ORIGINAL ARTICLE
Public Health and Preventive Medicine Archive (PHPMA) 2024, Volume 12, Number 2: 132 - 141
E-ISSN: 2503-2356

PHPMA
Published by
Department of Public Health and Preventive Medicine, Faculty of Medicine, Udayana University

How do we improve nurse preparedness on pandemic: Learning from Theory of Planned Behavior

Luh Gede Lisnawati[1], Dinar Saurmauli Lubis[2], Cokorda Bagus Jaya Lesmana[3]

[1]Postgraduate School of Public Health, Faculty of Medicine, Udayana University, Bali, Indonesia
[2]Department of Public Health and Preventive Medicine, Faculty of Medicine, Udayana University, Bali, Indonesia
[3]Department of Psychiatry, Faculty of Medicine, Udayana University/Sanglah General Hospital, Bali, Indonesia

*Correspondence to: dinar_lubis@unud.ac.id

ABSTRACT

Background and purpose: The drastic elevation in the number of patients during the COVID-19 pandemic demands the preparedness of nurses to provide quality services to COVID-19 patients. The purpose of this study was to determine the relationship between knowledge, attitudes, self-esteem, and nurses' intentions towards preparedness in facing the COVID-19 pandemic and an overview of the factors that influence it.

Methods: This study used a quantitative method with a cross-sectional analytic design, conducted at Sanglah General Hospital in Bali Province, Indonesia and involved 333 nurses with a total sampling technique. The research data was collected with a google form related to demographic characteristics (age, gender, education level, and length of work), knowledge, attitudes, self-esteem, intentions, and nurse preparedness. Furthermore, data were analyzed using descriptive statistics and Chi-Square tests ($\alpha<0.05$).

Results: Most of the respondents were female (85.6%), had an associate degree Diploma III education history (75.7%), had the longest working time of 34 years, and the oldest age was 57 years. This study found that most nurses had poor preparedness (53.8%), good knowledge (65.5%), good attitude (51.7%), high self-esteem (68.2%), and good intentions (86.5%). The correlation test showed a significant relationship between gender ($p=0.033$), attitude ($p<0.001$), self-esteem ($p<0.001$), and intention ($p<0.001$) on preparedness for the COVID-19 outbreak. Meanwhile, knowledge ($p=0.784$), ages ($p=0.120$), education levels ($p=0.094$), and length of work ($p=0.100$) were not related significantly to nurses' preparedness for the COVID-19 pandemic.

Conclusion: Nurses' readiness is related to attitude, self-esteem, intention, and gender. In improving nurses' preparedness in carrying out disease management during a pandemic, efforts are needed to improve attitudes, self-esteem, and intentions. These efforts can be part of the hospital disaster plan program by providing psychosocial support to improve attitudes, self-esteem, and intentions.

Keywords: Nurse preparedness, attitude, self esteem, intention, pandemic

INTRODUCTION

COVID-19 was declared a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, due to its rapid transmission.[1] It was finally declared a global pandemic status on March 11, 2020.[2] Since the COVID-19 case was first announced in Indonesia on February 4, 2020[3], the spread of this infectious disease in Bali on March 5, 2021, as many as 35,379 confirmed cases, 2,036 people were still being treated, 32,373 people had been declared cured, and 970 people has died.

In a pandemic situation, nurses are faced with two complicated situations. On the one hand, the increasing number of patients demand nurses' preparedness in providing quality services. However, nurses are risky of being exposed to COVID-19 due to 24-hour close contact with patients during the treatment period as well as several treatment actions that cause aerosol production, such as nebulization.[4]

Studies related to nurses' preparedness in dealing with disasters show variations in nurses' preparedness in dealing with non-natural disasters. A study in Saudi Arabia showed that nurses considered themselves to be quite prepared to deal with disasters.[5] However, a study in the Philippines stated that 80% of 170 nurses reported that they were not fully prepared for disasters.[6] Several other studies have also found that nurses feel unprepared when a disaster occurs.[7-8]

