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

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**Abstract:**

**Background and Objective:** Coronaviruses are a large family of viruses that, according to evidence, seem to be capable of causing diseases ranging from a simple cold to more severe illnesses such as Middle East Respiratory Syndrome (MERS) and even more severe ones like severe acute respiratory syndrome (SARS). The best way to combat this virus is prevention. The aim of this study is to examine the knowledge, attitudes, and Performance of the people of Lorestan province regarding personal and environmental hygiene in order to prevent the COVID-19 virus.

**Materials and methods:** In this cross-sectional applied study conducted in the years 2019-2020 in Poldokhtar County, the population aged 15 and above was examined. To collect data, an online questionnaire prepared by the project executors with 34 questions was used. The questionnaire questions included four sections: the first section on demographic information, the second section on knowledge, the third section on attitudes, and the fourth section on the community's performance regarding adherence to personal and environmental hygiene to combat the COVID-19 virus. Finally, the collected data were analyzed using SPSS software version 19. For the analysis of binary variables, the T-Test was used, and for the analysis of three or more categorical variables, a one-way ANOVA was employed. If the P-Value is less than 0.05, the statistical analysis is significant.

**Findings:** Most 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 good attitude, and appropriate performance regarding COVID-19, respectively. Additionally, the results indicated a significant correlation between knowledge and performance, as well as between attitude and performance.

**Results:** Based on the results of this research, it was determined that the individuals studied have sufficient knowledge, a good attitude, and an appropriate level of performance for preventing COVID-19. However, their knowledge regarding preventive measures such as wearing masks, maintaining social distance, and proper use of disinfectants was insufficient. Therefore, extensive education is needed to enhance people's understanding of the COVID-19 virus and to encourage them to adopt preventive behaviors. Although misinformation, misconceptions, and inappropriate methods have spread in society, the results of this study, as well as similar studies, have shown that the general public follows 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

**Introduction:**

In late December 2019, a new coronavirus named SARS-COV-2 caused the outbreak of pneumonia from Wuhan to spread across China. On January 31, 2020, the World Health Organization (WHO) declared the outbreak of the new coronavirus as a public health emergency of international concern, and it 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 and involved 67 countries, including Iran. Iran is the seventh country with the highest COVID-19 cases and the sixth country with the highest death toll from this virus so far. Coronaviruses are a family of viruses that cause viral symptoms such as pneumonia, fever, respiratory problems, and lung infections. These viruses are common in animals worldwide, but only a few known cases have affected humans (3,4). Unfortunately, there is no FDA-approved medication to combat this virus, and studies have shown that this virus is a pandemic. Until a definitive treatment or vaccine for this disease is available, preventive measures are crucial. This virus mutates every day and becomes more effective, affecting not only the health of the community but also involving the economy, politics, and other issues. In the current situation, health education and preventive methods are the most important approaches to controlling this disease, and among the main points in preventing the spread of this virus in the community are: hand hygiene, social distancing, and quarantine. With the increase in testing capacity and the identification of more COVID-19 positive patients in the community, as well as strict regulations, secondary infections will decrease (5).

Prevention measures are common strategies for limiting the incidence and spread of this disease (5). The most important prevention strategy is washing hands and 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 and regularly with a diluted bleach solution (one part bleach and 99 parts water). For surfaces that cannot be cleaned with bleach, ethanol 70% can be used (5). Ultimately, the aim of this study is to examine the level of knowledge, attitude, and practices of the people of Lorestan province regarding the adherence to personal and environmental hygiene to prevent the COVID-19 virus. It should also be determined how aware people are of prevention and control methods and to what extent they engage in preventive behaviors such as personal hygiene, etc.

**Materials and methods:**

This cross-sectional applied study was conducted on 110 people in 2020 in the city of Poldokhtar. To determine the knowledge, attitude, and performance of the people of Poldokhtar regarding personal and environmental hygiene to prevent the COVID-19 virus, an online questionnaire with 34 questions was used. This questionnaire was distributed through popular social networks in the country, including WhatsApp and Telegram. The time taken to answer the questionnaire questions was approximately 10 minutes. The questionnaire was prepared in four sections: demographic information (8 questions), knowledge (8 questions), attitude (8 questions), and performance (10 questions). Finally, the results obtained were analyzed using SPSS software version 19.

**Research findings:**

This cross-sectional applied study aims to determine the knowledge, attitude, and practice of the people of Poldokhtar city regarding personal and environmental hygiene to prevent the COVID-19 virus based on a questionnaire.

