Jurnal Ners
Jurnal Ners
Vol. 16, No. 2 October 2
http://dx.doi.org/10.20473/jn.v16i2.22626

Original Research

Clinical Profile and Nursing Diagnosis of the Newborn in a Special Care Nursery (SCN) Unit

Defi Efendi[1], Yeni Rustina[2] and Dian Sari[3]

[1] Department of Pediatric Nursing, Faculty of Nursing Universitas Indonesia
Neonatal Intensive Care Unit (NICU), Universitas Indonesia Hospital
[2] Department of Pediatric Nursing, Faculty of Nursing Universitas Indonesia
Head of Nursing Committee, Universitas Indonesia Hospital
[3] Prima Nusantara Bukittinggi Health Institute, West Sumatra Indonesia

ABSTRACT

Introduction: A good comprehension of the clinical profile and nursing diagnosis of newborn in Special Care Nursery (SCN) unit guides decision-making by nurses. In addition, it can become an initial basis for making plans for improving quality of care, management and nursing research. The purpose of this study was to identify clinical profile and nursing diagnosis of newborns in an SCN unit.

Methods: It is a quantitative, cross-sectional, descriptive study in SCN (Level II and III) with a sample of 77 medical records of newborns less than 31 days old in a national referral hospital. Descriptive analysis was used to identify demographic characteristic, the medical diagnosis and nursing diagnosis of newborns at birth and hospitalization.

Results: Newborns treated in SCN unit are dominated by preterm with low birth weight (74%). Respiratory system disorders (55.8%) and infections (35.1%) dominate newborn problems both at birth or coming. Most nursing diagnoses when the baby is born or coming are the risk of infection (90.9%) and ineffective breathing patterns (76.6%). As for the treatment, most diagnoses show the risk of infection and hypovolemia.

Conclusion: A good clinical profile and nursing diagnosis of newborns can guide nurses to decision-making. Continuous update on nursing diagnosis determination, improvement of nurses' knowledge about the signs of deterioration, and future research that prioritizes issues in neonates are required to optimize nurses' role in SCN units.

ARTICLE HISTORY

Received: October 21, 2020
Accepted: April 29, 2021

KEYWORDS

newborns; nursing diagnosis; special care nursery

CONTACT

Defi Efendi
defiefendi@ui.ac.id
Department of Pediatric Nursing, Faculty of Nursing Universitas Indonesia
Neonatal Intensive Care Unit (NICU), Universitas Indonesia Hospital

Cite this as: Efendi, D., Rustina. Y., & Sari, D. (2021). Clinical Profile and Nursing Diagnosis of the Newborn in a Special Care Nursery (SCN) Unit. *Jurnal Ners, 16*(2). 101-105. doi:http://dx.doi.org/10.20473/jn.v16i2.22626

INTRODUCTION

Neonates have the highest risk of health issues that can potentially lead to death. Globally, almost 2.5 million babies in the world die within their first month of life (neonatal age). Most neonatal death (75%) happens in the first week of life, and approximately one million neonates die in the first 24 hours of life. Premature birth, perinatal asphyxia, infection, and birth defects are the main causes of neonatal mortality (WHO, 2019). The Indonesia Demographic and Health Survey (IDHS) in 2017 indicated that the neonatal mortality rate was 15 per 1,000 live births. This number showed a decrease compared to 2012, when the neonatal mortality rate was 19 per 1,000 live birth (Ministry of Health - Republic of Indonesia, 2018).

The reduction of neonatal mortality requires cooperation among healthcare professionals, families, and the community to provide excellent and continuous health services for mothers during pregnancy and delivery, and for mothers and neonates during the neonatal period (Ministry of Health - Republic of Indonesia, 2010). Among the delivery of health services to neonatal is services to the perinatology unit. One of the important elements in providing quality services in the perinatology unit is nursing. The 2014 constitution of The Republic

Indonesia mandated that nursing services are an integral part of health services based on nursing knowledge and tips (Constitution of The Republik Indonesia, 2014). Through their knowledge and skills, nurses are expected to be able to make a major contribution in the process of solving various problems in the unit. Article 29 No. 38 of the constitution outlines the authority of nurses to be able to provide comprehensive nursing services including nursing care, executing assignments overflow, as counselors, service managers, and researchers.

In nursing care, nurses are guided through the nursing process, which includes assessment, nursing diagnosis, intervention, implementation and evaluation. One of the important elements in the nursing process is the nursing diagnosis. Nursing diagnoses help nurses see the patient holistically and create nursing plans. A good nursing diagnosis can result in good quality of care and strengthen their professional role (Håkans, 2012). To be able to achieve this, basic data are needed that describe the initial conditions of the newborn along with the nursing diagnosis that is enforced. Nursing studies about it are limited and there is no research that describes the uniqueness of newborns in Indonesia.

Based on this, it is necessary to build baseline data related to neonatal conditions in the form ofclinical profiles and diagnosis of neonates undergoing hospitalization in an SCN unit. This basic data for nursing development can be further utilized such as (1) developing nursing intervention protocols based on priority problems, (2) making nursing care standards based on the most common nursing diagnoses, (3) developing research based on priority nursing problems.

MATERIALS AND METHODS

A cross-sectional study was used to explore clinical profile and nursing diagnosis neonates in an SCN. We classify SCN as level II and III of care according to the American Association of Pediatrics (AAP) 2012 (Barfield et al., 2012). The number of samples required in the quantitative study was determined using a categorical descriptive formula in accordance with the expected main outcome (Dahlan, 2016) (i.e., the nursing diagnosis). With 5% alpha, 20% nursing diagnosis proportion, and 0.09 precision, thisresulted in 76 for the minimum number of samples. Therefore, this study examined 77 medical records (MR), which were selected by using a proportional random sampling technique. Samples comprised complete documents for babies less than 31 days old who were born between January and December, 2016 in a national referral hospital. The medical record includes neonatal demographic data, neonatal symptom signs at birth and hospitalization, medical diagnosis and nursing diagnosis at birth and hospitalization. These data were analyzed descriptively using the Statistical Package for Social Sciences (SPSS). The descriptive analysis of the quantitative variables involved of percentage, mean, standard deviation (SD). Data were collected in a special care nursery unit in a national referralhospital between June and August, 2017.

This research obtained ethical approval from the institutional review board of the Faculty of Medicine Universitas Indonesia: No. 671/UN2.F1/ETIK/2017.

RESULTS

The results of an analysis of the quantitative data are presented in the following table and graphics. Table 1 is the demographic data of neonates, while graphics 1, 2, and 3 present the signs and symptoms at birth and during treatment, the medical diagnosis and the nursing diagnosis at birth and during treatment, respectively.

The respondents of this study were dominated by premature infants with average 33.57 weeks, birth weight average 2016.97 gr. Forty-nine babies were born by caesarean delivery in the local hospital (not a referral hospital) (65%). Fifty-four percent were male and 45% were female.

The newborns' signs and symptoms during hospitalization were dominated by mucosal secretions of the respiratory tract (n=29 (37.7%), desaturation (n=25 (32.5%)), and chest wall retraction (n=24 (31.2%)). Hypotonia, grunting, cold acral and pale body were the clinical conditions that were found only in the first few hours of life and were not reported in the following days.

The most common disorders and medical diagnoses at birth were respiratory system disorders (n=43), immunity/infection disorders (n=27), cardiovascular system disorders (n=14), and surgery case. The number of respondents with these disorders increased with the length of stay. Hyperbilirubinemia, indigestion, and central nervous system disorders were new problems that arose after treatment.

Risk of infection was the most frequent diagnosis identified by nurses on the first day of life and during treatment. During hospitalization, fluid volume deficit, ineffective airway clearance, imbalanced nutrition (i.e., less than body requirements), and ineffective breathing patterns were also diagnosed by nurses.

DISCUSSION

This study aimed to identify clinical profile neonatal (demographic data, neonatal symptom signs at birth and hospitalization, medical diagnosis at birth and hospitalization) and nursing diagnosis newborn at birth and hospitalization in a Special Care Nursery from admission and during hospitalization. An SCN unit specializes in taking care of neonates aged 0–28 days. Neonates have the highest risk of death—up to 60–80% (Ministry of Health - Republic of Indonesia., 2018; WHO, 2018). Most neonatal patients (74.02%) who were treated in the SCN unit were premature infants. This is in line with the observation of Chawanpaiboon et al. (2019), who included Indonesia

in the five countries with the greatest number of preterm births. Premature infants are helpless human beings with diverse health problems (Trembath, Payne, Colaizy, Bell, & Walsh, 2016) who need complex support, both from specialized equipment and services (Trembath et al., 2016). Under certain conditions, preterm infants in an SCN unit of a hospital must be referred to another hospital.

In this study, respiratory disorder was the main problem faced during treatment. This was because most of the respondents were preterm infants. Parkash, Haider, Khoso, and Shaikh, (2015) state that 33% of treated neonates were admitted with a gestational age of less than 28 weeks, resulting in respiratory disorder being the main reason for babies to receive treatment, except if the baby was born with congenital anomalies or surgical conditions. Caesarean delivery was also considered a factor contributing to respiratory disorder in neonates (Kotecha, Gallacher, & Kotecha, 2016). Chest retraction, cyanosis, and grunting were the most frequently found symptoms in newborns, and these also led to the syndrome of respiratory disorder (Parkash et al., 2015). Another problem in this research is oxygen desaturation. Oxygen desaturation in preterm infants happened when oxygen saturation fell below 80%/ or 85% for >10 seconds (Chawanpaiboon et al., 2019; Fairchild. Nagraj, Sullivan, Moorman, & Lake, 2019; Paliwoda, New, Davies, & Bogossian, 2018). Martinez et al. (2012) state that desaturation and bradycardia in premature infants is related to cardiorespiratory instability and respiratory control immunity.

Table 1. The Demographic of Neonates (n=77)

Variable	N	(%)	Mean	Min-Max	SD	CI ± 95%
Sex						
Male	42	54%				
Female	34	45%				
Ambiguous genitalia	1	1%				
History of Resuscitation						
Yes	35	45%				
No	42	55%				
Birthplace						
On- site	65	84%				
Off-site / Referral	12	16%				
Type of Labor						
Normal	28	36%				
Sectio Caesarea	49	64%				
Birth Weight						
> 4000 gr	2	3 %				
Normal (2500-4000 gr)	18	23%				
Low Birth Weight (1500-2500 gr)	32	42%				
Very Low Birth Weight (1000- 1500 gr)	20	26%				
Extremely Low Birth Weight (<1000 gr)	5	6%	2016.97	680- 4110	844.885	1825.21-2208.74
Gestational Age						
Extremely preterm < 28 *week*	8	10.3%				
Very preterm 28-< 32 *week*	13	16.9%				
Moderate to late preterm 32-< 37 week	36	46.7%				
Term 37-41 *week*	20	26.1%	33.57	24-41	3.928	32.68-34.46
Post term ≥ 42 *week*	0	0%				

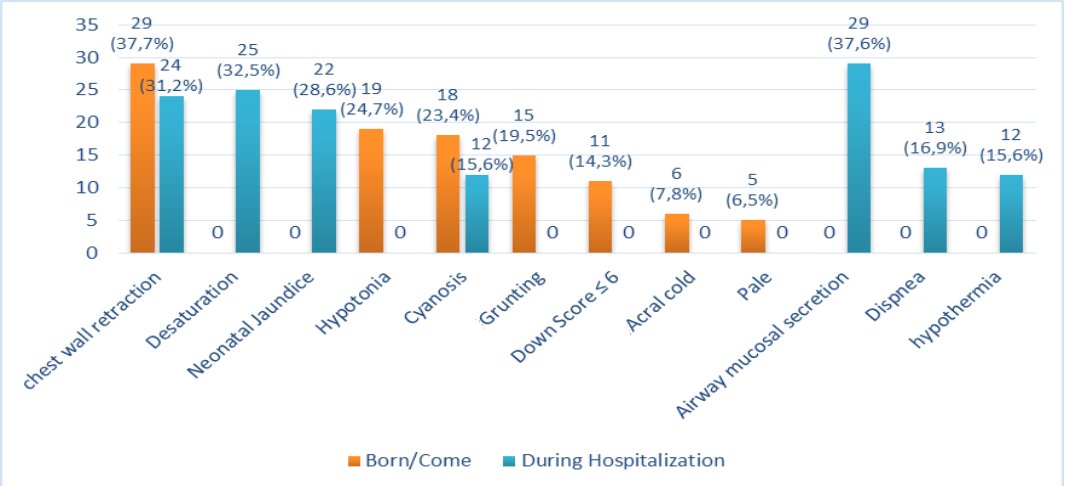

Figure 1. Signs and Symptoms of the Newborn at Birth and During Hospitalization

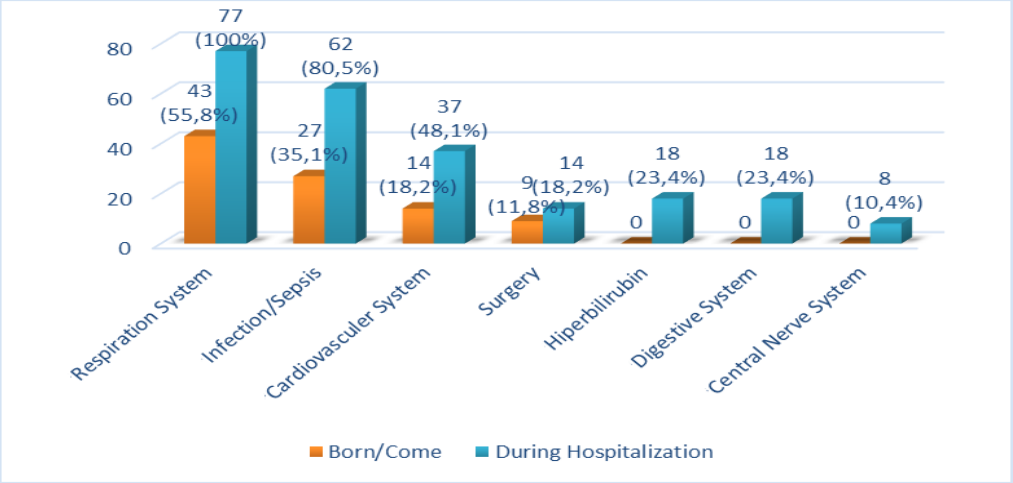

Figure 2. Medical Diagnosis at Birth and During Hospitalization

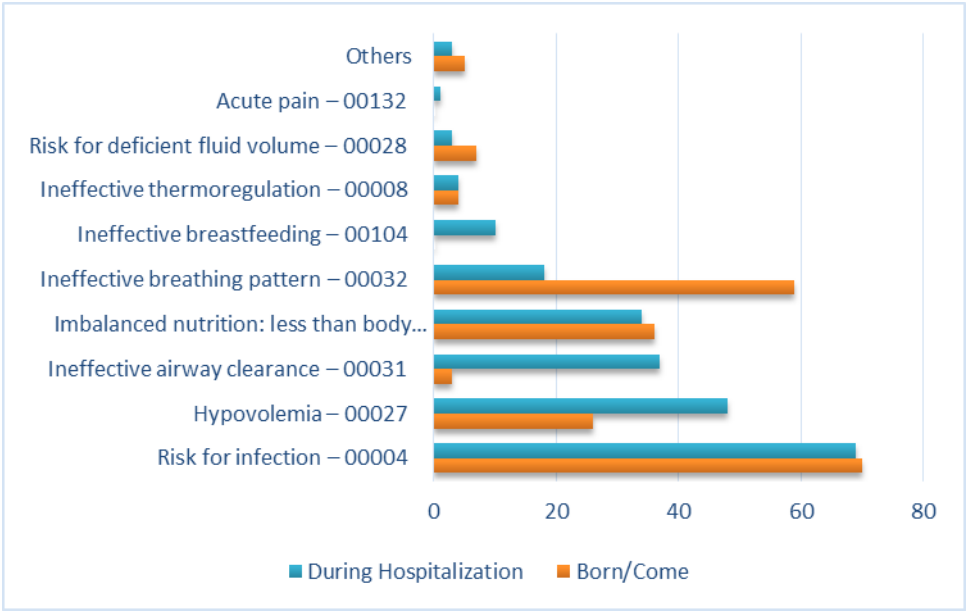

Figure 3. Nursing Diagnosis at Birth and During Hospitalization

In line with symptoms, nursing diagnosis of ineffective breathing patterns is one of the biggest problems with an incidence of more than 75% when the baby is born or comes to the hospital.

Neonatal sepsis was the most common problem in this study of hospitalized neonates (i.e., 62 respondents (80.5%)). Globally, infection was the second leading cause of neonatal mortality(Trembath et al., 2016; WHO, 2019) and is an issue especially in developing countries (Adatara et al., 2018). In our study, risk of infection was the most frequently identified nursing diagnosis—69 respondents (89.61%) identified risk for infection. Many factors contribute to the increased susceptibility of premature babies to infection. They are innate immunity consisting of barrier, inflammatory response and cells that fight infection having not developed significantly compared to term infants (Collins, Weitkampb, & Wynn (2018). In line with this, the infection risk nursing diagnosis became the most frequently raised diagnosis both at birth / at and during hospitalization.

The most common nursing diagnosis in this research is deficient fluid volume. Problem in fluid in neonates likes dehydration generally results from inadequate fluid intake, often a result of inadequate breast-feeding (Jobe, 2007). In addition, when coordination is poor between sucking and swallowing, especially in the late preterm infant (GA 34-36 weeks), it increases the risk of dehydration. This condition was related to the immaturity of gastrointestinal function and NEC/necrotizing enterocolitis (Nsibande et al., 2013).

CONCLUSION

The new-borns treated in the SCN unit were mostly late preterm babies with low birth weight (1500–2500 gram). Respiratory distress and infection dominated the nursing diagnoses at birth/admission and during treatment. The most common nursing diagnoses were risk for infection and ineffective

breathing pattern. Continuous update on nursing diagnosis determination, improvement of nurses' knowledge about the signs of deterioration, and future research that prioritizes issues in neonates are required to optimize nurses' role in SCN units.

REFERENCES

Adatara, P., Afaya, A., Salia, S. M., Afaya, R. A., Kuug, A. K., Agbinku, E., & Agyabeng-fandoh, E. (2018). Risk Factors for Neonatal Sepsis : A Retrospective Case-Control Study among Neonates Who Were Delivered by Caesarean Section at the Trauma and Specialist Hospital , Winneba , Ghana. *Biomed Research International*, 7. https://doi.org/https://doi.org/10.1155/2018/6153501

Barfield, W. D., Papile, L. A., Baley, J. E., Benitz, W., Cummings, J., Carlo, W. A., Kumar, P., Polin, R. A., Tan, R. C., Watterberg, K. L., Macones, G., Jefferies, A. L., Mainous, R. O., Raju, T. N. K., Wang, K. S., & Couto, J. (2012). Levels of neonatal care. *Pediatrics*, *130*(3), 587–597. https://doi.org/10.1542/peds.2012-1999

Chawanpaiboon, S., Vogel, J. P., Moller, A. B., Lumbiganon, P., Petzold, M., Hogan, D., Landoulsi, S., Jampathong, N., Kongwattanakul, K., Laopaiboon, M., Lewis, C., Rattanakanokchai, S., Teng, D. N., Thinkhamrop, J., Watananirun, K., Zhang, J., Zhou, W., & Gülmezoglu, A. M. (2019). Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. *The Lancet Global Health*, *7*(1), e37–e46. https://doi.org/10.1016/S2214-109X(18)30451-0

Collins, A.M., Jörn-Hendrik Weitkampb, J-H, & Wynn, J.L. (2018). Why are preterm newborns at increased risk of infection? *Archives of Disease in Childhood - Fetal and Neonatal Edition*, *103*(=), F391–F394. https://doi.org/10.1136/archdischild-2017-313595

Constitution of The Republik Indonesia. (2014). *Constitution of The Republik Indonesia about Nursing*.

Dahlan, M. S. (2016). *Besar Sampel dalam Penelitian Kedokteran dan Kesehatan* (5th ed.). Epidimiologi Indonesia.

Fairchild, K. D., Nagraj, V. P., Sullivan, B. A., Moorman, J. R., & Lake, E. (2019). Oxygen desaturations in the early neonatal period predict development of bronchopulmonary dysplasia. *Pediatr Res*, *85*(7), 987–993. https://doi.org/10.1038/s41390-018-0223-5.Oxygen

Håkans, V. B. (2012). Nurses' perception of nursing diagnosis. *NI 2012 : 11th International Congress on Nursing Informatics, June 23-27, 2012, Montreal, Canada. International Congress in Nursing Informatics (11th : 2012 : Montreal, Quebec)*, *2012*(2006), 54.

Jobe, A. H. (2007). Neonatal dehydration and neurodevelopment. *The Journal of Pediatrics*, *151*(2), 32887.

Kotecha, S. J., Gallacher, D. J., & Kotecha, S. (2016). The respiratory consequences of early-term birth and delivery by caesarean sections. *Paediatric Respiratory Reviews*, *19*, 49–55. https://doi.org/10.1016/j.prrv.2015.12.002

Martinez, A. M., Thi, D., Khu, K., Boo, N. Y., Neou, L., Saysanasongkham, B., & Partridge, J. C. (2012). Barriers to neonatal care in developing countries : Parents ' and providers ' perceptions. *Journal of Pediatrics and Child Health*, *48*, 852–858. https://doi.org/10.1111/j.1440-1754.2012.02544.x

Ministry of Health - Republic of Indonesia. (2010). *Neonate Service Pocket Book (Buku Saku Pelayanan Neonatus).* Ministry of Health - Republic of Indonesia.

Ministry of Health - Republic of Indonesia. (2018). *Indonesian Health Profile for 2017 (Profil Kesehatan Indonesia Tahun 2017)*. Ministry of Health - Republic of Indonesia. www.kemenkes.go.id

Nsibande, D., Doherty, T., Ijumba, P., Tomlinson, M., Jackson, D., Sanders, D., & Lawn, J. (2013). Assessment of the uptake of neonatal and young infant referrals by community health workers to public health facilities in an urban informal settlement, KwaZulu-Natal, South Africa. *BMC Health Services Research*, *13*(1), 1. https://doi.org/10.1186/1472-6963-13-47

Paliwoda, M., New, K., Davies, M., & Bogossian, F. (2018). Physiological vital sign ranges in newborns from 34 weeks gestation: A systematic review. *International Journal of Nursing Studies*, *77*(October 2017), 81–90. https://doi.org/10.1016/j.ijnurstu.2017.10.004

Parkash, A., Haider, N., Khoso, Z. A., & Shaikh, A. S. (2015). Frequency , causes and outcome of neonates with respiratory distress admitted to Neonatal Intensive Care Unit , National Institute of Child Health , Karachi. *Journal of Pakistan Medical Association*, *65*(7), 771–775.

Trembath, A. N., Payne, A. H., Colaizy, T. T., Bell, E. F., & Walsh, M. C. (2016). The problems of moderate preterm infants. *Seminars in Perinatology*, *40*(6), 370–373. https://doi.org/10.1053/j.semperi.2016.05.008

WHO. (2018). *Care of the preterm and low-birth-weight newborn*. https://www.who.int/maternal_child_adolescent/newborns/prematurity/en/

WHO. (2019). *Newborns: Reducing mortality*. http://www.who.int/mediacentre/factsheets/fs333/en/

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2, October 2021
http://dx.doi.org/10.20473/jn.v16i1.22785

Original Research

Parental Interactions Associated with Adolescent Health Risk Behavior: Premarital Sexual and Aggressive Behavior

Ilya Krisnana, Praba Diyan Rachmawati, Iqlima Dwi Kurnia and Nur Sayyid J. Rummy

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Introduction: Interactions within the family will determine the behavior of adolescents. Lack of interaction in adolescents is a risk factor for adolescent behaving deviant, among others, unmerried sexual and aggressive behaviors. The purpose of this study was to analyze the relationship between parental interaction and the premarital sexual and aggressive behavior among adolescents.

Methods: A cross-sectional approach was taken. The sample consisted of 744 adolescents from junior high school and senior high school in Java Island aged 13 - 19 years old who had completed a Google form. The independent variable was parent interaction while the dependent variable was premarital sexual and aggressive behaviors. The PACHIQ-R questionnaire was used for measuring parent interaction. While the dependent variable was using checklist questionnaire. The data was analyzed using Spearman Rank correlation with a level of significance α=0.05.

Results: The results show that there is a correlation between the parent interactions and premarital sexual (p=0.007; r=0.100) and aggressive behavior among adolescents (p=<0.001;r=0.156). Parental interaction has an association on the adolescent's behavior, especially in terms of premarital sexual and aggressive behavior.

Conclusion: Nurses need to provide education not only to parents, but also for adolescents to prevent premarital sexual and aggressive behaviors among adolescents in any media that available.

ARTICLE HISTORY

Received: October 24, 2020
Accepted: June 03, 2021

KEYWORDS

health risk; parent-child relation; sexual behavior; aggression; adolescent

CONTACT

Ilya Krisnana
✉ ilya-k@fkp.unair.ac.id
Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

Cite this as: Krisnana, I., Rachmawati, P. D., Kurnia, I., D., & Rummy, N. S. J. (2021). Parental Interactions Associated with Adolescent Health Risk Behavior: Premarital Sexual and Aggressive Behavior. *Jurnal Ners, 16*(2). 106-110. doi:http://dx.doi.org/10.20473/jn.v16i1.22785

INTRODUCTION

Chemotherapy Risky behaviors in adolescents greatly affect their health (Achhab et al., 2016). The behaviors include fighting, drug use and extortion. One of the behaviors that is less often in the spotlight is sexual behavior when dating (Catur, 2015). It is also supported that the factors that influence adolescent sexual behavior include the adolescent's parental relationships, negative peer pressure, an understanding of religion (religiosity) and exposure to pornographic media (Arista, 2015; Murdiningsih, Rosnani, & Arifin, 2016; Yusuf, Bahiyah, Nihayati, & Wiyono, 2017). Parental interactions have been shown to be associated with risky behavior in adolescents (Kurnia et al., 2019)(Krisnana, Diyan, Yuni, Arief, & Dwi, 2019). The impact of aggressive behavior can be seen from the impact on both the perpetrators and victims. The impact of the perpetrators is that they will be shunned and not liked by others. The impact of the victim includes physical and psychological pain and losses due to aggressive behavior (Restu & Yusri, 2013).

Based on a reproductive health survey conducted by the National Family Planning Board (BKKBN) 2017, 67% of adolescents were dating, 18,6% boys had kissed each other and 5% of adolescent (male) teens who were dating had had sexual intercourse before marriage(BKKBN, 2017). Based on the data from WHO (2018) stated that nearly one in three adolescent girls aged 15 – 19 years (84 million) has been a victim of emotional, physical and/or sexual violence perpetrated by their husband or partner (WHO, 2018). Based on the data from the National

Commission on Child Protection 2016, there were 41 brawls between students, while childhood violence (bullies) totaled 93 cases (Komisi Perlindungan Anak, 2016).

Child relationship with family becomes an important factor in the prevention and management of juvenile delinquency (Doly Purba, 2014). The parent-child interactions are a mutually beneficial process because the parental behavior will affect the child and vice versa. The child will affect the parents so then both experience change(Adah & Arisna, 2015). Various theories of nursing have been introduced by nursing experts, one of which is the theory of Kathry E. Barnard. This theory discusses the interaction between children and their parents. The reason for taking this theory into account is because it is in accordance with the problems that are to be explored, namely the interaction between the parents and the evidence of pre-marital sexual and aggressive behavior in adolescents. The focus of Barnard's theory is to view the parents and children as an interactive system (Alligood, 2014). The parent-child system is influenced by the individual characteristics of each member involved and the individual characteristics are modified to meet the needs of the interactive system in turn. The identification of the parent interactions as it relates to the premarital sexual behavior of adolescents is very important. This is because Indonesia is a country that still adheres to norms of Eastern behavior and customs. There is still only a small amount of research that explains the relationship between parental interactions, aggressive behavior and premarital sexual behavior in adolescents. The researchers are interested in conducting an analytical study of the relationship between parental interactions, aggressive behavior and premarital sexual behavior in adolescents. Study on parental interaction with premarital sexual behavior and aggressive behavior in adolescents on the island of Java has not been carried out. Therefore, the purpose of this study is to analyze the relationship between parental interactions with pre-marital sexual behavior and aggressive behavior among adolescents on the Java Island.

MATERIALS AND METHODS

The design in this study was cross-sectional. This research was conducted in one time data collection on the subject. The population of this study consisted of 13 - 19 year old adolescents attending junior and senior high school in Indonesia, particularly in Java Island. The inclusion criteria in this study were 1) adolescents living in Java, aged 13-19 years old, 2) adolescents who can access Google Forms. The determination of the sample size in this study was done using the Gpower 3.1.9.2 application and statistical test Correlations: Two dependent Pearson r's (common index). The results of the calculation using power analysis obtained 744 samples as the ideal size. Sampling based on quota sampling according to the results of the sample size formula. The independent variable was parent interaction and the dependent variable was pre-marital sexual behavior and aggressive behavior.

The researcher made an online questionnaire using Google forms https://goo.gl/forms/49lv8TrN2D3qzFcs1. The form contained the informed consent sheet, the respondent's demographic data, the PACHIQ-R questionnaire, the premarital sexual behavior questionnaire and the aggressive behavior questionnaire. The questionnaires were distributed through social media such as Line, Whatsapp, Facebook and Instagram to be filled in by the respondents on 3 months period (September-November 2017). The respondents fill out the informed consent form first. After agreeing, the respondents filled in the biodata and PACHIQ-R questionnaire, in addition to the premarital sexual behavior questionnaire and the aggressive behavior questionnaire that was used in the Google form. The PACHIQ-R questionnaire (The Parent-Child Interaction Questionnaire-Revised) was made by Lange (2002) and it was filled in by the adolescents(Lange, Evers, Jensen, & Dolan, 2002). The PACHIQ-R questionnaire was translated from English into Indonesian and it was tested for validity and reliability (Krisnana et al., 2019). All of the items in the questionnaire had good validity scores. The reliability testing had a Cronbach's Alpha score = .854. The questionnaire was divided into 2 measurements, namely the measurement of the interactions of the parent and the measurement of the interactions of the adolescent. The adolescent version had 25 questions. The 2 subscales were conflict resolution (certain behaviors) and acceptance (certain feelings). There were both positive and negative questions in the PACHIQ-R questionnaire: (6, 8, 9, 11, 14, 16, 17, 18, 19, 20, 21, 23, 24, and 25) and (1, 2, 3, 4, 5, 7, 10, 12, 13, 15, and 22) respectively. PACHIQ-R used five response categories: "never", "hardly ever", "sometimes", "almost always", and "always". The higher the score, the higher the level of interaction between the adolescents and their parents. The questionnaire was completed by those with the means who had understood the instructions for filling it in. Meanwhile, the dependent variable data is in the form of descriptive data, namely the percentage of adolescents who did and did not engage in premarital sexual behavior and aggressive behavior. The researcher gave the participants a cellphone number that they could be contacted on if there were questions related to the questionnaire. The completion of the questionnaire took approximately 20 minutes. For the completed questionnaire, the researcher checked Google forms directly to find out the number of questionnaires that had been filled in. Once they met the target, the researcher turned off the link that allowed access to the Google form. The data was analyzed using Spearman Rank correlation with a level of significance of α=0.05.

This study has passed the review and certification of the Ethical Agreement with no. 566 - KEPK issued

by the Faculty of Nursing University of Airlangga. This study follow the princip of ethic are anonymity, justice, informed concent, confidentially, beneficience.

RESULTS

The results show that the majority of respondents were their mid adolescents, in the range of 15 - 17 years old (as many as 374 people; 50.2%). The majority of respondents (606) had a high school level of education (81.3%). The majority of the respondents' parent's education was high school for the father and mother, totaling 328 people (44.1%) and 314 people (42.2%) respectively. The majority of the respondents resided with their parents (672 people; 90.3%). Most of the respondents used motorbikes as their medium of transportation to get to school (as many as 462 people; 62.1%). The majority of respondents were given pocket money by their parents, totaling as much as < 50,000 IDR (as many as 626 people; 84.1%) (Table 1).

The parent interactions with the adolescents had a minimum score of 55. This score indicates that there were no adolescents who had never interacted with their parents. The maximum score was 121. This score shows that none of the adolescents had a perfect score. The mean value was 95 which means that the adolescent interactions were in the range of 'sometimes' and 'almost always' (Table 2).

Most of the adolescents had never engaged in premarital sexual behavior (96.1%) and they had not engaged in aggressive behavior either (73.1%). The parent interactions with the adolescents consist of a very weak positive relationship. These results indicate that the higher the level of interactions, the higher the tendency of the adolescents to not engage in premarital sexual behavior (p = .007; r = .100) and aggressive behavior (p = <. 001; r = .156) (Table 3).

Table 1. Demographic Characteristics of the Adolescents (n=744)

Characteristics	n	%
Sex		
Boys	391	52,6
Girls	353	47.4
Ages		
Early adolescent	105	14.1
Mid-adolescent	374	50.3
Late adolescent	265	35.6
Education		
Junior high school	138	18.5
Senior high school	606	81.5
Father's Education		
Bachelor	141	19.0
Diploma	37	5.0
Senior High School	328	44.1
Junior High School	109	14.7
Elementary School	129	17.3
Mother's Education		
Bachelor	110	14.8
Diploma	42	5.6
Senior High School	314	42.2
Junior High School	125	16.8
Elementary School	152	20.4
Uneducated	1	0.1
Stay at Home With		
Parents	672	90.3
Grandparents	25	3.4
Other family	7	0.9
Boarding house	40	5.4
Transportation		
Motorcycle	462	62.1
Public transportation	95	12.8
Delivered	180	24.2
Bicycle	7	0.9
Pocket Money per Day		
< 50,000 IDR (3 USD)	626	84.1
> 50,000 IDR (3 USD)	118	15.9

Table 2. Correlation between Premarital Sexual and Aggressive Behaviors with Parent Interaction in Adolescents (n=744)

Variables	Min-max	Mean	SD	p	r
Parent interaction	55-121	95.4	10.9		
Premarital sexual behavior	1-2	1.96	0.19	.007	.100
Aggressive behavior	1-2	1.73	0.44	<.001	.156

DISCUSSION

Table The results showed that there was a relationship between parental interactions with premarital sexual behavior and aggressive behavior in adolescents. Interaction refers to contact and communication which is interpreted as the mutual influence on various aspects of a shared life(Lange, Evers, Jansen, & Dolan, 2002). There were 2 subscales used to measure the interaction between parents and adolescents, namely conflict resolution and acceptance. For the conflict resolution subscale, most adolescents call their parents directly by their names. For the acceptance subscale, the acceptance of a small proportion of teenagers is related to always being told by their parents to do everything. Good family interactions will provide happiness in the family which can provide protection various problems and minimize the occurrence of negative things in the children(Adah & Arisna, 2015). Adolescents, while developing, need love, attention and a sense of security from their parents(Saputri, 2014). This is consistent with the research conducted by(Rogi, 2015) where the results showed that juvenile delinquency occurred due to the lack of intense family communication where the power related t the control and guidance of the parents towards adolescent behavior was very limited.

Adolescence is a period of rapid physical, cognitive, emotional and social maturity in both males and females(Wong, Hockenberry, Wilson, Winkelstein, & Schwartz, 2009). Adolescents who actively communicate with their parents have risky sexual behavior that is in the mild category. The respondents who passively communicate with their parents have risky sexual behavior in the severe

category (Sekarrini, 2012). The research conducted by(Gustina, 2017) showed the same result, that there is a relationship between parental communication and sexual risk behavior. Poor communication between parents and adolescents results in the adolescents engaging in risky sexual behavior. Interactions between the teenagers and their parents can delay and even reduce the level of sexual intercourse behavior in adolescents(Hidayah & Maryatun, 2013).

