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Jurnal Keperawatan Soedirman

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

- PREPAREDNESS OF ELEMENTARY SCHOOL PARENTS FOR OFFLINE LEARNING DECISIONS DURING THE COVID-19 PANDEMIC
- ANALYSIS OF PSYCHOSOCIAL FACTORS AFFECTING DIETARY BEHAVIOR AMONG PEOPLE WITH TYPE 2 DIABETES MELLITUS IN INDONESIA
- SYMPTOM CLUSTERS AND QUALITY OF LIFE AMONG WOMEN LIVING WITH CANCER
- THE DEVELOPMENT OF AN APPLICATION FOR LEARNING HOW TO USE COMBINED HORMONAL CONTRACEPTIVE PILLS
- NEWBORN WEIGHT AND SECOND-HAND SMOKING IN UTERO EXPOSURE: A CASE IN A LOW-MIDDLE INCOME COUNTRY
- *THE THE EFFECTIVENESS OF PSYCHOEDUCATION TO REDUCE ANXIETY AND INSOMNIA AMONG PATIENTS WITH CHRONIC KIDNEY FAILURE IN HEMODIALYSIS UNIT*
- NURSES' EXPRESSION OF TRANSCULTURAL CARE TO PATIENTS WITH CANCER: A PHENOMENOLOGICAL STUDY OF THE PHILIPPINES CONTEXT
- THE EFFECTIVENESS OF CADRE TRAINING USING CANCER EDUCATIONAL VIDEOS ON KNOWLEDGE AND SELF-EFFICACY

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A scientific journal

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Author Guidelines

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Writing Guidelines

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Conclusions from the results of research conducted delivered briefly and clearly

Acknowledgment

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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.

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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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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:

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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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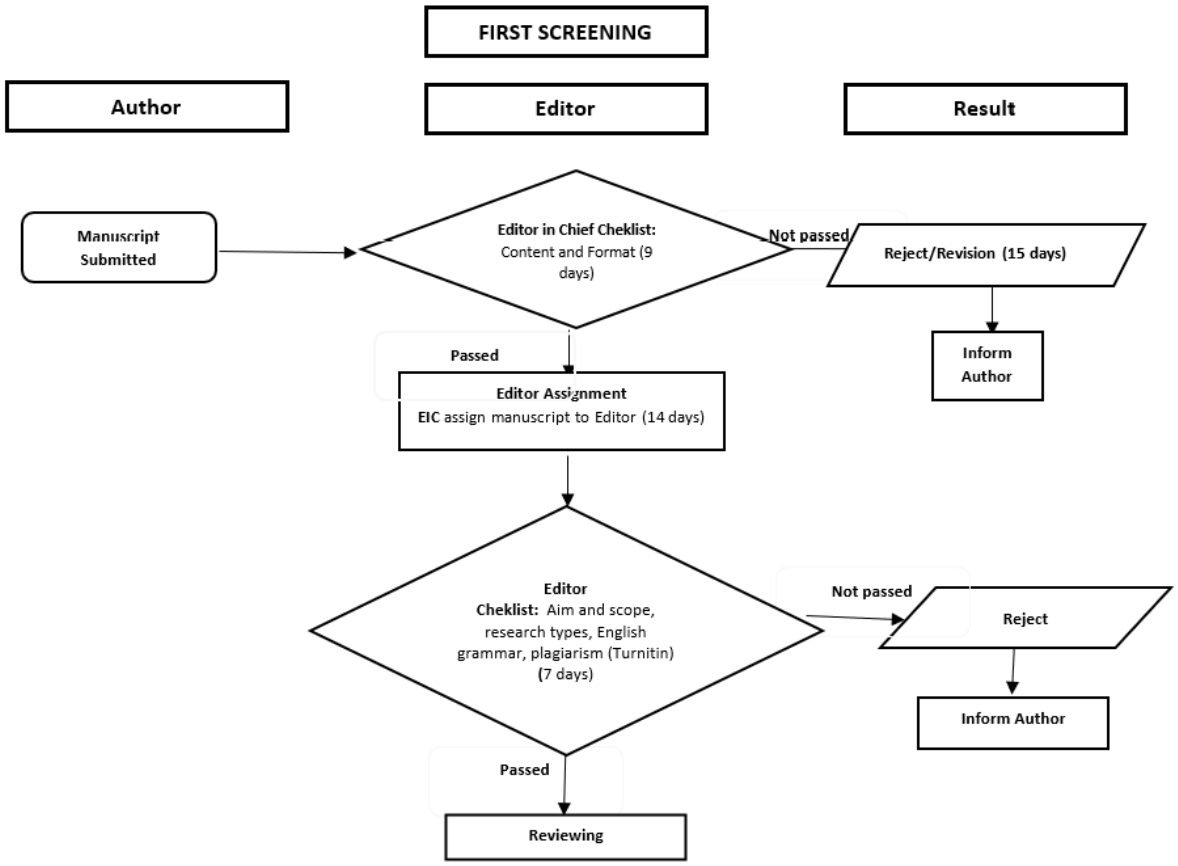
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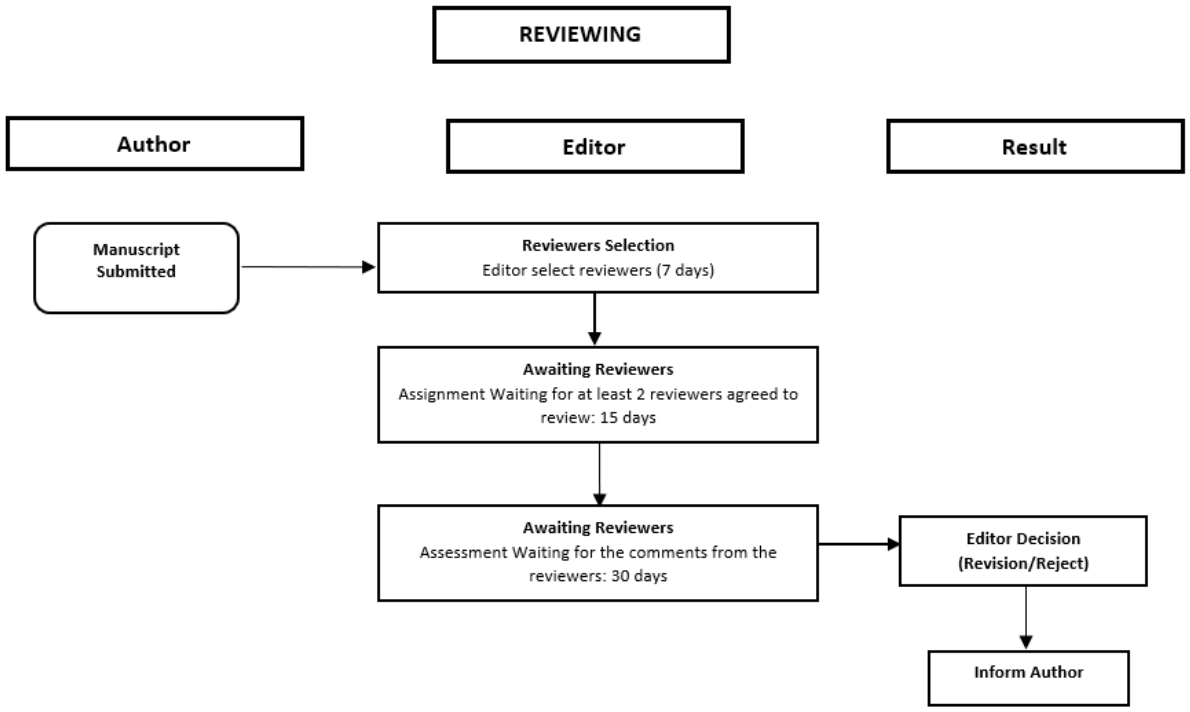
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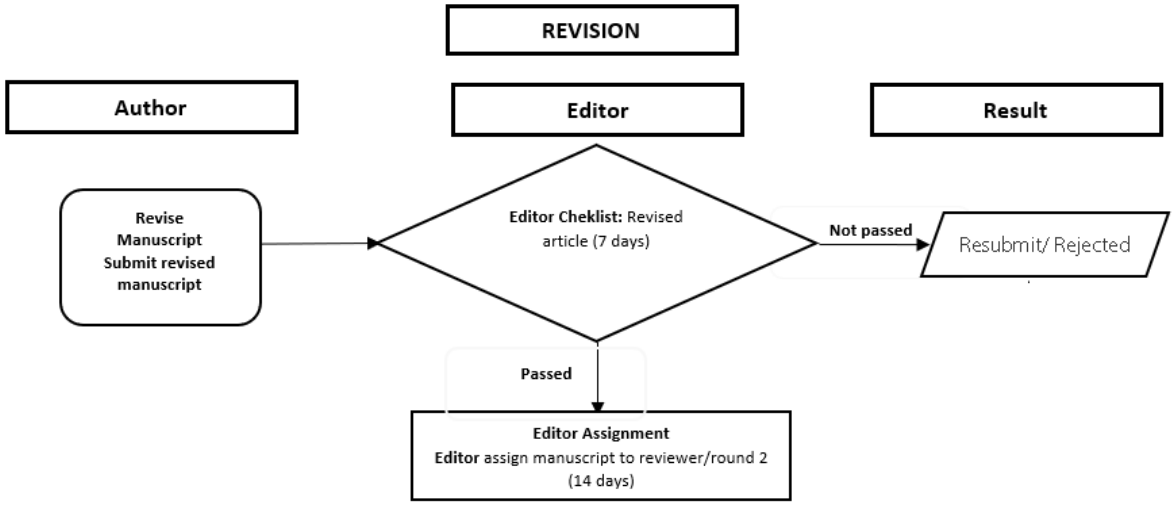

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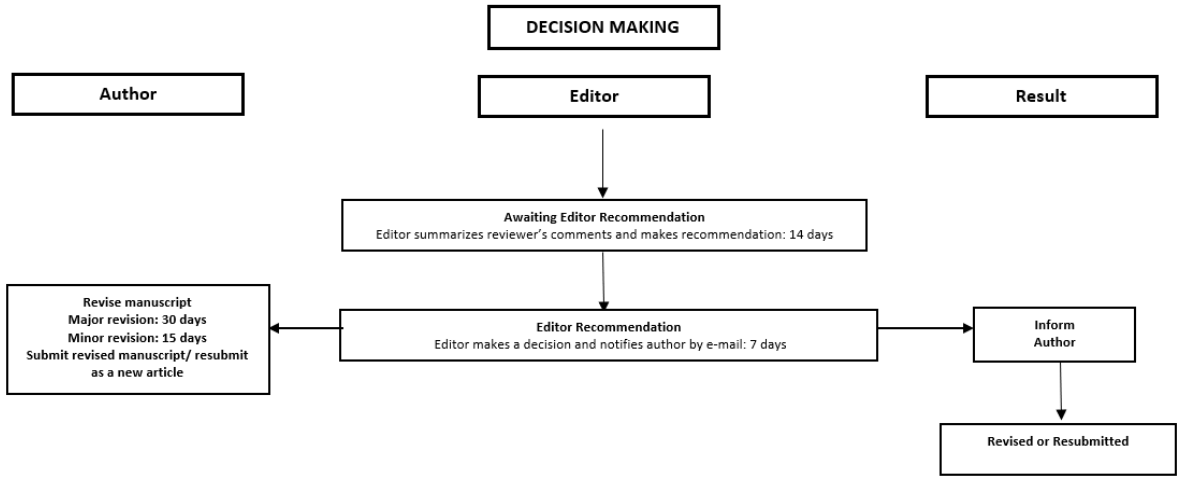

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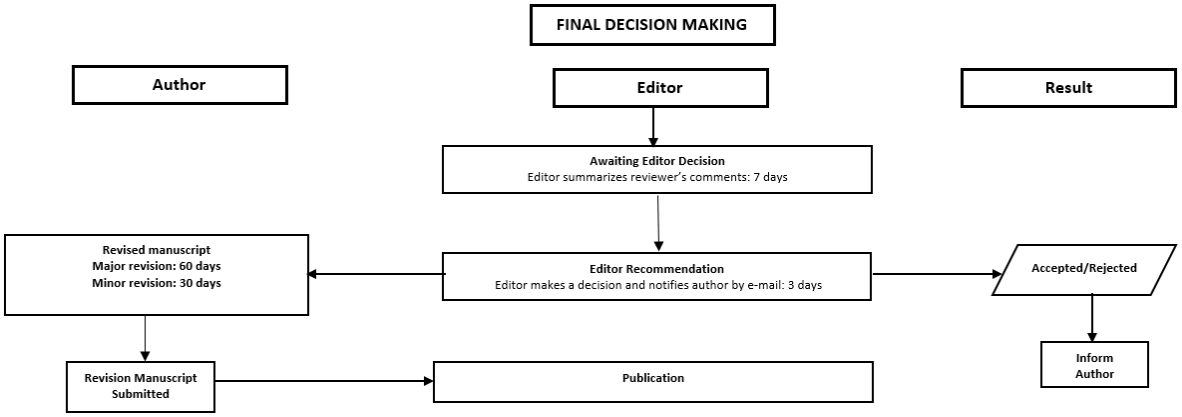

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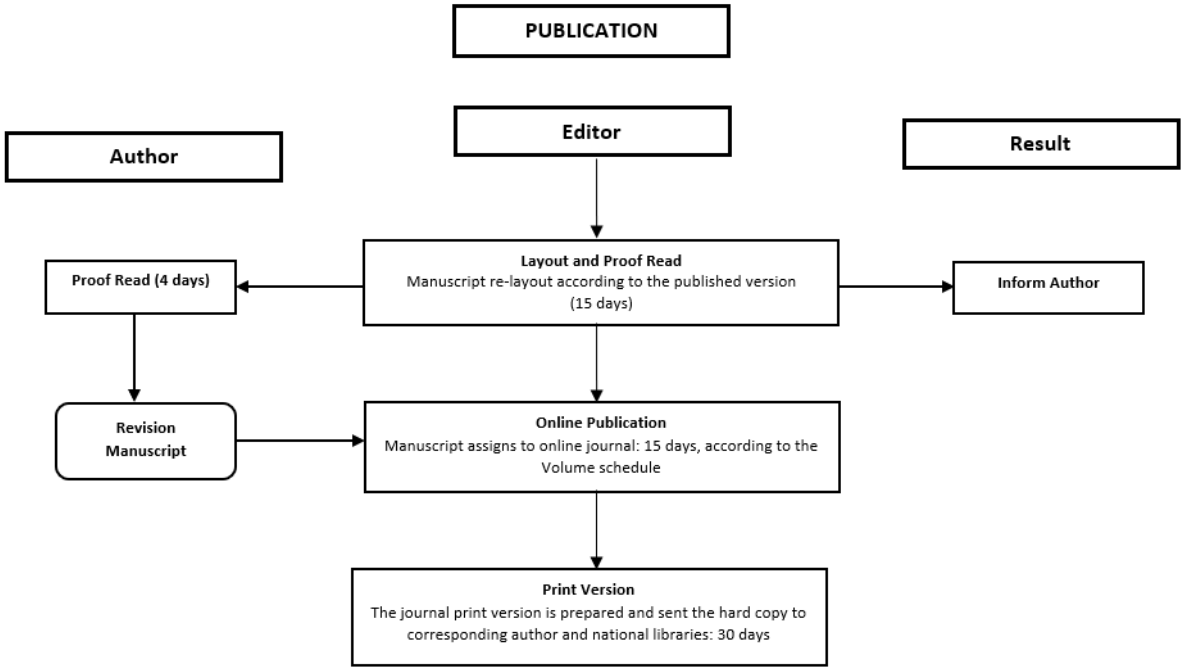

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ORIGINAL ARTICLE

PREPAREDNESS OF ELEMENTARY SCHOOL PARENTS FOR OFFLINE LEARNING DECISIONS DURING THE COVID-19 PANDEMIC

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ABSTRACT

Reopening schools during the COVID-19 pandemic requires the full consideration of parents' decisions due to the worry of exposure for their children. This study evaluated parents' preparedness for offline learning decisions among elementary school children during the COVID-19 pandemic. This is a cross-sectional study with 134 parents as respondents. The consecutive sampling technique was used. The online questionnaire was distributed on social media to collect data from various regions in Indonesia. The finding indicated that 99 (73%) parents sent their children for offline learning from July to November 2021 for one to three times a week (44.8%) and one to three hours a day (46.8%). The significant factor for parents' decisions was school preparedness for COVID-19 prevention ($p < 0.05$). However, parents' preparedness for self-protection and the child's mental condition had no significant relationship because almost all parents were already prepared for these factors (> 95%). Therefore, the government and primary health care have a vital role in supervising and providing a safe environment for children during the COVID-19 pandemic.

Keywords: *COVID-19; elementary school; offline learning; parents' preparedness; self-protection*

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INTRODUCTION

COVID-19 affected all age groups, including children from 0 to 18 years. Research stated that the possible modes of transmission of COVID-19 include droplet, airborne, fomite, fecal-oral, blood-borne, and animal-to-human transmission. Globally, schools immediately closed in response to the COVID-19 pandemic (Unesco, Unicef, The World Bank, WFP, & UNHCR, 2020). In Indonesia, the government prevented the spread of the COVID-19 virus to children by applying learning from home for children, which had been implemented since March 2020 following a circular from The Ministry of Education and Culture no. 4 of 2020 and strengthened by circular no. 15 of 2020 about guidelines for the implementation of learning from home in the emergency period of the COVID-19 pandemic (Ministry of Education and Culture Republic of Indonesia, 2020b).

Interruptions to instructional time in the classroom have impacted children's learning abilities (Unesco, Unicef, The World Bank, WFP, & UNHCR 2020). A survey on the impact of learning from home was performed by the Ministry of Education and Culture and found that most children had difficulty understanding lessons, lacked concentration, and found learning from home more difficult than offline learning (Ministry of Education and Culture, 2020). Difficulties are also experienced by parents in accompanying children during online learning, especially for younger children. They need intensive guidance to maintain the flow of their studies. Parents have also voiced their obstacles in supporting their children's online learning, such as lack of time and experience, especially parents with full-time jobs. They cannot manage daycare or caregiver support in addition to their work duties. Thus, they find conventional learning preferable. Parents perceive face-to-face learning as the best solution (Pudjiadi et al., 2022).

The Indonesian Minister of Education and Culture targeted face-to-face learning to be reinstated in July 2021 by considering the vaccination target for educators in Indonesia (Wicaksono, 2021). Educators are a priority group for the COVID-19 vaccination (Director-General of Disease Prevention and Control, 2020). After the vaccination target for educators was achieved, the minister encouraged schools to open and start face-to-face learning. This Ministerial Decree

is conducted in accordance with the direction of the President of the Republic of Indonesia (Atmoko, 2021). However, epidemiologists from the University of Indonesia considered that the government needs to re-evaluate the opening of schools due to the newly discovered SARs-CoV-2 B117 virus mutation in Indonesia (Wicaksono, 2021). On the order hand, parents also expressed their restlessness for offline learning as school-aged children have not been vaccinated in June 2021 (Wicaksono, 2021).

Reopening schools for face-to-face learning need to be well-prepared to keep children safe and reduce parental concerns (Jallul et al., 2022). School management must provide children a safe environment and activities by focusing on policies, procedures, planning, and financing (Widowati et al., 2022). This research evaluated the factors influencing parents' decisions for offline learning and their preparedness during the COVID-19 pandemic in Indonesia.

METHOD

Study design

This is a quantitative study with an analytical cross-sectional approach. The cross-sectional approach was used to describe and evaluate the factors that influence parents' decisions for offline learning and their preparedness (Polit & Beck, 2018).

Sample

This study focused on elementary school parents (father or mother) in Indonesia, and the researchers used consecutive sampling to select participants due to the pandemic conditions, which made voluntary sample selection more appropriate. This approach allowed for a broad range of research locations without limitations on the number of schools, provinces, or districts. The researchers recruited participants by advertising the study objectives, process, eligibility criteria, and how to participate via flyers. Respondents were screened using the eligibility criteria: parents (father or mother), age over 18, smartphone ownership, and familiarity with the research application (Google Forms). Participants who met the criteria completed the survey online. The questionnaire was distributed via popular social media platforms such as Facebook, Instagram, and WhatsApp to make it accessible to everyone in Indonesia. Google Forms was used to survey parents' decisions regarding offline learning and their level of preparedness. The study included 134 participants.

Instrument

This study used an online questionnaire that contains demographic characteristics, offline learning, and parents' readiness for offline learning during the pandemic. The demographic characteristic questionnaire contains the child's, mothers', and fathers' characteristics. The parents' readiness instrument was developed by the Centers for Disease Control and Prevention (CDC). The CDC developed questions to help parents consider the risks and benefits of available educational choices before deciding for their children to follow offline learning (CDC, 2021). The original instrument was in English and has been translated into Indonesian. The translation is performed in two steps, i.e., forwarding translation and the forwarding translation reviewed by the research team. Three kinds of parents' readiness were used in this study: school readiness for COVID-19 prevention, planning for their children's self-protection from COVID-19, and mental health and social-emotion well-being consideration.

The school readiness for COVID-19 prevention questionnaire focuses on the family's unique needs and situation and the family's comfort levels with the school's readiness for COVID-19 preparation. This instrument consists of nine statements with a Likert scale; the answer choices for these questions were yes, no, unsure, and disagree.

The next questionnaire focuses on the parents' plans for the children's self-protection from COVID-19. This instrument ensures that the family emphasizes and exemplifies self-protective behavior and talks with their children about the changes expected for offline learning. This instrument consists of thirteen statements with a dichotomous answer choice.

The third questionnaire focuses on mental health and social-emotion well-being considerations. It concentrates on the parents' preparedness about their children's mental health and social emotion. This instrument consists of 12 statements with a dichotomous answer choice. The Indonesian version of the questionnaire was tested on 30 eligible respondents. The Cronbach's coefficient of this instrument was 0.754 of the total score.

Data analysis

Descriptive statistic was conducted to analyze the demographic characteristics, offline learning characteristics, and parents' readiness for offline learning during the pandemic. The data of children's characteristics (sex, grade, province, and transportation), mother/father's characteristics (education, occupation, and income), and offline learning characteristics (learning mode, first decision, offline frequency, and hours offline learning in a day) were described in frequency and percentages. The numeric data, such as children's characteristics (age), mother/father's characteristics (age), and offline learning characteristics (offline frequency and hours offline learning in a day) were described as the mean, deviation standard (SD), minimum, and maximum. The characteristic data were normally distributed. The Mann–Whitney U test was used because the parents' perception data (school readiness, planning for self-protection, mental health, and social-emotional well-being) were not normally distributed to the relationship between parents' readiness for offline learning during the pandemic among elementary school children.

Ethical consideration

This study was approved by the ethical review board of the Carolus Institute of Health Science Number 075/KEPPKSTIKSC/IX/2021. All participants provided their written informed consent by online mode.

RESULTS

Table 1 shows the characteristics of children, mothers, and fathers of elementary school children. Most of the children were female (70; 52.2%). Among 134 children, 77 (57.5%) were in the first to third grade, and 124 (92.5) children came from Sulawesi. The children used public transportation (67.50%) and private transportation (67.50%). Mothers' characteristics include predominately highly educated (95; 70.9%). Among 134 mothers, 43 (32.1%) were housewives and 73 (54.5%) have over three million IDR of monthly income. Most fathers were highly educated (95; 70.9%). As many as 65 (48.5%) of them were private employees, and 103 (76.8%) fathers have over three million IDR of monthly income.

Table 1. Characteristics of children, mothers, and fathers

Variable	Mean (SD)	Min - Max	n (%)
Children's characteristics			
Ages (year)	8.46 (1.878)	6-9	
Sex			
Women			70 (52.2)
Men			64 (47.8)
Grade			
Grade 1-3			77 (57.5)
Grade 4-6			57 (42.5)
Province			
Sulawesi			124 (92.5)
Kalimantan			2 (1.5)
Java			5 (3.7)
Jakarta			3 (2.2)
Transportation			
Public transportation			67 (50.0)
Private transportation			67 (50.0)
Respondent's relationship with children			
Father			17 (12.7)
Mother			117 (87.3)
Mothers' characteristics			
Ages (year)	36.91 (5.142)	23-50	
Education of mothers			
Low (SD-SMP-SMA)			39 (29.1)
High (Diploma-S1-S2-S3)			95 (70.9)
Mothers' occupation			
Housewife			43 (32.1)
Private employees			25 (18.6)
Health profession			13 (9.7)
Teacher/lecturer			11 (8.2)
Civil servant			42 (31.3)
Mothers' income			
No income			27 (20.1)
< Rp. 1 billion			9 (6.7)
Rp. 1 – 3 billion			25 (18.7)
>Rp. 3 billion			73 (54.5)
Fathers' characteristics			
Ages (year)	39.5 (5.62)	26-58	
Fathers' education			
Low (SD-SMP-SMA)			39 (29.1)
High (Diploma-S1-S2-S3)			95 (70.9)
Fathers' occupation			
Farmer/daily laborer			11 (8.2)
Soldier/police/sailor			16 (11.9)
Private employees			65 (48.5)
Teacher/lecturer			8 (6.0)
Civil servant			34 (25.4)
Fathers' income			
No income			2 (1.5)
< Rp. 1 billion			7 (5.2)
Rp. 1 – 3 billion			22 (16.4)
>Rp. 3 billion			103 (76.8)

Table 2 presents the offline learning implementation during the pandemic in Indonesia. Between August and November 2021, 99 (73.9%) children have been in offline learning mode. Most of them had their first offline learning classes between June-December 2021, but there were children in offline learning mode since January-June 2020. Among 134 children, 60 (44.8%) did offline learning one to three times a week, and 62 (46.3%) children did offline learning for 1-3 hours each day.

