



Health Belief Model as Students' Perspective Framework Regarding Covid-19 Prevention

Ismar Agustin¹, Azwalid², Nathalia Ramadhanti³, Yunike⁴, Ira Kusumawaty⁵

Politeknik Kesehatan Kemenkes Palembang^{1,2,4,5}

Politeknik Kesehatan Kemenkes Jogjakarta³

Email: ismaragustin@poltekkespalembang.ac.id¹, azwalid@poltekkespalembang.ac.id²,
nathaliaramadhanti24@gmail.com³, yunike@poltekkespalembang.ac.id⁴,
irakusumawaty@poltekkespalembang.ac.id⁵

Abstract

The Covid-19 epidemic have a significant risk to the public's health. The Covid-19 infection spreads swiftly and affects people of all ages. The implementation of health guidelines among students and how students feel they can complete the Covid-19 procedure cannot be separated. The goals of this study is to ascertain how students view Covid-19 prevention from the viewpoint of the Health Belief Model. This research used a descriptive survey with a sample size of 170 respondents and the sampling method is purposive sampling. Descriptive analysis of the components of HBM perceived severity category is quite good (90.0%), perceived barriers is a quite good category (68.2%), perceived benefits is found to be in a quite good category (77.6%), health motivation is in quite a good category (81.2%) and it can be seen that the perception of vulnerability (55.9%) and perception of cues to act (56.5%) was quite good. Positive perceptions include student perceptions of the Health Belief Model's effectiveness in preventing COVID-19, which are rated as being quite good. Therefore, it is envisaged that linked parties would be able to enhance health promotion initiatives for the Covid-19 prevention procedure, both directly and through media like posters put up around campuses

Keywords Covid-19, Health Belief Model, Preventing, Student Perception

INTRODUCTION

A novel coronavirus is the source of acute infectious respiratory disease that called Coronavirus Disease 2019. On January 30, 2020, A pandemic was declared in March 2020 by the WHO Emergency Committee after it was deemed a global health emergency owing to its rapid growth (Sohrabi et al., 2020). The genetic similarity between SARS-CoV-2 and a coronavirus generated from bats is 96% (Q. Li et al., 2020). The first signs of SARS-CoV-2 are comparable to those of COVID-19, a coronavirus disease that presents with pneumonia-like symptoms (Eastin & Eastin, 2020). This condition is extensively transmitted through liquid droplets, direct hand contact with the liquid from body such as mouth, nose, or eye, coughing and sneezing, and contact with objects that have the virus on them (Dost et al., 2020; Giao et al., 2020).

The high pathogenicity of SARS-CoV-2 is a characteristic. According to the findings of a current study including 425 patients of epidemic was increasing every week, and each patient infected an average of 2.2 people (Chan et al., 2020). The number of cases ranges from 2.2 to 3.58, according to an analysis of recent data from the outbreak's early phases (Zhao et al., 2020).

Many restrictions on daily life have been brought about by government laws during the COVID-19 epidemic, including social isolation, lockdown, and social distancing (Alagili & Bamashmous, 2021; Ammar et al., 2020). Additional limitations were put in place with the switch to online education at both colleges and universities, the requirement for travelers to stay in quarantine, and the stoppage of all public meetings, including worship, and the imposition of lockdowns and curfew restrictions..



A person's readiness to follow COVID-19 instructions can depend on a number of circumstances and exercise protective behavior. A person's motivation to engage in protective behavior can be affected by a number of factors, such as age, gender, and education, know about COVID-19 and how they learn about it (Al-Hanawi et al., 2020; Baig et al., 2020; Bekele et al., 2020). Gender and higher education among women were shown to be strongly connected with following rules, according to an analysis of 21 studies from 14 different nations (Bekele et al., 2020). Higher levels of education, gender, and age were linked to greater COVID-19 protective behaviors, according to numerous research examining people's habits in Saudi Arabia regarding social distance, Keeping your hands clean and avoiding cultural customs like shaking hands (Al-Hanawi et al., 2020; Baig et al., 2020).

Student involvement in COVID-19 prevention behavior varies in various countries around the world. Nursing students are trained to prevent Covid-19 through the family social environment (Falcón et al., 2022). To illustrate, in China it was 87.94%. In Japan, Pakistan, Saudi Arabia, and Jordan, the utilization of COVID-19 precautions was, respectively, 96.4%, 95.4%, 94.1%, and 84.3% (Hatabu et al., 2020; Jasser et al., 2020; Noreen et al., 2020). Africa, Nigeria, Egypt, and Ethiopia, respectively, had COVID-19 preventive behavior rates of 88.8%, 92%, and 56.8% (Soltan et al., 2020; Tadese et al., 2021; Umeizudike et al., 2021). Students' COVID-19 prevention behavior is influenced by age, gender, knowing people who are infected with COVID-19, perceived vulnerability, and the type of program they enroll in.