The impact of free sexual behavior is that it puts the adolescents at risk of developing STDs, Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS). The risk of unplanned pregnancy can lead to the action of abortion which can result in death(Arista, 2015). Some of the factors that can cause the teenagers to behave freely include puberty, poor communication with their parents and friends, other social factors and media exposure(Sekarrini, 2012). Adolescent health risk behavior includes casual sex, brawling and alcoholism(Hartono & Gianawati, 2013). Children from harmonious families have more of a stronghold when it comes to the prevention of aggressive behavior(Gómez-Ortiz, Romera, & Ortega-Ruiz, 2016). The interactions in a harmonious family can have a positive influence on adolescents. . Physical punishment and strict disciplinary practices on part of the parents will result in negative impacts, one of which is the emergence of aggressive behavior in the children(Hidayah & Maryatun, 2013). The level of parental interaction related to adolescent health risk behavior includes free sex and aggressive behavior. Efforts to minimize the increase in adolescent health risk behavior can be applied by increasing the understanding of the parents about the importance of maintaining open communication and interactions with adolescents. Based on the results of this study showed that parental interaction has a relationship with premarital sex behavior and violent behavior in adolescents. the school and the government need to provide education and empowerment for parents so that they can monitor adolescents in order to prevent health risk behaviors.

The limitation of this study was that the researchers could not directly observe the process of the questionnaires being filled out by the adolescents via a Google form.

CONCLUSION

Parental interaction has an impact on the adolescent's behavior, especially in terms of premarital sexual and aggressive behavior. Nurses need to provide education not only to parents, but also to teenagers to prevent premarital sexual and aggressive behaviors among adolescents in any media that available. For futher study need to explore the parents perspective of premarital sexual and aggressive behavior of adolescents.

ACKNOWLEDGMENT

We would like to say thank you to the Directorate of Research and Community Service, Deputy for Strengthening Research and Development of the Ministry of Research and Technology/ National Agency for Research and Innovation for funding this study.

REFERENCES

Achhab, Y. El, Ammari, A. El, Kazdouh, H. El, Najdi, A., Berraho, M., Tachfouti, N., … Nejjari, C. (2016). Health risk behaviours amongst school adolescents : protocol for a mixed methods study. *BMC Public Health*, *16*(1209), 4–9. https://doi.org/10.1186/s12889-016-3873-4

Adah, L., & Arisna, D. (2015). *Effects of parent-child interaction and family decision making on juvenile delinquency*. Institut Pertanian Bogor.

Alligood, M. R. (2014). *Nursing Theorists and Their Work Eight Edition* (Eight). United States of America: Elsevier Inc.

Arista, D. (2015). Factors associated with risk sexual behavior among adolescents in jambi senior high school state 1 in 2015. *Scientia Journal*, *4*(3), 255–264.

BKKBN. (2017). *Survei kependudukan, Keluarga berencana, kesehatan reproduksi remaja dan pembangunan keluarga di kalangan remaja Indonesia*. Jakarta.

Catur, T. (2015). *Hubungan antara Komunikasi Orang Tua-Remaja tentang Seksualitas dengan Perilaku Seksual Remaja yang Telah Bekerja di Pekalongan*. Universitas Kristen Stya Wacana.

Doly Purba, A. (2014). Dampak Kenakalan Remaja dalam Perspektif Kriminologi di Kota Medan. *Jurnal Mahupiki*, *2*(1).

Gómez-Ortiz, O., Romera, E. M., & Ortega-Ruiz, R. (2016). Parenting styles and bullying. The mediating role of parental psychological aggression and physical punishment. *Child Abuse & Neglect*, *51*, 132–143. https://doi.org/10.1016/J.CHIABU.2015.10.025

Gustina, E. (2017). Komunikasi Orangtua-Remaja dan Pendidikan Orangtua dengan Perilaku Seksual Berisiko pada Remaja. *Unnes Journal of Public Health*, *6*(2).

Hartono, R., & Gianawati, N. (2013). The factors that causes teenagers behave deviant). *Artikel Ilmiah Hasil Penelitian Mahasiswa*.

Hidayah, N., & Maryatun. (2013). Hubungan Antara Pola Asuh Orang Tua dengan Perilaku Seksual Pranikah pada Remaja di SMK Batik 1 Surakarta. *Gaster*, *10*(2), 53–61.

Komisi Perlindungan Anak. (2016). Bank Data. Retrieved from http://www.kpai.go.id/

Krisnana, I., Diyan, P., Yuni, R., Arief, S., & Dwi, I. (2019). Adolescent characteristics and parenting style as the determinant factors of bullying in Indonesia : a cross-sectional study. *International Journal of Adolesecent Medicine and Health*, 1–9. https://doi.org/10.1515/ijamh-2019-0019

Kurnia, I. D., Krisnana, I., Rachmawati, P. D., Kristiawati, ., Arief, Y. S., Budiarto, H., & J.R, M. S. (2019). The Increased Interaction of Parents can Prevent Smoking Behavior and Alcohol Consumption of Adolescents in Indonesia. In *Proceedings ofthe 9th International Nursing Conference (INC 2018)* (pp. 274–279). SCITEPRESS – Science and Technology Publications. https://doi.org/10.5220/0008323802740279

Lange, A., Evers, A., Jansen, H., & Dolan, C. (2002). The Parent-Child Interaction Questionnaire-Revised. *Family Process*, *41*(4), 709–722. Retrieved from http://www.alfredlange.nl/site/publications/pdf/FP2002.pdf

Lange, A., Evers, A., Jensen, H., & Dolan, C. (2002). PACHIQ-R (The Parent-Child Interaction Questionnaire-Revised). *Family Process*, *41*(4), 709–722.

Murdiningsih, M., Rosnani, R., & Arifin, H. (2016). Corelation Between Pornographic Media and Influence of Peers With Unsafe Sexual Behavior in Adolescent of South Sumatera. *Jurnal NERS*, *11*(2), 210. https://doi.org/10.20473/jn.v11i22016.210-212

Restu, Y., & Yusri. (2013). Studi tentang perilaku agresif siswa di sekolah. *Jurnal Ilmiah Konseling*, *2*(1), 243–249.

Rogi, B. A. (2015). Peranan Komunikasi Keluarga dalam Menanggulangi Kenakalan Remaja di Kelurahan Tataaran 1 Kecamatan Tondano Selatan. *Jurnal Acta Diurna*, *IV*(4).

Saputri, E. . (2014). The correlation between social interaction and family harmony with the aggressiveness of the tenth grade students of SMK N 1. *Jurnal BK Unesa*, *4*(2), 375–382.

Sekarrini. (2012). *Faktor-Faktor Yang Berhubungan Dengan Perilaku Reksual Remaja Di SMK Kesehatan Di Kabupaten Bogor Tahun 2011*. *Skripsi. Depok: Fakultas Kesehatan Masyarakat UI*.

WHO. (2018). Adolescents: health risks and solutions. Retrieved March 21, 2020, from http://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions

Wong, D. L., Hockenberry, M., Wilson, D., Winkelstein, M. L., & Schwartz, P. (2009). *Buku ajar keperawatan pediatrik* (6 volume 2). Jakarta: EGC.

Yusuf, A., Bahiyah, K., Nihayati, H., & Wiyono, A. (2017). Hubungan Pola Asuh Orang Tua dan Lingkungan Sosial dengan Perilaku Seksual Remaja Usia 14–21 Tahun di Lingkungan Lokalisasi. *Jurnal Ners (Surabaya)*, *2*(1), 14–17. https://doi.org/10.20473/jn.v2i1.4951

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2 October 2021
http://dx.doi.org/10.20473/jn.v16i2.25701

Original Research

The Effect of Thinking Like a Nurse Simulation as an Online Clinical Learning Method on Nursing Students' Satisfaction and Confidence during the COVID-19 Pandemic

Dian Fitria, Jehan Puspasari and Puspita Hanggit Lestari

STIKes RS Husada, Jakarta, Indonesia

ABSTRACT

Introduction: Corona Virus Disease (Covid-19) was declared as a pandemic by the World Health Organization (WHO) resulting in changes in existing patterns of life. This impact also affects the world of education, including nursing vocational education. Nursing vocational education must be able to design online methods for the clinical competency with existing facilities and infrastructure. The online clinical method can describe the achievements achievable in clinical facilities so as to build students' satisfaction and confidence.

Methods: This research used quasi-experimental pre-posttest without control group method by providing clinical learning thinking like a nurse simulation. The research sample consists of 110 diploma students with purposive sampling method. Simulation focuses on clinical judgment, communication skills, and skill simulations by adopting clinical practice in hospitals. Assessment is measured using Simulation Design Scale (SDS) and Student Satisfaction and Self-Confidence in Learning Scale (SCLS). Pair t test with level of significance 0.05 is used to process data.

Results: It is found that there is an increase in students' satisfaction and confidence using the clinical simulation method of "thinking like a nurse" having an average 40.69%. Meanwhile, online clinical learning methods has an average increase of 114%. There is an effect of thinking like a nurse simulation method on students' satisfaction and self-confidence ($p < 0.05$).

Conclusion: This research is recommended to add to the reference for online nursing clinical learning methods during Covid-19. Determining the ratio between students and lecturers in online clinic learning can be considered for further research.

ARTICLE HISTORY

Received: March 16, 2021
Accepted: July 06, 2021

KEYWORDS

covid-19; online clinical learning; nursing student

CONTACT

Dian Fitria
dianfitriafanani@gmail.com
STIKes RS Husada, Jakarta, Indonesia

Cite this as: Fitria, D., Puspasari, J., & Lestari, P. H. (2021). The Effect of Thinking Like a Nurse Simulation as an Online Clinical Learning Method on Nursing Students' Satisfaction and Confidence during the Covid-19 Pandemic. *Jurnal Ners, 16*(2). 111-118. doi:http://dx.doi.org/10.20473/jn.v16i2.25701

INTRODUCTION

The determination of the status of Covid-19 spread as a pandemic on 11 March 11 by the World Health Organization (WHO) resulted in all learning activities turned online. The Decree of the Minister of Education and Culture through a circular number 4 of 2020 gave an order to carry out the learning and teaching process from home starting from 24 March, 2020 to reduce the acceleration of the spread of the Covid-19 virus.

All educational institutions were forced to adapt very quickly. The learning and teaching process from home had to be carried out immediately to achieve the students' competencies. Simple online methods, such as through chat, voice record, video record, online meeting applications, email, to learning via web were specially designed by educational institutions. All institutions thought hard to be able to provide effective online learning for their students, including educational institutions with diploma nursing program (Al-Balas et al., 2020).

Educational institutions can no longer send students to gain learning experiences through clinical practices since the emergence of Covid-19. However, the closure of these educational practices cannot stop the teaching and learning process. It is not easy to transform learning at clinical institutions into an

online effort, so preparation is required to design appropriate methods so that clinical learning outcomes in knowledge and skills can still be achieved (De Metz & Bezuidenhout, 2018)

The three main competencies obtained from learning methods at clinical institutions are the ability of students to carry out clinical judgments, communication skills, and nursing procedure skills. Learning methods that are carried out online must be done through very well-made simulations so that they are representative to achieve nursing knowledge and clinical judgment (Letcher, Roth, & Varenhorst, 2017). Clinical judgment is the key to caring and decision-making for intervention on patients based on existing assessments and data, (Yuan, Williams, & Man, 2014), and reduced evidence-based experience in conducting clinical judgment can cause students to lack critical skills in nursing process and real problem solving for patients (Konrad, Fitzgerald, & Deckers, 2020a).

Online clinical learning has been carried out and evaluated in clinical courses in the even semester 2019/2020. The method used is to provide cases, group discussion, online case presentations, and videos on nursing action procedures. This method is not sufficiently representative of students who do not acquire experience doing clinical judgment, communication skills, and nursing procedure skills. Unrepresentative methods of learning have an impact on students' satisfaction and self-confidence. Some issues that make online learning dissatisfied are less time to practice procedural skills, numerous tasks, insufficient group discussions, technical learning, and network problems (Shih, Chen, Chen, & Wey, 2013a). Dissatisfaction may produce anxiety in students and cause them to doubt their abilities, causing further impact, namely from decreased academic achievement to student retention (Abdous, 2019). Confidence is very important for all individuals since it affects the performance of the work done and the results of the work. Therefore, it is very important to build nurses' confidence with effective online learning methods so that they have satisfaction with the clinical learning process that is carried out online.

Based on this description, the researchers develop a "thinking like a nurse" method adapted and modified based on the clinical judgment for the nurse learning model (Tanner, 2006). The process shall have three main stages to train skills in conducting clinical judgment, namely noticing, interpreting and response, and reflection. (Tanner, 2006). Noticing is the first stage; the lecturers provide simple cases and students are trained to complete the assessment and the necessary supporting data, as if the student met a new patient at the hospital. In this phase, the students are triggered to think critically about the data that must be studied, diagnostic data on supporting patients, and a flow of thinking on the reason why the data are needed to be completed. The interpreting stage is the stage where students are able to interpret the data obtained through the noticing stage; making diagnosis and designing the interventions to be carried out and knowing the rationality of implementing these interventions. The responding stage is carried out where students evaluate the actions taken. In this method, researchers include the process of communication and nursing procedure skills while students will be trained to think critically in overcoming patient problems according to their developmental conditions; besides that, students will also be trained to carry out activities in the nursing room such as handover, Situation, Background, Assessment, Recommendation (SBAR), pre-conference, and post-conference. A self-reflection process carried out in the learning process will help students understand learning outcomes; the reflection process carried out will also increase professional development, personal growth, empowerment, and facilitated learning This research is expected to produce appropriate online clinical learning methods and to increase students' satisfaction and confidence. The result of this study can be used as a reference for online nursing clinical learning methods during Covid-19.

MATERIALS AND METHODS

The method used in this study is a "quasi-experimental pre-posttest without control group" using statistical tests with paired t-test. The sampling technique uses a non-probability sampling with a purposive sampling method with a sample size of 110 students with the inclusion criteria of students who attended mental and maternity clinical lectures with a supervisor who is a member of the research team and the sampling process was carried out for five days for each class with lectures fully accompanied for two sessions and two session student group discussions. Independent variable in this research is online clinical method. The Simulation Design Scale (SDS) instrument by Jeffries and Rizzolo (2006) with Cronbach's alpha 0.96 was used to assess the method using questionnaires assessed using a Likert scale of 1-5. The dependent variable of this research is satisfaction and self-confidence. The instrument used, namely the questionnaire, is the Student Satisfaction Self-Confidence in Learning Scale (SCLS) by Jeffries and Rizzolo (2006) with a Cronbach's alpha value of 0.94. The satisfaction assessment component consists of satisfaction on the learning method, the variety of materials provided, the facilities in the processes of learning, motivation, and suitability of the simulation process with the competencies to be achieved (Jeffries & Rizzolo, 2006). In measuring satisfaction and self-confidence, the researchers use the concept put forward by Jeffries and Rizzolo (2006). Self-confidence is assessed through the aspects of mastery of the material provided, the need for the material presented, the availability of learning resources, and a place to look for learning sources, both sources for questions and sources of reference.

The first stage of research implementation is to conduct a literature study and identification of research problems. The second stage is a pre-test to measure the level of satisfaction and self-confidence and an assessment of the design of the simulation method used

Table 1. Stages of Implementing Online "Thinking Like Nurse" Clinical Learning Method

Stages	Lecturers' Activities	Students' Activities
Explanation of learning methods	Explains the clinical learning process using the "Thinking like a nurse" simulation	
Clinical Judgment: Noticing (Days 1-3)	Determination work schedule groups - morning and evening Shares medical records (simulations) and formulas to use Divides trigger cases (cases will be provided on the first day and changes in the patient's condition will be given on the following day until the patient is discharged). Patients are treated for 3 days Day 1- Simulation: asks questions 1. Which follow-up studies should be done? 2. Why are they done? 3. What diagnostic tests should be done? 4. What is the purpose of the examination? Day 2- the simulation provides the progress of the case. Simulation with questions: 1. What causes the change in the patient's condition? 2. Describe any further assessments to carry out Day 3 - simulated patient preparation for discharge. 1. What are the discharge preparations made by the nurse for the patient? 2. What is the rationale for such preparation? 3. What forms should the nurse prepare?	Have discussion on the cases acquired Pre-conference *Hand over* Fills in the assessment; Fills in the Initial patient's assesment form to the ward (day 1) Carries out further assessment (day 2) Prepares the patient to return home (day 3) Performs self-reflection
Clinical Judgment: Interpreting (Days 2 and 3)	Simulation: through questions 1. What are the characteristic limitations of the diagnosis offered? 2. Which is the priority problem? Simulation: through questions 1. Why are there such planning and outcome criteria?	Enforcing Nursing Diagnosis Performs self-reflection Making plans and criteria for nursing care outcomes Performs self-reflection
Clinical Judgment: Responding (Days 2 and 3)	Simulation (discussion on zoomeeting) 1. Lecturers provide the results of nursing actions taken by students 2. The lecturer provides an overview of the patient's condition after the intervention 3. The Lecture provide advices for student about Nursing care delivered, SBAR hand over, and documentation. Simulation: through questions 1. What Should you do if the next condition of patient .....? (lecture explain progress patient condition) 2. Which your next priority implementation for patient?	1. Carrying out the actions to be performed in accordance with the action documentation planning on the documentation sheet. 2. Situation, Background, Assesment, Recommendation (SBAR) exercise 3. Communications 4. Performs self-reflection 5. Creating documentation of nursing actions 6. Filling out the Integrated patient progress notes form (documentation) 7. Handover exercise Making plans and criteria for next nursing care outcomes
Reflecting (Day 3)	Simulation (discussion on zoomeeting) Lecture Motivates self-reflection by asking question about students understand learning outcomes; the reflection process carried out. Simulation: through questions 1. What the lesson learnt today? 2. How the feeling? 3. What the learning outcone you can get today? 4. What should you improve for your self?	1. Self-reflection (while treating patients from admission to discharge) 2. post-conference Making Self Reflection
Communication and nursing procedure skills (Days 4 to 5)	Provides nursing procedures that will be trained in accordance with the agreement on the discussion of responding implementation divide nurse-patient	1. Creates patient-nurse scenarios for cases that have been created for 3 days. 2. Performs self-reflection

by students who have participated in online clinical learning without the "thinking like a nurse" method followed by the provision of the "thinking like a nurse" simulation method and the third stage carries out a post-test to measure the level of satisfaction and self-confidence of students and an assessment of "thinking like a nurse" learning method with the activities as provided in Table 1 - stages of implementing online the "thinking like a nurse" clinical learning method.

This study has passed the ethical test by the Health Research Ethics Commission of the Faculty of Nursing, the Airlangga University, number 2118-KEPK. Data were collected through questionnaires and did not cause any harm to the respondents. Ethical requirements and respondent rights have been fulfilled throughout the research process.

RESULTS

The results of satisfaction and self-confidence assessment (Table 2) show that the mean value before the intervention is 37.28 with a median value of 27.50. Meanwhile, the mean satisfaction and self-confidence of respondents after the intervention is 52.45 with a median value of 52. The table above also illustrates that there is a difference of 15.17 in the mean before and after intervention with a mean increase of 40.69%. Hence, it can be concluded that there is a difference in the mean and an increase in the mean of the respondents' satisfaction and confidence before the intervention and after the intervention.

Based on table 3, it is found that the mean of the respondents' online clinical learning method before the intervention is 37.58 with a median value of 27.50. Meanwhile, the mean of clinical learning method by respondents after intervention is 80.46 with a median value of 80. Hence, it can be concluded that there is a difference in the average online clinical learning method before the intervention and after the intervention. The table above also illustrates that there is a difference of 52.9 in the mean before and after with a mean increase of 114%. Hence, it can be concluded that there is a difference in the mean and an increase in the mean of the respondents' satisfaction and confidence before the intervention and after the intervention.

In examining the effect of providing online clinical learning methods with the "thinking like a nurse" method, it was found the students' average satisfaction and self-confidence before and after the effect of providing online clinical learning methods with the "thinking like a nurse" method on students' satisfaction and self-confidence is 15.16, and the difference between these differences is between

Table 2. Average Satisfaction and Confidence Before and After the Intervention (N=110)

Variables	Mean	Median	SD	Min-Max	Mean Difference	95% CI	Average increase percentage (%)
Satisfaction and Confidence before Intervention	37.28	27.50	12.3	26-52	15.17	0.41-0.59	40.69
Satisfaction and Confidence after Intervention	52.45	52.00	5.2	38-65		0.62-0.80	

Table 3. Average Online Clinical Learning Methods Before and After Intervention (N=110)

Variables	Mean	Median	SD	Min-Max	Mean Difference	95% CI	Average increase percentage
Online Clinical Learning Methods before Intervention	37.58	27.50	12.8	26-52	52.9	0.38-0.57	114
Online Clinical Learning Methods after Intervention	80.47	80	6.7	61-100		0.61-0.79	

Table 4. The effect of providing Online Clinical Learning Methods with "thinking like a nurse" Method on Students' Satisfaction and Self-confidence (N=110)

Variables	Mean	SD	SE	95% CI		P Value
				Lower	Upper	
Respondents' satisfaction and confidence before and after the intervention	15.16	13.07	1.246	12.70	17.63	<0.000

Table 5 .The Effect of Giving the "thinking like a nurse" Simulation Method on Online Clinical Learning Methods (N=110)

Variables	Mean	SD	SE	95% CI		P Value
				Lower	Upper	
Respondents' online learning methods before and after the intervention	42.9	14.03	1.345	40.24	45.54	<0.000

17.63 and 12.70 (95% confidence interval of the lower and upper differences), Sig (2-tailed) of <0.000. Hence, it can be concluded that there is a mean difference in students' satisfaction and confidence between before and after the "thinking like a nurse" simulation; therefore, there is an effect of the "thinking like a nurse" simulation method on students' satisfaction and self-confidence.

Based on Table 5, the results show that the average online clinical learning method for students before and after the "thinking like a nurse" simulation is 42.9, and the difference between these differences is between 45.54 and 40.24 (95% confidence interval of the lower and upper differences), Sig (2-tailed) of <0.000. Hence, it can be concluded that there is an average difference between the online clinical learning method for students before and after the "thinking like a nurse" simulation; therefore, there is an effect of the "thinking like a nurse" simulation method on the online clinical learning method.

DISCUSSION

The "thinking like a nurse" method is a design adapted from Tanner (2006) and Konrad, Fitzgerald, and Deckers (2020). The stages of this online method are divided into three, namely Clinical Judgment, Communication, and Procedure Skills Simulation. This method is designed since, based on Adam (2015), the clinical online learning method must cover three cognitive aspects (knowledge, comprehension, critical thinking), psychomotor (skill development), and affective (emotional & behavioral response) (Adams, 2015). This method is designed as an effort to respond to the Covid-19 pandemic which makes nursing students unable to practice in hospitals. For the first semester during the Covid-19 pandemic and before the application of this clinical method, online clinical activities were carried out with case provision in which students were asked to produce preliminary reports on three-day nursing care and presentation of the case and continuing with cases' question and answer sessions. Through the method, students only reached satisfaction and confidence with a mean of 37.28 with a mean value of the online clinical learning method used before the intervention of 37.58. The interaction of the old method is less interaction between lecturer and student, and the method cannot describe the situation in the hospital.

Student satisfaction and confidence are low due to the learning process, which is not optimal for presenting clinical learning experiences conducted online. The procedure performed is still oriented toward training students to be able to provide nursing care; but is not yet at the application of simulation stage and, with this method, students only gain knowledge without any clinical learning experiences such as communicating with patients or simulating nursing actions. This is in line with the results of research conducted by Al-Balas et al. (2020) saying that the clinical medical practice method during a pandemic must include three aspects, namely knowledge, nursing care practice, and representative experience in caring for patients performed online by simulating nursing actions (Al-Balas et al., 2020). The results of research by McGann et al. (2020) state that the online clinical method will be effective if it is not only in the form of knowledge on nursing care, but when it is followed by providing feedback on simulated procedures, providing videos, and practicing communication with patients, and by so doing can increase self-confidence of the students (McGann et al., 2020).

Another study states that students' dissatisfaction in learning is due to anxiety on seven things felt by students, namely unclear online learning technique mechanisms, the absence of face-to-face session, high risk of distraction to social media during online learning, minimum feedback, unsupportive online learning environment, and the absence of interaction with friends such as in the classroom (Abdous, 2019). The research results of Chen et al. (2013) show several issues that cause dissatisfaction in online learning, i.e., less time to practice procedural skills, abundance of tasks, insufficient group discussions, technical learning, and network problems (Shih et al., 2013b). In the previous method, students only work on the given cases, make a path of flow, and ask and answer questions on nursing care provided; students could not see changes in the patients' condition such as students caring for patients in the ward.

After the intervention using the "thinking like a nurse" method adapted and modified from Tanner (2006) and Konrad, Fitzgerald, and Deckers (2020) in five days as an online clinical learning method, the average students' satisfaction and confidence increase to 52.45 with an increase of 40.69% from the condition before the intervention (Konrad et al., 2020a; Tanner, 2006). Likewise, the mean value for the online clinical learning method used after the intervention is 80.47; this value increases 114% from the previous method. This is because the "thinking like a nurse" method provides students with experiences on caring for patients, but it is done online. The noticing stage is the first stage in the clinical judgment process. Lecturers provide simple cases and students are trained to complete the assessment and the necessary supporting data, as if the student met a new patient at the hospital. In this phase, the students are triggered to think critically about the data that must be studied, diagnostic data on supporting patients, and a flow of thinking on the reason why the data are needed to be completed. The management of trigger cases by students is the key to optimal online learning processes (Konrad et al., 2020b; Kyrkjebø, 2006). Learning feedback is immediately provided by the lecturer after students complete the data to know whether the assessment data really needs to be studied before the students make diagnosis. The lecturer also provides the results of the assessment completed on the patient. The focus of the first day on this assessment provides clarity to students on the competencies in nursing assessment

skills. This is consistent with a research from Kim et. al. (2020) that giving the right feedback will increase students' confidence during online learning.

The interpreting stage is the stage where students are able to interpret the data obtained through the noticing stage, making diagnosis and designing the interventions to be carried out and knowing the rationality of implementing these interventions. Lecturers discuss the rationality of diagnosis and planning. In the third stage, the responding stage is carried out where students evaluate the actions taken. The three stages of clinical judgment, namely noticing, interpreting, and responding, are carried out by the interaction of lecturers and students for three days and performed in stages. In each learning process, the lecturer provides feedbacks and triggers for students to think critically. Through this method, students know whether each stage of the nursing care that they make is appropriate or not, and know the rationale for each action. Feedback obtained after each process is the interaction between students and lecturers; this can increase satisfaction and the method becomes more effective because one of the reasons for dissatisfaction with online learning is the lack of interaction with lecturers and students (D'Aquila, Wang, & Mattia, 2019; De Metz & Bezuidenhout, 2018; Singh et al., 2021)

The nursing care given every day is made based on the development or changes in the patient's condition provided by the lecturer as a trigger for nursing care for the next day. Therefore, students are continuously trained to think critically in designing nursing care such as in clinical practice. This is in accordance with the good learning components according to Jeffries and Rizzollo (2006), including competence (objectives, material preparation, trigger cases), support (learning resources; motivation provided by the lecturer), problem solving (opportunities to ask questions, ease of finding sources to solve problems), feedback (providing constructive feedback, and self-reflection processes), and accuracy (accuracy with real life conditions) (Jeffries & Rizzolo, 2006). This method is also a student-centered clinical learning method that can increase student satisfaction and confidence when the process is able to motivate, the presence of lecturers for interaction and collaboration with students, clear learning activities, and students understand the right goals, competencies, and deadlines (Tartavulea, Albu, Albu, Petre, & Dieaconescu Silvia, 2020).

In the second stage of the "thinking like a nurse" method after clinical judgment, namely communication skills, students will be trained to do handover and patient process reports to doctors using SBAR either during handover or on the phone. Students practice handover with other students for managed cases. The supervisor observes the handover process carried out by the students; the components mentioned are the completeness of the data being transferred and the next action to be taken. Input is also provided by peers between groups. This stage is carried out because, according to O'Neil, Fisher, Rietschel, and Fisher (2018), three principles that must be fulfilled in online learning are easy to access, easy to navigate, and easy to interact with others. It is also stated that communication is the core of online learning because it is with this communication that interactions will be built between students and students, student and lecturers, and students with trigger cases on learning (O'Neil, Fisher, Rietschel, & Fisher, 2018). Increasing interaction and communication in learning will increase discipline, independent learning ability, self-motivation, level of participation, time management and being active in learning (Reinckens, Philipsen, & Murray, 2014).

The third stage consists of students performing peer-to-peer simulation and practicing selected actions for one of the diagnoses. This action is performed online by students. Actions taken to be simulated are assessment, education, or independent nursing actions. The simulation of providing education to fellow students with the patient nurse scenario is the most effective online clinical action simulation method (Rodríguez, Navarro, Pino, & Maroto, 2020). Simulations of nursing actions with scenarios that are played online are parts of the student-centered learning method and are able to increase students' satisfaction and self-confidence (Englund, Olofsson, & Price, 2017). In this stage, the lecturer also provides videos of nursing procedures that are not possible to be performed by online role play. All actions taken are documented in a simulated medical record prepared and designed in accordance with the standards of teaching hospitals commonly used as practice venues.

These three stages produce average increase in students' satisfaction and confidence. In this clinical learning method, students are motivated to carry out nursing care according to the patient's development, perform communication for nurse-nurse and nurse-patient, and are trained to foster a sense of caring and empathy in caring for patients. Soundy et al. (2021) state that there are three aspects that students must be trained in in order to increase self-confidence in caring for patients, namely the experience of patient nurse interaction, patient empowerment, and training in caring and empathy (Soundy et al., 2021). The same thing is revealed in the study that self-confidence in learning is influenced by eight factors, namely mastery or understanding of certain materials or expertise, materials according to needs, increased psychomotor abilities, availability of reference sources, and the ability to solve existing problems (Franklin, Burns, & Lee, 2014). Clear and continuous feedback can increase satisfaction and self-confidence so that individuals will be able to perform cognitive functions to seek efforts to move closer to goals through various ways and be able to set specific goals for themselves with self-regulation abilities (Luthans, 2007).

Every day, at the end of an online work meeting, students reflect themselves on clinical learning activities. It is designed to increase students'

satisfaction and confidence. The self-reflection process carried out in the learning process will help students understand learning outcomes; it will also increase professional development, personal growth, empowerment, and facilitated learning (Langley & Brown, 2010). Good understanding of learning outcomes by students through self-reflection prevents them from experiencing helplessness, burnout, and burdens (Suliman, Abu-Moghli, Khalaf, Zumot, & Nabolsi, 2021). This learning method also enhances the role of the lecturers as facilitator; the lecturers are in charge of not only providing trigger cases, but also listening to the results of solving cases by students on the last day. In this method, the lecturers understand and participate in online clinical learning interactions. This becomes one of the reasons for students' satisfaction and confidence since they know where to ask and are trained to think critically. Schroeder, Shogren, and Terras (2020) state that online students need instructors to provide personal presence, by being engaging, approachable, understandable, patient, and passionate about the subject. This method does not only focus on students processing cases with a nursing care approach, but also on the interaction between lecturers and students (Schroeder, Shogren, & Terras, 2020). The limitation of this research is that it hasn't considered yet the ratio of students and lecturers based on the ratio on clinical setting; nevertheless, the number of students is divided into several small groups in team teaching.

CONCLUSION

Based on this research, it can be concluded that the provision of the online clinical learning method of "thinking like a nurse" has an influence on students' satisfaction and self-confidence. This method is designed with the urgency of the impact of Covid-19 causing students to be unable to do clinical practices in hospitals. This design provides a student clinical learning experience, such as learning in a hospital, where students manage patients through nursing care for five days until the patient is discharged. This design is also developed for students to maintain communication skills and nursing procedures, as well as interactions between patient-nurses and nurses-peers. From this method, they learnt three aspects that students must be trained in in order to increase self-confidence in caring for patients, namely the experience of patient nurse interaction, patient empowerment, and training in caring and empathy (Soundy et al., 2021). This method is designed to achieve the clinical online learning method criteria which must cover three cognitive aspects (knowledge, comprehension, critical thinking), psychomotor (skill development), and affective (emotional & behavioral response) (Adams, 2015).

This research is expected to be able to provide a reference contribution to nursing vocational education to develop online clinical learning methods. This method is also expected to be adopted by nursing vocational education institutions in achieving clinical learning competence. The "thinking like a nurse" method can anticipate changes in hospital practice regulations that have re-accepted students in a limited number, so that it can be used as blended learning. This method also needs to be re-developed by taking into account the number of students and the number of lecturers to get a more optimal process. This research is recommended to determine the ratio between students and lecturers in online clinic learning and can be considered for further research.

REFERENCES

Abdous, M. (2019). Influence of satisfaction and preparedness on online students' feelings of anxiety. *Internet and Higher Education*, *41*(January), 34–44. https://doi.org/10.1016/j.iheduc.2019.01.001

Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., … Al-Balas, B. (2020). Correction to: Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives (BMC Medical Education, (2020), 20, 1, (341), 10.1186/s12909-020-02257-4). *BMC Medical Education*, *20*(1), 1–8. https://doi.org/10.1186/s12909-020-02428-3

D'Aquila, J.M., Wang, D. and Mattia, A. (2019). Are instructor generated YouTube videos effective in accounting classes? A study of student performance, engagement,motivation, and perception. *Journal of Accounting Education*, *47*, pp.63-74.

De Metz, N., & Bezuidenhout, A. (2018). An importance-competence analysis of the roles and competencies of e-tutors at an open distance learning institution. *Australasian Journal of Educational Technology*, *34*(5), 27–43. https://doi.org/10.14742/ajet.3364

Englund, C., Olofsson, A. D., & Price, L. (2017). Teaching with technology in higher education: understanding conceptual change and development in practice. *Higher Education Research and Development*, *36*(1), 73–87. https://doi.org/10.1080/07294360.2016.1171300

Franklin, A. E., Burns, P., & Lee, C. S. (2014). Nurse Education Today Psychometric testing on the NLN Student Satisfaction and Self-Con fi dence in Learning , Simulation Design Scale , and Educational Practices Questionnaire using a sample of pre-licensure novice nurses. *YNEDT*, *34*(10), 1298–1304. https://doi.org/10.1016/j.nedt.2014.06.011

Jeffries, P.R., Rizzolo, M. A. (2006). Designing and Implementing Models for the Innovative Use of Using Simulation to Teach Nursing Care of Ill Adults and Children: A National, Multi-site, Multi-method Study. National League for Nursing. *New York, NY.*

Kim, J. W., Myung, S. J., Yoon, H. B., Moon, S. H., Ryu, H., & Yim, J. J. (2020). How medical education survives and evolves during COVID-19: Our experience and future direction. *PLoS ONE*, *15*(12 December), 1–13. https://doi.org/10.1371/journal.pone.0243958

Konrad, S., Fitzgerald, A., & Deckers, C. (2020a). Nursing fundamentals À supporting clinical competency online during the COVID-19 pandemic. *Teaching and Learning in Nursing*, *000*, 17–20. https://doi.org/10.1016/j.teln.2020.07.005

Konrad, S., Fitzgerald, A., & Deckers, C. (2020b). Nursing fundamentals À supporting clinical competency online during the COVID-19 pandemic, *000*, 17–20. https://doi.org/10.1016/j.teln.2020.07.005

Kyrkjebø, J. M. (2006). Classroom and Clinic : Getting it Wrong and Getting it Right, *45*(3).