Table 2. Offline learning characteristics in August – November 2021

Variable	Mean (SD)	Min - Max	n (%)
Offline learning mode			
Yes			99 (73.9)
No			35 (26.1)
The first decision for offline Learning			
Never			35 (26.1)
June – December 2021			79 (59.0)
Jan – June 2021			7 (5.2)
April – June 2020			13 (9.7)
Offline frequencies in a week	2.64 (2.19)	0-6	
Never			35 (26.1)
1 – 3 times			60 (44.8)
4- 6 times			39 (29.1)
Hours of offline learning in a day	2.48 (1.96)	0 - 8	
Never			35 (26.1)
1 – 3 hours			62 (46.3)
4-6 hours			31 (23.1)
7– 9 hours			6 (4.5)

The parents' perception of their preparedness for their children's offline learning is shown in Table 3. Most of the parents perceived that the school's preparation for COVID-19 prevention was sufficient or ready at 100 (74.6%) people with an average score of 15.14. Almost all parents had the perception that they were ready about the preparation of COVID-19 prevention for offline learning at 98 (73.1%) people, with an average score of 11.19. Most of them also believed that they had done enough mental health preparation for offline learning during the pandemic at 95 (70.9%) people, with an average score of 10.05.

Table3. Parents' perception of the preparedness for COVID-19 prevention for offline learning during the pandemic (August – November 2021)

Variable	Mean (SD)	Min - Max	n (%)
School readiness for COVID-19 prevention	15.14(3.44)	4 – 18	
Ready			100 (74.6)
Not ready			34 (25.4)
Planning for self-protection of children from COVID-19	11.19(1.65)	5 - 13	
Ready			98 (73.1)
Not ready			36 (26.9)
Mental health and social-emotion well-being consideration	10.05(2.37)	3 - 12	
Ready			95 (70.9)
Not ready			39 (29.1)

The relationship between parents' preparedness and perception of COVID-19 prevention in offline learning is presented in Table 4. The average parents' perception of school preparedness for COVID-19 prevention that chose offline learning mode for their children (15.76 $\pm$ 3.05) was higher than the parents that did not choose offline learning (13.4 $\pm$ 3.89), with a significant difference (P value < 0.05). The planning score for the self-protection of children from COVID-19 among the parents that chose offline learning (11.05 $\pm$ 1.77) and online learning (11.57 $\pm$ 1.95) differed. However, there was no significant difference in statistics (P value > 0.05). There is a small score difference between mental health and social-emotion well-being consideration among the parents that chose offline learning (10.11 $\pm$ 2.45) and online learning (9.89 $\pm$ 2.17). However, there was no significance in statistics (P value > 0.05)

Table 4. The relationship between parents' readiness for offline learning during the pandemic among elementary school children

Variable	Offline learning mode		P value
	Yes (mean±SD)	No (mean±SD)	
School preparedness for COVID-19 prevention	15.76 $\pm$ 3.05	13.4 $\pm$ 3.89	0.000
Planning for self-protection of children from COVID-1	11.05 $\pm$ 1.77	11.57 $\pm$ 1.95	0.109
Mental health and social-emotion well-being consideration	10.11 $\pm$ 2.45	9.89 $\pm$ 2.17	0.631

DISCUSSION

This study shows that only a few parents have allowed their children to conduct offline learning in elementary schools since the beginning of the COVID-19 outbreak. However, the government officially reopened schools in June 2021 if the positivity rate in the area is below 5% and the mortality rate is declining, per the recommendations of the Indonesian Pediatric Society (IPS) (Pudjiadi et al., 2022). Daily cases have declined since reaching a peak in July 2021, from 56,000 cases to 2,577 cases in September 2021. The recovery rate is above the world average, and the number of people vaccinated has reached 34.4% of the target and will

continue to increase the national vaccination rate (Ministry of State Apparatus Utilization and Bureaucratic Reform of Indonesia, 2021). Thus, most parents were satisfied with the face-to-face learning policy during the end of the pandemic (Safira, 2022).

The parent's decision to allow their children to conduct offline learning early was because of the many obstacles of online learning. Parents argued that during online learning, their children lacked concentration, lacked self-regulation, and had difficulties in learning support due to the parent's lack of time and experience, particularly for parents with full-time jobs (Pudjiadi et al., 2022). A previous study regarding the readiness level of 38 parents from elementary school, secondary school, and senior high school students showed that 96% of parents were very ready to accompany their children to learn online, 92% instructed their children to learn online according to the school's learning schedule, 82% did not understand their children's lessons, 16% were grumpy when accompanying their children's learning process, and 47% became stressed (Siahaan et al., 2021). This study's results differed than previous research as only a few parents (26.1%) prefer online school. This may be because the research was conducted after nearly two years after the beginning of the pandemic.

The parents' readiness for offline learning during the pandemic among elementary school children was greatly influenced by their perception of the schools' preparedness for COVID-19 prevention. This is in line with a previous study that found the highest reported reason for parents' satisfaction level was their trust in schools' safety protocols, besides improvements in learning processes and outcomes (Safira, 2022). A previous survey in Indonesia showed that most parents were "quite satisfied" with the face-to-face learning policy based on gender, region, household income, marital status, work status, and their children's school level and school type (Safira, 2022). Another study among elementary school children from July to November 2021 showed that 100% of parents have a good readiness for face-to-face learning during the pandemic (Made et al., 2023). This result is in line with this study, which showed that parents sent their children to school since the beginning of the COVID-19 pandemic as distance learning has faced some resistance in Indonesia, especially among those living in rural communities, i.e., being disproportionately disadvantaged due to gadget ownership issues and limited access to internet connectivity (Safira, 2022).

Previous research has also found that there were several factors that affect parents' decision to keep their children conducted online learning, including the presence of vulnerable people at home, children with comorbidities, perception of COVID-19 as a dangerous disease, experience with COVID-19-positive cases in the community, COVID-19 related death in the community, approval for adult COVID-19 vaccination, and ownership of private transportation (Pudjiadi et al., 2022). Moreover, another research indicated that some parents were uncertain about the preparedness of schools for limited face-to-face learning. The same research also showed that the surveyed parents reported a 50-70% readiness level for schools to conduct offline learning (Mujiarti et al., 2022).

This study also shows no significant relationship between parents' planning for the self-protection of their children from COVID-19 and their decision to send their children for offline learning. Another previous study showed that children, especially teenagers, commonly practice COVID-19 protocols, such as hand hygiene by using an alcohol-based hand sanitizer or soap and clean running water, wearing a medical mask, and avoiding touching one's eyes, nose, and mouth (Seniwati et al., 2022). Self-protection for children was not the main factor for parents because the parents have instilled this behavior since the beginning of the pandemic. The main factor they considered was the school's readiness for offline learning. In a previous study, the school must implement ventilation standards, adjusted school duration, and physical distancing before they reopened the school (Widowati et al., 2022).

Based on the results of this study, parents who opted for offline learning did not show any notable discrepancies in their mental health and overall well-being compared to those who opted for online learning. The participants demonstrated a high level of mental health and overall well-being. Earlier studies highlighted the adverse effects of the pandemic on the mental health and well-being of parents, who have reported feeling depressed, stressed, and overwhelmed due to the added responsibilities of managing both their work and their children's education. These parents have also struggled with managing their time effectively between work and their children's studies (Lase et al., 2021). Another research also showed that parents experienced stress and exhaustion while managing multiple pressures and conflicting responsibilities related to home, school, and work, without their usual support system and in the context of disrupted routines (Dawes et al., 2021). The findings of this study diverge from previous research. According to the results, the parents showed positive mental health and well-being, evident from their high scores. One possible explanation for this could be that the pandemic had been ongoing for almost two years, allowing parents to adjust and adapt to the sudden changes in the learning methodologies brought on by the pandemic (Afrilyasanti & Basthomi, 2022).

The limitation of this study is that the respondents were collected with voluntary sampling, and the questionnaire was distributed on social media. Therefore, this study only used a small sample. This may result in bias as the target population does not represent Indonesia's population. Hence, we suggest collecting data from the centers of several regions in Indonesia to obtain a more representative sample.

CONCLUSION AND RECOMMENDATION

Parents in Indonesia have sent their elementary school children to offline learning since the beginning of the COVID-19 pandemic. However, most of them sent their children to school in July 2021. School preparedness for COVID-19 prevention was the main factor for parents to send their children to school because they have prepared their children with self-protection and good mental health. Hence, the government and primary healthcare centers are important in supervising and providing safe schools for children from COVID-19.

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ORIGINAL ARTICLE

ANALYSIS OF PSYCHOSOCIAL FACTORS AFFECTING DIETARY BEHAVIOR AMONG PEOPLE WITH TYPE 2 DIABETES MELLITUS IN INDONESIA

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ABSTRACT

Dietary behavior is essential to diabetes self-management in people with type 2 diabetes mellitus. Understanding factors influencing diabetes self-management will help in designing appropriate intervention. The study aims to determine the effect of psychosocial on dietary behavior. This study was an analytical observational with a cross-sectional design. The sample size was 138 respondents recruited with multistage random sampling. Psychosocial factors were identified using; 1) Spoken Knowledge in Low Literacy patients with Diabetes Scale, 2) The Coping Scale, 3) Diabetes Distress Scale, 4) Hensarling Diabetes Family Support Scale, 5) Perceived nurse support questionnaire, while dietery behaviour was measured by Self-Management Dietary Behaviors Questionnaire. Data analysis used multiple linear regression. Among five psychosocial factors only two factors influenced dietary behaviour, such as; distress and perceived family support ($p=0.004$; $p=0.001 < \alpha=0.05$). Meanwhile, knowledge, coping, and perceived nurse support did not affect diabetes diet ($p=0.133$; $p=0.527$; $p=0.535 > \alpha=0.05$) with $R^2 = 0.275$ ($F=11.148$; $p=0.001 < \alpha=0.05$). Distress and perceived family support are two psychosocial factors that can affect dietary behavior. Preventing the occurrence of distress and increasing family support are important to improve dietary behavior adherence in people with type 2 diabetes mellitus.

Keywords: *Dietary behavior; psychosocial factors; type 2 diabetes mellitus*

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INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a health problem that is a priority for treatment worldwide. The number of people with DMT2 worldwide has continued to increase in the last decade, including in Indonesia. In 2019, the number of people with T2DM in Indonesia was 10.7 million, and in 2021 it increased to 19.5 million (International Diabetes Federation, 2021). East Java Province is one of the provinces with the highest number of people with T2DM in Indonesia. The prevalence of people with T2DM in East Java was 2.6% compared to 2013, which was only 2.1%. Specifically, in Jember Regency, it was a 2% increase compared to 2013, which was only 1.1% (Indonesian Ministry of Health, 2019).

Diabetes is a chronic disease that relies heavily on disease management and changes in behavior and lifestyle, especially setting a healthy and balanced diet (Neuenschwander et al., 2019). Meal planning involves determining the amount, type, and schedule of daily meals (Nurjannah & Asthiningsih, 2023). However, diet programs for people with diabetes mellitus often fail, characterized by diet patterns that do not follow health workers' recommendations and increased blood glucose levels (American Diabetes Association, 2021; International Diabetes Federation, 2021). Previous studies showed that 21.02% of people with T2DM do not adhere to a diabetes diet (Fitriana & Salvina, 2021). Even the results of another study stated that only 6.06% of people with T2DM followed a diabetes diet (Messina et al., 2018). The results of previous studies also showed that 38.7% of people with T2DM had insufficient knowledge, 33.33% had a perception of less family support (Fitriana & Salvina, 2021), Only 9.52% received social support in the high category, and only 29.37% who have adaptive coping (Albai et al., 2017). Another study showed that most people with T2DM (51.2%) had diabetes distress (Messina et al., 2018).

Psychosocial factors can affect self-management compliance among people with T2DM, such as eating patterns. Based on the literature review, psychosocial factors that can affect the diabetes diet are knowledge (Babikr et al., 2017; Morris et al., 2020; Mphasha et al., 2021; Nurkamilah et al., 2018), coping (Fidan et al., 2020; Onyishi et al., 2021), distress (Kokoszka et al., 2022; Jannoo et al., 2017), perceived family support (Demilew et al., 2018; Gupta et al., 2019), and perceived nurse support (Alshammari et al., 2021; Morris et al., 2020; Rondhianto et al., 2020). Dietary knowledge plays an essential role in regulating diet. Inadequate dietary understanding leads to poor diabetes conditions, complications, comorbidities, decreased quality of life, and death (Ang et al., 2019; Babikr et al., 2017).

People with T2DM who have passive coping mechanisms will experience health concerns, an increase in diabetes fatalism (perception of hopelessness and helplessness), and a decrease in self-care behaviors such as diet or eating patterns (Polhuis et al., 2020; Chew *et al*., 2017). The family's support and level of knowledge can affect the adherence of people with T2DM to running a diabetic diet. The higher the family support, the more people with T2DM will be more obedient to the diet program. In addition, people with T2DM, especially those with severe symptoms, will seek information about diet and recommendations from health workers, such as nurses (Morris *et al*., 2020; Ligita *et al*., 2019).

One of the primary forms of dietary self-management, in order to control diabetes, is dietary behavior. Until now, no or very few studies have analyzed the effect of psychosocial factors such as knowledge, coping, distress, perception of family support, and perception of nurse support on diabetes behavior simultaneously. Based on the aforementioned studies, Jember regency is experiencing an ever-increasing number of diabetes mellitus patients, coupled with scant studies exploring the relationship between psychosocial factors and dietary behavior. Therefore, the current study aims to determine what psychosocial factors influence the dietary behavior of people with T2DM in the Jember Regency.

METHOD

Study design

The study was an analytical observational with a cross-sectional design.

Sample

The study was conducted in Jember Regency, East Java, Indonesia, from May to June 2022. The sample study was people with T2DM with inclusion criteria: (1) 40-65 years old; (2) have diabetes for more than one year; (3) not currently undergoing treatment at a hospital or other health institution; and (4) does not have barriers to communication such as deaf, blind, and speech impaired. The sample size was 138 respondents calculated using G Power (f2 = 0.15; α = 0.05, and power (1-β) = 0.95). The sampling technique used is multistage random sampling. We divide the Jember Regency into five regions (east, west, north, south, and middle). We then selected two community health centers from each region randomly. We randomly selected five villages from each community health center and 2 - 3 people with T2DM from each village.

Instruments

The instruments used in this study were:

1. Spoken Knowledge in Low Literacy patients with Diabetes Scale (SKILLD) (Rothman et al., 2005). This instrument was validated in Indonesian language by Rondhianto (2021). The results of the validity and reliability tests were r= 0.371 – 0.709, Cronbach's alpha = 0.812. It has 2 dimensions, firstlly disease sign and symptoms, secondly disease management which are measured in likert format ranging from 1 to 16. Knowledge was categorized into low (< 5.33), medium (5.33 – 10.65), and high (≥ 10.66). SKILLD was used to measure the knowledge of people with DMT2.;
2. The Coping Scale (Hamby et al., 2015). This questionnaire was used to measure the coping skills of people with DMT2 in the management of diabetes. This instrument was validated in Indonesian language by Rondhianto (2021). The results of the validity and reliability tests were r= 0.363 – 0.855, Cronbach's alpha = 0.727. The scoring is ranging from 11 to 44. Coping was categorized into low (< 22), moderate (22 – 32.99), and high (≥ 33);
3. Diabetes Distress Scale (DDS) (Polonsky et al., 2005). DDS was used to measure the diabetic distress experienced by people with T2DM. This instrument was validated in Indonesian language by Ahmad (2018). The results of the validity and reliability test are r = 0.595 – 0.755, Cronbach's alpha = 0.931. The measurements are ranging from 1 to 17. Distress was categorized into low (< 2.68), moderate (2.68 – 4.32), and high (≥ 4.33);
4. Hensarling Diabetes Family Support Scale (HDFSS) (Hensarling, 2009). HDFSS was used to measure people's perception of T2DM on family support in managing T2DM. The Indonesian HDFSS instrument was validated by Rondhianto (2021). The results of the validity and reliability test are r = 0.499 – 0.866, Cronbach's alpha = 0.966). It has range from 24 to 96. Perceived family support was categorized into low (< 48), moderate (48 – 71.99), and high (≥ 72);
5. Perceived nurse support questionnaire (Rondhianto et al., 2020). The questionnaire was used to measure the perceived support for T2DM patients with the support provided by nurses in managing T2DM. The results of the validity and reliability tests were r= 0.381 – 0.886, Cronbach's alpha = 0.948). The scoring is ranging from 24 to 96. Perceived nurse support was categorized into low (< 48), moderate (48 – 71.99), and high (≥ 72);
6. Self Management Dietary Behaviors Questionnaire (SMDBQ) (Primanda et al., 2011). SMDBQ was used to measure dietary behavior in patients with T2DM. The SMDBQ's dimensions are 1) selection of healthy food, 2) attitude towards calory needs, 3) diet arrangement, 4) eating schedule. The results of the validity and reliability tests were r= 0.405 – 0.818, Cronbach's alpha = 0.903. Dietary behavior was categorized into low (< 32), moderate (32 – 47.99), and high (≥ 48).

Data collection

Researchers collected data with the help of five assistants or enumerators by conducting direct interviews with respondents. Researchers obtained list of prospective respondents from selected Public Health Centers. Then, randomization was done using Microsoft excel (R) series 16. The enumerators then approached selected participants at their respective addresses. Before collecting the researcher explained the objectives, benefits, possible hazards, procedures, and research techniques to prospective respondents (informed). After the prospective respondent understands it, the prospective respondent is asked to sign an informed consent. The data collection took 4 weeks.

Data analysis

Data were analyzed using multiple regression analysis (α = 0.05). The classical assumption test is carried out for each variabels first as a prerequisite for multiple regression tests:

(1) normality test, knowledge (*p: 0,200*), coping (*p: 0,200*), distress (*p: 0,097*), perception of family support (*p: 0,200*) and perception of nursing support (*p:0,073*), which mean all variables has normal data distribution; (2) multicollinearity test knowledge (*tolerance: 0,842*), coping (*tolerance: 0,852*), distress (*tolerance: 0,739*), perception of family support (*tolerance: 0,678*) and perception of nursing support (*tolerance:0,888*), which mean there are no multicollinearity occured; (3) heteroscedasticity test knowledge (*p: 0,280*), coping (*p: 0,060*), distress (*p: 0,771*), perception of family support (*p: 0,583*) and perception of nursing support (*p:0,413*), which mean all variables have no heteroscedaticity; and (4) linearity test knowledge (*p: 0,777*), coping (*p: 0,475*), distress (*p: 0,361*), perception of family support (*p: 0,901*) and perception of nursing support (*p: 0,897*), which mean all variables have linearity. The data were analyzed descriptively using descriptive statistics (frequency distribution and central tendency).

Ethical consideration

Health Research Ethics Committee, Faculty of Nursing, Universitas Jember, approved the study with a numbered certificate is 072/UN25.1.14/KEPK/2022.

RESULTS

The respondents' characteristics were collected to portray demographical situation. Researchers collected age, gender, education and income data as seen in Table 1.

Table 1. Characteristics of Respondents Based on Age, Gender, Education, and Income in Jember Regency in May-June 2022 (n=138)

Demographic Characteristics	n	%
Age		
40-45	17	12,3
46-55	54	39,1
56-65	67	48,5
Gender		
Male	49	35,5
Female	89	64,4
Education		
No school	17	12,3
Basic Education	54	39,1
Middle Education	53	38,4
College	14	10,1
Income		
> regional minimum wage	55	39,8
< regional minimum wage	83	60,1

Most respondents were 56-65 years old (48.5%), female (64.4%), had primary education (39.1%), and low income (60.1%) (Table 1).

There are 5 psychosocial factors that researchers gather in this study as presented in Table 2.

Table 2. Psychosocial Factors of People with T2DM in Jember Regency in May-June 2022 (n=138)

Variable	Mean ± SD	Category	n	%
Knowledge	9,76 ± 2,96	Low	15	10,8
		Medium	63	45,6
		High	60	43,4
Coping	29,31 ± 5,74	Low	13	9,4
		Medium	93	67,3
		High	32	23,1
Distress	2,94 ± 0,95	Low	44	31,8
		Medium	42	30,4
		High	52	37,6
Perceived family support	63,97 ± 15,95	Low	22	15,9
		Medium	74	53,6
		High	42	30,4
Perceived nurse support	60,84 ± 15,67	Low	24	17,3
		Medium	88	63,7
		High	26	18,8

Most respondents had a moderate category in knowledge (45.6%), coping (67.3%), perceived family support (53.6%), and perceived nurse support (63.7%). Most respondents had distress in a high category (37.6%) (Table 2).

Table 3 shows that most respondents had a moderate category in dietary behavior (61.5%). Table 4 shows a simultaneous influence of psychosocial factors on dietary behavior (p= 0.001).

Table 3. Diet Behavior of People With T2DM in Jember Regency in May-June 2022 (n=138)

Variable	*Mean* ± SD	Category	n	%
Diet behavior	42,95 ± 8,61	Low	14	10,1
		Medium	85	61,5
		High	39	28,2

Partially, there were no influence between knowledge, coping, and perceived nurse support on dietary behavior (p= 0.133; p= 0.527; p= 0.535). There were an influence of distress and perceived family support on dietary behavior (p = 0.044; p =0.001). The value of the Adjusted R Square was 0.275. It means that psychosocial factors can explain 27.5% of the variation in diabetic dietary behavior. At the same time, 72.5% explained other factors outside of psychosocial factors (Table 4).

Table 4. Effect of Psychosocial Factors on Diet Behavior of People With T2DM Jember Regency in May-June 2022 (n=138)

Fisher Test			t Test				R Square
F	Sig	Model		B	t	Sig	
11,418	0,001	Fit	(Constant)	30,259	5,258	0,000	0,275
			Knowledge	0,347	1,511	0,133	
			Coping	0,075	0,634	0,527	
			Distress	-1,555	-2,037	0,044	
			Perceived family support	0,208	4,355	0,000	
			Perceived nurse support	-0,028	-0,620	0,535	

DISCUSSION

This study showed that most people with T2DM were aged 56-65. It is in line with a previous study that states that most people with T2DM are the late elderly (Ang et al., 2019; Jangra et al., 2019). Aging is closely related to the incidence of diabetes. Aging causes physiological changes that reduce the body's ability to metabolize glucose. Likewise, the insulin hormone cannot work optimally and causes an increase in blood sugar levels (International Diabetes Federation, 2021). The result of the study showed that most respondents were female. It is in line with previous studies (Ang et al., 2019; Mphasha et al., 2021). Differences in body composition and levels of sex hormones between men and women. Women have more adipose tissue and fat than men. The decrease in estrogen levels with age leads to fat accumulation and an increase in free fatty acids. It impacts increasing the risk of insulin hormone resistance which plays a role in blood glucose regulation (International Diabetes Federation, 2021). Most respondents in this study had an elementary school. This study is in line with a previous study that stated that most people with T2DM had low education (Jangra et al., 2019; Mphasha et al., 2021). Awareness of health issues related to education. The lower the level of education, the person has an unhealthy diet and tends not to know the symptoms of diabetes (International Diabetes Federation, 2021). Low education is related to low health awareness and low disease prevention and control capabilities (Jangra et al., 2019). In this study, most respondents had incomes less than the minimum wage. It is in line with a previous study that stated that most people with T2DM had earned below the minimum wage. The lower the family's economic level, the higher the risk of experiencing T2DM (Assari et al., 2017). People with diabetes who have a high socioeconomic status have a better ability to manage diabetes concerning their ability to finance health and access health services (International Diabetes Federation, 2021).

Most respondents had moderate diabetes knowledge (Table 2). Knowledge plays a vital role in disease management. It is in line with a previous study that stated that most people with T2DM said they did not comply with the diet because they did not know and had a low capability to perform diet diabetes (Ghimire, 2017; Babikr et al., 2017). This study revealed that most respondents had moderate coping (Table 2). Coping skills have a close relationship with self-care adherence. People with T2DM will face various requirements, including changing their lifestyle and behavior. Barriers to coping mechanisms must be identified to encourage adherence to diabetes self-management, such as a healthy diet (Fidan et al., 2020). The tendency to use passive coping mechanisms is also an obstacle to self-care behavior and adherence to medical treatment. People with depression tend to regulate their negative emotions by overeating and overeating, which can exacerbate chronic diseases such as diabetes. So it can be seen that non-adherence to diet is also a person's maladaptive coping mechanism (Albai et al., 2017; Edraki et al., 2018; Polhuis et al., 2020).

Most respondents experienced high distress (Table 3). Diabetic distress significantly affects a person's dietary behavior. Diabetic distress will result in poor diet and becoming more depressed over time, leading to increased HbA1c and diabetes complications (Kurnia et al., 2017). Depression and diabetes distress are major psychological problems in diabetic patients related to self-management, where one of them is diet (Edraki et al., 2018; Fidan et al., 2020; Kokoszka et al., 2022). A previous study found that 25% of screened people with T2DM had moderate to high diabetic distress. Regarding the components of diabetes distress, emotional distress is the most commonly experienced by people with T2DM (Skinner et al., 2019).

Most respondents feel moderate family support (Table 2). Family support is essential in compliance with chronic disease management and an indicator of self-care in diabetic patients. The support provided by the family to people with type 2 diabetes mellitus includes four dimensions, one of which is instrumental support, including providing food (International Diabetes Federation, 2021). The family is the most important source of information, it is easier for people with diabetes mellitus to receive information and be motivated to maintain their health, and this information can be in the form of advice and information about food and eating patterns (Gupta et al., 2019; Luthfa & Ardian, 2019; Yamin & Sari, 2018).

The study result showed that most respondents feel the support of nurses in the moderate category (Table 2). Nurses play a significant role in influencing patients' health to achieve better health status. Nurses give education to people with diabetes mellitus regarding lifestyle changes and self-care. Educating nurses can lead to perceptions that determine the patient's health behavior towards their disease, increase motivation, and increase understanding and confidence of patients in managing the disease (Alshammari et al., 2021; Fidan et al., 2020; Rondhianto et al., 2020). The role of nurses in providing patient-centered care can be done by empowering and encouraging diabetes management, including diabetes diet. Patients who receive support from nurses feel that the role of nurses is to contribute to providing patient-focused interventions and resulting in a better quality of life (Alshammari et al., 2021).

Most respondents had a moderate adherence to dietary behavior (Table 3). A good diet arrangement will improve glycemic control, preventing morbidity that impacts the quality of life. A poor diet contributes to increasing poor diabetes control, complications, and mortality due to diabetes (American Diabetes Association, 2021; International Diabetes Federation, 2021). A previous study has shown that most people with T2DM can choose healthier foods. In dietary practice, the response varies. People with T2DM can choose not to eat fast food and not to consume sugary drinks and foods. In addition, most people with T2DM also choose healthy whole wheat bread over white bread, which is high in glucose levels (Ang et al., 2019).

