criteria. A total of 10 participants, 5 HIV-positive pregnant women and 5 of their nurses, were recruited and was judged to reach data saturation.

Data collection

1. A total of 10 key informants were included in this study (five nurses and five HIV-positive pregnant women). The informants were interviewed, whereby data from the nurses were gathered from two small group discussions, and face-to-face in-depth interviews were conducted with the HIV-positive pregnant women.

2. A substantive model "Pregnancy decision-making process in Thai women living with HIV" (see Figure 1) was selected. The model consisted of six categories: 1) concealing their HIV-positive status from their husband; 2) their desire to have a child; 3) becoming pregnant; 4) keeping or terminating a pregnancy; 5) accepting a decision, and 6) adapting to a decision. These categories were delivered to the participants for them to share their opinion on them.

3. A flexible interview schedule was implemented. Each interview was recorded and transcribed and took approximately 45–60 minutes. The content and structure of the initial semi-structured interview guideline were developed by three experts in obstetrics and nurse-midwifery (a hospital obstetrician, an antenatal care unit nurse-midwife, and a nurse-midwife lecturer). Field notes were also written following each interview to document the researcher's ideas

(JK). These served as memos and noted significant body language and activities of the interviews.

Trustworthiness in qualitative research
The authors have advocated two elements, triangulation and member checking (Lincoln and Guba (1985:300) to strengthen trustworthiness in this qualitative study.

Triangulation
By using different sources (women, nurses, and midwives) and methods (small group discussion, in-depth interview, and observation in the setting), the investigator (JK) rechecked the contextual validation of the collected data (Lincoln & Guba, 1985; Guba & Lincoln, 1989).

Member checking
As a quality marker, one of the researchers (JK) returned to the field to meet with three participants and shared this research's findings - they confirmed the findings and provided suggestions. MH also provided critical advice in the development of the grounded theory and was involved in the writing and critical revisions of the manuscripts.

Researcher's roles and experience
JK, the first author, has been working with people and women of reproductive age living with HIV in the Northeastern region of Thailand for 10 years. JK has considerable experience in providing services in antenatal care (ANC), labor room (LR), and the postpartum period (PP). Additionally, JK is a researcher who has studied and published research papers related to pregnancy decision-making with HIV/AIDS in Thailand. Therefore, in this study, JK led the data collection, analysis, and manuscript development.

MH, the co-author, is a professor of nursing and sexual health. MH was involved in the conception and design of the study, cross-checked the data analysis, and was involved in the writing and critical revisions of the manuscript.

Data saturation
Bryant and Charmaz (2007) described that researchers would know when they have reached saturation when they hear nothing new from the data and when the categories are robust and well supported by the data. After interviewing 10 participants, the researchers were satisfied with the information collected and ceased data collection as it was clear that the categories developed were strong and well supported by the data.

Data Analysis
Thematic analysis (Braun and Clark, 2006; Vaismoradi et al., 2013) was used to analyze the collected data. The analysis was divided into six steps; 1) familiarization; reading and re-reading the transcripts, 2) coding; coding interesting data concerning the research question, 3) searching for themes; collating and gathering codes into themes, 4) reviewing themes; combining, refining, separating, or discarding entire codes, 5) defining and naming themes; defining and refining each theme and, 6) writing up the report; finally, reporting of analysis into 2 themes and 5 sub-themes.

Ethical consideration
The study was approved by the Mahasarakham University Ethics Committee for research involving human subjects (#074-377/2021). Informed consent was obtained from the participants.

RESULTS

The socio-demographic characteristics of the participants are shown in Table 1

Table 1. Participants' socio demographic characteristics n = 10

Characteristic	Number	
	Nurse-midwives	Women
Age (year)		
< 20	-	1
20-30	-	3
31-40	4	1
41-50	1	-
51-60	-	-
Religion		
Buddhist	5	5
Marital status		
Single	1	-
Married	4	5
Divorced	-	-
Widowed	-	-
Single mother	-	-
Education level		
Primary	-	-
Secondary	-	5
Vocational college	-	-
Bachelor	4	-
Master	1	-
Occupation (year)		
1-5	-	3
6-10	-	2
11-15	2	-
16-20	1	-
21-25	1	-
26-30	1	-
Duration of being HIV-positive (year)	-	4
1-5	-	1
6-10	-	-
11-15	-	-

After five HIV-positive women and five nurses and midwives were interviewed, the selected model was divided into two themes: 1) Perspective on the selected model, which contains five sub-themes, 1.1) A substantive model that reflects the pregnancy decision-making process; 1.2) Complexity; 1.3) Usefulness; 1.4) Strength; 1.5) Weakness; and 2) What is the matter? The perspective of women and nurses regarding the model's practice and services (see Table 2).

Theme 1. Perspective on the selected model

Figure 1 was provided to nurses, midwives, and pregnant women to discuss.

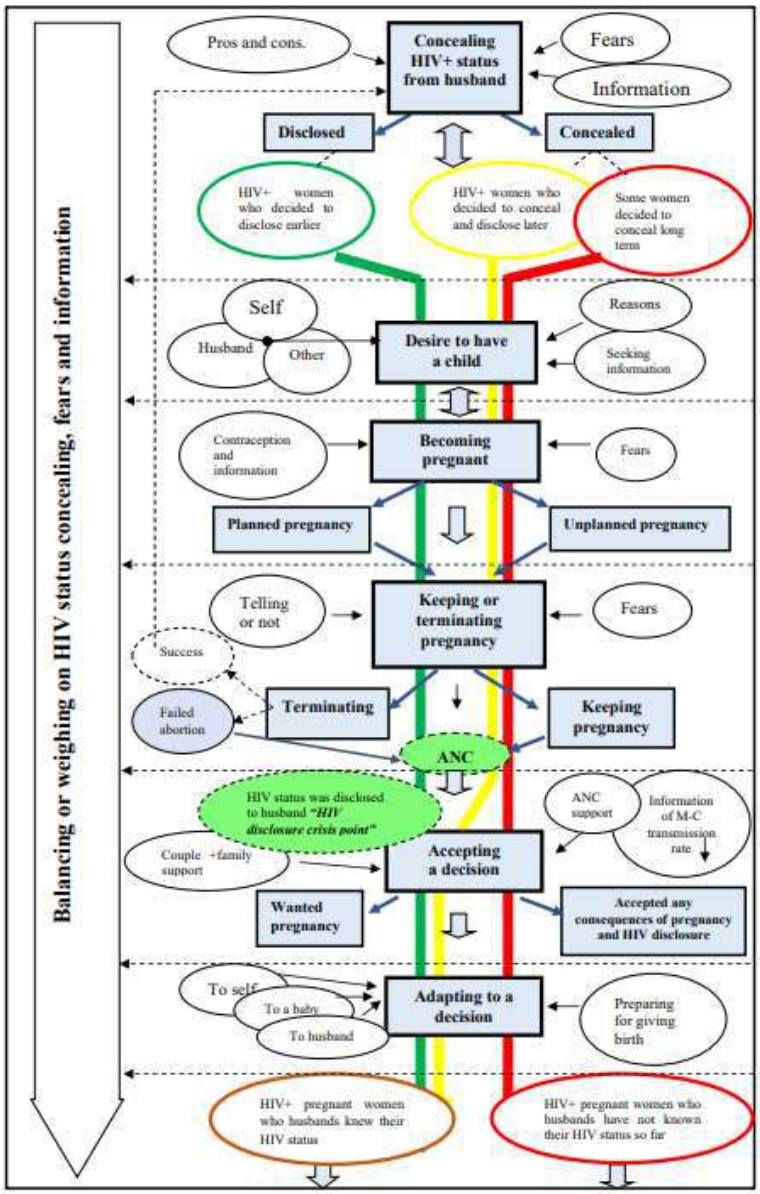

Figure 1: A substantive model developed by Kownaklai 2018

A summary of the perspectives of nurse-midwives and women based on the substantive model regarding the pregnancy decision-making process is shown in Table 2 below.

Table 2. The perspectives of nurse-midwives and women based on the substantive model regarding the pregnancy decision-making process

Sub-themes	Women's perspective	Nurses' perspective
A substantive model that reflects the pregnancy decision-making process	– They agreed on how the model reflects the experiences and decision-making processes of women. – There are options in each category that shows the footprint of each woman's decision; each category has two options. For example, concealing the infection from the partner has both disclosing and concealing options. – These options allow each woman to describe the path they took in reality.	– It is interesting at first, but it is quite difficult to follow because of its complexity. However, after the researcher explained the model, the nurses felt that the model was accurate and reasonable. – It is good to have three colors to divide the paths of the three groups of women.
Complexity	There were too many details and it was difficult to follow. The women would swipe to only look for	Complex and requires somebody to explain some points.

Sub-themes	Women's perspective	Nurses' perspective
	their own decision rather than look at the whole diagram.	
Usefulness	– Useful and can be used in practice. – Reflects the real life of the sample.	It makes nurses understand the perspectives and experiences of women more. The model helped identify how many issues were missed. The nurses agreed that the model is useful and can be used in practice with HIV-positive mothers and children.
Strength	– Matches the women's real experiences, as they agreed with the model shown.	Reflects the real-life experiences of the participants in detail.
Weakness	Difficult to follow.	Due to its complexity, it required further explanation.

Theme 2. What is the matter? The perspective of nurses and women regarding the models' practice and services

The perspective of women regarding the model's practice and services

All pregnant women stated that some healthcare providers showed some form of discrimination against HIV-infected people. Despite being impressed with the care and services of the staff of this hospital, the women wanted the nurses to add the following services:

1. To take the time to explain the treatment, medicine, and prevention of infection methods from mother to child.
2. Have nurses in the antenatal care room provide a private room for pregnancy examination. This is because, at the present ANC, the services and explanations for HIV-positive and HIV-negative pregnant women are conducted in the same room. Therefore, sometimes unrelated people may hear conversations about women's infections during the service because the examination beds are quite close together. Thus, the women suggest that the hospital should have 2-3 private rooms for counseling.
3. During the postpartum period service, women would like to have a service to deliver formula milk to their homes instead of coming to the hospital to collect it. Currently, Thailand still has a policy for infants born to HIV-infected mothers to drink formula milk instead of breastmilk. Therefore, these women must come to the hospital every *3* months to collect the formula milk for their infants. According to the respondents, going to the hospital often wastes time and travel expenses for the women and family members.

The perspective of nurse-midwives regarding the model's practice and services

Nurse-midwives at ANC

From the nurses' perspective, women receiving antenatal care services, when receiving HIV-positive results from lab 1 and lab 2, tended to hide their circumstances and HIV status, especially from their partners. According to the nurses, "Most of the time, women will tell their partners themselves." Nurses are responsible for pointing out the pros and cons of informing their partners and M-C (mother-to-child) transmission. This is because Thailand's policy has given women the right to choose whether they wish to disclose this information to their sexual partners or not.

The barriers to action

Nurses or midwives in the ANC indicated that some hospital policies breach women's confidentiality. For example, this is seen in the labeling of HIV-positive in the mother's handbook (Pink book) as well as sending the patient's relatives to collect their outpatient home medicines.

As part of Thailand's routine care and policy, the nurse or doctor would write the word "UP" (stands for Universal Precaution) at the top of the mother's handbook when they receive service at the hospital. This allows for the unintentional exposure of the women's HIV status to close relatives who are health care providers (all care providers in Thailand know what UP stands for).

> *"A woman once asked a nurse not to write the word UP (universal precaution) in the pink mother handbook for fear that others would find out, especially officials or relatives who know this abbreviation", according to the policy of the hospital they still can't do, they must write it to communicate with other staff to take care or caution"* (small group discussion, nurse group 1).

Moreover, allowing relatives to collect the patient's medicines also allows for some women's HIV status to be exposed.

> *"Most of the time, the secret is broken when the baby admitted into the ward is a sick newborn, because all children born to HIV-infected mothers are required to receive the AZT syrup. A relative is required to collect the medication from the pharmacist and medicine rooms. At this point, the relatives will see what medicine the child has received and know it's AZT"* (small group discussion, nurse group 1).

Another difficult and complex barrier is the unstoppable concealing cycle. All nurses at ANC confirmed that when these women conceal their HIV status from their partners, it would cause a new problem in a new cycle when their partners discover the truth.

> *"When women's HIV status is in the red (exposed) and their partner finds out their HIV status. Some men will leave the HIV-positive women. So, to survive, some women often have new partners and want to have another child. This will start a new cycle…"* (small group discussion, nurse group 1).

> *"We won't stop women to have a new partner, but we can protect the transmission from mother to child. Most nurse-midwives and obstetrics will recommend a permanent vasectomy for the women's partner because in the next pregnancy, they may not be so lucky again…"* (small group discussion, nurse group 1).

Nurses at the counseling clinic

The barriers to action

In this study, most nurses highlighted the importance of having a "premarital clinic" for premarital counseling. It is very important for providing advice on preventing the sexual

transmission of infectious diseases to the sexual partner and fetus. Sadly, women would get infected by their sexual partners who are unaware of their HIV status or those working in a sex trade occupation are at risk of getting infected. These barriers are supported by statements from the small group discussion, nurse group 2, as follows:

Nurses gave the opinion that premarital blood examination in Thailand is difficult to access, is a passive service, is not free, and lacks promotion to new couples. Therefore, to overcome such barriers, these services should be provided for free for voluntary couples for premarital counseling and examination.

> *"The barrier to service is the pre-marriage blood test... It is often costly and there is less publicity around it, so people pay less attention to it. These blood tests should be available for free to do before marriage or before having children"*

> *"…it is difficult to access premarital services, such as a pre-marital blood test. These types of services are given by the obstetrics clinic. Then, when the clients want to take an STD blood test and treatment, they will have to go to another medical department service since there is no STD clinic at the hospital. There are no doctors and nurses who will come to work separately here due to the heavy workload in other areas. So, there it is very not convenient for clients to wait for every service and visit many clinics just to take a premarital blood exam…"*

> *"The system is too passive, there is a lack of proactive service. The prevention of AIDS problems must be more proactive. Because when the problem comes, it is difficult and complicated to solve."*

> *"In my opinion, another barrier is the law. Our current law does not favor discordant couple counseling because this law allows one side to conceal their HIV-positive result from his or her partner. Yes, I agree that he or she should not be forced to disclose this sensitive information to others. But we should consider both points of view, his or her partner should have the right to know such information and should have the right to protect themselves too. If there is a law or act to disclose the necessary information to the partner, it will be easier for our staff to work with and have a good preparation step to deal with it"* (nurse A at the counseling clinic).

> *"I want women to open up to their partners … they don't need to tell everyone around the world but should tell their partner"… to protect themselves and their partner from the transmission and get the treatment together if they stick together, if it doesn't stick together, it's fine. You know? HIV and disclosure consulting is very difficult and requires a lot of energy from counselors because each person's life is different, it is very complex for our patients…"* (nurse B at the counseling clinic).

DISCUSSION

This study on Thai women living with HIV highlights the way that they still desire to have a child – which is also seen elsewhere in the previous literature (Hernando et al., 2014; Huntington et al., 2013: Moseholm et al., 2022). However, the severity of stigmatization in Thai society is still widespread at the family and community level, including among health service staff, as stated in other contexts and studies (Cuca et al., 2012; Kavanaugh et al., 2013; Kownaklai, 2022; Nattabi et al., 2012). In contrast, some studies indicated that some women have positive attitudes to healthcare providers and services regarding their HIV status. For example, Hanh et al. (2009) described the role of healthcare professional in supporting HIV-positive pregnant women and found that most women believed they were being supported and encouraged by healthcare providers. Similarly, Hardon et al. (2012) found that most pregnant women living with HIV (85%) in Africa felt that health providers and counselors respected their desire for confidentiality by protecting their HIV results. Moreover, Moseholm et al. (2022) indicated that HIV-positive women's interactions with healthcare providers and community influence their experiences in both positive and negative ways.

According to the opinions of the participants in this study, the selected model is quite complicated to follow. This contrasts with the view of Charmaz who proposes that a constructivist grounded model must be not too difficult to follow and understand (Charmaz, 2006). However, a grounded theory should also be comprehensive. Therefore, the current model – with its explanation – should be made to be an accurate depiction of the decision-making process of HIV-positive Thai pregnant women.

In this study, the point of view of nurses and women was that they understood why HIV-positive women may not want to share their HIV status with anyone because of their fear of stigma and its consequences. Based on the model, women should not be forced to disclose their HIV status but should be motivated to share the information by themselves with nursing support.

Nowadays, with the rapid development of HIV/AIDS treatments, especially ART, the lives and health of people who are living with HIV/AIDS have been significantly improved. However, stigma and discrimination related to living with AIDS have not decreased as much as would have been expected. HIV/AIDS-related stigma and discrimination exist among people living with HIV themselves, in families, communities, countries, and worldwide. The WHO cites that fear of stigma and discrimination are the main reasons why people are reluctant to get tested, conceal their HIV status, and take antiretroviral drugs (AIDS Education & Research Trust, 2014; Ibrahim et al., 2019; Kownaklai et al., 2022). To reduce the level of stigma and discrimination in local and international societies, people need to understand and respect other humans and their sexual rights. This must also be supported by governments and international organizations, healthcare providers, communities, and family.

The needs and choices of reproductive women who living with HIV have been changed in recent decades. Deciding to become pregnant for those women is an unavoidable situation that healthcare providers must better concern respond to by providing appropriate choices and services, managing risk among couples and infants, and respecting these women's decision to become pregnant. The challenge in taking care of reproductive-age women who are living with HIV, despite the current efficiency of treatment, is in managing more complex problems related to personal and social context such as women who live with HIV becoming pregnant, their rights and choices, and addressing the associated stigma and discrimination.

Many studies also suggest that the social-cultural context within which women living with HIV of reproductive age live and how that affects pregnancy decisions should be better understood and treated by health professionals who hope to improve their quality of life and reproductive choices (Firth et

al., 2012: Kownaklai et al., 2022; Liamputtong & Haritavorn, 2014b: Moseholm et al., 2022; Nattabi et.al., 2012).

CONCLUSION AND RECOMMENDATION

The nurses' and women's views on the model were positive. The respondents agreed that the model reflects the real-life aspects of HIV-positive women's pregnancy decisions. It also reflected the problems of the service system for HIV-infected women of reproductive age. Although they are aware of the process, women and healthcare providers still face challenges and obstacles in providing and serving women, partners, and families in the Thai context. These obstacles and problems are from the operational level to the policy level, which is complex and difficult to solve, but everyone involved in this study is hopeful that this research will improve the current conditions. Based on this study's findings, we recommend the following actions for practice, policymakers, and further research:

For practice: integrate multidisciplinary marital counseling with STD clinics as a one-stop service for better proactive service for couples, women, and families in Thailand.

For policy: well-timed law in Thailand should be considered to favor discordant couple counseling and allow one side who contracted HIV to declare their HIV status to his or her sex partner.

For further research: The model should be tested by a quantitative method with other health care professionals such as doctors. Social and well-being service members should also be included to explore their views.

This study was written based on the perspective of pregnant women and counseling nurses and midwives at the ANC. This may limit its generalizability to other settings such as the labor room, postpartum period, and other cultures and contexts.

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CONFLICT OF INTEREST

None

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ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN WAIST CIRCUMFERENCE AND WAIST-TO-HIP RATIO WITH RISK OF CARDIOVASCULAR DISEASE IN INDONESIA

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ABSTRACT

Cardiovascular disease (CVD) is one of the non-communicable diseases which is the mayor leading cause of death in the world. One of the modifiable factors of cardiovascular disease is central obesity. Assessment of central obesity status was carried out by measuring waist circumference (WC) and waist-to-hip ratio (WHR). This study aimed to determine the relationship between WC and WHR with the risk of cardiovascular disease. This was an observational study with a cross-sectional design. There were 106 respondents selected using a convenience sampling technique. In this study, the risk of cardiovascular disease was calculated using the Jakarta Cardiovascular Score. The Spearman Rho's was used as bivariate analysis for this study. The findings showed that WC and the risk of cardiovascular disease indicates a significant relationship with a moderate correlation ($p < 0.001$ and $r = 0.467$). Meanwhile, there was a significant relationship between WHR and the risk of cardiovascular disease ($p < 0.001$ and $r = 0.385$). Nurse may use this study result as an evidence to develop a preventive central obesity program.

Keywords: Cardiovascular risk; waist circumference; waist-to-hip ratio

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INTRODUCTION

Cardiovascular disease (CVD) is one of the non-communicable diseases that is the most common cause of death in the world. In 2019, 16% of the total deaths worldwide or 8.9 million people were caused by coronary heart disease (World Health Organization, 2021). According to RISKESDAS 2018, the prevalence of heart disease in Indonesia was 1,017,290 case or 1.5% of the total population (Ministry of Health Republik of Indonesia, 2018). One of the risk factors for cardiovascular disease is obesity, especially central obesity (Setiadi & Halim, 2018). Central obesity cases in Indonesia always increase from 2007 to 2018 based on RISKESDAS 2018 (Ministry of Health Republik of Indonesia, 2018). Obesity is associated with complex pathophysiology. Increased availability of palatable foods and beverages, containing rich sugar or fat is supposed to be major determinant of increasing rates of obesity worldwide (Mullee et al., 2019)

Central obesity, also known as abdominal obesity, is different from general obesity because of excessive abdominal fat accumulation around the stomach and abdomen which may occur in both obese and non-obese patients (Wien, 2022). The proportion of habitual consumption of sweet foods, sweet drinks and fatty/cholesterol/fried foods more than 1 time per day in Pekalongan City is quite high compared to other areas in Central Java (Health Departement of Central Java, 2018). This habit can certainly increase the risk of obesity and cardiovascular disease in the future. Especially with the increase in obesity cases in Pekalongan City which is increased significantly in 2020 (Health Departement of Pekalongan City, 2021).

There are several anthropometric measurements of central obesity are waist circumference (WC), waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR). Waist circumference provide an overview of body fat stores, especially in the abdomen. These fats are dangerous because their proximity to the liver increases the production of free fatty acids and decreases the effectiveness of insulin (Par'i, Wiyono, & Harjatmo, 2017). In addition, fat deposits in the abdominal area have an effect on decreasing adiponectin levels (anti-inflammatory adiposity cells) and increasing pro-inflammatory cytokines which continue in metabolic complications such as cardiovascular disease (Widjaja,

Prihaningtyas, Hanindita, & Irawan, 2020). Waist circumference of more than 102 cm in men and more than 88 in women gives an illustration of the amount of fat that accumulates in the abdominal area and has more risk for diseases such as diabetes, heart disease and others (Par'i et al., 2017).

The waist-to-hip ratio (WHR) is the result of dividing the waist circumference measured at the smallest part of the abdomen horizontally with the hip circumference measured around the largest part of the buttocks. WHR values more than 0.9 for men and 0.8 for women are associated with apple shaped obesity. This body shape indicates more abdominal fat accumulation and has a higher risk of cardiovascular disease (Sudargo, Freitag, Rosiyani, & Kusmayanti, 2016).

There are inconsistencies between some previous studies regarding the correlation between waist circumference and waist-to-hip ratio with the risk of cardiovascular disease. A previous study found that waist circumference and waist-to-hip ratio have a relationship with the risk of cardiovascular disease as well as the opposite side (Bi et al., 2016; Hassan et al., 2021; Markova, Boyanov, Bakalov, & Tsakova, 2020; Rompas, Panda, & Rampengan, 2013). However, several studies revealed that the waist-to-hip ratio is stronger in determining the risk of cardiovascular disease than waist circumference and other antropometric measure (Hassan et al., 2021; Peters, Bots, & Woodward, 2018).

This study is important because central obesity is a one of modifiable risk factor for cardiovascular disease and the increasing number of obese people in Indonesia. It is necessary to conduct a study aimed to measure obesity related to cardiovascular disease risk as a preventive measure by screening the risk of cardiovascular disease. Based on previous data on differences in some studies regarding the relationship between anthropometric indicators of central obesity and the risk of cardiovascular disease and the importance of prevention by screening risk factors.

METHOD

Study Design

This is an analytic observational study with a cross sectional design conducted in the working area of the Klego Public Health Center, Pekalongan City.

Sample

A total of 106 samples were selected using a convenience sampling technique. The criteria for inclusion in this study were 25-64 years old and willing to participate in this study.

The exclusion criteria applied were individuals with a history of angina, stroke, and other heart disease, had ascites, were pregnant, could not stand properly or had to be assisted by other people or equipment and refused to participate in this study.

Instrument

The risk of cardiovascular disease in this study was measured using the Jakarta Cardiovascular Score designed by Kusmana (2002). The Jakarta Cardiovascular Score has a sensitivity of 77.9%, a specificity of 90%, a positive predictive value of 92.2% and a negative predictive value of 72.8% (Kusmana, 2002). The Jakarta Cardiovascular Score has 7 indicators that are used to assess the risk of cardiovascular disease with their scores. These 7 indicators include age, gender, blood pressure, body mass index (BMI), smoking history, history of diabetes, and level of physical activity. After the data is collected on each indicator, the Jakarta Cardiovascular Score is summed with the categories of total scores, namely low risk (score (-7) – 1), moderate risk (score 2-4) and high risk (score ≥5).

Waist circumference (WC) was measured using a metline at the smallest or midway between the lower costal margin and the iliac crest without pressing the skin (Rinaldo & Gualdi-russo, 2015). Waist circumference was categorize into normal (WC≤92 cm for men and ≤80 cm for women), increased risk (WC>92 cm for men and WC>80 cm for women), and high risk (WC > 102 cm for men and >88 for women) (Par'i et al., 2017).

The waist-to-hip ratio (WHR) measurement used the formula for dividing waist circumference by hip circumference. Hip circumference is measured using a metline around the maximum buttocks and make sure it doesn't press the skin (Rinaldo & Gualdi-russo, 2015). WHR was categorized into normal (WHR≤0.9 for men and ≤0.8 for women) and elevated (WHR >0.9 for men and >0.8 for women) (Par'i et al., 2017).

Data Collection

Data collection was carried out on April 4-16, 2022 in 2 villages which were included in the area of the Klego Public Health Center in Pekalongan City. They were Klego Village and Kauman Village. Data collection was carried out once by researchers and enumerators. Before taking measurements, the researcher explained the purpose and procedure of the study and asked for informed consent from the respondents orally and signed the written informed consent after respondent agreed to participate in this study.