Langley, M. E., & Brown, S. T. (2010). Perceptions of the Use of reflective learning journals in online graduate nursing education. *Nursing Education Perspectives*, *31*(1), 12–17. https://doi.org/10.1043/1536-5026-31.1.12

Letcher, D. C., Roth, S. J., & Varenhorst, L. J. (2017). Simulation-Based Learning : Improving Knowledge and Clinical Judgment Within the NICU, 284–290.

Luthans, Y. & A. (2007). *Psychological Capital: Developing the Human Competitive Edge*. Oxford University Press.

McGann, K. C., Melnyk, R., Saba, P., Joseph, J., Glocker, R. J., & Ghazi, A. (2020). Implementation of an E-Learning Academic Elective for Hands-On Basic Surgical Skills to Supplement Medical School Surgical Education. *Journal of Surgical Education*, 1–11. https://doi.org/10.1016/j.jsurg.2020.11.014

Nancy E. Adams. (2015). Bloom's taxonomy of cognitive learning objectives Nancy. *J Med Lib Assoc*, *103 (3)*(July), 152–153. https://doi.org/DOI: http://dx.doi.org/10.3163/1536-5050.103.3.010

O'Neil, C. A., Fisher, C. A., Rietschel, M. J., & Fisher, C. A. (2018). Interacting and Communicating Online. *Developing Online Learning Environments in Nursing Education*, 99–110. https://doi.org/10.1891/9780826199140.0008

Reinckens, J., Philipsen, N., & Murray, T. L. (2014). Nurse practitioner: Is online learning for you? *Journal for Nurse Practitioners*, *10*(9), 700–705. https://doi.org/10.1016/j.nurpra.2014.07.015

Rodríguez, D. J., Navarro, M. del M. T., Pino, F. P. del, & Maroto, O. A. (2020). Simulated Nursing Video Consultations: An Innovative Proposal During Covid-19 Confinement. *Clinical Simulation in Nursing*, (5 august 2020). https://doi.org/10.1016/j.ecns.2020.08.004

Schroeder, S., Shogren, M., & Terras, K. (2020). Student Connectivity in Online Programs: Role of the Nurse Faculty. *Journal for Nurse Practitioners*, (xxxx). https://doi.org/10.1016/j.nurpra.2020.09.005

Shih, H., Chen, S. E., Chen, S., & Wey, S. (2013a). The Relationship Among Tertiary Level EFL Students ' Personality , Online Learning Motivation And Online Learning Satisfaction. *Procedia - Social and Behavioral Sciences*, *103*, 1152–1160. https://doi.org/10.1016/j.sbspro.2013.10.442

Shih, H., Chen, S. E., Chen, S., & Wey, S. (2013b). The Relationship Among Tertiary Level EFL Students ' Personality , Online Learning Motivation And Online Learning Satisfaction, *103*, 1152–1160. https://doi.org/10.1016/j.sbspro.2013.10.442

Singh, H. K., Joshi, A., Malepati, R. N., Najeeb, S., Balakrishna, P., Pannerselvam, N. K., … Ganne, P. (2021). A Survey of E-Learning Methods in Nursing and Medical Education During COVID-19 Pandemic in India. *Nurse Education Today*, *99*(November 2020), 104796. https://doi.org/10.1016/j.nedt.2021.104796

Soundy, A., Hemmings, L., Gardiner, L., Rosewilliam, S., Heneghan, N. R., Cronin, K., & Reid, K. (2021). E-learning communication skills training for physiotherapy students: A two phased sequential mixed methods study. *Patient Education and Counseling*, (xxxx), 1–9. https://doi.org/10.1016/j.pec.2021.01.022

Suliman, W. A., Abu-Moghli, F. A., Khalaf, I., Zumot, A. F., & Nabolsi, M. (2021). Experiences of nursing students with the unprecedented abrupt online learning forced by the national curfew due to COVID-19: A qualitative research study. *Nurse Education Today*. https://doi.org/https://doi.org/10.1016/j.nedt.2021.104829

Tanner CA. (2006). Thinking like a nurse: a research-based model of clinical judgment in nursing. *Journal Nurse Education*, *June 45*(6), 204–211. https://doi.org/10.3928/01484834-20060601-04

Tartavulea, C. V., Albu, C. N., Albu, N., Petre, R. I., & Dieaconescu Silvia. (2020). Online Teaching Practices and the Effectiveness of the Educational Process in the Wake of the COVID-19 Pandemic. *Amfiteatru Economic*, *22*((25)), 920–936. https://doi.org/10.24818/EA/2020/55/920

Yuan, H. Bin, Williams, B. A., & Man, C. Y. (2014). Nursing students' clinical judgment in high-fidelity simulation based learning: A quasi-experimental study. *Journal of Nursing Education and Practice*, *4*(5), 7–15. https://doi.org/10.5430/jnep.v4n5p7

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2 October 2021
http://dx.doi.org/10.20473/jn.v16i2.27418

Original Research

Perspectives of Pregnant Women Regarding Iron Deficiency Anemia

Sirikanok Klankhajhon[1], Kornkarn Pansuwan[1], Kanokon Klayjan[1], Somsak Thojampa[1] and Nannaphat Nensat[2]

[1] Faculty of Nursing, Naresuan University, Phitsanulok, Thailand
[2] Watbot Hospital, Phitsanulok, Thailand

ABSTRACT

Introduction: Iron deficiency anemia (IDA) is a global health problem. The prevalence of anemia in pregnancy worldwide is nearly half of pregnant women. It impacts on women and offspring outcomes during pregnancy, intrapartum and postpartum period associated with increasing rate of preterm labor, pregnancy induced hypertension, low birth weight, perinatal death including postpartum hemorrhage, postpartum infection, unsuccessful rate of exclusive breast feeding, and postpartum depression. Inadequate iron intake, maternal physiological changes during pregnancy, and bleeding were indicated as common causes of IDA in pregnancy. The objective was to explore the experiences of pregnant women regarding IDA.

Methods: A total of eighteen women between 16-36 weeks' gestation participated in the qualitative research. Women were selected by purposive sampling according to inclusion criteria to in-depth interviewed at antenatal care clinic, Watbot hospital, Phitsanulok, Thailand.

Results: Thematic analysis of the qualitative interviews identified four main themes: iron-deficiency anemia in pregnant as a normal pregnancy; concern on food rather than hematocrit (HCT) level; maternal instinct in healthy baby; and low socioeconomic as a main obstacle.

Conclusion: The findings illustrated to enhance better understanding the nature, attitude, knowledge, perception, and behavior of pregnant women on IDA, facilitators to support women for healthy behavior, and barriers to IDA in pregnancy based on Thai context.

ARTICLE HISTORY

Received: June 06, 2021
Accepted: September 09, 2021

KEYWORDS

iron deficiency anemia; pregnant women

CONTACT

Sirikanok Klankhajhon
sirikanok_k@hotmail.com
Faculty of Nursing, Naresuan University, Phitsanulok, Thailand

Cite this as: Klankhajhon, S., Pansuwan, K., Klayjan, K., Thojampa, S., & Nensat, N. (2021). Perspectives of Pregnant Women Regarding Iron Deficiency Anemia. *Jurnal Ners, 16*(2). 119-127. doi:http://dx.doi.org/10.20473/jn.v16i2.27418

INTRODUCTION

Iron deficiency anemia (IDA) in pregnant women is a serious global health issue (WHO, 2011). Anemia in pregnant women is defined as the Hemoglobin (Hb) level lower than 11 g/dL or Hematocrit (Hct) level lower than 33%, divided into three classifications of severity as follows: mild (Hb10-10.9 g/dL), moderate (Hb 7-9.9 g/dL) and severe (Hb <7 g/dL) (Center of Disease Control (CDC), 1989; WHO, 2011). The Center of Disease Control defined the severity of anemia in each trimester AS Hb level lower than 11 g/dL or Hct level lower than 33% in the first and third trimester of pregnancy and Hb level lower than 10.5 g/dL or Hct level lower than 32% in the second trimester of pregnancy due to the physiological changes during pregnancy (Center of Disease Control, 1989).

The Global Health Observatory (GHO) reports indicated that the prevalence of anemia worldwide is increasing WITH around 40% of pregnant women in 2016 (Murray-Kolb et al., 2012; WHO, 2011,, 2016). One of five cases of anemia in pregnant women is caused by iron deficiency anemia (IDA) (Department of Health, 2017, 2018; WHO, 2011). IDA in pregnant women has direct and indirect impacts on maternal health and offspring outcomes, including both medical and obstetrical complications during pregnancy, labor, and postpartum period. It is associated with increasing rate of preterm labor, pregnancy induced hypertension, low birth weight, perinatal death, postpartum hemorrhage,

postpartum infection, unsuccessful rate of exclusive breast feeding, and postpartum depression (American College of Obstetricians and Gynecologists (ACOG), 2008; Camaschella, 2015; Maha et al., 2011; Tandon et al., 2018).

The evidence strongly supports that maternal physiological changes during pregnancy with inadequate iron intake are indicated as common causes of IDA in pregnancy (Camaschella, 2015; Goonewardene et al., 2012; Lowdermilk et al., 2016; Pinchaleaw, 2017; Reinold et al., 2012; Tana, 2017; Techakampholsarakit et al., 2018). In Thailand, the policy promotes to decrease rate of IDA in pregnant women by the Department of Health (DoH), Ministry of Public Health (MoPH) that provides iron supplement for all pregnant women. including nurses use in the nursing processes with group and individual health education about IDA such as severity, consequences, prevention, treatment, dietary and iron supplement, and self-care during pregnancy (Bureau of Nutrition, Department of Health, 2011; Center of Disease Control, 1989; Department of Health, 2018; Food Division, Bureau of Food, Food and Drug Administration, 2016) and based on the recommendation from the World Health Organization (WHO, 2016) processes may support and decrease rate of IDA in pregnant women.

In addition, most of the studies focused on the risk factors, intervention, and program to prevent and improve the iron deficiency anemia in pregnant women (Kaljarueg, 2017; Sookdee & Wanaratwichit, 2016; Sukkai & Khiewyoo, 2012). The national statistics reports that IDA in Thai pregnant women was around 20.43%, 21.05%, 20.39%, 18.55%, 17%, and 17%, respectively, from 2013 to 2018 (Department of Health, 2017; 2018). Although, the prevalence of IDA in pregnant women slightly decreased, it is quite steady around 17%. It is still more than KPI for anemia in pregnancy. The key performance indicator (KPI) must be less than 10% for anemia in pregnancy. The prevalence of anemia in Thai pregnant women is still higher than the KPI of anemia in pregnant women. These data illustrated the current studies that focused on the intervention to prevent and improve the iron deficiency anemia in pregnant women. It might not fit with the women's views, which affect the practical use for pregnant women with IDA. Therefore, the overall aim of the study was to explore the experiences and perspectives of pregnant women regarding IDA to understand their attitude, knowledge, and behavior during pregnancy based on the Thai context including their insight of barriers and facilitators to anemia in pregnant women. This identification of phenomena and experiences of pregnant women with IDA will be used to design the program or intervention that might fit and be of practical use for them.

MATERIALS AND METHODS

A phenomenology qualitative research was used to explore the experiences and understand the phenomena of pregnant women with IDA through in-depth interviews. Their experiences provided better understanding of the attitude, knowledge, self-care and behavior of pregnant women and provided insights into their experiences of the barriers and facilitators based on the Thai context.

A target sample size was ten to fifteen pregnant women for interviews. The researcher believes the number of sample size around ten to fifteen women is sufficient to identify and understand the phenomena and their lived experiences of pregnant women with IDA (Creswell, 2014; Holloway, 2010). The sampling grid is shown in Table 1. Women were selected by purposive sampling for in-depth interview at antenatal care clinic, Watbot hospital, Phitsanulok, Thailand. Women were initially invited by the nurse at ANC. When a pregnant woman expressed willingness to participate in the interviews, they contacted the researcher by telephone (free call) or in person at the ANC during office hours. Then, women interested in participation were given full information by the researcher. The researcher took written consent. The participants were screened through inclusion and exclusion criteria. The inclusion criteria are woman able to read, speak and understand the Thai language. Pregnant women diagnosed as IDA, who had Hct level less than 33 percentages, and no complications would be eligible for recruitment. Women with any complications and extremely high stress scores (ST-5 score > 8 points) during pregnancy were excluded. Women with extremely high stress scores were referred to nurse at ANC. ST-5 is a stress self-assessment tool within the Thai version of the mother and child health handbook. Stress score was collected from the women as part of their usual antenatal clinical assessments and these data were then extracted by the researcher. Participants were offered a gift voucher of 200 baht for taking part in the interviews.

The data were collected through individual in-depth interviews from February to September 2020. The semi-structured questions were developed by the researcher based on the concepts of anemia in

Table 1. Purposive Sampling Frame for Pregnant Women in the Interviews

Variable	Details of variable	
Number of pregnancy	Primigravida (first time)	Multigravida (second or more)
Maternal age	Age < 20 years old	Age ≥ 20 years old
History of IDA during pregnancy	Yes	No
Gestational age (GA) at the first visit	> 12 weeks	< 12 weeks
Antenatal care visit at clinic following the recommendation	Yes	No
Severity of anaemia	Hb < 7 g/dL	Hb > 7 g/dL

pregnancy, research objective, and context. The items of questions were verified by the three experts in maternal and newborn nursing in terms of content, construct, and language. The question guide consisted of the participant's experiences with the IDA during pregnancy, caring during pregnancy, facilitators and barriers related the IDA and healthcare service. For example, the key questions were guided to in-depth interview*: "Could you tell me about your experiences during pregnancy?"*; *"Could you tell me about your current Hct level?"*; and *"I would like to start with your usual care, please tell me about what do you do during pregnancy with IDA."* Steps in conducting the interviews were as follows: (1) the name, position and contact details of the researcher were introduced to the participants; (2) study information was briefed to the participants on the purposes, benefits and processes of the study, and ethical issues; (3) any questions from the participants were answered by the researcher before starting the interviews; and (4) the main findings from the interviews were summarized for checking accuracy and correction with the participants (Creswell, 2014; Holloway, 2010). The interviews ended with eliciting the participant's demographic characteristics. All interviews took about 30 to 45 minutes per participant and were recorded with a digital voice recorder and field notes.

Thematic analysis was used to analyze data. The data were managed by the researcher as well as manually. The processes in conducting a thematic analysis were as follows (Braun& Clarke, 2006; Creswell, 2014; Holloway, 2010). Firstly, the data were fully transcribed. The full transcripts were checked and cross-checked for accuracy. Next, all transcripts were read and reread several times to understand each interview in depth. The data were compared for similarities and differences among participants based on a list of all topics from interviews. Verbatim quotes were underlined and highlighted as key words. The data contents were coded. The codes were checked back with the transcripts for accuracy. The codes were grouped according to initial categories and progressed to sub-themes and themes. The themes were examined in terms of relationships in two dimensions between data set and codes; and codes and themes. The themes were defined and named for presenting the overall data in each theme. Lastly, the coding and the themes were examined for accuracy by the researcher, co-researcher and consultant. The process of thematic analysis was reported in relation to the research questions and literature. For instance, the data were transcribed as:

> *"I feel nothing. I had morning sickness and fatigue in the early pregnancy. It is normal signs and symptoms of pregnancy."* (G_1P_0, Age 34 years, GA 30 wk., Hb 9 g/dL)

> *"I have had an anemia before as same as this time. I feel nothing. It is a normal, just low level of Hct. I never had signs of anemia."* (G_3P_2 L_2, Age 30 years, GA 32 wk., Hb 8.5 g/dL)

The verbatim quotes were underlined and highlighted as keywords as *"never had signs of anemia" and "a normal signs and symptoms of pregnancy."* The data contents were coded and then were examined into the theme.

The study rigor was obtained in terms of trustworthiness through credibility, confirmability, objectivity and transferability (Anney, 2014). The process of qualitative interviews was checked by consolidated criteria for reporting qualitative studies (COREQ) in three domains: research team and reflexivity; study design; and analysis and findings. The researcher summarized the findings from the interviews, which were re-examined by the researcher, co-researcher and consultant in each phase of the data analysis, including codes and themes as a peer-debriefing for credibility (Anney, 2014). The protocols of data collection and data analysis were checked with the researcher, co-researcher and consultant to ensure that they were described well enough in terms of data collection process, raw data, process of data analysis and interpretation of the findings as an audit trial for dependability.

The methods of data collection and data analysis process were reported in rich description of characteristics with the details of research setting, characteristics of participants, and the Thai context. The decision-making of the researcher in each stage was demonstrated so that the research processes and context of the study can be applicable for justification to other contexts or situations in future research as a transferability (Anney, 2014; Baillie, 2015; Creswell, 2014). The research process was recorded with a diary by the researcher including the feelings and contexts behind the decision-making for confirmability. The effect of the researcher on the research process was recognized because the researcher as an instrument might influence the process of the data collection and data analysis. The data analysis process was demonstrated in rich description to ensure that the findings were interpreted from the interviews (Anney, 2014; Baillie, 2015; Creswell, 2014; Shenton, 2004).

Ethical approval for this study was obtained from the Naresuan University Institution Review Board, Naresuan University, Thailand (IRB No. 0596/62) dated on October 08, 2019. The decision to participate was made by individual women independently and without pressure. Pregnant women could withdraw any time without giving any reason and their withdrawal from the research did not affect the standard of care. All data in this study were identified by individual codes, except for copies of the consent form which contained the names and contact details of all participants. No data could be accessed by anyone other than the researcher, co-researcher and consultant. The data were presented and reported without personal identification. During data collection

and analysis, the researcher used a personal laptop with strong password protection. All files and documents were kept securely in locked storage at Naresuan University, Thailand. Personal information will be kept for one year after the end of the study; all other anonymized data will be kept for a period of ten years after completion of the study in locked storage at Naresuan University, Thailand.

RESULTS

A total of twenty-five pregnant women had expressed an interest in participating in the in-depth interviews. Five women withdrew from the study due to their duties: taking care of their children, transportation and their households. Two women withdrew from the interviews due to their mother and husband having not allowed them to participate in the interviews. They also decided after the introduction to have explained again the aim of the study, the interview process, and checked consent for recording the interviews. One woman's mother said, *"It takes quite a time and there's nothing for us to do that"*; and the husband said, *"It's not significant to us. We just go back home to prepare our street food: Thai sweets."*

The participants were residents of the Lower Northern region of Thailand such as Sukhothai, Pichit, Phitsanulok, and Tak in both the rural (village or countryside) and urban (town) areas. The demographic characteristics of pregnant women are summarized in Table 2. The age of participants ranged from 16 to 40 years. The average income of participants was 10,000 baht a month. Around half of participants had a healthy pre-pregnancy BMI (10, 55.6%), five women had an overweight (27.8%) and three women had an underweight (16.6%). Most of the pregnant women had a mild severity of IDA (Hb 10-10.9 g/dL) (n = 13; 66.7%). They had no signs and symptoms of IDA.

Table 2. Demographic characteristics of pregnant women in the in-depth interviews

Characteristics	n	%
Age		
< 20 years	5	27.8
20-34 years	9	50.0
≥ 35 years	4	22.2
Number of gravida		
Primigravidarum	8	44.4
Multigravidarum	10	55.6
Occupation		
Employee	4	22.2
Self-employed	3	16.6
Agricultural	5	27.8
Housewife	6	33.4
Education		
Secondary school or equal	9	50.0
High school or college degree	6	33.4
Bachelor degree or equal	3	16.6
Pre-pregnancy Body Mass Index (BMI)		
Underweight (BMI < 18.5 kg/m2)	3	16.6
Healthy (BMI 18.5-22.9 kg/m2)	10	55.6
Overweight (BMI 23-29.9 kg/m2)	5	27.8
Income		
< 200 US dollar	3	16.6
200-400 US dollar	6	33.4
400-800 US dollar	6	33.4
>800 US dollar	3	16.6
Gestational age at the first ANC		
≤12 weeks	11	61.1
>12 weeks	7	38.9
Hb Level		
< 7 g/dL	2	11.1
7-9.9 g/dL	4	22.2
10-10.9 g/dL	12	66.7

Topics of in-depth interviews covered a range of issues on pregnancy and IDA. There were an initial twelve codes and initial nine sub-themes. These are shown in Figure 1. Four main themes emerged from the interviews: iron-deficiency anemia in pregnant women as a normal pregnancy; concern on food rather than Hct level; maternal instinct in healthy baby; and low socioeconomics as a main obstacle.

Theme 1: Iron-deficiency anemia in pregnant women as a normal pregnancy

This theme illustrates the perception of pregnant women with IDA. Their point of views was still feeling it as a normal pregnancy even though they have had an anemia during pregnancy. They said:

> *"I feel as the same as I am a normal pregnant woman. I know, I have a hematocrit level quite lower than usual pregnant women."* (G_1P_0, Age 18 years, GA 32 wk., Hb 6 g/dL)

> *"When I was pregnant with the last child, this time, I feel the same as well."* ($G_3P_2A_0L_2$, Age 32 years, GA 28 wk., Hb 7 g/dL)

Pregnant women perceive the IDA in the real word as quite different impacts from information from healthcare professionals.

> *"I got information from the nurse and doctor at this hospital. They also said that my baby will have growth restriction. It means like a small baby but when the doctor checked my baby via ultrasound, she told me the size of baby is appropriate with my gestation. So, I feel IDA for me as a normal."* ($G_2P_1A_0L_1$, Age 27 years, GA 30 wk., Hb 10 g/dL).

Sub-theme 1.1: Nothing: not any signs and symptoms

Pregnant women expressed their experiences about IDA during pregnancy. They indicated that they have not had any signs and symptoms and related complications of IDA such as severe fatigue, abortion, infection, baby low birth weight, preterm labor, and others.

> *"I'm OK. I don't have any signs and symptoms about anemia that the nurses at the antenatal clinic told me about, such as infection, abortion, and intrauterine growth retardation. I am aware and take care myself and my baby the same as in the previous pregnancy. I just have an anemia in this pregnancy. Last pregnancy, I am not sure, I have Hct*

level around 35-37 vol%." ($G_4P_2A_1L_2$, Age 42 years, GA 34 wk., Hb 8 g/dL)

"I feel nothing. I had morning sickness and fatigue in the early pregnancy. It is normal signs and symptoms of pregnancy." (G_1P_0, Age 34 years, GA 30 wk., Hb 9 g/dL)

"I have had anemia before, same as this time. I feel nothing. It is normal, just low level of Hct. I never had signs of anemia." ($G_3P_2L_2$, Age 30 years, GA 32 wk., Hb 8.5 g/dL)

Sub-theme 1.2: Common way of life during pregnancy

Participants indicated their lifestyle during pregnancy with IDA as similar as the common way of life during pregnancy. They expressed that they can run their job, take care of their children, household, and come to the hospital by themselves.

"I feel as similar as other pregnant women because I can do my job at the convenience store and household including take care of my husband. I feel the nurse and doctor care for me the same as normal pregnancy." (G_1P_0, Age 34 years, GA 30 wk., Hb 9 g/dL)

"I have two children at 9 and 5 years old. I take care of this pregnancy the same as normal. Now, I am a single mom. I think, I have a common way of life as a normal pregnancy although I have anemia during pregnancy. It's just anemia, it's the same as normal pregnancy. I do it as my usual life during pregnancy. I also got iron supplement the same as normal pregnancy." ($G_4P_2A_1L_2$, Age 42 years, GA 34 wk., Hb 8 g/dL)

They illustrated that they also work, live, and do other things during pregnancy with IDA the same as pregnant women without IDA, including getting iron supplement.

Theme 2: Concern on food rather than Hct level

This theme illustrates the pregnant women's concern on their food and diet as related to their gestational weight gain. They expressed that when they got information from the nurse about their complication: IDA during pregnancy, they were concerned about their usual food, that they should take more food such as milk, vegetables, eggs, and meat. Surprisingly, they did not concern to take iron-rich food such as pork liver, broccoli, green bean, and pork blood.

"When I know, I am a pregnant. I take a lot of food such as milk, eggs, meat, and veggies. I think, it might help me to get high gestational weight gain. When I know that I have a low level of Hct. I still take a lot of food and I don't focus on iron-rich foods. I think, if I take more food (general foods), my weight will gain. It's quite significant for me. Frankly, I did not concern about my Hct level. Sometimes, I forgot to take an iron supplement." (G_1P_0, Age 24 years, GA 36 wk., Hb 10.4 g/dL)

Pregnant women also expressed their experiences that iron-rich foods and iron supplements might not benefit to treat IDA. They perceived iron supplements for all pregnancy, not specifically for IDA during pregnancy.

"I'm not sure about nutrients in the iron supplements that I got from hospital. I take it following the prescription but I didn't see the outcomes. I still have low Hct level both the previous

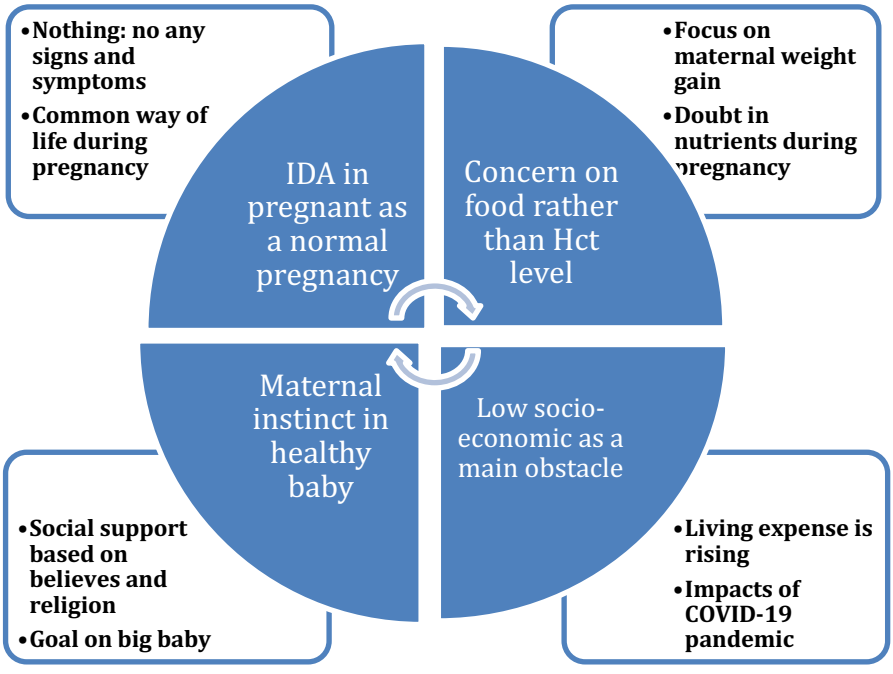

Figure 1. Themes and sub-themes of pregnant women with IDA

and this time. Does it really help?" ($G_2P_1A_0L_1$, Age 29 years, GA 31 wk., Hb 8 g/dL)

Sub-theme 2.1: Focus on maternal weight gain

Pregnant women focus on their gestational weight gain.

"It's my experience, the first pregnancy I had was normal Hct level but my weight gain was only 9 kilograms in total. My first baby, it's quite smallest just 2,600 grams. Then, I have anemia in the second pregnancy. My total gestational weight gain is 15-16 kilograms, baby birth weight is 3,200 grams. It's quite a difference. If you have anemia and don't have anemia during pregnancy, it may not impact on the different size of the baby." ($G_3P_2A_0L_2$, Age 35 years, GA 32 wk., Hb 7.8 g/dL)

They stated that they desired to take a lot of food. They believed that food benefits for them to gain their gestational weight.

"I have anemia during this pregnancy. So, I try to take a lot of food, such as milk, eggs, and fruits. I believe that it's good for me and my baby." ($G_2P_0A_1L_0$, Age 22 years, GA 29 wk., Hb 7.8 g/dL)

They pointed out that they did not concern about iron-rich foods and iron supplements. They assumed that it's might not be an advantage for them during pregnancy.

"I still believe you are what you eat in foods rather than iron-rich foods or iron supplements such as pork liver, pork blood, green beans, and vitamin supplements. If I take only pork liver, pork blood, green beans, etc., and Obimin AZ and Ferrous Fumarate every day, my weight might not gain. It's quite bad for me and baby. I think, all pregnant women should gain their total gestational weight around 10-15 kilograms even though you have anemia. Hct level is less significant for me. It means iron-rich foods or iron supplements are less significant than my weight gains." ($G_2P_1A_0L_1$, Age 38 years, GA 33 wk., Hb 8 g/dL)

"When I have anemia, I must take more food for gaining my weight." (G_1P_0, Age 21 years, GA 31 wk., Hb 8.5 g/dL)

Sub-theme 2.2: Doubt in nutrients during pregnancy

Pregnant women indicated that iron-rich foods and iron supplements might benefit for increasing the Hct/Hb level but might not be of benefit for them.

"I don't know about the nutrients or iron in the iron-rich foods and iron supplements. I got Ferrous Fumarate 200 mg. to treat anemia. I regularly take it three times a day: morning, noon, and evening from 12 weeks of gestation until now. The level of Hct quite swings. I mean up and down and up and down between Hct 28-31 vol%." ($G_4P_3A_0L_3$, Age 36 years, GA 32 wk., Hb 10 g/dL)

They showed that they did not know about the real benefits of iron nutrients in iron-rich foods and iron supplements. They also expressed that they hesitated about nutrients during pregnancy, especially iron.

"I feel confused about nutrients during pregnancy. I have a question as to how much iron does a pregnant woman need daily? I got Triferdine and Ferrous Fumarate. I take Triferdine one tablet once a day and Ferrous one tablet three times a day. I try to eat pork blood soup most of the week. When I checked up my Hct level, it's the same level. I don't know what's happened?" (G_1P_0, Age 16 years, GA 27 wk., Hb 6.5 g/dL)

Theme 3: Maternal instinct in healthy baby

Pregnant women pointed out about their maternal instinct on a healthy baby. They claimed that the characteristics of a healthy baby consisted of good appearances, no complications and birth weight more than 3,000 grams. The most significant aspect of a healthy baby is big baby.

"I try to do the best. If you have a big baby, it shows you have good food and self-care during pregnancy. You try to compare the big and small baby. The small baby might to get more frequently sick than the big baby." ($G_3P_2A_0L_2$, Age 35 years, GA 32 wk., Hb 7.8 g/dL)

Pregnant women supposed that they get social support based on the Thai context, belief and religion.

"My husband finds a lot of information from his family, friends and internet and prays for my baby every day, when he knows I have anemia. I try to do everything, if I can for my baby." (G_1P_0, Age 34 years, GA 30 wk., Hb 9 g/dL)

Sub-theme 3.1: Social support based on beliefs and religion

Social support was illustrated by pregnant women that assisted them to be a healthy mom based on the Thai context, including beliefs and religion.

"He (my husband) extremely believes what his mother and grandmother give me about local food to decrease my anemia. It's is a local vegetable; it's called "Pak Good" (Paco fern or small vegetable fern). He also prays before bedtime every day. Maybe average five days a week." (G_1P_0, Age 34 years, GA 30 wk., Hb 9 g/dL)

Informational support from healthcare professional indicated that pregnant women got an overview on IDA such as diagnosis, causes, signs and symptoms, treatment, consequences, and follow up.

"The nurse at the antenatal clinic told me in the first visit that I have anemia, Hct 24 vol%, and gave me information about causes, signs, protocol for treatment and impacts on me and the baby. Then, I met the doctor. She said I need to get blood transfusion and then take a blood test after that. I

have had iron supplements since after blood transfusion until now." (G_1P_0, Age 17 years, GA 32 wk., Hb 9 g/dL)

Sub-theme 3.2: Goal of a big baby

Pregnant women claimed their goal of pregnancy was that they wanted to get a big baby. They do the best to gain high gestational weight during pregnancy. Based on their belief and Thai context, pregnant women expressed their experiences that having a big baby came from their parents and grandparents.

"My aim is to get a baby birth weight more than 3,500 grams. I'm not sure, is it quite high? But my mom and my grandmother told me you should take more foods to have a baby more than 3.5 kilograms. It's a healthy baby." (G_1P_0, Age 21 years, GA 32 wk., Hb 9.8 g/dL)

"In Thailand, if you have a big baby that means you are healthy during pregnancy and have a healthy boy too. Most people don't concern about what Hct level do you have during pregnancy. They also ask you as a common question: How much weight did you gain during pregnancy and how does your baby weigh?" (G_1P_0, Age 22 years, GA 33 wk., Hb 8.2 g/dL)

Theme 4: Low socioeconomics as a main obstacle

The socioeconomic aspects showed that pregnant women concerned about their income and monthly stipend during pregnancy. Pregnant women illustrated that they worried about cost of vitamin supplements and others during pregnancy with IDA. It is a main barrier to pregnant women regarding IDA.

"I still keep money for my family rather than for myself although I have an IDA during pregnancy. I think, the iron supplement that I got from the clinic is quite enough for me and my context. I have two children. I don't want to pay more for iron-rich food. I ate a lot of rice noodles with curry no meat. It helps me to gain my weight." ($G_4P_2A_1L_2$, Age 42 years, GA 34 wk., Hb 8 g/dL)

"I cannot do my job. I work at the local restaurant. I have not enough money to pay for iron-rich food. I focus on living expenses in each month during the COVID-19 pandemic." (G_1P_0, Age 19 years, GA 27 wk., Hb 10 g/dL)

Sub-theme 4.1: Living expenses rising

Pregnant women expressed the living expenses are constantly rising in Thailand due to the impacts from the Thai socioeconomics, political situations and COVID-19 pandemic. They indicated that they got the same rate of salary, but the cost of living is rising, such as the price of pork meat, vegetables, milk, and gas for car or motorcycle. They have limited money to take care of their pregnancy with IDA.

"I concern on our living expenses (my husband, son and daughter and me). The price of pork meat, green beans, tomatoes and milk are rising. I think, it's not good if I spend too much money for my pregnancy. I try to keep a balance. So, I take care of my pregnancy the same as previous pregnancy although this pregnancy has an IDA. I choose sticky rice with fish sauce to eat rather than milk, salad, or noodle soup. I have no choice." ($G_4P_3A_0L_3$, Age 36 years, GA 32 wk., Hb 10 g/dL)

Sub-theme 4.2: Impacts of COVID-19 pandemic

Participants indicated that the COVID-19 pandemic impacts on the lifestyle and their work. Some pregnant women changed their work outside to work from home. In addition, their income was decreased around 30-75%. They also expressed that they have adapted their lifestyle, including their expenses. They need to take care of their pregnancy and their life also.

