ARTÍCULO ORIGINAL

Knowledge and Perception and its Relationship with Preventive Behaviors of COVID-19

Conocimiento y percepción y su relación con comportamientos preventivos de la COVID-19 entre estudiantes de enfermería de Indonesia

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SUMMARY

Introduction: *This pandemic is an unprecedented challenge for all health care systems worldwide and the first medical crisis in recent history to affect different populations, countries, and continents, which requires everyone to be alert and ready to face it. One of which is a nursing student, and health student, is one of the prospective medical workers who will later serve as the vanguard in handling COVID-19. This study aimed to determine the relationship between knowledge and Perception of COVID-19 prevention behaviour.*
Methods: *This cross-sectional study recruited 112 nursing students who agreed to participate in the research through an online survey by filling out a questionnaire on COVID-19 knowledge and perceptions related to COVID-19 and COVID-19 prevention behaviour in July 2020. Data analysis used multiple linear regression tests by software SPSS version 20.*
Results: *The results showed that the average age of the respondents was 20.8 years, 80.4 % female gender, and 31.3 % of the participants were batch 2016. The Student t-test showed a significant relationship between Perception and preventive behaviour of COVID-19 (p=0.006). Meanwhile, the F test results show that knowledge and Perception substantially correlate to COVID-19 preventive behaviour (p= 0.024).*
Conclusion: *A person's behaviour, especially the COVID-19 prevention behaviour of nursing students, can be related to their knowledge and Perception of COVID-19. However, theoretical knowledge is not directly proportional to practice. Individuals with a good level of knowledge will have the right perceptions regarding COVID-19, which will ultimately improve COVID-19 prevention behavior.*

Keywords: *COVID-19, nursing student, knowledge, perception, preventive behavior.*

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RESUMEN

Introducción: *Esta pandemia es un desafío sin precedentes para todos los sistemas de salud a nivel mundial y la primera crisis médica en la historia reciente que afecta a diferentes poblaciones, países y continentes, lo que requiere que todos estemos alerta*

y preparados para enfrentarla. Uno de los cuales es estudiante de enfermería, estudiantes de salud, es uno de los futuros trabajadores médicos que luego servirá como vanguardia en el manejo de la COVID-19. Este estudio tuvo como objetivo determinar la relación entre el conocimiento y la percepción del comportamiento de prevención de la COVID-19.

Métodos: *Este estudio transversal reclutó a 112 estudiantes de enfermería que aceptaron participar en la investigación a través de una encuesta en línea completando un cuestionario sobre conocimientos y percepciones relacionadas con la COVID-19 y el comportamiento de prevención de la COVID-19 en julio de 2020. El análisis de los datos utilizó pruebas de regresión lineal múltiple por el software SPSS versión 20.*

Resultados: *Los resultados mostraron que la edad promedio de los encuestados fue de 20,8 años, el 80,4 % de sexo femenino y el 31,3 % de los participantes eran lote 2016. La prueba t-Student mostró una relación significativa entre la percepción y el comportamiento preventivo de COVID-19 (p=0.006). Mientras tanto, los resultados de la prueba F muestran que el conocimiento y la percepción se correlacionan sustancialmente con el comportamiento preventivo de COVID-19 (p=0,024).*

Conclusión: *El comportamiento de una persona, especialmente el comportamiento de prevención de la COVID-19 de los estudiantes de enfermería, puede estar relacionado con su conocimiento y Percepción sobre la COVID-19. Sin embargo, el conocimiento teórico no es directamente proporcional a la práctica. Las personas con un buen nivel de conocimiento tendrán las percepciones correctas con respecto al COVID-19, lo que en última instancia mejorará el comportamiento de prevención de la COVID-19.*

Palabras clave: *COVID-19, estudiante de enfermería, conocimiento, percepción, conducta preventiva.*