There was no significant effect of knowledge, coping, and perceived nurse support on dietary behavior (Table 4). This study's results were in line with previous research, which stated that good knowledge does not guarantee a person's adherence to the diet (Ang et al., 2019; Babikr et al., 2017; Gupta et al., 2019). Control of dietary behavior in patients with T2DM does not come from the concept of knowledge. Previous studies stated that the higher the level of knowledge, the higher the success of a person in dealing with stress. However, if the knowledge is not implemented adequately, it certainly cannot affect a person's health practices including dietary behavior (Ang et al., 2019; Nurkamilah et al., 2018).

This study is not in line with previous research, which states that good coping skills increase self-efficacy and correlate with dietary compliance (Edraki et al., 2018). Various coping mechanisms such as spirituality become a solid coping strategy for people with debilitating health conditions such as diabetes mellitus. Tool coping with spirituality produces a positive attitude towards life, life experiences, and motivation.

This coping mechanism is effective in increasing acceptance of diabetes and self-care behaviors such as the dietary behavior of people with diabetes (Albai et al., 2017; Fidan et al., 2020; Polhuis et al., 2020).

The result of the study is in line with a previous study that stated that diabetic distress and perceived family support would affect dietary behavior (Demilew et al., 2018; Jannoo et al., 2017; Kokoszka et al., 2022; Kurnia et al., 2017; Skinner et al., 2019). Patients who perform self-care activities well will improve their quality of life. The level of distress contributes to increased motivation to follow behavioral and dietary recommendations (Kokoszka et al., 2022; Jannoo et al., 2017). People with T2DM, with or without complications, are at risk for developing diabetes distress in self-management. People with T2DM who have diabetic distress will feel alone, unsupported, and tired of diabetes management efforts, which will be related to decreased self-care. Diabetic distress will result in poor diet and more depression over time, leading to increased HbA1c and complications (Kurnia et al., 2017; Skinner et al., 2020).

Family support is essential in diet self-management. Family support as caregivers is necessary to support monitoring the diet of people with diabetes mellitus in daily life (Gupta et al., 2019; Rondhianto et al., 2020; Yamin & Sari, 2018). Family support is one determining factor in adherence to proper dietary practices. Positive family support is a means to promote good nutritional management (Demilew et al., 2018; Gupta et al., 2019; Luthfa & Ardian, 2019). Saturation in the recommended eating arrangements and difficulty controlling the number of calories, portions, and types of food are obstacles for people with diabetes in implementing the diet. In addition, they need optimal family support to remain obedient to diet management. Family support as part of health care is beneficial for glycemic control and improving quality of life (Gupta et al., 2019). Support from family can increase motivation and prevent stress (Chew et al., 2017), self-management behavior (Kurnia et al., 2017; Yamin & Sari, 2018), especially in dietary behavior compliance (Demilew et al., 2018; Ghimire, 2017). It impacts the quality of life of people with T2DM (Gupta et al., 2019; Jannoo et al., 2017; Yamin & Sari, 2018). Material and spiritual support from the family will reduce psychological stress, relieve stress, increase social adaptability, and face challenges in disease management (Yamin & Sari, 2018).

This study is in line with previous studies which say that there is no effect of health workers on the level of dietary adherence of people with diabetes mellitus. Nurses with inadequate knowledge about diabetes cannot provide proper education about diabetes. Nurses with less knowledge can lead to inadequate health care instructions for people with T2DM (Alshammari et al., 2021; Morris et al., 2020; Rondhianto et al., 2018).

The limitation of this study is that this study only measured the influence of psychosocial factors on dietary behavior in T2DM patients. Many other factors may influence a diabetic diet, such as demographic factors, disease situational factors, and other factors.

CONCLUSION AND RECOMMENDATION

Psychosocial factors, especially distress and perceived family support, significantly influence dietary behavior in T2DM patients. Therefore, efforts to improve diabetes self-management behavior, especially diet, must consider psychosocial factors, especially aspects of distress and perceptions of family support. Nurses and other health workers can make efforts to reduce distress and increase family support so that people with T2DM can perform optimal dietary behavior. It certainly has a positive impact on improving self-management and the quality of life of people with T2DM.

Further researchers can re-identify the influence of psychosocial factors on dietary behavior, especially knowledge, coping, and perceived nurse support factors, to strengthen this study's results. Further research using other designs (cohort study, experimental study, and others) can identify other factors influencing dietary behavior, such as sociodemographic factors, situational treatment factors, and others.

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ORIGINAL ARTICLE

SYMPTOM CLUSTERS AND QUALITY OF LIFE AMONG WOMEN LIVING WITH CANCER

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ABSTRACT

The prevalence of cancer in Indonesia has increased and is one of the biggest causes of death. Symptom clusters, a collection of symptoms in cancer patients that appear together and are related to one another, can affect the quality of life of cancer patients. This study aims to identify the relationship between symptom clusters and the quality of life of advanced cancer patients. This research used cross-sectional quantitative survey data from a cancer patient care unit at a referral hospital in West Java Province with a total of 140 respondents. Consecutive sampling was conducted for three months in stage III or IV cancer patients who were undergoing therapy. This study used descriptive analysis, factor analysis with the Principal Components Analysis (PCA) approach, and multiple linear regression analysis. Five symptom clusters were identified: the psychological cluster, the gastrointestinal cluster, the numbness cluster, the pain cluster, and the respiratory distress cluster. The results showed that symptom clusters influence the quality-of-life dimension. The symptom clusters' coefficient of determination (R^2) for the physical dimension was 0.231 (weak), the role dimension was 0.191 (very weak), the emotional dimension was 0.484 (moderate), the cognitive dimension was 0.011 (very weak), the social dimension was 0.420 (moderate), and the general-health dimension was 0.202 (weak).

Keywords: *Advanced stage; cancer; quality of life; symptom cluster*

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INTRODUCTION

Cancer is one of the highest causes of death in the world. In 2018, the International Agency for Research on Cancer (IARC) recorded 18.1 million new cancer cases and 9.6 million cases of cancer deaths (International Agency for Research on Cancer [IARC], 2018). In Indonesia, cancer prevalence increased from 1.4% in 2013 to 1.8% in 2018, and the disease became one of the country's largest causes of death (Kemenkes RI, 2018).

Patients with cancer are known to suffer from several physical, social, and psychological symptoms that range from mild to severe (Fan et al., 2007). These symptoms often occur together, arising due to the disease and the side effects of treatment (Ji et al., 2017). The collection of symptoms in cancer patients that appear together and are related to each other is known as a symptom cluster (Kim et al., 2005). The symptoms in symptom clusters are characterized by cohesiveness, simultaneity, and stability. They may also have a common biological mechanism (Zhou et al., 2023).

In advanced cancer patients, there are two typical symptom clusters: the psychological cluster (anxiety and depression) and the physical cluster (fatigue, drowsiness, nausea, decreased appetite, and shortness of breath). Both clusters are influenced by the location of the primary cancer (Cheung et al., 2009). In about 40% of patients, these symptoms often appear together and rarely appear as a single symptom

(Cooley & Siefert, 2016). The symptoms in the cluster may or may not have the same etiology.

Previous studies have identified that cluster symptoms can affect the quality of life of cancer patients (Lopes-Júnior et al., 2022). Choi and Ryu (2018) and Wang and Fu (2014) stated that cluster symptoms experienced by lung cancer patients negatively affect their quality of life. Therefore, it is important to consider the consequences of other symptoms when treating one of these symptoms, as increasing the severity of symptoms can ultimately interfere with the quality of life of advanced cancer patients (Hamada et al., 2016).

Previous studies exploring the relationship between symptom clusters and quality of life in advanced cancer patients have been conducted in developed countries, such as the United States (Omran et al., 2017) and Japan (Hamada et al., 2016). The absence of research exploring the relationship between symptom clusters and quality of life in advanced cancer patients in Indonesia is a research gap. Therefore, this study aims to identify the relationship between cluster symptoms and quality of life in advanced cancer patients in Indonesia. This study's results are expected to be a basis for nurses to develop appropriate intervention models to manage symptom clusters in advanced cancer patients to improve their quality of life.

METHOD

Study design

This is a cross-sectional quantitative study.

Sample

This study used survey data from a cancer patient care unit at a referral hospital in West Java Province with a total of 140 respondents. The researchers selected this specific hospital because it was a class A hospital and the highest referral hospital in West Java Province. It is also a good quality National Referral Hospital and a competitive Teaching Hospital. In addition, malignancy/cancer are the highest cases treated at the hospital in outpatient and inpatient installations. The consecutive sampling method was conducted for 3 months. The inclusion criteria set are stage III or IV cancer patients who are undergoing therapy.

Instrument

Descriptive analysis was used to obtain an understanding of the respondents' quality of life and symptoms. The factor analysis was used with the Principal Components Analysis (PCA) approach to determine the symptoms studied. Furthermore, the multiple linear regression analysis was used to forecast the value of the influence of the independent variables on the dependent variable.

This study measured cluster symptom data using the Edmonton Symptom Assessment Scale (ESAS). The ESAS instrument briefly examines 17 common symptoms focusing on palliative aspects, such as pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, mood (feeling at the time of measurement), and tightness. The five clusters identified were the psychological, gastrointestinal, numbness, pain, and respiratory distress clusters.

In addition, the questionnaire used to measure the quality of life is the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ C30). This questionnaire, also known as the Core Questionnaire, is specifically designed for a broad application to measure the quality of life of cancer patients. The five functional scales that measure the quality of life on this questionnaire are physical function, role function, emotional function, cognitive function, and social function (Mystakidou et al., 2001).

After validity and reliability tests, the ESAS questionnaire was declared valid with a Cronbach alpha value of 0.89 (>0.6) and reliable with a correlation value or r count of 0.36 (>0.3) (Chang et al., 2000). The EORTC QLQ C30 questionnaire used in this study is already in the Indonesian version. It has been declared valid with a Cronbach alpha value of 0.70 (>0.6) and reliable with a correlation value or r count of 0.40 (>0.3). (Perwitasari et al., 2011).

Data collection

Data collection was carried out from June 2019 to July 2019 at RSUP Dr. Hasan Sadikin Bandung. Data were collected by researchers and research assistants.

Data analysis

Descriptive analysis, factor analysis with the Principal Components Analysis (PCA) approach, and multiple linear regression analysis were used in this study.

Ethical consideration

This research has received ethical approval number: LB.02.01/X.6.5/144/2019 from RSUP Dr. Hasan Sadikin Bandung.

RESULTS

Univariate

Characteristics of respondents

Table 1. Frequency distribution of respondent characteristics (N = 140)

Variable	n	%	Mean ± SD
Age (years)			48 ± 12
Gender			
Man	39	27.9	
Woman	101	72.1	
Religion			
Islam	137	97.9	
Christian	3	2.1	
Marital status			
Married	137	97.9	
Unmarried	3	2.1	
Education			
No school	3	2.1	
Elementary school	64	45.7	
Junior high school	24	17.1	
Senior high school	37	26.4	
Diploma 3	1	0.7	
Bachelor	10	7.1	
Master	1	0.7	
Job			
Civil Servants	9	6.4	
Private	8	5.7	
Self-employed	11	7.9	
Laborer	5	3.6	
Housewife	86	61.4	
Doesn't work	21	15.0	
Earnings per month (Rp)			
<1,500,000	96	68.6	
1,500,000-3,900,000	32	22.9	
>3,900,000	12	8.6	
Stadium			
III	116	82.9	
IV	24	17.1	

Variable	n	%	Mean ± SD
Long seeking treatment			
<1 week	20	14.3	
1-2 weeks	45	32.1	
>2 weeks-<1 months	30	21.4	
1-2 months	27	19.3	
>2 months	18	12.9	
First treatment			
Public Health Center (PHC)	51	36.4	
Hospital	59	42.1	
Practicing physician	14	10.0	
Mantri	4	2.9	
Clinic	2	1.4	
Practicing Midwife	6	4.3	
Alternative Therapies	2	2.9	

Table 1 exhibits that the average age of the 140 respondents was 48 years (standard deviation 12). Most of the respondents were women (72.1%), Muslim (97.9%), and married (97.9%). Most had an elementary school education level (45.7%), were homemakers as their employment status (61.4%), and had a monthly income of <1,500,000.00 (68.6%). They were also mostly stage III cancer patients (82.9%) that been seeking treatment for 1-2 weeks (32.1%), and their first treatment was conducted at the hospital (42.1%).

Quality of life overview

Table 2. Quality of life distribution of advanced cancer patients (N = 140)

Quality of life	Median	Min-Max
Scale/ common domain		
General health status	66.67	0.00 - 83.33
Scale/ functional domain		
Physical	80.00	0.00 – 100.00
Role	83.33	0.00 – 100.00
Emotional	75.00	25.00 – 100.00
Cognitive	100.00	0.00 – 100.00
Social	83.33	0.00 – 100.00
Total score	**428.33**	**50.00 – 500.00**
Scale/ domain symptoms		
Fatigue	55.56	0.00 – 100.00
Nausea and vomiting	50.00	0.00 – 100.00
Pain	66.67	0.00 – 100.00
Shortness of breath	0.00	0.00 – 100.00
Sleep pattern disturbances	66.67	0.00 – 100.00
Loss of appetite	33.33	0.00 – 100.00
Constipation	0.00	0.00 – 100.00
Diarrhea	0.00	0.00 – 100.00
Financial difficulties	33.33	0.00 – 100.00
Total Score	**355.56**	**33.33 – 655.56**
Quality of life score	811.67	501.67 – 1125.56

The analysis showed that the median value of the total quality of life score was 811.3 with a range of 501.67 - 1125.56. This result indicates that the quality of life of advanced cancer patients, who were the respondents in this study, was at a moderate level.

Cluster symptom overview

Table 3. Distribution of advanced cancer symptoms (N = 140)

Symptom	Median	Min-Max
Pain	8	0-10
Numbness	0	0-10
Tingling	1.5	0-10
Fatigue	8	0-10
Sleep pattern disturbances	8	0-10
Sleepy	4.5	0-10
Nausea	8	0-10
Vomiting	0	0-10
Appetite	5	0-10
Dry mouth	0.5	0-9
Diarrhea	0	0-10
Constipation	0	0-10
Depression	0	0-10
Anxiety	5	0-10
Mood	2	0-10
Cough	0	0-10
Shortness of breath	0	0-10

Of the 17 symptoms that appear, pain, fatigue, sleep pattern disturbances, and nausea have the highest median score of 8.

Table 4. Factor analysis of 16 symptoms in advanced cancer patients (N = 140)

Row cluster	Factor loading	Cronbach's Alpha
Factor 1		
Mood	0.936	0.858
Depression	0.901	
Anxiety	0.869	
Dry mouth	0.578	
Factor 2		
Nausea	0.818	0.702
Vomiting	0.802	
Appetite	0.677	
Diarrhea	0.506	
Factor 3		
Numbness	0.892	0.711
Tingling	0.857	
Fatigue	0.407	
Factor 4		
Sleep pattern disturbances	0.877	0.727
Sleepy	0.869	
Pain	0.503	
Factor 5		
Cough	0.883	0.753
Shortness of breath	0.858	

Factor extraction method: Principal Factor Analysis; rotation method: Varimax with Kaiser Normalization

The analysis results show that there are five symptom clusters. Each cluster consists of 2-4 symptoms experienced by advanced cancer patients regardless of the type of cancer experienced by respondents. The Cronbach alpha for these five factors ranges from 0.702 to 0.858. In contrast, Hamada et al. (2016) examined patients with advanced lung cancer and identified three symptom clusters. The dynamic experience of symptoms causes different groupings of symptoms.

Bivariate

The relationship between cluster symptoms with quality of life

Table 5. Correlation of cluster symptoms to five dimensions of quality of life and general health status of advanced cancer patients

Symptom cluster	General health status	Physical function	Role function	Emotional function	Cognitive function	Social function
Psychological	-0.393**	-0.245**	-0.387**	-0.658**	0.001	-0.567**
Gastrointestinal	0.066	0.008	0.120	0.052	-0.005	0.150*
Numbness	-0.029	-0.152*	-0.140*	-0.061	-0.127	-0.092
Pain	-0.089	-0.363**	-0.221**	-0.191*	-0.165*	-0.109
Respiratory Disorders	-0.116	-0.205**	-0.135	-0.052	-0.036	-0.023

**p<0.05, **p<0.01*

From the analysis results, all cluster symptoms identified in this study revealed a meaningful correlation to five dimensions of quality of life and general health status. Therefore, all clusters were included in the multiple linear regression analysis. The next step was to perform multiple linear regression analyses between the symptom clusters and each quality of life dimension. Then, a value was obtained to predict the influence of two symptom cluster independent variables on one independent variable, which is each dimension of quality of life. Table 6 shows the results of the analyses.

Table 6. Multiple linear regression analysis between symptom cluster and quality of life dimension

Symptom cluster	Coefficient B	SE	Adjusted correlation	p	R^2
	Physical dimensions				
Constant	74.19	1.780		<0.001	0.231
Psychological	-6.812	1.787	-0.284	<0.001	
Gastrointestinal	1.814	1.787	0.075	0.312	
Numbness	-2.415	1.787	-0.100	0.179	
Pain	-6.648	1.787	-0.277	<0.001	
Respiratory disorders	-7.059	1.787	-0.294	<0.001	
	Role dimensions				
Constant	75.119	1.870		<0.001	0.191
Psychological	-9.482	1.877	-0.385	<0.001	
Gastrointestinal	2.945	1.877	0.120	0.119	
Numbness	-0.862	1.877	-0.035	0.647	
Pain	-3.518	1.877	-0.143	0.063	
Respiratory disorders	-4.663	1.877	-0.189	0.014	
	Emotional dimension				
Constant	73.929	1.156		<0.001	0.484
Psychological	-12.807	1.160	-0.673	<0.001	
Gastrointestinal	2.347	1.160	0.123	0.055	
Numbness	-1.066	1.160	-0.056	0360	
Pain	-3.149	1.160	-0.165	0.008	
Respiratory disorders	-1.266	1.160	-0.066	0.277	
	Cognitive dimension				
Constant	96.786	1.151		<0.001	0.011
Psychological	-2.045	1.155	-0.149	0.079	
Gastrointestinal	0.314	1.155	0.023	0.786	
Numbness	-1.316	1.155	-0.096	0.257	
Pain	-1.649	1.155	-0.120	0.156	
Respiratory disorders	-0.232	1.155	-0.017	0.841	
	Social dimension				
Constant	81.905	1.619		<0.001	0.420
Psychological	-16.067	1.625	-0.638	<0.001	
Gastrointestinal	3.069	1.625	0.122	0.061	
Numbness	-1.628	1.625	-0.065	0.318	
Pain	-2.997	1.625	-0.119	0.067	
Respiratory disorders	-0.524	1.625	-0.021	0.748	
	General health dimensions				
Constant	59.464	1.375		<0.001	0.202
Psychological	-8.009	1.38	-0.440	<0.001	
Gastrointestinal	1.397	1.38	0.077	0.313	
Numbness	-0.476	1.38	-0.026	0.731	
Pain	-1.547	1.38	-0.085	0.264	
Respiratory disorders	-2.829	1.38	-0.155	0.042	

The symptom clusters' coefficient of determination (R2) for the physical dimension was 0.231 (weak), the role dimension was 0.191 (very weak), the emotional dimension was 0.484 (moderate), the cognitive dimension was 0.011 (very weak),

the social dimension was 0.420 (moderate), and the general-health dimension was 0.202 (weak).

The relationship between cluster symptoms and the physical function of advanced cancer patients

Table 7. Regression analysis of cluster factors on the physical function of advanced cancer patients

Symptom cluster	Physical function				
	Coefficient B	SE	Adjusted correlation	p	R^2
Constant	74.19	1.780		<0.001	0.231
Psychological	-6.812	1.787	-0.284	<0.001	
Gastrointestinal	1.814	1.787	0.075	0.312	
Numbness	-2.415	1.787	-0.100	0.179	
Pain	-6.648	1.787	-0.277	<0.001	
Respiratory disorders	-7.059	1.787	-0.294	<0.001	

Overall, symptom clusters affect physical function at 23.1%. However, only three symptom clusters had a more significant association with physical function than other clusters. Sequentially, the psychological cluster, the pain cluster, and the respiratory distress cluster had almost the same influence on the physical dimensions of quality of life with weak correlation strengths of -0.284, -0.277, and -0.294. This result suggests that if there is a 1% increase in the psychological cluster, the pain cluster, and the respiratory distress cluster, there will be decreases in physical function of 6.812, 6.648, and 7.059.

The relationship between symptom clusters and the role functioning of advanced cancer patients

Table 8. Regression analysis of cluster factors on the role functioning of advanced cancer patients

Symptom cluster	Role functioning				
	Coefficient B	SE	Adjusted correlation	p	R^2
Constant	75.119	1.870		<0.001	0.191
Psychological	-9.482	1.877	-0.385	<0.001	
Gastrointestinal	2.945	1.877	0.120	0.119	
Numbness	-0.862	1.877	-0.035	0.647	
Pain	-3.518	1.877	-0.143	0.063	
Respiratory disorders	-4.663	1.877	-0.189	0.014	

The multiple linear regression analysis showed that the psychological cluster, the gastrointestinal cluster, the numbness cluster, the pain cluster, and the respiratory distress cluster could explain role functioning by 19.1%. The psychological and respiratory distress clusters have a significant influence on role functioning. The psychological cluster was the dominant factor impacting role functioning with low correlation strength (r = -0.385). A negative correlation indicates that the higher the psychological cluster, the lower the role functioning.

The relationship between symptom clusters and the emotional functioning of advanced cancer patients

Table 9. Regression analysis of cluster factors on the emotional functioning of advanced cancer patients

Symptom cluster	Emotional functioning				
	Coefficient B	SE	Adjusted correlation	p	R^2
Constant	73.929	1.156		<0.001	0.484
Psychological	-12.807	1.160	-0.673	<0.001	
Gastrointestinal	2.347	1.160	0.123	0.055	
Numbness	-1.066	1.160	-0.056	0.360	
Pain	-3.149	1.160	-0.165	0.008	
Respiratory disorders	-1.266	1.160	-0.066	0.277	

Only two symptom clusters are associated with emotional functioning: the psychological symptom cluster and the pain cluster. However, all symptom clusters account for emotional functioning at 48.4%. The psychological cluster was the dominant factor impacting emotional functioning with high correlation strength (r = -0.673). The negative correlation indicates the higher the psychological cluster, the lower the emotional functioning.

The relationship between symptom clusters and the cognitive functioning of advanced cancer patients
Table 10. Regression analysis of cluster factors on the cognitive functioning of advanced cancer patients

Symptom cluster	Cognitive functioning				
	Coefficient B	SE	Adjusted correlation	P	R^2
Constant	96.786	1.151		<0.001	0.011
Psychological	-2.045	1.155	-0.149	0.079	
Gastrointestinal	0.314	1.155	0.023	0.786	
Numbness	-1.316	1.155	-0.096	0.257	
Pain	-1.649	1.155	-0.120	0.156	
Respiratory disorders	-0.232	1.155	-0.017	0.841	

Although the entire cluster had a meaningful relationship with cognitive functioning, cluster symptoms could only explain a small effect of cognitive functioning at 1.1%.

The relationship between cluster symptoms and the social functioning of advanced cancer patients
Table 11. Regression analysis of cluster factors on the social functioning of advanced cancer patients

Symptom cluster	Social functioning				
	Coefficient B	SE	Adjusted correlation	p	R^2
Constant	81.905	1.619		<0.001	0.420
Psychological	-16.067	1.625	-0.638	<0.001	
Gastrointestinal	3.069	1.625	0.122	0.061	
Numbness	-1.628	1.625	-0.065	0.318	
Pain	-2.997	1625	-0.119	0.067	
Respiratory disorders	-0.524	1.625	-0.021	0.748	

Overall, cluster symptoms can explain changes in social functioning at 42%. However, only the psychological cluster had a meaningful relationship to social functioning and was the dominant factor impacting social functioning with high correlation strength (r = -0.638).

The relationship between cluster symptoms and the general health status of advanced cancer patients
Table 12. Regression analysis of cluster factors on the general health status of advanced cancer patients

Symptom cluster	General health status				
	Coefficient B	SE	Adjusted correlation	p	R^2
Constant	59.464	1.375		<0.001	0.202
Psychological	-8.009	1.38	-0.440	<0.001	
Gastrointestinal	1.397	1.38	0.077	0.313	
Numbness	-0.476	1.38	-0.026	0.731	
Pain	-1.547	1.38	-0.085	0.264	
Respiratory disorders	-2.829	1.38	-0.155	0.042	

Table 12 shows the results of the regression analysis of cluster factors on general health status, which obtained a coefficient of determination R2 of 0.202. This coefficient of determination shows that all symptom clusters contribute only 20.2% to general health status, and other factors influence the remaining 79.8%.

DISCUSSION

The analysis showed that the median value of the total quality of life score was 811.3 with a range of 501.67 - 1125.56. This result indicates that the quality of life of advanced cancer patients, who were the respondents in this study, was at a moderate level. This aligns with Husen, Suharti, and Hardian's (2016) research in advanced lung cancer patients undergoing chemotherapy. The total quality of life score they obtained was 799.6, which was interpreted to be moderate quality of life.

Cognitive function has the highest median value for the quality-of-life dimension. This result shows that cognitive function is the least affected component, both by the cancer itself and the cancer treatment undertaken. Age response can also affect the cognitive function components. The average age of the respondents in this study was 48 years (SD 12). Thus, there has been no decline in cognitive function. In addition, the type of cancer, its location, and metastasis also affect cognitive function, such as in brain cancer patients who tend to experience impaired cognitive function due to pressure on the skull. This pressure results in changes in concentration, memory decline, or even confusion Of the 17 symptoms that appear, pain, fatigue, sleep pattern disturbances, and nausea have the highest median score of 8. This study's results align with Kwekkeboom et al. (2018), where pain, fatigue, and disruption of sleep patterns are common symptoms in advanced cancer patients receiving cancer therapy. Similarly, Cheung, Le, Gagliese, and Zimmermann (2010) revealed that pain, fatigue, and disruption of sleep patterns are factors causing the high prevalence and severity of distress in cancer patients. In addition, the 17 symptoms in this study correspond to common symptoms in advanced cancer patients receiving treatment (Esper, 2010).