"I don't know how to say. I think, I cannot think about me and my pregnancy. I have not enough money because I got only 50% of my salary from my boss due to the COVID-19 pandemic. I cannot perfectly take care of my pregnancy with IDA." (G_1P_0, Age 23 years, GA 30 wk., Hb 8.6 g/dL)

DISCUSSION

The findings of this study reflect on their attitude, knowledge, and behavior including the self-awareness on IDA during pregnancy. Most of the pregnant women indicated that they did not have any signs and symptoms of anemia during pregnancy. They still have a common way of life as in a normal pregnancy. This experience reveals their attitudes that IDA in pregnant women is the same as a normal pregnancy. In their point of view, pregnant women with IDA and normal pregnancy got the information, treatment, and iron supplements the same as normal pregnancy. This is similar to findings of study conducted in Mumbai, India where the participants expressed their experiences of anemia as "normal during pregnancy" because they perceived weakness or fatigue might not directly impact their offspring (Chatterjee & Fernandes, 2014). Pregnant women indicated that they were more concerned on their food intake to gain higher gestational weight rather than the severity of anemia. Based on their beliefs and Thai context, most pregnant women focused on the maternal weight gain that benefited for them and their fetuses. They also pointed out that they concerned on their general foods rather than iron-rich foods and iron supplement. They revealed that they hesitated over the benefits or advantages of iron supplement or nutrients of iron-rich foods during pregnancy. These findings reflected on their low level of attitude and knowledge including the behavior of pregnant women with IDA about iron-rich foods and iron supplement. It is related to the study of factors affecting iron deficiency anemia in pregnant women that indicated the low level of knowledge and misunderstanding affecting their attitude and behavior during pregnancy, including iron

supplements and iron-rich foods as a nutrition for pregnant women (Kaljarueg, 2017; Sookdee & Wanaratwichit, 2016; Sukkai & Khiewyoo, 2012).

The self-care during pregnancy with IDA was expressed that they concerned on their food intake rather than iron-rich foods and iron supplements. It might impact on their Hct or Hb level. They also believed that if they take a lot of food it will be good so that they have high total gestational weight gain. Participants indicated that the iron supplements and iron-rich foods were not significant to treat IDA during pregnancy. They seemed to have less knowledge about the advantages of iron-rich foods and iron supplements on IDA during pregnancy and self-awareness to enhance their behavior. A previous study aimed to determine factors affecting iron deficiency anemia among pregnant women and showed inappropriate attitude of taking iron tablets and self-care about iron deficiency anemia during pregnancy, including knowledge about iron-rich foods that were significantly associated with higher rate of IDA (Sookdee & Wanaratwichit, 2016). These findings related to maternal instinct in a healthy baby. They believed that if they were healthy during pregnancy, they will have a big baby. It illustrated their social support from their families, friends, and significant persons, including healthcare professionals based on their beliefs and religion. It is quite important for pregnant women with IDA regarding their informational and emotional supports as a facilitators during pregnancy (Bilimale et al., 2010; Chatterjee & Fernandes, 2014; Senanayake et al., 2010).

In addition, the findings also illustrated the barriers to behavior of pregnant women regarding IDA, that is socioeconomics and political situation. The increasing living expenses and impacts of the COVID-19 pandemic, such as lockdown, should be a concern that impacts on their income and monthly stipend, especially IDA during pregnancy. They expressed that they have enough money to support the iron-rich foods and iron supplement such as milk, meat, and offal. They still take local nutrients with high calories that they believe would afford a high maternal weight gain such as sticky rice with fish sauce and rice noodles with curry without meat. It affected their baby birth weight. It is similar to findings that the COVID-19 pandemic affected income and household consumption due to income loss and unemployment (Hawkins et al., 2010; Martin et al., 2020).

These issues will be improved by the prenatal educational program for pregnant women with IDA that develops their iron supplements adherence and health behavior of pregnant women (Bilimale et al., 2010; Pipatkul et al., 2015; Senanayake et al., 2010; Sirisopa & Pongchaidecha, 2015). The results of this study are significant for healthcare professionals, especially nursed, that should aware and take a role as a supporter during pregnancy based on informational, emotional, tangible, and appraisal supports to enhance attitude, knowledge, self-awareness, and behavior of pregnant women with IDA (Kaljarueg, 2017; Sookdee & Wanaratwichit, 2016; Sukkai & Khiewyoo, 2012).

CONCLUSION

The results verified to enhance better understanding the nature and perception of pregnant women on IDA, facilitators to support women for healthy behavior, and barriers to IDA in pregnancy based on a Thai context in beliefs, socioeconomics, and religion.

The findings revealed the insight of attitude and knowledge that impacts on their experiences, behavior and self-care during pregnancy with IDA. It is very useful for healthcare professionals to be aware and gain understanding of pregnant women with IDA based on their backgrounds and context. This study will be applied in clinical practice of antenatal care clinic and health promoting hospital for reconsideration of the protocol for pregnant women with IDA in terms of diagnosis, treatment, nursing care and transfer to community.

For nursing administration, the collaboration between multidisciplinary such as pharmacist, doctor and nutritionist will be established for prenatal education about IDA. In addition, the nursing clinical practice guideline (NCPG) for pregnant women with IDA will be designed based on the findings from this study and will be tested in a future clinical trial. The limitation of this study should be considered. Most of the pregnant women represented a low to medium level of education and family income, which cannot be generalized to the entire population.

ACKNOWLEDGMENT

The authors would like to thank Associate Professor Dr. Chommanard Wannapornsiri, Dean of Faculty of Nursing, Naresuan University, Thailand for her kind support. I also would like to acknowledge my deepest thanks and gratitude to Assistant Professor Dr. Raweewan Pilaikiet as a consultant for her kind support and useful advice and guidance. We also thank our colleagues for their kind support and helpful suggestions.

REFERENCES

American College of Obstetricians and Gynecologists (ACOG). (2008). ACOG Practice bulletin-Clinical management guidelines for Obstetrician-Gynecologists: Anemia in pregnancy. *Obstetrics & Gynecology*, *112*(1), 201–207.

Anney, V. N. (2014). Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, *5*(2), 272–281.

Baillie, L. (2015). Promoting and evaluating scientific rigour in qualitative research. *Nursing Standard*, *29*(46), 36–42.

Bilimale, A., Anjum, J., Sangolli, H.N., & Mallapur, M. (2010). Improving adherence to oral iron

supplementation during pregnancy. *Aust Med J*, *3*(5281–90).

Braun, V. & Clarke, V. (2006). *Using thematic analysis in psychology. Qualitative Research in Psychology*. *3*(2), 77–101.

Bureau of Nutrition, Department of Health, M. of P. H. (2011). *Nutritive values of Thai foods*. Department of Health, Ministry of Public Health.

Camaschella, C. (2015). Iron-deficiency anemia. *New England Journal of Medicine*, *372*(19), 1832–1843.

Center of Disease Control (CDC). (1989). CDC Criteria for anemia in children and childbearing-aged women. *MMWR Morbidity and Mortality Weekly Report*, *138*(22), 400–404.

Chatterjee, N., & Fernandes, G. (2014). "This is normal during pregnancy": A qualitative study of anaemia-related perceptions and practices among pregnant women in Mumbai, India. *Midwifery*, *30*(1), e56–e63.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (4th ed.). SAGE Publications.

Department of Health, M. of P. H. (2017). *Health data centre for standard on maternal and child care service of Department of Health, Ministry of Public Health*. http://www.hpc.go.th/director/data/standardUpload/LR_profile_090217_105208.pdf

Department of Health, M. of P. H. (2018). *Standard of care on maternal and child service of Department of Health, Ministry of Public Health*. http://www.hpc.go.th/director/data/standardUpload/LR_profile_090217_105208.pdf.

Food Division, Bureau of Food, Food and Drug Administration, M. of P. H. (2016). *Knowledge of food and nutrition for all ages*. Food and Drug Administration.

Goonewardene, M., Shehata, M., & Hamad, A. (2012). Anemia in pregnancy. *Best Practice & Research Clinical Obstetrics and Gynaecology*, *26*(1), 3–24.

Hawkins, R.B., Charles, E.J., & Mehaffey, J. H. (2010). Socioeconomic Status and Coronavirus Disease 2019 (COVID-19) Related Cases and Fatalities. *Public Health*. https://doi.org/https://doi.org/10.1016/j.puhe.2020.09.016

Holloway, I., Wheeler, S., & Holloway, I. (2010). *Qualitative research in nursing and healthcare: Chichester* (3rd ed.). Blackwell.

Kaljarueg, P. (2017). Anemia among pregnant women at U-Thong Community hospital, U-Thong district, Suphanburi province. *Nursing Journal of the Ministry of Public Health*, *27*(1), 22–32.

Lowdermilk, D.L., Perry, S.E., Cashion, K., & Alden, K. . (2016). *Maternity & Women's health care* (11th ed.). Elsevier.

Maha, S.S., Tondare, S.B., & Tondare, M. . (2011). Study of impact of anemia on pregnancy. International Journal of Reproduction, Contraception. *Obstetrics and Gynecology*, *6*(11), 4847–4850.

Martin, A., Markhvida, M., Hallegatte, S. & Walsh, B. (2020). Socio-Economic Impacts of COVID-19 on Household Consumption and Poverty. *Economics of Disasters and Climate Change*, *4*, 453–479. https://doi.org/https://doi.org/10.1007/s41885-020-00070-3

Murray-Kolb, L.E., Chen, L., Chen, P., Shapiro, M., & Caulfield, L. (2012). *CHERG Iron report: Maternal mortality, child mortality, perinatal mortality, child cognition, and estimates of prevalence of anemia due to iron deficiency*. CHERG.

Pinchaleaw, D. (2017). Nurses and management of iron deficiency anemia in pregnant women. *Journal of the Police Nurses*, *9*(2), 195–201.

Pipatkul, W., Sinsuksai, N., & Phahuwatanakorn, W. (2015). Effects of a nutrition and iron supplement promoting program on iron deficiency anemia in pregnant women. *Journal of Nursing Science*, *33*(1), 69–76.

Reinold, C., Dalenius, K., Brindley, P., Smith, B., & Grummer-Strawn, L. (2012). *Pregnancy nutrition surveillance 2008 report*. U.S.Department of Health and Human Service.

Senanayake, H.M., Premaratne, S.P., Palihawadana, T., & Wijetrat, S. (2010). Simple educational intervention will improve the efficacy of routine antenatal iron supplementation. *J Obstet Gynaecol Res*, *36*(3), 646–650.

Shenton, A. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 66–67.

Sirisopa, N. & Pongchaidecha, M. (2015). Evaluation of a Pharmaceutical care program with pregnant women with Iron deficiency anemia. *Journal of Science & Technology, Ubon Ratchathani University*, *17*(2), 53–62.

Sookdee, J., Wanaratwichit, C. (2016). Factors affecting iron deficiency anemia among pregnant women receiving antenatal care at sub-districts health promoting hospital. *Journal of Health Science Research*, *10*(1), 1–7.

Sukkai, C., Khiewyoo, J. (2012). Factors related to anemia among pregnant women in Khaopanom district, Krabi province. *Srinagarind Med J*, *27*(2), 133–138.

Tana, C. (2017). *Anemia in pregnancy*. http://www.med.cmu.ac.th

Tandon, R., Jain, A., & Malhorta, P. (2018). Management of Iron deficiency anemia in preganancy in India. *Indian Journal of Hematology Blood Transfusion*, *34*(2), 204–215.

Techakampholsarakit, L., Kantaruksa, K., & Sansiriphun, N. (2018). Interventions to promote anemia prevention among pregnant women: A systemic review. *Nursing Journal*, *45*(1), 62–74.

WHO. (2011). *Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity*. WHO.

WHO. (2012). *The Global Prevalence of Anemia in 2011*. WHO.

WHO. (2016). *WHO recommendations on antenatal care for a positive pregnancy experience*. WHO.

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2 October 2021
http://dx.doi.org/10.20473/jn.v16i2.27479

Original Research

The Older Adults Experience Caring for Grandchildren with Special Needs

Sylvia Dwi Wahyuni, Retno Indarwati, and Aditya Budi Nugroho

Faculty of Nursing, Universitas Airlangga, East Java, Indonesia

ABSTRACT

Introduction: Nowadays, grandparents are still involved in the care of grandchildren. The previous research showed that the grandparent involvement in the care of grandchildren has a bad and good impact for older adults. This study aims to gain a deep understanding of the experience of older adults while caring for their grandchildren with special needs.

Methods: Researchers use a phenomenological approach to explore the experience based on awareness that occurs in some individuals. The participants involved in this study were six older adults. Data were collected by in-depth interview and analyzed by Colaizzi's method.

Results: All participants have grandchildren who attended school for special needs children in Surabaya city. This study showed all participants responded positively and related involvement in taking care of grandchildren. In addition, the decision to being a part of caring for the grandchildren came from themselves and the discussions with both parents. Most of the activities with grandchildren were spending time together. However, all participants complained of being tired and this condition can be solved by seeing grandchildren's happiness. They believed that grandchildren care is better with grandmothers or grandfathers than with servants.

Conclusion: It can be concluded that the experiences of the older adult taking care of grandchildren are very varied and positive for the older adults. Further researchers are advised to continue to explore more detail about the psychological influence of grandparents taking care of their grandchildren with special needs.

ARTICLE HISTORY

Received: June 13, 2021
Accepted: October 11, 2021

KEYWORDS

older adults; experience; caring; grandchildren with special needs

CONTACT

Sylvia Dwi Wahyuni
✉sylvia.dwiwahyuni@fkp.unair.ac.id
Faculty of Nursing, Universitas Airlangga, East Java, Indonesia

Cite this as: Wahyuni, S. D., Indarwati, R., & Nugroho, A. B. (2021). The Older Adults Experience Caring for Grandchildren with Special Needs. *Jurnal Ners, 16*(2). 128-134. doi:http://dx.doi.org/10.20473/jn.v16i2.27479

INTRODUCTION

In general, there are challenges for families raising children with special needs (Franklin, 2020). Children who have physical, mental, and social behavioral characteristics (such as: communication disorder, social interaction difficulties, emotional disturbances and others) need special strategies and approaches in treatment (Tigere & Makhubele, 2019). On the one hand, there is a change in the pattern of the role of mothers as career women and housewives so that other family members in the family (extended family) such as grandmothers will become substitute figures for parents while caring for their grandchildren (Wahyuni & Abidin, 2015). Preliminary studies conducted by researchers at several Sekolah Luar Biasa (Extraordinary Schools, a school for children with special needs) in Surabaya city showed that children with special needs are more cared for by their grandparents than their parents. Based on the initial data survey through interviews with the principal, information was obtained that the number of older adults with grandchildren was approximately 20 people. Various experiences make parents more comfortable if the care of grandchildren is carried out by the older adults than others, such as a babysitter. However, the description of the experience of the older adults in the care of their grandchildren is still not clearly illustrated. The purpose of this study was

to explore the older adults who are involved in the care of grandchildren with special needs.

On the other hand, the care of grandchildren has positive and negative impacts to the older adults (Fauziningtyas et al., 2018). The care of grandchildren for older adults has a positive impact on physical, psychological, social, and environmental aspects (Putu et al., 2020). Based on the other research, grandmothers and grandfathers who are involved in caring their grandchildren reported higher rate of life satisfaction and quality of life than non-grandparents. The result also show that grandmothers reported fewer depressive symptoms than women without grandchildren (Tanskanen et al., 2019).In addition, the older adults who were interviewed accepted gracefully if they were given responsibility for caring for their grandchildren. However, there are also negative effects such as fatigue and family conflict (Fauziah, 2020). The major factor that affected grandparents' health self-management who involved in taking care of grandchildren was caregiving burden (Jing & Guo, 2019).

Meanwhile, many older adults in Indonesia live with their families. The older adults who live with their families in three generations are as much as 40.64% (Statistik, 2019). Moreover, Indonesia is among the top five countries with 8.9% older adults in 2013 and will increase to 21.4% in 2050 (BPS & Jawa Timur, 2012). The number of adults aged >60 years in East Java Province is 3.6 million people (BPS & Jawa Timur, 2012). The number of older adults aged >60 years in Surabaya in 2019 is 256,007 people (Surabaya, 2019). In addition, the Central Statistics Agency (BPS) in 2017 stated that the number of children with special needs in Indonesia was 1.6 million people. However, there is no definite data regarding the number of older adults who care for grandchildren (Fauziningtyas et al., 2018).

Based on the background above, the experience of the older adults in the care of grandchildren with special needs to be explored. The description of this experience can be explored by qualitative research through in-depth interviews. Therefore, the researchers are interested in seeing a picture of that specific experience.

MATERIALS AND METHODS

This research is a qualitative method with a phenomenological approach. The population were the older adults with grandchildren who attend an extraordinary school in Surabaya. Sampling method used purposive sampling with the following criteria: 1) older adult aged 60-74 years, 2) take care of grandchildren for 1-12 hours per day, 3) live with grandchildren, and 4) grandchildren who attend extraordinary schools. The number of participants in the study was six older people.

Data collection tools consisted of interview guidelines, voice recorder, and field notes. The interview used open questions and consisted of fourteen questions that aim to explore the experience of grandparents in caring for grandchildren with special needs. The question framework was based on the theory of family centered nursing.

Researchers conducted interviews with participants in a facing position with a fairly close distance (approximately 50-100 cm), with the consideration that the voice recorder could record the conversation clearly. The voice recorder was placed in the open with a distance of approximately 30-50 cm from the participants.

The interview process in the study lasted for 60-90 minutes for each participant, ending when the required information had been obtained according to the research objectives through saturation. In addition, field notes were used to document the atmosphere, facial expressions, behavior and non-verbal responses of participants during the interview process. After all the interviews were completed, the researcher then made a contract again with the participants for the next meeting, namely for data validation.

Furthermore, the researcher ignores all personal assumptions related to the phenomenon under study when digging research data, puts aside his personal knowledge and understanding, and tries fully to position himself as a participant and see things from the participant's perspective. This concept is called epoche or bracketing.

The data were analyzed by the Colaizzi method. The data analysis was through nine stages as follows: describe the phenomenon under study, collecting descriptions of phenomena through participant opinions; read the entire description of the participants about the phenomenon being studied, separating significant statements by giving a code to participant statements that have significant meaning listed verbatim; formulate the meaning of each significant statement; categorize each unit of meaning into one theme/cluster of meaning; integrate each theme into a complete description, validating the results of the analysis to participants, and improving the results of the analysis with the data obtained during the validation process.

This study has passed the ethical test by the Ethics Committee of the Faculty of Nursing, Universitas Airlangga.

RESULTS

Participants in this study were six older adults consisting of one male and five female older adults. This study resulted in nine themes that were elaborated according to the research objectives to obtain a deep understanding of the experiences of the older adults and grandchildren with children with special needs. The data on the characteristics of grandparents and grandchildren are presented in the table below.

Theme 1: Caring Engagement

Participants in this study expressed a meaningful response based on their involvement with the mother

Table 1. Grandparent Characteristics

Participant	Gender	Education level	Profession	Religion	Marital Status	Age (year)
1	Female	Junior high school	Housewife	Islam	Married	67
2	Male	Senior high school	Retired	Islam	Married	72
3	Female	Junior high school	Housewife	Islam	Married	66
4	Female	Diploma III	Housewife	Islam	Married	65
5	Female	Diploma III	Retired	Islam	Widow	68
6	Female	Junior high school	Housewife	Islam	Widow	72

Table 2. Grandchildren Characteristics

Participant	Gender	Age (year)	Special condition
1	Male	12	Down Syndrome
2	Male	16	Down Syndrome
3	Female	10	Down Syndrome
4	Female	10	Down Syndrome
5	Male	11	Down Syndrome
6	Female	14	Down Syndrome

and grandchildren. All participants responded positively, namely accepting anything related to involvement with the mother of the grandchildren and one sub-theme was obtained, namely that the older adults were involved in caring for their grandchildren for one full day. Statements about involvement in the mother and grandchildren were expressed by the following participants:

Custodian

"Currently, this child's parents are already working, so 100% of the care is with me and my wife. Actually they have a house but it is not inhabited because we chose to raise this child here." (P2)

"As a grandmother, I take care of all day, starting to drop off school in the morning, take care when at home and outside the house because this child with special needs requires full attention. Eating, drinking, and resting time should also be a priority." (P4)

Theme 2: The feeling of caring for grandchildren with special needs

Gratitude

"Yes, he feels grateful to be able to teach him all the time, to keep talking, if not invited to talk, his child will continue to be silent like this. So ... oh no ... just be grateful if I just give thanks for the gift of Allah SWT. Yes, if asked to sing, taught to recite the Koran, that's how it used to be if now I rarely want to talk about it like that…." (P1)

Happy

"Yes, I am happy, bro, I have never had grandchildren, that only grandchildren, but yes, God gave it, yes, we accept it as it is, bro. Maybe there are people who are ashamed, but I'm not ashamed, bro, entrusted it like that, inshaAllah, bro, because it was a deposit from God, bro, my mandate, bro, I will feel guilty. Actually, I'm sorry to see a child like that, for example learning, the obstacle is lazy, bro, if you can actually learn, bro, it's just that there is less interest in learning, bro, so it's hard there, so you have to be patient...." (P6)

Sad

"As a human, sometimes there is sadness, sometimes there is anger. It's sad if someone wants their grandchildren, since I was little I took care of them so there were signs 'this body is not feeling well or something,' that's sad...." (P2)

Annoyed

"Sometimes I get annoyed because I can't say if I want to pee so I still use a pamper, so I don't to the point of littering the house. So he can't be independent yet...." (P6)

Angry

"Sometimes I get angry because he doesn't obey, but I really love him. Angry at my grandchildren can't really be angry. He's just a matter of taking a shower is hard. He didn't even want to enter the bathroom, so we had to seduce him with a gold toy so that his grandson would go to the bathroom and take a shower...." (P3)

Attention

"Yes, it's normal, it's normal, children with special needs need affection, so if their parents can't take care of it, I take care of it...." (P5)

Fatigue

"That's the complaint, my legs get tired sometimes because I have gout...." (P1)

Theme 3: Parenting Decisions

Self-decision

"They (parents and grandchildren) all work so I take a stand to take care of him. If a helper is handed over, it is not certain that it will be done. There is also no coercion in the care of grandchildren...." (P5)

Joint decision

"His parents work, yes, we want to happily accept them together with his siblings as well, we are very supportive, so this is a mutual agreement, while people wanted to take it in the past, but we are

afraid because we are not in the same heart as we are afraid that something will happen to my grandchild. I used to have a student like this but he was not active, still like that, he continued to drink, he was given medicine, he continued to sleep and was left behind, how about that? Well, I'm very scared, and I will think if there is something wrong with our grandchildren, so now we are just worried...." (P3)

Theme 4: Activities during parenting

Learning

"Sometimes he studies, if he's in the mood we guide him, but if he is forced, he doesn't want to...." (P3)

Worship

"I thank Allah SWT for the first time, he often saw me praying five times at that time, now he is the one who tells me the time for prayer and keeps saying he wants to go to the mosque or mosque, so he wants to ask to move to the prayer room, evening prayer at the prayer room for evening prayer ' The mosque is close to me, so I follow the problem according to my wishes...." (P2)

Taking a walk

"Where have you been if you want to walk like that, if I get it, go for a walk with his brother, younger brother, his father, his mother. Yes, I sometimes walk to TP, yes, but sometimes if I want to go to Malang, like yesterday, I didn't go along, I was tired so I couldn't join...." (P5)

Playing

"Yes, I usually bathe, yes I am invited to play. Come on, don't worry, yes that's usual, I want to ask for my pan to give me a bribe..." (P4)

Watching TV

"*Grandma watching TV together, sometimes you listen to radio, listen to me..."* (P6)

Doing homework

"In the morning, cook, cook, there are employees, right? Yes, I did cook. This is when it's still early morning with the mother, so I'll cook later if I want to go to a new school with me, right, there is a mother in the morning too. Brother, when night sleeps with his mother, this is the little one who sleeps with me, this is the second grandchild of my child..." (P1)

Selling snacks in front of the house

"I help my son sell snacks in front of the house, I also help wholesale the ingredients when they run out. It's good to be able to fill time and increase income." (P2)

Community activities

"Yes, at home, there are RW activities, mas, if there is a recitation and at home, the mother will take care of the mother. If the recitation in the mosque is Wednesday and Friday then the routine recitation is every Wednesday, sometimes Wednesday, sometimes it's Wednesday, sometimes someone asks for Saturday or Sunday, but if there are no parents, I don't dare to die, if the parents haven't come home, I don't have the courage. Died mas still a little pity...." (P4)

Theme 5: Fulfillment of daily needs

Meeting the needs of children from parents

"Grandchildren's daily needs are met by their parents, we (grandfathers) only buy snacks when our grandchildren ask for it." (P2)

"All the needs of grandchildren are met by his father because his mother does not work." (P4)

Compliance with the grandchildren needs by grandparent

"I also help meet the needs of my grandchildren because I have a pension every month." (P4)

"I fulfill all the needs of my grandchildren because their parents need a lot of other expenses including therapy." (P6)

Theme 6: Addressing complaints

Break

"Yes, sleep, rest and take medicine so that we don't get tired the next day we can do what we do again, so take care of the man...." (P3)

Pray

"I always pray for my grandson. I recited a verse about illness so that my grandson's illness would be removed. In addition, the doctor also said that before taking medication, read a prayer first. I believe God will help us if we pray." (P2)

Get treatment

"Yes, you anticipate if the medicine is routine every day, you have to drink it, sometimes you get hit with food, which may be too salty, so sometimes you are alert, sometimes you fight, bro. Cholesterol is indeed from a lot of fried foods, but if you boil tempeh, it's not delicious if it's not fried. The doctor's advice is not too strict on a diet, you just have to reduce it, but sometimes chronic disease conditions change to become uncomfortable, right, the mind can also catch a cold too. Yes, if he sleeps sometimes I can definitely rest if I don't sleep, I can't...." (P5)

Theme 7: Attitudes and perceptions

Informational support

"Yes, you already know that the neighbors often ask 'Where are you being treated?' Yes, I said therapy. So you usually just ask" 'Mom, mom?' Yes, you can do it yourself, if you don't bring up your own children, you can run away, but you can do it, Mom.

Receive

"Ohhh nothing, if in my neighborhood where there is a grandmother it is commonplace to take care of the grandchild because it seems like there is a grandmother, so if you want to join her grandmother, it doesn't matter because there is a tradition here...." (P4)

Disregard

"It's not important to the neighbors, although there are assumptions that there are those who tend to talk like that, but my grandson, how come I don't receive payment, not forced to, if he thinks it's good, please if not yes please...." (P5)

Ordinary

"Just normal, you don't say the one who takes care of me is only the parents saying thank you. Yes, if I asked for this, it was bought because it was spoiled education. If I did that, I taught Dewe. I should just have to rest because it is still needed so I have to help. I myself am a maid in Mongol, so don't have the heart for people to be the same, how come sometimes there are people who clam up, there is something like that, because they are still able to move unless there is no strength...." (P5)

Gossip

"Yes, it is common for villagers to talk about their son-in-law, but I don't care about it ..." (P6)

Theme 8: Family Interaction

Harmonious

"There is no problem, our relationship is all good...." (P4)

Lack of communication

"Yes, the interaction with my son number 5 is not good, like a disobedient child because he never calls. My son-in-law often wanders around rarely at home...." (P6)

Theme 9: Hope

Independent

"Yes, he can continue to be independent on his own. If God gives him health, independence can be useful for the mother and father, just like that. Independent in any way and must be supervised by parents. We support you together, you take care of each other. Grandchildren and children are stickier to grandchildren…." (P3)

Healthy

"Yes, there is a limit, it's impossible for him to be faced with becoming an engineer. no need to be grandiose the important thing is healthy...." (P5)

DISCUSSION

The involvement of the older adults caring for grandchildren in this study is the role of the grandparents in meeting the educational and physical needs of the grandchildren. The role of the older adults is needed in the growth and development of grandchildren. Raising grandchildren is a shared responsibility of grandparents and parents. This is in line with the previous research (Fauziningtyas et al., 2018). Moreover, about 80% of grandparents say they are happy with their grandchildren (Santrock, 2002). The fundamental value in the family structure in Asia is to place parents as parties to be held and respected (Pujiatni & Kirana, 2013). The family maintains relationships between generations, where the early generations will always leave an influence on the next generation (Santrock, 2002). In addition, participants had feelings of joy during their time with their grandchildren and some older adults experienced or had complaints when caring for their grandchildren, but these complaints disappeared when the older adults saw their grandchildren happy. This is in line with research conducted by Rista et al. which states that "Grandparenting" in Java provides positive experiences and feelings of happiness for grandparents (Fauziningtyas et al., 2018). The experience gained by the older adults can make them the right figure to provide a benchmark for family values that should be applied (Pujiatni & Kirana, 2013). Moreover, the existence of a family can achieve individual needs such as support, love, and emotions like happiness (Wahyuni & Abidin, 2015).

Furthermore, participants said that they tend to make decisions for themselves because the older adults think that their grandchildren are everything and are the successor of the family. This is in line with previous research (Wahyuni & Abidin, 2015) which states that the experience gained by the older adults makes them a figure appropriate to provide a benchmark for family values that should be applied. Decisions that are taken collectively are due to the busy careers of the parents of the child. Furthermore, a family can be decisive in making decisions on other family members (Kertamuda, 2009). Likewise, grandchildren will learn ways to achieve social roles for themselves.

Additionally, participants often spent their time doing activities with their grandchildren. The older adults also do other activities when they do not care for their grandchildren, such as participating in community activities and doing household chores. This condition is similar to Papalia and Olds (2008) who found that the grandparents' activities are often having dinner together, watching television, shopping, and practicing or playing sports with their grandchildren. According to Duvall, the developmental task at old age is to adjust the stage of retirement by changing ways of life; the older adults accept the death of a partner, friends and prepare for death, the older adults maintain the intimacy of their partner and care for each other, and carry out past life

reviews (Setiadi, 2008). Santrock (2002) said that successful aging indicates the success of the older adults in facing the changes that occur in their life. This success is characterized by the ability to perform daily activities such as homework (Peterson, 2017).

Almost all of the fulfillment of the needs of the grandchildren came from both parents and grandparent. However, some grandparents meet almost all the needs of grandchildren because their mothers are not working and the older adults have pension funds. According to Papalia and Olds (2008), more than half of grandparents spend money on the needs of their grandchildren. Grandparents take care of their grandchildren while their parents work and prepare school supplies for their grandchildren, wait for their grandchildren's school, until they come home from school and at home. The fulfillment of formal and informal support for the older adults in raising grandchildren is in the form of fulfilling financial needs in the form of money (Choi, Sprang, & Eslinger, 2016).

Participants think that there are no damning complaints, everything can be resolved. It turns out that every time a complaint comes, the older adults feel paid off when they see their cute and healthy grandchild. Psychologically, physical fatigue can be relieved by praying in overcoming the disease. This is in line with research which states that grandparents only raise grandchildren when their children work; when parents have returned from work, the grandchildren are handed back to their parents. In addition, they said that they did not only talk to their grandchildren, they could be involved in other activities. For rest hours, the older adults feel very adequate because, when their grandchildren take a nap, the older adults also take a nap so they don't feel disturbed for resting (Suyanta & Ekowarni, 2012).

The attitudes and perceptions of the participants obtained different results, that the responses from neighbors about their grandchildren were different, some were normal, some supported helping remind, and some did not care. Older adults also sometimes hear words that are not wearing from people around them but the older adults choose to ignore it and stay focused on taking care of their grandchild. Parent figures in the extended family have a meaning in regard to parenting the children (Yulion, 2013). Parents trust more when their children are taken care of by grandparents than when they have to leave with someone else. This is in accordance with research which states that various experiences make a child believe that the care of grandchildren is carried out by the older adults rather than others outside the family, such as babysitters (Pujiatni & Kirana, 2013). Each family member must support each other because of an absolute obligation; *momong* and grandchildren are natural (Bulanda & Jendrek, 2014).

Good relationships and support from family can help minimize discontinuity in the older adults (Papalia & Olds, 2008). A warm relationship with children is the highest support for the older adults. Therefore, a good relationship between children, son-in-law, grandchildren and family is very good for the older adults psychologically.

Older adults are happy in continuing to care for their grandchildren because the older adults want their grandchildren to learn ways to achieve social roles for themselves. There is also a developmental task for the older adults, which is called a life review, and allows the older adults to see the past that is in their grandchildren so that the older adults are very happy if they continue to care for their grandchild because they see their old identity in their grandchild (Wahyuni & Abidin, 2015).

CONCLUSION

Overall, this study shows that all participants felt positive experiences during grandparenting. Participants expressed the same response regarding the meaning of a grandchild. They believed that grandchildren are everything, beyond their own children, a diamond, a gift and a pride. In addition, they had feelings of joy at the birth of grandchildren and the decisions of grandparenting were from themselves. Most of the activities that are often done with grandchildren are playing. The other activities were participating in community activities, taking care of the household, watching TV, and selling snacks in front of their house. On the other hand, the feeling of tiredness and negative experiences will disappear when they see their grandchildren happy and cheerful. All participants think that the care of grandchildren is better with grandparents than with helpers.

REFERENCES

BPS & Jawa Timur. (2012). *Profil Penduduk Lanjut Usia Provinsi Jawa Timur*.

Bulanda, J. R., & Jendrek, M. P. (2014). Grandparenting Roles and Volunteer Activity. *The Journals of Gerontology*, *Series B 71*(1) January 2016 1–11. https://doi.org/10.1093/geronb/gbu033

Choi, M., Sprang, G., & Eslinger, J. G. (2016). Grandparents Raising Grandchildren: A Synthetic Review and Theoretical Model for Interventions. *Family & community health*, 39(2), 120–128. https://doi.org/10.1097/FCH.0000000000000097

Fauziah, N. (2020). The Role of Grandmother ' s Grandparenting on Family Harmony : a Phenomenological Analysis. *Journal of Educational, Health, and Community Psychology*, *9*(4), 574–590.

Fauziningtyas, R., Indarwati, R., Alfriani, D., Haryanto, J., & Ulfiana, E. (2018). The experiences of grandparents raising grandchildren in Indonesia *Working with Older People, 23*(1), 17-26 https://doi.org/10.1108/WWOP-10-2018-0019

Franklin, P. A. (2020). Impact of disability on the family structure. *Social Security Bulletin*, *17*(6), 14711–14729.

Jing, X. W., & Guo, C. C. (2019). The implications of childcare on grandparents ' health self-

management in a Chinese elderly population. *Int J Health Plann Mgmt*, *September*, 1–10. https://doi.org/10.1002/hpm.2904

Kertamuda. (2009). *Konseling Pernikahan dalam Keluarga*.

Papalia Diane. E, Old Sally Wendkos, F. R. D. (2008). *Human Development (Psikologi Perkembangan)* (9th ed.). Kencana.

Peterson, T. L. (2017). Social Work in Public Health Changes in Health Perceptions among Older Grandparents Raising Adolescent Grandchildren Adolescent Grandchildren. *Social Work in Public Health*, *32*(6), 394–406. https://doi.org/10.1080/19371918.2017.1327389

Pujiatni, K., & Kirana, A. (2013). *Penjaga Nilai-Nilai Dalam Keluarga : Peran Kakek Dan Nenek Dalam Pengasuhan Cucu*. 302–309.

Putu, N., Narayani, R., Menik, K., & Krisnawati, S. (2020). *Hubungan intensitas pengasuhan cucu dengan kualitas hidup lansia*. *8*(April), 25–32.

Santrock, J. W. (2002). *Life-Span Development, Perkembangan Masa Hidup (5th ed.)* (5th ed.). Erlangga.

Suyanta, S., & Ekowarni, E. (2012). Pengalaman Emosi dan Mekanisme Koping Lansia yang Mengalami Penyakit Kronis. *Jurnal Psikologi, 39*(2), 208–221.

Setiadi. (2008). *Konsep Dan Proses Keperawatan Keluarga*. Graha Ilmu.

Statistik, B. P. (2019). *Katalog: 4104001*. Badan Pusat Statistik.

Surabaya, B. (2019). *Penduduk Lanjut Usia Kota Surabaya*.

