


Survey of the knowledge, attitude, and Performance of the people of Pol Dokhtar city regarding personal and environmental hygiene to prevent the COVID-19 virus in the spring of 2020

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Article Info	A B S T R A C T
Article type: Original article	Introduction: Coronaviruses are a large family of viruses that appear to be capable of causing diseases ranging from a simple cold to more severe illnesses, such as Middle East Respiratory Syndrome (MERS) and severe acute respiratory syndrome (SARS). The best way to combat this virus is through prevention. This study aims to examine the knowledge, attitudes, and practices of the people of Lorestan province regarding personal and environmental hygiene to prevent the spread of the COVID-19 virus.
Article History: Received: Jan. 01, 2025 Revised: Feb. 05, 2025 Accepted: Mar. 17, 2025 Published Online: Jun. 30, 2025	Materials & Methods: This cross-sectional applied study was conducted between 2019 and 2020 in Poldokhtar County, examining a population aged 15 and older. An online questionnaire, developed by the project executors, consisting of 34 questions, was used to collect data. The questionnaire comprised four sections: the first focused on demographic information, the second assessed knowledge, the third evaluated attitudes, and the fourth addressed the community's performance regarding adherence to personal and environmental hygiene to combat the COVID-19 virus. Finally, the gathered data were analyzed using SPSS software version 19. The T-test was applied for analyzing binary variables, while a one-way ANOVA was used for examining three or more categorical variables. A P-value of less than 0.05 indicates statistical significance.
 Correspondence to: Moayad Adiban Department of Environmental Health Engineering, School of Public Health, Ilam University of Medical Sciences, Ilam, Iran	Results: The majority of participants in the study were from urban areas (83.6%), female (60%), and married (59%). The study results showed that 65.45%, 60.76%, and 84.45% of the participants had adequate knowledge, a positive attitude, and appropriate performance regarding COVID-19, respectively. Additionally, the results indicated a significant correlation between learning and performance, as well as between attitude and performance.
Email: m_f_1859@yahoo.com	Conclusion: This research determined that the individuals studied possess sufficient knowledge, a positive attitude, and an appropriate level of performance for preventing COVID-19. However, their understanding of preventive measures, such as wearing masks, maintaining social distance, and using disinfectants correctly, was lacking. Therefore, extensive education is necessary to enhance people's understanding of the COVID-19 virus and to encourage them to adopt preventive behaviors. Despite the spread of misinformation, misconceptions, and inappropriate methods in society, the findings of this study, along with similar studies, indicate that the general public adheres to the guidelines of the Ministry of Health and Medical Education for the prevention and control of this virus.
	Keywords: COVID-19, personal and environmental hygiene, knowledge, attitude, performance

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Introduction

In late December 2019, a new coronavirus named SARS-CoV-2 caused an outbreak of pneumonia in Wuhan that spread across China. On January 31, 2020, the World Health Organization (WHO) declared this outbreak a public health emergency of international concern, which has since posed significant health threats to global public health (1,2). This disease is spreading worldwide and, as of March 1, 2020, has affected 67 countries, including Iran. Iran ranks as the seventh country with the highest COVID-19 cases and the sixth in terms of death toll from the virus so far. Coronaviruses are a family of viruses that cause respiratory symptoms, including pneumonia, fever, and lung infections. These viruses are common in animals worldwide, but only a few known cases have been reported in humans (3,4). Unfortunately, there is no FDA-approved medication to combat this virus, and studies have shown that it is a pandemic. Until a definitive treatment or vaccine is available, preventive measures are crucial. This virus mutates daily, becoming more effective and impacting not only community health but also the economy, politics, and other issues. In the current situation, health education and preventive methods are the most essential approaches to controlling the spread of this disease. The main strategies to prevent transmission of the virus in the community include hand hygiene, social distancing, and quarantine. With increased testing capacity and the identification of more COVID-19-positive patients in the community, along with strict regulations, secondary infections are expected to decline (5).

Prevention measures are common strategies for limiting the incidence and spread of this disease (5). The most important prevention strategy involves washing hands, using portable hand sanitizers, and avoiding contact with the face and mouth after engaging in activities that may be contaminated with the virus. High-touch areas should be disinfected daily with a diluted bleach solution (one part bleach and 99 parts water). For surfaces that cannot be cleaned with bleach, 70% ethanol can be used as an

alternative (5). Ultimately, this study aims to examine the knowledge, attitudes, and practices of the people of Lorestan province regarding adherence to personal and environmental hygiene to prevent the spread of the COVID-19 virus. It should also determine how aware people are of prevention and control methods and to what extent they engage in preventive behaviors, such as personal hygiene, among others.