A theoretical model of psychological and social theory is the model of health beliefs. In research, the health belief model is frequently employed to understand individual health behavior (Janz & Marshall Becker, 1984). Health belief model tries to describe and predict behavior based on two important aspects, namely activities to avoid health threats or prevention and views about the effectiveness of behaviors carried out to fight these threats. The view or perception of the threat of a disease can be seen from how vulnerable the individual feels and its severity. As a preventative measure to lessen a threat or disease, the success of health behavior depends on the interaction between the benefits of the habit and perceived barriers (Norman & Conner, 2016). There are two types of cues to action: internal triggers (such physical symptoms) and external cues. Last but not least, health motivation (or self-efficacy) explains how people typically react to prompts to act on their health ideals. The health belief model has been a popular way to explain communication (Jones et al., 2015). Numerous research have used the Health Belief Model to forecast COVID-19 adherence preventative practices (Al-Sabbagh et al., 2022; Tong et al., 2020). Key health beliefs that explain, predict, and influence behavior have been extensively studied using this method. The HBM framework is used in this study to analyze students' opinions about Covid-19 prevention.

RESEARCH METHOD

This study use descriptive research with descriptive survey research design. participants in this study was taken from all students of DIII Nursing and Bachelor of Applied Nursing from Poltekkes Kemenkes Palembang in 2021, totaling 310 people. After taking the sample using purposive sampling technique, the sample of this study was 170 samples. Univariate analysis and descriptive analysis of the data were employed in this study.



RESULTS AND DISCUSSION

1. Characteristics of Respondents

Consists of age, gender, study program, place of residence, parents' education, and parents' income.

Table 1 Frequency Distribution based on Respondents' Personalities at the Palembang Health Polytechnic's Nursing Department

Characteristic	Total (n)	Persentase (%)
Ages		
17-20 Years old	126	74.1
>20 years old	44	25.9
Gender		
Male	12	7.1
Female	158	92.9
Study Program of Respondent		
DIII Nursing	138	81.2
Bachelor of Applied Nursing	32	18.8
Respondent's place of residence		
With parents	122	71.8
boarding house	48	28.2
Parents' Education Level		
Elementary School	31	18.2
Junior High School	11	6.5
Senior High School	98	57.6
DIPLOMA	30	17.6
Parents' Income		
Father		
a. Not working	12	7.1
b. <Rp 500.000,-	12	7.1
c. Rp 500.000,- s/d Rp 2.500.000,-	74	43.5
d. Rp 2.600.000,- s/d Rp 5.000.000,-	59	34.7
e. > Rp 5.000.000,-	13	7.6
Mother		
a. Not Working		
b. <Rp 500.000,-	99	58.2
c. Rp 500.000,- s/d Rp 2.500.000,-	14	8.2
d. Rp 2.600.000,- s/d Rp 5.000.000,-	22	12.9
e. > Rp 5.000.000,-	32	18.8
	3	1.8

The majority of respondents, according to data on the respondents' age characteristics are 17-20 years old (74.1%). In addition, the majority of respondents are women, namely 92.9% and only 28.2% of respondents who do not live with their parents (boarding house). The education level of the parents is mostly high school (57.6%) with the father's economic income of around Rp. 500,000, - up to Rp. 2.500.000,- and the majority of mothers do not work (58.2%). In this study, the majority of respondents were female (92.9%).



2. Overview of Student' Perceptions of Covid-19 Prevention in Terms of the Health Belief Model (HBM)

Table 2 Frequency Distribution of Respondents Based on HBM Components in the Nursing Department, Poltekkes Kemenkes Palembang in August 2021

HBM Component	Frequency (f)	Percentase (%)
Susceptibility Perception		
Good Enough	95	55.9
Kurang baik	75	44.1
Persepsi Bahaya/ kesakitan		
Cukup Baik	153	90.0
Kurang baik	17	10.0
Persepsi Manfaat		
Cukup Baik	132	77.6
Kurang baik	38	22.4
Persepsi Hambatan		
Cukup Baik	116	68.2
Kurang baik	54	31.8
Persepsi Motivasi		
Cukup Baik	138	81.2
Kurang baik	32	18.8
Persepsi Isyarat untuk Bertindak		
Cukup Baik	96	56.5
Kurang baik	74	43.5

The results of the questionnaire analysis with the concept of the Health Belief Model (HBM) are in table 3.2. it can be seen that the perception of vulnerability in the category is quite good (55.9%). In addition, in table 3.2, there are 153 respondents (90.0%), perceived severity category as good enough, 116 respondents (68.2%) good perceived barriers, 116 respondents (68.2%) perceived benefits. good enough category as many as 132 respondents (77.5%), the perception of motivation to act got quite good category as many as 138 respondents (81.2%).

