

Original Article: The Relationship between Mental and Physical Health Status with Knowledge, Attitudes and Practice about Covid-19 Virus among the Medical Science Students of Urmia Islamic Azad University in 2020

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ABSTRACT

The relationship between awareness and physical and mental health of people is direct and strong and is significant at the 95% confidence level. Since the Covid-19 disease is more effective on people with underlying diseases, therefore, if a person suffers from a chronic disease, it can make him sicker and therefore the person has less desire to get information about this disease, which reduces the level of awareness. and this issue is also true in relation to intellectual obsessions. In such a way that students with phobia or any other mental disorder deal with the subject more carefully. On the other hand, high awareness in people reduces the amount of stress related to the disease and improves the level of mental health and subsequently physical health. The results of this research also showed that the relationship between attitude and physical and mental health of people is direct but relatively weak, although it is significant at the 95% confidence level. Although mental and physical health increases the level of awareness, it does not have an effect on a person's perspective of an existing reality.

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Introduction

Covid-19 is the name of the CORONAVIRUS2019 disease, which is an infectious disease that causes acute respiratory syndrome and was previously known as the new 2019 CORONAVIRUS (2019 CORONAVIRUS) (1,2). This disease was first recognized in December 2019 in the city of Wuhan, the capital of Hubei Province, China, and since then it has spread globally, causing the 2019-2020 coronavirus pandemic. This virus is from the COVB category and from the 2B group, and 70% genetically corresponds to SARS-COVID and has been called COVn-2019 by the WHO organization (3,4). Its general symptoms include fever, cough and shortness of breath, which can appear 2 to 14 days later, but the average incubation period is 5 days. However, the World Health Organization has stated that the onset of symptoms until the occurrence of death is something between two and eight weeks (5,6). Other symptoms of this disease can include sputum production, muscle pain, diarrhea, sore throat, decreased sense of smell, and abdominal pain (7). While the majority of cases show mild symptoms, some cases progress to viral pneumonia and organ failure. (3) This disease first started in China and spread quickly. As the global prevalence of this disease on April 2, 2020, more than 1 million and 9662 cases were reported. There are more than 200 countries involved, including 52,855 deaths. These statistics in Iran include 50 thousand 468 cases of infection (7th rank) and 3160 deaths (6th rank), which is a proof of the importance of this disease and the research surrounding it (2,8). This virus spreads mostly through close contact through respiratory particles from sneezing and coughing, as well as through touching an infected surface and hand-to-face contact, but it does not have an official and confirmed airborne transmission (9,10). An observation in Singapore shows that free coughing can spread respire able particles up to 4.5 meters (11). This factor is more transferable when people have symptoms, although it is also possible to transfer before symptoms appear (12,13).

This virus has the ability to survive for up to three days (72 hours) on surfaces (14,15) and shows a longer half-life than COV-1-SARS in surviving on a column, and its longest durability is observed on steel and plastic has been (15). Early detection of this disease is very important for treatment and control. Therefore, its standard diagnosis method is reverse transcription polymerase chain reaction (RT-PCR) from respiratory secretions or plasma samples. It can also be diagnosed by blood samples, a combination of symptoms, risk factors, and a chest CT scan with features indicative of pneumonia (11). For RT-PCR, some patients can have a negative test, which may be due to inappropriate nucleic acid cellular material. However, at present, imaging can effectively detect abnormalities of the respiratory parenchyma, which can solve the challenges in troubled patients with negative results. For diagnosis, the sensitivity of chest CT scan (98%) compared to RT-PCR (71%) has been reported (1).

Since prevention is essential in this disease, the suggested method to prevent infection is continuous hand washing, social distancing, especially for people with symptoms, covering coughs and sneezes with the inside of the elbow or a handkerchief and keeping the infected hand away from the face (21,22). It is better for people who are concerned about the disease and their caregivers to use a mask, especially when in contact with other people, but regarding the use of healthy people, there is still no correct information and it is being discussed (13). The Covid-19 pandemic is currently considered a major threat to global health; The global spread of this disease has been very fast and currently we have 146 countries involved in at least one reported case; The last reported epidemic with a global response on a very large scale was in 1918 in relation to the H1N1 pandemic. Therefore, attention and research in this regard is very important (10).