Studies related to nurse preparedness in dealing with disasters show the influence of personal, community, and organizational environmental factors. Nurses' insufficient knowledge and attitudes regarding preparedness in a disaster can lead to a low ability of nurses to provide health services.[9] Attitude also affects trust and a sense of optimism in carrying out nurse preparedness actions.[10] Hospital organization is also influential in disaster preparedness through the implementation of good disaster management.[11]

Sanglah General Hospital, one of the hospitals appointed as a center of COVID-19 treatment in Bali, experienced a significant impact on the service system at the hospital. From the beginning of the pandemic, Sanglah General Hospital has recorded 2,007 confirmed positive COVID-19 patients. During the pandemic, health services to patients were disrupted due to the closure of patient care rooms, infected nurses, and an increase in the number of patients. The elevation of confirmed patients and the differences in findings in several previous studies have made researchers interested in the study and proving the existence of a correlation between the knowledge, attitudes, intentions, and self-esteem of nurses on preparedness in the surge of patients during health crises either caused by natural and non-natural, such as the COVID-19 outbreak.

METHOD

This study used a quantitative method with a cross-sectional analytic design. The population of this study was all nurses in the COVID-19 non-isolation inpatient unit, totaling 393 people. Sampling was conducted using total sampling technique with inclusion criteria: nurses who worked in the non-isolation COVID-19 inpatient room at Sanglah Hospital, served in the room for 1 year, attended COVID-19 training, and willing to participate in the study. While the exclusion criteria were the Coordinator of the Nursing Service Unit (in Indonesian: *Koordinator Unit Pelayanan Keperawatan*, Abbreviated ad *KaUPP*), the Head of the Room who

served in all inpatient rooms, also nurses who were on leave or being outside Bali during the research.

From January 9–20, 2021, data collection was carried out for 333 nurses who met the inclusion and exclusion criteria. Data was collected using a questionnaire in google form format with a response rate of 85.24%, and the data obtained was 84.7%. The collected data consisted of individual characteristics (age, gender, education level, and work experience), nurses' knowledge of disaster preparedness with good and poor categories, attitudes towards disaster preparedness with positive and negative categories, nurse preparedness in pandemic with good and poor categories. Besides, self-esteem was to measure the feelings of worthiness that nurses have with high and low categories, and nurses' intention to measure the nurses' desire to do and not do disaster preparedness with good and poor categories.

The data were then analyzed descriptively to describe the characteristics of the respondents and a description of the knowledge, attitudes, intentions, and self-esteem of nurses. A correlation test was conducted to determine the relationship between two variables with the chi-square test after testing for normality with Kolmogorov-Smirnov (n>50, level of significancy <0.05). This research has been approved by the Ethics Commission of the Faculty of Medicine, Udayana University/Sanglah General Hospital, with number 2441/UN14.2.2.VII/14/LT/2020.

RESULT

The results of study in Table 1 show that the median of age of the respondents was 33 years with the youngest age was 22 years. The majority of respondents were female (n=285 or 85.6%), and the majority had an associate degree Diploma III educational background (n=252 or 75.7%). According to the length of service, the median was 10 years, with the longest working period was 34 years.

Table 1. Characteristics of respondents

Variable	Total n=333	Percentage (%)
Age (Median±IQR, Min–Max)	(33±11, 22-57)	
Gender		
• Male	48	14.4
• Female	285	85.6
Education level		
• Bachelor degree	81	24.3
• Associate degree Diploma III	252	75.7
Length of service (Median ± IQR, Min–Max)	(10±9, 1-34)	

Table 2. Distribution of preparedness and research variables

Variable	Total n=333	Percentage (%)
Preparedness (Median±IQR, Min–Max)	(28±4, 19-42)	
• Good	154	46.2
• Poor	179	53.8
Knowledge level (Median±IQR, Min–Max)	(9±3, 4-16)	
• Good	218	65.5
• Poor	115	34.5
Attitude (Median±IQR, Min–Max)	(36±7, 26-47)	
• Positive	172	51.7
• Negative	161	48.3
Self-esteem (Median±IQR, Min–Max)	(20±3, 12-30)	
• High	227	68.2
• Low	106	31.8
Intention (Median±IQR, Min–Max)	(20±2, 10-30)	
• Good	288	86.5
• Poor	45	13.5

Table 2 shows that the median value of preparedness was 28 from the maximum score of 42, self-esteem with a median of 20 from the maximum score of 30, with the majority of nurses were having a good knowledge level of 218 (65.5%), good attitude of 172 (51.7%), good self esteem of 227 (68.2%) and good intentions of 288 (86.5%).