INTRODUCTION

The spread of Coronavirus Disease (COVID-19) cases has increased rapidly in a short period since the first cases occurred in early December 2019 in Wuhan. COVID-19 is a zoonotic large family of coronavirus viruses. Viruses are transmitted from animals to humans and transmitted from humans to humans. COVID-19 can cause respiratory infections ranging from the common cold to more severe illnesses, such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) [1]. As a result, the World Health Organization (WHO) declared the COVID-19 disease a world pandemic in March 2020. As of August 10, 2020, the number of COVID-19 cases globally has reached over 19.8 million and has spread to more than 215 countries with recorded more deaths of 729 thousand cases. In Indonesia, the number of cases identified in Indonesia as of August 10, 2020, reached more than 125 thousand cases, with the number of deaths reaching more than 5 thousand cases (4.6 %) [2].

This pandemic is an unprecedented challenge for all health care systems worldwide and the first medical crisis in recent history to affect different populations, countries, and continents, which requires everyone to be alert and ready to face it [3,4]. However, one of the strategies established around the world to reduce transmission is behavioural mainly (social distancing, regular hand washing), primarily relying on rapid behavioural changes, which depend on one's knowledge of the problem, the ability to understand risks, and willingness to change attitudes [5-7] the COVID-19 pandemic spread to over 100 countries and all 50 states in the US. Government efforts to minimize the spread of disease emphasized behavioral interventions, including raising awareness of the disease and encouraging protective behaviors such as social distancing and hand washing, and seeking medical attention if experiencing symptoms. However, it is unclear to what extent individuals are aware of the risks associated with the disease, how they are altering their behavior, factors which could influence the spread of the virus to vulnerable populations. We characterized risk perception and engagement in preventative measures in 1591 United States based individuals over the first week of the pandemic (March 11th-16th 2020. During the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, knowledge and attitudes towards infectious diseases were linked to fear, which could hinder efforts to prevent the spread of disease. Besides, knowledge related to COVID-19 was associated with a lower likelihood of negative attitudes and potentially dangerous practices in society [8-10] the novel coronavirus (2019–nCoV.

One of which is a nursing student, and health students is one of the prospective medical workers who will later serve as the vanguard in handling

COVID-19. It is crucial to determine these students' level of knowledge and perceptions of competence, considering the potential of graduate internships and then invited to the field because of uncertainty about how the pandemic will happen (11,12). In particular, Universities are asked to establish a panic-related management approach to encourage positive health behaviour among students (13). Empowering health students with adequate knowledge will put them at the forefront of health education to provide correct information to the public and debunk myths and false information about COVID-19 (14). This study aimed to determine the relationship between knowledge and Perception of COVID-19 and COVID-19 prevention behavior.

METHODS

This research is exploratory research with a cross-sectional approach by relating the variable's knowledge and Perception with the variable of COVID-19 prevention behaviour by using a research instrument in the form of a questionnaire. Participants were 112 students recruited from a private university in July 2020. The sampling technique used was purposive sampling with the inclusion criteria of 2016 -2019 students willing to participate in this research.

Knowledge and perceptions of COVID-19 were measured using online-based questionnaires (15) the coronavirus disease 2019 (COVID-19. The knowledge questionnaire consists of 8 question items with true and false answers with a score of true = 1 and false = 0; and the perception questionnaire consisted of 6 question items with correct answers = 1 and false = 0. While the questionnaire used to measure prevention behaviour, COVID-19 was adopted by Shahnazi et al., 2020, consisting of 8 statement items using a Likert scale of 1-5 points from always to never with a reliability value of $\alpha = 0.72$ (16). Data analysis used is the Spearman rank test using SPSS software version 20. Univariate data in the form of demographic data and other particular data using frequency distribution. This study was approved by the Ethical Review Board (ERB) Committee of the Universitas Muhammadiyah Malang, Indonesia (Number: E.5.a/168/KEPK-UMM/VI/2020).