Materials and methods

This cross-sectional applied study was conducted in 2020 with 110 participants in the city of Poldokhtar. To assess the knowledge, attitudes, and practices of Poldokhtar residents regarding personal and environmental hygiene for preventing the COVID-19 virus, an online questionnaire containing 34 questions was used. This questionnaire was distributed through popular social networks in the country, including WhatsApp and Telegram. Respondents took approximately 10 minutes to complete the questionnaire. The questionnaire comprised four sections: demographic information (8 questions), knowledge (8 questions), attitude (8 questions), and performance (10 questions). Finally, the results were analyzed using SPSS software version 19.

Findings

This cross-sectional applied study aims to assess the knowledge, attitudes, and practices of residents in Poldokhtar city regarding personal and environmental hygiene to prevent the COVID-19 virus, based on a questionnaire.

Table 1 presents a comparison of means, standard deviations, and uniformity of knowledge, attitudes, and performance among residents of Poldokhtar County regarding the COVID-19 virus, based on demographic information. This comparison revealed that individuals living in the city possess greater knowledge than those residing in the village. There was no significant difference in the knowledge and attitudes of married and single individuals; however,

a notable difference was observed in their performance, with married individuals outperforming single individuals. Employees demonstrated better performance than those in other occupations. Additionally, individuals with lower economic status

exhibited poorer performance compared to others. Ultimately, it was found that 65.45% of the study participants possessed sufficient knowledge, 60.76% showed a good attitude, and 84.47% demonstrated appropriate performance in combating COVID-19.

Table 1. Comparison of means, standard deviations, and uniformity of knowledge, attitudes, and performance of participants regarding COVID-19 by demographic information.

Demographic information	Number (%)	Mean knowledge ± SD*	P-value	Mean attitude ± SD	P-value	Mean performance ± SD	P-value
sex							
male	44(40%)	5.27(1.7)	0.355	25.9(3.01)	0.304	40.84(6.19)	0.222
female	66(60%)	4.69(1.46)		24.24(3.57)		43.16(5.73)	
Marital status							
Single	45(40.9%)	4.57(1.63)	0.366	24.68(3.32)	0.922	41.17(6.34)	0.067
Married	65(59.09%)	5.16(1.51)		25.06(3.54)		42.96(5.68)	
Education status							
Elementary and middle school	11(10%)	4.9(0.33)	0.971	24.72(0.73)	0.971	43.72(1.26)	0.613
Diploma	35(31.81%)	4.85(0.55)		24.85(1.02)		42.17(2.08)	
University education	64(58.82%)	4.96(0.52)		24.96(1.13)		42.01(1.97)	
Job							
Unemployed	35(31.81%)	4.74(0.61)	0.621	24.48(1.31)	0.226	41.85(2.29)	0.0172
Housewife	24(21.81%)	4.66(0.62)		24.62(1.34)		43.91(2.36)	
Worker	3(2.72%)	6(0.98)		28.33(2.2)		42.33(3.86)	
Employee	33(30%)	5.12(0.6)		25.66(1.29)		42.48(2.28)	
Freelance job	12(10.09%)	5.08(0.7)		24.41(1.5)		40.75(2.64)	
Retired	3(2.72%)	5.33(1.03)		22.33(2.2)		26.33(3.86)	
Location							
City	92(83.63%)	5.02(1.57)	0.158	24.92(3.09)	0.919	42.77(5.58)	0.034
Village	18(16.36%)	4.44(1.58)		24.83(4.97)		39.5(7.36)	
Economic situation							
Good	15(13.63%)	5.6(0.49)	0.178	24.26(1.08)	0.665	43.4(1.88)	0.074
Medium	82(74.54%)	4.84(0.45)		24.97(0.99)		41.96(1.72)	
Weak	13(11.81%)	4.69(0.55)		25.23(1.21)		42.61(2.12)	

* Standard Deviation

In Table 2, a comparison of the knowledge, attitudes, and performance of individuals regarding the control

and prevention of the COVID-19 virus is presented. This study, which involved 110 individuals with an

average age of 30 years, showed that, in terms of gender, 60% of the individuals were female; regarding marital status, 59% were married; and concerning residence, 83.68% of participants were

independent in urban areas. The findings of this study indicate a significant relationship among knowledge and attitude, attitude and performance, as well as expertise and performance.