Data Analysis

SPSS version 26 was used for statistical analysis, both univariate and bivariate analysis. Univariate analysis was presented by frequency and percentage of respondents' characteristics. Spearman Rho's test was conducted to determine the relationship between two variables in this study.

Ethical Consideration

This research has obtained ethical agreement from the ethics committee of the Health Polytechnic of the Ministry of Health, Semarang No. 0653 /EA /KEPK /2022.

RESULTS

A total of 106 individuals were included in analyses. Table 1 shows about education level and occupation characteristic. The majority of respondents had high school education level. In this study, the highest percentage of respondents who work as housewives. This was because the proportion of women were higher than men.

Tabel 1. Characteristics of respondents by education and occupation

Characteristics	n	%
Education		
No education	4	3,8
Elementary School	22	20,8
Junior High School	25	23,6
High School	36	34,0
Vocational High School	3	2,8
Bachelor degree	15	14,1
Master degree	1	0,9
Occupation		
Unemployed	17	16,0
Housewife	30	28,3
Worker	20	18,9
Employed	13	12,3
Teacher	4	3,8
Self employed	22	20,7

Based on table 2, this study was dominated by women, which made up 70% of the total respondents. They were also more likely to have a high risk of cardiovascular disease. The 25-34, 45-49, and 55-59 age groups had the same frequency but the number of respondents who have a high risk of cardiovascular disease in these group age increased with age. Therefore, it can be concluded that increasing age could increase the risk of cardiovascular disease. Based on blood pressure, respondents with level 1 hypertension category began to increase in the number of respondents with a high risk of cardiovascular disease. Even more than half of the respondents in this category had a high level of risk. Likewise, in the category of level 2 and level 3 hypertension, both of them also had half the number of respondents who have a high level of risk. The smoking history, more than 90% of respondents stated that they had never smoked or had stopped smoking for more than 10 years. Based on table 2, the majority of respondents do not have a history of diabetes mellitus. Respondents in this category are more likely to have a low level of risk. The majority of respondents had a low level of weekly physical activity.

Tabel 2. Characteristics of respondent by CVD risk category

Risk Factor	CVD Risk			Total
	Low n (%)	Moderate n (%)	High n (%)	
Gender				
Female	22 (20.8)	19 (17.9)	34 (32,0)	75
Male	16 (15,1)	6 (5.7)	9 (8.5)	31
Age (year)				
25-34	16 (15.1)	1 (0,9)	0 (0,0)	17
35-39	11 (10,4)	1 (0,9)	0 (0,0)	12
40-44	7 (6,6)	2 (1,9)	1 (0,9)	10
45-49	4 (3,8)	8 (7,6)	5 (4,7)	17
50-54	0 (0,0)	8 (7,6)	7 (6,6)	15
55-59	0 (0,0)	4 (3,8)	13 (12.3)	17
60-64	0 (0,0)	1 (0,9)	17 (16.0)	18
Blodd Pressure (mmHg)*				
Normal	17 (16,0)	10 (9,4)	7 (6,6)	34
High Normal	12 (11,3)	4 (3,8)	4 (3,8)	20
Grade 1 Hypertension	5 (4,7)	8 (7,6)	16 (15,1)	29
Grade 2 Hypertension	2 (1,9)	2 (1,9)	12 (11,3)	16
Grade 3 Hypertension	2 (1,9)	1 (0,9)	4 (3,8)	7
Body Mass Index (BMI)				
13,79 – 25,99	27 (25.4)	17 (16.0)	20 (18.9)	64
26,00 – 29,99	9 (8.5)	6 (5.7)	15 (14.1)	30
30,00 – 35,58	2 (1,9)	2 (1,9)	8 (7.6)	12
Smoking				
Never	38 (35.9)	24 (22.6)	40 (37.8)	102
Ex-Smoker	0 (0,0)	0 (0,0)	0 (0,0)	0
Smoker	0 (0,0)	1 (0.9)	3 (2.8)	4
History of diabetes				
No	38 (35.9%)	24 (22.6%)	37 (34.9%)	99
Yes	0 (0,0%)	1 (0.9%)	6 (5,7%)	7
Physical activity levels				
Low	24 (22,6%)	17 (16,0%)	34 (32,1%)	75
Moderate	10 (9,5%)	7 (6,6%)	9 (8,5%)	26
High	4 (3,8%)	1 (0,9%)	0 (0,0%)	5

**Normal (<135/<85), High Normal (130-139/85-89), Grade 1 Hypertension (140-159/90-99), Grade 2 Hypertension (160-179/100-109), Grade 3 Hypertension (≥180/≥110)*

According to table 3, in this study the majority of female respondents had waist circumference in the high risk category and had elevated WHR.

Tabel 3. Characteristic WC and WHR of women and men

	Women (n=75)	Men (n=31)
Waist circumference		
Low risk	10 (9,4)	21 (19,8)
Increased risk	19 (17,9)	8 (7,6)
High risk	46 (43,4)	2 (1,9)
Waist-to-hip ratio		
Normal	6 (5,7)	20 (18,9)
elevated	69 (65,0)	11 (10,4)

Based on table 4, the majority of respondents had waist circumference in the high risk category also had a high level of cardiovascular disease risk. The bivariate analysis using the Spearman Rho test showed $p < 0.001$ and $r = 0.467$. Almost half of the respondents who had excess WHR category (women ≥ 0.8 and men ≥0.9) also had a high level of cardiovascular disease risk. The Spearman Rho's test showed $p<0.001$ and $r=0.385$.

Tabel 4. Correlation WC and WHR with CVD risk

	CVD Risk			Total	Sign.	r
	Low (n=38)	Moderate (n=25)	High (n=43)			
Waist circumference						
Low risk	18 (16,9%)	6 (5,7%)	7 (6,6%)	31		
Increased risk	13 (12,3%)	8 (7,5%)	6 (5,7%)	27		
High risk	7 (6,6%)	11 (10,4%)	30 (28,3%)	48		
Total				106	<0.001	0.457
Waist-to-hip ratio						
Normal	15 (14,2%)	6 (5,7%)	5 (4.7%)	26		
Elevated	23 (21,7%)	19 (17,9%)	38 (35,8%)	80		
Total				106	<0.001	0.385

DISCUSSION

Our study found 45.3% of respondents had a waist circumference in the high risk category (women > 88 cm and men > 102 cm) and 43.5% of them were women. This shows that the incidence of central obesity in women in this study is higher than men. The high incidence of obesity could be caused by the number of women respondents being more than male and the majority of women respondents working as housewives, where there were more low activities at home. This low physical activity also encourages an imbalance calorie intake and energy expenditure so that a lot of energy is accumulated as fat, resulting in obesity (Sudargo et al., 2016).

In this study, 28.3% of respondents that had a high risk category of waist circumference also had a high risk of cardiovascular disease. The bivariate analysis using the Spearman Rho test showed that there was a significant moderate correlation between waist circumference and the risk of cardiovascular disease. This was supported by Klisić et al. (2018) which reported that WC has a significant relationship $p<0.001$ with strength correlation ($r=0.470$) on the risk of cardiovascular disease calculated using the Reynolds Risk Score (RRS). Bi et al. (2016) also stated that waist circumference has a greater correlation than other anthropometric indicators (BMI, WHR, hip circumference, body adiposity index) to cardiovascular disease risk indicators. Another study conducted by Li, Zhu, & Wang (2022) regarding the risk of death from cardiovascular disease related to waist circumference and diabetes reported that an increase in waist circumference (≥94 cm) was associated with an increase in mortality from cardiovascular disease ($p<0.05$) and has a hazard ratio (HR) value of 2.65.

According to Sudargo et al. (2016), an increase in waist circumference is an indicator of central obesity. A large waist circumference indicates an accumulation of excess fat in the abdominal area, especially visceral fat. Visceral fat in the abdominal area is more dangerous because its proximity to the liver increases the production of free fatty acids and fat metabolism. In addition, fat deposits in the abdominal area have an effect on decreasing adiponectin levels (anti-inflammatory adiposity cells) and increasing pro-inflammatory cytokines which continue in metabolic complications such as cardiovascular disease (Widjaja et al., 2020).

Our study found that 35.8% of respondents with elevated WHR were in the category of a high level of cardiovascular disease risk. Supported by the results of bivariate statistical data processing, there was a weak correlation between WHR and the risk of cardiovascular disease that calculated using the Jakarta Cardiovascular Score. The results of our study are in line with research conducted by (Alifiya, Indrayana, & Josafat, 2017) which reported that WHR has a significant relationship with the risk of cardiovascular disease calculated using the Framingham Risk Score on the Lombok island population with a p-value of 0.001 and a coefficient correlation of 0.390. Rahayu & Maulina (2017) also showed the results of $p = 0.04$ ($P <0.05$) which means that there was a relationship between WHR and coronary heart disease (CHD) in CHD patients at Cut Meutia Hospital.

A high WHR indicates the presence of obesity with the android type. Where in android type obesity, there is more fat accumulation in the abdomen and less fat in the hip and thighs. This type has a higher risk of diseases related to sugar and fat metabolism such as diabetes mellitus, hypertension, and cardiovascular disease (Hermawan et al., 2020; Sudargo et al., 2016).

The measurement of hip circumference itself is an anthropometric measurement that is more specific to subcutaneous fat only. Waist circumference measures the presence of visceral fat and subcutaneous fat. Thus, combining waist circumference and hip circumference measurements in a ratio allows a more specific estimate of visceral fat. In addition, the impact of gluteofemoral subcutaneous fat which can be measured by the hip

circumference is believed to provide protection against the risk of cardiovascular disease by retaining free fatty acids and preventing an increase in lipid levels (Cameron, Magliano, & Söderberg, 2013). This was also explained by Frank, De Souza Santos, Palmer, & Clegg (2019) that reported there was a protective effect of gluteofemoral subcutaneous fat on the risk of cardiovascular disease and type 2 diabetes.

In our study, the strength of correlation of WHR was lower (r=0.385) than the strength of correlation of WC(r=0.467) with risk of cardiovascular disease. This is different from several other studies which state that the WHR is superior to other anthropometric measurements as in the study by Hassan et al. (2021) regarding the relationship between anthropometric measurements of obesity (BMI, WC, WHR and waist-to-height ratio) to cardiovascular risk stated that the measurement of WHR had a stronger relationship with the risk of cardiovascular disease than measurements of BMI and WHtR with an OR value of 2.39 (95% CI: 1.92-2.98). However Hassan et al. (2021) showed no significant relationship between WC and cardiovascular disease (p value=0.109). Peters et al., (2018) also stated that WHR correlated more strongly with the incidence of myocardial infarction than BMI and WC with an HR (hazard ratio) value of 1.49 in women and 1.36 in men. This correlation was 18% stronger as a predictor of myocardial infarction in women. compared to men, which is only 6%.

This study had several limitations, including the small number of research samples, not analyzed by gender and dominated by women, while in calculating the risk of cardiovascular disease using the Jakarta Cardiovascular Score, men had a higher score. So that in future research it is recommended to balance the proportion of men and women. In addition, this study only used 2 indicators of central obesity and only used indicators of obesity as a risk factor for cardiovascular disease.

CONCLUSION AND RECOMMENDATION

Our study showed that there was a significant relationship between waist circumference and waist-to-hip ratio with the risk of cardiovascular disease. The value of the coefficient correlation of waist circumference to the risk of cardiovascular disease is higher than the coefficient correlation of the ratio of waist to hip ratio. It is recommended to Indonesia Ministry of Health to add waist-to-hip ratio measurement as an indicator for health screening in order to make cardiovascular disease risk early detection.

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ORIGINAL ARTICLE

THE ONLINE GAMING BEHAVIOUR OF UNIVERSITY STUDENTS UNDERGOING SELF-QUARANTINE

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ABSTRACT

Self-quarantining is one of the coping mechanisms used during the pandemic. However, it can negatively affect the sufferer. Self-quarantine causes many students to play online games excessively. Understanding students' online game behavior during self-quarantine can help to prevent online game addiction and encourage positive self-quarantine activities. This study aims to investigate the online gaming experience during self-quarantine for university students who tested positive for COVID-19 during the pandemic. Phenomenological qualitative research was used. The study's sample consists of ten university students from Yogyakarta who tested positive for COVID-19 and played online games during self-quarantine. Purposeful sampling was utilized, and data were collected through semi-structured in-depth interviews. The Colaizi method was then used to analyze the data. The results indicated four themes: (1) the changes in online gaming behaviors before and after being tested positive for COVID-19; (2) the influencing factors on online gaming behavior before and during self-quarantine, (3) the impacts of parenting styles on online gaming behaviors, and (4) the impacts/consequences of online gaming behaviors. Overall, during self-quarantine, the students changed their behavior during online gaming, which was influenced by internal and external factors. They also became aware of the consequences of excessive online gaming.

Keywords: *COVID-19; online gaming behavior; self-quarantine; university students*

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INTRODUCTION

The coronavirus caused the COVID-19 pandemic, which impacted a vast geographical area. This disease affected many people and became a global health concern (Hastuti & Djanah, 2020). COVID-19 had a rapid transmission rate; as a result, Indonesia implemented self-quarantine for COVID-19 patients.

Self-quarantine was a measure taken to stop the spread of COVID-19. Self-quarantine typically requires the patient to stay home or at a designated location while monitoring their condition and maintaining a distance from others (Putri & Rahmah, 2020). Self-quarantine is often performed for 14 days, during which the patient is banned from interacting with others in person. Therefore, the patients used existing technological developments to study, work, and engage with others.

Online games are one of the internet's breakthroughs in the entertainment industry. Many individuals enjoy online gaming via the internet; consequently, it is no longer taboo for many people to play online games (Lutfiwati, 2018). However, due to the prevalence of online games, individuals can develop a dependency on them (Gewab et al., 2020). A study on online game visitors revealed that 10.15% of Indonesian teenagers were addicted to online games (Jap et al., 2013). Many kids who play video games do so to alleviate stress or pass the

time. However, online gaming without understanding when to rest or engage in other things might negatively affect gamers.

Online gaming addiction has detrimental psychological and emotional repercussions (Siregar, 2017). These issues are created when individuals use online games as an emotional coping mechanism and do not solve their problems (Gewab et al., 2020). Some teens also believe they can make many friends through media chat in-room games during online gaming (Piyeke et al., 2014).

Preliminary research on university students regarding their online gaming experience while undergoing self-quarantine revealed that several phenomena were strained due to having COVID-19 and being required to self-quarantine. University students infected with COVID-19 were restricted from leaving their homes, causing them to perform a majority of their activities at home. As a result, they preferred to spend their time relaxing and online gaming. Thus, it is crucial to understand university students' online gaming behavior during self-quarantine so that preventative steps can be taken to prevent online game addiction and positive self-quarantine activities can be designed. This study aims to investigate the online gaming behavior of COVID-19-positive university students during self-quarantine.

METHOD

Study design

A qualitative phenomenological method was used to investigate the university students' online gaming behavior during self-quarantine. The research was conducted in the special region of Yogyakarta between November 2021 and March 2022.

Participants

The participants who met the inclusion criteria were selected for this study, i.e., active university students in Yogyakarta who were undertaking self-quarantine, tested positive for COVID-19, and play online games for more than three hours each day. In-depth interviews guided by semi-structured interview rules were utilized for data collection. Data saturation was reached by the tenth respondent.

Data collection

In-depth interviews guided by semi-structured interview rules were utilized for data collection. The participants were interviewed individually for around 45-60 minutes. The researchers conducted the interviews themselves. The participants' responses were then transcribed verbatim to provide written data.

Data analysis

Data analysis was performed with the Colaizi method. We carefully reviewed the transcripts and extracted the most applicable statements for our data analysis. We obtained the meaning of statements from their significance. Next, we compiled the theme based on the identified meanings. Finally, after we organized the topics into a comprehensive narration, we returned to the respondents to validate our findings.

Trustworthiness

This study employed extension of observations, member checks, triangulation, and bracketing to conduct validity tests. Before collecting data, the researcher employed bracketing and separating the researcher's hypotheses from the respondents' responses/existing phenomena. The researchers also did a member check by having the respondents reexamine the interpretation notes. Investigator triangulation was employed in this investigation, in which two researchers created the coding and analytical judgments.

Ethical consideration

This research passed the ethics examination and was awarded certificate number 017/EC-KEPK FKIK UMY/I/2022 from the Health Research Ethics Commission of the Faculty of Medicine and Health Science of Universitas Muhammadiyah Yogyakarta.

RESULTS

Four themes were identified from the qualitative data analysis of in-depth interviews with 10 participants, as seen in Table 1.

Table 1. Matrix of themes

Theme	Sub-theme	Category
The changes in online gaming behaviors before and after being tested positive for COVID-19	Change in time spent online gaming	Online gaming time before self-quarantine
		Online gaming time during self-quarantine
	Perceptions of online gaming	Feeling lucky when online gaming with friends
	Changes in feelings toward online games	Emotions exhibited during online gaming before self-quarantine
		Emotions exhibited during online gaming during self-quarantine
	The changes in students' habits due to online gaming	Changes in physical habits
		Changes in spiritual habits
		Changes in study habits
Influencing factors on online gaming behavior prior to and during self-quarantine	Reasons to play internet games before self-quarantine	Friends and places to play online games
		The availability of facilities for online gaming
	Factors influencing the increased use of online games during self-quarantine	The places to play online games
		The availability of facilities for online gaming
		The huge amount of free time they had during self-quarantine
		How they spent it on online gaming

Theme	Sub-theme	Category
	Factors that contributed to the decreasing amount of online gaming time during self-quarantine	The physical and environmental conditions
The impacts of parenting styles on online gaming behaviors	Parents' indifference to the dangers of online gaming	Parents gave them the freedom to play online games
	Parents' concerns about the dangers of online gaming	Parents became angry when they played online games for a long period of time
The impacts/consequences of online gaming behaviors	Maladaptive responses during online gaming	Parents became angry when they played online games for a long period of time
	Students' indifference to the dangers of online gaming.	Responses when scolded by parents
	Perceptions of online games	Thought that online gaming excessively can cause addiction

Theme 1. The changes in online gaming behaviors before and after being tested positive for COVID-19

Theme 1 is subdivided into several subthemes based on the participant's responses: 1) the change in time spent online gaming; 2) the perceptions of online gaming; and 3) the changes in feelings toward online games; 4) and the changes in student behavior as a result of online gaming.

1) Change in the time spent online gaming

Online gaming time before self-quarantine

The interviews showed that the online gaming time of each participant was different. The participants revealed their shortest online gaming time and the longest online gaming times before self-quarantine and preferred parts of the day to play online games.

The following are the participants' statements about their shortest amount of online gaming time before self-quarantine:

> "It was about 6-7 hours, but mostly at least 6 hours, when I get bored." p1
> "The shortest time to play is, well, about 1-2 hours. Usually, I would play 2 matches in 1 hour but it could also be only 1 match. So, it's based on when the game is finished." p2
> "I would usually play for about 4 hours, but sometimes I get to play with kids, and it is so boring." p4
> "When I get bored and have a lot of assignments, I would spend about 4 hours. I play 2 matches that would take about an hour and then continue to play at night before I go to sleep." p6

The following are the participants' statements regarding their longest online gaming time:

> "Approximately 4 hours, based on how long the matches are, but it can be more when the time is right." p2
> "About 5 hours in a day, from the afternoon until night." p5
> "9 hours, depending on how long the matches are. When I get good teammates, the match can be done in a short time." p8
> "I play about 3-4 hours since usually I would play with my friends so it could take a long time." p9

The following are the participants' statements about their preferred parts of the day to play online games:

> "I usually play at night since my friends and I agree to play at that time." p9
> "I often play in the afternoon and at night. I often play alone in the evening but at night I would usually play with my friends." p10
> "I play in my spare time at night since I have a lot of time at night and sometimes it is hard to sleep right away too, so I would use that time to play a game p4
> "Mostly in the evening with my friends, depends on whether I have spare time." p6

Online gaming time during self-quarantine

The interviews showed that the online gaming time of each participant was different. The following are the participants' statements regarding their longest online gaming time during self-quarantine:

> "About 11 hours. Online gaming is fun so sometimes I didn't realize that it was morning already and I haven't slept." p9
> "I think it was only 1-2 hours during quarantine because I mostly felt sleepy, tired, and dizzy." p8
> "About 10 hours, since I had nothing to do except gaming and it is preferable than always sleeping which made me dizzy." p4
> "I guess it was around 6 hours, not much different from the previous time, but I could play more since I've got nothing to do." p2

The following are the participants' statements with the shortest online gaming time during self-quarantine:

> "I think it was only 1-2 hours." p8

2) Perceptions of online gaming

The following are the participants' statements when they felt lucky when online gaming with their friends:

> "I mostly play with my friends because if I play by myself, I often lose." p2
> "Honestly, playing with others often makes you win." p7
> "I play with others often because the win rate is higher." p10

3) Changes in feelings toward online games

The participants experienced changes in their sensations when online gaming during the COVID-19 pandemic. These changes were affected by the emotions they exhibited during online gaming before and during self-quarantine.

Emotions exhibited during online gaming before self-quarantine
The following are the participants' statements about feeling happy when online gaming:

> "I play games only for fun when I feel a lot of pressure from assignments. Playing game makes me feel refreshed." p1
> "It's fun to play games since I get to rank up in online games." p5
> "It's so fun because there are a lot of challenges there." p10

The following are the participants' statements about feeling irritated when they lose:

> "Usually, I feel so irritated and angry." p2
> "I feel so irritated and uninterested to play again, so I often play with friends to win." p5
> "Yes, it is so irritating. If I get a lose streak, I could get angry, haha." p7

The following are the participants' statements about feeling happy when winning online games:

> "I usually feel so happy when winning and keep on playing, especially when playing with friends." p3
> "It's quite common for me to get victories, hehe. I feel happy when I win." p8
> "Yes, it made me happy and just keep on playing till I got lost in time." p4

Emotions exhibited while online gaming during self-quarantine
The following are the participants' statements about feeling unmotivated to play online games:

> "I wasn't interested in playing games since I was not fit and I had no energy. I just wanted to rest." p1
> "I felt dizzy and unmotivated. I was too lazy to do other things, let alone play games." p8

The following are the participants' statements about feeling happy when online gaming during self-quarantine:

> "I felt happy because I have so much time to play games." p2
> "I felt happy because I could play games all the time and nothing interfered with my playing time." p4

4) The changes in students' behavior due to online gaming
The results showed changes to the students' habits due to online gaming, which can be categorized into the following sub-themes: 1) changes in physical habits, 2) changes in spiritual habits, and 3) changes in study habits.

The following are the participants' statements about experiencing changes in their physical habits:

> "My bedtime has changed, but honestly I've stayed up late often, so it's not a problem." p1
> "Usually when I play my games, I'm too lazy to do things like taking a shower or eating meals." p2
> "I would delay everything, like praying, eating, and sometimes going to bed after 12 at midnight." p5
> "It has affected my eating habit. Sometimes I go to bed late because time flies when you're online gaming." p7

The following are the participants' statements about experiencing changes in their spiritual habits:

> "Sometimes I miss prayers, sometimes I delay them." p3
> "I delay my meals and prayers sometimes." p6
> "I began to frequently delay prayers and rarely recite the Qur'an." p7

The following are the participants' statements of experience regarding changes in their study habits:

> "I sleep after midnight and skip classes; sometimes I miss assignments too." p1
> "I guess it takes a little longer to finish an assignment and sometimes I only start working on an assignment when the deadline is almost due." p6

Theme 2: Influencing factors on online gaming behavior before and during self-quarantine
The availability of facilities during self-quarantine was affected by several things, which can be categorized into the following sub-themes: 1) reasons to play internet games before self-quarantine, 2) factors influencing the increased frequency of online gaming during self-quarantine, and 3) factors influencing the decrease in an online gaming habit during self-quarantine.

Theme 2 is divided into several subthemes based on the participants' interview answers.

1) Reasons to play internet games before self-quarantine
The following are the participants' statements about the places to play online games:

> "I mostly play at my friends' place. We play together there with the others too." p3
> "I always play games in my boarding house because the Wi-Fi there is fast, so my friends usually come to my boarding house." p6

The following are the participants' statements about the availability of facilities for online gaming:

> "I use Wi-Fi when my cellular signal is bad." p5
> "I always use my data package because the Wi-Fi signal is not always stable." p5
> "I use Wi-Fi when I'm in my boarding house, but when I'm at my friend's, I use my data package."

2) Factors influencing the increased frequency of online gaming during self-quarantine
The following are the participants' statements about the places to play online games:

> "I usually play games at UNIRES." p5
> "In my boarding house because I' am self-isolating." p8
> "I play games at home." p1

The following are the participants' statements about the availability of facilities for online gaming:

> "I always use my own data package since I cannot connect to the Wi-Fi at UNIRES. I don't know why the Wi-Fi is not available on the 2nd floor." p5
> "I always use Wi-Fi in my boarding house. I have paid for it, so I have to use it, right?" p8
> "Sometimes I use my data package, sometimes Wi-Fi. It depends on which signal is better for playing." p2

Furthermore, the interviews revealed that the participants also played online games due to social and environmental factors.

The following are the participants' statements about social and environmental factors:

> "All of my friends play it, and they would usually invite me to play along." p4
> "I was scrolling around on social media and found out about the game through an ad." p6

The interviews also showed that various factors caused the increase in the amount of time spent on online gaming during self-quarantine. The following are the participants' statements about the huge amount of free time they had during self-quarantine and how they spent it online gaming:

> "Because during quarantine my symptoms were getting improving, I played even more frequently and longer." p2
> "There is nothing to do during quarantine, it is impossible to go outside and just sleeping all day makes me dizzy, so I play games since I got plenty of time." p3
> "I had nothing to do at all and had no other symptoms either. So, yeah, I just kept on playing games." p9

3) Factors that contributed to the decreasing the amount of online gaming time during self-quarantine

The following are the participants' statements about their physical and environmental conditions:

> "I didn't have that much energy and had a headache too at that time. No one invited me to play along." p1
> "I still played but not so frequently since I had a bad headache if I watched the phone screen for too long." p5
> "Just watching the phone screen made me dizzy so I rarely used the phone, let alone play an online game." p7

Theme 3: The impacts of parenting styles on online gaming behaviors

The results revealed that different parenting styles affected the students' online gaming behaviors. These styles were categorized into two sub-themes: 1) the parents' indifference to the dangers of online gaming and 2) the parents' concern about the dangers of online gaming.

Theme 3 is divided into several sub-themes based on the participants' interview answers.