Many problems and unmet needs in advanced cancer patients are mainly related to physical aspects. Some physical symptoms are directly related to the progression of the cancer itself, while others are related to cancer treatments, such as chemotherapy (Omran & Mcmillan,

2018). In this study, the physical problems experienced were pain, numbness, tingling, fatigue, nausea, vomiting, decreased appetite, dry mouth, diarrhea, constipation, cough, and shortness of breath. Some of these physical problems found in advanced cancer patients are related to the effects of chemotherapy agents (Cherwin, 2012; Di Fiore & Van Cutsem, 2009; Hawkins & Grunberg, 2009). As stated by Effendy et al. (2015), meeting the physical needs of advanced cancer patients is still a challenge.

Next, further analysis was performed through factor analysis (Principal Components Analysis) to get a picture of the respondents' cluster symptoms. The analysis results can be seen in Table 4.
The analysis results show that there are five symptom clusters. Each cluster consists of 2-4 symptoms experienced by advanced cancer patients regardless of the type of cancer experienced by respondents. The Cronbach alpha for these five factors ranges from 0.702 to 0.858. In contrast, Hamada et al. (2016) examined patients with advanced lung cancer and identified three symptom clusters. The dynamic experience of symptoms causes different groupings of symptoms.

Cluster naming is based on the name of the variable that represents its group (its cluster). Factor 1 (mood, depression, anxiety, dry mouth) is called the psychological cluster. Factor 2 (nausea, vomiting, appetite, diarrhea) is called the gastrointestinal cluster. Factor 3 (numbness, tingling, fatigue) is called the numbness cluster. Factor 4 (disturbance of sleep patterns, lethargy, pain) is called the pain cluster, and factor 5 (cough, shortness of breath) is called the respiratory distress cluster.

This study's findings differ from previous studies, such as the study conducted by Jiménez et al. (2011) on 406 advanced cancer patients. In their study, four symptom clusters were identified: the confusion cluster (cognitive impairment, agitation, urinary incontinence), the neuropsychological cluster (anxiety, depression, insomnia), the anorexia-cachexia cluster (anorexia, weight loss, fatigue), and the gastrointestinal cluster (nausea, vomiting). This explains that empirically identified symptom clusters or de novo methods of multiple studies show inconsistencies of specific symptoms in various groups (Miaskowski et al., 2007). These inconsistencies can be caused by differences in the number and characteristics of samples, questionnaires used in collecting symptom data, the timing of data collection, and analysis methods used.

From the analysis results, all cluster symptoms identified in this study revealed a meaningful correlation to five dimensions of quality of life and general health status. Therefore, all clusters were included in the multiple linear regression analysis. The next step was to perform multiple linear regression analyses between the symptom clusters and each quality of life dimension. Then, a value was obtained to predict the influence of two symptom cluster independent variables on one independent variable, which is each dimension of quality of life. Table 6 shows the results of the analyses.

Overall, symptom clusters affect physical function at 23.1%. However, only three symptom clusters had a more significant association with physical function than other clusters. Sequentially, the psychological cluster, the pain cluster, and the respiratory distress cluster had almost the same influence on the physical dimensions of quality of life with weak correlation strengths of -0.284, -0.277, and -0.294. This result suggests that if there is a 1% increase in the psychological cluster, the pain cluster, and the respiratory distress cluster, there will be decreases in physical function of 6.812, 6.648, and 7.059.

Psychological clusters in patients with chronic diseases, such as cancer, include mood changes, depression, and anxiety as psychological pain. This psychological pain can occur along with physical pain and depression. This symptom is one of the most common psychological symptoms in patients with chronic diseases. The fragile psychological condition of advanced cancer patients will disrupt their physical function and hinder them from conducting their usual daily activities. Meanwhile, erratic mood changes due to the disease will cause excessive concern about the prognosis of the disease or diagnostic certainty. Depression typically appears when patients feel their first symptoms, when they receive news of their diagnosis, and during treatment and palliative care (Holland & Alici, 2010).

Physical pain felt by advanced cancer patients can be caused by the disease itself, cancer treatment, and general weakness or discomfort that they experience (Raphael et al., 2010). Moreover, one symptom may cause two other symptoms, such as pain with moderate to severe intensity can wake the patient from sleep at night, disrupting sleep patterns, which causes the patient to be sleepy the next day. This condition will worsen the physical function of advanced cancer patients.

In this study, the cough felt by advanced cancer patients may be caused by a dry throat due to a lack of fluids. Lee and Park (2009) mentioned that the cough and shortness of breath in cancer patients are closely related to the type of cancer experienced or the progression of the disease, where coughing and shortness of breath are symptoms of tumor growth in certain organs. This condition will worsen the patients' physical functions.

The multiple linear regression analysis showed that the psychological cluster, the gastrointestinal cluster, the numbness cluster, the pain cluster, and the respiratory distress cluster could explain role functioning by 19.1%. The psychological and respiratory distress clusters have a significant influence on role functioning. The psychological cluster was the dominant factor impacting role functioning with low correlation strength ($r = -0.385$). A negative correlation indicates that the higher the psychological cluster, the lower the role functioning.

This result may have occurred because the fluctuating psychological condition of advanced cancer patients will disrupt role functioning. Advanced cancer patients are unable to perform their proper role functions, such as a husband who cannot work. In addition to disturbed physical conditions, erratic moods, and excessive anxiety, this condition makes patients irritable, have difficulty concentrating, and lose confidence, resulting in disrupted work.

Only two symptom clusters are associated with emotional functioning: the psychological symptom cluster and the pain cluster. However, all symptom clusters account for emotional functioning at 48.4%. The psychological cluster was the dominant factor impacting emotional functioning with high correlation strength ($r = -0.673$). The negative correlation indicates the higher the psychological cluster, the lower the emotional functioning. Emotions are closely related to a person's psychological condition, and mood can be expressed in certain forms of behavior, such as sadness,

anger, happiness, disappointment, feelings of inadequacy, anxiety, insecurity, and more. This condition may occur due to the relationship with the respondent's age, gender, type of cancer experienced, treatment undertaken, how the respondent responds to the condition experienced, family support for the respondent in undergoing treatment, and the respondent's financial condition.

Although the entire cluster had a meaningful relationship with cognitive functioning, cluster symptoms could only explain a small effect of cognitive functioning at 1.1%. It can be explained that of the 16 symptoms that meet the assumptions of factor analysis, only depression has a link to cognitive functioning. Patients with depression will experience a decline in cognitive function abilities, such as difficulty focusing attention and decreased memory (Kaplan et al., 2010). This condition shows that advanced cancer patients in this study have not reached the stage of depression.

Overall, cluster symptoms can explain changes in social functioning at 42%. However, only the psychological cluster had a meaningful relationship to social functioning and was the dominant factor impacting social functioning with high correlation strength (r = -0.638).

The negative correlation indicates that the higher the psychological cluster, the lower the social functioning. This result may be caused by the psychological disorders and severe self-rejection that advanced cancer patients can experience, which can worsen the condition of the patient. This condition can cause patients to withdraw from the social environment. Hasnani (2012) mentioned that dominant aspects, such as spiritual, social support, and well-being, influence the quality of life dimension. Family support and religious beliefs, life experiences, and culture are important components of quality of life. Therefore, the provision of care and support throughout the course of cancer treatment in advanced cancer patients can affect the quality of life of patients and family members as a whole (Kagawa-Singer et al., 2010).

General health status is a quality-of-life assessment indicator. A decreasing health status indicates a decrease in quality of life. This is supported by Bello and Bello (2013), who stated that health status affects the patient's quality of life.

Table 12 shows the results of the regression analysis of cluster factors on general health status, which obtained a coefficient of determination R^2 of 0.202. This coefficient of determination shows that all symptom clusters contribute only 20.2% to general health status, and other factors influence the remaining 79.8%. This is evident from the significance of the analysis results, which are marked by only two clusters showing p values < 0.05: the psychological cluster and respiratory disorders. Therefore, only psychological cluster symptoms and respiratory disorders are related to general health status. When viewed from the strength of the relationship, the psychological cluster is the dominant factor related to general health status with sufficient correlation strength (r = -0.440). Meanwhile, for the respiratory disorders cluster, a correlation to general health is obtained at r = -0.155, which means it has low correlational strength.

All symptoms present in advanced cancer patients in this study affect general health status. The multiple linear regression analysis results show that all symptom clusters affect general health status by 20.2%. Thus, the remaining 79.8% is influenced by other factors. However, the psychological cluster was the dominant factor influencing general health status with sufficient correlational strength (r = -0.440). The negative correlation suggests that the psychological cluster plays a role in lowering the quality of life of advanced cancer patients. This is related to the disease condition and treatment undertaken by advanced cancer patients, which will affect their mood and lead to excessive anxiety and depression. This mood can cause the patient to have no appetite and drink, resulting in a dry mouth. In addition, the respondents in this study were mostly women, where hormonal factors will also affect mood. If women are depressed, they will experience stress more easily than men (American Psychological Association (APA), 2012). This condition will affect the patient's general health status. This finding aligns with Choi and Ryu's (2018) research which revealed that psychological conditions (depression) experienced by advanced lung cancer patients negatively affect their quality of life.

Meanwhile, the respiratory disorders cluster (cough and shortness of breath) influenced general health status with a weak correlation (r = -0.155). This condition may be caused by a link between the type of cancer and the progression of the disease, such as lung cancer which tends to cause respiratory problems or breast cancer, which metastasizes to the lungs. Lee and Park (2009) revealed that cough and shortness of breath are symptoms of the presence of tumors in certain organs or are linked with the disease's progression.

In this study, data were collected through a self-report questionnaire. Some disadvantages of self-report questionnaires include the respondents providing answers that are more socially acceptable than giving honest answers according to their conditions, respondents being unable to assess themselves accurately, and the respondents giving moderate answers to all questions. The study also used a cross-sectional design without considering changes that occurred over time due to therapeutic regimens, disease stages, and patient age.

CONCLUSION AND RECOMMENDATION

The quality of life of advanced cancer patients in this study was at a moderate level. Five symptom clusters were identified: the psychological cluster (mood, depression, anxiety, dry mouth), the gastrointestinal cluster (nausea, vomiting, appetite, diarrhea), the numbness cluster (numbness, tingling, fatigue), the pain cluster (sleep pattern disturbances, drowsiness, pain), and the respiratory disturbance cluster (cough, shortness of breath). There is a significant correlation between symptom clusters and the quality of life of advanced cancer patients in Indonesia. Symptom clusters affect the quality-of-life dimension. The symptom clusters' coefficient of determination (R^2) for the physical dimension was 0.231 (weak), the role dimension was 0.191 (very weak), the emotional dimension was 0.484 (moderate), the cognitive dimension was 0.011 (very weak), the social dimension was 0.420 (moderate), and the general-health dimension was 0.202 (weak).

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ORIGINAL ARTICLE

THE DEVELOPMENT OF AN APPLICATION FOR LEARNING HOW TO USE COMBINED HORMONAL CONTRACEPTIVE PILLS

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ABSTRACT

Unintended pregnancy has been a significant global health issue. This study aimed to develop an application for learning how to use combined hormonal contraceptive pills and examine the application's quality and learning satisfaction. The application was developed in four stages: 1) reviewing the evidence-based practice, 2) designing the structure, 3) developing the application, and 4) checking the application's accuracy. The quality of the application was tested through questionnaires. A convenience sampling of 40 women aged 20-40 years were selected. The respondents were women who used combined hormonal contraceptive pills and had no previous experience using them in the urban community of Phitsanulok, Thailand, between January and April 2022. Descriptive statistics were used. Consultants and experts checked the research findings and revealed that the application was accurate. The computer and information technology quality of the application for learning based on the Android operating system was high ($\bar{X}$= 4.00, S.D. = 0.31). The content quality of the application and the satisfaction were also at a high level ($\bar{X}$= 4.10, S.D. = 0.36; $\bar{X}$= 4.33, S.D. = 0.52). The findings demonstrated that developing an application for learning how to use combined hormonal contraceptive pills can enhance the effectiveness of contraceptive knowledge and use.

Keywords: *Application; combined hormonal contraceptives pills; unintended pregnancy*

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INTRODUCTION

Unintended pregnancy is a significant public health issue in Thailand. An unintended pregnancy is either unwanted and unplanned or a mistimed pregnancy. A mistimed pregnancy refers to when the pregnancy occurs earlier than desired (Yazdkhasti et al., 2015). The incidence rate of unintended pregnancy is increasing worldwide, especially in developing regions. Unintended pregnancy can negatively impact the health of pregnant women (Birgisson et al., 2015; Troutman et al., 2020). The offspring can have socioeconomic consequences, such as malnutrition and violence. Statistics from 36 countries indicated that two-thirds of women who have sexual activity avoid contraception due to concerns about the side effects, health conditions, and misunderstanding about contraception (World Health Organization (WHO), 2019). A United Nations Population Fund (UNFPA) report found that nearly half of all global pregnancies, around 121 million per year, are unintended pregnancies (UNFPA, 2022). This figure illustrates that the gaps in family planning are linked to the rise in the rate of unintentional pregnancies.

One common strategy employed to decrease the rate of unintended pregnancy is promoting preconception health as part of family planning to avoid incorrect use and contraceptive failure, especially with the combined hormonal contraceptive pills (Centers for Disease Control and Prevention (CDC), 2021). A combined hormonal contraceptive pill (CHC) contains two synthetic hormones, i.e., estrogen and progesterone, for preventing pregnancy (Faculty of Sexual & Reproductive Healthcare (FSRH), 2019).

In Thailand, the CHC is more commonly used rather than an Intrauterine device (IUD) or implant because the CHC is relatively easy to obtain from a pharmacy or drugstore without

a prescription. In addition, the dosage regimen for CHC is different from other medicines regarding when to start using it, continuously taking it, and its following side effects (Fitzpatrick et al., 2023). The CHC is generally started in the first five days of the menstruation period and is taken continuously at the same time every day for 21 or 28 days based on the type of CHC (WHO, 2016; Department of Health, 2021).

A study of the effects of drug reminder applications and manual reminders to improve adherence to oral contraceptive pills discovered that women of reproductive age between 15 and 49-year-olds choose oral contraceptives because it is convenient to use (68.8%) and easy to obtain (65.6%). Surprisingly, the findings in this study indicated that only 53.6% of the respondents correctly used oral contraceptives. They illustrated the following problems: incorrect taking of the pills for the first time and misuse of pills when missing their doses. Nearly one-tenth of them expressed that they do not know how to take it after missing or forgetting the pills. Most of them claim they know how to use oral contraceptive pills, but some women may misunderstand how to use them correctly (Kanjanasilp et al., 2018). These results align with a study of knowledge and attitude toward using combined hormonal contraceptive pills among reproductive Thai women. The study found that around two-thirds (66%) of the respondents knew about the accurate use of the pills (Saelim et al., 2019). Therefore, women of reproductive age should learn to correctly use and take oral contraceptive pills, including knowing the starting date, handling missing pills, their advantages and disadvantages, and their side effects (Chuemongkon et al., 2019).

Technological evolution has changed and transformed global healthcare. This innovation impacts health behaviors and health-promoting activities (Muljo et al., 2019). According to statistics, internet usage in all age groups dramatically increased from 2017 to 2020. In 2020, the number of online users were particularly high for people aged 15-24 (98.4%). Ages 25-34 years and 35-49 years actively use the internet, around 97.3% and 90.6%, respectively. Meanwhile, the daily internet use rate is 89.3% and around 10% for once a week. Almost all online users use a smartphone to access the internet (99.2%) (National Statistical Office Thailand, 2021. These figures show the impact of technology on our lifestyle. Smartphone technology has rapidly developed, improving internet and social media access. Moreover, smartphone ownership in Thailand is growing rapidly due to its low cost and prevalent use in society (Hincharoen, 2019).

Therefore, this study aims to develop an application for learning how to use the combined hormonal contraceptive pills for reproductive women. The application was designed for convenience, open accessibility, and ease of use, to minimize mistakes, to save time and costs, and to include an alert system. The advantages of the application are that it will enhance the users' knowledge, increase the correct use of the CHC, and reduce the mistakes or missing pills to improve family planning and reduce the rate of unintended pregnancy.

METHOD

Study Design

The research and development design was used to develop an application to learn how to use the combined hormonal contraceptive pills (CHC) and determine its quality in terms of content, technology, and learning satisfaction.

Sample

This study's population was reproductive women at least twenty years old who sought services to use combined hormonal contraceptive pills. Implants were used for women under twenty years old due to Thai Government policy. A total of 40 women, aged between 20 and 40 years old, were selected by convenience sampling. The respondents used combined hormonal contraceptive pills and had no experience using combined hormonal contraceptive pills in the urban community of Phitsanulok, Thailand (Billingham et al., 2013).

Women interested in participating were given complete information by the researcher. The researcher obtained written consent from the respondents. The participants were screened based on the following inclusion criteria: women who can read, speak, and understand the Thai language; women who use a smartphone or tablet; and women with no complications from taking contraception. Women with any contraindications, complications, or severe side effects while using combined hormonal contraceptive pills were excluded. This study was conducted at the Faculty of Nursing, Naresuan University, Thailand, over four months from January to April 2022.

Instruments

The questionnaire consisted of content evaluation, information technology evaluation, and users' learning satisfaction with the application designed with a rating scale of 0 to 5. A score of 0 means "I really disagree with this item" and 5 means "I really agree with this item." The content quality evaluation questionnaire consisted of 10 items (Table 1) that cover content and language. The information technology quality evaluation questionnaire consisted of 13 items (Table 3). It was divided into four parts: screen design, pictures, information system, and utility. The content validity was proved by three experts based on the index of concurrence (IOC) at 0.7-1.0 points (Taber, 2018). The learning satisfaction questionnaires included 15 items (Table 3), and its reliability was tested with thirty reproductive women aged between 20 and 40 years old through *Cronbach's Alpha Coefficient* of 0.81.

Intervention

The application for learning to use combined hormonal contraceptive pills (CHC) was developed by the research team. It included two researchers and three information technology (IT) support members with experience in developing software and smartphone applications for at least five years. The application was developed in 4 stages: 1) reviewing the evidence-based practice, 2) designing the structure and learning approaches, such as writing the layout of the application, making the storyboard, designing alphabet size and font, matching the contents and pictures, trying out the color of the application, 3) developing the application, and 4) checking its accuracy by the consultants and experts. The application consists of five parts in the Thai language based on the Android operating system (Picture 1). The first part contains the concept of combined hormonal contraceptive pills (CHC) that provides benefit and mechanism of action for contraception. The second part demonstrates how to use the CHC in terms of efficacy and perfect use, such as when missing the pill or taking the pills late. The third part consists of the adverse effects and contraindications. The fourth part contains the side effects and signs and symptoms that need to be met by healthcare professionals. The last part consists of the alert for the pill's reminder. The three experts in

reproductive healthcare and contraception checked and tested the application's accuracy.

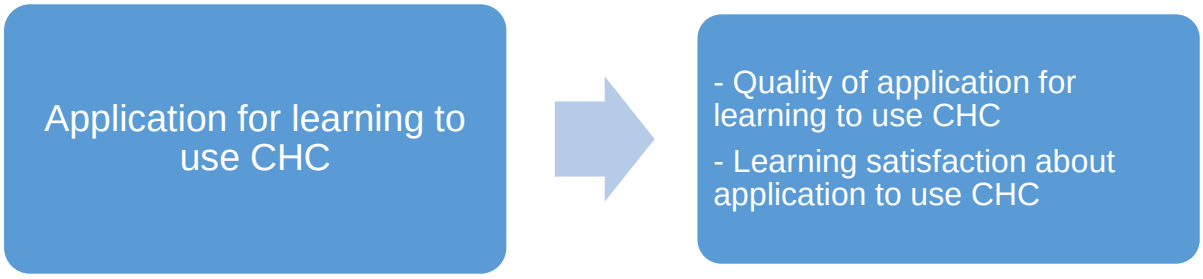

Figure 1: Conceptual framework

Picture 1: The application for learning to use combined hormonal contraceptives pills

Data Collection

The data were collected from women through questionnaires. The learning satisfaction results were collected from the respondents after they used the application. The first step of the data collection process was having the respondents obtain CHC from pharmacies. Then, the respondents contacted the researcher through phone or e-mail. Next, the researcher sent the application's link via message to the respondent's smartphone. Then, the respondents registered and logged in to the application. After that, the respondents learned how to use the CHC on their own time through the application until they finished the first pack of the combined hormonal contraceptive pills. The last step was the researcher sending the learning satisfaction form through Google Form. The form took around 20 minutes to complete.

Data Analysis

The data were analyzed by using SPSS 17.0 for Windows. The data were reported as descriptive numbers, percentages, frequency, mean, and standard deviation.

Ethical Consideration

Ethical approval for the study was obtained from the Naresuan University Institutional Review Board (IRB No. P3-0176/2564), Naresuan University, Thailand, dated from December 23, 2021, to December 23, 2022.

RESULTS

The application's content quality was evaluated through three experts in reproductive healthcare and contraception with at least five years of experience with reproductive women. All items on average were high ($\bar{X}$= 4.10, S.D. = 0.36). The appropriation and ordering the contents from easy to complicated contents obtained the highest score ($\bar{X}$= 5, S.D. = 0). The lowest score was for the easily understood language item, which was moderate ($\bar{X}$= 3.33, S.D. = 0.58) (Table 1).

Table 1. The content quality evaluation of the application for learning to use combined hormonal contraceptives pills

Item	Expert			x̄	S.D.	Level
	1	2	3			
1. Contents covers the objectives	4	5	4	4.33	*0.58*	High
2. Accuracy of contents	5	4	4	4.33	*0.58*	High
3. Appropriation and ordering the contents	5	5	5	5.00	*0.00*	Highest
4. Amount of contents are appropriate	4	4	3	3.67	*0.58*	High
5. Continuing the contents in each part	5	4	4	4.33	*0.58*	High
6. Language easy to understanding	4	3	3	3.33	*0.58*	Moderate
7. Accuracy of language	4	4	4	4.00	*0.00*	High
8. Contents according to picture	5	4	4	4.33	*0.58*	High
9. Appropriate between contents and pictures	4	4	4	4.00	*0.00*	High
10. Appropriation contents for users	4	4	3	3.67	*0.58*	High
Overall				4.10	0.36	High

The information technology quality was evaluated through three experts in computer and information technology who have experience with the software and application for at least five years. All items average were high ($\bar{X}$= 4.00, S.D. = 0.31). The overall utility part was higher than the information system, screen design, and picture, respectively ($\bar{X}$= 4.17, S.D. = 0.15). The pill reminder alert was high ($\bar{X}$= 4.67, S.D. = 0.58). Meanwhile, the lowest score was for picture sharpness ($\bar{X}$= 3.33, S.D. = 0.58) (Table 2).

Table 2. The computer and information technology quality evaluation of the application for learning to use combined hormonal contraceptives pills

Item	Expert			x̄	S.D.	Level
	1	2	3			
1. Designing screen						
1.1 Appropriate and stylish	4	3	4	3.67	*0.58*	High
1.2 Accessibility	5	4	4	4.33	*0.58*	High
1.3 Attractive	4	3	4	3.67	*0.58*	High
Overall				**3.89**	**0.58**	**High**
***2.* Picture**						
2.1 Sharpness	3	4	3	3.33	*0.58*	Moderate
2.2 Appropriation for interpretation	4	4	4	4.00	*0.00*	High
2.2 According to picture	4	4	4	4.00	*0.00*	High
Overall				**3.78**	**0.19**	**High**
3. Information system						
3.1 Convenience to use	5	4	5	4.67	*0.58*	Highest
3.2 Easy to search content	3	4	4	3.67	*0.58*	High
3.3 Appropriate about content bulk	4	4	4	4.00	*0.00*	High
Overall				**4.11**	**0.39**	**High**
4. Utility						
4.1 Alert for pills reminder	5	4	5	4.67	*0.58*	Highest
4.2 Download data speed	4	4	4	4.00	*0.00*	High
4.3 Imaged use	4	4	4	4.00	*0.00*	High
4.4 Accuracy ratio of picture for use	4	4	4	4.00	*0.00*	High
Overall				**4.17**	**0.15**	**High**
Overall				**4.00**	**0.31**	**High**

The respondents were aged between 20 and 40 years. All of them used smartphones. The respondents were women without any complications and contraindications and severe side effects when using combined hormonal contraceptive pills. However, some had minimal side effects when using combined pills, such as nausea, vomiting, headache, and mood swings during their period. The overall learning satisfaction after using the application was high ($\bar{X}$= 4.33, S.D. = 0.52). They were mostly satisfied about the display speed of data and picture ($\bar{X}$= 4.71, S.D. = 0.51). The satisfaction of the color on the application screen was lowest ($\bar{X}$= 3.78, S.D. = 0.51) (Table 3).

Table 3. The learning satisfaction of the application for learning to use combined hormonal contraceptives pills (n = 40)

Item	x̄	S.D.	Level
1. Contents is interesting and attractive	4.21	0.44	High
2. Topics are clearly division	4.54	0.52	Highest
3. Contents order clearly and easy to understand	4.67	0.58	Highest
4. The amount of contents are appropriate	4.53	0.50	Highest
5. The introduction of contents is interesting and attractive	3.96	0.55	High
6. Color on the application screen is interesting	3.78	0.51	High
7. Font is appropriate and easy to read	4.22	0.61	High
8. Picture are attractive	3.84	0.52	High
9. Easy to accessibility	4.58	0.51	Highest
10. Speed of display the data and picture	4.71	0.51	Highest
11. Review the content by yourself and gain my understanding	4.54	0.48	Highest
12. Time for learning is appropriate	4.37	0.59	High
13. Appropriate between level of contents and users	4.05	0.49	High
14. Gain my knowledge about CHC after learning the application	4.45	0.48	High
15. Alert for pills reminder	4.63	0.50	Highest
Overall	**4.33**	**0.52**	**High**

DISCUSSION.

The application consists of five parts. The first part describes the benefit and mechanism of action for the contraception. The second part demonstrates how to use the CHC in terms of efficacy and perfect use, such as when missing the pills or taking the pills late. The third part consists of the adverse effects and contraindications of CHC. The fourth part contains the side effects and signs and symptoms that require a visit to healthcare professionals. The last part consists of the pill reminder alerts. The application's development was processed in 4 stages, from reviewing the content until the stage of checking accuracy based on evidenced-based practice (FSRH, 2019) and from a Thai context. This process was useful for developing the application to include healthcare promotion, which is linked to globalization and global healthcare in terms of need, time, accessibility, and satisfaction (National Statistical Office Thailand, 2021).