Based on the findings of the examination of the respondents' personal characteristics, based on the age characteristics of the respondents, the majority of respondents were 17-20 years (74.1%). In addition, the majority of respondents are women, namely 92.9% and only 28.2% of respondents who do not live with their parents (boarding house). The education level of the parents is mostly high school (57.6%) with the father's economic income of around Rp. 500,000, - until Rp. 2.500.000,- and the majority of mothers do not work (58.2%).

Age, educational status of parents, Social media usage and local news sources have an impact on people's views of COVID-19 high risk (Tadese et al., 2021). Age was discovered to be a significant predictor of perceived high COVID-19 risk. Students perceive a low risk of the COVID-19 pandemic when classes resume. This is influenced by the demographic characteristics of students, comorbidities, sources of information, including social media (Tadese et al., 2021). Adolescence is a productive stage and allows for greater exposure to Covid-19, this is due to high mobility and physical activity outside the home (López-Bueno et al., 2020). In addition, social interaction in productive groups is also higher. The same thing was also stated by CSIS that transmission of infection came from a group with relatively high mobility, namely a relatively young age group (Philips & Wicaksono, 2020).



Although according to Elviani et al., (2021) the covid-19 virus is not significant with the difference in a person's age so that all ages are at risk of being exposed to covid-19 (Elviani et al., 2021).

Based on findings from research by Akhter et al., female students have higher confidence and adherence to preventive measures (Akhter et al., 2022). Women have the best preventive behavior from Covid-19 (Shahnazi et al., 2020). However, other literature says that both women and men have the same potential to be exposed to COVID-19.

Based on observations, men behave more at risk than women (Bates et al., 2020) or have a higher risk perception than women (Albaqawi et al., 2020; Rana et al., 2021; Rodriguez-Besteiro et al., 2021). Parental education affects children's perceptions of COVID-19 prevention. This supports the finding of Tadese et al.'s research that there is a substantial association between father's education and perceived risk during Covid-19. Parents who go to elementary school will have a higher risk than those who don't go to school (Tadese et al., 2021). Possibly because of the better educational background of parents, it can affect the understanding of the pandemic and can affect the perception of risk and prevention (Honarvar et al., 2020).

A small proportion (28.2%) of respondents do not live with their parents. This is related to the perception of cues to take action where usually individuals will find it more difficult to do something if they do not get support in this case parental support. Lack of parental support can create negative perceptions on respondents (Durado et al., 2013).

Judging from the income of parents, many mothers do not have income and income figures that are less or below the average. According research by Alagili et al. low income and education will be more likely to adopt fully protective behavior (Alagili & Bamashmous, 2021), education is only positively related to preventive measures without any strong indicators that something has to be done, including relative testing and probable positive Covid-19 (M. Li & Wang, 2021). Therefore, a person's adherence to COVID-19 preventative strategies may not be significantly influenced by their higher education level (Alagili & Bamashmous, 2021).

The ideal theory to stop the spread of a disease is the health belief model (Tarkang & Zotor, 2015). The perceived vulnerability, perceived severity, perceived benefits, perceived barriers, and cues to action are all part of the health belief model's framework with reference to starting and continuing healthy behavior (Tsai et al., 2021; Zewdie et al., 2022). According to the findings of the analysis of research on student perceptions of Covid-19 prevention, it was found that the perception of student vulnerability was quite good with a percentage (55.9%). This perception is the initial concept of a health belief model which is defined as an individual's belief about the possibility of contracting a disease so it is necessary to take preventive action (Jones et al., 2015). Perception of severity is a belief held by individuals related to feelings of severity of a disease that can affect their current state of health and how big the consequences of the disease are in their lives. Perception of severity is very important to encourage someone to take preventive action. People who perceive a sickness to be serious are more likely to lead healthy lives, whereas those who perceive a disease to be less serious are more likely to participate in unhealthy or risky activities (Jose et al., 2021). This finding is consistent with the work of Qian et al., which demonstrates the importance of disease severity and susceptibility levels as predictors of behavior changes for the betterment of Covid-19 disease prevention in China (Qian et al., 2020) and has a positive relationship with the prevention of Covid-19 (Karimy et al., 2021).