1) Parents' indifference to the dangers of online gaming

The following are the participants' statements whose parents gave them the freedom to play online games:

> "My parents let me play games since I was in junior high school, but at the time I played PS (PlayStation) until 2 a.m." p1
> "In the beginning, my parents were often angry, but after a while, they got used to it." p4
> "My parents are silent when I play my games." p6
> "They just let me and never get angry." p10

2) Parents' concerns about the dangers of online gaming.

The following are the participants' statements about when their parents became angry when they played online games for a long period of time:

> "I get scolded all the time, especially if I forget to do other things." p2
> "When I play games at home, my parents will scold me, especially if I play games until late at night." p3
> "Yes, I'll be scolded. That's why I don't play games when I'm home on Saturdays and Sundays." p7

Theme 4: The impacts/consequences of online gaming behaviors

The impacts or consequences of online gaming behaviors can be categorized into the following sub-themes: 1) maladaptive responses when online gaming, 2) students' indifference to the dangers of online gaming, and 3) perceptions of online games.

Theme 4 is divided into several sub-themes based on participants' interview answers.

1) Maladaptive responses during online gaming

The following are the participants' statements about their anger when they played online games for a long period of time.

> "I would call out people who are troublesome in the game." p3
> "Yes, I would get angry for sure, but yeah, I keep on playing." p8

2) Students' indifference to the dangers of online gaming

The following are the participants' statements about their responses when scolded by parents:

> "Yeah, sometimes I obey them, sometimes I don't." p5
> "Yes, but I just listen." p10
> "Yes, I would say yes to them, but I would still keep playing." p7

3) Perceptions of online games

The following are the participants' statements on how they thought that excessive online gaming can cause addiction:

> "If we do it too much, we may get addicted, but hopefully it won't happen to me." p5
> "I guess I'll get addicted if it's too much." p2

DISCUSSION

Theme 1. The changes in online gaming behaviors before and after being tested positive for COVID-19

According to the data collected, the duration of the students spend online gaming varies between 3 to 9 hours daily. A person will continuously increase their online gaming activities because of the compulsion to continue playing games (Stockdale & Coyne, 2020). Over time, the duration of online gaming will increase within their *tolerance* criteria. This compulsion can cause students to feel more interested in *online games* and increase their playing hours.

The results showed that various factors influence students to play online games. One of which is the environment. A person's behavior is not only formed by their family but is also affected by their environment. If friends in the school environment play online games, it does not rule out the possibility that someone will also not play online games (Irawan & Siska W., 2021). Most students play online games because they are invited by friends or see friends around them online gaming, which triggers the students to start playing them.

Next, a lack of activities is one of the factors that cause a person to keep online gaming while being on their own. This is because they felt that there was no activity they could do, so online gaming became an escape for them (Irawan & Siska W., 2021). During self-quarantine, the lack of activities causes some students to increase their playing hours.

This study showed that several factors affect the decline in online gaming while undergoing self-quarantine. The participant's physical condition affected the decrease in their online gaming intensity. This aligns with a previous study that stated that a decreased physical condition could make a person experience changes in activities that they would regularly do (Nurhadi & Fatahillah, 2020). Some students that had undergone self-quarantine either at home or elsewhere experienced decreased physical condition due to COVID-19. This decline in physical condition decreased their playing hours or even caused them not to play games.

Online gaming has been shown to trigger changes in activity levels. According to Istyanto & Maghfiroh (2021), online gaming encourages players to ignore all other tasks, including learning, eating, sleeping, and engaging with the outside world. This causes students to experience various changes, including modifications to their food intake, sleeping schedule, and physical activity. According to students, their time spent online gaming disrupts their sleep patterns. As a result, many students lacked sleep because they played late at night and early in the morning.

Theme 2. Influencing factors on online gaming behavior before and during self-quarantine.

Moderate burnout is a common occurrence for nursing students (56.4%). This is due to the fact that students have a lot of demands placed on their learning activities and processes, thus they require entertainment that is readily available (Alimah et al., 2018). Research shows that the feeling of pleasure appears when students win in online game matches, and anger and annoyance appear when they lose an online game. The feelings that arise are influenced by dopamine activation and the release of the dopamine hormone, which creates feelings of pleasure and sadness (Lutfiwati, 2018). Dopamine is one of the brain's neurotransmitters that regulates feelings of happiness and mood (Denby et al., 2016). These fluctuations can cause the students' feelings to change in online gaming.

Furthermore, research has shown that pleasure and laziness can be felt when online gaming. Playing games can cause brain changes that regulate attention and control, impulses, motor function of emotion regulation, and motor coordination, which will change with dopamine release and affect the players' emotions and feelings (Weinstein et al., 2017). This causes the student's feelings to go from being happy to being lazy to play online games.

A chat feature in online games allows players to communicate with each other virtually, either with people they already know or people they do not know. The chat feature allows players to set the strategy in the game (Trianto, 2018). This affects students who prefer to play realistically because they can communicate with their team.

This research also discussed the availability of amenities and infrastructure that assist students in online gaming, including internet connection and locations for online gaming. According to Kurniawan (2019), online gaming requires an internet connection to function and connect players. Therefore, a reliable internet connection is required to access online games. This may encourage kids who play online games to seek out an internet connection so they may play at any time.

Theme 3. The impacts of parenting styles on online gaming behaviors

This study indicates that parenting affects a person's behavior, including parental apathy toward the dangers of online gaming. Parents' lack of control exacerbates the effects of internet gaming addiction (Irawan & Siska W., 2021). As a result of feeling emancipated from their parents, students frequently engage in excessive online gaming behavior.

However, some parents are also concerned about the risks associated with online gaming. Parental supervision or monitoring is required when a child plays online games (Permana & Tobing, 2019). Doing so would demonstrate to students from a young age that their online gaming behavior may be governed by responsible parenting.

Theme 4. The impacts/consequences of online gaming behaviors

The interaction of online game players, particularly those who play violent genres, influences the intensity of adolescent violent behavior (Fahrizal & Pratama, 2021). This encourages students to frequently mimic their teammates' or friends' language during online gaming. Additionally, students participate in disputes with co-stars through chat and voice note tools.

Numerous risks are associated with excessive internet gaming (Elsayed, 2021). Today, online games are frequently played excessively and exploited as an escape from reality; hence, online gaming addiction is prevalent (Novrialdy, 2019). Many students believe that online gaming excessively may lead to addiction, but this does not stop students from playing.

Some students in this study exhibited indicators of online gaming addiction, such as anxiety or other sentiments when not online gaming and the constant desire to play online games.

Nevertheless, this research is still limited by the research location as it was conducted in a single area. Future research should include multiple locations with various participant characteristics.

CONCLUSION AND RECOMMENDATION

Self-quarantine for students positive for COVID-19 has altered their online gaming behavior. This change is due to the presence of internal and external factors that are both supportive and inhibiting. Students are also aware of the effects of excessive online gaming.

The university, parents, and students must all take preventative measures against online game addiction. Feasible measures include implementing health education to prevent addiction among students, limiting access to online games via the campus internet network, and encouraging self-quarantining patients to engage in physical activities.

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ORIGINAL ARTICLE

DISCIPLINE STRATEGIES: PARENT'S EXPERIENCES FOR EARLY CHILDHOOD DEVELOPMENT IN NORTH EASTERN, THAILAND

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ABSTRACT

Parent's positive discipline strategies are very important to promote child development. However, the use of corporal punishment, psychological, physical, and sexual violence to child in the Southern Thailand is quite high. This study aimed to explore phenomenon of interest in the contextual relationship between parents' discipline strategies and early childhood development and behaviors. This study employed a qualitative hermeneutic phenomenological approach. Sampling method using a purposive sampling strategy, potential participants who met the initial criteria were the primary caregivers, closely live with the children, and regarded to have had adequate experience with child rearing. The principle of data saturation was used to recruit 8 study informants. Thematic statements were identified from narrative data. Pattern of themes were interpreted by using a qualitative hermeneutic phenomenological approach. Trustworthiness of data was established following Lincoln and Guba's criteria. This study found 4 themes included: 1) Parents' positive discipline strategies, 2) Ineffective methods in disciplined the child, 3) Low self-discipline children lacked of self-control and poor emotional regulation, and 4) Disciplined children were full of self-regulation. Strengthen self-control and self-regulation should be done for training children to become disciplined. Parents should be trained positive discipline techniques for improving children's behaviors.

Keywords: *Disciplined child; parents' experiences; phenomenology; positive discipline*

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INTRODUCTION

Thailand is the ageing society of 66.4 million people of which 17.21% are children aged 0 – 14 years (Chandanachulaka, 2020). Discipline was very important to child development in Thai culture and value for long time. Since the year 1961 to 2014, discipline was the word used in the slogan of the Thai Prime minister in the children day 14 times for developing Thai children as good citizen (Chitlaoarporn, 2022). In contrast, child behavioral problems without proper control and rules, had been documented in many situations. Thailand annual report of child and youth development 2018 found that 13 – 17 years old youth were cured game addiction the third rank after Attention Deficit Hyperactivity Disorder (ADHD), the rate had increased six times compared to 2016. The Juvenile Observation and Protection Centers throughout the country reported 17,705 children and youth who in the criminal case system in the year 2018. Narcotics used, theft, aggravated assault were the most related problems (Komonmarn, 2020).

Some researchers found that juvenile offenders had been grown up in violence environment without understanding families. Mostly, they engage in abuse, drug and alcohol used, drop out of school (Wongin & Paileeklee, 2018). The study in Thai secondary school students was reported that alcohol, tobacco and drug use, and fighting, are clustered in school (Assanangkornchai et al., 2018). Unapproved behaviors of student discipline associated with their temperament, unreasonably attraction to friends, and inattention to study (Decharit & Chayanuvat, 2018). Furthermore, a study among undergraduate students found that effect of social media and the discipline climate had negative effects on their self-discipline (Damrongpanit, 2019). As we knew the reinforce positive discipline based on family participation was significantly effective in child development (Inson et al., 2021). Although parent's positive discipline strategies were very important to promote child development in Thailand, but the use of corporal punishment in Thai homes were reported high prevalence at 85.5% (Watakakosol et al.,

2019). For high school students in southern part of Thailand, the prevalence of psychological, physical, and sexual violence were was 84.0%, 66.9%, and 30.6%, respectively (Boonrusmee et al., 2018). In addition, *Love cow to tie, Love child to hit* (equivalent to English as "Spare the rod, and spoil the child") was the proverb accepted to preserve their corporal punishment in Thai culture. A study from eight countries included China, Colombia, Italy, Jordan, Kenya, Philippines, and Thailand found that corporal punishment leading to child anxiety and aggression (Lansford et al., 2014). Another study found that general parenting style in Thai families were authoritarian (Varma et al., 2018) described as "controlling" (Benito-Gomez, 2022). Some researcher found that authoritarian and neglectful parenting were related to lower self- esteem in the offspring (Pinquart & Gerke, 2019), while authoritative style parents used high parental demand with emotional responsiveness and recognition of child autonomy (Febiyanti & Rachmawati, 2021).

During Thai early childhood, parents try their best to push their children to be successful in academic achievement. They hasten their children in literacy skills, foreign language, and screen technology, however Thai parents ignored the positive disciplines training skill. As result, the children loss of self-control, communication skill, and poor development (Yotanyamaneewong & Tapanya, 2019). The more social media screen time, the less prosocial behaviors in children (Limtrakul et al., 2018). Researchers found that 63.4 % of toddler's caregivers in Bangkok allow their children used a smartphone or tablet as babysitter to make their child calm. Their toddler spent their time used smartphone or tablet 49.23 minutes per day. The highest amount of screen time occurred in the toddlers who sleep with their grandparents (Tancharoenwong et al., 2018).

Mahasarakham, the province in Northeastern part of Thailand, had been rapidly changes from rural to urban because of powerful growing universities in this area (Jaturong et al., 2018). Children were sent to child care center early when they were toddlers and some parents leave their children with grandparents because their workplaces in other provinces. There was a study in 5 skipped-generation families in Mahasarakham province reported that grandparents raised grandchildren with both authoritative parenting style and authoritarian parenting style (Watyotha & Samahito, 2019).

Nevertheless, no research has been done on parents live experience in discipline strategies to promote child development especially when COVID-19 began pandemic in Thailand. Therefore, this research was conducted to explore how parents discipline their children. Then it will help pediatric nurses gain a better understanding of parents' attempt behaviors in promoting their children development during unusual situation.

METHOD

Study design

This study employed a qualitative hermeneutic phenomenological approach (Polit & Beck, 2021). This was a qualitative research method aimed to interpret the meaning of parents' lived experience describing phenomenon of interest in the contextual relationship between parents' discipline and children's development and behaviors.

Informants

By using a purposive sampling strategy, (Moser & Korstjens, 2018) potential participants who met the initial criteria were the primary caregivers usually be mother, father, grandfather, grandmother who closely live with the children. They living together in the same household. They were regarded to have had adequate experience with childrearing. They participated in the part of study by permission and willingness to be contacted by the research team. The data saturation was gained at the 8th informants.

Instrument

Researchers utilized the semi-structured interview guide (McIntosh & Morse, 2015) that allow participants to freely express their experiences.

Data collection

Researchers relied primarily on face to face in-depth interviews with parents. Data were collected with an audiotape recorder at child care center or at home when parents permitted the researchers to visit in Mahasarakham province. An interview schedule was developed in the Isaan and Thai dialect. The following question were asked: Tell me your experiences in child care discipline and child development. What problems usually occurred in your live experience on child discipline? Tell me about your perception of that problems. How can you manage both yourself and your child in that situations? Additional questions were asked in response to participant's expression or reaction during the interview, in addition to the essential questions. To comprehend the meaning of participants experiences in the context of interview, the researchers used key interview question for example: "Tell me more about that., What was that like?" (Creswell & Creswell, 2018). Interview sessions were face to face discussion lasted from 45 minutes to 1 hour for each participant. Data collection started in July 2020. Researchers transcribed all interviews recorded in Thai. English translation were done in the last phase of data analysis after all quotes giving explanation of theme.

Data analysis

Researchers transcribed the conversation interviews from an audio recording and verify the accuracy of all transcriptions. Thematic statements were identified from narrative data. Text sentence were studied to understand parents' experience as lived. Significant statements were reviewed to find meaning and extract underlying themes. Pattern of themes were interpreted. Essential themes were characterized study phenomena. Finally, interpretation in group was delivered. Concerning of saturation data, the researchers replicated data which was the essential thematic components of the phenomenon under study.

Trustworthiness

Trustworthiness of data was established following Lincoln and Guba's criteria (Lincoln & Guba, 1985). Credibility was established by using an interview guide, immersion on the data and member checking. Dependability were demonstrated through description of the research process from the start, including context, participants, data collection and analysis. The interview transcripts, coding material were kept as audit trail throughout the study. Confirmability were considered through audio - recording of interviews, transcriptions, the capture of rich quotes from participants. Accuracy of the transcriptions of the raw data could be checked. Researchers read all transcripts carefully. The discussion and analysis of the finding were confirmed in every case. The interviewees participants were checked the researchers' understanding of elements in the interview by using question for explanation such as: What do you mean? Could you explain? To ensure transferability, researchers used purposive sampling, provided different

sociodemographic, and contextual information of the participants.

Ethical consideration

Ethical approval to conduct the study was obtained from Mahasarakham University's research and ethics committee with the reference number 113/2020.

RESULTS

Participants were included 8 parents who were Buddhists and closely live with their children whom age ranged from 1 to 7 years old. Five of participants were mother of the children. The age ranged from 24 – 68 years old. The majority of participants graduated Bachelor's degree. Their participant's occupations were different including: office manager; meatball seller; night restaurant's owner; hotel's owner; electrician; cook; street food vender; and hair dresser. The participant's characteristics data were shown in table 1.

Table 1. The participant's characteristics data

Education	Occupation	Child's relationship	Child's age
Bachelor's degree	Office manager	Mother	4 yrs 2 yrs
Bachelor's degree	Meatball seller	Mother	3 yrs 1 yr
Bachelor's degree	Night restaurant's owner	Mother	4 yrs 3 yrs
Bachelor's degree	Hotel's owner	Grandfather	3 yrs
Diploma	Electrician	Father	4 yrs
Diploma	Cook	Mother	4 yrs 7 yrs
Bachelor's degree	Street food vendor	Mother	3 yrs 2 yrs
High school	Hair dresser	Grandmother	4 yrs

This study found 4 themes included: 1) Parents' positive discipline strategies, 2) Ineffective methods in disciplined the child, 3) Low self-discipline children lacked of self-control and poor emotional regulation, and 4) Disciplined children were full of self-regulation. Themes and sub-themes that emerged from the data were shown in table 2.

Table 2. Themes and sub-themes of parents' experiences in early childhood discipline

Theme	Sub theme
1. Parents' positive discipline strategies	1.1 Parents served as role model
	1.2 Parents encouraged delayed gratification
	1.3 Parental positive reinforcement
	1.4 Effective parental communication
2. Ineffective methods in disciplined the child	2.1 Smart phone and screen used as babysitter
	2.2 Spoiled the child, Do everything for child
	2.3 Punishment
3. Low self-discipline children lacked of self-control and poor emotional regulation	3.1 Temper tantrum
	3.2 Instant gratification
	3.3 Inattention
	3.4 Hyperactive
4. Disciplined children were full of self-regulation	4.1 Self-care
	4.2 Punctuality
	4.3 Public mindedness

Theme 1: Parents' positive discipline strategies

When asked parents how they disciplined their kids to be disciplined children. It yielded four sub-themes included 1) Parents served as role model, 2) Parents encouraged delayed gratification, 3) Parental positive reinforcement, and 4) Effective parental communication.

1.1. Parents served as role model

Parents served as role model through direct interaction with their kids. They addressed their concern, and share family activities with interest together. Finally, their kids become disciplined children. Example of participants' statements were explored as follows:

> "…I am a purist. House is not messy. I practice them. I taught them learn by doing. I love to clean up the house then they follow me. School bags, bicycles were kept in place by them. They said to me "Mom, we keep it in place already…." (P7)
> "…He needed to help me such as keep the yoga mat, clothes. He looked at me and help me by imitation…" (P3)

1.2. Parents encouraged delayed gratification

To increase delayed gratification behaviors, parents did not response their kids' need immediately. They give them the accepted reason, keep a promise, and response in reasonable time. Example of participants' statements were explored as follows:

> "…They need to buy remote control car toy. I said I have to collect money, next time when I have money I will buy it for you both. They said ok next time mommy have money, mommy will buy it for us…" (P7)
> "…I gave him reason. If I have no money to buy toys for him, I said to him waiting for my salary. When I have money on payday, I bought some toy for him…" (P5)

1.3. Parental positive reinforcement

When children displayed satisfactory behaviors, parents gave them a pleasant stimulus in order to increase its future occurrence. The participants' statements showed the positive reinforcement as follows:

> "…I told him how to do the right thing, then I said "excellent" and give him big hands. This is for motivation. For example, I taught him how to take his pants off, he did, I clap my hands for him…" (P4)
> "…I told them that they have to help me to do housework. If they did not, they won't get money to buy ice cream. They understood. I practiced them to help me clothes washing. They put clothes into washing machine. Then they ask me for ice cream. I gave them each 20 baht with my pleasure…" (P7)

1.4. Effective parental communication

Parents used effective communication to exchange information, and sending the best understood for their kids. They did not only deliver the massages but also clarifying, listening, understanding, emotional controlling, and providing non-verbal communication to their kids. Example of effective communication is shown in the participants following statements:

"…I knew that he disliked me to scold him. If I was not moody, I told him softly, he easily response to me…" (P1)
"…I need him to have a good communication with me. If we have effective communication, he understands and listen what I talk to him. It will be better…" *(P2)*

Theme 2: Ineffective methods in disciplined the child
Discipline techniques that parents used and strongly confirmed to avoid because of ineffective results. There were 3 subthemes explored from parents' experiences. 1) Smart phone and screen used as babysitter, 2) Spoiled the child, do everything for child, and 3) Punishment as follow:

2.1. Smart phone and screen used as babysitter
Parents used smart phone, iPad, TV, screen devices as babysitter when things get hectic. It's just easier to allow them take a break from parenting, to keep their kids entertained, to have time to work, and to stop unwanted behaviors of their kids. It seemed to be effective, but bigger problems later on. Example of participants statements reflected child behavioral problems and delayed development after parenting with smart phone, tablet, and screen as follows:

"…I gave him iPad to stop his running. He stayed still long with iPad to see cartoons. He had delayed speeches because of me.… (P1)
"…I gave him smart phone when he was 2 years old. He used smart phone and play alone in his play zone in the room. He enjoyed angry bird cartoon in English and usually scream imitated cartoon actors' behaviors. During 3 months of COVID-19 pandemic, he had very serious smart phone addiction" (P2)
"…He had delayed language development compared to his sister. No screen for his sister, so she talked when she was only 2 years old. He couldn't because of smart phone used as babysitter. I knew that from my experience…" (P3)

2.2. Spoiled the child, do everything for child
*"*Spoiled the child*"* or *"*do everything for child*"* was used when parents wanted to stop difficulty of their kids and they were in a hurry or need something to be done quickly. Too much parents' engagement can come at a cost to kids' abilities to control their own attention, behavior and emotions. Then, they become dependent children. Example of participants' statements were explored as follows:

"…I told him to dress, no he didn't. He played till I did. He did not keep his toys back, I did for him. I did everything for him, he did not listen to me. He had no discipline because I did everything for him such as shower, shampoo, nail cut, clean up. He didn't because I did…" (P1)
"…He can take shower himself, but he needs me to do for him. He cannot stay alone in bathroom, then I take shower for him. Sometimes I feed him even he can have breakfast himself…" (P5)

2.3. Punishment
Negative discipline such as prohibit, blame, complain, force, beat, hit, did not effective for discipline the children. Example of parents' statements reported:

"…For my first child, I knew that I forced him. Force is my technique for feeding, dressing, brushing. Sometimes I beat him, I knew that he did not understand the reason why I beat him. He imitated me to beat his sister. I knew it is because of my negative technique. The more I forbidden him, the more he did... (P1) "...Someone told me to hit him for stopping his tantrums behavior, I did, but he did not stop tantrums..." (P2)

Theme 3: Low self-discipline children lacked of self-control and poor emotional regulation
Self-control is one of the most important things that parents try to discipline their kids for success later in life. Parents reflected that low self-discipline child lacked of self-control and poor emotional regulation. They express behaviors: temper tantrums, instant gratification, inattention, and hyperactive as follows:

3.1. Temper tantrum
Temper tantrum usually occurred when children were overwhelmed by strong emotion. Parents tried to manage their kids' feelings, but not successful. The kids could not regulate their emotions, inhibitory control, and restrain their feeling of needs. Example of tantrums' behaviors were shown in the participants following statements:

"...He would like to have car toy. He cried, screamed, tantrums and pull my hand to buy it. If I didn't buy it, he flopped down the floor and cried…" (P1)
"…He went to buy some snack. I said "no" "not this one, this one is ok". He didn't understand me. He still wanted to buy that one, then he screamed and cried…" (P2)
"…He was irritable boy. Sometimes he felt hotheaded, he threw something, screamed and cried for an hour…" (P3)
"…His mom pleased him, paid for him. If she didn't, he scold and hit her back…" (P5)

3.2. Instant gratification
The kids who had instant gratification need a response immediately for their fulfillment. Whereas, delayed gratification was the ability to postpone an immediate gain and later reward. Example of instant gratification is shown in the following parents' statements:

"…He cannot suppress his need. Once at Big C Department store, he picked up car toy from shop and ran away out, I shouted to security guard. Stop him for me please, he was very fast running. That guard laugh and safe him for me. I said to him, father is the cop, son should not be thief, do you know? You should buy it first before pick it. Then I buy that car toy for him.…" (P1)
"…He can't wait for me. For example, I told him wait for me just moment, I had to do something for his sister first before gave him milk. He screamed out and cried. If I did not suddenly response to him, he screamed…" (P2)

3.3. Inattention
Inattention behaviors of the kids showed less interesting in daily routine task, seeming not to listen, easily distraction, and leaving tasks partially done as participant statements as follow:

"…Um… for example …he can do daily routine himself, but he does not listen to me when I told him to do. He understands, but ignore. It's up to him. He has been distracted easily compared to his friends…" (P1)
"…It seems like he worries about playing, he doesn't care to listen to me. I think he can put on clothes himself, but he can't because of inattention…*"* (P2)
"...I tried to let him read child story book. He listened only short time, then he ran away. He dislikes story book and he didn't pay attention to it. I need him to pay more attention..." (P3)

3.4. Hyperactive

Hyperactive is excessively active behavior. It's the result of smart phone addiction explored from parents' experiences. Hyperactive children characterized by naughty, mischievous, difficulty, and inability to concentrate. It's seemed like concentrate in screen, but could not achieve development tasks. Example of hyperactive behavior is shown in the participants following statements:

> "...He didn't hyperactive in normal sense. He is naughty boy. Outing with him, I must hold on his hand because he like be mischievous. I gave him iPad if I need him to stayed still for long, if no iPad, he ran and find something to play at all time..." (P1)
> "...Her sister has been distracted and hyperactive. I think because of mobile phone addiction..." (P6)

Theme 4: Disciplined children were full of self-regulation

Self-regulation was the ultimate goal of parenting strategy explored from parents' perception. It's the key to helping the kids being responsible. There were 1) self-care 2) punctuality 3) respectful behavior and 4) public mindedness that reflect child's self-regulation as follows:

4.1. Self-care

Self- care was the ability that performed self-discipline in early childhood explored from parent's experience. It's associated with child's positive satisfaction and happy to practice daily routine. Children developed their self-care along with personal and social skills development such as feeding, teeth brushing. Example of self-care is shown in the participants following statements:

> "...I need him to do daily routine himself. For about the discipline…, I would like him to feed himself and spilled not rice on the ground during meal..." (P2)
> "...Discipline… there are personal care practices. For example, when he wakes up in the morning, he brushes his teeth himself. Sometimes he can do, but doesn't want to do. He tells me or his mom to brush his teeth. O.K. when he was 3 years, I did for him. Now he is 4 years, he should brush his teeth himself." (P5)
> "...She wakes up early in the morning. I practice her to brush her teeth. I told her. This is toothpaste. This is toothbrush. I practice her to do by herself..." (P6)

4.2. Punctuality

Punctual child always respects the values of time and develop self–awareness for punctuality. Parents instilled this prime skill with developing habit of waking up in the morning, going to bed, going to school, having breakfast at certain time. Example of participants' statements regarding this subtheme are as follows:

> "...well suppose, it's time to get up, he should get up without wake him up. It's time to have breakfast, he should have a seat and eat breakfast himself. No need to be fed. When it's time to bed, he should go to bed without force or order to do..." (P1)
> "...After breakfast, I looked at the clock and told her that it's 8 o'clock. Let's go to school, it's late. She hurried up to school happily. When the time for bed, I told her turn off TV and went to sleep, she did. She had nap time at school 11 o'clock, she did..." (P6)

4.3. Respectful behavior

Respectful behavior was important and basic principle that Thai parents instill in their children. Respectful child feel respect for another without fear or command. Respect is an abstract concept showed by listening to another person's point of view, follow the rules. Example of respectful behavior is shown in the participants following statements:

> "…I observed my child, she is respectfully to people. When her grandmother comes, she suddenly pays respect to her grandmother…" (P6)
> "…Suppose he pick up the toy and try to throw the toy to his sister, I said don't do that. If he listens to me and obeys the rules. It means that he has discipline of child…" (P1)

4.4. Public mindedness

Parents instill public mindedness for their kids when they were young to promote the public interest and having helpful behaviors. Example of public mindedness is shown in the participants following statements:

> "…We went to temple on Buddhist holy day. I taught her how to sharing by giving ice cream to others. We cleaned toilets in temple together, she could help me clean toilet by imitation. We pick up trash together for cleaning up the environment of temple. No one called us to do, but we did…" (P6)

DISCUSSION

To explore parents' experiences how they disciplined their early childhood children in Mahasarakham province, Northeastern, Thailand, we used 8 participants. Thematic statements were identified from narrative data. Pattern of themes were interpreted by using a qualitative hermeneutic phenomenological approach. There were 4 subthemes that reflect parent's positive discipline strategies included: parents served as role model; parents encouraged delayed gratification; parental positive reinforcement; and effective parental communication. Similarly, a study reported the definition of positive parenting was the continual relationship between parents and kids. It's included caring, teaching, communicating, and providing their kids needs consistently and unconditionally. (Seay et al., 2014).