In **Table 1**, the comparison of means, standard deviations, and uniformity of knowledge, attitude, and performance of the people of Poldokhtar County regarding the COVID-19 virus based on demographic information has been conducted. This comparison showed that the knowledge of individuals living in the city is higher than that of individuals living in the village. There was no relationship or difference between the knowledge and attitude of married and single individuals, but there was a significant difference in their performance, with married individuals performing better than single individuals. Employees performed better than those in other occupations. Additionally, individuals with lower economic status had poorer performance compared to others. Finally, it was determined that 65.45% of the study participants had sufficient knowledge, 60.76% had a good attitude, and 84.47% had 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 based on 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 knowledge, attitude, and performance of individuals regarding the control and prevention of the COVID-19 virus has been conducted. This study, which was carried out on 110 individuals with an average age of 30 years, showed that in terms of gender, 60% of the individuals were female, in terms of marital status, 59% of the studied individuals were married, and in terms of residence, 83.68% of the study participants were independent in urban areas. The findings of this study indicate a significant relationship between knowledge and attitude, attitude and performance, as well as between knowledge and performance.

**Table 2:** Comparison of 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 and conclusion:**

The aim of the present study was to examine the level of knowledge, attitudes, and practices of the people of Poldokhtar County regarding personal and environmental hygiene to prevent the COVID-19 virus. The results showed that 65.45% of the participants in the study had sufficient knowledge about COVID-19 prevention. Additionally, the participants had adequate knowledge about personal hygiene and social distancing. However, their knowledge about wearing masks and the proper use of disinfectants was not adequate. 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 the present study, the knowledge of individuals regarding COVID-19 prevention was positive and adequate, and it correlated with their practices. The results indicated that enhancing individuals' knowledge about COVID-19 could increase preventive behaviors against this disease. Although having a high level of knowledge alone is not sufficient for proper performance (7). The methods of prevention and control of COVID-19 are only acceptable when, in addition to sufficient knowledge, individuals have the appropriate attitude and optimal performance regarding the prevention criteria for this disease (8).

In the present study, most individuals had a positive attitude towards COVID-19 prevention and a high understanding of its risks.They also recognized the importance of personal hygiene for preventing COVID-19 and believed in staying home and avoiding crowded places.Some individuals also believed that the information regarding COVID-19 was confusing and that the disease had a negative impact on 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.After the outbreak of this virus in Iran, the Ministry of Health and Medical Education (MOHME[[1]](#footnote-1)) has implemented extensive structures to combat this disease.MOHME has also launched several campaigns to combat this virus, such as: We Defeat COVID-19 - We Stay Home.

The results of the present study, as well as similar studies in Iran, have shown that the general public successfully follows the guidelines of the Ministry of Health and Medical Education for the prevention and control of COVID-19 (11,12,13). Unfortunately, in addition to appropriate and sufficient guidelines and information about this virus, incorrect information, misconceptions, and inappropriate methods, especially through social media, have spread in society (14,15). Misconceptions such as drinking camel urine, consuming alcohol, gargling with saltwater or mouthwash, massaging the body with viola and sesame oil, etc., 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 information, social media can also be a platform for spreading misinformation (14, 16, 17). According to the present study, most participants (84.47%) had a desirable performance, while about 15.53% had an average or poor performance regarding COVID-19. The studied individuals 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 and 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 poor knowledge and attitudes of some individuals towards COVID-19 prevention measures have led 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 concerning demographic variables showed that the knowledge and awareness of those living in urban areas were significantly higher than those living in rural areas, because individuals residing in rural areas have lower levels of education and literacy (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, it was found that married individuals 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 reported that employees have a more positive attitude towards the prevention and control of COVID-19 and may dedicate more opportunities to learning about this disease compared to other professions, as employees often have higher levels of education and health literacy (26,27).It has been reported that individuals with a medium to high social level and economic well-being performed better in terms of COVID-19 prevention and control compared to others.Zong et al. (2020) reported 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 good economic status have better performance in preventing COVID-19 (9).At the beginning of the outbreak of this disease, the high demand for personal protective equipment such as masks and sanitizers led to a shortage of these items and ultimately a significant increase in their prices.For this reason, most low-income individuals in the community, who were workers or self-employed, did not have a stable income and had to work daily. Following the stay-at-home order for an extended period was a significant barrier for these individuals.

**Conclusion:**

The findings of this study indicate that the 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 to motivate preventive behaviors is very important. Participants in this study exhibited appropriate protective behaviors, including regular handwashing, wearing masks, avoiding crowded places, and 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 and the need for specific training.

The present study aimed to examine the level of knowledge, attitude, and performance of the people of Poldokhtar County regarding personal and environmental hygiene to prevent the COVID-19 virus. This study had various limitations, including: 1- The study was conducted on individuals aged 15 and above. 2- Only literate individuals were examined in the study, so the results cannot be generalized to illiterate individuals. 3- The study was conducted through an online questionnaire, so individuals without access to the internet and smartphones could not participate in the study. 4- Since most participants in the study had a university degree, it is possible that the reported level of knowledge, attitude, and performance in the present study is higher than their actual value.

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