According to (Afro et al., 2021) what influences the perception of Covid-19 susceptibility are health status, preventive actions and activities carried out.. A person who feels himself vulnerable to being infected with Covid-19 must apply health protocols



(Raamkumar et al., 2020) to avoid the Covid-19 virus. This is in contrast to the research of Shahnazi et al. who stated that there was no relationship between susceptibility and severity to Covid-19 preventive behavior (Shahnazi et al., 2020). So it is necessary to have activities to increase individual perceptions of a person's vulnerability to a health condition (Tarkang & Zotor, 2015).

Furthermore, student's the perceived severity in this study was categorized as quite good. In this case, once a person becomes aware of his or her vulnerability, it does not motivate the person to take the necessary precautions unless he or she is aware that acquiring The disorder will have negative effects on both the body and society. One can take the required steps to prevent these bad repercussions when they are aware of the severity of the negative effects of a condition. According to research, perception of severity relates favorably to Covid-19 preventive behavior (Shitu et al., 2022). This is compared to the results of the study (Shahnazi et al., 2020), It claimed that there was no significant correlation between perception of risk and severity and COVID-19 preventive actions (ACOG, 2012). High perceived harm/severity, according to Li et al., increased negative emotions, more mobile phone use, and caution in COVID-19 (J. Bin Li et al., 2020) by utilizing text-based information can help determine public perceptions. Health workers can use this method to characterize public health behavior through social media (Raamkumar et al., 2020).

Perceived barriers of the respondents in this study obtained 68.2% in the fairly good category. The obstacles felt by students In this instance, there is a conflict between Covid-19 prevention and the use of the Health Belief Model (Karimy et al., 2021). Perceived barriers are important factors that determine behavior change. Considered a key component of preventative behavior are perceived barriers. Therefore, it is essential to concentrate (identify, remove) on the obstacles that prevent COVID-19 readiness and response in humanitarian circumstances. According to Shitu et al. College students or students will be more likely to imitate Covid-19 prevention behavior if they experience obstacles such as the absence of soap, lack of sanitizer, economic status and the impact of Covid-19 prevention is eliminated (Shitu et al., 2022) . These findings are consistent with Tsai et al.'s research on nursing students' knowledge of COVID-19, health attitudes, cues to action, self-efficacy, and behavioral intentions showed that perceived barriers were quite good (Mahindarathne, 2021; Norman & Conner, 2016; Tsai et al., 2021). Health behavior has been shown to have an important impact on the quality of various diseases. Individuals need to increase behavior (health protection), and reduce risky health behaviors so that the results obtained are positive. In addition, according to Bekele and colleagues' research Regarding employee Covid-19 preventive behavior, it was found that the perception of obstacles tends to be low causing bad Covid-19 prevention behavior, while employees with high barriers to preventative behavior are considered better. In this study, respondents still felt obstacles in carrying out health protocols because they still had to make adjustments to follow daily health practices, especially during the lecture process (Bekele et al., 2020). Motivation is needed by individuals to face obstacles to healthy behavior. Strong motivation enables individuals to overcome these obstacles, strengthen they choose realistic measures to reach their health objectives while adhering to their health ideals (Tsai et al., 2021).

Perceived benefits are a determining factor that affects behavior to prevent COVID-19. In this study, it was found in the fairly good category. In this study, the perception of the benefits of respondents (students) is quite good, indicating that indirectly respondents are aware of the benefits of compliance and application of health protocols so as to avoid the risk of being exposed to the covid-19 virus. This is in line with the perceived benefits of having a relationship when Covid-19 preventive practices are followed (Alagili & Bamashmous, 2021; Karimy et al., 2021). In the preventive measures launched by the



government such as hand cleaning, mask use (Martini et al., 2021), maintaining distance, and avoiding face contact, and carrying a hand sanitizer, the first three behaviors are related to perceived benefits (Alagili & Bamashmous, 2021). This shows that someone feels the benefits when carrying out health protocols in order to prevent with COVID-19 infection. In addition, the greater benefits thought to have resulted from COVID-19 preventive actions, the greater the individual's chance of implementing preventive behavior (Afro et al., 2021). According to Jung et al. systematic infection prevention education program should be established, taking into account the fear of COVID-19 infection and the perceived benefits and barriers in infection control, in order to promote the preventive health behavior of nursing students against COVID-19 (Jung & Kim, 2022).