The results of the correlation test in Table 3 below show that there is no significant relationship between knowledge (p=0.784), age (p=0.120), education level (p=0.094), length of work (p=0.100) and nurse's readiness. Meanwhile, a significant relationship was found between gender (p=0.033), attitude (p<0.001), intention (p<0.001), self-esteem (p<0.001), and preparedness by nurses in dealing with the COVID-19 pandemic.

Table 3. Overview of preparedness based on characteristics and other variables

Variable	Nurses' Preparedness		Jumlah f (%)	p
	Good f (%)	Poor f (%)		
Knowledge level				
Good	102 (46.8)	116 (53.2)	218 (100)	**0.784**
Poor	52 (45.2)	63 (54.8)	115 (100)	
Attitude				
Positive	117 (68.0)	55 (32.0)	172 (100)	**<0.001**
Negative	37 (23.0)	124 (77.0)	161 (100)	
Intention				
Good	146 (50.7)	142 (49.3)	288 (100)	**<0.001**
Poor	8 (17.8)	37 (82.2)	45 (100)	
Self-Esteem				
High	130 (57.3)	97 (42.7)	227 (100)	**<0.001**
Low	24 (22.6)	82 (77.4)	106 (100)	
Age (years)				
<33	75 (51.0)	72 (49.0)	147 (100)	**0.120**
≥33	79 (42.5)	107 (57.5)	186 (100)	
Gender				
Male	20 (60.4)	19 (39.6)	39 (100)	**0.033**
Female	125 (43.9)	160 (56.1)	285 (100)	
Education				
Bachelor degree in nursing	44 (54.3)	37 (45.7)	81 (100)	**0.094**
Associate degree Diploma III	110 (43.7)	142 (56.3)	252 (100)	
Length of work				
<10 years	66 (52.0)	61 (48.0)	127 (100)	**0.100**
≥10 years	88 (42.7)	118 (57.3)	206 (100)	

DISCUSSION

This study found that the majority (53.7%) of nurses had poor preparedness for the COVID-19 pandemic. It was in line with the previous findings[6,12], but also others found different.[13,14] These differences can be influenced by factors such as age,[15] and gender, which have been shown to influence behavior related to COVID-19 disease significantly.[16] The existence of continuous mutations and creating new and old COVID-19 strains[13,17], as well as several other factors such as the availability of information sources, the division of work composition are also known to affect the preparedness of nurses or health workers related to disasters.[14,17]

Our study did not find any relationship between the level of knowledge and nurse preparedness. However, most nurses had a good level of knowledge (65.1%), and the rest had poor knowledge (34.9%). This finding is similar to the previous finding that the majority (70%) of health workers, including nurses, have a good level of knowledge regarding COVID-19[17], as the implementation of COVID-19 control.[18] Some of the influencing

factors include internal factors, i.e., education[19], and the level of intelligence.[20] While external factors include experience, environment, socio-culture, information.

Based on the Theory of Planned Behavior[21], knowledge creates attitudes and perception of control so that it may affect the emergence of preparedness intentions and behavior. Knowledge is a predisposition in the formation of preparedness of actions that require organizational factors in creating facilities and infrastructure (enabling factors) and policies to regulate the implementation of disaster response efforts (reinforcing factors). Although most nurses have a good level of knowledge and have been equipped with COVID-19 disaster management and transmission mechanisms, the absence of emergency response preparations in the pre-disaster period from the institution has not been able to convert knowledge into disaster response actions.