Role model was someone whose behavior were admired enough to be emulated. Parents served as role model through direct interaction with their kids. They addressed their concern and played their roles in shaping the children's morality, instilling religious beliefs, communicating, and providing bonding time for their children. (Tan & Yasin, 2020) In Malaysia, researchers found that best mothers played their virtues through role model included hardworking; bravery; patience; healthy lifestyle; cleanliness and punctuality to their kids. (Manap et al., 2013). In this study, parents disciplined their kid to increase delayed gratification behaviors by giving them the accepted reason and response in reasonable time. The ability to delay gratification at a young age is a predictor of psychological, cognitive, health, and academic later-life outcomes. It is because delay of gratification had often been conceptualized as an aspect of temperament relating to self-regulatory ability (Hong et al., 2017). The delayed gratification is the realization of self-control and psychological maturity as well. Patients with Attention-Deficit/Hyperactivity Disorder (ADHD) and Obsessive-Compulsive Disorder (OCD) showed inefficient self-controlled ability due to neural deficit or dysfunction in fronto – striato – insular -cerebellar regions responsible for self-control. These patients had tendency to prefer instant gratification rather than delayed gratification. (Jiang et al., 2018).

Some researchers found that Delaying gratification longer at 4 years of age was predicted their body mass 30 years later. Improving self-control in young children had been developed

and might reduce children's risk of becoming overweight (Schlam et al., 2013). The researcher in India found that ability to delay gratification was the key role influence of student's educational track choice at the end of grade 8 similarly to their cognitive ability and parental socio-economic status (Ganie, 2022). An effective way of improving young children's ability to delay gratification was attention training technique (Murray et al., 2018). Delay gratification were different in culture, Children in Japan delayed gratification longer for food than for gifts, whereas children in the United States delayed longer for gifts than for food (Yanaoka et al., 2022). In this study, parents develop the ability to delay gratification for toys.

Positive reinforcement was used to strengthen behaviors of their kids. It's the motivation by providing desirable stimulus in order to train and maintain desirable behaviors. However, negative reinforcement occurred by taking away something unpleasant or uncomfortable in order to increase the desired behavior (Troussas et al., 2017). Some parents implemented negative reinforcement by taking away something that made their kids had tantrum behaviors. For physically handicapped children the researchers recommended to use "undesired items" as negative reinforcement in picture exchange communication system (PECS) teaching (Agi, 2020). Positive reinforcement implemented by caregiver is effective to improve discipline behavior in home settings (Sari & Indianti, 2019). Parents were the first educators who have strategic and practical responsibilities in shaping their kids' habits. To make good speech habits in early childhood, communication of parents should be ethical language, appropriated to children's development, full of comfortable formation, and planed. In addition, parents should communicate with psychological expression and touch (Wirman & Elkhaira, 2022). Effective communication was the way parents used to exchange information, clarifying the message, listening to children, and understanding children's need. Researchers found that children preferred parents to saying that could not hurt, speaking without preaching, softly talking not to speak up, and carefully listening to what the child says (Runcan et al., 2012).

We found that discipline techniques that parent used and strongly confirmed to avoid because of ineffective results were smartphone and screen devices used as babysitter, spoiled the child/ do everything for child, and punishment. Although, the pediatrician recommended that under 3 years children should have no access to screen media. This study found that parents still used smart phone, iPad, TV, screen devices as babysitter. Similarly, a study in Israel found that parents used screens as a "background," a "babysitter", a "pacifier" and a "childcare toolkit", regardless of their own attitudes towards media effects on their young children (Lev & Elias, 2020). It seemed to be effective at that time, but bigger problems later on. Parents complained their kids had delayed development and behavioral problems. Researchers in Taiwan found that young children who spent more time on touch screen devices were more likely to have emotional problems, anxious/depressive symptoms, somatic complaints, social withdrawal symptoms, attention problems, and aggressive behaviors, but not language delay (Lin et al., 2020).

Spoiled the child was not effective technique for disciplined child. It allowed children to used their spoiled nature to get what they want, and become dependent (Chairilsyah, 2019). Every parenting style had its own effect towards children's self-development. Parent who had permissive type of parenting style usually spoiled the child, no commands, low control, and high parental responsiveness. Children with authoritative parents exhibited more positive behavior compared to children with authoritarian and permissive parents (Howenstein et al., 2015). Nurtured with permissive parenting type, children tended to be resistant and spoiled. In contrast, nurtured with democratic style, children could be an independent person. The study in Legian Village, Bali, Indonesia found that parenting style of grandparents was dominantly permissive parenting style. Grandparents show their affection, attention and responsibility in fulfilling their grandchildren's needs (Pratiwi et al., 2020).

All forms of corporal punishment used as disciplinary strategies for children, were minimally effective in the short-term and not effective in the long-term. Corporal punishment risk to increased negative behavioral, cognitive, psychosocial, and emotional outcomes for children (Sege et al., 2018). Parents should avoid spanking when disciplining children because it's associated with deleterious outcomes (Ward et al., 2020). Physical punishment was harmful and increase child behavioral problems over time (Heilmann et al., 2021). In terms of positive punishment, we response to children behaviors by adding something unpleasant to stop undesirable behaviors. Whereas, negative punishment we take away something that favorite to the children. Negative punishment in form of time – out might reduce undesirable behaviors effectively in the short-term, however long - term use or positive punishment may have unanticipated and unwanted side-effects in shaping ADHD children's behaviors (Van der Oord & Tripp, 2020).

Participants in this study reflected that low self-discipline in children because of lack of self-control and poor emotional regulation. They expressed behaviors: temper tantrums, instant gratification, inattention, and hyperactive. These behaviors related to screen devices used as babysitter. Researchers found that the effects of inattention and hyperactivity problems in children who had severity of internet gaming disorder, were low self-control to aggression (Jeong et al., 2020). Generally, Children learn how to regulate their emotion and self-control by increasing thinking, planning, and organizing skills, but children who deficit in self-control had the association with adverse childhood experiences (Meldrum, 2020). In children, decreased emotion regulation was significantly related to maladaptive coping mechanism (Gruhn & Compas, 2020). Consequently, children should learn how to response to stressful situations in positive ways such as timeouts, holding privileges discipline, and modeling appropriate behavior (Rebinal, 2017).

Disciplined children were full of self-regulation explored from parents' perception in this study. Parents contributed their kids to maintaining self-care, punctuality, respectful behavior, and public mindedness. Positive processes between parent and child was predicted higher levels of self-regulation in early childhood. (Lobo & Lunkenheimer, 2020). This study found that parents disciplined self-care along with personal and social skills development such as feeding, teeth brushing for their kids. These several self-care and independence tasks performed in an early stage of young children's development were useful for their self-efficacy. Children who strong with their self-efficacy were able to increase their health and prevent health problems. (Maddux & Kleiman, 2022). Furthermore, the researcher found positive relationship between self-efficacy and self-discipline. The higher score on self-efficacy test, the higher self - discipline score test (Ma, 2022).

Punctuality was an important character to success in academic life. The importance of punctuality varied from culture. The Punctuality of Performing Prayers was very importance for every Muslim. There were 5 times commanded to perform prayers. The researchers in Indonesia found that online game addiction has an influence of 41.1% on punctuality in performing prayer. The higher the level of addiction, the more it will affect the punctuality in performing prayers (Helwatuzzakiah et al., 2021). In Nigeria, punctuality to classes, time management, study habits, record keeping, attitudes during classes, note taking, attitudes towards assignment, examination results and attitudes towards co-curricular activities were all parts of academic effectiveness of students. The researchers found that academic effectiveness related to discipline management of students (Owan & Ekaette, 2019). A study in street children at the basic schools in Somanya, Ghana, researchers found that street children were often not punctual and irregular at school. They were often apathetic towards learning and lack concentration in classroom (Appiah et al., 2022). A qualitative study of self-discipline in the life of university students found that fulfilling punctuality and responsibilities contributed them to be self-disciplined students. (Şimsisir & Dilmac, 2020).

Respect was an important component of both interpersonal relationships and personal identity. The researchers studied the role of respectful behavior in the relationship between empathetic tendencies and conflict resolution in primary school students. As a result, empathetic tendency through respectful behavior was found to be an important predictor of conflict resolution skills (Sekerci & Yilmaz, 2021). We found that parents cultivated their kids with respectful behavior in order to increase positive feeling to others, being respected, reciprocal respect and self-respect. When the children experienced respect, they showed concern people, and followed rules. Self-respect was the component of self-esteem and associated with morally principle (Clucas, 2020). This study found that parents disciplined their children to become disciplined children by increasing public mindedness. Public mindedness significantly affected children' s responsibility. (Janmaimool & Khajohnmanee, 2020) Public mind behavior to environment of students had positive significant relationship between cultivating environmental responsibility, environmental conservation, environmental sacrifice, environmentally sustainable development, environmental participation (Sookngam et al., 2022).

The limitation of this study was that even though data saturation was reached by only eighth interview. The sample size was a small sample. Findings might not be generalized to more regions in Thailand. The experience of parents

CONCLUSION AND RECOMMENDATION

This study found that parents used positive discipline strategies in parenting their kids to become disciplined children. Strengthen self-control and self-regulation is highly needed in order to train children to become disciplined.

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ORIGINAL ARTICLE

A SIMPLE MODEL FOR DESCRIBING NON-ADHERENCE TO MEDICATION IN TUBERCULOSIS PATIENTS IN A TROPICAL AREA, INDONESIA

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ABSTRACT

Indonesia has the second-highest number of tuberculosis (TB) cases in the world. Many TB patients did not take their medicine at health care centers causing an increase in taking medication. This study aimed to develop a simple model for describing non-adherence to medication in TB patients. This study used an analytical with a cross-sectional approach. The following criteria were used in selecting the respondent: adolescent, able to read and write, and willingness to be a respondent. A total of 93 participants were recruited randomly. Data were collected through questionnaires and analyzed using logistic regression. The predisposing factors were knowledge, attitude, belief (p = 0.000), trust (p = 0.013), and values (p = 0.001). Family support (p = 0.034) and healthcare personnel support (p = 0.022) were reinforcing factors. The enabling factor was the healthcare facility (p = 0.000). This study found that the most dominant factor is knowledge (B = 56.4). The model was Logit (Pi) = 22.363 + 56.4 knowledge (1) + 22.56 belief (1) + 2.9 family support (1) + 0.577 healthcare support (1) + 0.061 healthcare facility (1). This study suggests that TB patients' knowledge must be increased to improve their TB treatment and management.

Keywords: *Medication; non-adherence; tuberculosis*

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INTRODUCTION

Tuberculosis (TB) is an infectious disease with high morbidity and mortality rates worldwide (Mekonnen & Azagew, 2018; World Health Organization, 2021). These high rates are because TB treatment takes a minimum of six months. Therefore, TB patients must take their medication regularly. Most drug-susceptible TB cases can be cured with 2-intensive months of therapy followed by advanced phases of 4-7 months of therapy. Completing the treatment would result in only a 5-8% chance of return. However, non-compliance with TB medications will likely result in multidrug-resistant TB (MDR-TB) or post-TB sequelae (Bea et al., 2021; Mekonnen & Azagew, 2018). TB patients irregularly undergoing treatment, increase their rate of treatment failure and drug resistance (Adane et al., 2013) and relapse, leading to prolonged infection, transmission, and mortality (Woimo et al., 2017).

Non-adherence to medication is a form of health behavior. According to Lawrence Green's hypothesis, three elements—predisposing factors, precipitating factors, and enabling factors—impact health behavior (Green & Frankish, 1994). However, the non-adherence model has not been explored with non-adherence to medication for TB patients.

In Indonesia, the morbidity rate due to TB decreased in 2021. Nevertheless, Indonesia is still second after India for TB prevalence (World Health Organization, 2021). According to the Ministry of Health of the Republic of Indonesia in 2020, there were approximately 845,000 TB patients in Indonesia, 569,899 of them being notified. Therefore, 32% of cases have

not been reported. Moreover, 73% of the 90% target for successful treatment has been achieved.

Furthermore, Indonesia is one of the ten countries contributing to drug resistance rates yearly. Surabaya contributed the highest TB rate for East Java. In 2019, the number of TB cases at the East Perak Health Center was the 2nd highest in Surabaya and was comprised almost entirely of adolescents. The Global TB Report released by the World Health Organization in October 2021 estimated that there are currently 24,000 cases of drug-resistant TB in Indonesia. However, only 7,921 patients had laboratory confirmation, and 5,232 have started new treatments (World Health Organization, 2021).

TB medication adherence is critical for achieving successful treatment (Bea et al., 2021). However, ensuring adherence to TB drugs can be challenging due to the duration of treatment. Many factors affect the non-compliance of TB patients in taking medications. Treatment failure of TB patients is caused by socio-demographic and economic problems, knowledge and perception, and the effect of TB treatment (Pradipta et al., 2020). Nurses are health workers who are always in contact with TB patients. Thus, nurses also have a role in completing TB treatment. This study aimed to develop a simple model to describe the non-adherence to medication among Indonesian TB patients.

METHOD

Study design

This study used an analytical design with a cross-sectional approach.

Sample/ Participants/ Informant

This research was conducted at the Perak Timur Public Health Center, Surabaya. The population of this study was 119 pulmonary tuberculosis patients referred to the Perak Timur Health Center for treatment. The inclusion criteria in this study were adolescents who could read and write and were willing to be respondents. Their willingness was evidenced by their signed informed consent forms. The sample sizes were calculated from known population formulas. The sample size was 93 respondents, who were selected using simple methods for random probability sampling. This study considered predisposing factors (knowledge, attitudes, beliefs, and values); enabling factors (health facilities, environment); and independent variables (knowledge, attitudes, beliefs, and values); factors that reinforce (family support and healthcare personnel support), and the dependent variable of non-adherence to medication.

Data collection

Data collection was conducted using questionnaires with checklists.

Instrument

The TB medication adherence instrument was based on Lowren Green's behavioral theory, which consists of three parts: predisposing factors (knowledge, attitudes, and beliefs); enabling factors (health facilities, environment); and reinforced factors (family support and healthcare personnel support). The type of questions asked was closed questions with a Likert scale. The t-scoring system for the research data consisted of good and bad criteria with a good indicator with t-count > mean t. The validity test was predicated on a 0.361 difference between the r-count and the r-table. The assertion was accepted as true if the r-count exceeded the r-table. The instrument validity test results were deemed legitimate based on the instrument reliability test's findings and Cronbach's alpha result of 0.678.

Data analysis

Data were analyzed using logistic regression. The requirements for the logistic regression test were fulfilled, including data categorized as dichotomous and did not require the assumption of normality.

Ethical consideration

This research has received ethical approval from the Ethics Committee for Health Research at Nahdlatul Ulama University Surabaya with 048/EC/KEPK/UNUSA/2019.

RESULTS

The respondents' characteristics indicate that 52% were adults, 58% were male, and 50% had secondary education. Based on the respondents' treatment phase, 48% were in category 1.

Table 1. The participant's socio-demographic characteristics (n = 93)

Socio-demographic variables	Category	n (%)
Age	Adult	64 (68.8)
	Early elderly	29 (31.2)
Gender	Male	54 (58)
	Female	39 (42)
Education level	Basic	17 (18)
	Intermediate	47 (50)
	Advance	27 (42)
Suffering from TB	Category 1	45 (48)
	Category 2	26 (28)
	Category 3	22 (24)

Table 2. Regression analysis

Omnibus test	Hosmer & Lemeshow test	Prediction percentage	Regression analysis		
			Variables	p	OR
0.000	0.990	91.4	Knowledge	0.000	56.4
			Attitude	0,123	20.02
			Believe	0.000	22.56
			Family support	0.034	2.940
			Healthcare personal support	0.022	0.577
			Healthcare facility	0.007	0.061
			Environment	0.221	2.254

Table 2 shows that knowledge, belief, family support, support for health workers, and health facilities have a significant effect. Meanwhile, the variables that are not significant are attitude and environment.

The model fits (omnibus test = 0.000) and is correct (Hosmer and Lemeshow test = 0.990).

Logit (Pi) = 22.363 + 56.4 knowledge (1) + 22.56 believe (1) + 2.9 family support (1) + 0.577 healthcare support (1) + 0.061 healthcare facility (1).

This study's data were analyzed by logistic regression, where the requirements of the logistic regression test have been fulfilled. The following are the requirements for logistic regression: (1) does not require an assumption of normality, (2) a linear relationship between independent and dependent variables is not required, (3) independent variables do not require the assumption of multivariate normality, 6) dependent variables should be dichotomous, (9) at least 50 data samples are required for (independent) prediction if the required samples are relatively large.

Based on the above equation, the following information was obtained:

1. TB patients with low knowledge have a 56.4 times higher risk of non-adherence to TB mediation than those with good knowledge.
2. TB patients with low family support have a risk of not complying with TB medication 2.94 compared to those with good family support.
3. TB patients with low support from health workers risk not complying with TB medication by 0.577 times compared to those with good support from health workers.
4. TB patients with lower support from health facilities risk not complying with TB medication by 0.061 times compared to those with good support facilities.

Insignificant variables were attitude (p = 0.123) and environment (p = 0.221).

1. TB patients with low attitudes have a 20.02 times risk of non-adherence to TB medication than those with good attitudes.
2. TB patients with low environmental support have a 2.254 times higher risk of non-adherence to TB medication than those with good environmental support.

DISCUSSION

TB is a disease that can be cured. However, a lack of knowledge causes TB patients to not complete the necessary treatment (Adisa et al., 2021; Zhang et al., 2020). Low knowledge of tuberculosis and anti-TB therapy has a significant relationship with non-adherence (Mekonnen & Azagew, 2018). Lack of health education also makes TB patients lack information about TB medication (Ali & Prins, 2020). Thus, the patient's knowledge of the disease influences their treatment adherence and outcome (Dogah et al., 2021).

The factor that positively affects adherence to TB treatment is the belief in TB recovery (Sukartini et al., 2019). A good attitude is also related to adherence to drug adherence in patients with pulmonary disease TB at East Perak Surabaya (Nimah et al., 2019)·(Afryandes & Afryandes, 2020; Zahroh et al., 2021).

Family support is essential for TB patients to adhere to medication (Gugssa Boru et al., 2017; Zahroh et al., 2019). Families are involved as the patient's supervisors, provide food and transportation, and motivate the patient during treatment (Gugssa Boru et al., 2017). Knowledge of tuberculosis as well as family and social support are considered as important components of efficacy decisions..Knowledgeable families would encourage their family members to adhere to their treatment plan since they know of the repercussions of doing otherwise. Therefore, family support and information are crucial for a patient's healing and rehabilitation (Nimah et al., 2019). Effective family functioning can be interpreted as family members having a sense of belonging in the family, and maintaining their personality in a way that meets the psychological needs of family members. Family support allows families to function properly, improves adaptation skills and can improve the health of family members. Individuals who have good family support will become more optimistic and confident that they can improve their self-efficacy.

Lack of family support can contribute to non-adherence to medication by TB sufferers (Zhang et al., 2020). Social support systems including family support, peer support, and health support play an important role in maintaining TB treatment regimens (Barik et al., 2020). Moreover, families of TB sufferers play a role in preventing TB transmission by increasing knowledge and awareness (Gunawan, 2019; Sukartini et al., 2019, 2020).

Next, healthcare personnel helps TB patients overcome non-adherence to medications by being educators, reliable sources of information, trainers, and caregivers (Kurniawati, 2013). The role must be continuously and consistently performed at every TB patient meeting (Adisa et al., 2021). A strong correlation was also found between poor patient-provider relationships (Gugssa Boru et al., 2017; Mekonnen & Azagew, 2018; Sukartini et al., 2020). Lack of adequate communication between health professionals and TB patients also reduces the health worker support they receive (Gebremariam et al., 2010; Nezenega et al., 2020).

Furthermore, healthcare facilities also play a role and should ensure the timely collection of medication. However, access to healthcare facilities is frequently hampered by the difficulty of transporting TB patients to those facilities due to how they prepare their medications. (Sukartini et al., 2020). Moreover, transportation costs were the biggest obstacles to adhesion (Woimo et al., 2017). The patient's belief that they are far from health institutions is a major risk factor for non-adherence to tuberculosis treatment (Zegeye et al., 2019).

Another aspect to consider is the patient's living environment. It should also be modified into a place of therapy for the patient's recovery (Sukartini et al., 2020). The ability to modify a good environment will minimize the transmission of TB to other family members. Moreover, maintaining a healthy and conducive home environment will help TB patients to maintain their immune systems and avoid other diseases during their treatment program.

Non-adherence to anti-tuberculosis treatment was high (Adane et al., 2013). Pulmonary TB patients are considered obedient if they regularly undergo treatment for six months. After finishing the treatment, patients with pulmonary tuberculosis can be declared as recovered if they have met the predetermined criteria (Yusmaniar & Kurniawan, 2020).

Knowledge is the dominant factor that affects the TB patient's non-compliance in taking medication. Therefore, health workers, especially nurses, must increase health education efforts for TB patients. Knowledge is closely related to behavior (Gunawan, 2019; Sukartini et al., 2019). It is included in the cognitive domain and has six levels: knowing, understanding, application, analysis, synthesis, and evaluation.

In this study, attitude and environment were insignificant variables. The attitude factor referred to adherence to taking TB medication. The environmental factors reviewed in this

study included ventilation (air circulation), lighting, and humidity. Nevertheless, environmental factors must still be considered because they can affect the growth of TB. Feedback from the environment may be the most important factor that can influence the level of social support. In this study there were still many individuals who received less social support from the community because there is still a bad social stigma around people with pulmonary tuberculosis. Patients feel embarrassed and afraid to be excluded when they gather with the community because they suffer from pulmonary tuberculosis disease (Sukartini et al., 2019). This can cause an individual to withdraw or avoid others. This experience is a factor that can reduce their self-confidence because individuals are not able to control changes in their environment. Social support is not related to self-efficacy which is allegedly due to various social circumstances and conditions with different self-beliefs.

The limitation of this study was that only adult TB patients were sampled because almost all TB sufferers at the East Perak Health Center in Surabaya were adults.

CONCLUSION AND RECOMMENDATION

TB is a curable disease. The factors affecting non-compliance to medication should be minimized. This requires families and health workers to support (knowledge, attitudes) and motivate TB patients. In conclusion, overcoming the issue of non-adherence to TB medication requires collaboration between the private sector, family sector, society/healthcare sector, and government sector.

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ORIGINAL ARTICLE

THE EFFECT OF PREGNANT WOMEN'S PARTICIPATION IN PREGNANCY CLASSES ABOUT BREASTFEEDING SKILLS: A QUASI-EXPERIMENTAL STUDY

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ABSTRACT

Pregnant women can benefit from exclusive breastfeeding. Therefore, to raise awareness of exclusive breastfeeding and hone their breastfeeding skills, mothers can participate in pregnancy classes. This study aimed to determine the effect of pregnant women's participation in pregnancy classes on their breastfeeding skills. This is a quasi-experimental study with a control group and a double post-test design. The samples were selected by using random permuted block sampling. The sample size that met the inclusion criteria was 80 pregnant women in their third trimester domiciled in the work area of the Perumnas and Curup Public Health Center. The intervention group was given pregnant women classes with the Breastfeeding Preparation Module. This study used checklists to assess the respondent's breastfeeding skills. The data obtained were analyzed using the dependent T-test. The results showed that pregnant women's participation in pregnancy classes affected their breastfeeding skills (p-value < 0.05). Pregnancy classes regarding exclusive breastfeeding are recommended for pregnant women to succeed at breastfeeding, especially exclusive breastfeeding.

Keywords: *Breastfeeding skills; classes for pregnant women; third trimester*

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INTRODUCTION

Expecting mothers should begin taking exclusive breastfeeding skill classes in the third trimester of their pregnancy. One of the success factors for breastfeeding is the correct breastfeeding technique. Pregnant women can learn or improve their breastfeeding skills at classes held in antenatal care facilities. These classes contribute to the success of exclusive breastfeeding (Alebel, Tesma, Temesgen, Ferede, & Kibret, 2018). Mothers' breastfeeding skills include breastfeeding techniques and knowledge regarding expressing, storing, and correctly serving breastmilk. These skills are essential for babies to get good quality and quantity of breastmilk and for mothers to succeed in exclusive breastfeeding for six months.