Tanskanen, A. O., Danielsbacka, M., Coall, D. A., & Jokela, M. (2019). Transition to Grandparenthood and Subjective Well-Being in Older Europeans : A Within-Person Investigation Using Longitudinal Data. *Evolutionary Psychology*, *September*, 1–12. https://doi.org/10.1177/1474704919875948

Tigere, B., & Makhubele, J. C. (2019). The experiences of parents of children living with disabilities at Lehlaba protective workshop in Sekhukhune district of Limpopo province. *African Journal of Disability*, *8*, 1–9. https://doi.org/10.4102/ajod.v8i0.528

Wahyuni, Y. T., & Abidin, Z. (2015). Pengalaman Hidup Lansia Yang Mengasuh Cucu : Studi Kualitatif Fenomenologis dengan Interpretative Phenomenological Analysis. *Jurnal Empati*, *4*(4), 8–14.

Yulion, M. M. (2013). *Memahami Pengalaman Komunikasi Pengasuhan Anak Dalam Extended Family*.

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2, October 2021
http://dx.doi.org/10.20473/jn.v16i2.22399

Original Research

Nurses' Individual Characteristics Associated with Five Moments Handwashing Compliance

Maryana Maryana and Rima Berti Anggraini

STIKES Citra Delima Bangka Belitung, Pangkal Pinang, Indonesia

ABSTRACT

Introduction: The most effective way to control infection is to ensure that hospital staff carry out handwashing according to the protocols. This study aims to determine the characteristics of nursing individuals that affect the compliance of the five moments of handwashing in the hospital inpatient room.

Methods: The method used was a quantitative with a cross-sectional approach. The population was all nurses in five inpatient rooms totalling 84 nurses selected using purposive sampling. The dependent variable was the compliance of nurses' handwashing. The independent variables were the individual characteristics of the nurses, including knowledge, gender, age, attitude, motivation, skin condition, years of service, education, employment status, infrastructure, and type of room. The data were collected using a questionnaire and observation of handwashing compliance. The handwashing observation was based on the hospital guidelines, and the relationship between the variables was analyzed using Chi square and logistic regressions test.

Results: The study indicates that there is a significant relationship between motivation, education, and room type on compliance with the five moments handwashing ($p < 0.05$). The most dominant factor was type of room, and there is no relationship between gender, age, years of work, skin condition, knowledge, attitude, employment status and infrastructures ($p > 0.05$).

Conclusion: It is hoped that nurses can increase self-motivation to wash their hands for five minutes while working, as a form of dedication at work and to protect patients and themselves from nosocomial infections. Besides, hospital management needs to make efforts to increase the motivation of nurses.

ARTICLE HISTORY

Received: October 20, 2020
Accepted: September 11, 2021

KEYWORDS

five moments; handwashing compliance; nursing implementation

CONTACT

Maryana Maryana
maryana385@yahoo.com
STIKES Citra Delima Bangka Belitung, Pangkal Pinang, Indonesia

Cite this as: Maryana, M & Anggraini, R., B. (2021). Nursing Individual Characteristics Affecting Five Moments Handwashing Compliance. *Jurnal Ners,* 16(2). 135-141. doi: http://dx.doi.org/10.20473/jn.v16i2.22399

INTRODUCTION

The incidence of nosocomial infections is increasing in both developed and developing countries. The cause of nosocomial-infections is mostly transient flora. Microorganisms classified as transient flora are obtained by health workers when they are in direct contact with patients or with a contaminated environment. The source of cross-contamination in hospitals is the transfer of microorganisms from the hands of healthcare workers who make direct contact from one patient to another. The impact of the incidence of infection nosocomial can cause long days of stay, increase resistance to microorganisms, increase the burden of treatment costs, and, the most dangerous, death. One of the components to limit the spread of nosocomial infections is sufficient infection control. The most effective way to control contamination is to ensure that hospital staff perform hand hygiene according to the regulation (Lankford et al., 2003; WHO, 2009).

The Word Health Organization (WHO), a long-standing leading authority in campaigning hand hygiene (HH), urges every country to strengthen infection prevention and control, and appeals for networking with stakeholders to take better action for the prevention of HAIs (Saito, Kilpatrick, & Pittet, 2018). HAIs are still a substantial burden among infectious diseases, exceeding the burden of other infections such as influenza and tuberculosis (Cassini, Plachouras, Eckmanns, Abu Sin, Blank, Ducomble, & Suetens, 2016).

Nurses, doctors, and all people involved in patient care must perform infection prevention and control

(Duerink et al., 2006). Hand hygiene is the most effective simple way and the most cost-reducing approach to nosocomial infections (Hugonnet et al., 2002; Kampf et al., 2009; Sickbert-Bennett et al., 2016; von Lengerke et al., 2017). Nurses are professionals who play a significant role in hospital services and have contact with patients for a longer time, up to 24 hours straight. Thus, nurses have a role in the incidence of nosocomial infections (Nursalam, 2011). Health workers generally know about the importance of washing hands to prevent infections. However, the implementation of handwashing that follows the standard procedure is still low among health workers (Akyol, 2007; Nurbaety et al., 2019). Various previous studies stated that compliance with nurses' handwashing was still low, not reaching 100% (Jonker & Othman, 2018; Karuru et al., 2016; Putri et al., 2018; Ratnasari & Dulakhir, 2016; Umboh et al., 2017). Based on previous research, it is known that the individual characteristics of nurses related to handwashing compliance include age, gender, length of work, knowledge, attitudes, motivation, and nurse education (Anugrahwati & Hakim, 2019; Fauzi et al., 2015; Zainaro & Laila, 2020).

Based on the description above, this study aims to determine the individual characteristics of nurses that affect the compliance of the five moments handwashing in the inpatient room of Pangkalpinang City with a quantitative approach.

MATERIALS AND METHODS

This research is a quantitative study with a cross-sectional approach. The dependent variable of the study is the nurses' compliance with handwashing in the inpatient room. The independent variables are individual characteristics, including knowledge, gender, age, attitude, motivation, skin conditions, length of work, education, employment status, infrastructure, and type of room. The population of the study were all associated nurses who work in the inpatient room, as many as 98 nurses. A total of 84 implementing nurses as research respondents was obtained using purposive sampling (ICU = 14; PICU = 16; Non-surgical = 27; Children = 12; Surgery = 15) with the following inclusion criteria: (1) willing to be respondents, (2) not being assigned to the isolation room during the research. The COVID-19 isolation room was not involved in the research because, when the study was taking place, there were no patients. Thus, they could not estimate washing hands for the five moments.

The procedure in this research began by arranging a permit to a government hospital in Pangkal Pinang City. It was followed by conducting a meeting to equate the perception of the research process. The meeting was performed by hospital infection prevention and control programs (IPC). Four people assisted in the process of data collection. Two students were as research assistants who were in charge of collecting questionnaires and documentation. Two hospital IPC officers were responsible for observing the compliance of nurses' handwashing in the rooms. Researchers also coordinated with all heads of room related to research activities. First, the researchers explained to the respondents about the objectives and procedure of the research and the guarantee of data confidentiality. Nurses willing to sign the informed consent form as research respondents then filled out the questionnaire. The study questionnaire was adopted from previous researchers with modifications. The questionnaire covered the nurse's identity (name, age, gender, latest education, years of service, skin condition), room name, and handwashing infrastructure. The knowledge variable consists of 10 questions about the five moments handwashing and has passed the validity and reliability test. Questionnaire validation and reliability test had been done at RSUP Ir. Soekarno with the number of respondents as many as 20 people. Cronbach's alpha test results obtained knowledge value (0.932), motivation (0.958), attitude (0.969) and were declared reliable. Of the 10 questions and statements, all are declared valid with a calculated R value > R table (0.375). Each correct answer is given a value of 1 and 0 if the answer is wrong. The attitude variable includes 10 statements consisting of eight positive statements and two negative statements using a Likert scale. Meanwhile, the motivation variable has 10 statements using a Likert scale. For positive statements, the highest point is 5 in the SS category (strongly agree), while the highest point negative statement is 5 in the STS category (strongly disagree).

The 84 nurses were then observed for the five moments of handwashing compliance in the room by the hospital IPC officers. The observation process was uninformed to the respondents, and only carried out once in 10 days, starting from 22nd to 31rd of August, 2020. Furthermore, each research respondent is given a code, R01 for the first respondent up to R84. The questionnaire files and observation sheets were not accessible other than to the researchers. After data collection was complete, the study continued with data entry. Incomplete nurse data were confirmed to the head of the room concerned. The relationship between individual characteristics and compliance with handwashing was tested using the Chi-square test with a confidence degree of 95% (α = 0.05). Meanwhile, the relationship between variables was analyzed using the multivariate analysis method using logistic regression test with SPSS version 20 software.

RESULTS

Based on Table 1, there are 11 characteristic components of individual nurses. The dominance of female gender nurses, age less than 40 years, vocational education, long working period, non-sensitive skin condition, and civil servant status. Knowledge, attitude and motivation have equal value.

Table 1. Characteristics of Research Respondents

Characteristics of Respondents	n	%	Median
Age			
> 41 Years	13	15.5	-
≤ 40 Years	71	84.5	
Motivation			
Low	35	41.7	39.07
High	49	58.3	
Attitude			
Negative	39	44.6	43.67
Positive	45	53.6	
Knowledge			
Fair	31	36.9	9.61
Good	53	63.1	
Work Period			
New	10	11.9	-
Old	71	88.1	
Infrastructure			
Insufficient	4	4.8	-
Adequate	80	95.2	
Skin condition			
Sensitive	14	16.7	-
Not Sensitive	70	83.3	
Education			
Vocational Degree	63	75	-
Academic Degree	6	7.1	
Professional Degree	15	17.9	
Employment Status			
Civil Servant	63	75	-
Contract	21	25	
Gender			
Male	12	14.3	-
Female	72	85.7	

Table 2. Distribution of Respondents' Handwashing

Handwashing Compliance	n	%
Noncompliant	53	63.1
Compliant	31	36.9
Total	84	100

Table 3. Percentage Distribution of Respondents' Handwashing by Type of Room

Type of Room	Handwashing Compliance				Total
	Noncompliant		Compliant		n
	n	%	n	%	
ICU & PICU	7	23.3	23	76.7	30
Non-surgical	25	92.6	2	7.4	27
Surgery	12	80	3	20	15
Children	9	75	3	25	12
Total					84

Handwashing Compliance

Most of the respondents (63.1%) in this study did not comply with the five-minute handwashing, as in Table 2. The room with the highest level of compliance with washing hands was the ICU & PICU room, while in the normal inpatient room the level of compliance with washing hands was low, as shown in Table 3. While the five most neglected moments are after touching patient surroundings, as in Table 5.

Based on the statistical test in Table 2, there are three variables with p-value < 0.05, namely motivation, education, and type of room. It shows that the three aspects affect the washing of hands by nurses in the room. Furthermore, the OR value of the motivation variable is 2.986, meaning that nurses who have high motivation have the opportunity to comply 2.98 times more than nurses with low motivation. Based on the multivariate logistic regression test, the omnibus test section shows a p-value of 0.0001 (<0.05), which means that there is an interaction between motivation, education and type of room on compliance with handwashing. Based on Table 6, it can be found that the most dominant variable is the type of room.

DISCUSSION

Most of the respondents in this study did not comply with washing their hands for five moments. The research found only a small part of the individual characteristics of nurses that affect handwashing compliance, namely education and motivation. New findings from this research are that type of room was known to be significantly related to handwashing compliance, and to be the most dominant factor. The results of this study support previous research reporting that most nurses do not comply with handwashing (Arifin & Ernawaty, 2019; Karuru et al., 2016; Nurbaety et al., 2019). Handwashing or hand hygiene is a general term that refers to the act of cleansing the hands five times, commonly called five moments. The five moments are: the moment before contact with the patient, before the cleaning procedure or aseptic, after procedures exposing to the body fluids, after contact with patients, and after contact with the area around the patient (WHO, 2009). Permenkes no 27 Tahun 2017, concerning infection prevention and control in health facility services, states that hand hygiene is one of the standard precautions that must be applied routinely in the care of all patients in the hospital.

The hospital as a medical service unit cannot be separated from the activities of treatment and care for patients with various causes, one of which is infection. Infections that occur in health services during treatment and medical procedures after ≥ 48 hours and after ≤ 30 days after leaving a health facility are called nosocomial infections or hospital-acquired infections (HAI). According to Petersen et al. (2010), HAI causes a prolonged length of stay, thus harming patients and increasing treatment costs. HAI is a worldwide problem because it is detrimental to patients and hospitals. Lankford et al. (2003) state that one of the components to limit the spread of HAI is to implement infection control. The most effective way to control infection is to ensure that hospital-staff practice hand hygiene following the standard.

Factors related to the compliance level of nurses' handwashing include individual-factors, i.e.: gender, age, facilities, attitudes, length of work (Anugrahwati & Hakim, 2019; Arifin & Ernawaty, 2019; Fauzi et al., 2015; Pratama et al., 2016). However, this study gave different results as to which of these factors did not

Table 4. Five Moment Handwashing by Type of Rooms

Five Moment		Type of Room (%)			
		ICU & PICU	Non-Surgical	Surgery	Children
Before touching a patient	Noncompliant	0	59.3	33.4	41.7
	Compliant	100	40.7	66.6	58.3
Before clean/aseptic procedures	Noncompliant	0	22.3	13.4	25
	Compliant	100	77.7	86.6	75
After body fluid exposure/risk	Noncompliant	0	7.5	6.7	0
	Compliant	100	92.5	93.3	100
After touching a patient	Noncompliant	0	0	0	0
	Compliant	100	100	100	100
After touching the patient's surroundings	Noncompliant	26.7	92.6	80	75
	Compliant	73.3	7.4	20	25

Table 5. Relationship of Nurses' Individual Characteristics toward Handwashing Compliance

Characteristics of Individual Respondents	Compliance with Handwashing				Total		OR (95% CI)	p-value
	Non-compliant		Compliant					
	n	%	n	%	n	%		
Age	7	53.8	6	46.2	13	100	0.643	0.537
> 41 Years	46	64.8	25	35.2	71	100	(0.192-2.093)	
≤ 40 Years								
Attitude	27	77.1	8	22.9	35	100	0.584	0.339
Negative	26	53.1	23	46.9	49	100	(0.239-1.429)	
Positive								
Knowledge	20	64.5	11	35.3	31	100	1.102	1.000
Fair	33	62.3	20	37.7	53	100	(0.438-2.770)	
Good								
Work Period	7	70	3	30	10	100	1.420	0.738
New	46	62.2	28	37.8	74	100	(0.339-5.945)	
Old								
Infrastructure	4	100	0	0	4	100	1.633	0.292
Insufficient	49	61.3	31	38.3	80	100	(1.372-1.944)	
Adequate								
Skin condition	8	57.1	6	42.9	14	100	0.741	0.840
Sensitive	45	64.3	25	37.5	70	100	(0.231-2.377)	
Not Sensitive								
Education	43	68.3	20	31.7	63	100	-	0.042
Vocational Degree	1	16.7	5	83.3	6	100		
Academic Degree	9	60	6	40	15	100		
Professional Degree								
Employment Status	36	57.1	27	42.9	63	100	0.314	0.09
Civil Servant	17	81	4	19	21	100	(0.95-1.040)	
Contract								
Gender	9	75	3	25	12	100	1.909	0.521
Male	44	61.1	28	38.9	72	100	(0.476-7.664)	
Female								
Motivation	27	77.1	8	22.9	35	100	2.986	0.043
Low	26	53.1	23	46.9	49	100	(1.134-7.861)	
High								
Type of Room	7	23.3	23	76.7	30	100	-	0.0001
ICU & PICU	25	92.6	2	7.4	27	100		
Non-Surgical	9	75	3	25	12	100		
Pediatric	12	80	31	20	15	100		
Surgery Room								

have a significant effect on the co mpliance of nurses' handwashing. The gender of nurses was dominantly females. However, there is no difference in the proportion of compliance with handwashing between female and male respondents. The age of nurses was mostly ≤ 40 years, but there was found no difference in the proportion of compliance with handwashing between nurses aged ≤ 40 years and nurses aged > 41 years. Most of the nurses considered that the handwashing infrastructure was adequate in the patient room, and there was no difference in the proportion of compliance with handwashing among nurses who were considered supported by the infrastructure to be adequate and inadequate. These findings support previous research that found that the availability of facilities and infrastructure did not relate to handwashing compliance (Yotlely, 2019). The researcher assessed the non-correlation because there were adequate handwashing facilities in the

room. There were hand rubs in each patient's bed, room corridor, and nurse station.

The results showed that most of the nurses had a long working tenure, namely > 5 years, but there was no difference in the proportion of compliance with handwashing between nurses with a long tenure and nurses with a new tenure. The positive attitude of nurses is almost proportional to negative attitudes, and there is no difference in the proportion of compliance with handwashing between nurses with positive attitudes and nurses with negative attitudes. The same thing is found in the knowledge factor. Most of the nurses have good knowledge of handwashing. However, there is no difference in the proportion of compliance in washing hands between nurses with adequate knowledge and nurses with less knowledge. This is also in line with previous research which found that knowledge was not related to handwashing cosmpliance (Arifin & Ernawaty, 2019; Ratnasari & Dulakhir, 2016; Syamsulastri, 2017). Nurses may have good knowledge about handwashing, but other factors can lead to difficulty implementing handwashing compliance, one of which is the high workload. From the research results, nurses in ordinary inpatient rooms (surgical, non-surgical, children) were the most obedient to wash their hands at moment 3 (after being exposed to body fluids) and moment 4 (after touching the patient). However, the most neglected moment is moment 5 (after touching the patient's environment). It shows that nurses prioritize washing hands after exposure to patients. Further research is needed regarding the workload of nurses in inpatient rooms.

Also, another finding from this study is that employment status does not correlate with nurse handwashing compliance. Most of the nurses are civil servants, but there is no difference in the proportion of compliance in washing hands between nurses who are civil servants and nurses who are honorary status. Also, most skin conditions are not sensitive to handwashing fluids. However, there is found no difference in the proportion of washing hands between nurses with sensitive skin conditions and nurses who are not sensitive to handwashing fluids. There were complaints from the respondent such as dry hands, but the researcher's opinion is that the small number of nurses who have sensitive skin causes this variable to be unrelated. It is necessary to develop further research to find out more clearly.

An interesting finding in this study is that nurses' motivation affects compliance with nurses' handwashing. The number of nurses with high motivation is almost equal to those with low motivation. Nevertheless, there is a difference in the proportion of compliance with handwashing between highly motivated nurses and those with low motivation. These findings support previous research where 'motivation' is significantly related to nurses' compliance with handwashing (Ananingsih & Rosa, 2016; Fauzi et al., 2015; Sani & Pratiwi, 2017). Nurses need to cultivate high motivation as a form of dedication and altruism to patients' needs for healing (Nursalam, 2017). Besides, nurse education was found to affect compliance with handwashing. There was a difference in the proportion of handwashing between nurses with vocational, academic, and professional education. One of the factors that can increase the productivity or performance of nurses is the formal education of nurses. Education provides knowledge not only directly related to the implementation of tasks, but also a foundation for self-development and the ability to utilize all available facilities for smooth tasks (Nursalam, 2017).

The new finding from this study is that room type is related to the compliance of nurses' handwashing. There is a difference in the proportion of compliance with handwashing between intensive and non-intensive rooms (general inpatient care). Based on Table 6, it was found type of room to be the most dominant factor. Of the five rooms studied, there were two types of intensive rooms and three general inpatient rooms. Based on diagram 2, the highest handwashing compliance is in the intensive room, where moments 1 to 4 are 100%, but in moment 5 the compliance is 73.3%. Meanwhile, in general, inpatient rooms, the non-compliance of handwashing was five moments higher. This finding supports previous research that the workplace influences compliance with hand hygiene, where ICU nurses are more obedient than other wards (Arini, 2016). Further research is needed to be able to find a more specific cause.

The researcher's opinion is that not only individual characteristics should be highlighted in compliance with nurses' handwashing. Other factors outside the nurses as individuals also contribute to handwashing compliance. They can be organizational characteristics, which include reward systems, training, and development, leadership, and organization culture. Moreover, it is important to pay attention to aspects of job characteristics, including feedback, workload, and assignment methods.

This study has several limitations, although attempts have been made to overcome them. Researchers could not control nor directly see when respondents filled in answers or justify the truth of the answer given. In addition, observing the compliance of nurses' handwashing was only done once in a period.

CONCLUSION

Most nurses do not comply handwashing. From 11 nurses' individual characteristic factors, there were three factors related to the compliance of the nurse's hand washing, namely education, motivation and type of patient room. The research found type of room to be the dominant factor. However, knowledge, facilities, attitudes, age, gender, skin sensitivity conditions, and employment status do not relate to handwashing compliance.

It is hoped that nurses can increase self-motivation to perform the five moments of hand hygiene while working, as a form of dedication at

work and to protect patients and themselves from nosocomial infections. The researcher also recommends that further researchers be able to identify more about other factors, including reward systems, training and development, leadership, organizational culture, feedback, workload, and assignment methods. Thus, they can find the right intervention to increase compliance with the nurse's handwashing.

ACKNOWLEDGEMENT

Acknowledgments are presented to the Higher Education Service Institution (LLDIKTI) Region II of the Ministry of Research and Technology who funded this research.

REFERENCES

Akyol, A. . (2007). Hand Hygiene among nurses in Turkey: opinion adn practices. *Journal of Clinical Nursing*, *16*(3), 431–137.

Ananingsih, P. D., & Rosa, E. M. (2016). Kepatuhan 5 Moment Hand Hygiene pada Petugas di Laboratorium Klinik Cito Yogyakarta. *Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit*, *5 (1)*, 16–24. https://doi.org/10.18196/jmmr.5102

Anugrahwati, R., & Hakim, N. (2019). Faktor-Faktor yang mempengaruhi Kepatuhan Perawat dalam Melakukan Hand Hygiene Five Moment di RS Hermina Jatinegara. *Jurnal Ilmiah Keperawatan Altruistik*, *2(1)*, 41–48.

Arifin, A., & Ernawaty, J. (2019). Faktor-faktor yang berhubungan dengan kepatuhan hand hygiene mahasiswa profesi ners di ruangan rawat inap. *Jurnal Kesehatan*, 100–113.

Arini, M. (2016). Health Belief Model Pada Kepatuhan Hand Hygiene Di Bangsal Berisiko Tinggi Healthcare Acquired Infections (Hais) (Studi Kasus Pada Rs X). *Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit*, *5*(2), 129–135. https://doi.org/10.18196/jmmr.5117

Cassini, A., Plachouras, D., Eckmanns, T., Abu Sin, M., Blank, H. P., & Ducomble, T., Suetens, C. (2016). Burden of six healthcare- associated infections on European population health: Estimating incidence-based disability-adjusted life years through a population prevalence-based modelling study. *PLoS Medicine*, *13 (10)*.

Duerink, D. ., Farida, H., Nagelkerke, N. J. ., Wahyono, H., Keuter, M., Lestari, E. ., Hadi, U., & Van den Broek, P. . (2006). Preventing Nosocomial Infection: Improving Compliance with Standard Precautions In An Indonesia Teaching Hospital. *Journal of Hospital Infection*, *64*(1), 36–43.

Fauzi, N., Ahsan, & Azzuhri, M. (2015). Pengaruh Faktor Individu, Organisasi dan Perilaku terhadap Kepatuhan Perawat dalam Melaksanakan Hand Hygiene di Ruang Rawat Inap Rumah Sakit Tk. II Dr. Soepraoen Malang. *Jurnal Aplikasi Manajemen*, *13*(4), 566–574.

Hugonnet, S., Perneger, T. ., & D, P. (2002). Alcohol-based handrub improves compliance with hand hygiene in intensive care units. *Archives of Internal Medicine, 162*, 1037–1043.

Jonker, C., & Othman, M. (2018). Hand Hygiene among Hospital Staff: A Survey of Knowledge, Attitude, and Practice in A General Hospital in Syria. *Jurnal Keperawatan Indonesia*, *21*(3), 139–149. https://doi.org/10.7454/jki.v21i3.513

Kampf, G., Löffler, H., & Gastmeier, P. (2009). Hand hygiene for the prevention of nosocomial infections. *Deutsches Arzteblatt International*, *106(40)*, 649–655.

Karuru, C. P., Mogi, T. I., & Sengkey, L. (2016). Gambaran Kepatuhan Tenaga Kesehatan Dalam Menerapkan Hand Hygiene Di Rawat Inap Rsup Prof. Dr. R D. Kandou Manado. *E-CliniC*, *4*(1), 2–5. https://doi.org/10.35790/ecl.4.1.2016.10942

Lankford, M. ., Zembower, T. ., Trick, W. ., Hacek, D. ., Noskin, G. ., & Peterson, L. . (2003). Influence of Role Model and Hospital Design on the Hand Hygiene of Health-Care Worker. *Emerging Infectious Disesase*, *9*(2), 217.

Nurbaety, Baharuddin, A., Amelia, A. R., & Julianti, S. (2019). Penerapan Standar Prosedur Operasional (SOP) Hand Hygiene Pada Tenaga Kesehatan di Instalasi Rawat Inap Rumah Sakit Dr. Tadjuddin Chalid Kota Makasar. *Prosiding Seminar NAsional*, *2*.

Nursalam. (2011). *Manajemen Keperawatan Aplikasi dalam Praktik Keperawatan Profesional* (3rd ed.). Salemba Medika.

Nursalam. (2017). *Metodologi Penelitian Ilmu Keperawatan : Pendekatan Praktis* (P. Puji Lestasi (ed.); 4th ed.). Salemba Medika.

Petersen, M. ., Holm, M. ., Pedersen, S. ., Lassen, A. ., & Pedersen, C. (2010). Incidence and Prevalence of Hospital-Acquired Infection in a Cohort of Patients Admitted to Medical Departments. *Danish Medical Bulletin*, *57(11)*, A4210-A.

Pratama, B. S., Koeswo, M., & Hariyanti, T. (2016). Pengaruh Kelengkapan Handrub & Poster terhadap Kemauan Perawat untuk Berubah Terkait Hand Hygiene pada Rawat Inap RS Ananda Blitar. *Jurnal Aplikasi Manajemen*, *14*(4), 757–766. https://doi.org/10.18202/jam23026332.14.4.16

Putri, V. S., Yusuf, A., Tristiana, R. D., Nursing, F., & Airlangga, U. (2018). *Analysis of Factors Related to Nursing Student Self Wareness in Doing Screening for Psychosocial Problems*. *15*(3).

Ratnasari, D., & Dulakhir. (2016). Faktor-Faktor Yang Berhubungan Dengan Kepatuhan Perawat Ruang Rawat Inap Dalam Pelaksanaan Hand Hygiene Di Rumah Sakit Anna Medika Kota Bekasi Tahun 2016. *Jurnal Ilmiah Kesehatan*, *8*.

Saito, H., Kilpatrick, C., & Pittet, D. (2018). The 2018 World Health Organization SAVE LIVES: Clean Your Hands Campaign targets sepsis in health care. *Intensive Care Medicine*, *44*, 499–501.

Sani, F. N., & Pratiwi, M. R. (2017). Hubungan Motivasi Perawat Dengan Tingkat Kepatuhan Melakukan Cuci Tangan Di Rsi Klaten. *Profesi (Profesional Islam) : Media Publikasi Penelitian*, *14*(2), 11.

https://doi.org/10.26576/profesi.146

Sickbert-Bennett, E. E., Dibiase, L. M., Schade Willis, T. M., Wolak, E. S., Weber, D. J., & Rutala, W. A. (2016). Reduction of healthcare- associated infections by exceeding high compliance with hand hygiene practices. *Emerging Infectious Diseases*, *22(9)*, 1628–1630.

Syamsulastri. (2017). Faktor yang Berhubungan dengan Kepatuhan Perawat dalam Melakukan Hand Hygiene. *Respirstory Unmuhpkn*.

Umboh, F. ., Doda, D. ., & Kandau, G. . (2017). *Analisis Faktor-Faktor yang Berhubungan dengan Kepatuhan Perawat MElaksanakan Hand Hygiene dalam Mencegah Infeksi Nosokomial di Ruang Rawat Inap Rumah Sakit Advent Manado*.

von Lengerke, T., Lutze, B., Krauth, C., Lange, K., Stahmeyer, J. T., & Chaberny, I. F. (2017). Promoting hand hygiene compliance. *Deutsches Arzteblatt International, 114(3)*, 29–36.

WHO. (2009). *Guide to Implementation: A Guide to Implementation of the WHO Multimodal Hand Hygiene Improvement Strategy*.

Yotlely, A, S. (2019). Analisis Faktor yang Berhubungan dengan Kepatuhan Perawat dalam Penerapan Kewaspadaan Standar di RSUD Piru Penelitian Korelasional. *Repository Unair*.

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2, October 2021
http://dx.doi.org/10.20473/jn.v16i2.23921

Original Research

The Influence of Web-Based Spiritual Problem Solving on the Prevention of Suicidal Risk among University Students

Siti Khadijah[1], Ah. Yusuf[2], Hanik Endang Nihayati[2], and Esti Yunitasari[2]

[1]Politeknik Kesehatan Kemenkes Surakarta, Surakarta, Indonesia

[2]Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Introduction: Suicide is a health phenomenon that is currently increasing, especially in young adults aged 15-29 years. The spiritual aspect in the form of belief in God is one way to prevent suicide. This study was conducted to determine the effect of web-based spiritual problem solving on the prevention of suicide risk in college students.

Methods: The research design used a pre-experimental one-group pre-post-test. The sample was 59 respondents using the purposive sampling technique. The independent variable was web-based spiritual problem solving, and the dependent variable was suicide risk prevention. The intervention was delivered via the web using PowerPoint media, inspirational videos, and counselling for approximately one month with four sessions. Data were collected using a questionnaire and analysed using the Wilcoxon sign rank test.

Results: Web-Based Spiritual Problem Solving significantly decreases suicide risk with a p-value of 0.000 ($p < 0.05$).

Conclusion: Web-Based Spiritual Problem Solving has been shown to be effective in reducing students' suicide risk. This web intervention can be used for 24 hours and specifically for counselling and two-way communication on the web; privacy is maintained because of a hidden identity, which is seen in code when interacting with counsellors so as to minimize stigma.

ARTICLE HISTORY

Received: January 4, 2021
Accepted: November 2, 2021

KEYWORDS

Spiritual Problem Solving Web-Based; Suicide Risk Prevention; College Students

CONTACT

Siti Khadijah
✉ s.khadijah3029@gmail.com
Politeknik Kesehatan Kemenkes Surakarta, Surakarta, Indonesia

Cite this as: Khadijah, S., Yusuf, Ah., Nihayati, H. E., Yunitasari, E., & Tristiana, R. D. (2021). The Influence of Web-Based Spiritual Problem Solving on the Prevention of Suicidal Risk among University Students. *Jurnal Ners,* 16(2). 142-147. doi: http://dx.doi.org/10.20473/jn.v16i2.23921

INTRODUCTION

Suicide is a phenomenon of increasing health problems among young adults aged 15-29 years. Suicide cases often appear in media coverage (Kementerian Kesehatan Republik Indonesia, 2019). Suicide is the leading cause of morbidity and mortality worldwide (Ballesteros & Hilliard, 2016). That there is an increasing need for mental health in US Colleges, as many as 35% of college students report "feeling so depressed and having difficulty learning and another 50% experiencing intense anxiety that makes it difficult to succeed academically, according to the Center for Collegiate Mental Health (CCMH) counselling., It was found that from 263 universities, 33% had serious mental health problems and were accompanied by suicidal ideation (Tsong et al., 2018). A person's inability to control stress will lead to suicidal behaviour (Keliat & Pasaribu, 2016). The suicide death rate in Indonesia was higher in 2016 by 100,000 population, men 4.8/100,000 higher than women by 2.0/100,000 population (Kementrian Kesehatan Republik Indonesia, 2019).

Students are a group of young adults entering their early adulthood who will experience a period of challenges, rewards, and crises (Potter & Perry, 2005). The life challenges and responsibilities that a person feels when approaching adulthood will be heavier, especially when entering the phase of being a student, the number of tasks and the perceived pressure will affect mental health. In 2019 a university student in Surakarta committed suicide (Ryantono, 2019). A preliminary study on students at Surakarta health college in 2019 revealed that the idea of suicide occurred highly in 32% students, and was lower in 68% of students. The results of researcher interviews indicates there were problems

with consulting students as some did not want to meet directly but only wanted to go through WhatsApp communication due to embarrassment, students blamed and were disappointed in God for the problems experienced. This needs to get serious attention so that preventative efforts can be made so that no suicide occurs. College students as the nation's next-generation must be aware of the potential risk of suicide that exists in themselves and it is increasingly important for universities to provide prevention and intervention programmes in the campus environment (Tsong et al., 2018). A study by Wolitzky-Taylor et al. (2019) described a meta-analysis that revealed that suicide data programmes were effective in University suicides.

Spiritual factors are part of the internal protective factors that are easier to modify so that problem-solving efforts can be done by reinforcing aspects. Spiritual (belief) is one way to prevent suicide. The online world can be used as a means to help lecturers provide guidance to counsellors to counsel. Counselling is not only done face-to-face (FTF) in one closed space, but can be done through a remote format assisted by technology which is further known as e-counselling (Hidayat, 2018). The use of the internet and social media is very high in college students as a repository to find solutions to solving mental health problems while maintaining privacy, reducing stigma, and efficiency of distance and time, so it is necessary to make facilities in the form of web-based spiritual problem-solving. This web-based spiritual problem solving is an effort to overcome obstacles with focused thought to find solutions by pouring out the spiritual aspect, namely belief by interpreting life problems and life goals through online networks. Web-based spiritual problem solving with the Watson approach that links healing roots, caring, and spirituality in nursing will be very important. Belief systems can affect clients emotionally, physically, psychologically, and behaviourally (O'Brien et al., 2013). Mcauliffe, Mcleavey, and Fitzgerald (2014) explained that problem-solving skills training provided significant psychological and social improvements, showed a positive treatment effect in the self-harm group.

Based on the phenomenon of problems above, this study is needed to analyse the effect of Web-Based Spiritual Problem Solving on the prevention of suicide risk in college students.

MATERIALS AND METHODS

This study used a pre-experimental design of one group pre-post-test. Before the research was carried out informed consent was gained from respondents. The study was conducted between March and June 2020. The population was 359 college students at the Health College in Surakarta. The total sample was 59 respondents obtained by purposive sampling with inclusion criteria: 1) regular students; 2) young adults aged 17-29 years; and 3) college students with positive screening results at high risk of suicide, screening using the Suicide Behavior Questionnaire-Revision (SBQ-R). The independent variable is web-based spiritual problem solving, and the dependent variable is the prevention of suicide risk. The risk of suicide was measured using the SBQ-R, which has four total score items. The total score was obtained by accumulating the individual item scores with total score ranges from 3 to 18 points. A total score of ≥ 7 indicates a high risk of suicidal behaviour, while the <7 indicates a low risk of suicidal behaviour (Osman et al., 2001). The instrument has been tested for validity and reliability using Cronbach alpha with a value of 0.785. The validity test was conducted in November 2019 by first testing the questionnaire on a number of 30 respondents who were not study subjects and who had the same characteristics as the study subjects.

The intervention was delivered via the web using PowerPoints, inspirational videos, and counselling for approximately one month with four sessions. The web can be used for 24 hours and specifically for counselling, the contract is made in advance according to the agreement with the counsellor so that two-way communication can occur. This research was in collaboration with an IT Consultant from the Institute of Phicos Group Surakarta so that there was a letter of agreement to maintain the privacy and security of respondents' data. During the counselling process, the data that appears on the consultation screen is only a student numeric code so that the counsellor will not know the identity of who was communicating with the counsellor. This was done to maintain the privacy of respondents. The investigators explained the research process to the respondents and provided guidance books on the use of spiritual problem-solving web to students, respondents fill out informed consent through the web by choosing willing or unwilling choice.