Our research found a relationship between attitude and nurse preparedness in dealing with the COVID-19 pandemic. In addition, we also revealed that the majority of 173 (51.3%) respondents had a good attitude in being prepared to face the COVID-19 pandemic. These results are similar to previous studies[22-24], but contradict other studies[9,25]. Differences in findings may be due to the influence of age and education level. As people are getting old, they tend to have good thoughts in weighing things based on life experience,[15] as well as education level.[25]

The positive attitude of nurses can form trust and a sense of optimism in carrying out nurse preparedness actions.[10] This is following the theory[21] that attitudes influence behavior through the decision-making process to continue to carry out disaster preparedness.[21] The emergence of attitudes can also be caused by personal, socio-cultural, and informational factors. The Theory of Planned Behavior construct states that attitudes can arise because of the knowledge factor. These factors can then lead to an attitude toward behavior so that nurses' intentions and preparedness in carrying out service management during the pandemic are also formed.

This study also showed that the majority (68.4%) of nurses had a high level of self-esteem which was similar to the previous study.[26,27] There are variations in the value of self-esteem of nurses due to differences in personal conditions.[19] In addition, nurses with high self-esteem values tend to have good self-acceptance, giving rise to feelings of worth, worth, respect, and attention.[28] A relationship between self-esteem and nurse preparedness in this study because self-esteem affects self-confidence, it is following psychological theory in nursing.[28] The positive behavior of nurses causes courage in making decisions to face activities,[19] including in making decisions related to performance risks. The process of self-evaluation and self-motivation of nurses influences the emotions management and the reflection of a positive view of oneself.[29] The Theory of Planned Behavior[21] states self-esteem as an indicator of personal factors that lead to the formation of preparedness through the intention of several mechanisms. The first mechanism is the formation of attitudes, then the formation of subjective norms and control of perceptions of disaster response. The three mechanisms are capable of generating intentions that lead to individual preparedness.

The results of our study found that the majority of nurses had a good level of intention in dealing with the COVID-19 disaster. Our findings are similar to those of previous studies.[30] Intention is an individual's tendency to behave and is a direct antecedent of that behavior.[21] The variation in the value of nurses' intentions through a study can be caused by several factors such as training experience[30] and work experience.[31]

In addition to the level of attitude and self-esteem, we also found a relationship between nurses' intentions towards preparedness. This is explained according to behavioral theory[21], that intention causes preparedness

behavior during a disaster. The formation of nurse behavior cannot be separated from the attitudes and perceptions based on beliefs about control in the context of disaster response.[21] In addition, several factors also affect the emergence of intentions, such as attitudes, subjective norms, and perceptions of self-control. The more pleasant the attitude adopted, coupled with the norm of subjectivity or individual perception of social pressure, plus the more significant the perception of self-control or self-efficacy, the greater the individual's intention to display behavior.[21]

The emergence of beliefs about the ability to control behavior (control belief) can also be a factor in the emergence of intentions so that it has an impact on the emergence of behavior. Individuals with strong control beliefs will have a high perception of controlling behavior and vice versa.[21] According to the Theory of Planned Behavior construct[21], the more individuals, evaluate the positive consequences generated by the behavior, the more likely the behavior will be implemented. In this case, nurses perceive that preparedness of inpatient care during a pandemic is beneficial for all patients and themselves. This trust then forms good intentions towards nurse preparedness.

The relationship between nurse's gender and preparedness in this study is in line with previous research, which found that gender had a significant effect on COVID-19 behavior, including washing hands, not touching nose and mouth, covering mouth and nose when sneezing to prevent the spread of the virus, and so on.[16] However, this study is not in line with other previous studies.[14,32] Gender differences can undoubtedly affect how individuals think, receive information, and take certain actions.[33]

Our study showed no relationship between the level of knowledge, age, education level, and length of work on preparedness in the face of the COVID-19 pandemic. This finding is supported by other studies, which found no relationship between knowledge and level of education with nurse preparedness,[34] age,[35-36] and length of work.[37-38]