Maulida et al. (2018) showed a significant relationship between pregnant women's participation in pregnancy classes and successful breastfeeding. Nowadays, there are various methods for women to obtain information that can increase their knowledge or information and lead to maternal behavior changes. Nevertheless, pregnancy classes are still needed, especially for primiparous mothers, to increase their knowledge about breastfeeding (Maulida, Umriaty, Dina, & Zulfiana, 2018). According to Soriano-Vidal et al. (2018), prenatal classes could influence the mothers' behavior. They also found that knowledge was the most important element influencing exclusive breastfeeding behavior, followed by subjective norms, practice control, and attitudes in women in Spain (Soriano-Vidal, Vila-Candel, Soriano-Martín, Tejedor-Tornero, & Castro-Sánchez, 2018).

Previous studies have also shown that the mother's decision to breastfeed or give formula milk to their babies is influenced by multiple factors, including knowledge, attitude, and helpers (healthcare workers). Moreover, a lack of help from significant others or professional healthcare workers when breastfeeding difficulties occur affects the mother's decision to give exclusive breastfeeding (Mawaddah, Barlianto, & Nurdiana, 2018).

The participation of pregnant women in prenatal classes influences the rate of exclusive breastfeeding. In Rejang Lebong Regency, 77% of mothers provided exclusive breastfeeding, which is lower than the Ministry of Health's target of 90% (Rejang Lebong District Health Office, 2020). This result is predicted to be caused by the low attendance in pregnancy classes for various reasons, such as household duties, difficulty managing time due to work, and socio-cultural factors such as doubts to check by midwife.

Prenatal classes allow pregnant women to learn together to increase their knowledge about pregnancy care, preparation for childbirth, breastfeeding techniques, and exclusive breastfeeding. The Indonesian Ministry of Health (2019) defined a prenatal class as a study group for pregnant women with a gestational age of 20 weeks to 32 weeks with a maximum of 10 participants. These classes enable pregnant women to study together, have discussions, and share their experiences about maternal and child health thoroughly and systematically (Indonesian Ministry of Health, 2019).

Pradany and Margawati (2016) showed a significant relationship between the level of mothers' attendance in a prenatal class and the behavior of exclusive breastfeeding (Pradany & Margawati, 2016). Moreover, according to Andayani et al. (2017), the rate of exclusive breastfeeding was 1.86 times higher among mothers who regularly attended prenatal classes than mothers who did not. Despite controlling the effect of antenatal care (ANC) and the husband's support, these classes have been found to affect exclusive breastfeeding directly (Andayani et al., 2017). Additionally, an exploratory study of mothers who gave birth by cesarean section found that environmental support from health workers and family support also played a role in the mother's breastfeeding habits during the first two months after giving birth (Wen et al., 2021).

Based on an initial survey conducted by the Independent Practice of Midwives (PMB) in the Work Area of the Perumnas Public Health Center and Curup Public Health Center from July to November 2020, 60 postpartum mothers complained that their breastmilk supply was low. Therefore, they could not exclusively breastfeed their babies. Low milk supply can be caused by the mother's lack of knowledge about the correct breastfeeding technique. Nationally, in 2018, the coverage of infants that receive exclusive breastfeeding was 68.74%. This figure is still well below the national target of 80%. Bengkulu Province was ranked 9th with a percentage of 65.46%.

Overall, the studies above suggest that pregnancy classes for expecting mothers may increase their breastfeeding knowledge and exclusive breastfeeding skills. This study used the breastfeeding preparation module combined with the demonstration method during the pregnancy class. This research aims to determine the effect of the expecting mothers' participation in pregnancy classes on their breastfeeding skills.

METHOD

Study design

This is a quasi-experimental study with a control group and a double post-test design (two-group post-test-only design).

Sample

There were 126 pregnant women in their third trimester in the Work Area of the Perumnas and Curup Public Health Center in 2021. The sample size that met the inclusion criteria was 80 pregnant women. The samples in the study were pregnant women in their third trimester (32 weeks' gestation), primigravida, singleton pregnancy, able to read and write, pregnant women without pregnancy complications, and willing to be respondents and sign the informed consent form. The random permuted blocks sampling technique was used, which randomized patients into groups called blocks. Treatments were assigned to each block in a random order, but the desired allocation proportion was reached within each block (Sugiyono, 2018). The number of samples obtained was 33 respondents, which was calculated by Lameshow's sample size formula:

$$n = \frac{\{Z_{1-\alpha/2}\sqrt{2\bar{P}(1-\bar{P})} + Z_{1-\beta}\sqrt{P_1(1-P_1)+P_2(1-P_2)}\}^2}{(P_1-P_2)^2}$$

Based on this formula, the minimum number was added by 20% to 39.6 as a form of anticipation for dropout respondents. Therefore, the sample size was 40 people for each control and intervention group. Thus, the total number of samples in this study was 80 people.

Instrument

The media used in the study was a Breastfeeding Preparation Module. The module was made by the research team based on sources from the Ministry of Health of the Republic of Indonesia and has been consulted with experts and tested at the community health center at the Kampung Delima Health Center, which usually conducts classes for pregnant women. The instrument used was the checklist for assessing breastfeeding skills from Suryaningsih's Research (2012), which has been tested for validity and reliability with a Cohen's Kappa reliability test value of 0. 815.

Intervention

Pregnancy classes were conducted four times per the Indonesian Ministry of Health standards with a duration of 1-2 hours. The intervention group was given the breastfeeding preparation module, which contained materials on exclusive breastfeeding, breastfeeding techniques, breastmilk expression methods, and tips for boosting breastmilk supply. The pregnant women's classes were divided into four sessions: a lecture session, a question-and-answer session, a brainstorming session, and a demonstration session. The control group was given counseling about breastfeeding skills. The measurement of breastfeeding skills was conducted twice, i.e., in the first and second week of postpartum.

Data collection

This research was conducted between September and November 2021 and from August to September 2022 in the Work Area of the Perumnas Public Health Center and the Curup Public Health Center in Rejang Lebong Regency, Bengkulu Province, Indonesia. Data was collected by using a breastfeeding skills checklist. The respondents received explanations about the study and agreed to sign the informed consent form.

Data analysis

A univariate data analysis approach was applied to determine the distribution of the respondent's age, education, and occupation. The frequency and percentage of categorical data were calculated and presented. Bivariate analysis was also conducted to examine the relationship between independent (participation in pregnancy classes) and dependent variables (breastfeeding skills). This study used a parametric test because the data obtained is numeric. The results of the data normality test using the Shapiro-Wilk test

obtained a p-value of > 0.05, which means that the data is normally distributed. As the data is normally distributed, the dependent T-test was applied. The confidence level was determined to be 0.05, and the confidence interval was 95%.

Ethical considerations

This research has received approval from the Research Ethics Committee of the Health Polytechnic of the Ministry of Health of Bengkulu with No. KEPK.M/123/07/2021.

RESULTS

The characteristics of the research subjects in the two groups are presented in Table 1.

Table 1. Respondents' Characteristics

Characteristics	A	B	*Sig*
	n (%)	n (%)	
Age:			
< 20 years and > 35 years	0 (0%)	0 (0%)	1.000
≥ 20-35 years	40 (100%)	40 (100%)	
Education:			
Primary school and junior high school	3 (7.5%)	10 (25%)	1.000
Senior high school	23 (57.5%)	14 (35%)	
University	14 (35%)	16 (40%)	
Occupation:			
Working mother	29 (72.5%)	17 (42.5%)	0.346
Not working	11 (27.5%)	23 (57.5%)	

Note: A = intervention group; B = control group

Table 1 shows that all respondents were 20-35 years old. In the intervention group, more than half of the respondents (57.5%) graduated from senior high school; in the control group, almost half (40%) graduated from university. Most working mother respondents (72%) were in the intervention group, while the proportion of working mothers was lower in the control group (42.5%).

The results of the Chi-square analysis showed that the two groups did not show a significant difference (p > 0.05). This result indicates that the two groups were homogeneous and worthy of comparison.

The average values of breastfeeding skills in the two groups are presented in Table 2.

Table 2. Average breastfeeding skills in the two groups

Breastfeeding skills score	Group	Mean	SD	SE	t	Mean diff	95% CI		*p-value**
							Lower	*Upper*	
Post 1st	I	43.90	1.45	0.59	17.23	4.65	3.34	6.4	0.000
	C	39.25	2.97	0.65					
Post 2nd	I	47.87	3.39	0.56	3.49	6.75	5.44	8.05	0.001
	C	41.12	2.80	0.61					

Table 2 depicts that the average difference between the intervention group and the control group in the first measurement is 4.65, and in the second measurement is 6.75.

A bivariate analysis was conducted to examine the relationship between the two variables. The results of the data normality test using the Shapiro-Wilk test obtained a p-value > 0.05. This result indicates that the data is normally distributed.

Table 3. Differences in the mother's average breastfeeding skills, expression, and storage after being given the Breastfeeding Preparation Module

Variable	Mean	SD	T-test	95% CI		*P value*
				Lower	Upper	
Maternal age in the intervention group - Post 1 intervention group skills	19.28	3.90	22.65	17.51	21.06	0.000
Maternal age control group - Post 1 control group skills	23.57	4.13	13.94	10.69	14.45	0.000
Maternal age in the intervention group - Post 2 skills in the intervention group	21.23	4.76	20.43	19.06	23.40	0.000
Maternal age control group - post 2 control group skills	23.57	4.13	13.94	10.69	14.45	0.000
Post 2 intervention group skills - Post 1 intervention group skills	4.65	1.44	12.64	3.34	4.65	0.000
Post 2 control group skills - Post 1 control group skills	1.87	2.07	3.78	0.76	2.65	0.001

Table 3 shows a significant difference in the mean value of breastfeeding skills between the intervention group and the control group based on age, with a p-value of < 0.05 in the first and second measurements. This suggests that there is an effect between maternal age and participation in pregnancy classes on breastfeeding skills. Statistically, the T-test showed a significant difference between the intervention and the control groups, with a p-value of <0.05 in the first and second measurements. This result indicates that pregnant women's participation in pregnancy classes affects their breastfeeding skills.

DISCUSSION

This study found that maternal age affects breastfeeding skills. This result is supported by Damayanti et al.'s (2020) study, which showed a significant relationship between age and exclusive breastfeeding. In general, each woman has different breastfeeding abilities younger primiparous (less 20 years old) mothers are considered more able to breastfeed than older primiparous mothers (≥ 35 years old).

According to the theory that the age of 20-35 years is the productive age range which should be the most ideal age for reproduction so that the ability to breastfeed is also considered the most optimal. Age above 35 years is an age with a high risk of pregnancy and childbirth, so it is considered that the ability to breastfeed has also decreased along with the aging of organ systems. Meanwhile, at the age of fewer than 20 years, the reproductive organs are still in their infancy (immature), psychologically it is also considered not ready to become a mother so that it will interfere with the process of exclusive breastfeeding (Rahmawati & Wahyuningati, 2020).

One of the contributing factors to this finding is the development of mature glands at puberty and how they change functions after giving birth to a baby. For this reason, more preparation is needed for mothers aged 35 years and over to succeed at exclusive breastfeeding, such as self-preparation in terms of increasing breastmilk supply for fulfilling their babies' needs through consuming nutritious food and having adequate rest.

For that it is necessary more preparation for mothers who aged 35 years and over in the gift Exclusive breastfeeding is like deep self-preparation things to increase breast milk so that mother's milk Smooth and enough for baby consumption such as consuming nutritious food, get enough rest, take the time enough for the baby to breastfeed as often as possible and deep improve breastfeeding achievement exclusive given age limit giving birth to mothers up to 35 years old related to a (Damayanti, Doda & Rompas, 2020).

One of the contributing factors to this finding is the development of mature glands at puberty and how they change functions after giving birth to a baby. For this reason, more preparation is needed for mothers aged 35 years and over to succeed at exclusive breastfeeding, such as self-preparation in terms of increasing breastmilk supply for fulfilling their babies' needs through consuming nutritious food and having adequate rest.

The productive age range of 20-35 years is the most ideal age range for reproduction. It is also within this range that the ability to breastfeed is considered the most optimal. Women over 35 have a higher risk of pregnancy and childbirth. It is considered that their ability to breastfeed has also decreased along with the aging of their organ systems (Pradany & Margawati, 2016).

Conversely, at ages below 20 years, the women's reproductive organs are still in their infancy (immature). Women in this age range are also psychologically considered unprepared to be a mother. These factors would interfere with their breastfeeding journey and result in their failure in exclusive breastfeeding (Rahmawati & Wahyuningati, 2020).

The mother's age of over 20 years shows their physical and mental readiness to receive information during pregnancy class (Rapingah, Muhani, Besral, & Yuniar, 2021). In line with this study, maternal age affects breastfeeding skills. For mothers who attended the classes for pregnant women, the rate of exclusive breastfeeding is 1.86 times higher than for mothers who did not attend. A previous study has shown that despite controlling for factors such as husband's support and ANC, classes of pregnant women can directly affect exclusive breastfeeding (Andayani *et al.*, 2017). Classes for pregnant women can be provided during antenatal care and contribute to exclusive breastfeeding success (Alebel et al., 2018).

Next, the mother's educational level can affect their knowledge and attitude towards breastfeeding. Rahmawati and Wahyuningati (2020) stated that education level is related to breastfeeding skills and that the higher the mother's level of education, the easier it is for the mother to absorb information. Furthermore, previous studies have revealed that the mother's educational background was a significant predictor of good intentions and motivation to practice exclusive breastfeeding (Rapingah, et al. (2021). Educated women also follow the recommended antenatal instructions, changing their attitudes towards breastfeeding practices and affecting their decision to give exclusive breastfeeding (Sutrini & Aulia (2020). Mothers with no formal education are less likely to do exclusive breastfeeding because they tend to be less informed about the benefits of exclusive breastfeeding compared to mothers with higher education (Sutrini & Aulia, 2020). In addition, knowledge of breastfeeding skills and sources of information about breastfeeding were significant predictors of good intention to practice breastfeeding (Jebena & Tenagashaw, 2022).

Regarding the mother's occupation, Sutrini and Aulia (2020) stated that there was no relationship between the type of work and exclusive breastfeeding for working mothers. The mother's occupation is not related to breastmilk production; even though they have different workloads, all these types of work produce the same effect on the mother's physical and psychological condition (Sutrini & Aulia, 2020). The low exclusive breastfeeding to working mothers probably due to the fact that mothers generally work all the time consumed by his job at eventually affect life family, one of which is breastfeeding exclusive Therefore it is very important to impart knowledge to the mother working on the benefits of breastfeeding and breastfeeding, expressing breast milk, how to store and give breast milk, milk, how manage lactation since pregnancy so that working mothers can still get exclusive breastfeeding as well strive for regulations from local government so that each owner the workplace provides support for success of exclusive breastfeeding (Shaliha, 2019).

This study shows a significant difference in the mean of breastfeeding skills between the intervention and the control groups, with a p-value of < 0.05 in the first and second measurements. This result is supported by Maulida *et al.*'s (2018) study, which stated that there is a significant relationship between pregnant women's class participation and breastfeeding. Various media can increase knowledge or information influencing mothers' behavior. However, classes for pregnant women are still needed, especially for new mothers, to increase their knowledge about breastfeeding (Maulida et al., 2018).

Breastfeeding skills can be delivered to pregnant women during antenatal classes; midwives or maternity nurses can teach mothers about breastfeeding and its benefits during pregnancy or before the baby's birth (Lumbiganon et al., 2016). According to the reference Indonesian Ministry of Health (2019), classes for pregnant women should be held at least four times during pregnancy or per the agreement between the facilitator and participants. At each meeting, the class material for pregnant women would be adjusted to the needs and conditions of the participants. Nevertheless, it would still prioritize the primary material: breastfeeding and exclusive breastfeeding (Indonesian Ministry of Health, 2019). Mothers need to be informed that breastfeeding is a natural and physiological way to provide nutrition to infants and toddlers. Breastfeeding is an optimal way of providing nutrition and care for babies. The addition of complete foods

in the second half of the baby's first year also helps to meet their nutritional, immunological, and psychosocial needs (Gupte, 2016).

Table 2 and Table 3 show a significant difference in the mean of breastfeeding skills between the intervention group and the control group with a p-value of < 0.05 in the first and second measurements. This result aligns with Sulistiyawati's research (2016), which stated that other predisposing factors, such as self-confidence, parity, experience, and working status, influence exclusive breastfeeding. Multiparous mothers would have more experience in caring for their children, therefore they have better exclusive breastfeeding skills than primiparous mothers (Sulistyawati, 2016). The amount of knowledge that individuals gain, either through formal or informal education, also significantly contributes to individuals making healthy decisions, which directly impacts health status (Sulistiarini, 2018).

This study found that mothers could successfully breastfeed their babies after receiving the breastfeeding module. Applying the correct breastfeeding technique is one of the determining factors in whether the breastfeeding process will succeed or fail. Therefore, one of the activities that can help mothers become skilled in breastfeeding is to train postpartum mothers on correct breastfeeding techniques (Gupte, 2016). The classes given to pregnant women were found to have helped them to increase their knowledge of breastfeeding techniques, resulting in their ability to properly manage their expressed breastmilk to provide maximum breastmilk to their babies.

Furthermore, Jebena and Tenagashaw (2022) stated that health education information about breastfeeding techniques given during antenatal care, and follow-up perinatal care were variables that were significantly related to the practice of exclusive breastfeeding. Counseling pregnant women on breastfeeding issues during antenatal care services enables all mothers to access perinatal care services and encourages early initiation of breastfeeding.

Another study stated that the mother's decision to breastfeed their babies largely depends on their knowledge and attitudes towards breastfeeding (Sabriana, Riyandani, Wahyuni, & Akib, 2022). In line with this study, Raissian et al. (2019) stated that factors related to motivation and desire to breastfeed, such as knowledge about the benefits of breastfeeding for infant health and support from professional healthcare workers, are important for successful breastfeeding.

This study found a significant mean difference between breastfeeding skills in the intervention and control groups. The mothers' participation in pregnancy classes required support to obtain correct information about breastfeeding skills. Breastfeeding support groups help mothers to feel cared for and loved. This creates positive emotions, which can increase the levels of the hormone oxytocin and subsequent breast milk production (Purwanti, 2014). Moreover, Yuniyanti et al. (2017) found that breastfeeding support groups have encouraged pregnant women to have the confidence to breastfeed.

Tan et al. (2020) also stated that breastfeeding education during the antenatal period provides prospective mothers with the information and skills needed to breastfeed. Antenatal education substantially increases breastfeeding rates (continuing breastfeeding at two weeks postpartum) and initiation of breastfeeding rates (Wong, Tak Fong, Yin Lee, Chu, & Tarrant, 2014).

Research by Astutik and Purwandari (2021) revealed that skills related to breastfeeding techniques increased after mentoring. This research used breastfeeding technique materials that were provided through a 10-minute video delivered in easy-to-understand language and accompanied by exercises that used a phantom or a baby doll to demonstrate breastfeeding. This method can help increase the success of exclusive breastfeeding. Studies have also shown that pregnant women who actively participate in pregnancy classes have better breastfeeding skills than those who do not (Astutik & Purwandari, 2021).

This study has some limitations. Firstly, the researchers did not match the sample of the intervention group and the control group. Next, the supporting variables and confounding variables were not examined. A multivariate analysis was also not conducted. Moreover, we had difficulties controlling, parents or in-laws are more dominant in providing information, making it difficult to control respondents a safe and comfortable environment for respondents when evaluating breastfeeding skills. Cultural and family factors also became obstacles in the study. Family habits conducted during breastfeeding regarding method, scheduling, and myths have caused some respondents to hesitate to apply the breastfeeding skills taught.

CONCLUSION AND RECOMMENDATION

The mean of breastfeeding skills in the intervention and control groups differed from the mean difference in the first measurement. There is a significant difference in the mean of breastfeeding skills between the intervention group and the control group. Therefore, there is an effect on the participation of pregnant women in breastfeeding classes after being given the breastfeeding preparation module. Thus, it is recommended that breastfeeding preparation is conducted during pregnancy so that exclusive breastfeeding and breastfeeding for up to two years can be reached.

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ORIGINAL ARTICLE

EDUCATIONAL INTERVENTION TO IMPROVE KNOWLEDGE AND ATTITUDES ABOUT THALASSEMIA PREMARITAL SCREENING SURVEYS AMONG MUSLIM SOCIETIES: A PILOT STUDY IN INDONESIA

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ABSTRACT

Premarital screening is an effective preventive intervention to decrease the prevalence of thalassemia. However, the use of premarital screening is still low in Indonesia. This study assesses the effect of educational interventions on the knowledge and attitudes of Muslim couples regarding premarital screening for thalassemia in Indonesia. This pilot study used a pre-posttest design that included 17 premarital couples in Banyumas District. The participant's knowledge and attitude regarding premarital screening for thalassemia were measured using a paper-based questionnaire before and after the intervention. The participants received a class-based lecture about thalassemia screening and were provided a handbook containing lecture material to read at home. The knowledge and attitude score was analyzed using Wilcoxon and Kruskal-Wallis test. The knowledge score significantly increased after the intervention, but the proportion of positive attitudes did not differ significantly. The participants knew that premarital screening for thalassemia was necessary; however, it did not affect their marriage decision. Thus, educational intervention increases the knowledge and shapes the attitude of couples toward thalassemia premarital screening but is inadequate for changing their behavior. Further exploration of the factors that affect the behavior of couples is needed to increase the use of premarital screening among couples in Indonesia.

Keywords: *Attitude; education intervention; knowledge; premarital screening; thalassemia*

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INTRODUCTION

Thalassemia is an autosomal recessive genetic disorder of the blood that causes the human body to produce less hemoglobin. Genetic mutations and the level of expression influence the condition. The hereditary nature of thalassemia implies that the number of carriers will significantly affect the prevalence of the disease. Approximately 1.5% of healthy people in the global population are carriers of the mutant gene of β thalassemia, which leads to approximately 60,000 affected newborns annually (Lippi & Mattiuzzi, 2020).

The high medical costs for thalassemia treatment often form a financial barrier for its sufferers. Hematopoietic stem cell transplantation (HCT) is the only currently available procedure to cure the disease. However, it is expensive and unavailable to ordinary people (Santarone et al., 2022). This treatment includes blood transfusions, iron chelation therapy, nutritional supplementation, and surgical procedures. These procedures are resource-consuming because they must be provided for a lifetime (Chonat & Quinn, 2017). Therefore, preventive care, such as premarital screening, is the most effective and efficient way to reduce the prevalence of thalassemia. Premarital screening is one of the most frequent preventive efforts in various countries to reduce morbidity and mortality related to genetic disorders, especially thalassemia (Kisanga et al., 2021).

In Indonesian society, adequate knowledge and awareness of diseases caused by genetic disorders, including thalassemia, are still considerably low (Rujito et al., 2020). The screening of thalassemia carriers, such as premarital screening, tends to have a negative response from the community due to the low level of knowledge regarding the disease. This mainly occurs in traditional societies with rigid social norms and values, such as religious societies. Therefore, increasing people's knowledge regarding thalassemia and the related preventive efforts is crucial to preventing the disease (Angastiniotis & Lobitz, 2019). Moreover, a comprehensive understanding of thalassemia is required to reduce the mental burden felt by individuals with thalassemia when choosing a life partner (Hasanshahi & Khanjani, 2021).

Indonesia, a religious country with the world's largest Muslim population, has a relatively high incidence of thalassemia, with approximately 3-10% people being carriers, compared to Caucasian countries with below 1% prevalence (Wahidiyat et al., 2022). The Indonesian Thalassemia Foundation has conducted various efforts to increase people's knowledge of thalassemia in Indonesian society. These include providing information about thalassemia, such as brochures directly to the people, school-based education, and community empowerment, such as developing and training health cadres. Integrating thalassemia-related knowledge as part of schools' curricula is also an effective way to increase people's knowledge about the disease (Schmotzer et al., 2021).

However, the association between efforts to increase people's knowledge and premarital screening as the primary prevention of thalassemia has not been explored. Therefore, this study aims to conduct educational interventions for the targeted community to gain adequate knowledge of thalassemia and measure people's attitudes toward its screening. This study focuses on especially Muslim couples as the largest community in the country with conservative conduct regarding its religious rules. The pilot study took place in Banyumas District, Central Java, Indonesia, as one of the country's leading locations for both incident rate and service programs in Indonesia.

METHOD

Study design

This was a pilot study with a pre-posttest design. It assessed the differences in the level of knowledge and attitudes of premarital couples about thalassemia before and after the educational intervention.

Sample

The pilot study used the consecutive sampling method using the Lameshow formula $n = z1\text{-}\alpha/2P(1\text{-}P)/d^2$ with Z for 0.05 signifiance, d: 0.1, and proportion 0.23 to select 17 respondents (based on couples registered between the time frame of data collection). The inclusion criteria included newly married couples aged 19-35 years without a health statement. The exclusion criteria were respondents who have family members with genetic diseases. Couples who met the criteria and could participate in the research were then recruited. These couples planned to register their marriages at the Population and Civil Registration Office and Religious Affairs Office in Banyumas District, Central Java, Indonesia.

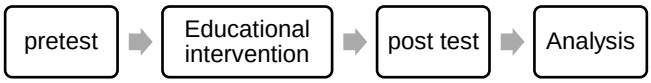
Instrument

The research instruments were a set of questionnaires related to premarital screening and booklets on thalassemia. The questionnaire was adopted and modified from a previous instrument (Hashemi-Soteh et al., 2019), and its validity and reliability were tested using Cronbach's alpha and Spearman tests before being administered to potential respondents. The respondents' demographic and other basic characteristic data were collected through this instrument. A tape recorder was used during the question-and-answer process to facilitate the interview.

Intervention

All participants went through the following process. Before the intervention, all participants received a questionnaire about their knowledge, attitudes, and behavior on premarital thalassemia screening. The knowledge section consists of 15 questions with a total score of 100. The questions for attitude were developed to assess how well the respondents understand, agree, and support the prevention program. The attitude section comprised of 12 questions with 6 main topics on a Likert scale with the following categories: agree, neutral, and disagree. It also consists of open-ended questions about the respondent's desire for the mass prevention program.
The education process was implemented in two steps. First, the respondents received a class-based education through a presentation of educational material about premarital screening for thalassemia, followed by an interactive discussion. This process was conducted by a physician who has expertise in thalassemia. Second, the respondents received a handbook containing educational material about premarital screening for thalassemia to read at home. The measurement of the respondents' knowledge regarding premarital screening for thalassemia and their attitude was repeated three days after the educational intervention using the same instrument.