RESULTS

The characteristics of the 112 respondents were described based on age, sex, and year batch. The average age of students who took part in the study was 20.8 years, the majority gender was 90 women (80.4 %), and 35 (31.3 %) participants were academic year fourth. Based on Table 1, it can be explained that most students' perceptions are good regarding COVID-19 (99 %) and student knowledge. Furthermore, most nursing students' knowledge is good (92 %). Furthermore, in the COVID-19 prevention behaviour, most students carried out good preventive behaviour (81 %).

Table 1

Overall characteristics of respondents and behavioural statements for COVID-19 prevention

Demographic characteristics	n	Percentage
Age (year)	20.8	
Gender		
Male	22	19.6
Female	90	80.4
Academic Year		
First	12	10.7
Second	32	28.6
Third	33	29.5
Fourth	35	31.3
Perception		
Good	111	99
Bad	1	1
Knowledge		
Good	103	92
Bad	9	8
COVID-19 prevention behavior		
Good	91	81
Bad	21	19

The results of the Spearman rank test showed a significant relationship between Perception and preventive behaviour of COVID-19 (p=0.006). In contrast, knowledge is not related to COVID-19 prevention behaviour (p=0.905). Table 2.

Table 2

Crosstabulation and correlation of knowledge levels and perceptions with COVID-19 prevention behaviour in nursing students

| Variable | COVID-19 prevention behaviour | | |
	Good n (%)	Bad n (%)	p-value
Perception			
Good	90 (80.36)	21 (18.75)	0.006
Bad	1 (0.89)	0 (0.0)	
Knowledge			
Good	84 (75)	19 (16.96)	0.905
Bad	7 (6.25)	2 (1.79)	

DISCUSSION

The research on preventive behaviour is appropriate, but some actions are sometimes not even done, such as still touching the face, still shaking hands, and others. Based on the research results, it was found that students' knowledge was not related to COVID-19 prevention behaviour carried out by students. The level of student knowledge is associated with the severity of the pandemic and the number of published articles, online conferences, and news reports relating to the current public health emergency. However, a high score in theoretical knowledge is not necessarily proportional to good health practice, as there are elements associated with clinical practice and patient care that such an evaluation cannot measure (17). Furthermore, lack of adherence to preventive measures is problematic in countries with cultural and economic inequalities that result in people from informal employment or underemployment not following government recommendations (17).

Besides, the level of student knowledge is also influenced by the level of awareness and willingness to take preventive action. Students with a high level of knowledge do not necessarily have the awareness to take preventive action and do not necessarily have the desire to increase information and take preventive actions when seeing the conditions in the field (18). Perceived barriers and fatalistic beliefs can also influence preventive behaviour. However, the impact of perceived inhibition is more significant than that of fatalistic beliefs. Excessive barriers can become barriers and prevent the creation of desired health behaviours. In the previous research, respondents understand preventive behaviours such as washing hands and using masks. Still, in practice, it is strongly influenced by environmental barriers such as lack of covers, alcohol pads, and disinfectants (16).

Meanwhile, perceptions have a significant correlation with student prevention behaviour. One of these is associated with fatalistic beliefs. Fatalistic beliefs are theories based on people's beliefs that external forces control events and humans have no power over them and can no longer influence them. A person's fatalistic belief is low towards COVID-19, where fatalistic behaviour has been studied and confirmed in diseases such as cancer, but COVID-19 is a contagious disease; and the process of infection, such as cancer, is multi-factor and sometimes unknown; and the cause is a single virus. Perceived benefits are another factor in predicting disease prevention behaviour. In other words, individuals who do good preventive behaviour by perceiving will increase the perceived benefits. For example, having perceptions such as the effect of regular hand washing, personal protective equipment such as masks, and disposable gloves can lead to high perceived benefits and thus a strong motivation to take preventive action against this disease (16).