The absence of a relationship between age and length of work with preparedness can be caused by differences in the physical condition of nurses at work, where the older the nurse is, the more mature the nurse tends to have a higher self-confidence so that they are aligned in displaying good skills at work.[15,19,39] Likewise, the length of work, the longer the working time, the more work experience one has. However, the higher the age causes a decrease in physical function so that nurses cannot work optimally. In addition, preparedness is more likely to be caused by several other factors such as experience, individual abilities or skills, availability of facilities and infrastructure, and participation in training. The existence of organizational policies in responding to disasters also plays a vital role in monitoring optimally. Although not examined in this study, organizational factors in improving the quality of patient safety and services are important in responding to disasters.

Several aspects become the limitations of this study, including the research has not examined other factors that can affect nurse preparedness, such as cultural factors, habits, nurses' physical condition, and environmental and organizational factors. Our study was also conducted in a provincial central hospital, therefore generalizing the results of this study to other hospitals should be considered with caution.

CONCLUSION

The results of this study indicates that most nurses in the non-COVID-19 inpatient unit at Sanglah General Hospital, Denpasar, had a good level of knowledge, attitude, intention, self-esteem. However, the majority of nurses remained not ready to face the COVID-19 outbreak. This was due to differences in several demographic factors, the availability of information sources, and the division of work composition. There was a relationship between gender, attitude, self-esteem, and intentions with nurse preparedness. However, no relationship was found between age, education level, length of work, and level of knowledge with nurse preparedness in the face of the COVID-19 pandemic.

This research can be used as input for policymakers to improve the quality of nursing services by analyzing and reviewing contributing factors and making various efforts such as increasing nurse participation in various training following the latest trends or information related to COVID-19.

COMPETING INTEREST

No conflict of interest is stated by the author.

FUNDING

This research was self funded by the researchers.

AUTHOR'S CONTRIBUTION

LGL compiled the research, collected and analyzed data, and drafted the manuscript. DSL and CBJL developed research concepts and designs, provided input, suggestions and feedback for research proposals, and drafted manuscripts.

ACKNOWLEDGEMENT

The researcher would like to thank the Faculty of Medicine, Udayana University/ Sanglah General Hospital, Denpasar, and all respondents and parties who have supported this research.

REFERENCES

1. World Health Organization. Proceedings of COVID-19 public health emergency of international concern forum. Geneva: WHO; 2020.
2. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. Acta Biomed. 2020; 91(1): 157–160.
3. Ministry of Health Republic of Indonesia. Pedoman kesiapan menghadapi COVID-19 [Guidelines for COVID-19 preparedness]. Jakarta: Kementerian Kesehatan Republik Indonesia; 2020.
4. Nugroho WD, Alanish ST, Istiqomah N, Cahyasari I, et al. Literature review : Transmisi Covid-19 dari manusia ke manusia di Asia [Literature review: Human-to-human transmission of COVID-19 in Asia]. J Bionurs. 2020: 2(2); 101–112.
5. Al Thobaity A, Plummer V, Innes K, Copnell B. Perceptions of knowledge of disaster management among military and civilian nurses in Saudi Arabia. Australas Emerg Nurs J. 2015: 18(3): 156-164.
6. Labrague LJ, Yboa BC, McEnroe–Petitte DM, Lobrino LR, Brennan MGB. Disaster preparedness in Philippine nurses. J