Flowchart



Data collection

Data were collected using a structured interview instrument when the couple registered their marriage. Knowledge data were recorded on paper, while audio recordings were taken for the attitude questions.

Statistical analysis

A univariate analysis was conducted to describe the participants' basic characteristics. Data measured in a categorical scale were described using absolute frequency distribution and percentages. A non-parametric Wilcoxon sign-ranked test was employed to assess the difference in knowledge scores before and after the educational intervention. Non-parametric tests were employed because the data were not normally distributed, and data transformation failed to normalize the data distribution. For similar reasons, the Kruskal Wallis tests were performed to assess the changes in the participants' attitudes. These were categorized into three categories (agree, neutral, and disagree) before and after the intervention.

Ethical consideration

This study has been exempted from undergoing a full ethics review by the Health Research Ethics Committee, Faculty of Medicine, Universitas Jenderal Soedirman, with the reference number: 0803/UN23.07.5.1/PP.1/2019.

RESULTS

Muslim couples are the largest community that performs their marriage registration process at the religious department. This fact is correlated with the number of Muslim populations in Indonesia. The basic characteristics of this study's participants are displayed in Table 1.

Table 1. Participant's characteristics (n = 17)

Characteristics	% (n)
Gender	
Male	47.1 (8)
Female	52.9 (9)
Education level	
Low	11.8 (2)
Middle	76.4 (13)
High	11.8 (2)
Employment	
Unemployed	17.6 (3)
Formal workers	58.9 (10)
Informal workers	23.5 (4)
Place of residence	
Urban	17.6 (3)
Rural	82.4 (14)
History of genetic disorder	
Yes	-
No	100.0 (17)
Carrier attribute	
Yes	-
No	100.0 (17)
Family history of genetic disorder	
Yes	-
No	100.0 (17)
Consanguinity	
Yes	-
No	100.0 (17)
Source of screening-related information	
Internet	5.9 (1)
Social media	17.6 (3)
Unknown	76.5 (13)
History of genetic screening	
Yes	-
No	100.0 (17)

Most of the respondents are female (52.9%), have a middle level of education equal to junior and senior high school level (76.4%), work as formal workers (58.9 %), and live in rural areas (82.4%). Regarding genetic characteristics, none of the respondents have a history of genetic disorders, carrier attributes, consanguinity, and a family history of genetic disorders. Most of the respondents also have no previous knowledge or information related to genetic or thalassemia screening (76.5%), and none of them have undergone any genetic screening before.

The average knowledge score before and after the intervention, followed by both absolute and relative changes in knowledge score after the intervention are presented in Table 2. Overall, the respondent's knowledge score was higher after the intervention than before. The overall knowledge score after the intervention increased by 39% compared to before the intervention. The increase in the knowledge score varies among categories such as gender, educational level, and employment type. Female respondents had lower knowledge scores both before and after the intervention compared to the male respondents. However, the female respondents had a larger increase in knowledge score after intervention compared to male respondents. Based on socioeconomic status, the high level education group had the highest knowledge score both before and after the intervention compared to the lower groups. The same phenomenon was seen when comparing formal workers with informal workers and unemployed individuals. However, respondents who were low education level (11.8%) and unemployed (65%) experienced the largest increase of knowledge score after the intervention.

Table 2. The average knowledge score of the respondents before and after the intervention (n = 17)

	Average knowledge score (%)		Change of knowledge score (%)	
	Before the intervention	After the intervention	Absolute	Relative
Overall	56.1	78.0	21.9	39.0
Gender				
Male	63.7	82.2	18.5	29.0
Female	47.5	73.3	25.8	54.3
Education level				
Low	30.0	63.3	33.3	111.0
Middle	50.9	76.1	25.2	49.5
High	86.7	93.3	6.6	7.6
Employment				
Unemployed	44.4	73.3	28.9	65.1
Formal worker	62.7	84.0	21.3	33.9
Informal worker	48.3	68.3	20.0	41.5

The participant's attitude toward premarital screening before and after the intervention is displayed in Table 3. In general, the respondent's attitudes toward premarital screening show fewer positive results after intervention with a higher number of respondents who opted for "neutral" or "disagree" from previously choosing to "agree" on several items. For instance, the number of respondents who agreed on the importance of premarital screening decreased from 70.6% before intervention to 58.8% after intervention. Similar findings were also found in the respondent's attitudes toward the possibility of premarital screening becoming a mandatory requirement for marriage as well as the implementation of government regulation to prevent marriage with positive screening results. However, some favorable changes in the participant's attitudes were also found. For instance, the number of respondents who recommended earlier screening increased from 0% to 11.8%.

Table 3. The respondent's attitude toward premarital screening before and after the intervention (n = 17)

Attitude parameter	Respondent's attitudes	
	Before the intervention % (n)	After the intervention % (n)
Premarital screening is important		
Agree	70.6 (12)	58.8 (10)
Neutral	29.4 (5)	41.2 (7)
Disagree	0.0 (0)	0.0 (0)
Agree to do premarital screening with a partner		
Agree	88.2 (15)	88.2 (15)
Disagree	11.8 (2)	11.8 (2)
Premarital screening is a mandatory procedure		
Agree	58.8 (10)	35.3 (6)
Neutral	41.2 (7)	58.8 (10)
Disagree	0.0 (0)	5.9 (1)
Most appropriate screening time		
Before marriage	88.2 (15)	70.6 (12)
During high school	11.8 (2)	17.6 (3)
Early	0.0 (0)	11.8 (2)
Marriage decision when screening results is positive		
Continue to marriage due to faith in God	70.6 (12)	47.1 (8)
Continue to marriage and willing to take the risk	17.6 (3)	29.4 (5)
Cancel the engagement/marriage	5.9 (1)	0.0 (0)
Do not know	5.9 (1)	23.5 (4)
Government regulation to prevent marriage when screening result is positive		
Agree	17.6 (3)	11.8 (2)
Neutral	64.8 (11)	58.8 (10)
Disagree	17.6 (3)	29.4 (5)

Table 4 and Table 5 exhibit the changes in knowledge score and the percentage of the respondent's positive attitudes before and after the intervention. The participant's average knowledge about premarital screening increased significantly after the intervention (78.04) compared to the average score before the intervention (56.08), as indicated by the p-value of 0.002.

Table 4. Change of knowledge score before and after intervention

Variable	Score (average%)		p-value
	Before	After	
Knowledge	56.08	78.04	0.002

Table 5. Changes of participant's attitude toward premarital screening before and after intervention

Attitude parameter	p-value
The importance of premarital screening	0.900
Premarital screening as mandatory procedure	0.293
Most appropriate screening time	0.352
Marriage decision due to positive screening result	0.264
Regulation to prevent marriage when screening result is positive	0.696

DISCUSSION

This study assessed the effect of educational interventions on the knowledge score and attitude toward premarital screening in Muslim couples living in Banyumas, Central Java, Indonesia. This study found that the respondents' knowledge regarding premarital screening significantly increased after the educational intervention compared to their knowledge before the intervention. However, the educational intervention did not significantly affect the respondents' positive attitude toward premarital screening.

This study found that educational intervention significantly improved the knowledge of the respondents. This finding is similar to a previous study conducted in Saudi Arabia which showed that health education interventions significantly increased the level of the student's knowledge related to Sickle Cell anemia (Kotb et al., 2019). Another study on the multiethnic population in Malaysia showed a significant increase in the level of respondents' knowledge as well as the agreement to the premarital screening program after the educational intervention. Moreover, this study underlined two most important factors which may further stimulate the respondents to conduct premarital screening: comprehensive information related to screening and the availability of screening facilities (Mohd Nor et al., 2022).

In this study, the respondents' knowledge scores were relatively low before the intervention. This is understandable because information about thalassemia and their preventive programs, such as premarital screening, is still limited in public media. Those with better information access are likely to have better knowledge. This can be confirmed by the relatively high score for respondents with high educational backgrounds (university level), implying that respondents with higher education have better information access and perhaps multiple information sources, resulting in a higher knowledge score. Several studies have confirmed the important role of education in health information access, particularly for preventive healthcare (Chen et al., 2019; Soroya et al., 2021).

In terms of knowledge increase, this study showed that respondents with low socioeconomic status (e.g., low-educated and unemployed respondents) experienced a larger increase in knowledge compared to their counterparts. This finding is similar to previous studies in Oman and Saudi Arabia (Al-Kindi et al., 2019). As the lower socioeconomic groups had much lower knowledge scores before the intervention compared to the higher socioeconomic groups, the probability of having a larger increase in knowledge scores becomes higher. For the higher socioeconomic groups, because their knowledge score is already high before the intervention, the increase of the knowledge score after the intervention is likely to be lower. This phenomenon is also known as the "ceiling effect" and is commonly found in studies related to health information (Svendsen et al., 2020).

Furthermore, the results from this study showed that the respondents' positive attitudes toward premarital screening did not increase and even decreased after the educational intervention. This result is different from a previous study in Cambodia which showed that knowledge and attitude towards preventing and controlling severe thalassemia and particularly the intention to undergo premarital screening improved considerably in the intervention group (Cheng et al., 2018). This difference can be explained by assuming that the positive response before the intervention represents a standard view of a value that is considered similar among individuals. Knowledge, motivation, and information interventions would increase the understanding of the proposed value conditions (Asbjørnsen et al., 2020). As a result, this will affect the attitude and values of the subject by considering the consequences of their positive attitude contrary to other social norms such as religious values, tradition, and cultural norms, which may lead to a more negative attitude toward premarital screening. In a society with a very heterogeneous background, the variation in attitude represents the variation in the respondents' literacy and ethnic origins (Al-Qattan et al., 2019). As previously mentioned, educational intervention potentially improves people's perception of thalassemia and their preventive care. However, this is still a formidable challenge in Indonesia due to ethnic diversity, its vast region, and cultural differences (Andodo et al., 2019; Rujito & Mulyanto, 2019; Widayanti et al., 2020).

Another plausible explanation related to the insignificant effect of an educational intervention on changing respondents' attitudes toward premarital screening is that the nature of thalassemia is described as a hereditary disease, which does not directly affect the respondents' current health condition. The study showed that the absence of clear and immediate signs and symptoms of the disease tend to negatively affect people's attitude toward the disease (Widayanti et al., 2020). Moreover, based on the health belief model, obtaining knowledge of the disease is not a warranty for achieving a cure (Luquis & Kensinger, 2019). A previous study also showed that the increase in knowledge and understanding related to the disease might drive the respondents to avoid screening due to the consequences of the screening results (Jaka et al., 2019).

The complexity of factors that influence a participant's attitude toward premarital screening is clearly described by the findings related to marriage decisions after premarital screening results. Most respondents were willing to take health risks by continuing the marriage, although their screening result showed significant health risks and suggested that the marriage should be canceled. This finding is similar to a previous study of a screening program for sickle cell disease and β-thalassemia in Saudi Arabia. Most respondents decided to continue marriage regardless of the unfavorable screening results (Al-Shroby et al., 2021). A previous study in Indonesia found that after going through premarital screening and education, couples that made individual decisions tend to have a conflict with their partners. For Muslim couples, particularly in Indonesia, the marriage decision generally involves each partner's extended family, complicating the decision-making process (Rizkianti et al., 2020).

Although premarital screening programs were unsuccessful in discouraging at-risk marriages, another study showed that it is likely to reduce the prevalence of affected births in countries given the adequate availability of prenatal detection and therapeutic abortion (Chakravorty & Dick, 2019). These options may provide opportunities for more advanced educational intervention using information technology that may suit millennials (Marshall et al., 2019). Efforts should start at the early stage to maximize the outcome of educational intervention by incorporating the program into formal education from the elementary level (Jansen et al., 2019).

Considering that attitude and behavior are heavily influenced by contextual factors such as religious values, social norms, and tradition, education interventions that aim to increase the public's knowledge of the general population and not only the specific population, such as couples, become fundamental. According to previous studies, a positive attitude relates to the health education provided. Therefore, teaching is essential for increasing public attitudes in the community and needs to be implemented as part of the formal education curriculum to promote a healthy lifestyle and prevent diseases. These efforts include counseling, interactive quizzes, and screening services (Joh et al., 2017).

This study reveals some prominent data for the Indonesian population. However, there are still several weaknesses that can be considered for further research. Future studies should improve this study's number of respondents and lack of controls.

CONCLUSION AND RECOMMENDATION

In conclusion, this study showed that the proposed educational intervention successfully increased the respondent's overall knowledge but did not positively affect their attitude toward premarital screening for thalassemia. The positive attitude toward premarital screening is likely related to the complexity of marriage decisions in the Indonesian context, which is often a collective decision of extended families influenced by religious values, social norms, and tradition rather than the participant's individual decision. Therefore, to be more effective, health campaigns are needed not only for a specific population (i.e., couples) but for the general population to increase public awareness and shape public attitudes toward the disease. A continuous, comprehensive, and integrated educational intervention that starts in the early stages of learning and is incorporated into formal education is likely to increase the public's knowledge and shape a positive attitude and behavior toward thalassemia and its prevention.

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ORIGINAL ARTICLE

THE EXPERIENCE OF TYPE II DIABETES MELLITUS PATIENTS WITH EARLY SYMPTOMS OF HYPOGLYCEMIA: A PHENOMENOLOGICAL STUDY

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ABSTRACT

Hypoglycemia is one of the acute complications that often occur in diabetes mellitus (DM) patients and could become an emergency condition that requires immediate treatment. The initial symptoms of hypoglycemia are cold sweats, tremors, dizziness, and blurred vision. Generally, DM patients' lack of diet management exacerbates hypoglycemia. This study aimed to explore experience of type 2 diabetes patient's hypoglycemia symptoms and affected factors. This qualitative research applied a phenomenological approach to seven participants. Semi-structured interviews were done to collect data. The Braun & Clarke method was then used to analyze the data. This study revealed three themes including the initial hypoglycemia symptoms, diet modification, and medication adherence. The study's results are expected to provide information on the importance of education and control related to initial hypoglycemia symptoms, nutrition, and medications awareness to the type 2 diabetes patients and family.

Keywords: *Hypoglycemia; symptoms; type II diabetes mellitus*

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INTRODUCTION

Diabetes mellitus (DM) is a heterogeneous group of disorders characterized by elevated glucose levels in the blood, also known as hyperglycemia (Maria Lousiana, et al., 2017) and insulin resistance (Alsahli & Gerich, 2015). DM is a degenerative disease that causes the pancreas to be unable to produce the hormone insulin for the body's needs. This increases blood sugar levels and can cause several other diseases as complications, such as chronic kidney disease, cardivasculer disease, ulcus diabetic.

The International Diabetes Federation (IDF) shows that 463 million people around the world were living with DM within the age range of 20-79 years, with a prevalence rate of 9.3%. This is only estimated to continue to increase (William et al, 2019). Indonesia is ranked 7th in the world for the prevalence of DM sufferers, reaching 10.7 million people. Meanwhile, in Southeast Asia, Indonesia ranks 3rd for the highest number of DM sufferers, with a prevalence of 11.3%. This figure is predicted to increase along with the escalation in the population with diabetes worldwide.

According to an Indonesian Basic Health Research (Riskesdas) report in 2018, there was an increase in the prevalence of DM sufferers in Indonesia. Prevalence reached 2% in 2018 for people above 15 years old (Riskesdas, 2018). This is a significant increase from 2013 which had a prevalence of 1.5%. This increase in the number of DM sufferers occurs in almost every province. In 2013, East Kalimantan was ranked 4th with the highest number of sufferers in Indonesia, but in 2018 this position changed to the 2nd highest in Indonesia. This indicates that the increase in the number of people with DM is happening rapidly.

DM is a disease that is quite difficult for its sufferers to control. Acute and chronic complications often occur in patients with DM. The acute complication that often occurs is hypoglycemia, where blood sugar levels are <50 mg/dl, and blood sugar values are below average. Low blood sugar levels in DM sufferers can cause damage to several organs of the body, especially the brain, due to the lack of nutrients received, thus inhibiting its function (Fatimah, 2015).

Hypoglycemia frequently occurs in patients with type 2 diabetes. This condition is typically based on the length of time the patient has suffered from DM, history of drugs used, diet, and age. Therefore, studies should be conducted to understand the signs and symptoms of hypoglycemia to minimize its risk. Understanding the signs and symptoms of hypoglycemia will significantly help patients and health providers to determine the actions that DM patients will need to take to avoid more severe hypoglycemia conditions (Decroli, 2019).

Hypoglycemia conditions can be categorized into mild, moderate, and severe, depending on the symptoms. Examples of mild to moderate symptoms are headaches, body shakes, cold sweat, heart palpitations, and hunger. Severe hypoglycemia is usually not felt by the patient, but symptoms that can be seen by other people or family members, such as seizures, changes in behavior, physical fatigue, confusion, and even coma. This condition requires immediate medical attention. However, mild to moderate symptoms can be overcome early by giving the sufferer food or drinks containing sugar (Makbul, 2018).

Hypoglycemia is a life-threatening condition for people with diabetes. It can occur when DM sufferers forget to eat. This is usually not only caused by forgetting to eat but also an unwillingness to eat. This is frequently seen in the elderly, as they often experience a significant decrease in appetite. Meanwhile, DM patients must continue to consume DM drugs regularly. This situation will cause a decrease in blood sugar in people with DM (Zoungas, 2010).

Another condition that often results in hypoglycemia is excessive activity. Excessive activity without adequate nutritional intake and regular consumption of DM drugs will cause hypoglycemia. This condition will usually be exacerbated if the DM patient has entered elderly age such that hypoglycemia often goes undetected and falls into severe hypoglycemic conditions. Patients with hypoglycemia are often found in an unconscious state after hypoglycemia occurs. This situation is also most commonly found in elderly DM patients (Sutawardana, Yulia, & Waluyo, 2016).

Diet management in DM patients is essential to control the amount of food consumed by the patients. Food arrangements are done to ensure the patients receive balanced meals that are set according to the caloric needs of DM patients. Food management for people with DM includes arranging the amount of food, types of food, and eating schedules that must be obeyed and applied by people with DM. The balanced composition of the DM diet includes 60-70% carbohydrates, 20-25% fat, and 10-15% protein. Moreover, the nutritional status of DM patients must also be calculated based on Body Mass Index (BMI), and this method is a simple way to monitor the nutritional status of adults (Fatimah, 2015).

Medication management is also crucial. The administration of these drugs is done as part of pharmacological management. The drugs given to DM patients are oral hypoglycemic drugs (OHO) or insulin injections. Administering these DM drugs requires reasonable consideration and calculation because the condition of DM patients must be considered, both in terms of age, duration of suffering from DM, comorbid diseases accompanied by previous treatment history, and history of hypoglycemia (Decroli, 2019).

According to Akbar, Hamsah, & Muspiati (2020), the age risk factor for DM sufferers needs to be considered. Based on their research, most DM patients are aged >45 years, this suggests that the majority of DM sufferers are elderly. The elderly has an abundance of health-related problems that are closely related to age. They also usually often experience a decrease in appetite, which causes a decrease in the amount of nutrient intake that enters the body. Thus, DM is often found in the elderly who are malnourished and result in nutritional deficiencies. The nutritional problems of the elderly are closely related to the decline in the body's physiological activity. Moreover, the consumption of an unbalanced diet worsens their condition, which naturally has decreased. This can be further exacerbated by the presence of psychological disorders and a history of illness (Nurfantri & Yuniar, 2016).

Providing health education to DM sufferers about hypoglycemic conditions can help them to identify their hypoglycemic conditions and prevent more severe conditions from occurring. This health education can be given to DM patients and their families and can provide information about setting meal schedules, the nutritional needs needed of DM sufferers, regulating the number of carbohydrates eaten (especially rice), controlling blood sugar regularly, and recognizing the early symptoms of hypoglycemia. According to Shiu and Wong (2002) in Sutawardana et al. (2016), DM patients who control their blood sugar regularly do not guarantee them from being free from hypoglycemia. This is because DM sufferers do not necessarily feel capable and confident that they can implement all measures that can prevent hypoglycemia conditions. Many factors do not support efforts to prevent hypoglycemia. Thus, these efforts are often not implemented properly.

The hypoglycemic conditions experienced by patients are unique encounters. The patients' experiences can differ from one another. Some patients can describe their experiences with hypoglycemia well, but others found it difficult. Currently, there has been a change to a more patient-centered healthcare system; it is hoped that this can prioritize focus on the patient and not only on the disease suffered by the patient. Nurses can provide a holistic, bio, psycho, social, and cultural services for DM patients who have experienced hypoglycemia. Nevertheless, research is needed to explore the phenomenon of hypoglycemia as one of the complications suffered by DM patients. This experience is a reasonably complex problem in DM, and it is necessary to explore the perspective of DM sufferers about this condition to understand the problem as a whole (Cryer, 2007).

METHOD

Study design

This was a qualitative study using a phenomenological approach. This study explored patients with type II DM experiencing hypoglycemia and affected factors.

Informants

The participants selected using a purposive sampling method. The inclusion criteria in this study were patients with type II DM who had and had never experienced hypoglycemia. A total of seven participants met the inclusion criteria, namely, suffering from DM for at least two years, got diabetes medications, had and/or had never experienced hypoglycemia, and were not hospitalized, able to share their experiences orally well, and were willing to be participants. A total of three male and four female participants participated in this study. This qualitative interpretive research was conducted in the working area of the Juanda Health Center, Samarinda.

Instruments
Data were obtained through interviews with semi-structured questions. The researcher developed the interview guideline. Pre-interviews are conducted with some people who share the same traits as the actual participants. Researchers doing pre-interviews with type II DM patients who have ever had hypoglycemia. Before conducting interviews with actual participants, researchers make modifications based on the findings of the pre-interview. The researcher also repeated the important questions at different times throughout the interview process to obtain optimal information. Data saturation was obtained from seven participants. The researcher is the instrument in this study, hence the researcher needs to get ready. Before interviewing skills, researchers conduct pre-interviews before conducting actual interviews.

Data collection
The researchers met with the head of Primary Health Center Juanda, Samarinda to explain the study's objectives and asked for permission to conduct the study. Data on type 2 DM patients were requested by researchers from Primary Health Center Juanda, Samarinda. Potential participants were approached and were provided the study related information by researchers. If the potential participants were agreeing to participate in this study, they signed an informed consent form. The in-depth interview lasted around 30-60 minutes for each participant. The interviews were recorded using a mobile phone's audio recorder. In addition, the researchers made field notes to collect participant nonverbal data. The study was carried out in July 2021.

Data analysis
The results of the study were analyzed using the Braun & Clarke (2014) method, such as:

1. Familiarizing yourself with your data
   In the first stage, researchers familiarize themselves with the data to become comfortable with the data they have gathered. The researchers listened and repeated interviews that have been recorded. Researchers create data transcripts and read through them several times. The researchers highlighted key concepts or words from the data in the initial ideas or words.
2. Generating initial codes
   The researchers created a code from all the data collected, and organize the relevant data. The researchers searched for important words as keys from the data.
3. Searching for themes
   From codes, the researchers connected sub-themes, and related topics. The researchers organized codes into themes and gathers pertinent keywords for each theme.
4. Reviewing themes
   Each themes were examined by researchers. The researchers re-read the data code on each theme. Data were connected to themes by researchers. Data codes that did not fit with the themes were not used, data codes were created for a different themes based on additional supporting data.
5. Defining and naming themes
   Each theme is defined and fixed in detail by the researchers during this time. The themes were determined by extracting themes' name and clear findings for each theme from the words proposed by the participants
6. Producing the report
   The final step of data analysis in this the study was provided a report to answer the study questions.

Trustworthiness
According to Lincoln and Guba (1985) in Jailani (2020), building trust in data is accomplished with credibility, dependability, confirmability, and transferability. Credibility was established using interview guideline, familiar with data, and member checking. Dependability was developed through details explanation of study process from the beginning until finish. Confirmability were considered through recording the interviews, made verbatim transcriptions, and reported appropriate quotations. Purposive sampling was used by researchers to select a sample for the study that represented a variety of participant backgrounds to ensure transferability.

Ethical consideration
This research's feasibility test was conducted at Muhammadiyah University, East Kalimantan No. 006/KEPK/UMKT/I/2022.

RESULTS

All participants in this study had type 2 DM, with most having had DM for 4-5 years. Four of the seven participants experienced mild to moderate hypoglycemia symptoms, while the others had never experienced hypoglycemia. All participants had never experienced a severe condition of hypoglycemia. Three of the seven participants were high school graduates and four were elementary school graduates. In this study, three respondents were private sector workers, one respondent was a retired civil servant, and the others were housewives. The age range of the participants in this study was 55-70 years old.

Table 1. The Participant`s Characteristic Data

Indicators	f	%
Age		
55 - 60 years old	3	42.9
61 - 65 years old	1	14.3
66 - 70 years old	3	42.9
Educational Background		
Elementary	4	57.1
Junior High	1	14.3
Senior Hight	3	42.9
Long Experience DM		
≥ 5 years	3	42.9
< 5 years	4	57.1

The theme of this study answered the questions related to experiences of hypoglycemia symptoms and related factors. The themes included the initial hypoglycemia symptoms, diet modification, and medication adherence.

1. The initial hypoglycemia symptoms
The initial hypoglycemia symptoms experienced by the respondents in this study were cold sweats, blurry vision, and body shaking. These symptoms were described by the participants' statements below:

"I experienced cold sweat..." (P1)
"I felt blurry vision…bit blurry..." (P3)
"hands were shaking" (P4)
"When walking, it felt like I was spinning round and round" (P7)

Additionally, the participants felt a decrease in appetite, which usually preceded the onset of the above symptoms. Their decreased appetite caused them to not eat, which might cause hypoglycemia. This is based on the following statements:

"...Usually, I do not want to eat..." (P1) "... it is okay, I am afraid to eat."(P6)
"I don't have much of an appetite..." (P7)

2. Diet modification
Adaptation to hypoglycemia made by participant in this study was diabetes mellitus diet program that the participants follow. This diet is performed by limiting the participants' number of servings, especially their rice intake. This is explained by the following statements:

"Sometimes I'm told to go on a diet if..." (P1)
"Just eat less rice, I used to eat more rice, it is different now.
"That is all that is reduced."(P3) "Yes, I eat less rice now" (P4) "Eating has been reduced, yes" (P7)

3. Medication adherence
Another cause of hypoglycemia in this study is the use of diabetes mellitus drugs such as glibenclamide and metformin. These DM drugs are consecutively taken once and three times a day after meals, respectively. As shown in the following statements:

"Before eating, I would take one glibenclamide, after eating, I would also take metformin three times a day" (P3)
"I take these pills three times a day (indicating metformin), this one, only one time, one pill a day (indicating glibenclamide)" (P4)
"There are 2 kinds of medicine, one of them is small. There is a morning before eating, and metformin is taken after eating" (P5)

DISCUSSION

The participants conveyed their early symptoms of hypoglycemia through the emergence of several complaints. These early symptoms include mild symptoms, such as cold sweats, shaking hands, and headaches. The symptoms experienced by the participants were classified into several groups.