The findings indicated the overall of content and technology quality of the development of the application for learning to use CHC were high. This result may be because the application was developed by a research team that comprise experts in maternal and newborn nursing and informational technology. The application was checked for accuracy by experts in reproductive healthcare and contraception before testing. In addition, the application was developed following four processes from evidence-based and updated information about CHC.

This study's results align with Rungrawiwan et al.'s, (2021) study, which developed a mobile application for personnel management of the faculty of Management Science of Yala Rajabhat University. The efficacy of the application for personnel management was tested and found to be high (Rungrawiwan et al., 2021). Moreover, systematic reviews about healthcare applications of smartwatches found that most publications focused on healthcare monitor applications for aging, Parkinson's patients, and patients with cardiac arrest respectively (Lu et al., 2016). Therefore, the development of future applications will consider global and technological changes from globalization. In addition, the application can be used in smart watches, smart glasses, or other devices.

This study found that overall learning satisfaction was high. The respondents expressed high satisfaction during learning and using the application as a valuable resource regarding content, convenience, accessibility, and ability to remind them to take their CHC (Kittipimpanon et al., 2023). The content about CHC met their requirements, was reliable, and was a useful resource about effectively using the combined hormonal contraceptive pills. They could review the content and learn how to use it when they had any questions or hesitation.

Furthermore, the application was convenient based on their context or need (Phola & Silapanilamarn, 2021). The accessibility can be adapted to their daily life because the application was installed on the respondents' smartphones, which they already use to enhance their day-to-day activities (Puttitaweesri et al., 2019). The application was designed to use tones, colors, and attractive fonts for women, including an alert for them to take their pills. It supported them to take their pills at the correct time and improve their effectiveness.

This study's findings align with Boonchom et al., (2020) study about developing an Android application for disseminating content on Thai cultural heritage in the lower southern provinces of Thailand. Their study found that the participants were highly satisfied with the Android application due to the reliability of the content and useful information for traveling, work, and study (Boonchom et al., 2020). The application developed in this study illustrates that the application can develop nursing practice in terms of healthcare education or nursing advocacy for all age groups. It might improve their access to useful health information for learning and change their attitude.

Nevertheless, this finding has limits due to the small sample size. It might not be representative of other groups of women. Aspects such as education level, divorce, and marriage status were not controlled. These aspects might impact the learning outcomes. Additionally, this application was limited to the Android operating system only. Future studies should develop the application for other operating systems, such as IOS (Lorwichit, 2016). Next, the duration of this study is limited to after women complete their first pack of CHC. A longer duration may be needed to follow the effectiveness and efficacy of using the application for learning, including the user's satisfaction. Future studies should also consider the contents of contraception, especially combined hormonal contraceptive pills (CHC), as they should be updated and developed based on globalization and evidence-based findings from a national and international level. In addition, the question and answer (Q&A) should be improved and developed in the next application version.

CONCLUSION AND RECOMMENDATION

The finding demonstrated that using an application for learning how to use combined hormonal contraceptive pills can enhance the effectiveness of contraceptive pills in reproductive women. The application was developed and designed based on evidence-based practices, and consultants and experts checked its accuracy. The application operated on Android smartphones and could allow users to gain knowledge and enhance their attitude about using a combined hormonal contraceptive pill. Such an application can support a decrease in the rate of unintended pregnancy worldwide, including in developing countries. Future studies should develop version II of the application to overcome the limitations faced in this study and improve the design to cater to teenage women or specific groups.

CONFLICT OF INTEREST

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Psychosocial factors, especially distress and perceived family support, significantly influence dietary behavior in T2DM patients. Therefore, efforts to improve diabetes self-management behavior, especially diet, must consider psychosocial factors, especially aspects of distress and perceptions of family support. Nurses and other health workers can make efforts to reduce distress and increase family support so that people with T2DM can perform optimal dietary behavior. It certainly has a positive impact on improving self-management and the quality of life of people with T2DM.

Further researchers can re-identify the influence of psychosocial factors on dietary behavior, especially knowledge, coping, and perceived nurse support factors, to strengthen this study's results. Further research using other designs (cohort study, experimental study, and others) can identify other factors influencing dietary behavior, such as sociodemographic factors, situational treatment factors, and others.

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ORIGINAL ARTICLE

NEWBORN WEIGHT AND SECOND-HAND SMOKING IN UTERO EXPOSURE: A CASE IN A LOW-MIDDLE INCOME COUNTRY

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ABSTRACT

Smoking exposure among pregnant women is correlated with the risk of low birth weight. The policy factors are believed to contribute to the rate or prevalence of smoking activities. This study aims to simultaneously portray the incidence of low-birth-weight newborns correlated with smoking exposure. The samples were 160 respondents, with 57 and 103 respondents in Hospital A and G respectively. A mixed-method analysis was utilized by combining a retrospective approach to identify the key findings and be equipped with a narrative analysis of the socio-demographic - law enforcement process. The Spearman correlation analysis was used for investigating correlation among variables. Spearman correlation test smoking exposure per day in minutes (rho= -0.595, p<0.001) and the number of smokers (rho= -0.621, p<0.001) for Hospital A, and smoking exposure per day in minutes (rho= -0.681, p<0.001) and the number of smokers (rho= -0.613, p<0.001) for Hospital G. It implied a strong correlation of inverse relationship among those variables. Smoke-free law enforcement is a key point to address, aiming at vulnerable group protection, including pregnant mothers and babies. The local government should consider the effects affected by smoking behavior in the community.

Keywords: *Low birth weight; pregnant women; smoke-free law enforcement; smoking exposure; socio-demographic*

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INTRODUCTION

Approximately 80% of the world's 1.3 billion smokers are from low- and middle-income countries (World Health

Organization, 2023). Every year, tobacco kills about 8 million people, including 1.3 million from secondhand smoke (World Health Organization, 2023). From 2013 to 2018, the number of smokers in Indonesia remained stable; it only declined by about 0.5% (Kementerian Kesehatan Republik Indonesia, 2018). In contrast, the increasing number of early smokers significantly jumped to 9.1% from 7.2% (Kementerian Kesehatan Republik Indonesia, 2018).

Secondhand smoke is associated with adverse health outcomes for pregnant women and their infants. Nicotine reduces uteroplacental circulation, resulting in maternal weight loss and unfavorable fetal outcomes such as small size for gestational age, low birth weight gain, short stature, and the development of fetal neurologic abnormalities (Kataoka et al., 2018). Cigarette smoke caused low birth weight and reduced placental weight during pregnancy due to maternal inflammation. The damaged or underdeveloped placenta is unable to transfer sufficient nutrients and oxygen from the maternal body to the fetus, potentially leading to full-term LBW (Low-birth-weight) (Niu et al., 2016). Although the infants are born full-term, secondhand smoke also increases the risk of a small gestational age (SGA) (Kobayashi et al., 2019; Odendaal et al., 2018). LBW is a significant predictor of infant survival, childhood stunting, and various harmful adult-onset chronic conditions, while being SGA increases the risk of death and other adverse outcomes (Blencowe et al., 2019; Chawanpaiboon et al., 2019; Christian et al., 2013; Katz et al., 2013; Lee et al., 2017).

Based on Indonesia's Basic Health Research from The Ministry of Health (2018), the number of low-birth-weight infants in the Special Region of Yogyakarta and Central Java was above the national number, which was only 4%. The proportion of low-birth-weight babies in Central Java was 4.3%, while the number in Yogyakarta was 7.6%. Yogyakarta has the highest proportion of low birth weights in Indonesia.
To prevent the harmful effects of smoking exposure on vulnerable populations, the government instructed every province to implement smoke-free areas. Several policies in Indonesia have been integrated into tobacco control consumption through smoke-free areas, namely: Government Regulation on Controlling of the Materials contained Addictive Substances in the form of Tobacco Products for Health Reasons known as Government Regulation number 109 of 2012. In addition to strengthening the smoke-free area program on the sub-national levels, the Ministry of Home Affairs and Ministry of Health enacted Joint Ministry Regulation in 2011 to provide indicators and guidance on legal norms to create local laws on smoke-free areas at provincial and regional levels (Indonesian Government, 2012; Minister of Health and Minister of Home Affairs of Indonesia, 2011).

Both Yogyakarta City and Kebumen Regency, where this study was conducted, have been implementing local smoke-free policies since 2017 through Yogyakarta's local regulation No. 2 for 2017 and Kebumen's local regulation No. 10 for 2017. However, the implementation of these policies is not yet effective (A'yuni & Nasrullah, 2021; Andini, Syakdiah, & Kusumawiranti, 2022; Azka, 2020; Institute for Global Tobacco Control, 2019). About 59% and 83% of people in Yogyakarta and Central Java smoked inside the houses or buildings (The Ministry of Health, 2018). More than 75% of Indonesian smokers smoke in front of their nuclear family (wife and children) (Asyary & Veruswati, 2023).

Therefore, this study aims to determine the impact of cigarette smoke on maternal and fetal health, especially on the risk of low birth weight (LBW). Furthermore, this study was conducted to evaluate the effectiveness of the implementation of smoke-free laws in providing better protection for vulnerable groups.

METHOD

Study design

This study used a mixed-method approach, combining quantitative data analysis and a descriptive review of relevant evidence-based findings. Data were analyzed using a retrospective model to re-identify the smoking exposure among pregnant women and the low birth weight.

Sample

This research employed two different data sets to cover a wider population and samples. Two private hospitals, located in the Special Regions of Yogyakarta and Kebumen Regency, were selected to collect the data among mothers with low birth weights. The sample of this research were 160 respondents, adopting total sampling technique and the respondents were grouped as Hospital A (57 respondents) and Hospital G (103 respondents). The inclusion criteria in this study were pregnant women with IUGR, mothers who gave birth to LBW, and premature.

Instrument

The instrument of this research was questionnaire. The questionnaire consists of 12 questions, including the history of smoking before and during pregnancy, the history of secondhand smoke at home or at work, the number of family members who smoke, the number of cigarettes consumed. The quantitative data employed two sets of data from two hospitals to collect larger samples. Each data set contained two variables as covariates: smoking exposure stated in minutes per day and the number of people smoking in a house. Meanwhile, the independent factor was the baby's birth weight.

Data Collection

This research was conducted for 4 months. A serial meeting with the hospital team was conducted to gain the same perception of the characteristics of selected samples. The first step in data collection was sorting the medical records. We collected demographic data on the mothers (age and income), gestational history (gestational age, status of parity, history of abortion, and history of intrauterine growth restriction), labor process (mode of delivery of the last labor, infants APGAR score, infants' birth weight). Mothers with a history of low-birth-weight infants (<2500 grams) are selected for this study. And then we give a questionnaire about smoking exposure to the selected mothers. A follow-up phone call was carried out to complete the data on smoking exposure and the number of in-home smoking people. Prior to data collection, the research team explained the purpose of the study as mentioned in the ethical clearance outlines. All the participants involved in the research agreed to extend their information for research purposes.

Data analysis

Data analysis was applied through Jamovi statistical software for macOS version 2.2.5.0 (The Jamovi Project, Sidney, Australia) (The Jamovi Project, 2021)**.** A descriptive review of law enforcement, socio-demographic, and economic aspects was utilized to examine the confounding factors of smoking exposure in the population context.

The quantitative data employed two sets of data from two hospitals to collect larger samples. Further, the three data groups were analyzed using a correlation matrix in regression

analysis. Prior to the correlation analysis, all data were assessed for their normality, and the analysis used was spearman's rho correlation. Data were provided in correlation.

Ethical clearance

The ethical clearance certificate from the Health Ethics Committee of Universitas Aisyiyah Yogyakarta (No. 1681/KEP-UNISA/VIII/2020) declares that the study was carried out in compliance with the ethical principles of the Helsinki Declaration (World Medical Association, n.d.). The researchers have also obtained written informed consent from all the participants.

RESULTS

Data analysis of the first (A) and the second (G) Hospital: Low birth weight and smoking exposure

The data were analyzed through statistical tools (table 1, table 2, and table 3), and the distribution among those data in the first (A) and second (G) groups was not normal. Thus, the correlation regression for these two groups used spearman's rho.

Table 1. Mothers Characteristics

Characteristics	All (n=160)		Hospital A (n=57)		Hospital G (n=103)	
	n	%	n	%	n	%
Mothers' Age (years old)						
<20	5	3.12	1	1.8	4	3.9
20-35	129	80.62	48	84.2	81	78.6
>35	26	16.25	8	14	18	17.5
Parity						
Grandemultigravida	12	7.50	5	8.8	7	6.8
Multigravida	67	41.87	21	36.8	46	44.7
Nullipara	8	5	3	5.3	5	4.9
Primigravida	73	45.62	28	49.1	45	43.7
Comorbidity						
Hypertension	21	13.12	4	7	17	16.5
Other comorbidity	14	8.75	12	21	2	1.9
No comorbidity	125	78.12	41	72	84	81.6
Abortion History						
Yes	23	14.37	13	22.8	10	9.7
No	137	85.62	44	77.2	93	90.3

Table 2. Babies' Characteristics

Characteristics	All (n=160)				Hospital A (n=57)					Hospital G (n=103)				
	n	%	Mean ± SD	Median (Min-Max)	n	%	Mean ± SD	Median (Min-Max)	Saphiro Wilk (p-value)	n	%	Mean ± SD	Median (Min-Max)	Saphiro Wilk (p-value)
Gestational age at birth			37.06 ± 1.45	37 (34-40)			38.08 ± 1.33	38 (35-40)	< .001			36.48 ± 1.18	36 (34-40)	< .001
APGAR Score			8.17 ± 1.29	8 (6-10)			8.77 ± 1.15	9 (6-10)	< .001			7.83 ± 1.25	8 (6-10)	< .001
Birth Weight (grams)			2605.5 ± 408.72	2470 (2100-3765)			2904.211 ± 530.51	2550 (2250-3765)	< .001			2440.194 ± 168.64	2430 (2100-3507)	< .001
Diagnosis														
IUGR	71	44.375			42	73.7				29	28.2			
Preterm	43	26.875			8	14				35	34			
Low Birth Weight Baby	46	28.75			7	12.3				39	37.9			

Table 3. Smoking Exposure and Number of Smokers

	All (n=160)		Hospital A (n=57)			Hospital G (n=103)		
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Saphiro Wilk (p value)	Mean ± SD	Median (Min-Max)	Saphiro Wilk (p-value)
Daily smoking exposure (minute)	85.36 ± 163.81	52.50 (0-1200)	15.84 ± 30.31	0 (0-120)	< .001	128.83 ± 192.70	65 (0-1200)	< .001
Number of smokers	1.55 ± 1.33	2 (0-4)	0.84 ± 1.08	0 (0-4)	< .001	1.94 ± 1.30	2 (0-4)	< .001

The correlation regression among the two groups indicated a significant correlation between covariates variables (number of smokers in a home and time length of smoke exposure a day) and independent variables (birth weight). In the first hospital (A), **Table 4** shows that the p-value of the number of smokers toward baby birth weight was (0.001) < 0.05, indicating a significant influence on people smoking at a house toward the independent variable, with a spearman's rho -0.62. In addition, the correlation of another covariate, smoking exposure per day in minutes, had a p-value of 0.001 (< 0.05), representing a significant influence on baby birth weight, with negative spearman's rho (-0.59).

The same significant correlation emerged among those variables in the second hospital (G) (**Table 4**), with the negative Spearman's rho in the level of moderate (-0.61) for the correlation of number of smokers and birth weight and high correlation between smoking exposure and birth weight variables (**Table 4**).

Table 4. The correlation between number of smokers and smoking exposure (in minutes) with birth weight in two hospitals

Variables	Hospital A (n=57)		Hospital G (n=103)	
	Birth weight		Birth weight	
	Spearman's rho	p-value	Spearman's rho	p-value
Number of smokers-A	-0.62***	<.001	-0.61***	<.001
Smoking exposure-A	-0.59***	<.001	-0.68***	<.001

DISCUSSION.

Main Findings: LBW as a result of smoking exposure

Smoking during pregnancy and the periconceptional stage has been linked to negative mother and newborn outcomes across the world (Avşar, McLeod, & Jackson, 2021; Maas et al., 2021). It is also responsible for lower weight at birth (the anthropometry at neonatal), birth gestational age, APGAR score and as a risk factor for mortality and morbidity (Amyx et al., 2021; Kalayasiri, Supcharoen, & Ouiyanukoon, 2018; Prince, Umman, Fathima, & Johnson, 2021; Schechter et al., 2020)**.** The biomarker in active and passive tobacco smoke exposure measurement, nicotine and cotinine- as its metabolite, have the availability of crossing the placenta, which these biomarkers further have a direct detrimental effect on the growth of fetal, including the risk of low birth weight (Amyx et al., 2021; Dennis, 2019; Edi, Chin, Woon, Appannah, & Lim, 2021; Xi et al., 2020). Additionally, smoking behavior among expectant mothers in each trimester of pregnancy has increased the proportion of preterm births (Soneji & Beltrán-Sánchez, 2019).

Smoking during pregnancy interferes with fetal growth and birth weight through the following mechanisms: Nicotine, the component of tobacco, has a higher concentration in the placenta (15%) than in maternal blood. Nicotine causes uterine vasoconstriction by inducing maternal catecholamine release. Smoking more cigarettes is linked to a poor Apgar score, premature birth, and low birth weight (Abdallah, Joho, & Yahaya, 2021). Tobacco use has an impact on a newborn's health by raising the risk of hypoxia and infections, which is commonly measured by the Apgar score (Baena-García et al., 2019).

The initial preventive action should be considered to decrease the amount of in-utero smoking exposure, for example, by introducing a smoking cessation program or giving psychosocial intervention to reduce smoking in a pregnancy program (Koivu et al., 2023; Scherman, Tolosa, & McEvoy, 2018) and enforcing the implementation of smoke-free law as a support for tobacco legislation (Mallma, Carcamo, & Kaufman, 2020). Another initiative to prevent second-hand smoke exposure during pregnancy is introducing the World Health Organisation (WHO) recommendation to apply an effective screen of pregnant mothers conducted by health care providers on their smoking status and potential second-hand smoking exposure (Krishnamurthy et al., 2018). There are several possible ways for health care providers to advocate, such as the media campaign to be accessed by smokers as support and helping aids to quit smoking, taxation applied for higher tobacco pricing, and the advocacy for a comprehensive policy on smoke-free (Fallin-Bennett, Scott, Fallin-Bennett, & Ashford, 2019). The health promotion among communities aiming at smoking cessation and enforcing smoke-free laws is very relevant to the current Covid-19 health safety campaign, as smoking is indicated as a risk factor for suffering from the disease and leads to more severe conditions (Sugiyo, Limato, & Handari, 2021).

Implications on Legal Policy

The efforts of the global public health and government have not been optimized to decrease the number of smokers and tobacco exposure to vulnerable groups (second-hand smokers). Overcoming the problems requires strong collaboration among stakeholders to implement better smoke-free laws. Furthermore, participation through community engagement will gain sustainability programs (Indonesian Minister of Health, 2019). Since 2012, tobacco control regulation has been determined as the basic anti-tobacco regulation. It has been going on for more than 10 years, but young smokers still increased to 9,1% in 2018. The percentage had not yet reached the national target of 5,4% (Ministry of Health, 2018). It aligns with the increased numbers of indoor smokers and the numbers of tobacco exposure (second-hand smokers) nationally. In 2018 Indonesia's basic health research showed the number of indoor smokers on average 80,6% (house, workplace and public transportation are the sample location); thus, the numbers of tobacco exposure reached 32,4% for daily routine and 43,1% for the occasion. Furthermore, women are more likely than males to be exposed to tobacco products on a daily basis (34,8% vs. 27,1%) (TCSC-IAKMI, 2020).

Consequently, in 2018 and 2019, the national government periodically distributed circular resolutions to all Indonesian governors, mayors, and regents to overcome the problems (the increasing number of smokers and second-hand smokers). The local governments were mandated strongly to implement smoke-free laws in their territory. In 2018, the points of the mandate in the circulation resolution from the Ministry of Home Affairs were namely; first, local governments (provincials and below levels) have to enact the smoke-free laws referring to all the regulations; second, smoke-free laws were implemented through optimizing the civil police for supervising, monitoring, and evaluating the enforcement of smoke-free laws; and third, the implementation of the smoke-free area in education sector refers to the Indonesia Education and Cultural Ministry

Regulation on 64 of 2015. Additionally, in 2019, the circular letter was distributed while adding new points. The points included smoke-free areas not only prohibited smoking but also had to ban any tobacco advertisement, promotion and sponsorship in those areas and implemented any sanction to the defendant (simple-criminal sanction) in the form of fines or administrative sanctions to give deterrent effects (Minister of Health and Minister of Home Affairs of Indonesia, 2011).

Furthermore, Yogyakarta and Kebumen, where the samples were selected, determined smoke-free laws in 2017 by Yogyakarta's local regulation No. 2 for 2017 and Kebumen's local regulation No. 10 for 2017. However, based on the 2018 National Report of the Indonesian Basic Health Report, the number of indor smokers in Yogyakarta and Central Java was more than 50% (Ministry of Health, 2018). This survey also revealed that the proportion of low birth weights in Yogyakarta (7.6%) and Central Java (4.3%) was above the national number, which was only 4% (Ministry of Health, 2018). This study emphasizes that the evaluation of policies on tobacco control and their enforcement are needed to decrease the number of low-birth-weight newborns.

The number of smokers and low birth weight have a high correlation in Yogyakarta. Smokers increase to>30% of the population. In 2020, the PHBS program showed that 58% (312.269) of households were not achieved the indicators. One of the indicators is not compliance and unachievable (smoking in house). Those indicators decreased by 4% more than before (DIY Health Office, 2020; Ministry of Health, 2020; Yogyakarta City Health Office, 2020).

The prohibition of in-home smoking in Yogyakarta is the worst indicator in the PHBS program that has been 62,58% of not being progressed compared to other indicators such as delivery assisted by health workers of 98,6% and access to clean water of 95,63% in 2019. As a result, the number of low-birth-weight neonates in Yogyakarta has grown at a provincial level from 2019 (6,08%) and 2020 (6,93%). Moreover, we have several low-birth-weight newborns (6,08% of 3,338 live births), all of which have exceeded the national level by 4,0% (2018) (DIY Health Office, 2020; Yogyakarta City Health Office, 2020).

Nevertheless, since 2018, the Local Government of Yogyakarta city has implemented smoke-free laws through socialization, monitoring and evaluation (compliance survey). The government prefers to use persuasive ways (a promotive-preventive mechanism). To gain better implementation, the government determined a special task force to supervise the compliance of smoke-free laws called *Satgas* KTR in 2019. At the end of 2019, *Satgas* KTR has supervised the compliance of smoke-free areas in worker-places of the governmental area: such as 15 departments or OPD, 14 sub-districts, and 45 villages. Moreover, the smoke-free area campaign's effort triggers some hamlets to have declared smoke-free zones (*rukun warga bebas asap rokok*). The number of hamlets self-declared as the smoke-free zone is 230 out of 616 hamlets in Yogyakarta city (DIY Health Office, 2020; Ministry of Health, 2020; Yogyakarta City Health Office, 2020).

Overall, the enforcement of smoke-free laws and regulations requires wider collaboration, continuous implementation, and periodic reports on the supervision to provide rooted and sustainable programs. To overcome any side effects of tobacco consumption and exposure, better global health indicators such as providing a healthy lifestyle, decreasing the number of non-communicable prevalence, and especially preventing low birth weight and neonatal mortality should be realized. Those programs aim to reach Indonesia's sustainable development goals.

Implications on Socio Demography

Cigarette taxation aims to improve health outcomes by reducing cigarette consumption and introducing a smoking cessation program as part of a social marketing campaign in the tobacco control field (Rosilawati, Nurjanah, Sugiyo, Nurmandi, & Habib, 2020; Settele & Ewijk, 2018). The tobacco industry targets youth groups as their marketing target, increasing their smoking prevalence (Rosilawati, Chen, Nurjanah, Sugiyo, & Cheng, 2021). The social condition of the community's daily consumption is an essential indicator in identifying which need is a priority. In relation to it, the Indonesian Central Statistics Agency in 2021 explained that cigarette consumption in Indonesia, based on the "food" category, was placed as the top 3 foods frequently consumed by the community (City and Village) apart from Prepared Food and Beverages, as well as cereals. The data explained that in 2020 the consumption of Cigarettes ranked the second highest (5,99%), while the first position was prepared food and beverages (16,87%), and the third position was cereals (5,45%) (Central Bureau of Statistics, 2021).

Therefore, smoking cessation programs in society are imperative in fulfilling *healthism* requirements among pregnant mothers (Walker et al., 2019). The outcomes of baby birth were affected also by the lifestyle of pregnant mothers which developed during pregnancy (Bagherzadeh et al., 2021). In this context, a pregnant woman is placed as an agency seeking to adapt her lifestyle to her social environment to achieve optimal health. In summary, agency is always bound by a social environment, and personal choices are defined by' social standards or codes' that instruct the individual how to rank their preferences and if they are suitable. It suggests that social activities or interaction were affecting health through the set of healthy lifestyle that covers human actions and daily life behavior (Bagherzadeh et al., 2021)

On the contrary, as Anthony Giddens proposes, we could link health-care systems with environmental conservation by considering it as preventative medicine. In this case, the pregnant woman's health is a structural issue – a complex one that requires collective awareness of the community to fulfill health equality for pregnant women in line with her latest physiological changes (Georgieva-Stankova, 2021; Siqueira, Fracolli, & Maeda, 2019). It is similar to the Foucauldian concept of governmentality, stating that risks and self-regulation are supposed to be endorsed by citizens, who are usually seen as passive actors. t's comparable to Foucault's notion of governmentality, which states that citizens, who are typically viewed as passive actors, should accept risks and self-regulation. The social environment where the expectant mothers lived, provide interactions among pregnant women and the society, and thus provide supportive atmosphere (Bagherzadeh et al., 2021). The initial way could be realized through comprehensive health education for society.