The perception of cue to action in this study is quite good. From studies (Karimy et al., 2021; Shitu et al., 2022; Tadesse et al., 2020) have a positive influence on Covid-19 prevention behavior. This is affected by both internal and external forces, including data from the media, advice from others, newspaper articles or illness from relatives, etc. Information about the benefits obtained by implementing healthy living behaviors can trigger someone to decide to take action to prevent a disease. It is more probable that someone will take preventive action if they have a driving cue to act responsibly (Afro et al., 2021). Cue to internal/external action is akin to the strongest stimulus required to start preventive behavior, and it involves encouraging the adoption of preventive behavior through mass media, highlighting a sense of social responsibility, and making a public announcement via mobile devices and social media as a behavioral step to stop Covid-19 (Karimy et al., 2021; Raamkumar et al., 2020).

CONCLUSION

This study examines student perceptions of Utilizing the Health Belief Model to avoid COVID-19. The six components of HBM in this study showed a fairly good category (>50%). In preventing Covid-19, to enhance student behavior and stop the development of COVID-19, the health belief model evaluation can be used as an effective health promotion technique. To evaluate student knowledge and Covid-19 prevention, we advise more study.

REFERENCES

- ACOG. (2012). Medically Indicated Late-Preterm and Early-Term Deliveries. *Committee on Obstetric Practice Society for Maternal-Fetal Medicine*, 133(764), 151–155. <http://journals.lww.com/greenjournal>
- Afro, R. C., Isfiya, A., & Rochmah, T. N. (2021). Analisis Faktor Yang Mempengaruhi Kepatuhan Terhadap Protokol Kesehatan Saat Pandemi Covid-19 Pada Masyarakat Jawa Timur: Pendekatan Health Belief Model. *Journal of Community Mental Health and Public Policy*, 3(1), 1–10. <https://doi.org/10.51602/cmhp.v3i1.43>
- Akhter, S., Robbins, M., Curtis, P., Hinshaw, B., & Wells, E. M. (2022). Online survey of university students' perception, awareness and adherence to COVID-19 prevention measures. *BMC Public Health*, 22(1), 1–9. <https://doi.org/10.1186/s12889-022-13356-w>
- Al-Hanawi, M. K., Angawi, K., Alshareef, N., Qattan, A. M. N., Helmy, H. Z., Abudawood, Y., Alqurashi, M., Kattan, W. M., Kadasah, N. A., Chirwa, G. C., & Alsharqi, O. (2020). Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Frontiers in Public Health*, 8(May), 1–10. <https://doi.org/10.3389/fpubh.2020.00217>
- Al-Sabbagh, M. Q., Al-Ani, A., Mafrachi, B., Siyam, A., Isleem, U., Massad, F. I., Alsabbagh, Q., & Abufaraj, M. (2022). Predictors of adherence with home quarantine



