

Misconceptions and Facts: A Unique Investigation into COVID-19 Among Medical Students at a Rural University in Sindh

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Abstract

The COVID-19 pandemic originated in Wuhan, China, and was initially identified as a case of unexplained pneumonia in December 2019. Its transmission rapidly increased worldwide. The World Health Organization (WHO) officially named it COVID-19 on 11 February 2020. As of 5 June 2020, Pakistan had recorded 87,113 confirmed cases of COVID-19. This study aimed to analyze the perceptions, myths, and realities surrounding COVID-19 among medical students in rural Sindh, Pakistan, to provide credible knowledge and promote better public health practices. A cross-sectional descriptive study was conducted with 196 students from SMBBMU using a self-designed online questionnaire, reviewed by epidemiologists. The questionnaire was based on the WHO's "Coronavirus disease advice for the public: myth busters" and included socio-demographic details along with 24 true/false questions to assess myths and knowledge about COVID-19. Of the participants, 100 were female, 96 were male, with a mean age of 22.40 ± 4.97 years, and 168 (85.7%) were unmarried. The largest group of participants was first-year students ($n = 82$; 41.8%), while social media emerged as the most common source of information ($n = 118$; 60.2%). Overall, 77.21% of the students were aware of the myths and facts surrounding COVID-19. Data analysis was performed using SPSS 24 and showed that the students had significant knowledge about the myths and realities of COVID-19. Public health professionals must disseminate such knowledge nationwide using social media and other accessible platforms.

Keywords: COVID-19, Students, Universities, Surveys, Questionnaires

Introduction

COVID-19 was first identified in Wuhan, China, in December 2019, where it was initially classified as an instance of pneumonia with no known cause. The infection spread rapidly from local to global levels [1-3]. Highly contagious, its primary symptoms include fever, dry cough, fatigue, muscle aches, and difficulty breathing [4]. In China, 18.5% of individuals infected with

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COVID-19 developed severe symptoms, characterized by septic shock, acute respiratory distress syndrome, metabolic acidosis, and coagulation abnormalities [5-7]. Initially referred to as Novel Coronavirus Pneumonia by the Center for Disease Control of the People's Republic of China [8], the virus was traced to a food market in Wuhan [9, 10]. COVID-19 primarily targets the respiratory system [11]. Chinese researchers initially named it 2019-nCoV [12], but it was later renamed SARS-CoV-2 by the International Committee on Taxonomy of Viruses [13]. The World Health Organization (WHO) officially designated it COVID-19 on February 11, 2020 [14]. On January 30, 2020, it was declared the 6th Public Health Emergency of International Concern (SPHEC). However, this was not the first coronavirus outbreak; earlier events included SARS-CoV and MERS-CoV [15, 16].

This marks the third outbreak of the Coronavirus, impacting over 209 countries, including Pakistan [17]. Pakistan reported its first two confirmed instances of COVID-19 on February 26, 2020, signaling the onset of a major crisis [18]. By June 5, 2020, Pakistan had recorded 87,113 confirmed cases and 1,838 deaths. These included 33,536 cases in Sindh, 33,144 in Punjab, 11,890 in KPK, 5,582 in Balochistan, 3,946 in Islamabad, 299 in AJK, and 852 in GB [19]. A national survey revealed a concerning lack of awareness among the public, with many relying on rumors, myths, and inaccurate information instead of factual medical guidance. The survey encompassed participants from all provinces and various socioeconomic backgrounds, exposing widespread misinformation about COVID-19 prevention. Alarming, 82% of respondents believed that performing ablution five times daily could shield them from the virus. Additionally, the survey highlighted the emergence of conspiracy theories questioning the virus's authenticity and significant confusion regarding preventive measures [20].

Given this context, it becomes crucial to assess the misinformation prevalent among university students, as they represent a vulnerable and impressionable demographic. Addressing their understanding is vital for disseminating accurate information about COVID-19 and debunking societal myths. This research specifically aimed to analyze the perceptions, myths, and realities surrounding COVID-19 among medical students in rural

Sindh, Pakistan, to provide them with credible knowledge and promote better public health practices.

Materials and Methods

This descriptive cross-sectional study was conducted among students of Shaheed Mohtarma Benazir Bhutto Medical University (SMBBMU), Larkana, utilizing an online questionnaire created through Google Forms. The questionnaire, designed to explore myths and realities about COVID-19, was initially self-constructed and later reviewed by public health experts and epidemiologists for validation. A pilot study was conducted to pre-test and refine the questionnaire. Its development was guided by the WHO's advisory document, "Coronavirus disease (COVID-19) advice for the public: Myth busters" [21].

The online survey included socio-demographic details such as age, marital status, source of information, gender, and the academic year of the participants. It comprised 24 true/false questions aimed at evaluating students' knowledge and beliefs about COVID-19. To ensure compliance with COVID-19 prevention protocols and social distancing measures, convenience sampling was employed, and a total of 196 students participated voluntarily after providing consent. The questionnaire link was distributed among university students via social media and other digital platforms. Participants were thoroughly briefed on the study's objectives, assured of the confidentiality of their personal information, and required to submit informed consent before completing the survey.