People's knowledge and awareness of the spread of a disease is necessary to report it, and one of the challenges for the effective implementation of disease outbreak monitoring systems is not reporting it completely and on

time, and the low level of knowledge and awareness about a disease among medical professionals. It has caused a decrease in the rate of correct outbreak reports, which points out the need to increase knowledge and awareness and encourage to remove the obstacles on the way to reporting the disease. People's knowledge and awareness is essential to reduce the spread of an infectious disease and one of the challenges that leads to an increase in the spread and mortality of the infected. Low knowledge and awareness in relation to that disease. Another effective factor during the outbreak of infectious diseases such as Covid-19 is the quality of life and mental and physical health of people. Researchers have shown the direct impact of high quality of life by preventing these types of diseases (14).

On the other hand, this disease has affected the physical and especially mental health status of various people, especially medical students, and therefore has changed their quality of life. Various studies have shown that there is a direct relationship between low quality of life and CORONAVIRUS 2019 disease (24). Research has shown that medical students with high physical health perform best in critical situations. In addition, students who have low mental health and low quality of life have always been vulnerable in dealing with diseases. Therefore, due to the wide spread of Covid-19, its direct impact on students' lives, as well as the importance of research in order to provide primary data for future evaluations and reforms are needed (8).

After determining the physical and mental health of the students, as well as their level of knowledge, attitude and performance, this research can examine the relationship between those factors and finally as a preliminary to planning for the prevention of this disease as well as health promotion. The mental and physical health of students takes the necessary measures; Also, the results of this research show the effect of various media trainings such as television, sending text messages of the Ministry of Health, Treatment and Medical Education, and it can be used effectively for policy makers and

national officials. And in this regard, it has considered the following goals in a special way.

1. Determining the physical health status of medical students of Islamic Azad University, Urmia branch regarding the 2019 coronavirus disease in 2020.
2. Determining the mental health status of medical students of Islamic Azad University, Urmia branch regarding the 2019 coronavirus disease in 2020.
3. Determining the awareness of medical students of Islamic Azad University, Urmia branch, regarding the 2019 coronavirus disease in 2020.
4. Determining the attitude of medical students of Islamic Azad University, Urmia branch, regarding the 2019 coronavirus disease in 2020.
5. Determining the performance of medical students of Islamic Azad University, Urmia branch regarding the 2019 coronavirus disease in 2020.
6. Determining the relationship between physical health and awareness of the 2019 coronavirus disease among medical students in Urmia in 2020.
7. Determining the relationship between mental health and knowledge about the 2019 coronavirus disease among medical students of the Islamic Azad University of Urmia in 2020.
8. Determining the relationship between physical health and attitude regarding the 2019 coronavirus disease among medical students of the Islamic Azad University of Urmia in 2020.
9. Determining the relationship between mental health and attitudes regarding the 2019 coronavirus disease among medical students in Urmia city in 2020.
10. Determining the relationship between physical health and performance regarding the 2019 coronavirus disease among medical

students of the Islamic Azad University of Urmia in 2020.

11. Determining the relationship between mental health and performance regarding the 2019 coronavirus disease among medical students of the Islamic Azad University of Urmia in 2020.

Research background

Lin et al. (2011) in a study on knowledge, attitude and education related to the 2009 H1N1 pandemic among the general population of China, which was conducted in the form of a descriptive survey of a telephone questionnaire in 7 urban areas and 2 rural areas of China, in which a total of 23,218 Eligible respondents were identified as 12,360 completed the interview (4,864 men and 5,805 women) and it was concluded that the H1N1 epidemic did not cause public panic. But the citizens' knowledge is not optimistic because most of them are confused about the method of its transfer. It was also shown that women with higher education have a greater understanding of the risk of infection and in them we observe more preventive behaviors, and it seems that public education can eliminate the side effects of vaccination (11).

Paro et al. (2010) in a study aimed at determining the health-oriented quality of life of medical students examined 490 students between the ages of 18 and 31 years, during which they concluded that students and depression symptoms have a severe negative impact on the quality of health life experience and medical schools should implement strategies with planning and support actions to improve their situation (7).