The initial symptoms felt by participants were different from one another. Symptoms of cold sweat and shaking hands (tremors) are neurogenic symptoms that arise due to low blood sugar. This is in accordance with the explanation of Kittah & Vella (2017) who stated that neurogenic symptoms arise from psychological perception changes due to hypoglycemia conditions stimulating the sympathoadrenal system. These symptoms appear when blood sugar levels reach around 60 mg/dl. These neurogenic symptoms can be grouped into the following two conditions: adrenergic and cholinergic symptoms. Adrenergic symptoms include palpitations, tachycardia, anxiety, and tremors. While cholinergic symptoms appear as excessive sweating, paleness, nausea, and excessive hunger.

A blurry eyes appear as early symptoms of hypoglycemia. This is equivalent to the explanation of Khan, Barlow, & Weinstock (2014) who found that hypoglycemia conditions can also cause eye disorders, especially in DM patients. The symptoms that the sufferers often feel are blurred eyes, diplopia, loss of contrast sensitivity, and retinal disorders. These symptoms often appear when there has been a decrease in blood sugar levels. Dizzy and spinning when walking symptoms experienced by participants in this study. These symptoms are neuroglycopenic symptoms that appear early in the event of hypoglycemia. This finding accordant with Cryer et al. (2009), who stated that neuroglycopenic symptoms appear more severe than neurogenic symptoms. The condition will appear when blood sugar levels are around 50 mg/dl or lower. This low blood sugar level causes the brain to be deprived of glucose supply. The symptoms of this condition would manifest as weakness, dizziness, confusion, headaches, seizures, decreased cognitive function, decreased consciousness, and coma. This condition can be categorized as severe if there has been a decrease in consciousness. Severe hypoglycemia can cause damage to organs, especially the brain, which can lead to permanent brain damage and even death (Decroli, 2019).

This study revealed that the hypoglycemia may be caused by the participants' decreased appetite. This might be caused by the participants' elderly age. All participants in this study are in the elderly age phase and they all mentioned their small appetites. As explained by Nurfantri & Yuniar (2016), inadequate nutritional intake in the elderly is caused by a disturbance in the digestion or food absorption process. This condition causes insufficient nutrient intake, an inability to digest food, and inadequate nutrient absorption. These issues are mainly experienced by the elderly. Moreover, the decreasing appetite in the elderly could also be caused by psychological factors (loss of a spouse), a history of illness, and food availability (amount and type).

In this study, majority of the participants were on a DM diet or had limited food intake (especially rice). This is performed to avoid high blood sugar levels. In addition, these diets are part of the management of DM. Fatimah (2015) described DM management in Indonesia as being focused on food regulation to prevent increased blood sugar levels. This food management emphasizes meal schedules, as well as types and amounts of food, especially for patients with DM who regularly consume DM medication. For diabetic patients, having the option to consume different types of food sometimes emerge as temptations that are more difficult to be managed. Therefore, it is more challenging for richer patients to adhere to diet management (Kurniawan & Yudianto, 2016). The recommended food standards must be balanced between the needs of carbohydrates, fats, and proteins. However, it is quite difficult to implement for participants who are all elderly.

Participants in this study adhere to consume DM medication routinely. There were two types of medications taken by the participants, namely, glibenclamide, which was taken once a day, and metformin, which was taken three times per day. This finding is in accordance with Decroli (2019), who stated that the drug glibenclamide is a sulfonylurea drug with a short half-life and a faster metabolism. The half-life of glibenclamide is 3-5 hours, and the hypoglycemic effect lasts 12-24 hours, so this drug is only taken once a day. Administering glibenclamide to the elderly with type 2 diabetes requires special attention because it can cause hypoglycemia. This happens because, in the elderly, hypoglycemia is caused by slower sulfonylurea metabolism. In addition, it is quite challenging to recognize hypoglycemia in the elderly because the onset is prolonged and slowly precedes acute signs. Therefore, what often happens is a decrease in consciousness and coma.

The participants in this study also consume metformin. Metformin is taken three times per day after meals. According to Decroli (2019), metformin is a class and a biguanide. Metformin is an antihyperglycemic drug that does not stimulate insulin secretion and does not cause hypoglycemia. Metformin works to decrease sugar production in the liver and increase insulin sensitivity in muscle and adipose tissue. It is

absorbed in the intestine and enters the circulation, and is not bound to plasma proteins at the time of circulation. Metformin is excreted in the urine. The half-life of metformin is about two hours, so it is safe for the elderly because it does not cause hypoglycemic effects. It can also function as a weight-loss drug for obese diabetic patients. However, metformin is not given to patients with impaired renal function.

The participants in this study regularly consume glibenclamide and metformin. However, medication consumption by the participants are often not accompanied by adequate nutritional intake due to a decrease in appetite and diet that are done as part of the management of DM. Moreover, the dose taken is not controlled according to the needs of the participants. This causes the emergence of symptoms of hypoglycemia in participants. In patients diagnosed with DM, the participation of other family members in guiding their medication, diet, physical exercise, and positive free time for family health plays an active role in the successful self- management of DM (Yamin & Sari, 2018). Therefore, in this case, support and family participation is needed in the management of DM to minimize the occurrence of hypoglycemia in patients.

A longer period of diabetes will cause the patient to become accustomed to the condition and its treatments, particularly self-care. When it comes to minimizing complications or practicing diabetic self-care, newly diagnosed patients may have different motivations and responsibilities than those who have had the disease for a long time (Rahayu, Kamaluddin, & Hapsari, 2018). Health care providers need to prioritize the newly diagnosed DM patients into medication effect education consideration.

This reaseach's limitation is that there were less visits from Diabetes Melitus patients in Juanda Health Center Samarinda, during the data collection period due to pandemic covid-19 conditions. The patients's family administer the medications as usual (children of the patient).

CONCLUSION AND RECOMMENDATION

Based on this study's results, it can be concluded that patients with type 2 DM experienced the early symptoms of hypoglycemia, namely, neurogenic symptoms, symptoms of cold sweat, and shaking hands (tremors). The neuroglycopenic symptoms felt are dizziness and blurred vision. The following recommendations are provided for type 2 DM patients: (1) DM patients must have a balanced and adequate nutritional status, especially the elderly who have decreased appetite, (2) dietary education is needed to both patients and their families, and (3) nurses and family collaboration are required for type II DM patient's daily diet and medicine consumption effects.

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ORIGINAL ARTICLE

THE DETERMINANT FACTORS OF PATIENT SATISFACTION AMONG OUTPATIENT AND INPATIENT SERVICES IN A TYPE B HOSPITAL IN INDONESIA

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ABSTRACT

Healthcare providers have made various efforts to increase patient and community satisfaction with health services. However, large sample size studies have not been conducted to investigate the determinants of community stratification in Indonesia. This research aimed to analyze determinant factors affecting patient satisfaction in a type B hospital. A cross-sectional with an online survey was used and analyzed with path analysis. A total of 884 participants were recruited with the criteria that all respondents were patients aged 17 years and over who visited the inpatient and outpatient hospital. Overall, the value service satisfaction was very good (scored 87.44 score). Moreover, online service directly increased by age (b = 0.68; 95% CI = 0.08 to 1.27; p = 0.026), gender (b = 0.82; 95% CI = 0.15 up to 1.49; p = 0.016), and education level (b = 1.76; 95% CI = 0.86 to 2.66; p <0.001). Moreover, service costs are directly affected by employment (b = 0.67; 95% CI = 0.92 to 1.26; p = 0.023); and product-specific services were directly affected by age (b = 0.74; 95% CI = 0.20 to 1.29; p = 0.008). These findings suggest that education, gender, and age directly affect online services as an indicator of satisfaction.

Keywords: *Determinant; health services; path analysis; patient satisfaction*

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INTRODUCTION

Health care is an organized effort to maintain and improve health, prevent and cure diseases, and restore the health of individuals, families, communities, and societies (Adhikary et al., 2018; Firdaus & Dewi, 2015). Private and public hospitals provide health services in the constantly expanding healthcare industry. Improving the quality of medical services has become a crucial concern in the national and international expansion of health care (Pratama & Hartini, 2020). Since 2013, the number of hospitals in Indonesia has expanded rapidly, and more than half are private (Simanjorang et al., 2019). Consequently, patient satisfaction is becoming integral to performance enhancement and clinical efficacy (Al-Harajin et al., 2019; Simanjorang et al., 2019).

Patient satisfaction evaluates the degree to which a patient is satisfied with the care they receive from a healthcare provider (Liu et al., 2021). Patient satisfaction results can indicate the patient's loyalty to the health facilities provided. In addition, when patients are satisfied with the service they receive, they will share this positive information with others. This is reinforced by a statement from Liu et al. (2021) that patient satisfaction evaluates the degree to which a patient is satisfied with the health care they receive from a healthcare provider.

Initially, patient satisfaction was measured because satisfied patients were believed to be more likely to comply with treatment, leading to improved outcomes (Sadeghi et al., 2021). Patient satisfaction is influenced by the quality of the services that officers provide. Patients who seek treatment also hope that the officers treat all patients well without discriminating against social status, religion, occupation, or education level (Asamrew et al., 2020). Interestingly, patient satisfaction is an internationally recognized component that must be assessed routinely to complement other quality assessments and assurance techniques to enable the healthcare system to operate efficiently (Asamrew et al.,

2020). By identifying and understanding its factors through a continuous quality improvement process, this comprehensive approach can better satisfy patients' needs and improve the quality of health service delivery (McCann et al., 2014; Nagorcka-Smith et al., 2022).

Previous research demonstrated that satisfaction with the hospital, department, room, and board; satisfaction with medical staff; satisfaction with the quality of care received, and satisfaction with hospital discharge favorably impact patient satisfaction (Umoke et al., 2020). Service quality is the most prominent element regarding service suppliers in achieving excellence. Therefore, it should be improved and measured (Taqdees et al., 2018). Healthcare associations have begun to emphasize the advanced quality of health services. The increasing competition among hospitals also encourages customers to make the best choice (Mosadeghrad, 2014).

Patient satisfaction regarding healthcare services has become essential in designing healthcare service quality, access improvement, and monitoring. In recent years, the focus on measuring patient satisfaction has increased. Such studies are regarded as valuable, even if they are made by official authorities (recognized international organizations or public institutions at the national level) or practitioners and researchers from medical, social, administrative, and economic fields (Karaca & Durna, 2019). Hospitals are responsible for increasing the quality of life and consumer expectations to provide patients with high-quality healthcare services.

In the current era of disruption, where everything is highly uncertain, organizations and service providers, particularly those in the healthcare services industry, must have a competitive advantage and be adaptable to change (Pratama & Hartini, 2020). Patient satisfaction with nursing care has become the most significant predictor of overall satisfaction with hospital care and an essential objective for any healthcare organization (Goh et al., 2016). Measuring patient satisfaction with nursing care can improve the quality of nursing services by simplifying the development of care standards and monitoring both results and patient perceptions of quality (Karaca & Durna, 2019). In all contexts, nurses have a crucial role in providing emotional and psychological support to patients and their families, such as assisting with the patient's diagnosis and ensuring optimal care. In addition to providing specialized care, nurses must possess the professional knowledge, attitudes, and abilities necessary to provide informational, emotional, and practical support (Buchanan et al., 2015).

A previous study demonstrated that service quality influences customer satisfaction in type B private hospitals. Patient satisfaction increases customer loyalty, reduces future transactional costs, favors corporate revenue, and prevents customer desertion due to inadequate quality (Fatimah et al., 2022; Lestariningsih et al., 2018). However, extensive sample-size studies have not been conducted to investigate the determinants of community stratification in Indonesia. Consequently, it was necessary to examine the determinants of patient satisfaction among inpatient and out-patient services in a type B hospital.

In this study, we analyzed factors related to patient satisfaction using path analysis that allowed the researchers to analyze more complex models. This test was used to determine direct or indirect relationships, one of which is through intervening variables. Path analysis presents causal relationships between variables in the form of images to be easier understood. This depiction is done to explain the relationship that occurs between both dependent and independent variables or other relationships with their moderation variables. Path analysis also allows researchers to test theoretical propositions regarding cause-and-effect relationships without intervening against variables, a novelty in our study. This study investigates the determinant factors affecting patient satisfaction in a type B hospital in Kediri, East Java, Indonesia.

METHOD

Study design

This is an analytic observational study with a cross-sectional design.

Sample

Between October to November 2021, the patient satisfaction index survey was distributed to every department of a type B hospital in Kediri. This study's population comprises of all patients and their families who were aware of this research and could complete the questionnaire. The respondents were outpatients, inpatients, emergency patients, and those receiving critical care, support services, or other services. They were required to rate 9 (nine) elements of the Community Satisfaction Survey, including service requirements, service procedures, service time, service competence, service behavior, facilities, service costs, product specification service, and complaint handling. The sample size for outpatients increased by 10%, with a significance level of 5% and a 95% level of confidence in the survey results with the Slovin method formula (Ryan, 2013). Thus, 884 participants were recruited for this study using the purposive sampling approach.

Instrument

The questionnaire was made based on the general guidelines of the Regulation of the Minister of State Apparatus Empowerment and Bureaucratic Reform Number 14 of 2017 concerning Guidelines for Community Satisfaction Surveys on Public Service Providers. The regulation stipulates 9 (nine) elements of the Community Satisfaction Survey in the scope of public services, including service requirements, service procedures, service time, service competence, service behavior, facilities, service costs, product specification service, and complaint handling (Harsoyo & Suparno, 2021).

The Customer Satisfaction Index (CSI) was used to process the survey results. The CSI method is a quantitative analysis method that determines the percentage of satisfied users in a user satisfaction survey by paying attention to the product or service's attributes. The calculation of the overall USI is indicated by the sum of the average value of each CSI indicator = sum of all indicators/maximum score of indicators. To facilitate the interpretation of the CSI assessment, with scores ranging between 25-100, the assessment results were converted to a basic value of 25, with the following formula: Convert of CSI = CSI x 25.

Table 1. Customer satisfaction index value criteria value

Value Perception	CSI interval value	Service quality CSI conversion	Interval value	Service unit performance
1	1.00 – 1.75	25 – 43.75	D	Poor
2	1.76 – 2.50	43.76 – 62.50	C	Moderate
3	2.51 – 3.25	62.51 – 81.25	B	Good
4	3.26 – 4.00	81.26 – 100	A	Excellent

Note: Literature from the Documentation Network dan Law Information, 2014

The questionnaire is divided into 11 variables, consisting of 9 elements from the assessment of the patient satisfaction index combined with 2 additional internal elements from the hospital: student existence and online registration. The first variable concerns the requirements that must be met in the management of a type of service, namely, technical and administrative requirements. The questions regarding the requirement indicator cover the conformity of the requirements information to the type of service and the terms of service. The second variable is that systems, mechanisms, and procedures are standardized service procedures for service providers and recipients, including complaints. The questions regarding the procedure indicator cover easy service procedures and simple and non-convoluted service procedures.

The next variable concerns the completion time, which includes the period of time required to complete the entire service process of each type of service. The questions regarding the service time indicator cover the completion of services per the target time and the adequacy of time given to customers for consultation. Fourth, is the competence of the implementer in terms of knowledge, expertise, skills, and experience. The questions for the competency indicator include doctors having professionalism/competence in providing services, nurses having professionalism or competence in providing services, laboratory officers, pharmacists, and administrative officers having professionalism or competence in providing services, and doctors, nurses, pharmacists, laboratory and other officers having the ability and experience in providing services.

The fifth variable is the behavior of the executor and the attitude of the officer when providing services. The questions for the behavioral indicators cover the behavior of doctors, nurses, pharmacists, laboratory workers, and other officers who provide services in terms of their polite, friendly, and respectful behavior and do not discriminate against patients. The next variable is all means that can be used to achieve goals and objectives. Infrastructure is the main support for the implementation of a process. The questions for the infrastructure indicator cover complete service facilities and infrastructure (adequate chairs, trash cans, hand sanitizers), suitability for use, quality, clean, neat, and comfortable service facilities and infrastructure, the presence of supporting facilities such as waiting rooms, prayer rooms, adequate bathrooms and parking, and information boards/signs about hospital evacuation plans and routes.

The seventh variable concerns the fee/tariff charged to the recipient of the service and the amount charged is determined based on an agreement between the organizer and the community. The questions for this indicator cover how the costs/tariffs include clear, open, and affordable service costs, and how officers do not receive monetary/goods outside of the official tariff (gratuity). The next variable is the product specification of the type of service provided and received per the provisions set. The questions for this indicator cover all types of services functioning per the standards stated by the hospital on the information board and the completeness of medical equipment and services and supporting equipment.

The ninth concerns the handling of complaints, suggestions, and inputs, as well as the procedures for complaint handling and follow-up. The questions for this indicator about complaint handling include the means of public service complaints available and the certainty of follow-up handling of public service complaints is clear. The tenth variable concerns an on-line service for registration in outpatient installations. The last variable is the presence of students in assisting the service process and their competence. In this study, the Cronbach's alpha of 0.77 to 0.93 indicated that it is of acceptable reliability.

Data collection

The data collection was conducted by having respondents fill in a paper-based questionnaire at the hospital and fill in an online questionnaire via Google Forms through a sent request. For inpatients, we used Bed Occupancy Rate (BOR) values. The contents of the paper-based questionnaire and the electronic version by Google Forms are the same. The distribution of online questionnaires is widely used research, for example, Abidova et al., (2020) used the Qualtrics software (Qualtrics XM, Provo, UT/ Seattle, WA) to collect data online.

Data analysis

The data analysis of demographic data utilized frequency analysis and general information about the survey participants. The data included the respondent's age, gender, education, occupation, and insurance. The descriptive statistics employed in this study were frequency, percentage, and CSI score. In a path analysis model, the normality test determines whether the dependent, independent, or both variables have a standard or abnormal distribution. Additionally, the kurtosis value in the final row was 6.350, which helped determined the multivariate normality of the data. Next, path analysis determined the direct or indirect influence of multiple independent variables-analysis of research using Stata version 13 software (STATA Corp LP).

Ethical consideration

The Ethical Review Board was obtained from Institut Ilmu Kesehatan STRADA Indonesia with number 2951/ KEPK/IV/2022. The institute analyzed and approved the protocol to guarantee that the rights of the study's subjects were fully protected. Moreover, the respondents were well-informed about the objectives of this research. We obtained written informed consent forms from each participant. The data were gathered and handled with confidentiality and anonymity.

RESULTS

Based on Table 1, most respondents are aged 41-60 (37.78%). This result indicates that people of productive age prefer to go to the hospital for health treatment. Most respondents were women (62.67%), and most graduated senior high school (41.40%). This statistic suggests that the level of knowledge of the community who uses local

government-owned hospital services is at the lower middle level. Additionally, most of the respondents were not working (33.14%) and used the Indonesian Health Card (Kartu Indonesia Sehat or KIS/BPJS) (71.15%) for payment.

Table 2. Respondents' characteristics

Characteristics	Indicators	Total	%
Age	17-25 years	174	19.68
	26-40 years	197	22.29
	41-60 years	334	37.78
	Over 60 years	179	20.25
Sex	Male	330	37.33
	Female	554	62.67
Education	Elementary school	61	6.90
	Junior High School	113	12.78
	Senior High School	116	13.12
	Diploma	366	41.40
	Bachelor	65	7.35
	Master Degree/PhD	149	16.86
Occupation	Public servant	80	9.05
	Private Sector	125	14.14
	Self-employed	173	19.57
	Student	91	10.29
	Unemployed	293	33.14
	Other	122	13.80
Insurance	BPJS/KIS	629	71.15
	Other insurance	18	2.04
	Non-insurance	237	26.81

Table 3 and Table 4 show that the conversion value of Community Satisfaction Index in outpatient installation is 87.44 with the category 'very good' in the Service Unit Performance.

Table 3. The patient satisfaction index value of 11 elements

Indicators	Conversion	Service unit performance
Service requirement	86.75	Very good
Service procedure	85.50	Very good
Service time	81.25	Very good
Service competence	89.00	Very good
Service behaviour	89.75	Very good
Facilities	87.25	Very good
Service cost	86.75	Very good
Product specification service	87.00	Very good
Complaint handling	91.00	Very good
Online services	93.00	Very good
The presence of internship students	84.50	Very good
Average	87.44	Very good

Table 4. The patient satisfaction index value of every department

Department	Conversion	Service unit performance
Interne	88.50	Very good
Heart	84.25	Very good
THT	81.50	Very good
Children	89.00	Very good
Surgery	90.50	Very good
General	89.00	Very good
Pulmonary	92.00	Very good
Gynaecology	79.00	Good
Dental	77.25	Good
Oral surgery	81.75	Very good
Neural	77.75	Good
Physiotherapy	99.25	Very good
Eye	89.25	Very good
Psychiatry	98.00	Very good
Orthopaedics	83.50	Very good
Neurosurgery	97.25	Very good
Oncology	99.50	Very good
Urology	76.75	Good
Average	87.44	Very good

The community satisfaction index revealed that age, sex, and education affect online service; insurance affects service behaviour; occupation affects service cost; and age affects specific service (Table 5).

Table 5. Factors affecting the patient satisfaction index

Dependent variable		Independent variable	Path coefficient (b)	CI 95%		p
				Lower limit	Upper limit	
Direct effect						
Online service	←	Age (*)	0.68	0.08	1.27	0.026*
	←	Sex(*)	0.82	0.15	1.49	0.016*
	←	Education (*)	1.76	0.86	2.66	<0.001*
Service behaviour	←	Insurance	-0.34	-1.07	0.40	0.369
Service cost	←	Occupation (*)	0.67	0.92	1.26	0.023*
Specific service	←	Age (*)	0.74	0.20	1.29	0.008*
Indirect effect						
Complaint handling	←	Service procedure (*)	0.95	0.35	1.55	0.002*
	←	Service competence (*)	0.91	0.31	1.52	0.003*
Service competence	←	Service procedure (*)	1.14	0.55	1.72	<0.001*
Service procedure	←	Online service (*)	0.59	0.59	-0.01	0.051
Online service	←	Service requirement	-0.68	-1.56	0.21	0.133
Service time	←	Internship student (*)	0.70	0.10	1.31	0.022*
Service behaviour	←	Facilities	0.54	-0.13	1.2	0.117*

Dependent variable		Independent variable	Path coefficient (b)	CI 95%		p
				Lower limit	Upper limit	
	←	Service time (*)	1.73	1.12	2.35	<0.000*
	←	Specific service	-0.65	-1.39	0.89	0.085
Facilities	←	Specific service	0.36	-0.24	0.95	0.238
Specific service	←	Service cost	0.19	-0.45	0.82	0.566
Service cost	←	Service requirement	-0.27	-0.92	0.38	0.418
Log Likelihood= -1326.9474						

Figure 1 is the path analysis diagram of the factors affecting the Patient Satisfaction Index in a Type B State Hospital.

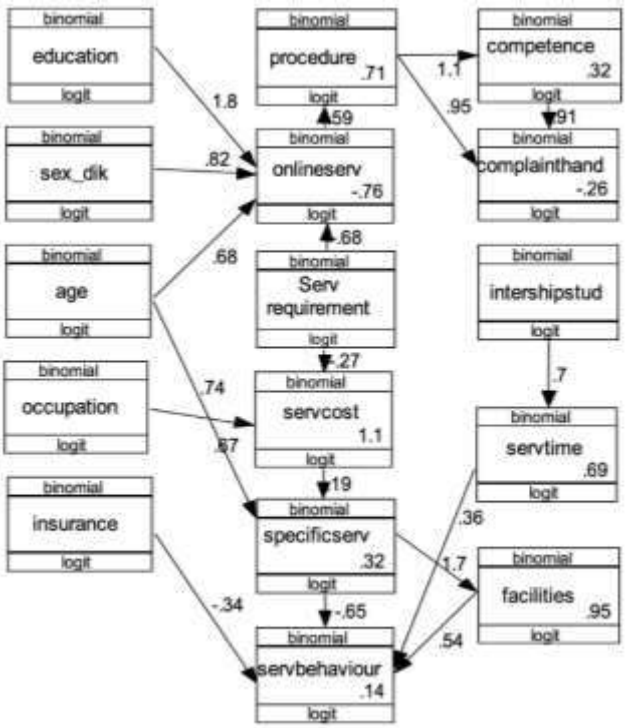

Figure 1. Path analysis model of the factors affecting the patient community satisfaction index

DISCUSSION

This study demonstrated that education, gender, and age directly affect online services as a satisfaction indicator. Other similar studies on the influence of sociodemographic characteristics on patients' satisfaction also showed a consistent relationship between patient satisfaction with age, gender, education, or insurance (Al-Harajin et al., 2019; Ramaswamy et al., 2020). Moreover, age is the most influential factor in the utilization of online services by 0.98 times. Another factor that has influenced the use of online or telemedicine services is gender and education. Age is a known factor associated with the use of information and communication technology, including the use of health information. This is believed to be due to age-related motivational factors rather than difficulty accessing technology (Darrat et al., 2021). Patients' age was found to correlate positively with the tangibility dimension of service but not with overall satisfaction. This, combined with education, indicates the patients' maturity and evaluation of healthcare delivery (Enabudoso & Isara, 2011). Moreover, Alessandri et al. (2021) found that the factors that influenced the use of telemedicine services during the COVID-19 pandemic were the age factor (which was 0.21 times higher), the education factor, the ease of access factor, and the service experience factor received from health workers in telemedicine that was 0.38 times higher (Kludacz-Alessandri et al., 2021). The older the patients, the more probable they have extensive experience interacting with healthcare institutions, which affects their choice of facility and evaluation of the quality of services provided (Amporfro et al., 2021).