Moreover, based on the above considerations, this analysis attempts to raise the view that the high consumption of cigarettes is related to the weak social structure in fulfilling the health rights of pregnant women. In the context of this research, it can be seen through the significant number of people who continue to smoke even though there are pregnant family members. Regarding this argument, the researchers suggest that future studies can conduct more specific testing.

Furthermore, smoking exposure during pregnancy has been shown to affect a baby's birth weight. It can be prevented by increasing personal, family, and community awareness about the harmful effects of tobacco. Moreover, family members' smoking patterns can increase children's willingness to smoke (Nazir & Almas, 2017). Oral health integrated into smoking cessation campaigns and programs can increase awareness of the negative effects of tobacco use (Nazir & Almas, 2017). Therefore, it is essential for health workers and smoking cessation communities to educate the community about the danger of tobacco. Health workers should educate children on the dangers of smoking to families during the pregnancy program. In addition, the smoking cessation communities should be able to campaign using social media so that the wider community can reach it. By doing so, it will increase the community's awareness of the dangers of smoking exposure for pregnant women.

This research covers the relation among those three variables. However, it needs further exploration on how the other birth outcomes may be impacted from smoking behavior, both active and passively.

CONCLUSION AND RECOMMENDATION

The growing consumption of cigarettes in Indonesia has had several negative impacts on people's health. Reflecting on this study, the consumption of cigarettes was relatively high among families with pregnant mothers, implied by the number of cigarette sticks consumed per day and the length (in minutes) of the smoking exposure per day. The prenatal outcomes, interpreted in the measurement of birth weight, were significantly affected by the quantity of smoking exposure. These findings suggest that policymakers consider health programs to minimize further the economic downturn resulting from the decreasing quality of human resources.

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ORIGINAL ARTICLE

THE EFFECTIVENESS OF PSYCHOEDUCATION TO REDUCE ANXIETY AND INSOMNIA AMONG PATIENTS WITH CHRONIC KIDNEY FAILURE IN HEMODIALYSIS UNIT

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ABSTRACT

Patients with chronic kidney disease who undergo hemodialysis may feel anxiety and experience insomnia. Anxiety is one of the factors that affects insomnia in patients with chronic kidney disease. One of the nursing interventions to reduce patient anxiety and insomnia is psychoeducation. The purpose of this research was to determine the effect of psychoeducation to reduce anxiety and insomnia in patients with chronic kidney failure treated in the hemodialysis unit. This was a quasi-experimental research using pre-test and post-test design with control group. The total sample was 54 respondents using a convenience sampling technique. Insomnia was measured using the Insomnia Severity Index questionnaire and anxiety was measured using the Zung Self Rating Anxiety Scale questionnaire. Psychoeducation intervention was carried out within three weeks. The results showed there were differences of anxiety score in the intervention group ($p<0.001$) and control group ($p=0.022$). There were differences of insomnia score in the intervention group ($p<0.001$) and control group ($p=0.029$). The results of multivariate test showed that the factors significantly related to anxiety were age and comorbidity. Psychoeducation using booklets was effective to reduce anxiety and insomnia of patients with chronic kidney disease undergoing hemodialysis.

Keywords: *Anxiety; chronic kidney disease; hemodialysis; insomnia; psychoeducation*

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INTRODUCTION

Chronic Kidney Disease (CKD) is one of global health issues CKD is defined as a progressive or irreversible loss of kidney function characterized by a decrease in glomerulus filtration rate, an increase in urinary albumin excretion, or both (Jha et al., 2013). . Chronic kidney Disease (CKD) is a condition of damaged kidneys causing ineffective blood filtration. It is manifested by a progressive decrease in kidney function and developing from early stage (I and II) to middle stage (III and IV) and eventually develops into kidney failure (stage V) (Ronco & La Manna, 2017).

Based on Centers for Disease Control and Prevention (CDC) in 2019, it is counted approximately 15% of adults population or about 37 million people in the United States suffered CKD, where 9 out of 10 adults did not notice if they had CKD. In Indonesia, according to Indonesia Renal Registry (IRR) (2018), in 2018 there were 66,433 new CKD patients and 132,142 existing CKD patients who were actively undergoing hemodialysis. Based on Basic Health Research (RISKESDAS) in 2018, there was an average prevalence of CKD of 2.0% in 2013 to 3.8% in Indonesia.

There are several treatment for patients with CKD, including Continuous Ambulatory Peritoneal Dialysis (CAPD), hemodialysis (HD), and kidney transplantation. Hemodialysis (HD) is one of the treatment options in patients with CKD. Hemodialysis is a medical treatment for CKD patients so they can live longer. However, this treatment has adverse effects on the physical and psychological conditions of patients with (Indonesia Ministry of Health, 2018).

CKD is one of the diseases that causes its sufferers to feel anxious both because of the disease and the undergoing treatment. Tanvir et al., (2013) showed that 47.30 % (18/38) HD patient experienced mild anxiety, 28,94% (11/38) HD patient experienced moderate anxiety, and 23,64 (9/38) HD patient experienced severe anxiety. A study conducted by Rahman & Pradido, (2020) showed that the prevalence result of mild anxiety in HD patients as many as 86.5% (148/171) and moderate anxiety of 13.5% (23/171). Patients with chronic kidney failure who undergo hemodialysis therapy frequently consider that they must rely on a dialysis machine to survive. Besides, they argue that their life will be jeopardized and their life expectancy will be reduced, so that it triggers anxious that they will not be around much longer. Anxiety experienced by patients undergoing hemodialysis also affect the sleep quality (Ningrum et al., 2017).

Insomnia is a common sleep problem among patients with CKD. Stress, anxiety, and depression are factors that cause insomnia in patients with CKD (Ahmad et al., 2013). Rosdiana (2011) showed the relationship between anxiety and the incidence of insomnia. The results showed that there were 64.9% of patients with CKD (37 out of 49 patients) having severe anxiety experienced insomnia, while among patients with mild anxiety, there were 42.9% (21 out of 57 patients) of them experienced insomnia.

Sleep disorders experienced by patient with CKD undergoing hemodialysis are approximately 50-80% (Maung et al., 2016).. These problems are varied and ranged from insomnia, restless legs syndrome, to obstructive sleep apnea. Insomnia is reported in approximately 60% of patients undergoing hemodialysis, ranging from difficulty in sleeping to difficulty in maintaining sleep in a quarter of the patients (Noda et al., 2006).

Nursing intervention are able to be applied to overcome anxiety and insomnia is psychoeducation. Psychoeducation is a modality therapy carried out professionally by integrating and synergizing psychotherapy and educational interventions (Wowor et al., 2019). Psychoeducation is not a treatment, but it is designed to be part of the overall care plan. For example, knowledge of an individual's disease is essential for individuals and their families to be able to design optimal treatment and care plans (Supratiknya, 2011). Knowes (1985) in Rachmaniah (2012) stated that psychoeducation implementation could be provided by health providers such as doctors, psychologists, nurses, and midwives. Several studies prove that psychoeducation has an significant effect on reducing anxiety in CKD patients undergoing HD (Espahbodi et al., 2015; Wowor et al., 2019).

A preliminary study conducted at Hemodialysis Unit of PKU Muhammadiyah Hospital in Yogyakarta by interviewing 5 patients with CKD undergoing hemodialysis. This reported that patient with CKD experienced most anxious state when they were first diagnosed with kidney failure and had to undergo hemodialysis. it also revealed that 4 of 5 patients felt anxious, afraid, and nervous, declined their disease condition, had their disrupted activities, and experienced sleep disorder when they obtained their first hemodialysis.

Espahbodi *et al.,* (2015) and Wowor *et al.,* (2019) conducted psychoeducational research to reduce anxiety in hemodialysis patients, but research on psychoeducation in reducing anxiety and insomnia has not been explored further in Indonesia especially at PKU Muhammadiyah Hospital Yogyakarta. Therefore, This research aims to determine "The effectiveness of psychoeducation to reduce anxiety with insomnia among patients with chronic kidney failure in hemodialysis unit of PKU Muhammadiyah Hospital Yogyakarta".

METHOD

Study design

The type of research was quasi experiment using pre-test and post-test design with control group. This research was conducted on December 2021 – January 2022.

Respondents

The population of this research were all patients with CKD who undergoing hemodialysis at PKU Muhammadiyah Hospital in Yogyakarta. The study involved 54 respondents that divided into intervention group (27 respondents) and control group (27 respondents) which calculated using Lemeshow formula. Sample was selected using a convenience method. The inclusion criteria were patients with CKD who undergoing hemodialysis with a dialysis duration <2 years, dialysis frequency was twice a week, had mild anxiety to panic anxiety level, had mild to severe insomnia level.

Instruments

The instrument applied in this study to measure the anxiety of hemodialysis patients was , the Zung Self Rating Anxiety questionnaires that had been modified and translated by Nasution et al., (2013) while to assess the insomnia of HD patients using Insomnia Severity Index questionnaires that had been modified and translated by Putri et al., (2017) before and after intervention in both groups.

Data collection

Before conducting the research, the researcher first distributed informed consent to the respondents, then pre-tested the intervention group and the control group. In the intervention group, psychoeducation was delivered with booklets, while there is no intervention to control group. However, control group were provided booklet after had posttest. Psychoeducation was carried out for 3 weeks using booklets for 5 sessions.

Data analysis

Bivariate analysis applied to examine the differences of anxiety and insomnia pre and posttest was paired t-test. Independent t test used to analyze the differences of pre-test and post-test anxiety and insomnia scores between intervention and control groups. Multivariate analysis used liner regression to figure out the external variables affecting psychoeducation on anxiety and insomnia. The significance value in this study was $p < 0.05$

Ethical consideration

This research had been approved by the Ethics Commission of the Faculty of Medicine, Public Health and Nursing of Universitas Gadjah Mada (The Medical Research Ethic Committee, MHREC) Ref number: KE/FK/0959/EC/2021 and the approval of the ethics committee of PKU Muhammadiyah Hospital Yogyakarta with No. 00237/KT.7.4/XII/2021.

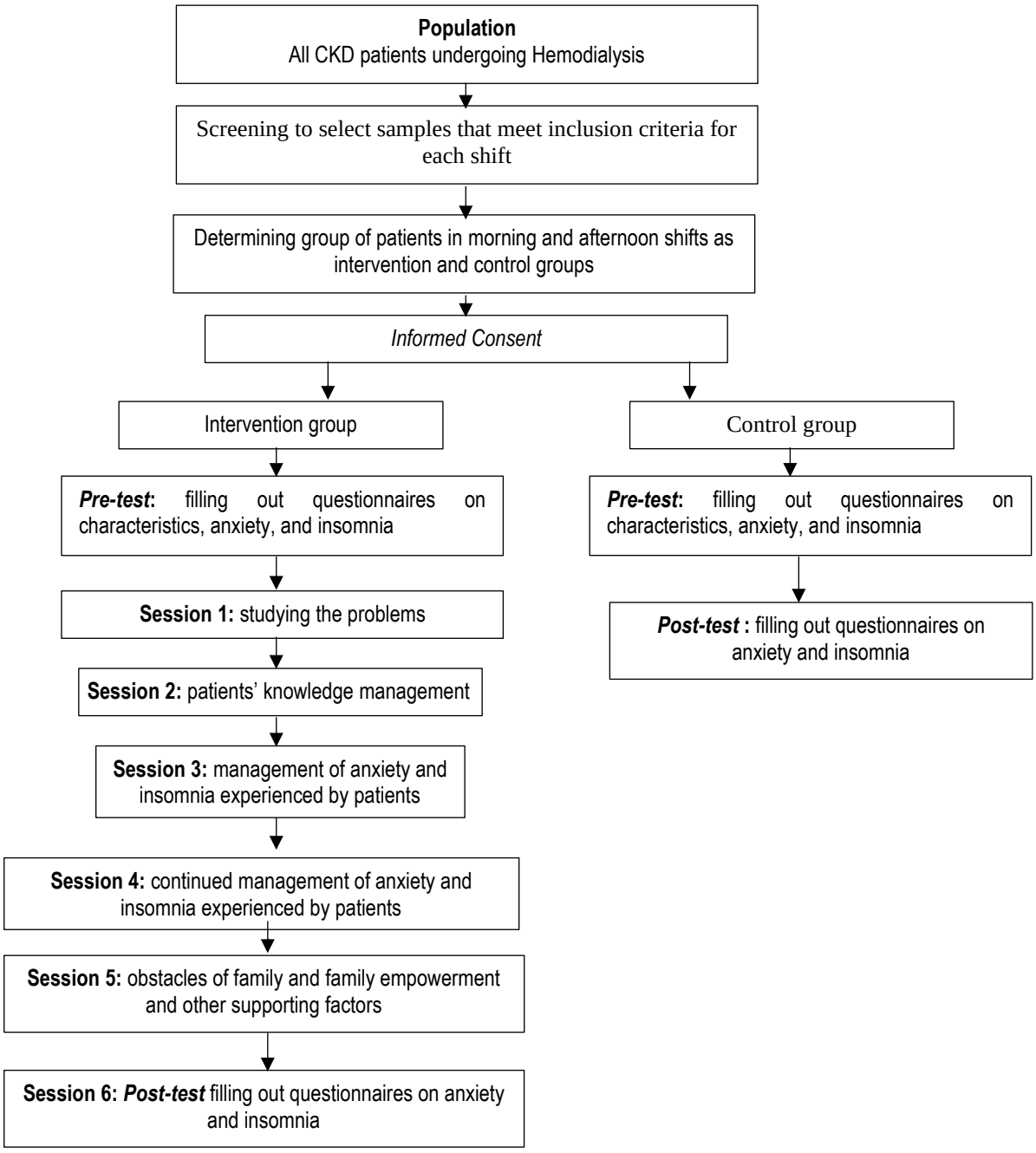

Figure 1. Flowchart of study

RESULTS

Based on the respondents' characteristic in both groups, the characteristics of sex, HD duration, educational background, work status, marital status, and comorbidity in both groups show *p* value > 0.05, sothere is no significant difference (homogeneous) between both groups. However, in the age variable there is a difference in age characteristics in both groups ($p < 0.05$). (See Table 1).

Table 1. Frequency Distribution of Respondents Characteristic at PKU Muhammadiyah Yogyakarta Hospital in December 2021-January 2022 (n=54)

Variables		Group				p-value
		Intervention		Control		
		f	%	f	%	
Age	18-25 years old	4	14.8	1	3.7	0.003*
	26-35 years old	5	18.5	0	0	
	36-45 years old	5	18.5	3	11.1	
	46-55 years old	6	22.2	8	29.6	
	56-65 years old	7	25.9	15	55.6	
Sex	Male	13	48.1	16	59.3	0.586
	Female	14	51.9	11	40.7	

Variables		Group				p-value
		Intervention		Control		
		f	%	f	%	
Dialysis Duration	1-12 Months	13	48.1	12	44.4	1.000
	13-24 months	14	51.9	15	55.6	
Education	No formal education	2	7.4	0	0	0.741
	Elementary, junior high school or equivalent	7	25.9	9	33.3	
	High school or equivalent	13	48.1	12	44.4	
	College	5	18.5	6	22.2	
Occupation	Unemployed	15	55.6	18	66.7	0.278
	Labor	3	11.1	4	14.8	
	Farmer	2	7.4	2	7.4	
	Merchant	0	0	1	3.7	
	Private employee	4	14.8	0	0	
	Civil servants	2	7.4	2	7.4	
	Retiree	1	3.7	0	0	
Marital Status	Married	20	74.1	24	88.9	0.204
	Unmarried	5	18.5	1	3.7	
	Widow/widower	2	7.4	2	7.4	
Comorbidity	DM	2	7.4	1	3.7	0.100
	DM, Hypertension	7	25.9	4	14.8	
	Hypertension	12	44.4	10	37.0	
	Hypertension and others	2	7.4	3	11.1	
	DM, Hypertension, + others	1	3.7	4	14.8	
	Heart disease	0	0	1	3.7	
	Uric acid	0	0	2	7.4	
	None	3	11.1	2	7.4	

The difference in anxiety score of patients with CKD in both groups was shown in Table 2. The results showed that in the intervention group, the mean score of anxiety before interventionwas 38.37 (moderate anxiety level) and post-test mean scoreof anxiety was 32.67 (mild anxiety level). While, In the control group with, pre-test average score of anxiety was 34.30 (mild anxiety) and post-test score was 35.59 (mild anxiety). In within group, there was significant difference between pretest and post-test score of anxiety in intervention group (p=0.000) and in control group (p=0.022). It could be interpreted that there are significant differences in anxiety in the before and after psychoeducation within intervention group and the control group.

Table 2. Differences in anxiety of patients with CKD before and after the intervention in the intervention and control groups

Groups	Pre-test	Post-test	p-value
	Mean ± SD	Mean ± SD	
Intervention	38.37±7.088	32.67±6.493	0.000
Control	34.30±6.250	35.59±6.553	0.022

This study displayed the differences in insomnia of patients with CKD. It showed that in the intervention group, the mean score of pre-test insomnia was 12.22 (mild insomnia level) and post-test average score was 7.93 (no insomnia). In the control group, pre-test average score was 10.81 (mild insomnia level) and post-test mean score was 11.52 (mild insomnia level). Within the group, there was significance difference insomnia score before and after psychoeducation\ the intervention group (p= 0.000) and control group (p=0.029) (see Table 3)

Table 3. Differences in insomnia of patients with CKD before and after the psychoeducation within the intervention and control groups

Groups	Pre-test	Post-test	p-value
	Mean ± SD	Mean ± SD	
Intervention	3.455±0.544	2.731±0.694	0.000
Control	3.256±0.474	3.37±0.415	0.029

In addition, there is a significant difference mean score f (p=0.000) between the intervention and control group. This study found that psychoeducation also had large effect on on reducing anxiety (ES= 2.879) and insomnia (ES = 3.013) after 1 week of intervention. (See Table 4)

Table 4. Difference in mean value of anxiety and insomnia of hemodialysis patients before and after the intervention between the intervention and control groups (n= 54)

Variables	Group		Effect Size	p-value
	Intervention (n=27)	Control (n=27)		
	Mean ± SD	Mean ± SD		
Difference in anxiety score (pre-post test)	5.70 ±2.035	-1.30±2.771	2.879	0.000
Difference in insomnia score (pre-post test)	4.30±1.564	-0.70±1.750	3.013	0.000

This study also assessed theexternal variables related to anxiety including age, marital status, and comorbidity (p<0.25), while the external variables related to insomnia were age, sex, and education (p<0.25).

Table 5. Results of bivariate test of the relationship between external variables and anxiety and insomnia

Variables		Anxiety	Insomnia
		p-value	p-value
Age		0.006*	0.096
Sex	Male Female	0.575	0.239
HD Length		0.945	0.764
Education	No formal education Elementary, junior high school or equivalent High school or equivalent College	0.572	0.231
Occupation	Unemployed Labor Farmer Merchant Private employee Civil servants Retiree	0.290	0.443
Marital Status	Married Unmarried Widow/widower	0.086	0.277
Comorbidity	DM DM, Hypertension Hypertension Hypertension and others DM, Hypertension, + others Heart disease Uric acid None	0.122	0.641

Multivariate analysis using the linear regressoion with backward method was conducted to determine external variables that affected the change in anxiety and insomnia scores.

Table 6. Results of Linear Regression Test of the relationship of external variables to anxiety

Variables	Anxiety		
	B	p-value	95% CI
Model I			
Age	-0.120	0.013*	-0.214-(-0.026)
Marital Status	-0.529	0.715	-3.249-2.370
Comorbidity	-0.680	0.019*	-1.245-(-0.114)
Constant	11.616	<0.001*	5.862-17.371
R^2		0.228	
Model II			
Age	-0.129	0.002*	-0.209-(-0.50)
Comorbidity	-0.683	0.018*	-1.243-(-0.123)
Constant	11..033	<0..001*	6..292-15..773
R^2		0..226	

The results found that there were two external variables that were significantly related to anxiety. which were age (B= 0.129. p = 0.002)and comorbidity (B = 0.683, p = 0.018). However.. the results of the multivariate test found that there was no significant external variable related to insomnia.

Table 7. Results of Linear Regression test on the relationship of external variables to insomnia

Variable	Insomnia		
	B	p-value	CI 95%
Model I			
Age	-0.055	0.080	-0.117-0.007
Sex	0.813	0.341	-0.884-2.511
Education	-0.275	0.617	-1.370-0.821
Constant	4.097	0.173	-1.860-10.055
R^2		0.085	
Model II			
Age	-0.052	0.090	-0.112-0.008
Sex	0.935	0.250	-.679-2.549
Constant	2.979	0.133	-.942-6.901

Variable	Insomnia		
	B	p-value	CI 95%
R^2		0.081	
Model III			
Age	-0.053	0.084	-.0.13-0.007
Constant	4.397	0.006*	1.323-7.471
R^2		0.056	

DISCUSSION.

The results showed findings the significant differences in the anxiety score of the intervention group compared to control group after psychoeducation. Although in the control group there were also significant results, from the different test results, the difference in anxiety scores from the two groups obtained large effect size of 2.879. These results showed that psychoeducation with booklet provided in the intervention group is more effective in significantly reducing anxiety. The finding was in line with Wowor *et al.,* (2019) that reported a significant effect for psychoeducational interventions on the anxiety of hemodialysis patients. Ozturk et al., (2015) also that the administration of psychoeducation has a positive effect and was a good choice in reducing anxiety and pain.

In this study, most of the respondents said that when they noticed that they had to receive hemodialysis therapy, they had concerns, fear, anxiety, sleeping difficulty due to lack of knowledge about hemodialysis and would do during dialysis. However, they still adhere to dialysis therapy in accordance with the physician recommendations. Based on this finding, basically humans respond to all stimuli either positive or negative. In this case, respondents who experienced psychological problems (anxiety and sleeping difficulty) when undergoing hemodialysis therapy could respond appropriately or less appropriately, for example, patients desperate with their condition.

The provision of psychoeducation is by using booklet media containing information about chronic kidney failure, the definition of anxiety and insomnia, anxiety management consisting of deep breath relaxation and affirmative relaxation, and insomnia management. Providing material psychoeducation about CKD could increase the knowledge of patients and families. This was in line with previous study by Setyowibowo et al., (2022) that psychoeducation can reduce anxiety with patients who felt isolated, so that the patients receive social support and increase their knowledge of coping strategies, and learn about stress management (breathing and relaxation exercises).

Education also can decrease the anxiety of hemodialysis patients. The media and methods used when providing health education is one of the factors that increase respondents' knowledge. Individual discussion method with storytelling approach could be applied, so respondents develop and feel comfortable when asking questions or conveying perceived concerns. Previous study by Manalu et al., (2021) stated that the provision of health education can reduce the level of anxiety in patients with CKD during hemodialysis. The increase in respondents' knowledge has an impact on their ability to control their anxiety as before gaining knowledge about the disease and therapy.

In this study, psychoeducation implemented into two techniques to cope with anxiety, such as deep breathing relaxation and affirmative relaxation. First, respondents were taught deep breathing relaxation to be implemented when anxiety occurs. Relaxation is an effective nursing intervention, which has been introduced as a non-pharmacological method that is beneficial for reducing stress on its effect on mental, physical condition, depression, anxiety, improving sleep quality, and improving the quality of life of hemodialysis patients (Elsayed et al., 2019). Darmawati et al., (2021) stated that there were differences or changes in anxiety levels before and after psychoeducation because psychoeducation involved anxiety management. In this anxiety management, the researchers carried out intervention with the aim that patients can express their anxiety by using deep breath relaxation techniques. This is in line with Carson's theory (2012) explained that psychoeducation is a strategy to reduce risk factors associated with behavioral symptoms such as anxiety.

Respondents were also taught affirmation relaxation during the deep breathing relaxation technique. Positive affirmations as psychological therapy aims to cope with anxiety or to alter maladaptive coping to adaptive coping of patients undergoing hemodialysis. Teaching positive affirmations foster patients' intrinsic motivation to undergo hemodialysis, help patient to think positively about their illness, and make conscious behavioral changes to patients in responding to hemodialysis therapy on a regular basis (Kusumastuti et al., 2017; Wijaya & Rahayu, 2019). After implementing deep breathing relaxation and affirmative relaxation, patients gain to relieve their anxiety.

To evaluate the process, the researchers conducted observations during psychoeducation by observing the smooth-running of psychoeducation. It consists of several aspects such as, the active participation in asking question from the respondents or their families,, sharing, and discussing about their feedbacks to the psychoeducation that has been delivered at each meeting, punctuation, asking the unclear matters, , and expressing satisfaction with psychoeducation material.

The results of the multivariate test show that there are only two external variables that are significantly related to anxiety, which were age and comorbidities. It could be concluded that the factors that affect anxiety in this study are age and disease. This study is in line with Manalu et al., (2021) found that age affects anxiety in patients with hemodialysis. Patients aged 60 years-old and above have lower levels of anxiety compared to younger patients (Semaan et al., 2018). In this study, comorbidities also affect anxiety in patients with hemodyalisis. Anxiety is a common problem faced by most people, especially those with chronic diseases. This study in line with Dziubek et al., (2021) result which found that comorbidities affect anxiety in patients with chronic kidney disease.

This study found that there were significant differences in the insomnia level in intervention group compare with control group at pre-test and post-test. Although in the control group there are also significant results, from the different test results, the difference in insomnia scores from both groups obtained a large effect size of 3.013. These results indicate that psychoeducation given to the intervention group with booklet administration can significantly reduce anxiety.

Several previous studies showed that psychoeducation able to reduce patients' psychological problems (Liza, 2015; Mahayanti, 2015; Nisa, 2018; Rachmaniah, 2012). Previous study conducted by Ridhoni (2013) using an observation method and interview with 3 sessions showed that psychoeducation can provide insight (understanding) about the problems (insomnia) experienced by the clients and they become aware of how to overcome sleep disorders experienced by the client.

In this study, psychoeducation used to reduce insomnia in hemodialysis patients were direct interaction, gave respondents opportunity to convey the cause of insomnia during hemodialysis, provided explanations related to insomnia management, being involved to create a comfortable environment, do exercise, avoid caffeine-containing drinks, avoid stress, avoid sleeping pills, and practice relaxation when experiencing insomnia. Communication between patients and health workers is an important factor in influencing the success of patient self-care undergoing dialysis because through communication with health workers. It can provide information, health tips, and provide problem solving related to the obstacles experienced during the self-care process (Curtin et al., 2008; Wasalamah et al., 2018). More information lead hemodialysis patients feel competent and are able to reduce their anxiety and insomnia.