Al-Hazmi et al. (2016) in their study with the aim of determining the knowledge and attitude and education in high schools and universities about the Middle East Respiratory Syndrome (MERS) disease epidemic in Saudi Arabia, where 53.1% of the 1109 people examined are men and the rest are women. The results showed that the comparison of information between students and students did not include any specific differences, but regarding the knowledge of

preventive measures against the disease, there were obvious differences, which indicated the existence of more educational efforts in the direction of prevention. However, according to one of the questions about the source of receiving information, it showed that most of the students sought their knowledge from traditional media and social media than classified organizational programs (10).

Al-Sahafi et al. (2016) in a study entitled Knowledge and opinions of healthcare workers in Saudi Arabia regarding the MERS virus group and other emerging infectious diseases, in which 1500 healthcare workers were invited to fill out a questionnaire and 1216 of them were included in this questionnaire (56.5% of nurses and 22% of doctors), in which it was shown that even despite the high basic level of awareness, there are many misconceptions about this disease (1).

Abag et al. (2018) in their research entitled "Determining knowledge and attitudes about the Middle East respiratory syndrome coronavirus (COV-MERS) among medical workers in the southern region of Saudi Arabia in a cross-sectional study among 339 workers, 104 of them died and 235 women (which was conducted during eight months) finally concluded that this group under study had limited biological and microbiological information, but from the clinical aspect, they had adequate information and indicated that additional training on COV-MERS for these health workers may be needed (12).

Harapan et al. (2018) in a study titled Knowledge and Attitude and Education about Dengue Virus Disease among the Residents of Aceh, Indonesia conducted a cross-sectional study among 609 participants (181 men and 428 women), in which it was found that about 45% of people had good knowledge about dengue virus, but only 32% of them had a correct attitude and proper preventive training in this regard, and there is a strong association between knowledge and attitude and between attitude and preventive training (13).

Al-Tamiri et al. (2018) in a study aimed at investigating the knowledge and attitude of

dental health professionals about the Middle East respiratory syndrome in Saudi Arabia in the form of a cross-sectional study of 202 people in the form of an online questionnaire showed good knowledge and a positive view regarding the COV-MERS disease. However, there is still a slight lack of knowledge and attitude regarding this disease, indicating the need for additional educational programs to fill this lack (14).

Alberk et al. (2019) in a cross-sectional study compared the knowledge, attitude and information of different health workers regarding the Middle East Respiratory Syndrome (MERS) after examining 391 cases in 4 fields: Doctors, pharmacists, nurses, technicians in two genders the majority of health workers showed average education about this disease. However, experience did not show a clear relationship with knowledge, and the medical staff participating in this test had good knowledge and a positive attitude in socializing with MERS patients, and they showed that low-to-average training in clinical interactions while socializing with patients can increase Infection in hospitals is effective (15).

Ghafar et al. (2019) in a study titled knowledge and training of dentists regarding COV-MERS in a cross-sectional study, examined 423 dentists (273 men and 150 women) who asked questions and the results generally show good knowledge but It was associated with gaps in history making methods and showed that the ability to recognize patients is related to higher chances of adopting recommended management methods.

Al-Amiri et al. (2019) in a study aimed at determining the knowledge and training of primary care physicians (PHC Physicians) about the updated guidelines of COV-MERS disease in the city of Abha, Saudi Arabia, cross-sectional, including 85 physicians (52 men and 33 women). They concluded that there are scientific gaps among the main medical doctors and less than a quarter of these doctors continue medical education related to COV-MERS and the rest only rely on guidelines and textbooks in this regard.

Soror et al. (2019) in their article with the aim of determining the health-oriented quality of life and its correlation with the academic performance of medical students after examining 267 students (184 women and 83 men) reached the conclusion that the mental health of medical students compared to physical health are less important. Especially female students and students with better health show themselves and also having a high mental and physical health has a very important effect on their lives (14).

Pascal Goldsetzer (2020) in a study as knowledge and perception about the disease of Covid-19 among the general population of the United States and England, which was an online cross-sectional study in which 2,986 people in the United States (including 1,519 women) and 2,988 people in England (including 1,531 female) has participated in it, and questions related to its epidemic, death rate, groups at risk, symptoms and prevention have been asked. Finally, it was found that the general population of England had signs of misperceptions related to Covid-19, and the correction of these misperceptions should be in line with the goals of information campaigns organized by government organizations and providing information to patients through clinical specialists and media coverage.