According to a prior study, respondents with primary education were 8.57 times more likely to be satisfied with nursing care than those who were illiterate (Wudu, 2021). The report aligns with research undertaken in Greece and Ethiopia (Gorari & Theodosopoulou, 2015; Sharew et al., 2018). This resemblance may be attributed to educated patients being familiar with healthcare facilities. As a result, they have higher expectations of nursing care than patients without formal education. Patient satisfaction is the patient's perception of the offered therapy compared to the standard treatment. Therefore, planned education enables the patient to reach their prior treatment experience with the predicted treatment (Wudu, 2021).

Furthermore, previous research has shown that client satisfaction positively correlates with enrollment in a health insurance program (Sun et al., 2017). Community-based health insurance is considered a viable instrument for improving the health system for low-income individuals, as it improves the health condition of enrollees and boosts labor supply and productivity (Sarker et al., 2017). Many factors, such as insurance scheme design features such as benefit packages, inflexible payment schedules, and a lack of client awareness, play a crucial role in successfully implementing such a scheme (Kimani et al., 2014). Moreover, satisfied individuals are more likely to employ healthcare services and adhere to treatment regimens (Ali et al., 2017; Atafu & Kwon, 2018).

The result shows that online services are effective in increasing service satisfaction. Customer satisfaction can be achieved when the needs and expectations are met. Patient satisfaction cannot be separated from the quality of services, which can function as the capital to get more patients (Sari et al., 2020). To fulfill the increasing service demands, performing data processing, such as having faster registration flows through online-based services, is necessary. The ease of obtaining services through online facilities makes a faster and shorter line from diagnosis and treatment, increasing the satisfaction of patients and families (Wardani & Efendi, 2014).

Time directly affects service satisfaction. Today's society perceives time as highly valuable, so a faster line to receive health services becomes a point of consideration when choosing a hospital (Taber et al., 2015). This point aligns with the previous research by Xie & Or (2017), which revealed that long wait times are the second factor of dissatisfaction. Patient waiting time refers to the time it takes from registration to the specialist providing the service (Xie & Or, 2017). It reflects how the organization manages its service components and adjusts them to the patient's situation and

expectations. Thus, good quality health services should run as well as possible to maintain loyal customers.

Our study showed that complaint handling directly improves service satisfaction. One of the strategies to increase customer satisfaction is efficient complaint handling (Behrouzi & Ma'aram, 2019). An efficient noncompliant-handling strategy could change a patient's satisfaction from unsatisfied to satisfied. A well-managed patient complaint handling following the basic fundamental principles (transparency, accountability, responsibility, independence, equality, and fairness) will generate a satisfactory perception of service quality (Marliana, 2017).

Facilities also play a significant role in achieving community satisfaction and directly affect service satisfaction. Increased public awareness of health's importance is one reason why the need for health facilities is also increasing. Additionally, people are more thoughtful in choosing healthcare providers that meet their needs and expectations (Assefa et al., 2019). Facilities are crucial to increasing satisfaction as it provides convenience and meets service users' needs and comfort. If the facilities provided suit their needs, it positively affects patients', families', and communities' satisfaction (Haldane et al., 2019; Hu et al., 2016; Manzoor et al., 2019).

This study's result shows service procedures' effect on service satisfaction as an indicator of competence, service requirements, and service behavior. According to (Mosadeghrad, 2014), the delivery of health services significantly affects the attitudes and expectations of patients and strengthens their relationship with healthcare providers. As a result, service delivery significantly impacts the management of all services and organizations involved and is related to delivering detailed medical attention (Cowing et al., 2009). In addition, it is significant to focus on the best quality of service to increase community satisfaction (Manzoor et al., 2019). Participation of medical or paramedics can influence the quality of health services. Nurses who provide nursing services to patients are a form of professional service based on the science and ethics of nursing (Purwaningsih, 2015). The optimal services provided by employees to the patient or the patient's family are expected to provide satisfaction so that it brings about effective coping. Effective coping means that the patient or the community thinks of alternatives as a form of adaptation to the positive behavior of hospital services (Karaca & Durna, 2019).

Notably, the indirect effect of service requirements on service satisfaction is through payment and service fees. The quality-of-service results from comparison between the expectations of service users about the service and their perceptions about how the service is given. Technical and functional quality in the healthcare sector is crucial to identifying several service quality dimensions (Shafiq et al., 2017). Quality care includes assessment, technical management at the administrative and clinical levels, interpersonal control, and continuity of care. Access refers to some aspects, such as location, hours, telephone, waiting time, and appointments. The administration of technical management focuses on the general condition and facilities, food, and billing efficiency. Technical clinical management, which refers to the technical quality of care provided, may have been one of the more contentious areas with the argument that patients lack the knowledge to accurately assess technical competence (Caruana et al., 2000).

The price or cost paid by the patient for the services received is also one of the factors of satisfaction and dissatisfaction of the community about health care facilities (Suyitno, 2018). The policy of value or price can affect the mindset of human beings by considering their needs as customers of a product. The costs incurred on the services received will affect the community's satisfaction with the health services, affecting their interest in revisiting. People will choose more effective, efficient, and suitable services according to the price or cost, which means they will be satisfied with spending the service costs. Therefore, the price has a positive relationship with satisfaction; the higher the feasibility of the price level, the higher the satisfaction of society (Sitio & Ali, 2019).

Next, the effect of service competence on community satisfaction with the services provided through the presence of internship students. The quality of service is affected by the competence of medical personnel and paramedics within the hospital. Training can improve competence according to the respective field of work, so employees can improve their performance and positively improve service quality (Syahrul et al., 2021). Competence is seen from expertise, knowledge, and emotional conditions. The better the competence, the more professional the employees, with practical, efficient, and transparent results based on the standards. Competence affects the quality of patient services, resulting in higher compensation for patient satisfaction (Jiménez & Basurto, 2022).

Hospitals have a strategic role in accelerating the improvement of the community level with a new paradigm of quality public health services per the patient's needs and expectations (Tiara & Lestari, 2013). Patient satisfaction is related to the quality of service. By knowing the level of patient satisfaction, hospital management can increase the quality of service. The clinical practice made by students is an independent action of professionals through cooperation with patients, individuals, family groups/communities, and collaboration with other medical or paramedics based on their responsibilities. The skills and attitudes of the interns have a positive effect on patient satisfaction. The better the skills and attitudes upon providing services, the higher the patient or family satisfaction (Wandebori, 2017).

Lastly, this study shows the indirect effect of the internship student on service satisfaction through service time and service behavior. High-quality or satisfactory service is achieved if the service meets the customer's needs and expectations. Therefore, quality is enormously significant and always focuses on patient satisfaction. To provide quality health services, standards must be met in the specification of service products. The acceptance of each service product specification represents the results of the services provided and is one of the priority programs in improving the quality of service for the community, so community satisfaction is reached. The increase in every product specification service positively affects community satisfaction (Wandebori, 2017).

The result shows that there is an effect of insurance on service behavior. Some treatments of nurses, doctors, administration, and others are sometimes different for insurance patients. The level of satisfaction of insurance patients with health services in hospital inpatient wards is lower than that of uninsured patients. Nurse service is the most influential factor in patient satisfaction (Amporfro et al., 2021). This is because nursing services are the main spearhead of health services in hospitals and are the main mirror of the overall success of health services. High-quality nursing services must also be carried out by professional nursing personnel in a professional manner (Jiménez & Basurto, 2022).

The limitation of this study is that the research location was only one hospital. Consequently, the distribution of the study sample is uneven and cannot be compared with private hospitals. We also did not identify each respondent's number of visitations. Moreover, methodological aspects in comparative analysis, research sample size, and research questionnaires are important factors for the evaluation process that could be improved in future studies.

CONCLUSION AND RECOMMENDATION

In this study, 11 satisfaction indicators were investigated. This study found that education, gender, and age directly affect online services as an indicator of satisfaction. Future research should identify the status of patient visits to evaluate the differences. There should also be a continuous process of monitoring and analyzing healthcare services using patient feedback and research data to develop new policies and improvements to healthcare facilities.

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ORIGINAL ARTICLE

VALIDATION OF BRIEF MEASUREMENT OF RELIGIOUS COPING IN BAHASA INDONESIA (BRIEF RCOPE BI)

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ABSTRACT

Religion and spirituality are determinants of psychological adjustment of coping resources, especially in a religious country such as Indonesia. However, in general, its measurement does not use standardized scales. This study aimed to examine the validity of the Indonesian version of the Brief Measurement of Religious Coping (Brief RCOPE). The sample of this study was 150 women recruited by a consecutive sampling strategy. Exploratory factor analyses were performed to examine the structure's validity. The criteria's validity was measured by its correlation with the Freiburg Mindfulness Inventory and FACIT Sp12. The exploratory factor analyses indicated that the Indonesian Brief RCOPE satisfied the construct validity. The Bartlett sphericity test was significant (df (91) = 1109.79, p < 0.001), and the Kaiser-Meyer-Olkin (KMO) test was 0.782. The exploratory factor analyses confirmed that the two-factor design model with 50.4% explained the variance. Positive religious coping was correlated with mindfulness (r = 0.338, p < 0.01) and spirituality (r = 0.317, p< 0.01), while negative religious coping was correlated with perceived stress (0.182, p < 0.05). Cronbach's alpha coefficients for Factor 1 and Factor 2 were 0.83 and 0.82, respectively. Thus, the Indonesian version of Brief RCOPE is valid and reliable for measuring positive and negative religious coping.

Keywords: *Adaptation; mindfulness; psychometric; religion; spirituality*

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INTRODUCTION

Individual coping strategies are influenced by the resources available to the person, such as psychological, spiritual, social, environmental, and material resources, and the nature of the situation, especially whether its outcome is controllable or has to be accepted (Folkman, 2013). Among belief systems, religion, and spirituality have been the main determinants of psychological adjustment for specific ethnic groups, such as Anglo-Saxons in the United States (Koenig et al., 2012). However, this result may vary in other countries, such as Indonesia. Indonesia is considered to be within the top five of the most religious countries (Gebauer et al., 2014). Thus, religion and spirituality may play an important role in the citizen's adjustment to challenging situations.

Religion and spirituality can become coping strategies for individuals to adapt to challenging situations. Therefore, religious people, such as Indonesians, may benefit from their belief systems (Arini et al., 2015; Mulyono, 2011; Mulyono & Chen, 2019). Patients also experienced the benefits of this coping strategy (Upoyo et al., 2016). Studies have reported various positive and negative effects from the patient's belief system (Pargament, 2002; Roger & Hatala, 2018). Positive outcomes would be beneficial for the patient's well-being or health. In contrast, negative outcomes would worsen or challenge the patient's health.

The Brief RCOPE is a valid instrument that measures the positive and negative patterns of religious and spiritual aspects. A current literature review has indicated the tool's consistency in its translated form into many different languages (Ashktorab et al., 2017; Brasileiro et al., 2016; Kohls et al., 2009; Rodrigues et al., 2022; Sauer et al., 2011; Trousselard et al., 2010; Walach et al., 2006). However, the Brief RCOPE was unavailable in the Indonesian language. If it existed, it would not have been supported by adequate

evidence of translation procedures (Sulistyani et al., 2020; Supradewi, 2019).

This study filled the knowledge gap on religious coping and examined the validity of the Indonesian language version of the Brief RCOPE instrument. This study serves to validate the Brief RCOPE among Indonesian people.

METHOD

Study design

A correlational design was employed.

Sample and setting

At first, one hundred and fifty healthy women and men were invited to this study. However, no potential male responded the invitation. Finally, authors decided to include only female in to join this study since further studies on this topic were specifically for the female population with cancer, the authors decided to include only women. Moreover, past literature reported a gender difference variable in religion or spirituality

The inclusion criteria included those over 18 years old who could read and write and were not suffering from illness or were under medication. The last criterion was set because consuming sedatives or pain killers for chronic illness could give a peaceful sensation (Beller et al., 2015). The consecutive sampling technique was applied to recruit 150 respondents. This study was conducted between May and June 2019.

Measures

The Brief RCOPE instrument evaluates the positive and negative patterns of religious coping (Pargament et al., 1998). It comprises of 14 RCOPE items focusing on the two theoretical dimensions of positive or negative patterns. The Brief RCOPE has the advantage of providing a valid measure and filling religious coping patterns with a more limited number of items. This tool is also of clinical interest, as it has indicated that the positive religious coping pattern predicts better mental health (through reduced symptoms of depression and anxiety). In contrast, the negative pattern predicts an alteration in mental health (Ano and Vasconcelles, 2005). The latest review indicated that various translated versions of Brief RCOPE were valid and reliable (Pargament et al., 2011)). A Likert Scale with four visual analog indicators was applied from never (0) to always (3). A positive religious coping score was obtained when the total score of items being 1-7, while negative religious coping was obtained when the total score of items being 8-14.

Construct validity testing of the two dimensionalities of the structure followed the original version. Criteria validity was measured by correlating the Indonesian Brief RCOPE with other tools such as the Freiburg Mindfulness Inventory (FMI), the Perceived Stress Scale (PSS), the WHOQOL BREF, and the Spirituality (FACIT-Sp12).

The construct validity tested the two dimensionalities of the structure per the original version. Criteria validity was measured by correlating the Brief RCOPE Bahasa Indonesia (BI) with other tools, such as the Freiberg Mindfulness Inventory (FMI), the Perceived Stress Scale (PSS), the WHOQOL BREF, and the Spirituality (FACIT-Sp12).

Translation and validation

The translation and adaptation process adopted the Sperber (2004) approach, which includes translation and back-translation procedures. Two English-qualified bilingual nurses with IELTS scores equal to or above 6.5 translated the original version into the Indonesian language. These two translated versions were compared to the formulated draft of the Indonesian Brief RCOPE. Next, a native bilingual person who lived in the US back-translated the draft into English. The draft and back-translated versions were compared to formulate the Indonesian language version of Brief RCOPE. A cognitive interview was conducted with five students and five laypeople. A minor revision was performed for mistyping and misspelling of several words.

Procedures for data collection

Six enumerators who live in Purwokerto were trained to recruit potential respondents. Each enumerator visited each potential respondent and explained the study's purpose and benefits and the respondent's role in the study. After the respondents signed the informed consent form, each enumerator provided a set of questionnaires and waited for the respondents to complete them. Prepaid mobile phone vouchers were provided for each respondent.

Data analysis

The univariate analyses provided information about data dispersion and the central tendency of numeric data. Categorical data were presented as percentages. Exploratory Factor Analysis (EFA) examined the validity of the two-factor solution structure of the Indonesian language Brief RCOPE. Internal consistency was measured with Cronbach's alpha coefficient. Pearson *r* correlation was utilized to test the correlation between positive and negative coping patterns and criteria tools such as the Freiburg Mindfulness Inventory (FMI), the FACIT Sp12, the WHO Quality of Life (WHOQOL BREF), and the Perceived Stress Scale (PSS 10).

Statistical treatments were performed with the SPSS 21.0 software. The Bartlett sphericity test and the Kaiser-Meyer-Olkin index (KMO) were utilized to verify the adequacy of the correlation matrix for the exploratory factor analysis. The significant findings of the Bartlett test and KMO index of > 0.7 indicated that the correlation matrix was adequate for factor analysis (Tiesinga et al., 2009). Structural validity was explored with factor analysis using principal component extraction and oblique rotation (direct Oblimin) as the supposed correlation between the two factors (Caporossi et al., 2018). Factor selection was performed using the Kaiser criterion (eigenvalue > 1). The validity of the convergent criteria was explored by studying the links (Pearson *r*) between religious coping factors and criteria variables. Reliability was tested using Cronbach's alpha formula (internal cohesion). The significance threshold was fixed at $p \leq 0.05$.

Ethical considerations

This study is part of the "Studi Eksplorasi Koping Religius dan Spiritual pada Pasien Kanker Ginekologis untuk Meningkatkan Kualitas Hidup pada Periode Survivorship". The study has been reviewed by the ethical committee of Margono Soekardjo Hospital in Purwokerto with number 420/956/VII/2019.

RESULTS

On average, the respondents were approximately 31 (±12.7) years old. Most of the respondents were affiliated with Islam. The proportion of married individuals to unmarried ones or widows was nearly equal at 50.7% and 49.3%, respectively. Most respondents' educational were of senior high school education or lower (86.7%). Most respondents were dependents (homemakers and kids or older adults) at 80.7%. Only 144 respondents shared information about their personal and family income. Several respondents (30) did

not fill out their personal income. They were primarily homemakers who felt they were family dependents. Most of those who shared the information had monthly incomes of less than 5 million IDR, or approximately equal to 357 USD. More than 75% of the respondents are active in their jobs/activities.

Table 1. Demographic characteristics

Characteristics	n (%)
Age	
Mean	31.1 (12.7)
Religion	
Islam	147 (98.0)
Catholic	3 (2.0)
Marital status	
Unmarried	68 (45.3)
Married	76 (50.7)
Widow/widower	6 (4.0)
Educational background	
Elementary school	29 (19.3)
Junior high school	20 (13.3)
High school	81 (54.0)
College/university	20 (13.3)
Jobs	
Government employee	2 (1.3)
Employee	11 (7.3)
Business person	12 (8.0)
Housewife	63 (42.0)
Laborer	4 (2.7)
Dependant	58 (38.7)
Current job status	
Active	115 (76.7)
Temporary leave	5 (3.3)
Retired	28 (18.7)
Personal income (N114)	
<1 M IDR	88 (58.7)
1-5 M IDR	25 (16.7)
6-10 M IDR	1 (0.7)
Total family income (N=144)	
< 1 M IDR	49 (32.7)
1-5 M IDR	91 (60.7)
6-10 M IDR	1 (0.7)
>10 M IDR	3 (2.0)
Health insurance covered	99 (66.0)

Table 2. Mean scores of the utilized tools

Variables	Mean (SD)	Scale's range
PR coping	18.90 (2.6)	0-21
NR coping	4.69 (3.8)	0-21
Mindfulness (FMI)	37.92 (4.4)	0-56
Spirituality (FACIT-SP12)	37.43 (5.4)	0-48
Perceived stress (PSS10)	18.44 (4.1)	0-50
WHOQOL BREF		
Physical domain	69.71 (11.4)	100
Psychological domain	69.61 (11.1)	100
Social domain	64 (15.2)	100
Environmental domain	63.33 (11.8)	100

As predicted, the mean score of the PRC pattern (M = 18.90 (2.6) was higher than the mean score of the NRC pattern (M = 4.69 (3.8). The difference between both scores was significant (t = 36.25, p < 0.01).

The mean FMI score of 37.92 with a maximum of 56 and mean Spirituality score of 37.43 with a maximum of 48 were slightly higher than the median score of each scale.

Construct validity

The Bartlett sphericity test was significant (df (91) = 815.044; p < 0.001), and the Kaiser-Meyer-Olkin (KMO) test resulted in a value of 0.782. These results satisfied the factorial analysis requirements. The principal component analysis retained a two-factor solution, which revealed that Factor 1, comprised of seven items, makes up the positive religious coping pattern of the original version of Brief RCOPE. This factor explained 27.31% of the variance. Factor 2 explained 23.12% of the variance and consisted of seven items composed of the negative religious coping pattern of the original version of Brief RCOPE. With the two-factor structure solution, the Indonesian Brief RCOPE explained 50% of the criteria validity variance.

Positive Religious Coping represents the closeness of individual to his/her belief system. Especially the relationship to the God or superior entity in the system belief. This is an integration the belief system in the life. While the Negative Religious Coping is a symbol of an individual failure to integrate religious aspects into coping strategies in dealing with stress (Pargament et al., 1998).

Table 3. Results of correlation analyses between PRC and NRC to other scales

Variables	PRC pattern	NRC pattern
PRC pattern	-	-.067
NRC pattern	-.067	-
Mindfulness (FMI)	.338**	.185*
Spirituality (FACIT Sp12)	.317**	-.082
Perceived stress (PSS 10)	-.093	.182*
WHOQOL BREF		
Overall	.164*	-.179*
Physical domain	.048	.076
Psychological domain	.272**	-.125
Social domain	.054	.001
Environmental	.015	.081

PRC: Positive Religious Coping, NCR: Negative Religious Coping

The correlational analyses (Table 4) did not indicate a significant intercorrelation between the positive and negative scales of Brief RCOPE BI (r = -0.06, p > 0.05). The PRC pattern score correlated positively with the FMI score (r = 0.338, p < 0.01) and FACIT-SP12 (r = 0.317, p < 0.01).

Meanwhile, the NRC score coping correlated positively with the FMI score (r = 0.185, p < 0.05) and the PSS score (r = 0.182, p < 0.05) and had a negative correlation with the score of overall quality of life (r = -.179, p < 0.05). The NRC pattern had a positive correlation with PSS (r = 0.185, p < 0.05) and FMI (r = 0.182, p < 0.05). Moreover, the correlational analyses (Table 4) did not indicate a significant inter-correlation between the positive and negative scales of the Indonesian language Brief RCOPE (r = -0.06, p > 0.05). The PRC pattern score correlated positively with the FMI score (r = 0.338, p < 0.01) and FACIT-SP12 (r = 0.317, p < 0.01).

Meanwhile, the NRC coping pattern score correlated positively with the FMI score (r = 0.185, p < 0.05) and PSS score (r = 0.182, p < 0.05) and correlated negatively with the score of overall quality of life (r = -0.179, p < 0.05). NRC

pattern had a positive correlation with PSS (r = 0.185, p < 0.05) and FMI (r = 0.182, p < 0.05).

Concerning quality-of-life domains, the PRC pattern score correlated with the overall quality of life (r = 0.164, p < 0.05) and psychological domain of quality of life (r = 0.272, p < 0.05), while NRC only correlated with the overall quality of life (r = -0.79, p < 0.05).

Table 4. Results of factor analyses

No	Items	Factor 1	Factor 2
1	Looked for a stronger connection with God	.633	-.057
2	Sought God's love and care	.629	.057
3	Sought help from God in letting go of my anger	.627	.099
4	Tried to put my plans into action together with God	.868	-.028
5	Tried to see how God might be trying to strengthen me in this situation	.692	-.095
6	Asked forgiveness for my sins	.725	-.048
7	Focused on religion to stop worrying about my problems	.775	-.174
8	Wondered whether God had abandoned me	-.207	.710
9	Felt punished by God for my lack of devotion	-.034	.707
10	Wondered what I did for God to punish me	.094	.734
11	Questioned God's love for me	-.066	.801
12	Wondered whether my church had abandoned me	-.117	.725
13	Decided the devil made this happen	.075	.434
14	Questioned the power of God	-.027	.707
	% variance explained	27.3	23.1
	Cronbach's alpha coefficient	0.83	0.81
	Eigenvalue	3.82	3.23

**) Note: Principal component method with direct Oblimin*

Reliability

The Brief RCOPE BI version was confirmed reliable. Its reliability was identified from Cronbach's alpha coefficient. The reliability of all 14 items was 0.728. The Cronbach's alpha coefficients of factor 1 and factor 2 were 0.83 and 0.80, respectively. Inter-item correlation had a mean of 0.420 (0.250-0.719) for factor 1 and 0.392 (0.153-0.641) for factor 2. These indicators confirmed that the Brief RCOPE BI is a reliable instrument.

DISCUSSION

This study examined the validity of the Bahasa Indonesian (BI) version of the Brief RCOPE. Overall, the Brief RCOPE BI version is a valid and reliable tool for this study's population. The mean score of PRC coping was higher than NRC. Religious aspects were a positive modality for the respondents' coping strategy. This result supported the evidence from a previous study of the original version in the US (Pargament et al., 1998) and the French version in Europe. However, the study did not confirm the correlation between the PRC pattern and the NRC pattern. A recent study indicated a correlation between PRC and NRC (Caporossi et al., 2018). However, both religious coping patterns were not correlated in the original version.

Furthermore, the construct validity of the Indonesian language Brief RCOPE satisfied the significance threshold. The two-factor model was confirmed valid, wherein all factors included in each factor exceeded the minimum requirement of 0.3. This finding confirmed the consistency of the positive and negative religious coping patterns and supported current studies in France and Iraq (Al-Hadethe et al., 2016; Caporossi et al., 2018; Pargament et al., 1998).

Next, PRC had a positive correlation with spirituality. This relationship was predicted since spirituality and religiosity are overlapping concepts. FACIT-SP12 is also a common tool to measure spirituality. Three concepts: meaning, harmony, and faith, were measured (Canada et al., 2013; Canada et al., 2008; Canada et al., 2016; Murphy et al., 2010). This study indicated a significant positive correlation between the PRC pattern and FACIT-SP12.

Another correlation exists between the PRC pattern and FMI. The high FMI score represents the individual's ability to pay attention to their emotional changes (mindfulness). Religiosity can measure how a person uses religious aspects in response to a problem. Similarly, the mindfulness measured information for processing taught in Buddhism practice through meditation (Sauer et al., 2013) is similar to the term *muroqobah* in Islam (Isgandarova, 2019; Siddiqui, 2019). These concepts are religious practices that can help their followers achieve a "spiritual" level. Spirituality and mindfulness were associated with improved psychological and medical symptoms (Carmody et al., 2008).

Although religious coping, spirituality, and mindfulness are correlated, these concepts are still different. PRC and NRC portray how religion influences how individuals adjust to stressful conditions (Kohls et al., 2009). Meanwhile, spirituality measures the effect of the belief system on subjective response to the meaning of life. In contrast, mindfulness measures information processing in a mental state (Sauer et al., 2013).

This study confirmed the validity of Brief RCOPE BI. However, unexpected results also emerged. The NRC pattern had a positive correlation with FMI and PSS. Theoretically, they should be negatively correlated. Current evidence also consistently reports that negative religious coping is related to negative psychological symptoms (Al-Hadethe et al., 2016; Pargament et al., 2011). Since the correlation coefficient was exceedingly small, the sample size may have caused this result. Increasing sample size may result in a more consistent relationship than what was found in this study.

The limitation of this study was that it only covered the female population. Therefore, this Brief RCOPE BI version validity

investigation was confirmed for the female population. Using this tool to measure gender should consider re-testing.

CONCLUSION AND RECOMMENDATION

This study indicated that the validity of the factor model design is conferment. The Brief RCOPE BI also measures different concepts from mindfulness and spirituality. Moreover, the reliability coefficient of the two factors is high. In conclusion, the Brief RCOPE BI is a valid and reliable tool for measuring the positive and negative patterns of religious coping among a healthy female population. Therefore, further studies can utilize the Brief RCOPE BI for assessing religious coping among Indonesians.

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