Table 2. Comparison of the means and standard deviations of knowledge, attitudes, and practices regarding COVID-19.

Variables	Number (%)	SD*	Number of questions
Knowledge			
sufficient	72(65.45%)	2.45	8
Insufficient	38(34.55%)		
Attitude			
Appropriate	67(60.76%)	3.44	8
Inappropriate	33(39.24%)		
Performance			
Desirable	93(84.54%)	6	10
Undesirable	17(15.46%)		

* Standard Deviation

Discussion

This study aimed to examine the knowledge, attitudes, and practices of the people of Poldokhtar County regarding personal and environmental hygiene to prevent the spread of the COVID-19 virus. The results revealed that 65.45% of the participants had sufficient knowledge about COVID-19 prevention. Additionally, the participants demonstrated a good understanding of personal hygiene and social distancing. However, their knowledge of wearing masks and the proper use of disinfectants was lacking. In a study conducted by Wolf et al. (2020), the knowledge of adults regarding COVID-19 in the United States was reported as insufficient. In this study, individuals' knowledge about COVID-19 prevention was both positive and adequate, correlating with their practices. The findings suggested that enhancing knowledge about COVID-19 could lead to increased preventive behaviors against the disease. However, having a high level of knowledge alone is not sufficient for proper performance (7). Prevention and control methods for COVID-19 are only effective when individuals possess not only enough expertise but

also the appropriate attitude and optimal behavior regarding preventive criteria for this disease (8).

In the present study, most individuals had a positive attitude towards COVID-19 prevention and demonstrated a high level of understanding of its risks. They also recognized the importance of personal hygiene in preventing COVID-19 and emphasized the importance of staying home and avoiding crowded places. Some individuals felt that the information regarding COVID-19 was confusing and that the disease negatively impacted their mental health. In a study by Sirchan et al. (2020), it was reported that one-third of the Thai population had a poor attitude towards this disease (9). In the present study, about 39% of individuals have a poor or moderate attitude towards COVID-19. Following the outbreak of this virus in Iran, the Ministry of Health and Medical Education (MOHME) has implemented extensive measures to combat this disease. MOHME has also launched several campaigns to fight this virus, such as "We Defeat COVID-19 - We Stay Home."

The results of the present study, along with similar studies in Iran, have demonstrated that the general

public effectively follows the guidelines issued by the Ministry of Health and Medical Education for the prevention and control of COVID-19 (11, 12, 13). Unfortunately, despite the existence of appropriate and sufficient guidelines and information about this virus, incorrect information, misconceptions, and inappropriate methods, particularly on social media, have proliferated in society (14,15). Misconceptions such as drinking camel urine, consuming alcohol, gargling with saltwater or mouthwash, and massaging the body with viola and sesame oil hinder people's adherence to correct guidelines (14,16).

It has been reported that the internet and social media are the most important sources of information about COVID-19 (15, 16). Despite their significant role in the rapid dissemination of scientific knowledge, social media can also serve as a platform for the spread of misinformation (14, 16, 17). According to the present study, most participants (84.47%) displayed a desirable performance, while about 15.53% demonstrated an average or poor performance regarding COVID-19. The individuals studied exhibited appropriate behaviors such as frequent hand washing, social distancing, wearing masks, staying at home, and avoiding crowded places. However, behaviors such as disinfecting home surfaces and personal items, as well as using air conditioning at home, were reported at a lower level.

The knowledge and attitudes of individuals had a direct and meaningful relationship with their performance regarding COVID-19. Additionally, the inadequate knowledge and attitudes of some individuals toward COVID-19 prevention measures have contributed to their poor performance. Furthermore, findings from various studies, including our research, have reported unsatisfactory protective behaviors of individuals against COVID-19 (18, 9, 19). The knowledge, attitudes, and performance of the study participants were somewhat influenced by demographic factors, as the comparison of individuals' knowledge levels regarding demographic variables revealed that the knowledge and awareness

of those living in urban areas were significantly higher than those living in rural areas due to lower levels of education and literacy among individuals residing in rural areas (20, 21). On the other hand, internet access and penetration in rural areas are weaker than in urban areas (22, 23).