The first step was session 1, pre-test by filling out assessment questionnaire links on the web. The second step was session 2, intervention with the web problem solving media using PowerPoint system and inspirational video which tells an inspiring story in the face of problems. The third step was session 3, two-way counselling with a counsellor. The fourth step was session 4, an evaluation.

A two-way solution was conducted with the counsellor and filling in the post-test by filling in from the web system. The evaluation was carried out 1 week after counselling. The time allotted for two-way counselling was 60-90 minutes. Counselling was done online based on the web. Respondents were not identified because they appeared on the web as a code to reduce stigma and students willing to seek mental health help through the web can get the problems solved.

Ethical clearance for this research was carried out at the ethics committee at the Faculty of Nursing, Airlangga University on December 9, 2019, with certificate number 1854-KEPK. Before the data collection, the respondents were given informed consent which indicated the purpose of the study, the

potential benefits and harm of the research, and ensures their complete anonymity throughout the research profess, and that they have the freedom to withdraw from the study at any time. After the informed consent distribution, the respondents were asked to sign it signifying the respondent's voluntary decision to be part of the study. The researcher addressed issues such as confidentiality, anonymity, and privacy. Further, the completed questionnaires are stored on the web and can only be accessed by IT admins.

RESULTS

Based on Table 1, some college students at Surakarta Health College had a positive risk of suicide (n = 59, 16%). The response rate was 85%. For the positive risk group totaling 59 college students, the majority of respondents were women (93.2%), at the second semester (first-year students; 37.3%), aged 20 years old, (27.1%), having physical or sexual abuse experience (3.4%), and preferring to keep their problem alone (45.8%).

Based on Table 2 and on the indicators of risk of suicide, there is a change for the better, the majority think that the desire to try suicide is a pre-test, the mind only passes it to be better during the post-test, that is, there is never any thoughts of suicide, for the frequency of suicidal thoughts in the pre-test year, the majority is rare (1 time) to change for the better during the post-test, namely never.

Based on Table 3, the study found a high risk of suicide pre-test 98.3% to 40.7%. This shows that after being given a web-based problem-solving spiritual intervention the risk of suicide has decreased. The results of the study were carried out by the Wilcoxon test because the data were not normally distributed, the Wilcoxon test results were different or there was a significant effect between the risk of pre and post suicide carried out by web-based spiritual problem-solving interventions with a p-value of 0.000 ($p < 0.05$).

The Wilcoxon test results on the variable risk of suicide produced a Z-Value of -4,676 with p = 0.000. It shows the value of significance was lower than level of significance (a = 5% or 0.05). So, it can be concluded that there is a significant difference in the results of the risk of suicide at the pre-test and post-test. This means that there is an influence of web-based spiritual problem solving on the ability to prevent student suicide risk.

Table 1. Respondents' Characteristics (N = 59)

Characteristics	n	%
Semester		
2	22	37.3
4	9	15.3
6	21	35.6
8	7	11.9
Age (years old)		
17	1	1.7
18	12	20.3
19	13	22.0
20	16	27.1
21	13	22.0
22	3	5.1
23	1	1.7
Gender		
Male	4	6.8
Women	55	93.2
Response to problems		
Talk to friends	21	35.6
Keep it alone	27	45.8
Talk to family	1	1.7
Talk to friends & kept alone	2	3,4
Talk to friends & family	2	3,4
Keep alone, talk to friends & family	4	6.8
History of Physical/Sexual Violence		
Yes	2	3,4
Not	57	96.6

DISCUSSION

Based on the results of the screening the risk of suicide was measured using the SBQ-R, the positive prevalence of student suicide risk at the Surakarta Health College was 16% of the total respondents, with the highest demographic character in first-year students. They have a higher risk of suicide than those with second-year students or above because they are new students and are still in the transition period from late adolescence to early adulthood, learning methods that are different from high school education, greater responsibility, and the period of adaptation to lectures cause them to have higher stress levels. Meanwhile, the students above are stronger because they have adapted and are psychologically mature. Even though the positive number is only 16%, it is very important to note because it can have serious consequences for them.

Research results from Lu, Bian, and Song (2015) explains that mental health problems such as anxiety, depression and suicidal thoughts often occur in new students (Pieter & Lubis, 2017). The psychological hazards in early adulthood, both personally and socially, stems from a failure in development that leaves them immature compared to other adults. Some of the factors that hinder this development include physical health barriers, parents who are overprotective of their children, and the influence of associations or peers.

The age range of college students who were positive for the risk of suicide was 17-23 years and most occurred at the age of 20 years. This contradicts the theory of Yusuf, Fitriyasari, R, and Nihayati (2015), that the risk factors for suicide in adolescents and those aged up to 45 years have a higher risk than those aged 25-45 years and 12 years. Today's young adult groups face greater challenges than the previous era, this is due to the very rapid development of science and technology, one of which is social media, which can influence their attitudes and behaviour, including suicidal behaviour. Putri (2018), Dr. Nova Riyanti Yusuf, SpKj from the

Table 2. The Pre and Post-Test Suicide Risk Scores

Indicator	Pre-test		Post-test	
	n	%	n	%
Thinking of trying to kill yourself				
Never	0	0.0	17	28.8
Only thoughts pass by	39	66.1	32	54.2
Have a plan	18	30.5	8	13.6
Has attempted suicide	2	3,4	2	3,4
Frequency of suicidal thoughts in a year				
Never	2	3,4	19	32.2
Rarely (1x)	28	47.5	22	37.3
Sometimes (2x)	19	32.2	13	22.0
Often (3-4x)	4	6.8	3	5.1
Very often (≥ 5x)	6	10.2	2	3,4
Have told someone else that you wanted to kill yourself				
None	34	57.6	38	64.4
Yes, at one time	21	35.6	20	33.9
Yes, more than 1x	4	6.8	1	1.7
How big will it be to try to kill yourself one day				
Never	5	8.5	31	52.5
No way at all	7	11.9	6	10.2
More than impossible	6	10.2	3	5.1
Impossible	28	47.5	9	15.3
Maybe	1	18.6	0	15.3
More than possible	1	1.7	1	0.0
Very likely	1	1.7	1	1.7

Table 3. Wilcoxon Test Statistics for Student Suicide Risk (N = 59)

Suicide Risk	Pre-test		Post-test	
	n	%	n	%
Low	1	1.7	35	59.3
High	58	98.3	24	40.7
	z-value		p-value	
	-4,676		0.000	

association of Indonesian Psychiatrists (PDSKJI) Jakarta said that social media is one of the factors that trigger a person to commit suicide. Ages 16-24 years have a higher risk of suicide. The suicide rate is directly proportional to the increase in age, and increases at a young age, namely 15-24 years (Riyadi, 2004). It is strengthened by research from Kementerian Kesehatan Republik Indonesia, (2019), which states that suicide is currently the second leading cause of death in adolescents and young adults aged 15-29 years.

The research findings reveal that the majority of students prefer to keep their problems to themselves, and some of them have a history of physical/sexual violence. Student who prefers to keep their problems alone, tends to be introverted, and has physical/sexual abuse traumas, has a higher chance of mental health disorders, to the point that it can result in a person at risk of suicide because a history of physical/sexual violence will result in trauma and affect psychological resilience in dealing with problems. If someone has a problem and feels unable to face it and does not ask for advice, solutions, or motivation from other people, it will add to a heavier burden. If this condition is not addressed, it will cause suicidal thoughts. Humans are created as social beings and need the attention and support of others when facing problems. Alternative solutions and motivation are needed so that he does not feel alone but has attention and help from others in solving/facing life's problems.

Baertschi, Costanza, and Conuto (2018) described personality as a potential determinant of suicidal ideation and attempts. Yusuf, Fitriyasari, and Nihayati (2015) explained that several factors cause suicide, one of which is behaviour and personality disorders. There are four aspects of a closed personality associated with an increased risk of suicide, namely hostility, impulsivity, depression, and hopelessness.

The results of the study found that most of the students attempted suicide, namely passing thoughts with a rare frequency. Suicide is an act that is prohibited by all religions so that the desire to try suicide that comes to students' minds will decrease when they remember God and will appear again when they feel unable to face the problem at hand. The factor of close people or loved ones also plays a role in reducing suicidal thoughts/desires. But what needs to be watched out for is that a history of suicidal thoughts can recur or come back if you do not have the knowledge and skills of problem-solving as well as good coping mechanisms. Spirituality is a tendency to create meaning in life through intrapersonal and transpersonal relationships in overcoming life's

problems (Yusuf et al., 2017). Shinde and Wagani (2019) explained that thoughts or attempts to commit suicide that have occurred will be the most significant risk factor for the occurrence of repetition of actions in the future, so it is very important to screen students for suicide risk to identify quickly so that efforts can be made to prevent suicide risk as early as possible for students.

The results of pre-test research is that the risk of suicide is high. This is because they do not have problem-solving skills. Research Mcauliffe, Mcleavey, and Fitzgerald (2014) explained that problem-solving skills training provided significant psychological and social improvements and showed a positive treatment effect in the self-harm group. Problem solving training has a positive impact and is proven worthy of self-harm therapy, quality of life and depression (Perry et al., 2019). Social problem-solving therapy was found to provide an additional percent of the variance in Non Suicidal Self Injury (NSSI) predictions (Lucas et al., 2019). Supported by the results of the Lutz et al. (2020), the research study found that problem solving therapy as a psychotherapy intervention reduces the risk of suicide in adults and anxiety disorders. Breitborde, Wastler, Pine, & Moe's (2021) study showed that improved social problem-solving skills may facilitate suicide reduction.

After conducting spiritual problem-solving interventions via the web, it is found that there is a decreased risk of suicide. Screening found an increase in the number of respondents who said they "never thought about trying to kill themselves". The number of suicidal thoughts in the year saying "never" increased. The majority of students said that they "do not speak of suicidal thoughts to others," and will never attempt suicide again. Spiritual problem-solving interventions via the web provide high motivation to make changes to themselves for the better and have a more adaptive coping mechanism and find ways to solve the problems faced appropriately according to the demands and desires of current students. Motivation is an active impulse so that there is a change in energy in humans that moves to achieve goals or needs. Motivation has a function as a driving force and driving behaviour (Candra et al., 2017). Motivation and learning are two inseparable things. Learning something based on strong motivation will give good results, as it is known learning is the process of acquiring various skills, skills, and attitudes, and learning brings about behaviour change (Muhammad, 2017). In addition to motivation problem-solving skills are also needed. Research from Sarkisian, Van Hulle, & Goldsmith (2021) found that problem solving research in children was significantly meaningful with the risk of suicidal thoughts. Such problem-solving therapies can improve the prediction and treatment of suicidal ideation in adolescents.

In the results of the evaluation in the counselling session via the web, the respondents said that they prefer web-based interventions because their identity is unknown, they are more flexible in conveying problems, are not ashamed, and can facilitate students who have introverted personalities or have difficulty communicating directly. Intervention conventionally has a weak side, namely the presence of stigma that reduces the interest of respondents to seek solutions to problems/solutions to professionals, so that an alternative solution to problems through web applications is needed. Web applications have the advantage of being more efficient in time, place, and cost. The results of this study are consistent with other studies, namely research Luca, Lytle, and Yan (2019), students prefer to seek mental health assistance online, this type of intervention could be beneficial for students who need services who are afraid to visit mental health centres on campus because of the stigma. An effective way to reduce student distress, and the presence of suicidal thoughts, with a combination of online and conventional services, can be provided. Research from Ballesteros and Hilliard (2016) explained that online counselling has a significant relationship with self-stigma. Problem-solving skills have resulted in systems that are now suitable for chronic mental disorder management, problem solving using technologies such as an application whose operation has more privacy and confidentiality of all information stored in the application, and users can anonymize their identity. Troubleshooting using smartphone apps with self-harm prevention management (Hatcher et al., 2020).

CONCLUSION

Web-Based Spiritual Problem Solving has been shown to be effective in reducing college students' suicide risk. The interventions were delivered via the web using PowerPoints, inspirational videos, and counselling. It can be used 24 hours and specifically for counselling, two-way communication on the web, and privacy is maintained because of a hidden identity. It is hoped that the researchers will further develop web-based interventions in the prevention of suicide risk in the campus environment.

REFERENCES

Baertschi, M., Costanza, A., & Conuto, A. (2018). The Function of Personality in Suicidal Ideation from the Perspective of the Interpersonal-Psychological Theory of Suicide. *International Journal of Environmental Research and Public Health*, *15*, 1–15. https://doi.org/10.3390/ijerph15040636

Ballesteros, J. L., & Hilliard, R. C. (2016). U.S.-Based Latina/O College Students' Attitudes toward Online Counseling. *International Journal for the Advancement of Counselling*, *38*(4), 269–285. https://doi.org/10.1007/s10447-016-9271-x

Breitborde, N. J. K., Wastler, H., Pine, J. G., & Moe, A. M. (2021). Suicidality and social problem-solving skills among individuals with first-episode psychosis participating in Coordinated Specialty Care. *Early Intervention in Psychiatry*, *15*(3), 497–

504. https://doi.org/10.1111/eip.12967

Candra, I. ., Harini, I. G. ., & Sumirta, I. . (2017). *Psikologi Landasan Keilmuan Praktek Keperawatan Jiwa*. Penerbit ANDI.

Hatcher, S., Heisel, M., Ayonrinde, O., Campbell, J. K., Colman, I., Corsi, D. J., Edgar, N. E., Gillett, L., Kennedy, S. H., Hunt, S. L., Links, P., MacLean, S., Mehta, V., Mushquash, C., Raimundo, A., Rizvi, S. J., Saskin, R., Schaffer, A., Sidahmed, A., … Vaillancourt, C. (2020). The BEACON study: protocol for a cohort study as part of an evaluation of the effectiveness of smartphone-assisted problem-solving therapy in men who present with intentional self-harm to emergency departments in Ontario. *Trials*, *21*(1), 1–16. https://doi.org/10.1186/s13063-020-04424-w

Hidayat, D. R. (2018). *Konseling Di Sekolah : Pendekatan-Pendekatan Kontemporer. Pertama.* Prenadamedia Group.

Keliat, B. ., & Pasaribu. (2016). *Prinsip dan Praktek Keperawatan Kesehatan Jiwa Stuart* (indonesia). Elsevier.

Kementerian Kesehatan Republik Indonesia. (2019). Situasi dan Pencegahan Bunuh Diri. In *Pusat Data dan Informasi* (pp. 1–10).

Lu, W., Bian, Q., & Song, Y. (2015). *Prevalence and Related Risk Factors of Anxiety and Depression among Chinese College Freshmen*. *35*(6), 815–822.

Luca, S. M. De, Lytle, M. C., & Yan, Y. (2019). Help-Seeking Behaviors and Attitudes of Emerging Adults : How College Students Reporting Recent Suicidal Ideation Utilize the Internet Compared to Traditional Resources. *Journal of American College Health*, 1–8. https://doi.org/10.1080/07448481.2018.1539397

Lucas, A. G., Chang, E. C., Li, M., Chang, O. D., & Hirsch, J. K. (2019). Perfectionism and Social Problem Solving as Predictors of Nonsuicidal Self-Injury in Ethnoracially Diverse College Students: Findings Controlling for Concomitant Suicide Risk. *Social Work (United States)*, *64*(2), 165–174. https://doi.org/10.1093/sw/swz005

Lutz, J., Mashal, N., Kramer, A., Suresh, M., Gould, C., Jordan, J. T., Wetherell, J. L., & Beaudreau, S. A. (2020). A Case Report of Problem Solving Therapy for Reducing Suicide Risk in Older Adults with Anxiety Disorders. *Clinical Gerontologist*, *43*(1), 110–117. https://doi.org/10.1080/07317115.2019.1617378

Mcauliffe, C., Mcleavey, B. C., & Fitzgerald, T. (2014). *Group problem-solving skills training for self-harm : randomised controlled trial*. 383–390. https://doi.org/10.1192/bjp.bp.111.101816

Muhammad, M. (2017). Pengaruh Motivasi Dalam Pembelajaran. *Lantanida Journal*, *4*(2), 87. https://doi.org/10.22373/lj.v4i2.1881

O'Brien, P. ., Kennedy, W., & Ballard, K. . (2013). *Keperawatan Kesehatan Jiwa Psikiatrik : Teori & Praktik* (B. Angelina (ed.); Bahasa Ind). EGC.

Osman, Bage, & Guetierrez. (2001). *The Suicide Behaviors Questionnaire-Revised (SBQ-R) - Overview*. *5*, 4–6.

Perry, A., Waterman, M. G., House, A., Wright-Hughes, A., Greenhalgh, J., Farrin, A., Richardson, G., Hopton, A. K., & Wright, N. (2019). Problem-solving training: Assessing the feasibility and acceptability of delivering and evaluating a problem-solving training model for front-line prison staff and prisoners who self-harm. *BMJ Open*, *9*(10), 1–9. https://doi.org/10.1136/bmjopen-2018-026095

Pieter, H. ., & Lubis, N. . (2017). *Pengantar Psikologi dalam Keperawatan* (3rd ed.). PT Kharisma Putra Utama.

Potter & Perry. (2005). *Buku Ajar Fundamental Keperawatan: Konsep, Proses & Praktek* (4th ed.). EGC.

Putri, F. . (2018, September). Dampak Negatif Media Sosial Bisa Picu Seseorang Bunuh Diri. *Detikhealth*.

Riyadi, Y. (2004). *Hubungan antara self esteem dengan kecenderungan bunuh diri pada remaja. Skripsi (tidak diterbitkan).* Fakultas Psikologi Universitas Widya Mandala. Surabaya.

Ryantono. (2019). *"Mahasiswa S2 UNS Solo Tewas Bunuh Diri, Selama Lima Bulan Terakhir Konsumsi Obat Depresi."* Tribun Solo.

Sarkisian, K., Van Hulle, C., & Goldsmith, H. H. (2021). Persistence During Childhood Problem-Solving as a Predictor of Active Suicidal Ideation During Adolescence. *Research on Child and Adolescent Psychopathology*, *49*(4), 533–543. https://doi.org/10.1007/s10802-020-00726-4

Shinde, F., & Wagani, R. (2019). *Does Spirituality Work as a Buffer in Suicide : A Systematic*. *14*(2), 249–256.

Tsong, Y., Young, J. T., Killer, J. D., & Takemoto, M. A. (2018). Suicide Prevention Program on a Diverse College Campus : Examining the Effectiveness of a Peer-to- Peer Model Suicide Prevention Program on a Diverse College Campus : *Journal of College Student Psychotherapy*, *00*(00), 1–14. https://doi.org/10.1080/87568225.2018.1434716

Wolitzky-taylor, K., Lebeau, R. T., Perez, M., Gong-, E., Fong, T., Lebeau, R. T., Perez, M., & Gong-, E. (2019). Suicide prevention on college campuses : What works and what are the existing gaps ? A systematic review and meta-analysis. *Journal of American College Health*, *0*(0), 1–11. https://doi.org/10.1080/07448481.2019.1577861

Yusuf, A., Fitriyasari, R, &, & Nihayati. (2015). *Buku Ajar Keperawatan Kesehatan Jiwa*. Salemba Medika.

Yusuf, Nihayati, & Iswari, M. . (2017). *Kebutuhan Spiritual: Konsep dan Aplikasi dalam Asuhan Keperawatan*. (Edisi Pert). Mitra Wacana Media.

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2, October 2021
http://dx.doi.org/10.20473/jn.v16i2.29650

Original Research

Teenagers' Safety Smartphone Use Model Based on Health Promotion Theory

Rizki Fitryasari, Rr Dian Tristiana, and Ah Yusuf

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Introduction: Smartphones and teenagers in the age of technology are two very close things. Uncontrolled use of smartphones can create serious problems for teenagers, namely addiction. This research aims to build a safe smartphone use model for teenagers using a health promotion theory.

Methods: This study was an explanatory study with a cross-sectional approach. The study population was 11-18 year old teenagers in Surabaya, Indonesia who use smartphones actively. The respondents were 185 teens recruited by simple random sampling. Variables include teenager factors, technology factors, environmental factors, teenagers' thinking, self-control, commitment, and the level of smartphone use. The instrument used was an on-line questionnaire distributed through social media and then analyzed with partial least squares. The statistical afforded material for focus group discussion followed by 15 teenagers, 15 parents and 5 health workers in order to improve the model.

Results: The results showed that the level of smartphone use was affected by self-control (t=2.303; p=0.022) and commitment (t=2.967; p=0.003). Self-control is influenced by adolescent factors (t=3.065; p=0.002), environmental factors (t=2.934; p=0.004) and teenagers' thinking (t=2.522; p=0.012), also self-control affects teenagers' commitment for using smartphones (t=3.953; p=0.000).

Conclusion: The model formed emphasizes the importance of establishing self-control through adolescent thinking and environment factors so that they can commit to using smartphones safely.

ARTICLE HISTORY
Received: September 2, 2021
Accepted: November 14, 2021

KEYWORDS
addiction; commitment; safety smartphone's use; teenagers; teenagers' thinking

CONTACT
Rizki Fitryasari
✉ rizki-f-p-k@fkp.unair.ac.id
Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

Cite this as: Fitryasari, R., Tristiana, R., D., & Yusuf, A. (2021). Teenagers' Safety Smartphone Use Model Based on Health Promotion Theory. *Jurnal Ners,* 16(2). 148-154. doi: http://dx.doi.org/10.20473/jn.v16i2.29650

INTRODUCTION

The use of smartphones by teenagers in the era of the Covid-19 pandemic is a necessity because all teenagers have undertaken on-line learning for school. Teenagers use smartphones actively as a means of meeting the needs of interaction with peers and most importantly for online school learning activities (Lenhart, 2015). Teenagers are required to be able to use smartphones appropriately and wisely so that they do not experience gadget addiction, especially smartphones (Cocorada, Maican, Cazan, & Maican, 2018). The number of smartphones in use in the world today is about six billion and is forecast to grow by several hundred million in the pandemic era (O'Dea, 2021). In Indonesia, 90% of high schools students own and use a smartphone (Machmud, 2018; Nurhayati, 2021). Teenagers in the city of Surabaya are detected using smartphones for more than 10 hours per day, which can be grouped into excessive smartphone use. Teenagers who use smartphones with high intensity have the potential to refuse activities because they tend to withdraw from social interaction (Fitryasari, Tristiana, & Yusuf, 2020). Self-control is the main key so that adolescents do not experience addiction (Fauzi, Yusuf, & Mundakir, 2019). Good self-control will determine the right decision-making behavior, because the ability to read the situation and be selective about environmental influences fosters good self-control abilities (Bandura, 2002; Gufron & Riswanita, 2010). Adolescents aged 12-25 years are in a transitional phase from childhood to early adulthood and are required to be able to go through an adaptation process to be able to control themselves towards true adulthood (Kementerian Kesehatan RI, 2015; Prawirohardjo & Sarwono, 2005). The ability of self-control helps adolescents to filter out various adverse situations and conditions (Gufron & Riswanita, 2010). Smartphone addiction can occur due to an

individual's failure to control himself (Sun, Liu, & Yu, 2018).

The ability of adolescents to control the use of smartphones in this study uses the perspective of the Health Promotion Model theory which focuses on the formation of self-control that affects adolescent commitment by conditioning existing thoughts through interpersonal stimulation from the environment, including health workers (Murdaugh, Parsons, & Pender, 2018). The novelty in this model is adding the variables of self-control ability and interpersonal stimulation of health workers so that adolescents are able to form a high commitment to healthy behavior, using smartphones safely. Previous studies state that self-control in children and adolescents can be a predictor of the level of smartphone use and prevent addiction (Lee, 2015; Servidio, 2019; Troll, Friese, & Loscheldera, 2021). This study aims to build a safe smartphone use model for adolescents based on health promotion theory.

MATERIALS AND METHODS

This study used an explanatory research design with a cross sectional approach. The study population was teenage smartphone users in Surabaya during the COVID-19 pandemic. Respondents were obtained through a purposive sampling technique and obtained 185 teenagers as research samples. Respondents were selected based on inclusion criteria of teenagers aged 11-18 years, actively using smartphones, and participating in online learning from school. Variables include teenager factors, technology factors, environmental factors, teenagers thinking, self-control, commitment, and the level of smartphone use. The research was conducted in two stages. The first stage is a meta-analysis of teenagers' factors, technological factors (smartphones), environmental factors, teenagers thinking, self-control, commitment, and level of smartphone use. The results of the meta-analysis obtained structural models and strategic issues. The results of the first stage became the material for the second stage of research. Focus Group Discussion (FGD) involving teenagers, parents, and health workers. The data was then compiled to develop a safety smartphone use model for adolescents.

The instrument used for the first phase of research is a questionnaire developed by the researcher based on the previous questionnaire and theory. The teenagers factor instrument consists of demographic data (gender and age) and emotional intelligence questionnaire. The emotional intelligence questionnaire adopted from Goleman (2003) consists of five indicators: recognizing one's own emotions, managing emotions, motivating oneself, recognizing other people's emotions and building relationships (Killian, 2012). Technological factors consist of instruments to determine ownership of internet and smartphone-based tools, access to smartphone use and social media. Ownership of internet-based devices and smartphones includes indicators of the number of smartphone devices owned, types of devices and types of data packages used to access smartphones. Access to smartphone use consists of three indicators, namely the length of smartphone use in one day, the most frequent time to access a smartphone, and the reason for using a smartphone. Social media consists of the types of social media that are often accessed and the activities carried out while accessing social media. The technological factor questionnaire was developed from a questionnaire developed by Oktario (2017).

The environmental factor instrument consisted of a questionnaire about parental and teacher control, demands for schoolwork, peer influence and interpersonal stimulation from health workers. The questionnaire on parental and teacher control was modified from Li, Li, & Newman (2013) which consisted of indicators of attention, restriction and supervision. The school assignment demand questionnaire was developed from Alfin (2017) which has been modified and consists of online school material indicators, online assignments, and online exams. The researcher modified the peer influence questionnaire based on the concept of peer function according to Santroc (2003). The interpersonal stimulation questionnaire from health workers was compiled from the concept of the role of health workers (Potter & Perry, 2007).

Table 1. Respondents' Characteristics

Teenagers Characteristics	Category	n(%)
School ownership	Public	134 (72.4)
	Private	51 (27.6)
Home area (in Surabaya)	East	83 (44.9)
	North	16 (81.6)
	West	45 (24.3)
	South	11(5.9)
	Central	30 (16.2)
School area (in Surabaya)	East	69 (37.3)
	North	20 (10.8)
	West	34 (18.4)
	South	12 (6.5)
	Central	49 (26.5)
School Grades	7th	2 (1.1)
	8th	4 (2.2)
	9th	6 (8.6)
	10th	21 (11.4)
	11th	121 (65.4)
	12th	21 (11.4)

Table 2. Distribution of Teenagers' Factor

Variable	Category	n(%)
Gender	Male	125 (67.6)
	Female	60 (32.4)
Age (years)	13	5 (2.7)
	14	12 (6.5)
	15	17 (9.2)
	16	101 (54.6)
	17	34 (18.4)
	18	16 (8.5)
Emotional Intelligence	Low	85 (45.9)
	High	100 (54.1)

Table 3. Distribution of Technology's Factor

Variable	Category	n(%)
Smartphone ownership		
Amount	1	134 (72.4)
	2	47 (25.4)
	>2	4 (2.2)
Device type	Handphone	184 (99)
	Laptop	49 (26.5)
	Tablet	9 (4.8)
Data packaged used	Daily	10 (5.4)
	Weekly	14 (7.5)
	Monthly	98 (52.97)
	Home-Wifi	92 (49.7)
Access smartphone use		
Length of use (hour/day)	Mean	8.04
	SD	5.05
Most frequent time	Morning	37 (2.0)
	Noon	86 (46.5)
	Afternoon	65 (35.1)
	Evening	120 (64.86)
	Midnight	30 (16.2)
Reason for use	School assignment	159 (85.9)
	Browsing	155 (83.7)
	Communication	163 (88.1)
	Social Media	159 (85.9)
	Leisure time	141 (76.2)
	Playing game	98 (52.9)
	Business	36 (19.4)
	Self-actualization	19 (10.2)
	Lifestyle	28 (15.1)
	Watching Korean movies	1 (0.5)
Social media access		
Application	Facebook	21 (11.3)
	WhatsApp	167 (90.3)
	Line	68 (36.7)
	Instagram	160 (86.4)
	Snap-chat	16 (8.6)
	You tube	133 (71.8)
	TikTok	22 (11.8)
Frequent activity	Status Update	53 (28.6
	Photo Upload	28 (15.1
	Comment/like	112 (60.5
	Profile update	31 (16.7)
	Browsing	162 (87.5)
	Chatting	9 (4.8)

The adolescent self-thinking instrument consists of four indicators, consist of benefits, obstacles, beliefs, and the impact of smartphone use on adolescents. This instrument was developed based on the concept of health promotion and a smartphone using a questionnaire (Murdaugh et al., 2018; Van Deursen, Bolle, Hegner, & Kommers, 2015). The adolescent self-control instrument consists of three indicators, namely cognitive control, behavioral control, and decision making modified from the Self Control Model and a smartphone using a questionnaire (Li et al., 2013; Van Deursen et al., 2015). The smartphone use instrument was developed from the smartphone addiction scale instrument according to Haug (2015). All questionnaires have been tested for reliability and validity as a pilot sample on 30 respondents. The test results show that the components of the questionnaire are valid and reliable (p>0.73).

Data collection at the first stage was performed using an online questionnaire via a Google form and is distributed through social media. A written explanation of the objectives, benefits and procedures of the research is clearly informed. All respondents who agreed to participate in the study had to obtain parental consent by signing an online informed consent, and consent was confirmed by telephone. The second stage of the research was FGD which involved 15 teenagers, 15 parents and 5 health workers. The FGD was conducted by describing the results of the first phase of the research and discussing the main questions (Table 1).

Analysis of the data obtained in the first stage was analyzed using the Partial Least Square (PLS) test. PLS is used to analyze the influence between variables which is determined by the t-statistic value (t>1.96), while the direction of influence is determined by the path coefficient (-/+). The result will be used as material (question) for FGD. The data of the FGD were recorded, transcribed, and analyzed using the Braun and Clarke Thematic Analysis approach. These stages were understanding the data, generating initial codes, searching for themes, reviewing themes, defining, and naming themes and producing the report. The results were then compiled to develop the models.

Ethics clearance has been approved and obtained from the Ethics Committee of the Faculty of Nursing Universitas Airlangga with the number: 2018-KEPK.

RESULTS

The characteristics of the respondents are described in table 1, the majority of teenagers attend public schools located in East and Central Surabaya, most are currently studying at the 11th grade (2nd of Senior High School) and live in eastern and western Surabaya. Tables 2, 3 and 4 describe the distribution of research variables. Table 2 describes the teenagers' factors, most of them were male and aged 16 years with varying levels of emotional intelligence from low to high. Table 3 details that almost all teenagers have a smartphone-based device, especially mobile phones with monthly data packages used and also home wifi. Respondents on average use smartphones for more than 8 hours a day, especially during the noon-day and night. The reasons for using smartphones mostly were to communicate, do schoolwork, access social media, and browse information. The most frequently accessed social media by respondents are WhatsApp and Instagram. Most smartphone usage activities are for browsing and giving comments or likes on social media. Table 4 illustrates that the influence of parents, demands for school assignments and

Table 4. Distribution of Environmental Factor, Teenager's Thinking, Self-Control, Commitment, and Smartphone Usage

Variable	Category (n(%))		
	Low	Middle	High
Environmental factor			
Parent's influence	24 (13)	47 (25.4)	114 (61.6)
Teacher's influence	89 (48.1)	45 (24.3)	51 (27.6)
School assignment demand	4 (2.2)	65(35.1)	116 (62.7)
Peer's influence	47 (25.4)	71 (38.4)	67 (36.2)
Health worker's interpersonal stimulation	61 (33)	45 (24.3)	79 (42.7)
Teenager's thinking			
Advantages	3 (1.6)	-	182 (98.4)
Barriers	9 (4.9)	-	176 95.1)
Belief	0 (0)	-	185 (100)
Effect	4 (2.2)	-	181(97.8)
Self-control			
Cognitive	30 (16.2)	81 (43.8)	74 (40)
Behavior	5 (2.7)	53 (28.6)	127 (68.6)
Commitment			
Decision-making	6 (3.2)	57 (30.8)	122 (65.9)
Level of gadget addiction			
Impaired physical activity	55 (29.7)	94 (50.8)	36 (19.5)
Overuse	87 (47)	68 (36.8)	30 (16.2)
Withdrawal	92 (49.7)	61 (33)	32 (17.3)
Anticipatory	113 (61.1)	56 (30.3)	16 (8.6)
Cyberspace oriented	91 (49.2)	61 (33)	33 (17.8)
Tolerance	39 (21.1)	81 (43.8)	65 (35.1)

Table 5. Final Model of Hypothesis Test on The Development of Teenagers' Safety Smartphone Use Model

Variable	Path-coefficient	t	p-value	
Teenager's factor (X1) → Teenager's thinking (Y1)	0.293	3.970	0.000	Significant
Teenager's factor (X1) → Self-control (Y2)	0.272	3.065	0.002	Significant
Teenager's factor (X1) → Commitment (Y3)	0.165	2.244	0.025	Significant
Teenager's factor (X1) → Smartphone usage (Y4)	-0.055	0.933	0.351	Insignificant
Technology's factor (X2) → Teenager's thinking (Y1)	0.039	0.519	0.604	Insignificant
Technology's factor (X2) → Self-control (Y2)	-0.248	4.094	0.000	Significant
Technology's factor (X2) → Commitment (Y3)	0.024	0.250	0.803	Insignificant
Technology's factor (X2) → Smartphone usage (Y4)	0.612	10.331	0.000	Significant
Environment factor (X3) → Teenager's thinking (Y1)	0.224	3.294	0.001	Significant
Environment factor (X3) → Self-control (Y2)	0.217	2.934	0.004	Significant
Environment factor (X3) → Commitment (Y3)	-0.092	0.940	0.348	Insignificant
Environment factor (X3) → Smartphone usage (Y4)	-0.030	0.476	0.634	Insignificant
Teenager's thinking (Y1) → Self-control (Y2)	0.218	2.522	0.012	Significant
Teenager's thinking (Y1) → Smartphone usage (Y4)	-0.073	1.114	0.266	Insignificant
Self-control (Y2)→ Commitment (Y3)	0.372	3.953	0.000	Significant
Self-control (Y2)→ Smartphone usage (Y4)	-0.183	2.303	0.022	Significant
Commitment (Y3 → Smartphone usage (Y4)	-0.201	2.967	0.003	Significant

interpersonal stimulation from health workers according to respondents has a high value as an environmental factor in smartphone use, while the influence of teachers has a low value. Meanwhile, teenagers' thinking, which consists of four categories, has almost all high scores related to the benefits, barriers, beliefs, and consequences of using smartphones. Teenagers' self-control variables both cognitively and behaviorally are dominated by high criteria, although there is a small proportion of teenagers' cognitive control with low scores. Meanwhile, the youths' commitment to decision making in the use of smartphones is high. Smartphone users are described in the level of gadget addiction which is described in six indicators with the dominance of low addiction levels in almost all categories, however obtained data shows that the tolerance indicator has a number that needs to be considered because it is classified as a high addiction level.