Research method

The present study is a cross-sectional descriptive study that was conducted after the approval of the proposal in the research meeting of the Research Committee and Research Vice-Chancellor of Urmia Azad University and receiving the code of ethics in 2020. The criteria for entering the study was to study in different stages of the medical department, and people had to complete the electronic questionnaire. Also, there was no age or gender restriction. Since community-based sampling was not possible in person in this special course, data collection was done online. To determine the sample size, Cochran's formula is used as follows:

$$n = \frac{NZ^2pq}{N \times d^2 + Z^2pq}$$

In this method, the first type error rate is 5%, $p=q=0.5$ values, test error rate is $d=0.05$, and the number of university students is 11748. The number of samples was calculated with the assumed initial parameters of 280 people, due to the possibility of dropping 300 questionnaires were distributed and finally 285 usable questionnaires were collected. Medical students were invited to complete these questionnaires through provincial web-based channels and other messengers. First, in order to collect information, an online questionnaire was created on the Internet and was provided to the research participants through social media.

The questionnaire used in this research consists of three parts: The first part includes demographic characteristics (age, gender, occupation, residential area, marital status). The second part includes questions including the standard questionnaire of awareness, attitude and performance related to Covid-19. This questionnaire contains 14 questions about people's knowledge, which were in the form of three-choice Likert: Yes, No, and I don't know, and the range of scores is from 0-14. 0-4 is poor knowledge, 5-9 is average, 10-14 is good. 3 questions about people's attitudes in the form of three-choice Likert yes, no, I don't know, and 4 questions about people's performance, which were yes and no (39). The questionnaire in question is translated, upgraded and edited from the standard questionnaire of Zong et al. (2020) (39), in their study, the Cronbach's alpha coefficient of the questionnaire was 0.71, which indicates acceptable internal consistency, and in the present study, after translation, upgrading and conducting a pilot study, the internal correlation coefficient was 0.86.

In the third part, a health questionnaire (quality of life or SF-36) was used to check physical and mental health. This questionnaire, which includes people's health status, including physical and mental health, consists of 36 questions that were first designed by Warosherbon in 1992 in the United States (41) and the validity of this questionnaire has been

confirmed by the convergent validity test. (The range of coefficient of variation is 0.95-0.58) and its reliability has been confirmed by a pilot study using Cronbach's alpha statistical test ($\alpha=0.80$). This questionnaire has been reviewed many times in Iran. For example, in Ghamari et al.'s study (2011), the internal correlation coefficient for 36 questions was obtained at 0.934, which shows its high reliability (41). The questions of this questionnaire measure 8 main constructs related to personal health (4 constructs of physical health and 4 constructs of mental health). The physical dimension is 10 words, physical role playing 4 words, physical pain 2 words, general health 5 words, vitality energy 4 words, social function 2 words, emotional role playing 3 words and mental health 5 words that evaluates the quality of people's life. The total score of this questionnaire was considered between 0 and 100, and the scores were divided into four levels: Less than 45 as very poor quality of life, 45-60 as poor, 60-75 as average, and more than 75 as desirable (42,43). For data analysis, descriptive statistics were used to express the state of the sample and inferential statistics in the form of the Kolmogorov-Smirnov test were used to test the normality of the data and Spearman's correlation coefficient at the significance level of P-value less than five percent.

Findings

Out of the 285 volunteers who were examined in this study, 197 were men and 88 were women, which is equal to 69.1 and 30.9 percent of the total population, respectively. The average age of the studied subjects is 33.98 years with a standard deviation of 14.84 years. The minimum age of the studied subjects is 9 years and the maximum age of the studied subjects is 82 years. Of the 285 people who participated in this study, 278 people are equal to 97.5% of city residents and 7 people are equal to 2.5% of village residents. Among the 285 people who participated in this study, 92.6% equal to 264 people are single and 7.4% equal to 21 people are married. The participants of the present study are from different fields, 63 of them equal to 22.1% of the total studied people are studying in one of the professional doctoral fields

(pharmacy, medicine or dentistry). 106 people equal to 37.2% of nursing, 57 people equal to 20% of midwifery, 10 people equal to 3.5% of laboratory sciences, 44 people equal to 15.4% of para medicine, 3 people equal to 1.1% of basic sciences. And 2 people were equal to 0.7% in other fields of study. The awareness level of 100.1% of people in the society is low, 34.4% is equal to 98 people, and 30.5% is equal to 87 people. The level of attitude of 45.3% of people in the society is low, 34.4% is equal to 98 people, average and 20.4% is equal to 58 people.