Moreover, many conventional aspects of human behaviour depend on cultural norms so that different cultures can respond with many alternative actions. The discovery of a new

infectious disease can increase motivational stress and change the level of behaviour. It also depends on various factors, such as current information about an infection (19). This is supported by research, which explains that the mass media has a significant influence, but people's knowledge and attitudes, and perception is also associated with experiences experienced, where someone who has experience in treating COVID-19 has the right Perception of the high risk of being exposed to COVID-19 which will also affect the preventive actions they take (20). In research, some nursing students may be registered as COVID-19 volunteers, which makes them experienced in handling COVID-19, affecting their preventive behaviour.

Health behaviour is influenced by internal factors, including knowledge, perception, emotion, motivation, and external factors (physical and non-physical environment). Cognitive knowledge is an essential domain for the formation of individual behaviour. Knowledge of social distancing will underlie attitudes to take preventive action and influence behaviour (19,21). Other research has argued that behaviour is influenced by individual perceptions of how other people think they should behave in certain situations, as well as observations of how others behave. For example, shaking hands because shaking hands is a core expectation of social interactions and is considered normal on certain occasions. Also, given that COVID-19 is a disease, it is likely that most respondents may not be sure about the level of actual risk faced the importance of preventive behaviour, and the extent to which a handshake can increase risk. So seeing other people shaking hands at an event might lead people to think that shaking hands is the right thing to do, thereby increasing the pressure to shake hands (19). Besides, as a student taking health education, in this case, nursing can also influence the preventive actions taken, according to research which explained that gender, major, and school style had the potential to impact student responses to the COVID-19 outbreak, where students already had basic information and knowledge related to infectious diseases (22).

LIMITATION

This study is limited to a population with a smartphone, access to email, and an educated group, so the results cannot be generalized. The level of knowledge, perceptions, and preventive measures among ordinary people may result in different findings.

CONCLUSION

A person's behaviour, especially nursing students' COVID-19 prevention behaviour, can be linked to their knowledge and Perception of COVID-19. However, knowledge associated with COVID-19 prevention behaviour becomes unrelated if theoretical knowledge is only understood but not practiced in daily actions. It can also be influenced by culture, economy, awareness, beliefs, and environmental barriers. Meanwhile, perception can be related to preventive behaviour due to the different fatalistic beliefs of each person, experiences, culture, and exposure to information from the mass media.

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REFERENCES

1. Syadidurrahmah F, Muntahaya F, Islamiyah SZ, Fitriani TA. Perilaku Physical Distancing Mahasiswa UIN Syarif Hidayatullah Jakarta pada Masa Pandemi COVID-19 Physical Distancing Behavior of Students of UIN Syarif Hidayatullah Jakarta dur- ing COVID-19 Pandemic. 2020;2(1):29-37.

2. Satgas COVID-19. Peta Sebaran COVID-19. Satuan Tugas Penanganan COVID-19. 2020. Available from: https://covid19.go.id/peta-sebaran

3. Nazar W, Leszkowicz J, Pieńkowska A, Brzeziński M, Szlagatys-Sidorkiewicz A, Plata-Nazar K. Knowledge and perception of COVID-19 pandemic: Before-and-after online community survey. 2020:1-21.

4. Wardhana MP, Aditiawarman MNC, Aditya R, Gumilar KE, Wicaksono B, Akbar MIA, et al. Lesson from Indonesia: Covid-19 testing strategy in obstetric emergency cases at low-resource health care setting. Pakistan J Med Heal Sci. 2021;15(2):508-513.

5. Wise T, Zbozinek TD, Michelini G, Hagan C, Dean M. Changes in risk perception and protective behavior

during the first week of the COVID-19 pandemic in the United States. R Soc Open Sci. 2020;7(9):200742.

6. Arifin F, Kuntaman K. Achieving behaviour change in COVID 19 pandemic: Lessons learned from cancer prevention and antibiotic stewardship programs based on social cognition framework. Malaysian J Med Heal Sci. 2021;17:157-161.

7. Angin SRAP, Astutik E. Knowledge, Attitude, and Perception of People in Compliance with The Covid-19 Health Protocol. J Berk Epidemiol. 2022;10(1):103-110.