Based on table 5, the research hypothesis can be explained. Teenagers' factors have an effect on increasing teenagers thinking (t=3.97; 0.293; p=0.000), increasing self-control (t=3.065; 0.272; p=0.002) and increasing teenagers' commitment (t=2.244; 0.165; p=0.025), but has no effect on smartphone use (t=0.933; p=0.351). Technological factors have an effect on decreasing self-control (t=4.094; -0.248; p=0.000) and increasing the use of smartphones (t=10.331;0.612; p=0.000) however, it has no effect on teenagers' thinking (t=0.519; p=0.604) and commitment (t=0.25; p=0.803). Environmental factors have an effect on increasing thinking (t=3.294; 0.224; p=0.001) and self-control (t=2.934; 0.217; p=0.004), but have no effect on commitment (t=0.940; p=0.348) and smartphone

Table 6. Result of Development Model of Teenagers' Safety Smartphone Use

Variable	Things to develop
Teenagers' factor	Assessing teenager emotional intelligence, especially self-emotional management, self-motivation in smartphone use
Technology factor	Assessing smartphone's access (availability of devices and internet data packages, length of screen time, types of content and reasons for use) that can be used by teenagers
Environment factor	Assessing the important role of peers (content accessed, activity on social media), information provided by health workers and parental control in smartphone use
Teenagers' thinking	Identify level of the teenager's understanding of the benefits, beliefs, barriers and impacts of smartphone use related to academic and non-academic activities Stimulating positive teenager thinking in the safe use of smartphones
Teenagers' self-control	Identify the level of teenager self-control abilities, both cognitive and behavioral in smartphone use Stimulating teenager self-control in using smartphones safely
Commitment	Identify the teenager's commitment especially decision making based on usage priorities Building a positive commitment of youth in using smartphones safely
Smartphone's use	Identify the frequency of use in one day and the level of dependence of teenagers in smartphone use

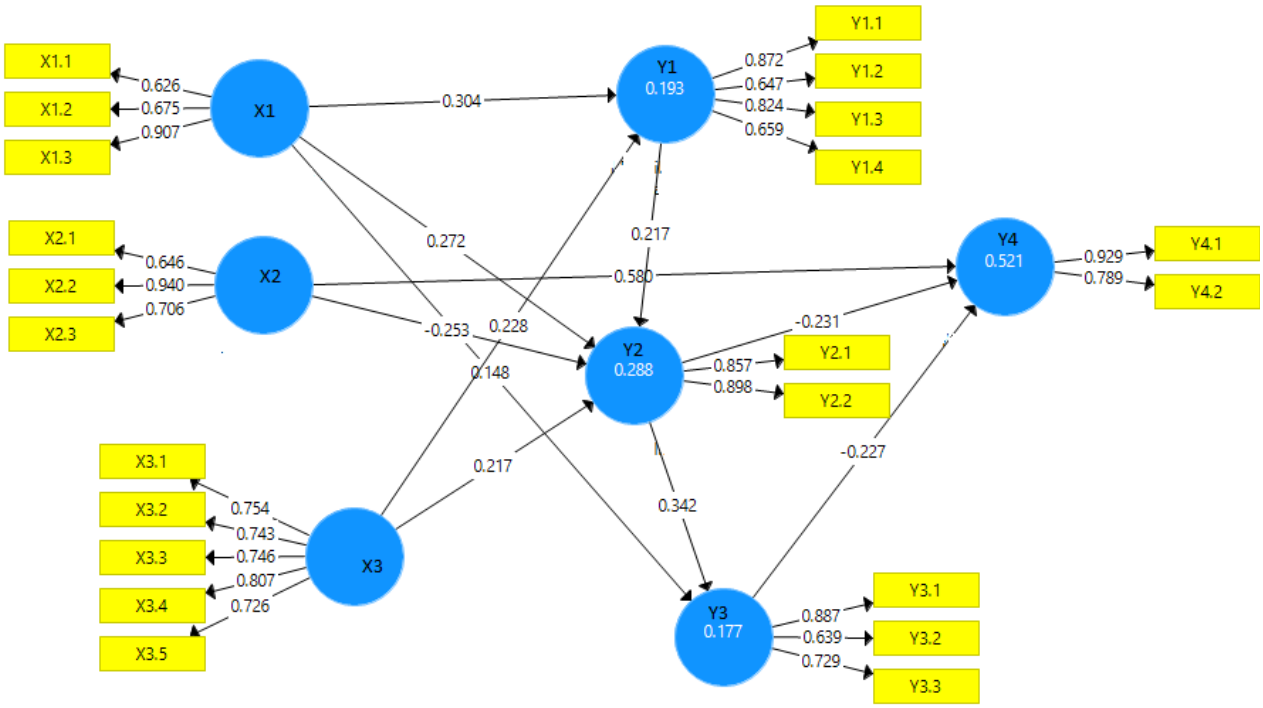

Figure 1. The Development of Teenagers' Safety Smartphone Use Model

use(t). =0.476; p=0.634). Teenagers' thinking has an effect on increasing teenagers' self-control (t=2.522; 0.218; p=0.012) but has no effect on smartphone use (t=1.114; p=0.266). Self-control has an effect on increasing commitment (t=3.953; 0.372; p=0.000) and decreasing smartphone use (t=2.303; -0.183; p=0.022). Commitment has an effect on reducing the use of smartphones in teenagers (t = 2.967; -0.201; p = 0.003). The findings can be explained whereby the model emphasizes the importance of establishing self-control through teenagers' thinking so they can commit to using a smartphone safely. Teenagers' thinking will be formed through controlling environmental factors, especially the influence of peers and interpersonal stimulation from health workers and by optimizing teenagers' individual factors, especially emotional intelligence.

Based on Figure 1, it can be explained that teenagers' factors and environmental factors affect the formation of teenagers thinking by 19.3%, and together with technological factors can increase the formation of self-control by 28.8%. Meanwhile, teenagers' commitment is built from teenagers' factors and self-control of 17.7%. Eventually, technology factors, self-control and teenagers' commitment control the use of smartphones by 52.1% in teenagers

During the FGD, it can be concluded that several things that must be developed in this model are: 1) Assess teenagers' factors, technology and the environment, 2) Identify the level of teenagers' thinking, self-control ability and teenagers' commitment related to smartphone use, 3) Provide stimulation to create positive teenagers thinking and self-control in the safe use of smartphones, 4) Build a

positive commitment for using smartphones safely (Table 6).

DISCUSSION

The safe use of smartphones in teenagers in was determined by two important variables with a negative relationship, namely teenager self-control and teenager commitment. High self-control and commitment can reduce or limit the use of smartphones in teenagers. Self-control as a result of cognitive considerations that are embodied in behavior in achieving certain goals (Gufron & Riswanita, 2010). Teenagers in this study had high self-control in using smartphones with the aim of doing school assignments and communicating with family, friends, and teachers. In addition, teenagers in the FGD process also stated that it is very important to limit the time they use smartphones in one day because they realize that using the device too much can affect their physical condition, such as eyes feeling tired, laziness in doing other activities and being bound to always using a smartphone. Understanding the main purpose of using internet-based tools is to form good self-control behaviorally so that teenagers are able to use smartphones without becoming addicted. The results of this study are in line with the results of research on school-age teenagers in South Korea, that self-control is related to the level of smartphone addiction (Cocorada et al., 2018; Sok, 2019; Sun et al., 2018). Good self-control also fosters teenager's commitment in making decisions to use smartphones with clear goals. The data also shows that more than 80% of teenagers use smartphones to do schoolwork and search for information on the internet (Lenhart, 2015; Muflih, Hamzah, & Purniawan, 2017). Data collection was carried out during the Covid-19 pandemic, where all teenagers went to school online (using internet-based tools). This situation strongly leads teenagers to use smartphones for the sake of learning at school and not just for the sake of having fun or spending their free time. During the FGD, teenagers said they were committed to being disciplined in limiting the use of smartphones by installing an application that functioned to remind them of the length of time of use, asking parents for help to remind them if they were too active with smartphones, teenagers were also very happy to remind each other not to use a smartphone for too long outside of school activities.

Self-control in teenagers is influenced by teenagers' thoughts related to the benefits, barriers, beliefs, and consequences of smartphone use. Thought is the beginning of the process of self-regulation. The inability to build self-regulation can lead to the risk of smartphone addiction in teenagers (Van Deursen et al., 2015). Self-regulation helps teenagers to be able to identify the problems they face and determine the selection of appropriate actions in solving problems (Alhidayah, 2017; Bandura, 2002). Teenagers in this study think about the benefits and believe that the use of smartphones is very helpful in completing school assignments, communicating, and interacting virtually with family, friends, and teachers. Variations in the internet network that are not smooth are expressed as obstacles experienced and related understanding due to the use of smartphones that are not related to completing school assignments fosters self-regulation skills in the form of self-control in smartphone use. The obstacles faced are one of the triggers for the creativity of smartphone users (Chun, 2018). The results also explain that teenagers use smartphones for pleasure, such as interacting through social media, playing games, and filling their spare time, but the thoughts are formed that smartphone use should be used for learning activities which make teens have good self-control and are committed to limiting their time of use of smartphones without having to experience heavy gadget addiction.

Teenagers' thinking as the basis for the formation of self-control is influenced by teenager factors and environmental factors. One of the dominant environmental factors is the presence of interpersonal stimuli, in the form of information about the use of smartphones from outside the teenager. The majority of information sources are from parents, internet, schools (school health unit) and health workers who come to school. Teenagers are an age who are thirsty for information and getting information from the right sources will help them have the right mindset regarding smartphone use. The findings of this study support the Health Promotion Model Theory, that the right input of information on individuals will foster thoughts related to benefits, beliefs, consequences, and obstacles in deciding an action. This study explains that sources of information from parents, schools (UKS) and health workers are sources of appropriate and accountable information. During the FGD the youth conveyed that the information they received and was very helpful for teenagers, including how to use smartphones, good content or sites for teenagers to access related to school assignments, seeking entertainment, increasing knowledge, how to limit smartphone use, information about the impact of excessive smartphone use, and how to overcome dependence on smartphone use. Teenagers who get the right information will be helped in developing the right thinking. Although thinking does not directly make teenagers use smartphones safely, the thoughts help teenagers have good self-control to commit and decide to use smartphones safely and not experience addiction.

The limitation of this study was that it only involved teenagers in big cities who have wide and good internet access, so it requires additional respondents in small cities to be more generalized for all teenagers in both big and small cities in Indonesia. However, the results of this study have highlighted that good self-control can be one of the factors that prevents smartphone addiction in teenagers.

CONCLUSION

The model emphasizes the importance of self-control in forming teenagers' commitment to using smartphones. High self-control is the result of teenager thinking that will be formed through controlling environmental factors, especially the influence of peers and interpersonal stimulation from health workers and by optimizing teenagers' individual factors, especially emotional intelligence. This model can be the basis for providing guidelines for the safe use of smartphones for teenagers.

REFERENCES

Alhidayah. (2017). The influence of smartphone use intensity toward social interaction in collage students. *Jurnal Riset*, *2*(2).

Bandura, A. (2002). *Self efficacy : The Exercise of Control*. W. H. Freeman & Company.

Chun, J. S. (2018). Conceptualizing effective interventions for smartphone addiction among Korean female adolescents. *Children and Youth Services Review*, *84*(November 2017), 35–39. https://doi.org/10.1016/j.childyouth.2017.11.013

Cocorada, E., Maican, C. I., Cazan, A. M., & Maican, M. . (2018). Assessing the smartphone addiction risk and its associations with personality traits among adolescents. *Children and Youth Services Review 93*, *345–354*.

Fauzi, M., Yusuf, A., & Mundakir. (2019). Predictive Risk Factors of Smartphone Addiction in Adolescents: A Systematic Review. *Journal Ners*, *14*(3). https://doi.org/http://dx.doi.org/10.20473/jn.v14i3.17110

Fitryasari, R., Tristiana, R. D., & Yusuf, A. (2020). Teenager ' s thought is related to self-control in safe smartphone use during the covid-19 pandemic. *Journal of Global Pharma Technology*, *12*(9), 280–286.

Gufron, M. N., & Riswanita, R. (2010). *Psychology Theorys*. Ar Ruzz Media.

Haug, S., Castro, R. P., Kwon, M., Filler, A., Kowatsch, T., & Schaub, M. P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behavioral Addictions*, *4*(4), 299–307. https://doi.org/10.1556/2006.4.2015.037

Kementerian Kesehatan RI. (2015). *Rencana Strategis Kementerian Kesehatan RI Tahun 2015-2019 (Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.02.02/MENKES/52/2015*.

Killian, K. (2012). Development and validation of the emotional self-awareness questionnaire: a measure of emotional intelligence. *Journal of Marital and Family Therapy*, *38*(3), 502–514. https://doi.org/10.1111/j.1752-0606.2011.00233.x

Lee, J. (2015). Effects of self-control and school adjustment on smartphone addiction among elementary school students. *International Journal of Contents*, *11*(3).

Lenhart, A. (2015). *Mobile Access Shifts Social Media Use and Other Online Activities*. Pew Research Center: Internet, Science & Tech.

Li, X., Li, D., & Newman, J. (2013). Parental Behavioral and Psychological Control and Problematic Internet Use Among Chinese Adolescents: The Mediating Role of Self-Control. *Cyberpsychology, Behavior, and Social Networking*, *16*(6), 442–447. https://doi.org/10.1089/cyber.2012.0293

Machmud, K. (2018). The Smartphone Use in Indonesian Schools : The High School. *Journal of Arts & Humanities*, *7*(3), 33–40. https://doi.org/10.18533/journal.v7i3.1354

Muflih, M., Hamzah, H., & Purniawan, W. A. (2017). Smartphone user and social interaction in senior high school. *Idea Nursing Journal*, *8*(1).

Murdaugh, C. L., Parsons, M. A., & Pender, N. J. (2018). *Health Promotion in Nursing Practice* (8th ed.). Pearson.

Nurhayati, H. (2021). *Number of smartphone users in Indonesia from 2017 to 2020 with forecasts until 2026*. Statista.

O'Dea, S. (2021). *Smartphone users worldwide 2016-2021*. Statista.

Oktario, A. (2017). *Relationship between smartphone use intensity and motivation in collage students. Thesis*. Universitas Sanata Dharma.

Potter, P. ., & Perry, A. . (2007). *Fundamental Nursing: Concepts, Process, and Practice* (6th editio). Mosby Year Book.

Prawirohardjo, & Sarwono. (2005). *Midwivery Science*. Bina Pustaka.

Servidio, R. (2019). Self-control and problematic smartphone use among Italian University students: The mediating role of the fear of missing out and of smartphone use patterns. *Current Psychology*, *40*, 4101–4111. https://doi.org/10.1007/s12144-019-00373-z

Sok, S. R. (2019). *Differences of Self-Control , Daily Life Stress , and Communication Skills between Smartphone Addiction Risk Group and General Group in Korean Nursing Students*. 1–9.

Sun, J., Liu, Q., & Yu, S. (2018). Child neglect, psychological abuse and smartphone addiction among Chinese adolescents: The roles of emotional intelligence and coping style. *Computers in Human Behavior*, *90*(September 2017), 74–83. https://doi.org/10.1016/J.CHB.2018.08.032

Troll, E., Friese, M., & Loscheldera, D. (2021). How students' self-control and smartphone-use explain their academic performance. *Computers in Human Behavior*, *117*. https://doi.org/https://doi.org/10.1016/j.chb.2020.106624

Van Deursen, A. J. A. M., Bolle, C. L., Hegner, S. M., & Kommers, P. A. M. (2015). Modeling habitual and addictive smartphone behavior: The role of smartphone usage types, emotional intelligence, social stress, self-regulation, age, and gender. *Computers in Human Behavior*, *45*, 411–420. https://doi.org/10.1016/j.chb.2014.12.039

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2, October 2021
http://dx.doi.org/10.20473/jn.v16i2.21765

Original Research

The Relationship Between Level of Knowledge and Behaviors of COVID-19 Prevention among Indonesian Population

Weni Widya Shari

Departmen of Nursing, STIKes Raflesia Depok, Depok, Indonesia

ABSTRACT

Introduction: Currently, there are no specific drugs to cure COVID-19, so it is an important strategy to be implemented in the community to increase knowledge and preventive behavior in order to prevent transmission. The purpose of this study was to see the relationship between the level of knowledge and preventive behavior against COVID-19 among Indonesian population.

Methods: This study used an analytical method with a cross-sectional design. Samples were taken from the people of Depok City as many as 406 people. The independent variable was knowledge and the dependent variable was preventive behavior. The instruments used were questionnaires on the characteristics of the respondents and knowledge and behavior with online questionnaire via Google Forms. The sampling technique was non-probability sampling with a consecutive sampling method. Data analysis used descriptive analysis test, Chi-square and correlative hypothesis test.

Results: The results showed that respondents have good knowledge (56.9%) and good prevention behavior (75.9%). The largest source of information about COVID-19 respondents was from Television News (84.4%). There was a significant relationship between the level of knowledge and preventive behavior toward COVID-19 (p=0.000). Moreover, there is a significant relationship between age (p=0.000), gender (p=0.000), education level (p=0.000) and work status (p=0.016) with knowledge.

Conclusion: The findings suggest that the local government should initiate an innovative program of health education focusing on knowledge and preventive behavior toward COVID-19 at a community level. The strategies to combat COVID-19 will require community involvement to control and prevent the disease outbreak.

ARTICLE HISTORY

Received: September 8, 2020
Accepted: Oktober 29, 2021

KEYWORDS

COVID-19; Knowledge; Prevention Behavior

CONTACT

Weni Widya Shari
when2_ners@ymail.com
Departmen of Nursing, STIKes Raflesia Depok, Depok, Indonesia

Cite this as: Shari, W., W. (2021). The Relationship Between Level of Knowledge and Behaviors of Covid-19 Prevention among Indonesian Population. *Jurnal Ners,* 16(2). 155-161. doi: http://dx.doi.org/10.20473/jn.v16i2.21765

INTRODUCTION

Corona Virus Disease 2019 (COVID-19) is an infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which was first discovered in the city of Wuhan, China at the end of December 2019 (WHO, 2020a). This virus causes disease from human to animals and has now been transmitted from human to human (Kemenkes RI, 2020a; WHO, 2020b) In humans, this virus can infect the respiratory path with the main symptoms of fever, dry cough, shortage of breath (Daryai et al., 2020; Hoque et al., 2020; Taghrir et al., 2020; WHO, 2020b) including other nonspecific symptoms such as headache, dyspnea, fatigue and muscle pain (Mo et al., 2020). There are also those who report suffering from symptoms, digestion such as vomiting and diarrhea (Huang et al., 2020). This virus spreads very quickly and has spread to almost all countries, including Indonesia, in just a couple of months. At least more than 200 countries around the world have been infected so that this virus becomes a serious threat to public health in the world (Ahmed et al., 2020; Daryai et al., 2020; Hoque et al., 2020).

According to WHO (2020a) there were an additional 185,536 cases as of July 14, 2020, bringing the total cases in the world to 13,150,645 cases while developments in the case in Indonesia has taken a significant increase amounting to 1,591 cases spread over 34 provinces and 461 cities with the total cases

of 78,572 patients. Depok is a city in West Java Province, where it is the second province with the highest number of cases after DKI Jakarta with an increase of 74 cases, with the total number of positive cases being 5,160. Meanwhile, Depok City is the first city where the COVID-19 cases appeared. As of July 14, 2020, there were also seven additional cases in Depok, with the total number of confirmed positive patients 890 people, so it can be concluded that the transmission is still ongoing up to now (Kemenkes RI, 2020b).

The increasing number of cases has impacted on many fields in various aspects, either health, economy, politics, social, education, religion or even security. Sukmana et al. (2020) stated that COVID-19 has an impact on health, tourism, economy, social and other sectors. The biggest major impact is in the health sector where there are additional positive cases that threaten public health and even cause death. On the other hand, the economy is also very much impacted, where people find it difficult to find jobs, difficulty to meet their daily needs, and even lose their income. Meanwhile, Indonesia's economic figure continues to significantly decline by 5%. The Minister of Finance said that if the prevention strategies were not implemented correctly and properly, Indonesia's economic growth could be depressed to a level of 2.5% or even lower (Hanoatubun, 2020). That is why an effective and correct handling strategy is needed to maintain the stability of an economy that is being threatened.

At the moment, there are no specific drugs and vaccines to fight COVID-19; therefore, the most crucial strategy in the community is preventive behavior to reduce the number of cases. Cvetković et al. (2020) and Ouassou et al. (2020) stated that preventive behavior with a clean and healthy lifestyle is effective for controlling and breaking the chain of transmission of COVID-19, when pharmacological interventions have not been found. Preventive actions that can be taken are washing hands regularly, covering mouth and nose with a mask, avoiding touching the face, covering mouth when coughing and sneezing, isolating cases that are suspected of being positive at home, maintaining a minimum distance of one meter (Cvetković et al., 2020; Daryai et al., 2020; Kemenkes RI, 2020a), implementing a clean and healthy lifestyle, controlling comorbid diseases and managing positive emotions (Kemenkes RI, 2020a).

The basis for change and prevention must start in society because it is a key element in the success of reducing the COVID-19 numbers. This is confirmed by the research of Qiu et al. (2020) on the public in China, that the involvement of the society in prevention factors significantly reduces the rate of virus transmission. The community must take responsibility for the health and safety of their family members by providing them continuous education. A preliminary study conducted by researchers in China resulted in the large number of people who gather at several points for such unnecessary activities, leaving the house without putting a mask on, wearing a mask but not in an appropriate way and other activities that do not apply health protocols.

The increasing number of positive cases continues every day probably because of inappropriate community preventive behavior. This could be based on a lack of knowledge or biased behavior by disobeying government calls. Health education is needed on knowledge of disease prevention and control behaviors to reduce the incidence of COVID-19 (Ouassou et al., 2020). Based on the above background, the researcher was interested in conducting research on the relationship between the level of knowledge and prevention behavior against COVID-19 in Depok City.

MATERIALS AND METHODS

This research used a correlation analytic method with a cross-sectional design which aims to find the relationship between the level of knowledge and behavior of the people of Depok City towards the prevention of COVID 19.

The data were obtained from questionnaires that were distributed to the researchers' social media accounts via Google Forms which were filled in online because of the COVID-19 pandemic situation. In addition, the researcher also asked for the help of students and colleagues to distribute questionnaires through their social media accounts. In the questionnaire, the instructions for filling and a statement of the respondent's willingness to be used as research respondents were explained.

Respondents who gave consent to willingly participate in the survey would click the 'Continue' button and would then be directed to complete the self-administered questionnaire. The Research and Community Service Unit of STIKes Raflesia (UPPM) approved our study protocol, procedure, information sheet and consent statement (Number: 247 B/STIKES-RAF/VII/2020). The ethical principles used during the research involve using the informed consent principles, anonymity, confidentiality and justice. After that, the researcher distributed the questionnaires.

Research data collection was carried out from July 20 to August 3, 2020, with a total population of all Depok City people aged 15-69 years, as many as 884,540 people. The minimum sample size obtained is 399.8 people based on the Slovin formula calculation (Nursalam, 2017). The consecutive sampling method was used for sampling where respondents are willing to fill out the questionnaires if they meet the inclusion criteria. The inclusion criteria for this study were willing to become respondents, age range between 15-69 years, living in Depok City, and able to read. The number of samples obtained was 406 people.

Knowledge was measured with 14 closed-ended questions and categorized into good (>75%), moderate (56-74%) and insufficient knowledge (<55%) (Arikunto, 2016). Meanwhile, preventive behavior was measured with 13 close-ended

questions on a 3-point Likert scale which is categorized into good (75%), moderate (56-74%) and insufficient behavior (55%) (Budiman & Riyanto, 2013). Meanwhile, the confounding variables were age, gender, education, occupation and sources of information.

The survey instrument was an adapted from previous research (Calano et al., 2019; Sari et al., 2020; Zhong et al., 2020) and Guidelines for the Prevention and Control of Coronavirus Disease, Revision IV (Kemenkes RI, 2020a). The questionnaire was tested for its reliability and validity. Cronbach's alpha value for the reliability of the knowledge questionnaire was 0.675. The result added credence where, according to Griethuijsen et al. (2014), the range of Cronbach's alpha within 0.6 to 0.7 is considered adequate and reliable. Data analysis was performed using IBM SPSS statistical software version 20. The researcher performed univariate and bivariate analysis (Chi-square).

RESULTS

The Characteristics of the Respondents

Based on Table 1, it is shown that the majority age of respondents are 12-25 years old (49.3%). Based on gender, the majority of respondents were 68.5% women. In addition, based on the education level, the majority of respondents earned senior high school education (52.7%). Based on employment status, the majority of patients were employed (86.5%). Most of them obtained source of information about COVID-19 from television news (8.4%) and at least 0.7% received information from family doctors. The respondents were allowed to answer more than one regarding the source of information.

The Relationship Between Knowledge Level and Preventive Behaviors

Table 2 explains that the majority of respondents have good knowledge (56.9%). The distribution of respondents based on prevention behavior shows the majority of respondents with good preventive behavior was 75.9%.

The Relationship Between Respondents' Characteristics and Knowledge Level

Table 3 explains that the majority of respondents having a good level of knowledge are aged 12-25 years (31%). In the gender category, the majority who have a good level of knowledge are women (43.8%). The majority of respondents who have a good level of knowledge in the education level category graduated from senior high school or equivalent (28.3%). Majority of respondents based on the employment status category who had a good level of knowledge were respondents who worked (47%). The chi-square test showed that age, gender, level of education, and employment status have a significant relationship with knowledge level.

Table 1. Respondents' characteristics

Characteristics	n	%
Age		
12-25 years	200	49.3
36-45 years	162	39.9
46-65 years	41	10.1
>65 years	3	7
Gender		
Male	128	31.5
Female	278	68.5
Education		
Elementary school	14	3.4
Junior high school	32	7.9
Senior high school	214	52.7
Higher education	146	36
Employment status		
Employed	351	86.5
Unemployed	55	13.5
Source of information		
Television news	343	84.4
Radio	216	53.2
Newspaper, magazine	156	38.4
Friends, relatives, colleagues	91	22.4
Online social media	45	11.08
Government/WHO official websites	14	3.4
Online news portal	5	1.2
Family doctors	3	0.7

Table 2. Respondents' knowledge and preventive behavior

Variable		n	%
Knowledge Level	Insufficient	41	10.1
	Moderate	134	33
	Sufficient	231	56.9
Preventive Behaviors	Insufficient	29	7.1
	Moderate	69	17.0
	Sufficient	308	75.9

The Relationship Between Knowledge Level and Preventive Behavior

Table 4 shows that respondents who have good knowledge and have good preventive behavior are 54.9%. The results of statistical tests using the Chi-square test obtained p = 0.000, which means that there is a relationship between the level of knowledge and COVID-19 prevention behavior. It can also be seen that the correlation coefficient value is 0.642, which means that the close relationship between the level of knowledge and COVID-19 prevention behavior is strong. A positive value means that if the level of knowledge increases, the better the preventive behavior will be.

DISCUSSION

This study found that there was a significant relationship between age and the level of knowledge about COVID-19. The correlation coefficient value shows that the higher the age, the knowledge about COVID-19 is minimum. This study aligns with research by Scoy et al. (2020) but contrasts with some previous research (Bates et al., 2021; Kirac et al., 2021; Wulandari et al., 2020). According to Lerik and Damayanti (2020), the relationship between age

Table 3. The Relationship between Respondents' Characteristics and Knowledge Level against COVID-19

Characteristics		Knowledge Level						Total		p-value	Correlation coefficient
		Insufficient		Moderate		Sufficient					
		n	%	n	%	n	%	n	%		
Age (years)	12-25	5	1.2	69	17	126	31	200	49.3	0.000	-0.166
	26-45	27	6.7	49	12.1	86	21.2	162	39.9		
	46-68	9	2.2	16	3.9	19	4.7	44	10.8		
Gender	Males	22	5.4	53	13.1	53	13.1	128	31.5	0.000	0.218
	Females	19	14.7	81	20	178	43.8	278	68.5		
Education Level	Elementary and junior high school†	25	6.2	17	4.2	4	1	46	11.3	0.000	0.397
	Senior high school	12	3	86	21.2	115	28.3	213	52.5		
	Higher education	4	1	31	7.6	112	27.6	147	36.2		
Employment status	Unemployed	1	0.2	14	3.4	40	9.9	55	13.5	0.016	0.134
	Employed	40	9.9	120	29.6	191	47	351	86.5		

†) Elementary and junior high school levels were combined into one category because three cells (25%) had an expected value less than 5, which was exceeding the maximum 20% standard for Chi-square test.

Table 4. The Relationship between Knowledge Level and Preventive Behavior against COVID-19

Knowledge	Preventive Behaviors						Total		p-value	Correlation coefficient
	Insufficient		Moderate		Sufficient					
	n	%	n	%	n	%	n	%		
Insufficient	24	5.9	15	3.7	2	0.5	41	10.1	0.000	0.642
Moderate	5	1.2	46	11.3	83	20.4	134	33.0		
Sufficient	0	0	8	2	223	54.9	231	56.9		
Total	29	7.1	69	17	308	75.9	406	100		

and level of knowledge about the myths and facts of COVID-19 was nowhere to be found. Different results to this research are conveyed in Nurmala et al.'s (2018) study, that people of different ages were able to have the same exposure to information. Wawan and M (2014) presented a different persepective which explains that the more people grew up, the level of maturity and strength of a person will be more in thinking and working.

This study also found female participants with better knowledge and preventive behavior than male ones. These findings were consistent with some of previously conducted studies (Bates et al., 2021; Hosen et al., 2021; Kirac et al., 2021; Wulandari et al., 2020). Their research shows a relationship between gender and *physical distancing* prevention behavior where the gender variable has a significant relationship with *physical distancing* behavior. The women tend to have good *physical distancing* behavior by 3.4 times better than men.

In addition, in this study there is a relationship between work status and the level of knowledge about COVID-19. This is following the theory presented by Nursalam (2011) that work will affect a person's level of knowledge. While the correlation coefficient shows that the relationship is very weak and has a positive correlation, which means that if the respondents work, the level of knowledge is increased. It is the same with the results of research by Scoy et al. (2020) and (Bates et al., 2021) but contrary to the research conducted by Wulandari et al. (2020).

Last, this study found that the respondents with higher education had higher knowledge. This result is the same compared with previous research (Anhusadar & Islamiyah, 2020; Bates et al., 2021; Hosen et al., 2021; Kirac et al., 2021). This result is also supported by Nursalam (2011), that a person's knowledge is also influenced by educational factors. However, the result of this research is contrary to some previously conducted studies (Lerik & Damayanti, 2020; Wulandari et al., 2020). It has been assumed that information or knowledge is not only obtained in formal education but can be obtained from experience, environment, and non-formal education (Ayurti et al., 2016; Wawan & M., 2014). Any information greatly affects a person's knowledge; even though someone has low education, when he/she is often exposed to information from various sources, the knowledge will be increased. The educational factor is not very influential because various information about COVID-19 at this time is very easy to be accessed (Wawan & M, 2014).

There is a significant relationship between the level of knowledge and COVID-19 prevention behavior in respondents. These results echo the research conducted by Sari et al. (2020) which stated that there is a relationship between public knowledge and obedience in the use of masks as an effort to prevent COVID-19 in Ngronggah. Research by Syadidurrahmah et al. (2020) also showed that the variable of knowledge related to physical distancing has a significant relationship with physical distancing behavior. This research shows that respondents who have good knowledge of physical distancing have a 1.7 times chance of having good physical distancing behavior than those who have less knowledge.

The correlation coefficient states that, if the level of knowledge increases, the prevention behavior will be better. This is supported by Juwariyah and

Priyanto (2018) and Hosen et al. (2021) but contrasts with research by Bates et al. (2021). Knowledge and behavior factors play a role in forming healthy habits (Shaw, 2016). Most people have inadequate health behaviors due to a lack of knowledge of health (Nurjanah & Mubarokah, 2019). Knowledge is a very important domain to creates one's actions (Nurmala et al., 2018). Behavior which is based on knowledge, awareness, and positive attitude will last longer rather than behavior that is not based on these three things (Notoatmodjo, 2014). As previously discussed, many factors connect knowledge and behavior. Knowledge is a predisposing factor before a person adopts a new behavior; people must understand first about the meaning or benefit of this behavior for one's self or family (Notoatmodjo, 2014). A person will take preventive action for COVID-19 if he/she knows what the benefits and goals of prevention are for (Hamel et al., 2020). Pratama and Hidayat (2020) found that society is still maintaining social distancing because they recognize the importance of the safety of themselves and others.

The results of the research show that there are still respondents who have good knowledge with adequate preventive behavior (2%). This is possible because of other factors from that person. As everyone knows, the COVID-19 pandemic has had many impacts on the various sectors. Economic sectors have a big impact on society. Now people experience difficulties to find jobs, experience difficulties to fulfill their daily needs, and even lose their income (Hanoatubun, 2020; Pratama & Hidayat, 2020) so even though people have good knowledge, they are constrained by the economy because they do not have money to buy masks, hand sanitizers or vitamins to prevent COVID-19, and thus, preventive behavior cannot be done properly. The other influencing factor is the social relationship factor in the form of disruption of social relations. There is still a belief that social distancing will lead to distant social relationships (Pratama & Hidayat, 2020). The lack of preventive behavior can also arise due to the non-obedience factor, a condition when an individual or group wishes to comply but several factors stop them from being submissive to the advice given by health professionals (Prihantana & Wahyuningsih, 2016).

This study has limitations by conducting research in one location, as in Depok, Indonesia. The study may be conducted in other areas to explore the same context with various variable. In addition, the data collection instruments, particularly the behavioural aspect, were self-administered by the respondents; thus, the researchers could not directly observe the actual behaviour demonstrated by the participants.

CONCLUSION

The results showed that a good level of knowledge will lead to good behavior as well. Variables of age, gender, education level, work status also have a relationship with a person's level of knowledge. Innovative health education is still needed to increase public knowledge in order to increase knowledge and prevention behavior for reducing the risk transmission of COVID-19. This study can provide input on level of knowledge and COVID-19 behavior to the government in making the right policies and strategies regarding COVID-19.

REFERENCES

Ahmed, N., Shakoor, M., Vohra, F., Abduljabbar, T., Mariam, Q., & Rehman, M. A. (2020). Knowledge, awareness and practice of health care professionals amid sars-cov-2, corona virus disease outbreak. *Pakistan Journal of Medical Sciences*, *36*(COVID19-S4), S49–S56. https://doi.org/10.12669/pjms.36.COVID19-S4.2704

Anhusadar, L., & Islamiyah. (2020). Penerapan Perilaku Hidup Bersih dan Sehat Anak Usia Dini di Tengah Pandemi Covid 19. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *5*(1), 463–475. https://doi.org/10.31004/obsesi.v5i1.555

Arikunto, S. (2016). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Rineka Cipta.

Ayurti, F., Betan, Y., & Goa, M. (2016). Hubungan Pengetahuan Dan Sikap Terhadap Perilaku Keluarga Dalam Pencegahan Penularan Penyakit Tuberkulosis Di Wilayah Kerja Puskesmas Oesapa. *CHM-K Health Journal*, *11*(2), 30–36.

Bates, B. R., Tami, A., Carvajal, A., & Grijalva, M. J. (2021). Knowledge, Attitudes, and Practices Towards COVID-19 among Venezuelans during the 2020 Epidemic: An online Cross-Sectional Survey. *Plos ONE*, *16*(4), 1–16. https://doi.org/10.1371/journal.pone.0249022

Budiman; Riyanto, A. (2013). *Kapita Selekta Kuesioner: Pengetahuan dan Sikap dalam Penelitian Kesehatan*. Salemba Medika.