The performance level of 34.7% of people in society is low, 55.4% is average, 158 people are average, and 9.8% is high, 28 people. 43.5% physical health of 124 people is very low, 22.8% is low with 65 people, 26% is equal with 74% average and 7.7% is high with 22 people. Mental health of 43.5% is very low with 124 people, 29.1% with 83 people is low, 19.6% with 56% is average and 7.7% with 22 people is high. In order to check the hypotheses of the research, statistical inferential tests have been used. Before any analysis, we first check the normality of the variables in order to choose the appropriate test based on the obtained results. Table (1) is displayed and used.

Considering the significance level of all variables, which is less than 0.05, the null hypothesis based on the non-normality of the data is accepted and it can be concluded that all variables have a distribution other than the normal distribution and non-parametric tests for used their analysis.

Table 1. Kolmogorov-Smirnov test

Meaningful	Degrees of freedom	Statistics	
0/001	285	0.231	Level of awareness
0/001	285	0.287	Attitude level
0.001	285	0.309	Performance level
0.001	285	0.27	Physical health
0/001	285	0.263	Mental health

Due to the non-normality of the data, Spearman's non-parametric correlation

coefficient was used to examine the relationship between physical health and the level of awareness, and its results are shown in table (2).

Table 2. Correlation between physical health and awareness

Consciousness		
0.94	The correlation coefficient	Physical health
0.001	Significance level	
285	Number	

The correlation coefficient between physical health and students' awareness is 0.94, which is positive and very close to 1. Therefore, the relationship between awareness and physical health of people is direct and strong and is significant at the 95% confidence level. The results related to the relationship between mental health and awareness are shown in table (3).

Table 3. Relationship between mental health and awareness

Consciousness		
0.942	The correlation coefficient	Mental health
0.001	Correlation	
285	Number	

The correlation coefficient between mental health and students' awareness is 0.942, which is positive and close to one. Therefore, the relationship between awareness and mental health of straight people is very strong and significant at the 95% confidence level. The results related to the relationship between physical health and students' attitudes are presented in table (4).

Table 4. Relationship between physical health and attitude

Attitude		Physical health
0.205	The correlation coefficient	
0.001	Significance level	
285	Number	

The correlation coefficient between physical health and students' attitude is 0.205, which is positive and close to zero. Therefore, the relationship between attitude and physical health of people is direct but relatively weak, although it is significant at the 95% confidence level. Next, the relationship between mental health and attitude has been investigated, and the results are shown in table (5).

Table 5. Relationship between mental health and attitude

Attitude		Mental health
0.204	The correlation coefficient	
0.001	Correlation	
285	Number	

The correlation coefficient between mental health and students' attitude is 0.204, which is positive and close to zero. Therefore, the relationship between the attitude and mental health of straight people is almost weak, but it is significant at the 95% confidence level.

Table 6. Correlation between physical health and performance level

Function		Physical health
0.3	The correlation coefficient	
0.001	Significance level	
285	Number	

The correlation coefficient between physical health and student performance is 0.3, which is positive and close to zero. Therefore, the relationship between performance and physical health of people is direct but relatively weak, although it is significant at the 95% confidence level. In this section, Spearman's non-parametric correlation coefficient has been used

to examine the relationship between mental health and performance level, the results of which are shown in table (7).

Table 7. Relationship between mental health and performance level

Function		Mental health
0.298	The correlation coefficient	
0.001	Correlation	
285	Number	

The correlation coefficient between mental health and students' performance is 0.298, which is positive and close to zero. Therefore, the relationship between performance and mental health of people is direct and weak and is significant at the 95% confidence level.