Nurs Scholarsh. 2016: 48(1); 98-105.
7. Hodge AJ, Miller EL, Skaggs MKD. Nursing self-perceptions of emergency preparedness at a rural hospital. J Emerg Nurs. 2017; 43(1): 10–14.
8. Usher K, Mills J, West C, Casella E, Dorji P, Guo A, et al. Cross-sectional survey of the disaster preparedness of nurses across the Asia–Pacific region. Nurs Health Sci. 2015; 17(4): 434–443.
9. Rika N, Oktomi W. Pengetahuan, sikap, dan perilaku preparedness pegawai RS dalam menghadapi bencana di RSU PKU Muhammadiyah Bantul [Knowledge, attitude, and preparedness behavior of hospital employees in disaster response at RSU PKU Muhammadiyah Bantul] [Thesis]. Yogyakarta: Faculty of Public Health, Ahmad Dahlan University; 2019.
10. Bukhari M, Sari SA. Hubungan sikap tentang regulasi, pengetahuan dan sikap perawat terhadap kesiapsiagaan bencana gempa bumi di Badan Layanan Umum Daerah Rumah Sakit Ibu dan Anak Pemerintah Aceh tahun 2013 [The relationship of regulation attitude, knowledge and nurses' attitude toward earthquake disaster preparedness in the BLUD Mother and Child Hospital, Aceh Province, 2013]. J Ilmu Kebencanaan Pascasarjana Unsyiah. 2014; 1(2): 37-46.
11. Djalante R, Lassa J, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B, et al. Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. Prog Disaster Sci. 2020; 6: 100091.
12. Öztekin SD, Larson EE, Akahoshi M, Öztekin I. J apanese nurses' perception of their preparedness for disasters: Quantitative survey research on one prefecture in J apan. Jpn J Nurs Sci. 2016; 13(3): 391–401.
13. Saqlain M, Munir MM, ur Rehman S, Gulzar A, Naz S, Ahmed Z, et al. Knowledge, attitude, practice and perceived barriers among healthcare professionals regarding COVID-19: A cross-sectional survey from Pakistan. J Hosp Infect. 2020; 105(3): 419-423.
14. Zhou M, Tang F, Wang Y, Nie H, Zhang L, You G, et al. Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan, China. J Hosp Infect. 2020; 105(2): 183-187.
15. Limbu DK, Piryani RM, Sunny AK. Healthcare workers' knowledge, attitude and practices during the COVID-19 pandemic in a tertiary care hospital of Nepal. PloS one. 2020; 15(11): e0242126.
16. Alahdal H, Basingab F, Alotaibi R. Awareness, attitude and practice during the COVID-19 pandemic in Riyadh, Saudi Arabia. J Infect Public Health. 2020; 13(10): 1446-1452.
17. Asemahagn MA. Factors determining the knowledge and prevention practice of healthcare workers towards COVID-19 in Amhara region, Ethiopia: a cross-sectional survey. Trop Med Health. 2020; 48(1): 1–11.
18. Wibowo BA, Ridho IA. Nurses' knowledge and attitudes in implementing policy to control the spread of COVID-19 in Tritya Eye Clinic. Media Gizi Kesmas. 2020; 9(2): 35-40.
19. Triana IK, Yanti NP, Sulistiowati NM. Determinants of associate nurse's self-efficacy in treatment room of hospital in Bali. In: Proceedings of the 2nd Udayana Int Nurs Conf. 2017. p. 130–141.
20. Rothberg HN, Erickson GS. Big data systems: Knowledge transfer or intelligence insights?. J Knowl Manag. 2017; 21(1): 92-112.
21. Ajzen I. Attitudes, personality and behavior. 2nd ed. New York: Open University Press; 2005.
22. Hussain I, Majeed A, Imran I, Ullah M, Hashmi FK, Saeed H, et al. Knowledge, attitude, and practices toward COVID-19 in primary healthcare providers: A cross-sectional study from three tertiary care hospitals in Pakistan. J Community Health. 2021; 46(3): 441-449.
23. Kassie BA, Adane A, Tilahun YT, Kassahun EA, Ayele AS, Belew AK. Knowledge and attitude towards COVID-19 and associated factors among health care providers in Northwest Ethiopia. PloS one. 2020; 15(8): e0238415.
24. Tadesse DB, Gebrewahd GT, Demoz GT. Knowledge, attitude, practice and psychological response toward COVID-19 among nurses during the outbreak in Northern Ethiopia, 2020. New Microbes New Infect. 2020; 38: 100787.
25. Setiawati I, Utami GT, Sabrian F. Gambaran pengetahuan dan sikap perawat tentang preparedness pelayanan kesehatan dalam menghadapi bencana banjir [Nurses' knowledge and attitude on flood disaster preparedness in health services]. J Ners Indones. 2020; 10(2): 158–169.
26. Setyawan NFB. Hubungan antara harga diri dengan kinerja pada perawat Rumah Sakit PKU Muhammadiyah Yogyakarta [The relationship between self-esteem and performance among nurses at PKU Muhammadiyah Hospital Yogyakarta]. J Sosio Humaniora. 2016; 6(1): 34–54.
27. Sari DY. Hubungan beban kerja, faktor demografi, locus of control dan harga diri terhadap burnout syndrome pada perawat pelaksana IRD RSUP Sanglah [The relationship of workload, demographics, locus of control, and self-esteem to burnout syndrome in nurses in IRD RSUP Sanglah]. Coping Ners. 2015; 3(2): 51–60.
28. Saam ZMS, Wahyuni S. Psikologi keperawatan [Nursing psychology]. Jakarta: Rajawali Pers; 2013.