8. Gallè F, Sabella EA, Da Molin G, De Giglio O, Caggiano G, Di Onofrio V, et al. Understanding knowledge and behaviors related to COVID–19 epidemic in Italian undergraduate students: The epico study. Int J Environ Res Public Health. 2020;17(10):1-11.

9. Faisal S, Khotib J, Zairina E. Knowledge, attitudes, and practices (KAP) towards COVID-19 among university students in Pakistan: a cross-sectional study. J Basic Clin Physiol Pharmacol. 2021;32(4):681-686.

10. Adli I, Widyahening IS, Lazarus G, Phowira J, Baihaqi LA, Ariffandi B, et al. Knowledge, attitude, and practice related to the COVID-19 pandemic among undergraduate medical students in Indonesia: a nationwide cross-sectional study. PLoS One. 2022;17(1):e0262827.

11. Çalışkan F, Mıdık Ö, Baykan Z, Şenol Y, Tanrıverdi EÇ, Tengiz Fİ, et al. The knowledge level and perceptions towards COVID-19 among Turkish final year medical students. Postgrad Med. 2020;132(8):764-772.

12. Alfaray RI, Rahmah FN, Yodianto L, Rizal A, Johan D, Habibi MR, et al. COVID-19 and hepatitis B Ambassador of Surabaya, Indonesia: Motivation, commitment, and knowledge of youth generation towards health programs in the pandemic era. Gac Med Caracas. 2021;129(Supp 2):390-402.

13. Baloran ET. Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic. J Loss Trauma. 2020;0(0):1-8.

14. Shimizu K. 2019-nCoV, fake news, and racism. Lancet. 2020;395(10225):685-686.

15. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Knowledge and Perceptions of COVID-19 Among Health Care Workers: Cross-Sectional Study. JMIR Public Heal Surveill. 2020;6(2):e19160.

16. Shahnazi H, Ahmadi-Livani M, Pahlavanzadeh B, Rajabi A, Hamrah MS, Charkazi A. Assessing Preventive Health Behaviors from COVID-19 Based on the Health Belief Model (HBM) among People in Golestan Province: A Cross-Sectional Study in Northern Iran. 2020:1-19.

17. Lincango-Naranjo E, Solis-Pazmino P, Rodriguez-Villafuerte S, Lincango-Naranjo J, Vinueza-Moreano P, Barberis-Barcia G, et al. Paradigms about the COVID-2 pandemic: knowledge, attitudes and practices from medical students. medRxiv. 2020;2020.05.21.20105858.

18. Sallam M, Dababseh D, Yaseen A, Al-Haidar A, Ababneh NA, Bakri FG, et al. Conspiracy Beliefs Are Associated with Lower Knowledge and Higher Anxiety Levels Regarding COVID-19 among Students at the University of Jordan. Int J Environ Res Public Health. 2020;17(14):4915.

19. Yanti B, Wahyudi E, Wahiduddin W, Novika RGH, Arina YMD, Martani NS, et al. Community Knowledge, Attitudes, and Behavior Towards Social Distancing Policy As Prevention Transmission of COVID-19 in Indonesia. J Adm Kesehat Indones. 2020;8(2):4.

20. Simione L, Gnagnarella C. Differences between health workers and general population in risk perception, behaviors, and psychological distress related to COVID-19 spread in Italy. Front Psychol. 2020;11:2166.

21. Suwantika AA, Dhamanti I, Suharto Y, Purba FD, Abdulah R. The cost-effectiveness of social distancing measures for mitigating the COVID-19 pandemic in a highly-populated country: A case study in Indonesia. Travel Med Infect Dis. 2022;45:102245.

22. Peng Y, Pei C, Zheng Y, Wang J, Zhang K, Zheng Z, et al. Knowledge, Attitude and Practice Associated with COVID-19 among University Students: A Cross-Sectional Survey in China. 2020:1-12.