Conclusion

In other words, mental and physical health cannot prove the existence or non-existence of a scientific truth, but can only increase or decrease the level of a person's readiness to face an existing problem. Further, the results of this research showed that the relationship between performance and physical and mental health of people was direct and weak, and it is significant at the 95% confidence level, which can be said to explain this result, although the effect of physical and mental health of people in the implementation of a process is especially obvious, but the level of awareness is more effective for controlling a particular phenomenon. Because in case of ignorance, people are less willing to engage with a certain issue. As the results of this research have shown, physical and mental health has a positive and significant effect, but this effect has been evaluated weakly.

References

- [1] A. Yarahmadi, K. Kamrava, A. Shafee, M. Milanifard, M. Aghajanpour, Mohebbi A., *J. Pharm. Res. Int.*, **2019**, 1-6. [Crossref], [[Google Scholar](#)], [Publisher]

- [2] M. Aminzadeh, R. Mohebi far, Y. Azamines, M. Faraji, *J. Health*, **2015**, *6*, 169-179. [Crossref], [Google Scholar], [Publisher]
- [3] N. Asadi, F. Salmani, S. Poorkhajue, M. MahdaviFar, Z. Royani, *J. Psychiatry Clin. Psychol.*, **2020**, *26*, 306-319. [Crossref], [Google Scholar], [Publisher]
- [4] E. Ghaibi, M.R. Soltani Manesh, M. Bushra, Z. Gilani, K. Salimi Nabi, F. Zarif, *Eurasian Journal of Chemical, Medicinal and Petroleum Research*, **2022**, *1*, 49-57. [Crossref], [Google Scholar], [Publisher]
- [5] E. Ghaibi, M.R. Soltani Manesh, H. Jafari Dezfouli, F. Zarif, Z. Jafari, Z. Gilani, *Eurasian Journal of Chemical, Medicinal and Petroleum Research*, **2022**, *1*, 33-39. [Crossref], [Google Scholar], [Publisher]
- [6] H. Alizadeh Otaghvar, K. Afsordeh, M. Hosseini, N. Mazhari, M. Dousti, *Journal of Surgery and Trauma*, **2020**, *8*, 156-160. [Crossref], [Google Scholar], [Publisher]
- [7] H. Alizadeh Otaghvar, S. Moghaddam, A. Molaei, *J. Med. Chem. Sci.*, **2021**, 369-375. [Crossref], [Google Scholar], [Publisher]
- [8] H.A. Otaghvar, R. Rezapour-Nasrabad, M.A. Ebrahimzadeh, M. Yaghoubi, A.R. Khalatbary, D. Nasiry, A. Raofi, A. Rostamzadeh, *J. Wound Care*, **2022**, *31*, S36-S44. [Crossref], [Google Scholar], [Publisher]
- [9] I. Karampela, M. Dalamaga, *Arch. Med. Res.*, **2020**, *51*, 741-742. [Crossref], [Google Scholar], [Publisher]
- [10] M. Yavari, S.E. Hassanpour, H.A. Otaghvar, H.A. Abdolrazaghi, A.R. Farhoud, *Arch. Bone Jt Surg.*, **2019**, *7*, 258. [Crossref], [Google Scholar], [Publisher]
- [11] M.B. Abhari, P.F. Afshar, R. Alimoradzadeh, H. Mirmiranpour, *Immunopathol. Persa*, **2019**, *6*, e10-e10 [Crossref], [Google Scholar], [Publisher]
- [12] B. Shakiba, N. Torabi, R. Alimoradzadeh, R. Maghsoudi, *Journal of Iranian Medical Council*, **2022**, *5*, 227-228. [Crossref], [Google Scholar], [Publisher]
- [13] M.M. Fard, *GMJ Med.*, **2021**, *5*, 391-395. [Crossref], [Google Scholar], [Publisher]
- [14] F. Najafi, F. Kerjasama, E. Gangoozehi, *Iran. J. Rehabilitation Res. Nursing*, **2018**, *4*, 53-59. [Crossref], [Google Scholar], [Publisher]
- [15] S.P. Smieszek, B.P. Przychodzen, M.H. Polymeropoulos, *Int. J. Antimicrob. Agents*, **2020**, *55*, 106004. [Crossref], [Google Scholar], [Publisher]

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