- during COVID-19 crisis: the case of health belief model. *Psychology, Health and Medicine*, 27(1), 215–227. <https://doi.org/10.1080/13548506.2021.1871770>
- Alagili, D. E., & Bamashmous, M. (2021). The Health Belief Model as an explanatory framework for COVID-19 prevention practices. *Journal of Infection and Public Health*, 14(10), 1398–1403. <https://doi.org/10.1016/j.jiph.2021.08.024>
- Albaqawi, H. M., Alquwez, N., Balay-odao, E., Bajet, J. B., Alabdulaziz, H., Alsolami, F., Tumala, R. B., Alsharari, A. F., Tork, H. M. M., Felemban, E. M., & Cruz, J. P. (2020). Nursing Students' Perceptions, Knowledge, and Preventive Behaviors Toward COVID-19: A Multi-University Study. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.573390>
- Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., Bouaziz, B., Bentlage, E., How, D., Ahmed, M., Müller, P., Müller, N., Aloui, A., & Hammouda, O. (2020). Effects of COVID-19 Home Confinement on Eating Behaviour and Physical Activity : Results of the. *Nutrients*, 12(1583), 13.
- Baig, M., Jameel, T., Alzahrani, S. H., Mirza, A. A., Gazzaz, Z. J., Ahmad, T., Baig, F., & Almurashi, S. H. (2020). Predictors of misconceptions, knowledge, attitudes, and practices of COVID-19 pandemic among a sample of Saudi population. *PLoS ONE*, 15(12 December), 1–13. <https://doi.org/10.1371/journal.pone.0243526>
- Bates, B. R., Moncayo, A. L., Costales, J. A., Herrera-Céspedes, C. A., & Grijalva, M. J. (2020). Knowledge, Attitudes, and Practices Towards COVID-19 Among Ecuadorians During the Outbreak: An Online Cross-Sectional Survey. *Journal of Community Health*, 45(6), 1158–1167. <https://doi.org/10.1007/s10900-020-00916-7>
- Bekele, F., Sheleme, T., Fekadu, G., & Bekele, K. (2020). Patterns and associated factors of COVID-19 knowledge, attitude, and practice among general population and health care workers: A systematic review. *SAGE Open Medicine*, 8, 205031212097072. <https://doi.org/10.1177/2050312120970721>
- Chan, J. F. W., Yuan, S., Kok, K. H., To, K. K. W., Chu, H., Yang, J., Xing, F., Liu, J., Yip, C. C. Y., Poon, R. W. S., Tsoi, H. W., Lo, S. K. F., Chan, K. H., Poon, V. K. M., Chan, W. M., Ip, J. D., Cai, J. P., Cheng, V. C. C., Chen, H., ... Yuen, K. Y. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet*, 395(10223), 514–523. [https://doi.org/10.1016/S0140-6736\(20\)30154-9](https://doi.org/10.1016/S0140-6736(20)30154-9)
- Dost, B., Koksall, E., Terzi, Ö., Bilgin, S., Ustun, Y. B., & Arslan, H. N. (2020). Attitudes of Anesthesiology Specialists and Residents toward Patients Infected with the Novel Coronavirus (COVID-19): A National Survey Study. *Surgical Infections*, 21(4), 349–355. <https://doi.org/10.1089/sur.2020.097>
- Durado, A. A., Tololiu, T. A., & Pangemanan, D. H. C. (2013). Hubungan Dukungan Orang Tua Dengan Konsep Diri Pada Remaja Di Sma Negeri 1 Manado. *Jurnal Keperawatan UNSRAT*, 1(1), 1–8.
- Eastin, C., & Eastin, T. (2020). Clinical Characteristics of Coronavirus Disease 2019 in China. *The Journal of Emergency Medicine*, 58(4), 711–712. <https://doi.org/10.1016/j.jemermed.2020.04.004>
- Elviani, R., Anwar, C., & Januar Sitorus, R. (2021). Gambaran Usia Pada Kejadian Covid-19. *JAMBI MEDICAL JOURNAL “Jurnal Kedokteran Dan Kesehatan,”* 9(1), 204–209. <https://doi.org/10.22437/jmj.v9i1.11263>
- Falcón, G. C. S., Moncada, M. J. A., Rojas, T. C. S., Arias, G. F. G., Camacho, C. V. C., Correa, M. I. D. M. M., & Lluncor, E. M. L. (2022). Preventing COVID-19 as a nursing student through social networks in their family-social environment. *Revista Brasileira de Enfermagem*, 75(1S Suppl 1), e20210631. <https://doi.org/10.1590/0034-7167-2021->