Sleep disorders, especially insomnia, are widely complained by hemodialysis patients and lead to poor sleep quality. Treatment for all patients must begin with basic sleep hygiene. Sleep hygiene is very crucial to have a healthy physical and mental life as well as the treatment of some sleep disorders (Aini & Maliya, 2020). The psychoeducation booklet provides sleep education including create a comfortable environment, exercise, avoid drinks containing caffeine, pray or read books, avoid taking sleeping pills, and practice relaxation techniques. Borzou et al., (2019) and Soleimani et al., (2016) proposed that sleep education has a positive impact to improve sleep quality among hemodialysis patients and determining the state of fatigue.

Practicing sleep hygiene combined with deep breathing relaxation can achieve REM (Rapid Eye Movement) sleep, promote muscle relaxation, stimulate cerebral activity (oxygen consumption, blood flow, and nerve stimulation), and help patients feel more relaxed and comfortable in their sleep. Practicing deep breathing while praying based on their respective beliefs will lead to stronger relaxation responses (Hasina et al., 2019; Wijayanti 2017). This study also found that respondents need to do physical exercise based on their capability, such as walking, resistance training, and aerobic. Physical exercise in hemodialysis patients is considered safe and feasible, and it can improve physical and psychological functions (Chung et al., 2017; Ma et al., 2012). Sheshadri et al., (2019) stated that HD patients who are more active in physical activity rarely experience insomnia.

The results of the multivariate test showed that there was no significant external variable in insomnia. Lufiyani et al., (2019) and Rehman et al., (2020) found there was no significant association between age and insomnia. The incidence of insomnia generally occurs in early adulthood or in the 30-50 years old. Patients had difficulties to initiate sleep and waking up earlier than usual. In contrast, several studies revealed that patients more than 60 years-old had significantly higher levels of insomnia than younger patients (Cabrera et al., 2017; Frengki et al., 2019; Reynaga-Ornelas, 2019; Xhulia et al., 2015). Sleep problems in elderly people undergoing hemodialysis were mostly caused by anxiety disorders, depression, and accompanying diseases that caused physical, cognitive, and emotional decline.

This study revealed that gender was not associated with insomnia. This study result was in line with Borzou et al., (2019); Lufiyani et al., (2019) and Rai et al., (2011) studies which found that gender was not associated significantly with insomnia. Insomnia experienced more often by female patients than male HD patients with hemodialysis. This might be due to women are more likely to bear the heaviest burden of their family problems so that they have to deal with insomnia and anxiety. The education level also does not affect insomnia among HD patient significantly. Previous study also found that education level did not affect the high incidence of insomnia in patients undergoing hemodialysis therapy (Frengki et al., 2019).

The limitation of this study is that the control group received a booklet at the end of the meeting after the post-test. However, during the intervention process, the respondents in the control group could access information through leaflets provided in the HD unit. During the pre-test and post-test, some respondents had their questionnaires filled out by their families because their conditions made it impossible for them to fill out it. However, the researchers had explained to the family that the questionnaire must be completed by the patients and ensured that the patient and their family understand about this.

CONCLUSION AND RECOMMENDATION

The psychoeducational using booklet was effective to reduce anxiety and insomnia among CKD patients undergoing hemodialysis. Occupation is an external variable which had a significant relationship with anxiety. Future studies are suggested to explore more the psychological impacts of CKD for patients undergoing hemodialysis and their families by developing psychoeducational interventions for patients and caregivers. In addition, future studies also may involve larger number of respondents.

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ORIGINAL ARTICLE

NURSES' EXPRESSION OF TRANSCULTURAL CARE TO PATIENTS WITH CANCER: A PHENOMENOLOGICAL STUDY OF THE PHILIPPINES CONTEXT

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ABSTRACT

Transcultural health care involves providing individualized and holistic health care to clients across cultures. Understanding and learning the differences in each culture will promote optimum care levels, especially for patients with cancer. This study describes nurses' expression of transcultural care to patients with cancer. This is a descriptive phenomenological study of nurses' expression in transcultural care to patients with cancer. A total of 11 participants were selected by using purposive sampling. Data was gathered from in-depth interviews among nurses who took care of patients with cancer via an online platform. Data analysis used Colaizzi's thematic analysis. The study's trustworthiness was established by its credibility, dependability, confirmability, and transferability. Four major themes were generated in this study: (1) cultural congruent care, (2) cultural and communication competency, (3) integrity as a vital aspect of respect and consideration of other cultures, and (4) challenges nurses face when a caring for patients with cancer and their transcultural and patient-driven solutions. Caring is about giving patients hope, love, and services based on their cultural sensitivity. Connecting and interacting effectively with people from different cultural backgrounds is essential in today's globalized society.

Keywords: *Nurses' expression; patients with cancer; transcultural care*

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INTRODUCTION

Understanding and learning the differences in each culture will promote optimum care levels, especially for patients with cancer who frequently experience pain and suffering. Patients come from many different cultures, beliefs, and values. These different backgrounds make each individual different from one another. Andrews and Boyle (2002) defined transcultural care as providing individualized and holistic health care to clients across cultures. In terms of cultural care, caring is an attitude within the nursing process that facilitates, assists, guides, and helps someone according to their culture. In caring, we provide holistic care to our patients. Moreover, respecting and embracing diversity can promote trust, leading to active participation in patient care. Therefore, cancer care should leave no stone unturned, especially as we work to address persistent cancer health disparities (Lo, 2012).

Previous literature revealed the health disparities among individuals with limited financial resources, those from specific racial or ethnic groups, and those who reside in isolated rural locations. Cultural determinants related to beliefs around the origins of illness, religious beliefs in divine control over life and death, and supportive familial relationships are also increasingly examined for their role in cancer disparities (Değer, 2018). However, much of what has been captured and reported in the healthcare literature on culture and cancer has been perceived as overwhelmingly negative (Değer, 2018).

The overwhelming negative perspective of the influence of culture on cancer disparities may obscure the strengths and realities of what is meaningful to that population, limiting our ability to provide optimal cancer care. Religious belief related to cancer is an example of a cultural determinant generally perceived as negative. People may have misconceptions that

cancer is a punishment from God, possibly for some sinful behavior (Hamilton, 2017). Cancer treatment is also worse than the illness itself, and surgery causes cancer to spread (Hamilton, 2017).

In the Philippines context, the cultural belief among patients with cancer is that it is caused by sinful behavior. The patients and their families perceived that cancer was a punishment. The patient also blames God and feels spiritually distressed. This situation sometimes worsens the patient's condition as their cancer symptoms manifest when the patients with cancer feel stressed and hopeless about the treatment (Salinda et al., 2021).

Thus, nurses must increase their awareness of the cultural diversity of patients with cancer to improve competency and sensitivity. Culturally competent cancer care will promote therapeutic outcomes (Cang-Wong et al., 2009). Healthcare professionals' challenge is understanding how culture has enormous potential to influence patients' responses to illness perception, treatment, and quality of life (Brown et al., 2016). Good cultural care requires relationships, time, and conversations. Healthcare professionals can begin to understand the nuances of cultural differences and obtain different perspectives for their patients through understanding, learning, and having the openness to learn (Salinda et al., 2021).

Nurses can promote cultural sensitivity by providing culturally congruent care. If nurses focus on comparative cultural care, which involves considering the individuals' values, beliefs, and practices, this will help promote quality care across cultures (Givler et al., 2023). Misunderstanding cultural differences can be a barrier to effective healthcare intervention and can even cause harm. This is especially true when a health care professional misinterprets or overlooks a patient's perspectives that differ from those of the health care professional. Nurses can overcome cultural blindness by developing an awareness of their patient's cultural background and understanding nursing values as an expression of cultural norms (Kaihlanen et al., 2019).

A nurse's expression will help build a solid foundation to provide quality patient care for patients with cancer. Quality patient care is needed to prevent misinformation, mistrust, and misinterpretation of the health care plan. Therefore, this study aimed to understand nurses' expression of transcultural care to patients with cancer in the Philippines context.

METHOD

Research design

This study employed a qualitative research design, specifically a phenomenological approach, which is an approach to qualitative research focused on the commonality of a lived experience within a particular group (Al-Sheikh, 2023). This study used the social constructivism perspective to describe the nurses' expression in transcultural care to patients with cancer.

Participants of the study

Eleven Filipino nurses participated in the study held at Baguio General Hospital and Medical Centre in the Philippines. These participants met the inclusion criteria and were selected by the purposive sampling method. The inclusion criteria to participate in this study were: (1) female and male nurses, (2) have more than two years of work experience in taking care of patients with cancer, and (3) have at least a bachelor's degree. The exclusion criteria were if the participants dropped out of the study when the data was gathered. The researchers requested the participants' email addresses and contact numbers to collect data. Due to the current situation where physical interaction was limited, face-to-face interviews were not possible.

Instruments

The researchers conducted an online interview through the Zoom platform during the pandemic. The questions asked during the interview were constructed based on the purpose of the study. An English semi-structured interview method was used in the study. The interview guideline was developed by the researchers. The following are examples of the interview questions: (1) Tell us something about your overall experience in caring for patients with cancer from diverse cultures; (2) How do you establish rapport with patients from diverse cultures?; (3) How do you develop awareness regarding the cultures and beliefs of the patients with cancer?; (4) How do you improve your cultural competence as a nurse?; (5) In doing nursing interventions and assisting cancer patients in the ward, what are their behaviors usually observed during giving medications, interacting with patients, interacting with the family, and facilitating necessary procedures? This type of interview enabled the researchers to obtain all the required information and gave the participants freedom.

The participants were interviewed in English, and their informed consent statements were digitally recorded. The researchers prepared a topic guide or script to serve as a guide for the interviews. However, they followed a semi-structured interview method to elicit more information from the participants without any limiting parameters. Verbatim transcription was performed to analyze and interpret the data.

Data Collection

Data collection started when the researchers obtained approval from the research and ethics committee of Saint Paul University of Philippines (SPUP), signed by the Chairperson of the Research Ethics Committee on the 14th of October 2021. A letter of request to conduct the study was sent to the chief of Hospital of Baguio General Hospital and Medical Center. Data collection was conducted from January to July 2021. The letter included a request for the list of names of the staff nurses, including their email addresses and contact numbers. The researchers ensured that the information gathered would only be used for academic and research purposes. The research guidelines were guided by legal and ethical principles that center on the welfare of all participants in the approved research study (Delden & Graaf, 2017).After selecting eligible nursing staff based on the inclusion criteria, the researchers emailed the chief of nursing service to notify the list of eligible nursing staff. The informed consent form was sent to each of the eligible staff nurses.

The informed consent document contained the background of the study, the mode of data gathering (interview via Zoom), the approximate time of the interview (45 minutes), the video recording of the interview, and the utilization of the staff responses to meet the study's objectives. The researchers ensured that the participants were aware of the study and methods of interview. The informed consent form also stated that the participants had the right to withdraw from the study at anytime. Assurance was given to the participants that all their details written in the form and the video recording of the interviews, including their responses, were kept confidential. Their anonymity was given utmost importance while the data gathered were used for the study's objectives.

If the participant decided not to participate in the study,

messages were sent immediately stating that they refused to be included. The researchers noted the participants who declined to participate in the study and respected their decision. After the participants signed the informed consent form along with the date of signature, the researchers set the interview dates according to the participant's convenience.

Data analysis

The data gathered were analyzed using Colaizzi's descriptive phenomenological method. This method is a distinctive seven-step process that enables the researchers to analyze each step rigorously. The seven steps in Colaizzi's method were (1) familiarization, (2) identifying significant statements, (3) formulating meanings, (4) clustering themes, (5) developing an exhaustive description, (6) producing the fundamental structure, and (7) verifying the fundamental structure (Colaizzi, 1978).

In this study, the online interviews were recorded, and a transcript was written to show transparency. Two researchers could familiarize themselves with the participant accounts as many times as needed for an accurate analysis. After familiarizing themselves with the accounts, guided by the semi-structured interview questions, the researchers identified the most relevant statements to the phenomenon studied. These identified statements were then assigned a meaning based on the phenomenon. In assigning meanings, the researchers "bracket" or avoided presuppositions and only observed the phenomena.

After being assigned meanings, the researchers grouped or clustered these statements to create themes and a connection or a relationship. When clustering themes, the researchers bracketed their presuppositions again to avoid the influence of any existing theories on the phenomenon. A general description that explained the phenomenon was then written based on the clustered meanings and identified relationships. Next, the exhaustive descriptions were condensed or summarized into several important points or research aspects. In the final stage, the researchers returned the summarized concepts to the participants for their validation to ensure that the data gathered and its analysis were correct and corroborated the participants' accounts.

Trustworthiness

Credibility

This study used a triangulation method to determine the credibility of the gathered information. The consistency of the findings was interpreted from the semi-structured interviews and observations and the participants' comments. According to Polit and Beck (2012),credibility refers to the data's truth or the participant's views, interpretation, and representation of them by the researchers. These data sets were the first criterion in establishing the trustworthiness of the qualitative paper. The researchers used a triangulation method where interviews and observations were discussed further, and the participant's description and interpretation of something were compared with another participant's report of the same research questions.

Dependability

Dependability refers to the consistency and reliability of the research findings and the degree to which research procedures are documented, allowing someone outside the research to follow, audit, and critique the research process (Sandelowski M, 1986). In this study, the researchers presented a step-by-step data collection and analysis process of the procedures to determine the study's dependability. The purpose and paradigm of the research were informed in the study, in addition to the researcher's role and background. This entails describing the research in the context of the paper and how these changes would affect the study's interpretation and conclusion.

Confirmability

Confirmability refers to the quality of the results produced by an inquiry and how well they are supported by informants (members) involved in the study and events independent of the inquirer. The variability of the criterion was determined by giving the interview script to several colleagues who were familiar with qualitative research analysis methods and were absent during this study's process. The accuracy of the data coding process was evaluated (Sandelowski M, 1986). The researchers reported the steps taken to both manage and reflect on the effects of their philosophical or experiential perspective, ensuring the results are based on the experience and preferences of the research participants.

Transferability

Transferability refers to the degree to which the qualitative research results can be generalized or transferred to other contexts or settings. From a qualitative perspective, transferability is primarily the responsibility of the one doing the generalizing (Sandelowski M, 1986).Since the study is focused on the nurses' expression of transcultural care to patients with cancer, the participants were selected on purpose based on the researchers' criteria. Thus, the data extracted focuses on the nurses' expressions of transcultural care.

RESULTS

Participants' demographic profile

The eleven respondents from Baguio General and Medical Center ranged from 27 to 35 years old. Seven (63%) were women, and four (37%) were men. The eleven nurses worked in different wards and handled a diverse range of patients, as shown in Table 1.

Table 1. Participants' demographic profile

Participant's ID code	Occupation	Gender	Age
SN1	Registered staff nurse	Female	28
SN2	Registered staff nurse	Female	29
SN3	Registered staff nurse	Male	29
SN4	Registered staff nurse	Male	35
SN5	Registered staff nurse	Female	30
SN6	Registered staff nurse	Female	28
SN7	Registered staff nurse	Female	32
SN8	Registered staff nurse	Male	34
SN9	Registered staff nurse	Female	28
SN10	Registered staff nurse	Male	27
SN11	Registered staff nurse	Female	28

Formulation of meanings

The researchers consistently analyzed the participant interview transcripts and extracted significant statements

related to the study's focus from the data acquired. The meanings from these statements were then formulated, as shown in Table 2.

Table 2. Example of formulated meanings relevant to the study's focus

A significant statement	Formulated meaning
Caring for a patient with cancer is like going to an arcade. You feel pity for them at times, but you need to maintain a nonjudgmental face. You laugh and sing throughout your shift, then they forever rest in peace. It's like a game where you don't know what will happen next and at times though you want the best for the patients. We cannot avoid conflict of interest when culture is involved.	The participants' experience cultural boundaries for some aspects, such as cultural sensitivity.
Since starting my nursing journey, be it cancer or non-cancer patients with different cultures, I always begin my interaction with a smile. Also, knowing their cultures and preferences would greatly help in establishing rapport. I use Google for a quick check if I am not well-versed in their culture or what they consider a norm.	The participant mainly describes the importance of cultural awareness in responding to patient needs.
As I mentioned earlier, a quick Google search will help. We are of different cultures, and as a nurse, I always remind myself to maintain neutrality. In cases where I do not understand what they are implying, then I ask for someone to interpret or ask them to expand or elaborate on their explanations.	The participant highlights the importance of understanding cultural sensitivity.
(1) Maintaining a non-judgmental outlook in life will help. Never make assumptions and always educate yourself regarding the cultures of your patients. (2) Break communication barriers. (3) Establish and maintain rapport. Practice listening to everything the patient says. (4) Educate patients about medical treatment regarding their conditions.	The participant provides culturally congruent care to the patient.

Emergent themes

Four emergent themes were derived from the data (Table 3): (1) culturally congruent care, (2) cultural and communication competency, (3) integrity as a vital aspect of respect and consideration of other cultures, and (4) challenges nurses face when caring for patients with cancer and their transcultural and patient-driven solutions.

Table 3. Analytical process of forming emergent themes and qualitative data

Identified significant statements	Formulated meanings	Theme cluster	Emergent theme
"In caring we must consider many areas. To provide care, we must be competent enough and equipped with knowledge, skills, and attitude. It is also necessary to include aspects like being aware of one's culture."- SN6	Providing congruent care is giving care that fits with sensitivity.	Cultural awareness and cultural sensitivity	Cultural congruent care
"As a nurse, I need to assess my patient carefully, part of my job is to gather vital information essential for them, including chatting, reading, evaluating, and others. We need to consider the barriers and give alternative solutions to the diverse range of patients."- SN 8	Supporting patients in patient care is essential in giving meaningful stays in the hospital.	Information and supportive solutions for caring	
"I've been a staff nurse for 15 years, I handle different situations already. What I can say is in caring you must put effort, especially with diverse people. In the case of a patient with cancer, triple checking, and care must be done because they are more prone to experiencing pain and at the same time giving care as well based on their cultural belief"- SN7	Experience plays a major role in caring for patients culturally. It is about learning with the patients with an open mind.	Experiences in cultural congruent care	Cultural and communication competency
"I believe that the further you go the more challenging it will be. I believe in the power of strategies, and having a concrete well plan will help you understand your patient. Our patients are experiencing so much pain, so we should give them comfort and make sure that we can address their concern." SN-9	Strategies in caring are essential, especially with patients with cancer. It is about accepting them and understanding your patients and anticipating their needs.	Strategies used in cultural interaction	
"Some patients are open-minded, and some are not. Some are easily convinced and some take time, and some also are convinced but still with doubt. Some acknowledge the absurdity of their beliefs and express interest in how to correct it." SN-5	Respecting and appreciating one culture help provide patient care.	Attitude toward cultural care diversity	Integrity is a vital aspect of respect and consideration of other cultures.
"I am a bit of a bully myself to my friends, so I usually don't get affected, but when I get to my			

Identified significant statements	Formulated meanings	Theme cluster	Emergent theme
limit, I just act just how they treat me. If they will raise their voices, then I will do the same until they realize that I am no pushover nurse. But of course, I will still try to explain and ask for an apology." - SN-3			
"Most of the time, the patient's or their family's beliefs, and cultures can cause a delay in the management and treatment of the disease. This sometimes causes progression and subsequent complications arising from the delay. There were encounters where we had when a patient diagnosed with a neck tumor suspected of malignancy. They were scheduled for a follow-up to schedule a procedure to remove the tumor. However, due to beliefs influenced by the family and cultures needed to be performed prior, the patient has lost his follow up schedule." - SN2	Attitude toward respecting differences and embracing them will help patients assist and help them with their culture.	Attitude toward cultural care diversity	
"As a nurse who cares for patients with cancer, I have a big role that I must do, it's just like putting my heart and effort into caring for the patient culturally.'- SN9 "I develop awareness by first asking about history, clarifying concerns, and discussing options. I also need to coordinate with my patient and incorporate them in the intervention." SN-1	Roles of nurse play vital roles in patient care, and cultural knowledge can be integrated with nursing intervention.	Role of staff nurse in transcultural nursing to oncology patient. Attitude toward feedback received from the patients with cancer.	Challenges of nurses in caring for patients with cancer and their transcultural and patient-driven solutions.

Final thematic map

A thematic map was created to show the paradigm of the results of the themes (Figure 1). The following paradigm is viewed as a whole circle of nurses' expressions of transcultural care for patients with cancer based on first-hand participant interviews.

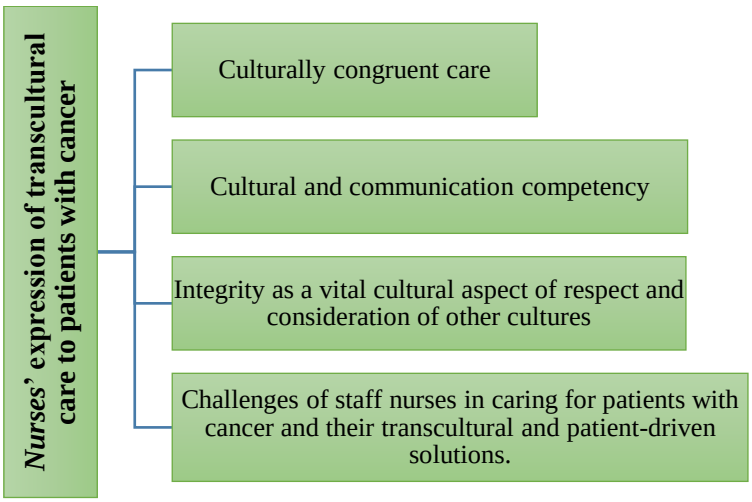

Figure 1. Nurses' expressions of transcultural care for patients with cancer

DISCUSSION.

Culturally congruent care is when a nurse understands and accepts the differences that exist in each culture. Nurses, as care providers, play a great responsibility in understanding and incorporating cultural beliefs and practices in the holistic delivery of care (Gunn, Bydalek, Rikabi et al. 2019). In this study, a complete understanding of culturally congruent care is important to provide care that fits the sensitivity of patients' health care and assist them in a manner that suits their culture. Nurses need to sit down and listen to their patients, especially when they need company. Learning from the patients is also important, as respecting differences, embracing tolerance, and being more accepting is a move toward cultural competency(Salinda et al., 2021). When nurses provide culturally congruent care, they can connect any existing cultural gaps and provide essential and supportive care for all patients with cancer. Clarke (2017)agreed that the nurse should be aware of and assist the patients' cultural beliefs to provide them with culturally congruent care.

Nurses should have cultural competency. The themes of cultural and communication competency showed that nurses must communicate in a holistic and culturally aware manner when taking care of patients with cancer. For patients with cancer, information is necessary to obtain baseline data. Being a professional nurse is a noble job that requires a commitment to providing transcultural care services. Moreover, patients with cancer often experience difficulty, and as a nurse, it is up to us to provide supportive care (Salinda et al., 2021).

In caring for patients with cancer, it is essential to look at different aspects, such as communication, understanding, and competence. Therefore, nurses must be able to function competently in any cultural setting (Marek, 2019). Most of the time, nurses tend to think of other cultures as other countries or speaking other languages. However, different cultures may live alongside each other within the same country or area (Marek, 2019). Anthropological nursing states that the transcultural care concept connects with actual clinical practices while offering a cultural approach to identify values, beliefs, behavior, and community customs (Salinda et al., 2021)Moreover, transcultural care competency will help the nurse's professional role to create a nursing intervention that involves culturally aware communication (Brooks et al., 2019). Meanwhile, translation care to various patients is quite challenging. However, a complete understanding of their situation must be given importance, and cultural respect for the difference must be prioritized (Givler et al., 2023). Therefore, the integrity theme as a vital cultural respect showed that it is vital for the nurses who take care of patients with cancer to have integrity. Cultural care diversity refers to different perspectives, values, and beliefs. Different practices become gaps to reaching others because what one believes differs from others. Respecting skin color, race, ethnicity, nationality, socioeconomic status, educational level, employment status, and religion results in cultural diversity (Salinda et al., 2021). The humanization of relationships and the participation of the individual in the construction of care practices are considered essential to advance the quality of care and to replace traditional models of health work management with more flexible and dynamic ways of valuing individual needs (Duarte et al., 2016).

It is quite challenging for nurses to respond to patients of different cultures. It will sometimes lead to misinformation and misinterpretation of values and practices. Nevertheless, nurses' mindset favors diversity. Therefore, we avoid cultural conflict and are sensitive to cultural traits and cues (Milberg et al., 2016).This is particularly valuable for people who need to interact with others who may speak a wide range of other languages due to the different accents (Marek, 2019).The intersectional identity of patients is often experienced in patients with cancer. The multidimensional and holistic care of care patients involves screening, diagnosis, treatment, and survivorship (Kelly-Brown et al., 2022).Therefore, this study affirms that the integrity of culture in nursing care must be considered, as patients with cancer have unique cultures as human beings.

Moreover, nurses play a major role in determining solutions to barriers. This statement aligns with this study's fourth theme, which is the challenges of staff nurses in caring for patients and their cancer transcultural and patient-driven solutions. Transcultural care is at the center of care provision. Hence, caring for patients with cancer requires nurses to be extra careful. Patient-driven solutions are required for multiple stages, such as diagnosis, treatment decision-making when receiving test results, treatment planning, immediately after treatment, for advanced disease, or any situation where important information is disclosed (Hyatt et al., 2018). The challenge of transcultural care around the world has become a tent issue in nursing. Thus, nurses must have a set of competencies of cultural care and possess the required knowledge, skills, and attitude.

The goal of nursing care for patients with cancer is to provide meaningful quality care and optimum care during their hospitalization. Therefore, nurses need to be sensitive to their patient's needs and create strategies to give holistic solutions to their issues. Nurses must also incorporate transcultural care into the nursing implementation process. Nair and Adetayo (2019)strongly recommend increasing the efforts for improvements in cultural competency for all healthcare professionals. This effort will help in raising awareness to improve cultural competency and diversity in healthcare. Therefore, the quality of nursing care based on the transcultural approach can be felt by the patient and the nurse caring for the patient (Hyatt et al., 2018).