In the present study, married individuals were found to have a more favorable attitude towards COVID-19 compared to single individuals. Additionally, previous studies have reported that married individuals are more engaged in health behaviors and have a higher level of health (24, 25). It has also been observed that employees tend to have a more positive attitude towards the prevention and control of COVID-19 and are more likely to dedicate time to learning about this disease compared to other professions, as employees often possess higher levels of education and health literacy (26,27). Furthermore, individuals with medium to high social standing and economic well-being performed better in terms of COVID-19 prevention and control compared to those with lower social standing and financial well-being. Zong et al. (2020) noted that individuals with higher socio-economic status have better knowledge, attitudes, and performance regarding COVID-19 (18). SIRCHAN et al. (2020) reported that individuals with higher income and robust economic status have superior performance in preventing COVID-19 (9). At the beginning of the outbreak, the high demand for personal protective equipment, such as masks and sanitizers, led to a shortage of these items, ultimately resulting in a significant price increase. Consequently, many low-income individuals in the community, who were workers or self-employed, did not have stable incomes and had to work daily. Adhering to the stay-at-home order for an extended period posed a significant barrier for these individuals.

Conclusion

The findings of this study indicate that participants had good knowledge, appropriate attitudes, and satisfactory performance regarding COVID-19. The

widespread implementation of programs by the Ministry of Health and Medical Education to increase knowledge about COVID-19 and promote preventive behaviors is crucial. Participants in this study demonstrated appropriate protective behaviors, including regular hand washing, wearing masks, avoiding crowded areas, and maintaining social distancing. However, behaviors such as disinfecting home surfaces and personal items, as well as ventilating indoor air, were reported at a lower level. Therefore, to enhance the effectiveness of health education interventions, it is necessary to consider the demographic, economic, and social characteristics of target groups, as well as the need for specific training.

The present study aimed to examine the level of knowledge, attitude, and performance of the people in Poldokhtar County regarding personal and environmental hygiene to prevent the COVID-19 virus. This study had several limitations, including: 1. The study was conducted with individuals aged 15 and older. 2. Only literate individuals were included, so the results cannot be generalized to illiterate individuals. 3. The study was conducted using an online questionnaire, which may have excluded participation from individuals without internet access or smartphones. 4. Since most participants held a university degree, it is possible that the reported levels of knowledge, attitude, and performance in this study are higher than their actual values.

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Ethics approval

Ethical approval for this study was obtained from Public Health Faculty of Tehran University of Medical Sciences.

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Conflict of interest

The authors report no conflict of interest in this study.

Authors' contributions

NC gathered the data and did the literature review. MA and AA contributed in analyzing and interpretation of data. Drafting of the paper was done by MA and AA. All authors read, revised, and approved the final manuscript.