Calano, B., Cacal, M., Cal, C. B., Calletor, K. P., Guce, F., Bongar, M., & Macindo, J. (2019). Effectiveness of a Community Based Health Programme on the Blood Pressure Control, Adherence and Knowledge of Adults with Hypertension: A PRECEDE-PROCEED Model Approach. *Journal of Clinical Nursing*, *28*(9–10), 1879–1888. https://doi.org/10.1111/jocn.14787

Cvetković, V. M., Nikolić, N., Nenadić, U. R., Öcal, A., Noji, E. K., & Zečević, M. (2020). Preparedness and preventive behaviors for a pandemic disaster caused by COVID-19 in Serbia. *International Journal of Environmental Research and Public Health*, *17*(11), 1–23. https://doi.org/10.3390/ijerph17114124

Daryai, U. G., Deore, K. G., Deore, P. R., Imran, M., Bairagi, V. A., Usman, M. R. M., & Patil, P. V. (2020). Corona virus (Covid-19) pandemic: A systematic review. *Journal of Pharmaceutical Sciences and Research*, *12*(4), 516–523.

Griethuijsen, R. A. L. F. van, Eijck, M. W. van;, Haste, H., Brok, P. J. den;, Skinner, N. C. ., Mansour, N., Gencer, A. S., & BouJaoude, S. (2014). Global Patterns in Students' Views of Science and Interest in Science.

Res Sci Educ, *45*(4), 581–603. https://doi.org/10.1007/s11165-014-94386

Hamel, L., Lunna, L., Muñana, C., Kates, J., Michaud, J., & Brodie, M. (2020). *KFF Health Tracking Poll – February 2020*. *February*.

Hanoatubun, S. (2020). Dampak Covid-19 terhadap Perekonomian Indonesia. *Journal of Education, Psychology and Counseling*, *2*(1), 146–153.

Hoque, M. N., Chaudhury, A., Akanda, M. A. M., Hossain, M. A., & Islam, M. T. (2020). Genomic diversity and evolution, diagnosis, prevention, and therapeutics of the pandemic COVID-19 disease. *PeerJ*, *April*, 1–47. https://doi.org/http://dx.doi.org/10.7717/peerj.9689

Hosen, I., Pakpour, A. H. ., Sakib, N., Hussain, N., Mamun, F. A., & Mamun, M. A. (2021). Knowledge and Preventive Behaviors Regarding COVID-19 in Bangladesh: a Nationwide Distribution. *PLos ONE*, *16*(5), 1–17. https://doi.org/https://doi.org/10.1371/journal.pone.0251151

Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., … Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*, *395*(10223), 497–506. https://doi.org/10.1016/S0140-6736(20)30183-5

Juwariyah, T., & Priyanto, A. (2018). Hubungan tingkat pengetahuan dengan perilaku pencegahan kekambuhan luka diabetik. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, *5*(3), 233–240. https://doi.org/10.26699/jnk.v5i3.art.p233-240

Kemenkes RI. (2020a). *KMK No. HK.01.07-MENKES-413-2020 tentang Pedoman Pencegahan dan Pengendalian COVID-19* (pp. 106–109). Kementrian Kesehatan RI.

Kemenkes RI. (2020b). *Situasi Terkini Perkembangan Coronavirus Disease (COVID-19) 15 Juli 2020*.

Kirac, R., Soyler, S., & Cavmak, D. (2021). Knowledge and Awareness Level of the Society about COVID-19 in Turkey: A Cross Sectional Research. *Malaysian Journal of Public Health Medicine*, *21*(1), 244–252. https://doi.org/https://doi.org/10.37268/mjphm/vol.21/no.1/art.751

Lerik, M. D. C., & Damayanti, Y. (2020). Mitos Covid-19 di Kalangan Masyarakat Kota Kupang : Survey Cross-Sectional. *Journal of Health and Behavioral Science*, *2*(2), 130–137. https://doi.org/10.35508/jhbs.v2i2.2259

Mo, P., Xing, Y., Xiao2, Y., Deng, L., Zhao, Q., Wang, H., Xiong, Y., Cheng, Z., Gao, S., Liang, K., Luo, M., Chen, T., Song, S., Ma, Z., Chen, X., Zheng, R., Cao, Q., Wang, F. W., & Zhang, Y. (2020). Clinical characteristics of refractory COVID-19 pneumonia in Wuhan, China. *Oxford University Press for the Infectious Diseases Society of America*. https://doi.org/10.1093/cid/ciaa270.

Notoatmodjo, S. (2014). *Promosi Kesehatan dan Perilaku Kesehatan* (Edisi Revi). Rineka Cipta.

Nurjanah, & Mubarokah, K. (2019). Health Literacy and Health Behavior in the Rural Areas. *KnE Life Sciences*, *4*(10), 8. https://doi.org/10.18502/kls.v4i10.3702

Nurmala, I., Rahman, F., Nugroho, A., Erlyani, N., Laily, N., & Anhar, V. Y. (2018). *Promosi Kesehatan* (Cetakan Pe). Airlangga University Press.

Nursalam. (2011). Manajemen Keperawatan Aplikasi dalam Praktik Keperawatan Profesional Edisi 3. In *Salemba Medika*. Salemba Medika.

Nursalam. (2017). Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis. *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis*.

Ouassou, H., Kharchoufa, L., Bouhrim, M., Daoudi, N. E., Imtara, H., Bencheikh, N., Elbouzidi, A., & Bnouham, M. (2020). The Pathogenesis of Coronavirus Disease 2019 (COVID-19): Evaluation and Prevention. *Journal of Immunology Research*, *2020*. https://doi.org/10.1155/2020/1357983

Pratama, N. A., & Hidayat, D. (2020). Pengetahuan dan Perilaku Masyarakat Memaknai Social Distancing. *Jurnal Digital Media & Relationship*, *2*(1), 1–10.

Prihantana, A. S., & Wahyuningsih, S. S. (2016). Hubungan Pengetahuan dengan Tingkat Kepatuhan Pengobatan pada Pada Pasien Tuberkulosis di RSUD dr. Soehadi Prijonegoro Sragen. *Farmasi Sains Dan Praktis*, *II*(1), 47.

Qiu, Y., Chen, X., & Shi, W. (2020). Impacts of social and economic factors on the transmission of coronavirus disease 2019 (COVID-19) in China. *Journal of Population Economics*, *33*(4), 1127–1172. https://doi.org/10.1007/s00148-020-00778-2

Sari, D. P., Sholihah, N., & Atiqoh. (2020). Hubungan antara pengetahuan masyarakat dengan kepatuhan penggunakan masker sebagai upaya pencegahan penyakit COVID-19 di Ngronggah. *INFOKES Journal*, *10*(1), 52–55.

Scoy, L. J. V., Miller, E. L., Snyder, B., Wasserman, E., Chinchili, V. M., Zgierska, A. E., Rabago, D., Lennon, C. L., Lipnick, D., Toyobo, O., Ruffin, M. T. I., & Lennon, R. P. (2020). *Knowledge, Perceptions and Preferred Information Sourcet Relate to Covid-19 among Central Pennsylvania Adults Early in the Pandemic: Results of a Mix Methods Cross Sectional Survey*.

Shaw, K. (2016). Exploring beliefs and attitudes of personal service practitioners towards infection control education, based on the Health Belief Model. *Environmental Health Review*, *59*(1), 7–16. https://doi.org/10.5864/d2016-003

Sukmana, M., Aminuddin, M., & Nopriyanto, D. (2020). Indonesian government response in COVID-19 disaster prevention. *East Afrian Scholars Journal of Medical Sciences*, *3*(3), 2617–7188. https://doi.org/10.36349/EASMS.2020.v03i03.025

Syadidurrahmah, F., Muntahaya, F., Islamiyah, S. Z., & Fitriani, T. A. (2020). Perilaku physical distancing

mahasiswa UIN Syarif Hidayatullah Jakarta pada masa pandemi covid-19. *Jurnal Perilaku Dan Promosi Kesehatan*, *2*(1), 29–37.

Taghrir, M. H., Borazjani, R., & Shiraly, R. (2020). COVID-19 and iranian medical students; A survey on their related-knowledge, preventive behaviors and risk perception. *Archives of Iranian Medicine*, *23*(4), 249–254. https://doi.org/10.34172/aim.2020.06

Wawan, A., & M, D. (2014). *Teori & Pengukuran Pengetahuan, Sikap, dan Perilaku Manusia, dilengkapi Contoh Kuesioner* (Cetakan II). Nuha Medika.

WHO. (2020a). *Coronavirus Disease 2019 Situation Report-177*. *July*.

WHO. (2020b). Infection Prevention and Control guidance for Long-Term Care Facilities in the context of COVID-19. *Interim Guidance of World Health Organization*, *March*, 1–5.

Wulandari, A., Rahman, F., Pujianti, N., Sari, A. R., Laily, N., Anggraini, L., Muddin, F. I., Ridwan, A. M., Anhar, V. Y., Azmiyannoor, M., & Prasetio, D. B. (2020). Hubungan Karakteristik Individu dengan Pengetahuan tentang Pencegahan Coronavirus Disease 2019 pada Masyarakat di Kalimantan Selatan. *Jurnal Kesehatan Masyarakat Indonesia*, *15*(1), 42. https://doi.org/10.26714/jkmi.15.1.2020.42-46

Zhong, B.-L., Luo, W., Li, H.-M., Zhang, Q.-Q., Liu, X.-G. L., Li, W.-T., & Li, Y. (2020). Knowledge, Attitudes, and Practices Towards COVID-19 among Chinese Residents during the Rapid Rise Period of the COVID-19 Outbreak: a Quick Online Cross-Sectional Survey. *International Journal of Biological Sciences*, *16*(10), 1745–1752. https://doi.org/doi: 10.7150/ijbs.45221

Jurnal Ners
Jurnal Ners
Vol. 16, No. 2 October 2021 - INPRESS
http://dx.doi.org/10.20473/jn.v16i2.29811

Original Research

Nurses' Role in Taking Care of Gestational Diabetes Mellitus Patients: A Qualitative Study

Tri Ismu Pujiyanto and Indah Wulaningsih

Universitas Karya Husada Semarang, Central Java, Indonesia

ABSTRACT

Introduction: Gestational Diabetes Mellitus (GDM) is becoming one of the major public health problems. It is important to screen the GDM and for the case to be managed by nurses. Nurses are needed to care for pregnant women with GDM, and the work experience of nurses is directly related to the assistance and quality of care provided. However, nurses face some barriers in understanding the GDM and providing good management thereof. This study explored the experiences of nurses of caring for GDM patients.

Methods: This study was a phenomenological approach qualitative research. Participants were 10 nurses who provide care for pregnant women with GDM selected by purposive sampling technique with sampling criteria. Data analysis used the Colaizzi method.

Results: There were five categories, e.g. empathy, inspiration to find ways to treat patients very well, feeling of ambivalence, self-preservation to develop potential, and the impact on the nurses of caring for GDM.

Conclusion: Sustaining the nursing workforce and improving their working experiences are essential to meet the care needs of pregnant women with GDM. Nurses should understand to promote empathy, and there is a need to improve the job satisfaction and morale of nurses. At the institutional level, policy makers should make efforts to improve the nursing clinical practice environment, increase the nursing management role, the maternity nursing education and training, achieve a proper skill mix of the health workforce, and, overall, attract, prepare and sustain nurses regarding caring for pregnant women with high risk GDM.

ARTICLE HISTORY

Received: September 08, 2021
Accepted: October 21, 2021

KEYWORDS

nurses' role experience; caring; gestational diabetes mellitus; patients

CONTACT

Tri Ismu Pujianto
✉ tri.ismu2021@gmail.com
Universitas Karya Husada Semarang, Central Java, Indonesia

Cite this as: Pujianto, T. I., & Wulaningsih, I. (2021). Nurses' Role in Taking Care of Gestational Diabetes Mellitus Patients: A Qualitative Study. *Jurnal Ners, 16*(2). 162-168. doi:http://dx.doi.org/10.20473/jn.v16i2.29811

INTRODUCTION

GDM is defined as glucose intolerance with onset or first recognition during pregnancy. The definition does not require any return to normal glucose levels following delivery. Thus, GDM simply represents relatively high glucose levels at one point in the life of a young woman (Buchanan et al., 2012). GDM is a form of hyperglycemia. In general, hyperglycemia results from an insulin supply that is inadequate to meet tissue demands for normal blood glucose regulation. Studies conducted during late pregnancy, when, as discussed below, insulin requirements are high and differ only slightly between normal and gestational diabetic women, consistently reveal reduced insulin responses to nutrients in women with GDM. Studies conducted before or after pregnancy, when women with prior GDM are usually more insulin resistant than normal women (also discussed below), often reveal insulin responses that are similar in the two groups or reduced only slightly in women with prior GDM. However, when insulin levels and responses are expressed relative to each individual's degree of insulin resistance, a large defect in pancreatic ß cell function is a consistent finding in women with prior GDM (Buchanan et al., 2012; Plows et al., 2018). GDM also adds an intrauterine environmental risk factor to an increased genetic risk for the development of obesity, diabetes and/or metabolic syndrome in childhood. As regard mother complications, GDM is a strong risk factor for the development of permanent diabetes later in life (40% in 10 subsequent. years) and GDM in successive pregnancies (35%), increasing with the age and

weight of the mother. An important intervention on long-term metabolic benefits for both mother and offspring has been attributed to breastfeeding. In the offspring a protective role was seen against excessive fat accumulation, protection against childhood infections, cardiovascular diseases and type 2 diabetes, while in women an association between lactation and low concentrations of glucose and insulin and a better tolerance to glucose was seen and a significant delay in the appearance of type 2 diabetes in women with GDM (Alia et al., 2019).

Although obstetricians-gynecologists (OBs/GYNs) serve many women as their primary care provider and are often the sole physician that women see regularly during their reproductive years, a pregnancy complicated by GDM should alert not only OB/GYNs, but also other primary care providers to take the preventive actions during the inter- and postpartum periods. Appropriate early postpartum care for women with prior GDM includes screening for continued abnormal glycaemia and risk for progression to diabetes. However, this care should also include ongoing (lifelong) counseling on the risk for future pregnancies complicated by GDM, the risk for progression to diabetes over the life of the woman, and on the importance of lifestyle changes to reduce these risks. The National Diabetes Education Program (NDEP) recommends that all providers who care for women with prior GDM screen all women as well as provide or refer these patients to early treatment and prevention interventions (Oza-Frank et al., 2014).

The impact of GDM will be seen after several years if it is not handled now and triggers an increase in the incidence of GDM. Therefore, screening or early detection is needed to capture GDM so that it can be managed as well as possible, especially in mothers with risk factors. Early detection will help pregnant women to improve maternal welfare both during and after pregnancy (Djihanga & Muflilah, 2020). A study related to the experience of pregnant women with GDM explained the inability to achieve optimal maternal roles in patients with GDM (Wulaningsih et al., 2020). Early detection in health services, especially for antenatal care, is also one of the work programs of the American Diabetes Association (ADA) to prevent complications that may occur during the delivery process later (Djihanga & Muflilah, 2020).

Nurses understand the importance of GDM screening. All of the nurses who encounter patients with high risk can assist in teaching and preparing for treatment (Djihanga & Muflilah, 2020). However, GDM screening is often missed because patients do not seek to achieve systematic health services for the implementation of screening. Patients come to a health facility when they have experienced the effects of GDM on their pregnancy. In addition, resources and facilities in health facilities are also often limited so that the practice of comprehensive ANC examination is not in accordance with the theoretical concept because it only focuses on physical examination, history taking, Leopold maneuver and laboratory examination of HB, leukocytes, proteinuria. Meanwhile, GDS examinations and even fasting GDs were not examined. This is related to the competence of resources and workload experienced by health workers, especially nurses (Sahu et al., 2021; Wulaningsih et al., 2020).

Nurses should understand their role in caring for patients. Regulatory agencies and accrediting bodies expect clinical staff nurses to understand their roles in all aspects of care, including caring for patients. Nurses should be knowledgeable about three major areas related to patients: (a) human subjects protection, including informed consent and the role of the institutional review board; (b) requirements of study participation; and (c) procedures for reporting conflicts between protection of the patient and requirements of study participation (Connelly, 2009). Based on the background of this study, the aim of this study was to analyze nurse role experience of caring for gestational diabetes mellitus patients.

MATERIALS AND METHODS

This was a phenomenological approach qualitative research. Data collection was carried out through in-depth interviews with a voice recorder and field notes. Participants were selected based on research needs with the principle of appropriateness and adequacy. Participants in this research were nurses taking care of GDM patients. The data collection was finished in the ten participants when the categorization of data was saturated. Data saturation was reached when there is enough information to replicate the study when the ability to obtain additional new information has been attained, and when further coding is no longer feasible. Besides, the availability of time and resources in research is also taken into consideration in ending data collection. This research instrument was the researchers themselves. Purposive sampling technique with sampling criteria was used. The inclusion criteria in this study were 1). Nurses who have provided care for high-risk mothers with GDM. 2) Living in the Central Java Province. 3). Willing to become a participant by agreeing to informed consent. The exclusion criterion was nurses on leave. Data analysis used the Colaizzi method. The inclusion of additional steps as follows: 1). Transcribing all the subjects' descriptions. 2). Extracting significant statements (statements that directly relate to the phenomenon under investigation). 3). Creating formulated meanings. 4). Aggregating formulated meanings into theme clusters. 5). Developing an exhaustive description (a comprehensive description of the experience as articulated by participants). 6). Additional step-researcher interpretative analysis of symbolic representations from the articulation of the symbolic representation (which occurred during participant interview). 7). Identifying the fundamental structure of the phenomenon. 8). Returning to participants for validation (Edward & Welch, 2011).

Table 1. List and Characteristics of Participants

Participant	Age	Gender	Education	Work Experience	Religion	Marital Status
P1	25	Male	Bachelor	1 years	Muslim	Married
P2	24	Female	Bachelor	2 years	Muslim	Married
P3	30	Female	Bachelor	2 years	Muslim	Married
P4	20	Female	Diploma	9 years	Christian	Single
P5	29	Male	Diploma	7 years	Muslim	Married
P6	32	Female	Diploma	11 years	Christian	Married
P7	37	Male	Diploma	17 years	Muslim	Married
P8	31	Male	Diploma	14 years	Muslim	Married
P9	23	Female	Bachelor	2 years	Muslim	Married
P10	49	Female	Diploma	10 years	Muslim	Married

Table 2. Socio-Demographic Characteristics of Participants

Characteristics	n	%
Age		
20-30 years	6	60.0
31-40 years	3	30.0
41-50 years	1	10.0
Gender		
Male	4	40.0
Female	6	60.0
Education Level		
Diploma	6	60.0
Bachelor	4	40.0
Work experience		
1-5 years	2	20.0
6-10 years	7	70.0
> 10 years	1	10.0
Religion		
Muslim	8	80.0
Christian	2	20.0
Marital Status		
Married	9	90.0
Single	1	10.0

Data were collected between November 2019 and February 2020 using in-depth interview with nurses who care for diabetes patients. Interviews were conducted by one of the research team who already had a basic understanding of qualitative research. Before selected as a participant, participants were given the research information about title, purpose, benefit, participant participation, reward and more information if there was an adverse event, then they gave a statement of informed consent as to voluntary participation. The validity of the data in this research was tested and included credibility, dependability, and conformability. The study was declared to have passed the ethical review by the Research Ethics Committee, Faculty of Health and Nursing Science, Karya Husada University. Data were collected using interview guide and participants answered the questions for 30-45 minutes. Data were collected once meeting with the participant. Before the in-depth interview, the author-built trust from the participant, so they gave truthful information about their experience. After data were collected, we analyzed the keywords and themes found from the research.

RESULTS

Based on the criteria for inclusion participating as many as 10 nurses were obtained. In-depth interviews were conducted with participants and showed mixed results about nurses' role experience of caring for GDM. This study obtained as many as five themes of the sub-categories, which have been arranged as below.

Table 1 and Table 2 shows the characteristics of participants were predominantly female (60.0%) and the age was majority 20-30 years (60.0%). Diploma was the highest education level in the participants (60.0%), the experience of nursing was dominated in range 6-10 years (70.0%). Muslim was the highest religion in participants and 90.0% of participants were in married status. The themes are shown in Table 3.

Theme 1: Empathy

Nurses have a sense of empathy for the patients they treat with GDM. Nurses have awareness in carrying out their duties and functions in providing nursing care. The following are participant answers expressed as follows: P2-10: "Every patient has the same right to get optimal nursing care, so I have to provide holistic care." P5-15: "I can feel the suffering of patients with GDM, being pregnant with a condition where there is an increase in blood sugar levels can make the mother experience anxiety, sadness. So I need to provide better service."

Table 3. Thematic Analysis of the Participants

Keyword	Sub Theme	Theme
The patient is the same Feeling patient's suffering	Awareness in carrying out duties	Empathy
Optimal nursing care Holistic care Giving better service	Providing nursing care	
Give best service	Patient's condition	Inspiration to find ways to treat patients very well
Finding something new Help mother with high risk	High risk pregnancy	
Caring is not easy Have to understand patient Uncomfortable feeling	Finding many challenges	Feeling of ambivalence
Finding many problems Difficult solving	Emotional feeling	
Proud to be nurse Giving optimal caring	Develop competencies	Self-preservation to develop potential
Helping patient and family Provide service to patient	Positive impact of many aspects	The impact on the nurses of caring for GDM

Theme 2: Inspiration to find ways to treat patients very well

Nurses thought that they must be able to find better ways to treat patients with GDM, stated by the participants as follows: P6-15: "I always think how to find a way to encourage patients with high risk especially GDM, to help them through difficult times during pregnancy." P5-15: "The best service must be provided to patients with GDM, nurses must change their perspective to find something new in providing nursing care to high-risk patients."

Theme 3: Feeling of ambivalence

Nurses have contrasting feelings about themselves and the patients whom they care for. The following are participants' statements: P8-16: "Carrying out the role as a nurse is not easy, there are many challenges but in the main is understanding patients who have different characters. Sometimes I feel uncomfortable when treating patien ts who can't be given advice, that's where my emotional feelings arise." P1-15: "Often there is a feeling of ambivalence in caring for high-risk patients, there are many problems within the patient that must be resolved but it is difficult to contradict my feelings."

Theme 4: Self-preservation to develop potential

Nurses realize that this profession is a noble profession to continuously develop existing competencies and potentials. This is stated by the participants as follows: P7-13: "I am very proud to be a nurse, when caring for patients I feel I can develop my own potential to provide the best service." P10-14: "Caring for high-risk patients, espe cially GDM, made me realize that, as a nurse, I must be able to preserve myself to develop my potential in order to provide optimal nursing care."

Theme 5: The impact on the nurses of caring for GDM

The actual service of nurses has a positive impact on many aspects of practice, as stated by the participants as follows: P3-16: "Efforts made by nurses have a positive impact on patients and families, including psychology the patient does not experience anxiety during pregnancy with GDM." P5-12: "The smallest thing to provide services to patients with high risk has a very significant impact, where patients feel capable and confident that they will recover."

DISCUSSION

Theme 1: Empathy

Pregnancy is a normal physiological process. The majority of pregnancy is accepted by the mother as something that has to be lived with. But the experience of the mother diagnosed with diabetes during pregnancy is a special experience for the mother and a serious challenge to maintain and undergo pregnancy. Therefore, it is very necessary to do prenatal care for the mother and fetus to align processes to avoid pregnancy complications and decrease the incidence of morbidity or perinatal and maternal mortality (Schellinger et al., 2017).

The nurses spoke about several experiences that captured the meaning of the theme of "empathy," and was illustrated with descriptions of the caring for GDM patients. Abby described the feelings she experienced concerning maternity patients when she "provides holistic care." This was also described as "so I need to provide better service." Empathy can be thought of as an individual's identification with and response to an event (Wilson & Kirshbaum, 2011). Empathy can further be viewed as an emotion felt by nurses when they place themselves in the patient's situation, personifying the experience and treating the patient as they would want to be treated. Empathy

involves alleviation of pain, avoidance of suffering, and promotion of a new level of health (Mattsson et al., 2013) and nurses will try to deliver patient care so these concepts can be achieved.

The result of this study shows that the cause of GDM is due to hereditary factors, immunological factors, and diabetes acquired during pregnancy. Empathy is needed by nurses in providing care to high-risk patients, GDM. Empathy toward patients and families contributes to the emotions of caring provided by nurses.

Theme 2: Inspiration to find ways to treat patients very well

Diabetes is a common complication of pregnancy. Patients can be separated into two, namely those who had previously known diabetes and those who are diagnosed with diabetes during pregnancy (gestational). Maternal factors obtained in mothers with GDM are hypertension, preeclampsia, and increased risk of caesarean section (Huang et al., 2020).

Maternal glucose levels are unstable and can cause fetal death in utero, which is a typical occurrence in women with diabetes. A fetus exposed to hyperglycemia tends to asphyxia and acidosis although the exact mechanism is unclear, but is thought ketoacidosis has close links with the death of the fetus. When maternal or blood glucose levels are within normal limits, the death of the fetus in the uterus is rare (Alberico et al., 2017). Hyperinsulinemia that occurs in the fetus will increase the metabolic rate and oxygen needs to deal with situations such as hyperglycemia, ketoacidosis, pre-eclampsia and vascular disease, which can reduce blood flow and oxygenation placenta-utero fetus. The frequency of fetal death in utero or stillbirth ranges from 15-20%. An attempt to avoid the sudden death of the fetus in the womb is to terminate the pregnancy a few weeks before term (Alia et al., 2019).

Some of the things above explain that GDM patients need to receive good care. Nurses have intuition and inspiration to treat patients well. Inspiration was identified when nurses observed the strength and resilience they detected in their maternity patients. Inspiration can also be felt by nurses in the experience of caring for GDM patients. "The best service must be provided to patients with GDM, nurses must change their perspective to find something new in providing nursing care to high-risk patients." The statement about inspiration to find ways to treat patients very well is a process of being mentally stimulated to do or feel something, creating a motivating reaction typically experienced when facing challenges in the process of goal attainment (Straume & Vitterso, 2012).

Theme 3: Feeling of ambivalence

Maintaining the pregnancy did not make the mother desperate to retain the fetus and mother's health. Various efforts have been made to maintain the mother and the fetus in good condition and wellbeing. The experience of the mother to keep the extra pregnancy is to maintain fetal maturity by way of checkups to the hospital (Alia et al., 2019). Another effort made by the mother is doing movement exercises during pregnancy, doing routine blood sugar control and continuously making efforts at healthcare treatment (Alia et al., 2019; Dhingra & Ahuja, 2016).

Nurses discussed struggling with their feelings during their experiences of caring for high risk GDM patients. Feelings of ambivalence were described by questioning why nurses were subjected to the contrasting feelings about themselves and the patients whom they care, when a participant stated "Carrying out the role as a nurse is not easy, there are many challenges in the main is understanding patients who have different characters. Sometimes I feel uncomfortable when treating patients who can't be given advice, that's where my emotional feelings arise."

Each nurse participant discussed similar issues related to ambivalence, the issues the struggles nurses when faced with their own emotions In relation to this, ambivalence may be emotionally distressing when nurses are asked to behave in a manner contradictory to their beliefs.

Ambivalence is defined as the state of having mixed feelings, mixed beliefs, or contradictions of thoughts and feelings (Petty & Krosnick, 2014). When discussing ambivalence in patient care, nurses described a sense of doubt as to whether or not the care rendered was appropriate for the situation. In nursing care view, a holistic human being is an individual. In a holistic concept, the human figure is seen as a whole, which is able to adapt as a whole.

Theme 4: Self-preservation to develop potential

Women with a history of DM should use effective contraception to reduce pregnancy which is accompanied by hyperglycemia. Long-term management with low-dose combined oral contraceptives did not appear to increase the risk of diabetes after pregnancy. An intra-uterine device (IUD) is the most effective contraceptive as it is metabolically neutral. Conversely, the use of progestin-containing contraceptives during lactation may increase the risk of diabetes (Kiley & Griffin, 2015).

Nurses' interviews revealed thoughts of "trying to manage, just taking care of today, so that you could go back to caring for the woman pregnant with GDM," illustrating self-preservation. One discussed her feelings about being able to continue with practicing in this specialty: "Caring for high-risk patients, especially GDM, made me realize that, as a nurse, I must be able to preserve myself to develop my potential in order to provide optimal nursing care."

Self-preservation can be defined as self-protection from harm, regarded as a basic human instinct of survival and is a coping strategy that allows for an understanding and processing of what takes place in our world. The construct of self-preservation helps

nurses deal with the emotional demands of patients, their families, and patient outcomes, either good or bad. Self-preservation is part of the process nurses employ to shield themselves from what can deeply hurt them. Research studies found distancing and disconnecting from patients facing a troubling situation is common with nurse self-preservation and self-protection (Lipp, 2011).

Theme 5: The impact on the nurses of caring for GDM

According to the nurses interviewed, caring for high risk GDM patients had an impact on them, both physically and psychologically. It makes them scared of becoming sick. Consequently, the nurses reported feeling that they had high motivation, both physically and psychologically. Discussing about the impact of practice, one said : "The smallest thing to provide services to patients with high risk has a very significant impact, where patients feel capable and confident that they will recovery."

Nurses' experiences with practical knowledge affect the nursing process. Expert nurses with practical knowledge have more positive attitudes toward patients than do less experienced nurses (Spencer et al., 2012). Nurses should have more training to receive quality improvement education and continued training to improve their professional capabilities. Moreover, their working spirit needs to be regularly regenerated to inspire them to take care of older people. Furthermore, nurses should be aware of the psychological and physical impact of caring for older people, and there is a need to revitalize nurses' positive experiences and feelings to improve their job satisfaction.

CONCLUSION

In this study, nurses showed complex experience for taking care of patients with high risk of GDM. They expressed the view that the patients were somewhat more experienced. The attitude of nurses caring for GDM patients gave the impact of themselves and patients. Implications of the findings allow for the opportunity to hear stories about nurses and their patients. Personal and emotional stories of lived experiences provide the ability to create strategies to improve quality of life for the patient and for nurses, as well as adding to the identity of the practice of nursing.

REFERENCES

Alberico, S., Erenbourg, A., Hod, M., Yogev, Y., Hadar, E., Neri, F., Ronfani, L., Maso, G., & Group, the G. (2017). Immediate delivery or expectant management in gestational diabetes at term: the GINEXMAL randomised controlled trial. *BJOG: An International Journal of Obstetrics & Gynaecology*, *124*(4), 669–677. https://doi.org/10.1111/1471-0528.14389

Alia, S., Pugnaloni, S., Borroni, F., Mazzanti, L., Giannubilo, S. R., Ciavattini, A., & Vignini, A. (2019). Impact of gestational diabetes mellitus in maternal and fetal health: An update. *Diabetes Updates*, *5*(3), 1–6. https://doi.org/10.15761/du.1000129

Buchanan, T. A., Xiang, A. H., & Page, K. A. (2012). Gestational diabetes mellitus: risks and management during and after pregnancy. *Nature Reviews. Endocrinology*, *8*(11), 639–649. https://doi.org/10.1038/nrendo.2012.96

Connelly, L. M. (2009). Staff Nurses' Responsibilities when Caring for Patients in a Research Study. *MEDSURG Nursing*, *18*(6), 385–388.

Dhingra, A., & Ahuja, K. (2016). Lifestyle modifications for GDM. *JPMA. The Journal of the Pakistan Medical Association*, *66*(9 Suppl 1), S34-8.

Djihanga, A. Y., & Muflilah. (2020). Screening Diabetes Mellitus Gestasional Di Negeri Berkembang. *Jurnal Keperawatan*, *12*(2), 217–222.

Edward, K. leigh, & Welch, A. (2011). The extension of Colaizzi's method of phenomenological enquiry. *Contemporary Nurse*, *39*(2), 163–171. https://doi.org/10.5172/conu.2011.39.2.163

Huang, Y., Zhang, W., Go, K., Tsuchiya, K. J., Hu, J., Skupski, D. W., Sie, S. Y., & Nomura, Y. (2020). Altered growth trajectory in children born to mothers with gestational diabetes mellitus and preeclampsia. *Archives of Gynecology and Obstetrics*, *301*(1), 151–159. https://doi.org/10.1007/s00404-020-05436-2

Kiley, J. W., & Griffin, L. R. (2015). Contraceptive care after gestational diabetes: considerations for clinical practice. *Diabetes Management*, *5*(6), 457–472. https://doi.org/10.2217/dmt.15.37

Lipp, A. (2011). Self-preservation in abortion care: A grounded theory study. *Journal of Clinical Nursing*, *20*, 892–900.

Mattsson, J., Forsner, M., Castren, M., & Arman, M. (2013). Caring for children in pediatric intensive care units: An observation study focusing on nurses' concerns. *Nursing Ethics*, *20*(5), 528–538.

Oza-Frank, R., Ko, J., Wapner, A., Rodgers, L., Bouchard, J., & Conrey, E. (2014). Improving Care for Women with a History of Gestational Diabetes: A Provider Perspective. *Maternal & Child Health Journal*, *18*(7), 1683–1690. https://doi.org/https://doi.org/10.1007/s10995-013-1410-y

Petty, R. E., & Krosnick, J. A. (2014). Attitude strength: Antecedents and conse quences. *New York, NY: Psychology Press*.

Plows, J. F., Stanley, J. L., Baker, P. N., Reynolds, C. M., & Vickers, M. H. (2018). The pathophysiology of gestational diabetes mellitus. *International Journal of Molecular Sciences*, *19*(11), 1–21. https://doi.org/10.3390/ijms19113342

Sahu, B., Babu, G. R., Gurav, K. S., Karthik, M., Ravi, D., Lobo, E., John, D. A., Oakley, L., Oteng-Ntim, E., Nadal, I. P., & Kinra, S. (2021). Health care professionals' perspectives on screening and management of gestational diabetes mellitus in public hospitals of South India – a qualitative

study. *BMC Health Services Research*, *21*(1), 1–17. https://doi.org/10.1186/s12913-021-06077-0

Schellinger, M. M., Abernathy, M. P., Amerman, B., May, C., Foxlow, L. A., Carter, A. L., Barbour, K., Luebbehusen, E., Ayo, K., Bastawros, D., Rose, R. S., & Haas, D. M. (2017). Improved Outcomes for Hispanic Women with Gestational Diabetes Using the Centering Pregnancy© Group Prenatal Care Model. *Maternal and Child Health Journal*, *21*(2), 297–305. https://doi.org/10.1007/s10995-016-2114-x

Spencer, K., Carr, A., & Doherty, M. (2012). Patient and provider barriers to effective management of gout in general practice: a qualitative study. *Ann Rheum Dis*, *71*(9), 1490–1495. https://doi.org/https://doi.org/10.1136/annrheumdis-2011-200801 PMID: 22440822.

Straume, L. V, & Vitterso, J. (2012). Happiness, inspiration and the fully functioning person: Separating hedonic and eudaimonic well-being in the work place. *The Journal of Positive Psychology*, *7*(5), 387–398.

Wilson, J., & Kirshbaum, M. (2011). Effects of patient death on nursing staff: A literature review. *British Journal of Nursing*, *20*(9), 559–563.

Wulaningsih, I., Hapsari, E. D., Pangastuti, H. S., & Priharjo, R. (2020). Life Experience of Pregnant Woman with Gestational Diabetes Mellitus in Maternal Role Attainment in Special Region of Yogyakarta. *Jurnal Ners*, *15*(2), 199. https://doi.org/10.20473/jn.v15i2.19306