Data collection was performed online, and the responses were analyzed using Statistical Package for Social Sciences (SPSS) version 24.0. Results were presented as ratios and percentages to summarize the findings.

Results and Discussion

A total of 196 students participated in this study, comprising 100 females (51%) and 96 males (49%). The average age of the respondents was 22.4005 ± 4.97 SD. Most participants, 168 (85.7%), were unmarried, while 27 (13.8%) were married, and 1 (0.5%) was divorced. The largest group of respondents consisted of first-year students ($n = 82$, 41.8%), followed by second-year students ($n = 36$, 18.4%), fifth-year students ($n = 40$, 20.4%), fourth-year students ($n = 21$, 10.7%), and third-year students ($n = 17$, 8.7%).

Students reported obtaining information about COVID-19 from various sources. Social media was the most frequently cited source ($n = 118$, 60.2%), followed by internet search engines ($n = 38$, 15%), television (6.3%), family members (2%), friends (0.8%), print media (0.4%), and other sources (6.3%), as outlined in **Table 1**.

When asked about their knowledge of COVID-19, 91.8% of participants correctly identified that individuals with the virus can recover with supportive care. Additionally, 62.8% were aware that thermic scanners are unable to diagnose COVID-19, as they only detect fever. Furthermore, 86.7% recognized that there is currently no medication confirmed to treat or prevent COVID-19.

While various trials are ongoing, 76.5% of participants correctly indicated that adding peppers to soups or other dishes neither prevents nor cures COVID-19. However, it was emphasized that maintaining hydration, eating a balanced diet, exercising regularly, and ensuring sufficient sleep are recommended for overall health. Additionally, 83.2% acknowledged that COVID-19 is not transmitted by houseflies, as no supporting evidence or data has been presented to date.

Regarding the use of chemicals, 72.4% of respondents were aware that spraying or applying bleach or other antiseptics on the body is not effective against COVID-19 and can be harmful, as these substances contain toxic components that may cause serious harm if ingested. Similarly, 88.8% understood that consuming substances such as isopropyl alcohol, ethyl alcohol, or bleach does not provide protection against COVID-19 and can pose significant health risks.

The misconception that mobile networks, such as 5G/4G, spread COVID-19 was refuted by 81.1% of students, who correctly stated that the virus is not transmitted through radio waves or mobile signals. A total of 68.9% knew that exposure to sunlight or high temperatures above 25 °C does not prevent coronavirus infection. Furthermore, 77.6% of participants were aware that contracting

COVID-19 does not mean lifelong infection, as recovery is possible.

When asked about self-diagnosis, 65.8% of respondents correctly stated that being able to hold one's breath for ten seconds or more without discomfort is not a reliable indicator of being free from COVID-19 or other respiratory diseases. They also acknowledged that laboratory testing is the most accurate way to diagnose the virus. Additionally, 61.2% of participants recognized that COVID-19 can spread in humid and hot climates, while 94.9% incorrectly believed that snow and cold weather could eliminate the virus.

Hot showers were correctly identified by 67.9% of students as ineffective in preventing COVID-19, while 86.7% recognized that mosquito bites do not transmit the virus, as no evidence has supported this claim. A total of 70.4% correctly stated that hand dryers are not effective in killing the coronavirus. Similarly, 78.6% noted that ultraviolet light should not be used on skin or hands, as it may lead to eye damage or skin irritation.

Regarding vaccines, 82.1% of participants correctly identified that vaccines designed to prevent pneumonia do not protect against COVID-19. Only 43.9% were aware that rinsing the nose with saline does not prevent infection with the virus. Meanwhile, 67.9% correctly stated that consuming garlic does not prevent COVID-19, as no scientific evidence supports this claim.

A total of 92.3% correctly indicated that the coronavirus does not exclusively affect older individuals, while 92.9% knew that younger people are also at risk of infection. Furthermore, 63.3% of respondents correctly stated that antibiotics are not effective against COVID-19, as they only target bacterial infections. Finally, 95.4% understood that no specific antiviral drugs have been confirmed to prevent or treat COVID-19.

Overall, 77.21% of participants provided accurate responses to the questionnaire, as summarized in **Table 2**.