CONCLUSION AND RECOMMENDATION

Four themes were obtained from the collected data: culturally congruent care, cultural and communication competency, integrity as a vital aspect of respect and consideration of other cultures, and challenges nurses face when caring for patients with cancer and their transcultural and patient-driven solutions. Caring is about giving hope, love, and services to patients based on their cultural sensitivity. Therefore, nurses should connect and interact effectively with people from many different cultural backgrounds as a part of cultural care. As nurses, it is important to have cultural communication with our patients to address commonalities across cultures and avoid points of cultural misconduct. Such communication facilitates care and transcultural services to patients with cancer by providing sensitivity and promoting dignity and respect. Overall, nursing care practices must ensure that all nurses embrace understanding diverse groups and build trust in patients seeking cancer care.

CONFLICTS OF INTEREST

None

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ORIGINAL ARTICLE

THE EFFECTIVENESS OF CADRE TRAINING USING CANCER EDUCATIONAL VIDEOS ON KNOWLEDGE AND SELF-EFFICACY

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ABSTRACT

Patients with cancer are at risk of death. There has been a lack of research on cancer-related training for health cadres. Meanwhile, they can potentially prevent cancer deaths because of their proximity to the community. This study aimed to determine the effectiveness of cancer educational videos on cadres' knowledge and self-efficacy in Yogyakarta. This was quasi-experimental research with a nonequivalent control group design. The purposive sampling technique was used to obtain data from 61 health cadre respondents. The inclusion criteria: older than 19 years old, a woman, and uses WhatsApp. The Cancer Knowledge and General Self-Efficacy Scale Questionnaires measurement instruments were used. Data analysis was conducted using an independent sample t-test, repeated ANOVA, and paired comparison post hoc. There was a significant difference in respondents' knowledge in the control and intervention groups ($p<0.05$). The intervention group's knowledge increased, and there was a moderate increase in knowledge in the control group. There was no significant change in cadres' self-efficacy in the intervention group ($p>0.05$), but there was a significant increase ($p<0.05$) in the control group. Therefore, cadres' training using cancer educational videos is effective for increasing cadres' knowledge only and not self-efficacy.

Keywords: *Cadres; cancer; knowledge; self-efficacy*

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INTRODUCTION

Cancer is the second leading cause of death after cardiovascular disease worldwide. In 2018, it was estimated that there were 18.1 million new cancer cases and 9.6 million deaths caused by cancer (World Health Organization, 2018). In Indonesia, cancer's prevalence is 136.2 per hundred thousand population. The Special Region of Yogyakarta had the highest cancer incidence among 34 provinces in Indonesia (Indonesian Ministry of Health, 2019).

Cancer may occur because of non-modifiable intrinsic risks and modifiable non-intrinsic risk factors (Wu et al., 2018). The risk factors for cancer include lifestyle factors, such as tobacco consumption, improper energy balance, which leads to obesity, an unhealthy diet, lack of physical activity, and excessive alcohol consumption (Arem & Loftfield, 2018). Grundy et al. (2016) reported that controllable factors and environmental risks cause 40.8% of cancer cases. Another study stated that the biggest contributors to the risk factors are tobacco use (15.1%) and excess body weight (6.3%) (Brown et al., 2018).

A person's knowledge of the risk factors for cancer plays a role in the prevention, early detection, and decision to seek cancer treatment (Elshami et al., 2020). Knowledge is related to myths and facts about cancer. Many myths about cancer in society are considered facts due to people's lack of understanding of the actual risk factors that cause cancer. These events can hinder the prevention, early detection, and treatment of cancer, which increases cancer incidence (Al-Azri, Al-Saadi, Al-Harrasi, & Panchatcharam, 2019).

The Health Belief Model theory explains that individuals will follow certain health actions because they feel vulnerable to certain conditions or diseases. In addition, these individuals believe that following these health measures can prevent them from contracting dangerous diseases (Norman & Conner, 2016).

Promotive and preventive actions, such as training on the early detection of cancer for health cadres, are one of the efforts implemented to control the increasing cancer incidence. Research about cancer generally focuses on one type of cancer and involves one group of health workers, for example, nurses only. However, nurses cannot always be able to educate people about cancer. Thus, cadres are expected to help educate society and develop follow-up plans related to public health (Indonesian Ministry of Health, 2014). Cadres' promotive and preventive efforts are hoped to prevent potential health problems in society (Solikhah et al., 2018). However, reports have found that most health cadres' knowledge regarding cancer, especially breast cancer, and its prevention and early detection, is in the low to moderate range (Yuhanah et al., 2019).

Next, self-efficacy has an essential role in early cancer detection and can improve health workers' confidence in carrying out their role (Sari et al., 2018). Knowledge and self-efficacy are correlated because knowledge is a factor that can increase a person's self-efficacy (Zamani-Alavijeh et al., 2019). Therefore, good knowledge, experience, and social support will increase the self-efficacy of cadres. The better the experience, social support, and knowledge of the cadres, the better their self-efficacy. Knowledge is the most dominant predictor factor (Rosdiana et al., 2018).

Kye et al. (2019) researched the effects of a cancer prevention education program on elementary school students' knowledge, attitude, self-efficacy, and intentions in South Korea. They discovered that educational interventions increased cancer prevention knowledge ($p = 0.005$). However, no effect was observed on self-efficacy ($p = 0.086$) To the best of our knowledge, studies focusing on cancer response training using educational videos and involving cadres as promotive and preventive agents are still not found in Indonesia. Therefore, this research investigated the effectiveness of educational videos during cadre training in Yogyakarta on their knowledge and self-efficacy related to cancer.

METHOD

Study design

This is a quasi-experimental study with a non-equivalent control group design.

Sample

This study was conducted in Yogyakarta from August to September 2021. The purposive sampling technique was used with the Lemeshow, Hosmer, Klar & Lwanga (1997) formula.

$$n = \frac{2\sigma^2(Z_{1-\alpha} + Z_{1-\beta})^2}{(\mu 1 - \mu 2)^2}$$

with σ: 2.28 (Purnamaningrum, 2011), $Z_{1-\alpha}$: 1% (2.326), $Z_{1-\beta}$: 1% (2.326), μ1-μ2: 2,78.

The total number of samples needed in this data collection was 29 respondents each for the intervention and control groups. The researchers added a 10% risk of respondents dropping out of the study. Therefore, the total sample for the intervention group was 33 respondents, and the control group was 33 respondents.

At the beginning, 40 respondents in the intervention group and 35 in the control group were willing to participate in the study. During the research, 11 respondents dropped out of the intervention group because they did not complete the pre-test (9 respondents), 1 respondent did not complete post-test I and II, and 1 respondent did not complete post-test II. In the control group, 3 respondents dropped out because 2 respondents did not complete post-test I and 1 respondent did not complete post-test II. Thus, the total sample was 61 cadres divided into two groups (29 in the intervention group and 32 in the control group).

The inclusion criteria included adult cadres (older than 19 years old), registered as cadres, female, able to speak the Indonesian language, can communicate well, have a mobile phone and WhatsApp application, and can read and write. Meanwhile, the exclusion criteria in this study were cadres with illness and physical weakness.

Instrument

A questionnaire about cancer knowledge developed by the researchers was used to determine the cadres' cancer knowledge. The questionnaire creation process is described below:

1. In the first stage, the researcher collected literature on the material used for the research instrument.
2. In the second stage, the researcher developed a cancer-related knowledge instrument.
3. Next, the researcher evaluated the validity of the content. A total of 30 questions showed essential results. The CVR value of the 30 item items shows CVR > 0.00, meaning 50% more than SME in the panel stating essential items (Azwar, 2019). The Content Validity Index (CVI) value is 0.95 (Essential). According to Davis in Azwar (2019) the recommended CVI value is 0.80, whereas Waltz et al. in Azwar (2019) state that the average CVI value for the conformity index standard is 0.90.
4. In the last stage, the researcher tested the construct validity and instrument reliability. Of the 30 question items on the knowledge questionnaire about the early detection of cancer, 27 items were declared valid and 3 invalid items (question numbers 1, 18, & 22). The 27 valid items with the lowest range of r-count values are 0.164 up to the highest calculated r-value of 0.586. According to Halin (2018), if the r-count value > r table or p-value <0.05, then the item items in the questionnaire are declared valid and if the r-count value <r table or p-value > 0.05, then the item items in the questionnaire are declared invalid. The results of the reliability test of the 27 question items on the cancer knowledge questionnaire obtained Cronbach alpha values of 0.658 > 0.60. Therefore, it can be concluded that this instrument has good reliability.

A general self-efficacy questionnaire was used to determine the cadre's self-efficacy. The self-efficacy instrument was developed by Schwarzer and Jerusalem (1995). This questionnaire has been adapted to Indonesia's language and context, and back-translation was conducted. Novrianto, Marettih, and Wahyudi (2019) state that the instrument's t-value is > 1.96 or positive, indicating that this general self-efficacy scale is valid.

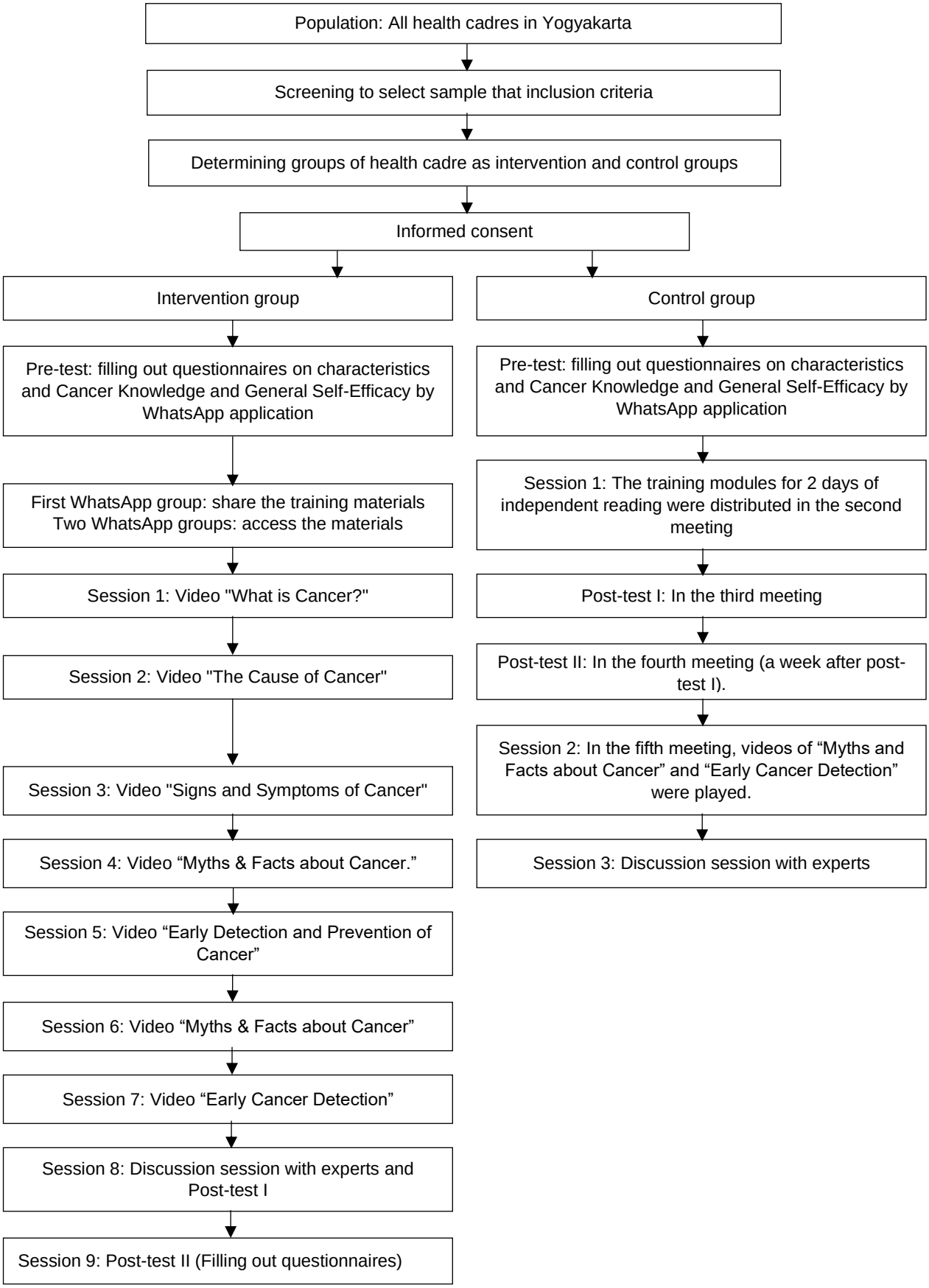

Figure 1. Flowchart study

Data collection and intervention

The data were collected by WhatsApp using a questionnaire about Cancer Knowledge and a General Self-Efficacy Questionnaire. In the intervention group, two WhatsApp groups were created. The first WhatsApp group was used to share the training materials, and the second WhatsApp group was for discussions. Two WhatsApp groups were created so the respondents could easily access the materials. The intervention was conducted for 9 consecutive days through WhatsApp. Each meeting was held for 4 hours, from 2 p.m. to 6 p.m. The first meeting's agenda comprised an introduction, having the respondents fill in the informed consent forms and the pre-test. During the first part of the second meeting, we discussed "What is Cancer?" Then, in the second, third, and fourth meetings, the following topics were discussed: "The Cause of Cancer," "Signs and Symptoms of Cancer," and "Myths & Facts about Cancer." Then, the "Early Detection and Prevention of Cancer" topic was presented in the fifth meeting. The educational videos with topics "Myths & Facts about Cancer" and "Early Cancer Detection" were played in the sixth and seventh meetings. Lastly, in the eighth meeting, there was a discussion with experts. In this meeting, post-test I was also conducted, while post-test II was done in the ninth meeting or a week after the first post-test.

In the control group, the first meeting's agenda comprised an introduction, having the respondents fill in the informed consent forms and the pre-test. The training modules for 2 days of independent reading were distributed in the second meeting. Post-test I was done in the third meeting, while post-test II was done in the fourth meeting (a week after post-test I). In the fifth meeting, videos of "Myths and Facts about Cancer" and "Early Cancer Detection" were played. Then, the group had a discussion session with experts.

Ethical considerations

This study had obtained a research ethics feasibility permit from the Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing UGM Yogyakarta with Ref No: KE/FK/0168/EC/2021 and a research permit from the Sleman District Health Office with No: 070/333.

Data analysis

The data were processed using the independent sample t-test, the Repeated Measure ANOVA test, and the post hoc test through a computer program.

RESULTS

Respondents' Characteristics

The respondents in the intervention and control groups were aged 50 or lower. Most of them completed their high school education, were unemployed, earned less than the minimum wage in Sleman Regency, had no relatives who had cancer, and had no history of attending a training session about cancer. In the intervention group, most respondents had been health cadres for more than five years, while those in the control group were health cadres for less than a year (Table 1).

Category	Intervention (n = 29)	Control (n = 32)	*p*-value
	n (%)	n (%)	
Respondent age			
• < 50 years	19 (65.5)	28 (87.5)	0.36
• > 50 years	10 (34.5)	4 (12.5)	
Education			
• Primary school	2 (6.9)	2 (6.3)	0.18
• Junior high school	4 (13.8)	7 (21.9)	
• Senior high school	18 (62.1)	15 (46.8)	
• Diploma	1 (3.4)	6 (18.8)	
• Bachelor	4 (13.8)	2 (6.3)	
Profession			
• Work	7 (24.1)	6 (18.8)	0.49
• Does not work	22 (75.9)	26 (81.2)	
Wage			
• < Sleman Regency Minimum Wage Rp1.903.500	25 (86.2)	28 (87.5)	0.40
• ≥ Sleman Regency Minimum Wage	4 (13.8)	4 (12.5)	
History of relatives suffering from cancer			
• No	21 (72.4)	25 (78.1)	0.85
• Yes	8 (27.6)	7 (21.9)	
Length of time being a health cadre			
• < 1 year	7 (24.1)	11 (34.4)	0.15
• 1-3 year	9 (31.0)	6 (18.8)	
• 3- 5 year	3 (10.3)	8 (25.0)	
• > 5 years	10 (34.5)	7 (21.9)	
History of getting cancer training			
• Yes	9 (31.0)	11 (34.4)	0.35
• No	20 (69.0)	21 (65.6)	

Homogeneity test (Levene test)

The homogeneity test on the respondents' characteristics revealed no difference between the control and intervention groups. Therefore, the respondents' characteristics are homogeneous because each aspect has a p-value greater than 0.05.

Table 2. The effects of educational video training on cadres' knowledge (n = 61)

Variable	Group	Intervention (n = 29)		Control (n = 32)	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value
Knowledge	Pre	19.41 (3.11)	<0.001*	20.19 (2.59)	0.004*
	Post I	22.89 (2.35)		21.91 (2.88)	
	Post II	23.07 (2.60)		21.47 (2.95)	

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

As shown in Table 2, there is a significant difference between the intervention and control group knowledge measured in the pre-test, post-test I, and post-test II. In the intervention group, the p-value was 0.001 and the p-value of the control group was 0.004.

Table 3. The posthoc test results of cadres' knowledge (n = 61)

Variable	Group	Intervention (n = 29)			Control (n = 32)		
		Mean difference	p-value	d	Mean difference	p-value	d
Knowledge	Pre-post I	-3.48	<0.001*	1.3	-1.72	0.003*	0.6
	Pre-post II	-3.65	<0.001*	1.3	-1.28	0.009	0.5
	Post I-post II	-0.17	1.00	0.07	0.44	0.66	-0.15

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

Table 3 shows that there was a knowledge difference in the intervention group in pretest-posttest I and pretest-posttest II p<0.05 with a Cohen (d) value of 1.3. This result suggests that there was an effect as the knowledge score increased. In the control group, the knowledge difference was found in pretest-posttest I and pretest-posttest II p<0.05 with a Cohen (d) value of 0.6 and 0.5. This result indicates that there was a moderate effect from the knowledge increase. However, the posttest I - posttest II results in the intervention and control groups showed no significant knowledge difference, p>0.05.

Table 4. The effects of educational video training on cadres' self-efficacy (n = 61)

Variable	Group	Intervention (n = 29)		Control (n = 32)	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value
Self-efficacy	Pre	39.86 (3.81)	0.54	41.72 (6.05)	0.025*
	Post I	39.31 (5.51)		41.06 (5.71)	
	Post II	38.62 (5.99)		42.75 (5.54)	

*Repeated ANOVA test, *Significant p<0.05*

Table 4 shows that there was no significant difference in self-efficacy in the intervention group (p>0.05). Meanwhile, in the control group, there was a significant difference in self-efficacy (p<0.05).

Table 5. The posthoc test results on cadres' self-efficacy (n = 61)

Variable	Group	Intervention (n = 29)			Control (n = 32)		
		Mean difference	p-value	d	Mean difference	p-value	d
Self- efficacy	Pre-post I	1.26	1.00	-0.11	0.66	1.00	-0.11
	Pre-post II	0.45	1.00	-0.25	-1.03	0.95	-0.11
	Post I-post II	0.63	0.85	-0.12	-1.69	0.02*	0.3

*Paired-wise comparison test (Bonferroni), *Significant p<0.05*

As shown in Table 5, the intervention group in pre-test-post-test I, pre-test-post-test II, and post-test I-post-test II did not show any difference or increase in self-efficacy. In the control group, the difference and increase in self-efficacy was seen in post-test I-post-test II. Meanwhile, the pre-test-post-test I and pre-test-post-test II showed no difference or increase in self-efficacy.

Table 6. The differences between the intervention and control groups' knowledge about early detection, myths, and facts about cancer (n = 61)

Variable	Group	n	Mean (SD)	*p*-value
Knowledge	Pre intervention	29	19.41 (3.11)	0.29
	Pre control	32	20.19 (2.59)	
	Post I intervention	29	22.89 (2.35)	0.15
	Post I control	32	21.91 (2.88)	
	Post II intervention	29	23.07 (2.60)	0.03*
	Post II control	32	21.47 (2.95)	

*Independent sample t-test, *Significant p<0.05*

Table 6 shows that there was no significant difference in pre-test scores between the intervention group and the control group as the p-value was 0.29 (p>0.05). Meanwhile, the post-test I values between the intervention and the control groups showed a difference based on the average value. The average value of the intervention group was 22.89, and the value of the control group was 21.91. However, in terms of significance level, there was no significant difference with p = 0.15 (p>0.05). Additionally, the values obtained in post-test II by the intervention and control groups showed a significant difference in knowledge p = 0.03 (p<0.05).

Table 7. The differences between the intervention group and control groups' self-efficacy (n = 61)

Variable	Group	N	Mean (SD)	p-value
Self- efficacy	Pre intervention	29	39.86 (3.81)	0.16
	Pre control	32	41.72 (6.05)	
	Post I intervention	29	39.31 (5.51)	0.23

Variable	Group	N	Mean (SD)	p-value
	Post I control	32	41.06 (5.71)	
	Post II intervention	29	38.62 (5.99)	0.007*
	Post II control	32	42.75 (5.54)	

*Independent sample t-test, *Significant p<0.05*

Table 7 indicates that there was no significant difference in self-efficacy in the pre-test scores between the two groups, p = 0.16 (p>0.05). The p-value of post-test I between the intervention and control groups is p = 0.23 (p>0.05), meaning there is no significant difference. Meanwhile, the p-value of post-test II is p = 0.007 (p <0.05), which means that there is a significant difference in self-efficacy between the intervention and control groups.

DISCUSSION.

Education for the community regarding the importance of cancer prevention and risk has been widely conducted in Indonesia. However, intensive training using modules and videos for health cadres about cancer and conducting early examinations is rarely done. This study proves that such training improves cadres' knowledge and understanding of cancer. Moreover, the training provided more details on conducting an early self-examination and knowing the difference between myths and facts.

The results obtained after providing training for cancer cadres using educational videos revealed that there is a significant knowledge difference in the intervention and control groups (p<0.05) before and after training (pre-test-post-test I and pre-test-post-test II). The intervention group experienced a significant increase in knowledge, and the control group experienced a moderate increase in knowledge. This increase in knowledge aligns with the research by Silalahi et al., (2018), which showed that audio-visual media and booklets effectively increase knowledge with a p-value of <0.001. Wolf et al., (2020) also found that the intervention using educational videos increased respondents' knowledge (p ≤ 0.001).

Knowledge can be gained through the senses: sight, hearing, smell, taste, and touch (Notoatmodjo, 2014). It can also be interpreted as a collection of experiences, information, and insights that a person can use to predict and integrate new experiences and information (Mohajan, 2016). Interventions with educational videos about cancer can increase cadres' enthusiasm for training about the importance of cancer prevention and its risks. This enthusiasm can encourage cadres to listen to the explanations and watch the displayed videos. Therefore, the knowledge of the intervention group increased.

Most of this study's respondents never attended training on cancer. Hence, this research taught the respondents about early cancer detection and myths and facts about breast, cervical, and ovarian cancers. Their knowledge about these aspects was developed. This study's results align with a study by Niman et al., (2021), where the training intervention provided a significant change or improvement in the respondents' knowledge than before the training was conducted (p-value = 0.001). Training sessions aim to provide coaching and develop the capabilities of human resources to improve and meet the expected goals (Sugandhi, 2016).

The training intervention the researchers conducted was equipped with educational audiovisual media. This media type was used as a communication method and tool in the learning process. When used in communication, it can deliver the message more clearly to the audience. Moreover, it is a good tool for explaining, can overcome the limitations of space and time, is more realistic, and can be repeated or stopped at any time (Susilana & Riyana, 2013).

This study showed a significant difference between the intervention and control groups regarding knowledge obtained in post-test II (p<0.05). This result indicates that the intervention provided an effective impact to increase knowledge. Therefore, although the training was conducted online without face-to-face meetings due to restrictions on community activities, health cadres could still gain knowledge about cancer through educational videos.

Furthermore, this study found no significant difference in self-efficacy in the intervention group (p>0.05). These results do not align with the research conducted by Sutarjo et al., (2016). Their research found that the training conducted about community mental health nursing significantly influences the cadre's self-efficacy. Moreover, a study conducted by Indrianingsih et al., (2020) also found that health education could increase caregivers' self-efficacy (p<0.05).

However, training interventions do not always have the same impact on self-efficacy. Capron Puozzo & Audrin (2021) provided training where respondents had to present an analysis of French texts creatively and found that the training did not have a significant impact on self-efficacy. However, respondents reported having a better general understanding and were more familiar with the topic after the intervention. \ Another study by Kye et al., (2019) focused on cancer prevention education in elementary school students. They provided an intervention in the form of watching a music video about cancer prevention during two 40-minute sessions. The results showed that the respondents' self-efficacy did not increase, but there was a significant increase in the knowledge variable. These results may be due to the duration of the educational intervention, which may be too short for a significant change in the self-efficacy variable.

Self-efficacy is a person's belief to produce something that is targeted. Thus, it can influence events and affect one's life. Good self-efficacy can increase a person's achievement and well-being. It can also make one's belief firmer that a difficult task is a challenge rather than a threat that must be avoided. Self-efficacy can be changed through some activities, such as training (Ardiyanti and Alsa, 2015). Self-efficacy can be formed through four sources: the experience of successfully performing a task or overcoming a problem, the experience of others/modeling through observation of the success of others, verbal persuasion, and physiological conditions and moods. Self-efficacy can improve because of the experiences that an individual has gone (Juwel and Ahsan, 2019).

In this study, the intervention group did not experience a significant increase in self-efficacy. The pre-test score was 39.86, the post-test I score was 39.31, and the post-test II score was 38.62. Therefore, the cadres' increase in knowledge did necessarily improve their self-efficacy. The increased knowledge made the respondents realize they had no adequate knowledge, decreasing their self-efficacy. However, it should be noted that the training provided was

only limited to verbal persuasion, which was shown through interesting educational videos and discussions with experts. The respondents had not conducted their duties as cancer response cadres who do health promotions about cancer response in the community.

In terms of limitations, the village selection for this study was not randomized. Due to the COVID-19 pandemic and the restrictions on community activities, several villages refused to participate in the research. Therefore, purposive sampling was used to collect samples from a village willing to participate and meet the inclusive and exclusive criteria.

CONCLUSION AND RECOMMENDATION

Providing educational videos during cancer training effected cadres' knowledge. After the intervention, their knowledge increased, but there was no effect on cadres' self-efficacy. Therefore, educational videos can improve the cancer knowledge of health cadres.

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