References

1. Kowk KO; Li KK; Chan HH; Yi YY; Tang A; Wei WI; Wong YS. Community responses during the early phase of the COVID-19 epidemic in Hong Kong: risk perception, information exposure, and preventive measures. medRxiv.2020 Jan 1.
2. Zhu N; Zhang D; Wang W; Li X; Yang B; Song J; Zhao X; Huang B; Shi W; Lu R; NIU P. A novel coronavirus from patients with pneumonia in China, 2019. New England Journal of Medicine. 2020 Jan 24.
3. Understanding the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and Coronavirus Disease (COVID-19) Based on Available Evidence- A Narrative Review. 2020 March 1.
4. Qian M; Wu Q; Wu P; HOU Z; Liang Y; Cowling BJ; Yu H. 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. 2020 Jan 1.
5. Rahmet GUNER. COVID-19: Prevention and Control measures in the community. Department of infectious Diseases and clinical Microbiology; faculty of medicine.
6. Wolf MS, Serper M, Opsasnick L, O'Connor RM, Curtis LM, Benavente JY, Wismer G, Batio S, Eifler M, Zheng P, Russell A. Awareness, attitudes, and actions related to COVID-19 among adults with chronic conditions at the onset of the US outbreak: A cross-sectional survey. Annals of Internal Medicine. 2020 Apr 9.
7. Mirzaei A, Nourmoradi H, Zavareh MS, Jalilian M, Mansourian M, Mazloomi S, Mokhtari N, Mokhtari F. Food safety knowledge and practices among male adolescents in western Iran. Open Access Macedonian Journal of Medical Sciences. 2018 May 20;6(5):908.
8. Glanz K, Rimer BK, Viswanath K, editors. Health behavior and health education: theory, research, and practice. John Wiley & Sons; 2008 Aug 28.
9. Srichan P, Apidechkul T, Tamornpark R, Yeemard F, Khunthason S, Kitchanapaiboon S, et al. Knowledge, Attitude and Preparedness to Respond to the 2019 Novel Coronavirus (COVID-19) Among the Bordered Population of Northern Thailand in the Early Period of the Outbreak: A Cross-Sectional Study. Available at SSRN 3546046. 2020 Feb 24.
10. Ministry of Health and Medical Education. Health Education and Promotion Office. Available at: <http://iec.behdasht.gov.ir/> [Accessed on 1st May 2020].
11. Taghrir MH, Borazjani R, Shiraly R. COVID-19 and Iranian Medical Students; A Survey on Their Related Knowledge, Preventive Behaviors and Risk Perception. Archives of Iranian Medicine. 2020 Apr 1;23(4):249.
12. Nemati M, Ebrahimi B, Nemati F. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. Archives of Clinical Infectious Diseases. 2020;15(COVID-19).
13. Raeisi A, Tabrizi JS, Gouya MM. IR of Iran National Mobilization against the COVID-19 Epidemic. Archives of Iranian Medicine. 2020 Apr 1;23(4):216.
14. Geldsetzer P. Knowledge and perceptions of coronavirus disease 2019 among the general public in the United States and the United Kingdom: A cross-sectional online survey. medRxiv. 2020 Jan 1.
15. Geldsetzer P. Knowledge and perceptions of coronavirus disease 2019 among the general public in the United States and the United Kingdom: A cross-sectional online survey. medRxiv. 2020 Jan 1.
16. Qian M, Wu Q, Wu P, Hou Z, Liang Y, Cowling BJ, Yu H. 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. 2020 Jan 1.
17. Pennycook G, McPhetres J, Zhang Y, Rand D. Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy nudge intervention.
18. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, Li Y. 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. 2020;16(10):1745.
19. Kamate SK, Sharma S, Thakar S, Srivastava D, Sengupta K, Hadi AJ, Chaudhary A, Joshi R, Dhanker K. Assessing Knowledge, Attitudes and Practices of dental practitioners regarding the COVID-19 pandemic: A multinational study. Dental and Medical Problems. 2020 Jan 1;57(1):11-7.
20. Golboni F, Nadrian H, Najafi S, Shirzadi S, Mahmoodi H. Urban-rural differences in health literacy and its determinants in Iran: A community-based study. Australian Journal of Rural Health. 2018 Apr;26(2):98-105.
21. Zahnd WE, Scaife SL, Francis ML. Health Literacy Skills in Rural and Urban Populations. American journal of health behavior. 2009 Sep 1;33(5):550-7.
22. Salmani B, Mohammadzadeh P, Zoolghadr H. Investigating the effect of economic factors on Internet diffusion in developing countries. Quarterly Journal of Applied Theories of Economics 2015; 2 (2): 81-102. (In Persian).
23. Zarabi V, Mohammadian Khorasani I, Maddah M. Predicting the Internet diffusion rate in Iran by providing a Fuzzy-diffusion model. Journal of Technology Development Management 2013; 3: 123-51. (In Persian).

24. Koskenvuo M, Daprio J, Lonnqvist J, Sarna S. Social factors and the gender difference in mortality. *Soc Sci Med*, 1986; 23: 605 - 9.
25. Wyke S, Ford G. Competing explanations for associations between marital status and health. *Soc Sci Med*, 1992; 34: 523 - 32.
26. Mirzaei A, Ramezankhani A, Ghaffari M, Jorvand R, Bazzyar M, Momeni K, et al. The Effectiveness of Health Literacy-Based Educational Intervention on Nutritional Outcomes of the Elderly (Persian). *Salmand: Iranian Journal of Ageing*. Forthcoming 2020. Doi: <http://dx.doi.org/10.32598/sija.2020.3.190>
27. Tavousi T, Haeri Mehrizi A, Rafiefar SH, Solimani A, Sarbandi F, Ardestani M, et al Health literacy in Iran: findings from a national study. *Payesh*. 2016; 15 (1):95-102.