29. Caprara GV, Alessandri G, Barbaranelli C, Vecchione M. The longitudinal relations between self-esteem and affective self-regulatory efficacy. J Res Pers. 2013; 47(6): 859–870.
30. Li J, Li P, Chen J, Ruan L, Zeng Q, Gong Y. Intention to response, emergency preparedness and intention to leave among nurses during COVID-19. Nurs Open. 2020; 7(6): 1867–1875.
31. Gershon RR, Magda LA, Qureshi KA, Riley HE, Scanlon E, Carney MT, et al. Factors associated with the ability and willingness of essential workers to report to duty during a pandemic. J Occup Environ Med. 2010; 52(10): 995–1003.
32. Al-Ziftawi NH, Elamin FM, Ibrahim MI. Assessment of knowledge, attitudes, and readiness to practice regarding disaster medicine among university health students. Disaster Med Public Health Prep. 2020; 15(3): 316–324.
33. Ferianto K, Hidayati UN. Efektifitas pelatihan penanggulangan bencana dengan metode simulasi terhadap perilaku kesiapsiagaan bencana banjir pada siswa SMAN 2 Tuban [Effectiveness of disaster management training using simulation methods on flood preparedness behavior among students of SMAN 2 Tuban]. J Kesehatan Mesencephalon. 2019; 5(2): 88–94.
34. Indrawati WS. Hubungan pengetahuan perawat instalasi gawat darurat (IRD) dengan kesiapan menghadapi bencana di RSUD Majene [Relationship between emergency department nurses' knowledge and disaster readiness at Majene General Hospital]. J Health Educ Literacy. 2020; 1(2): 146–153.
35. Fitriana L, Suroto S, Kurniawan B. Faktor-faktor yang berhubungan dengan upaya kesiapsiagaan karyawan bagian produksi dalam menghadapi bahaya kebakaran di PT Sandang Asia Maju Abadi [Factors associated with preparedness efforts among production workers in facing fire hazards at PT Sandang Asia Maju Abadi]. J Kesehat Masyarakat (e-Journal). 2017; 5(3): 295–307.
36. Qirana MQ, Lestantyo D, Kurniawan B. Faktor-faktor yang berhubungan dengan kesiapsiagaan petugas dalam menghadapi bahaya kebakaran (Studi pada instalasi pemeliharaan sarana rumah sakit di Rumah Sakit Umum Daerah Kota Salatiga) [Factors associated with fire preparedness among hospital maintenance staff in Salatiga]. J Kesehat Masyarakat (e-Journal). 2018; 6(5): 603–609.
37. Martono M, Satino S, Nursalam N, Efendi F, Bushy A. Indonesian nurses' perception of disaster management preparedness. Chin J Traumatol. 2019; 22(1): 41–46.
38. Gladston S, Nayak R. Disaster preparedness among nurses in a pediatric acute care unit, South India. IOSR J Nurs Health Sci. 2017; 18: 25–35.
39. Hergenhahn BR, Olson MH. Theories of learning. 7th ed. Jakarta: Kencana; 2008.