0631

- Giao, H., Thi, N., Han, N., Khanh, T. Van, Ngan, V. K., Tam, V. Van, & An, P. Le. (2020). *Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital , Ho Chi Minh City. 13(March), 260–265. <https://doi.org/10.4103/1995-7645.280396>*
- Hatabu, A., Mao, X., Id, Y. Z., Kawashita, N., & Wen, Z. (2020). *COVID-19 among university students in Japan and associated factors : An online cross- sectional survey. 1–19. <https://doi.org/10.1371/journal.pone.0244350>*
- Honarvar, B., Lankarani, K. B., Kharmandar, A., & Shaygani, F. (2020). Knowledge , attitudes , risk perceptions , and practices of adults toward COVID-19 : a population and field-based study from Iran. *International Journal of Public Health, 2. <https://doi.org/10.1007/s00038-020-01406-2>*
- Janz, N., & Marshall Becker. (1984). The Health Belief Model. A decade later. *Health Education Quarterly, 11(1), 1–47.*
- Jasser, R. Al, Sarhan, M. Al, Otaibi, D. Al, & Oraini, S. Al. (2020). Awareness toward COVID-19 precautions among different levels of dental students in King Saud university, Riyadh, Saudi Arabia. *Journal of Multidisciplinary Healthcare, 13, 1317–1324. <https://doi.org/10.2147/JMDH.S267956>*
- Jones, C. L., Jensen, J. D., Scherr, C. L., Brown, N. R., Christy, K., & Weaver, J. (2015). The Health Belief Model as an Explanatory Framework in Communication Research: Exploring Parallel, Serial, and Moderated Mediation. *Health Communication, 30(6), 566–576. <https://doi.org/10.1080/10410236.2013.873363>*
- Jose, R., Narendran, M., Bindu, A., Beevi, N., L, M., & Benny, P. V. (2021). Public perception and preparedness for the pandemic COVID 19: A Health Belief Model approach. *Clinical Epidemiology and Global Health, 9, 41–46. <https://doi.org/10.1016/j.cegh.2020.06.009>*
- Jung, Y. M., & Kim, N. Y. (2022). Factors Affecting Preventive Health Behaviors against COVID-19 in Nursing Students: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health, 19(9). <https://doi.org/10.3390/ijerph19095496>*
- Karimy, M., Bastami, F., Sharifat, R., Heydarabadi, A. B., Hatamzadeh, N., Pakpour, A. H., Cheraghian, B., Zamani-Alavijeh, F., Jasemzadeh, M., & Araban, M. (2021). Factors related to preventive COVID-19 behaviors using health belief model among general population: a cross-sectional study in Iran. *BMC Public Health, 21(1), 1–8. <https://doi.org/10.1186/s12889-021-11983-3>*
- Li, J. Bin, Yang, A., Dou, K., Wang, L. X., Zhang, M. C., & Lin, X. Q. (2020). Chinese public’s knowledge, perceived severity, and perceived controllability of COVID-19 and their associations with emotional and behavioural reactions, social participation, and precautionary behaviour: a national survey. *BMC Public Health, 20(1), 1–14. <https://doi.org/10.1186/s12889-020-09695-1>*
- Li, M., & Wang, W. (2021). Educational disparities in covid-19 prevention in china: The role of contextual danger, perceived risk, and interventional context. *International Journal of Environmental Research and Public Health, 18(7). <https://doi.org/10.3390/ijerph18073383>*
- Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K. S. M., Lau, E. H. Y., Wong, J. Y., Xing, X., Xiang, N., Wu, Y., Li, C., Chen, Q., Li, D., Liu, T., Zhao, J., Liu, M., ... Feng, Z. (2020). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia. *New England Journal of Medicine, 382(13), 1199–1207. <https://doi.org/10.1056/nejmoa2001316>*



- López-Bueno, R., López-Sánchez, G. F., Casajús, J. A., Calatayud, J., Gil-Salmerón, A., Grabovac, I., Tully, M. A., & Smith, L. (2020). Health-Related Behaviors Among School-Aged Children and Adolescents During the Spanish Covid-19 Confinement. *Frontiers in Pediatrics*, 8(September), 1–11. <https://doi.org/10.3389/fped.2020.00573>
- Mahindarathne, P. P. (2021). Assessing COVID-19 preventive behaviours using the health belief model: A Sri Lankan study. *Journal of Taibah University Medical Sciences*, 16(6), 914–919. <https://doi.org/10.1016/j.jtumed.2021.07.006>
- Martini, S., Kusumawaty, I., Yunike, Detiana, & Nurung, J. (2021). Why not wearing mask during Covid-19 outbreak: Big question mark. *Gaceta Sanitaria*, 35, S546–S548. <https://doi.org/10.1016/j.gaceta.2021.10.094>
- Noreen, K., Zil-E- Rubab, Umar, M., Rehman, R., Baig, M., & Baig, F. (2020). Knowledge, attitudes, and practices against the growing threat of COVID-19 among medical students of Pakistan. *PLoS ONE*, 15(12 December), 1–12. <https://doi.org/10.1371/journal.pone.0243696>
- Norman, P., & Conner, M. (2016). Health behavior. *The Curated Reference Collection in Neuroscience and Biobehavioral Psychology*, December 2015, 1–37. <https://doi.org/10.1016/B978-0-12-809324-5.05143-9>
- Philips, V., & Wicaksono, T. Y. (2020). Karakter dan Persebaran Covid-19 di Indonesia. *CSIS Commentaries*, April, 1–12.
- Qian, M., Wu, Q., Wu, P., Hou, Z., Liang, Y., Cowling, B. J., & Yu, H. (2020). Psychological responses, behavioral changes and public perceptions during the early phase of the COVID-19 outbreak in China: a population based cross-sectional survey. *MedRxiv*, 165, 1–13.
- Raamkumar, A. S., Tan, S. G., & Wee, H. L. (2020). Use of health belief model-based deep learning classifiers for COVID-19 social media content to examine public perceptions of physical distancing: Model development and case study. *JMIR Public Health and Surveillance*, 6(3), 1–8. <https://doi.org/10.2196/20493>
- Rana, I. A., Bhatti, S. S., Aslam, A. B., Jamshed, A., Ahmad, J., & Shah, A. A. (2021). COVID-19 risk perception and coping mechanisms: Does gender make a difference? *International Journal of Disaster Risk Reduction*, 55(February), 102096. <https://doi.org/10.1016/j.ijdr.2021.102096>
- Rodriguez-Besteiro, S., Tornero-Aguilera, J. F., Fernández-Lucas, J., & Clemente-Suárez, V. J. (2021). Gender differences in the covid-19 pandemic risk perception, psychology and behaviors of spanish university students. *International Journal of Environmental Research and Public Health*, 18(8). <https://doi.org/10.3390/ijerph18083908>
- Shahnazi, H., Ahmadi-Livani, M., Pahlavanzadeh, B., Rajabi, A., Hamrah, M. S., & Charkazi, A. (2020). Assessing preventive health behaviors from COVID-19: a cross sectional study with health belief model in Golestan Province, Northern of Iran. *Infectious Diseases of Poverty*, 9(1), 1–9. <https://doi.org/10.1186/s40249-020-00776-2>
- Shitu, K., Adugna, A., Kassie, A., & Handebo, S. (2022). Application of Health Belief Model for the assessment of COVID-19 preventive behavior and its determinants among students: A structural equation modeling analysis. *PLoS ONE*, 17(3 March), 1–17. <https://doi.org/10.1371/journal.pone.0263568>
- Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A., Iosifidis, C., & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*, 76(February), 71–76. <https://doi.org/10.1016/j.ijssu.2020.02.034>
- Soltan, E. M., El-Zoghby, S. M., & Salama, H. M. (2020). Knowledge, Risk Perception, and Preventive Behaviors Related to COVID-19 Pandemic Among Undergraduate Medical