Table 1. Descriptive statistics of study participants (N = 196)

Variable	Result
Gender	
Male	96 (49%)
Female	100 (51%)
Age (Mean $\pm$ SD) (years)	22.4005 $\pm$ 4.97

Marital status	
Single	168 (85.7%)
Married	27 (13.8%)
Divorced	1 (0.5%)
Participation of students	
First-year	82 (41.8%)
Second-year	36 (18.4%)
Third-year	17 (8.7%)
Fourth-year	21 (10.7%)
Fifth-year	40 (20.4%)
Source of information	
Social media	118 (60.2%)
Internet search engine	38 (15%)
Television	16 (6.3%)
Families	5 (2%)
Friends	2 (0.8%)
Print media	1 (0.4%)
Other sources	15 (6.3%)

Table 2. Questions regarding the myths and realities of COVID-19

Description	Frequency (%)
The majority of individuals infected with COVID-19 eventually recover from the illness.	180 (91.8%)
Thermal scanners are incapable of identifying COVID-19.	123 (62.8%)
Currently, there are no approved medications available for the treatment or prevention of COVID-19.	170 (86.7%)
Including peppers in soups or various dishes does not prevent or cure COVID-19.	150 (76.5%)
Houseflies do not transmit COVID-19.	163 (83.2%)
Applying bleach or other antiseptics on your body cannot protect you from COVID-19 and could pose serious health risks.	142 (72.4%)
Drinking propenyl alcohol, ethyl alcohol, or bleaching agents does not prevent or cure COVID-19 and can be extremely dangerous.	174 (88.8%)
COVID-19 cannot be transmitted through 5G or 4G mobile networks.	159 (81.1%)
Exposure to sunlight or temperatures exceeding 25 °C does not prevent the onset of coronavirus illness.	135 (68.9%)
It is possible to recover from coronavirus illness, as contracting the new coronavirus does not imply that it will remain with you permanently.	152 (77.6%)
The ability to hold your breath for 10 seconds or longer without coughing or experiencing discomfort does not confirm the absence of coronavirus illness or any other respiratory disease.	129 (65.8%)
The COVID-19 virus is capable of spreading in regions with hot and humid climates.	120 (61.2%)
Cold temperatures and snowy conditions eradicate the novel virus.	186 (94.9%)
Taking a hot shower does not prevent the novel coronavirus illness.	133 (67.9%)
The coronavirus cannot be transmitted through mosquito bites.	170(86.7%)

Hand dryers play a significant role in removing the novel coronavirus.	138 (70.4%)
Ultraviolet lights should not be used to disinfect hands or other areas of the skin.	154 (78.6%)
Vaccines against pneumonia preserve against the novel coronavirus	161 (82.1%)
Regularly washing your nose with saline does not help prevent infection with the new coronavirus.	86 (43.9%)
Eating garlic helps reduce the risk of infection with the novel coronavirus.	133 (67.9%)
The coronavirus primarily impacts older individuals.	181 (92.3%)
Younger individuals are not affected by the coronavirus.	182 (92.9%)
Antibiotics are effective in preventing and treating the novel coronavirus.	124 (63.3%)
There are no specific medications available to prevent or treat the novel coronavirus.	187 (95.4%)
Total Percentage	77.21%

Following the emergence of the novel coronavirus, it has rapidly spread worldwide, with the WHO declaring it a global public health emergency [22]. The full scope of COVID-19 remains unclear [23], but common symptoms include dry cough, pneumonia, fever, and difficulty breathing. To date, no vaccine or antiviral treatment has been developed. This cross-sectional survey aimed to examine the myths and misconceptions surrounding COVID-19 among students at SMBB Medical University. The current study provides an overview of these misunderstandings among university students at SMBB Medical University in Larkana, Sindh, Pakistan, and to the best of our knowledge, it is the first research of its kind to assess the prevalence of such myths in Pakistani university students. The findings reveal that most students were well-informed about COVID-19 and correctly identified the myths and misconceptions, aligning with similar research conducted in countries such as India, Vietnam, Jordan, and China, where participants also demonstrated strong knowledge about the virus [24-28].

A similar study conducted among healthcare professionals in Pakistan to evaluate their knowledge, attitudes, and behaviors toward COVID-19 found comparable outcomes, with healthcare workers showing considerable awareness about the virus [29]. However, when contrasting these results with a study done in Bangladesh on university students, it was observed that the knowledge about COVID-19 was either low or moderate among the students there [30]. In the present study, the majority of participants gathered their information about COVID-19 from social media, aligning with findings from another study in Pakistan, which also reported healthcare workers using social

media for COVID-19 information [31]. Similarly, a separate study in Pakistan indicated that pharmacists relied on social media for COVID-19 updates. On the other hand, university students in a different study used both literature and media for their COVID-19 information, and like our findings, they were aware of the symptoms and the lack of an available vaccine [32, 33].

Although only one hundred ninety-six students participated in this survey, expanding the study to a larger group would provide more comprehensive insights into the myths and facts surrounding COVID-19. Given the contagious nature of COVID-19, medical personnel remain at significant risk, even when patients are asymptomatic.

Conclusion

The students demonstrated a solid understanding of the myths and realities surrounding COVID-19. Therefore, public healthcare professionals must disseminate this knowledge across the country using social media and other available platforms.

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Ethics Statement: Data collection was carried out via an online questionnaire with informed consent from participants.

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