- Students in Egypt. *SN Comprehensive Clinical Medicine*, 2(12), 2568–2575. <https://doi.org/10.1007/s42399-020-00640-2>
- Tadese, M., Haile, A. B., Moltot, T., & Silesh, M. (2021). Perceived risk of covid-19 and related factors among university students in ethiopia during school reopening. *Infection and Drug Resistance*, 14, 953–961. <https://doi.org/10.2147/IDR.S302126>
- Tadesse, T., Alemu, T., Amogne, G., Endazenaw, G., & Mamo, E. (2020). Predictors of Coronavirus Disease 2019 (COVID-19) Prevention Practices Using Health Belief Model Among Employees in Addis Ababa, Ethiopia, 2020. *Infection and Drug Resistance*, 13, 3751–3761.
- Tarkang, E. E., & Zotor, F. B. (2015). Application of the Health Belief Model (HBM) in HIV Prevention: A Literature Review. *Science Publishing Group*, 1(1), 1–8. <https://doi.org/10.11648/j.cajph.20150101.11>
- Tong, K. K., Chen, J. H., Yu, E. W. yat, & Wu, A. M. S. (2020). Adherence to COVID-19 Precautionary Measures: Applying the Health Belief Model and Generalised Social Beliefs to a Probability Community Sample. *Applied Psychology: Health and Well-Being*, 12(4), 1205–1223. <https://doi.org/10.1111/aphw.12230>
- Tsai, F. J., Hu, Y. J., Chen, C. Y., Tseng, C. C., Yeh, G. L., & Cheng, J. F. (2021). Using the health belief model to explore nursing students' relationships between COVID-19 knowledge, health beliefs, cues to action, self-efficacy, and behavioral intention: A cross-sectional survey study. *Medicine*, 100(11), e25210. <https://doi.org/10.1097/MD.00000000000025210>
- Umeizudike, K. A., Isiekwe, I. G., Fadeju, A. D., Akinboboye, B. O., & Aladenika, E. T. (2021). Nigerian undergraduate dental students' knowledge, perception, and attitude to COVID-19 and infection control practices. *Journal of Dental Education*, 85(2), 187–196. <https://doi.org/10.1002/jdd.12423>
- Zewdie, A., Mose, A., Sahle, T., Bedewi, J., Gashu, M., Kebede, N., & Yimer, A. (2022). The health belief model's ability to predict COVID-19 preventive behavior: A systematic review. *SAGE Open Medicine*, 10, 20503121221113668. <https://doi.org/10.1177/20503121221113668>
- Zhao, S., Lin, Q., Ran, J., Musa, S. S., Yang, G., Wang, W., Lou, Y., Gao, D., Yang, L., He, D., & Wang, M. H. (2020). The basic reproduction number of novel coronavirus (2019-nCoV) estimation based on exponential growth in the early outbreak in China from 2019 to 2020: A reply to Dhungana. *International Journal of Infectious Diseases*, 94, 148–150. <https://doi.org/10.1016/j.ijid.2020.02.025>

