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# Knowledge, Attitude, and Perception of Covid-19 Vaccinations in Physiotherapy Students of Pakistan - A Cross-Sectional Survey

**Okasha Anjum[1], Hajra Ameer Shaikh[2], Syeda Wajeeha Raza Zaidi[1], Rabeiya Tazeem[1]**

*Indus University[1], Bahria University[2]*

*Corresponding Email: hajraameer90@gmail.com*

## Abstract

**Background:** COVID-19 has been identified as a deadly pandemic, and the vaccine is framed to be the most effective solution. Evidence reveals that medical students are a reliable source of health information, such as vaccination. Therefore, this survey aimed to examine the Knowledge, Attitude and Perception (KAP) of COVID-19 vaccinations in physiotherapy students of Pakistan.

**Methodology:** This survey included 500 physiotherapy students from different provinces of Pakistan. Participants aged between 18 to 35 years who had internet access were included. The data was collected using an online Google questionnaire consisting of four sections (socio-demographic, knowledge, attitudes, and perceptions). Descriptive statistics for frequency and percentage were run using the SPSS software version 26.

**Results:** The findings revealed that physiotherapy students have good knowledge of COVID-19 vaccinations, and 96.4% are sure about their effectiveness. Most respondents, i.e., 57%, have a positive attitude towards vaccine safety, and 69.6% believed that without vaccination, it is impossible to stop its spread. However, 64.2% perceived that COVID-19 vaccinations have side effects.

**Conclusion:** The results suggest that the healthcare authorities should work on awareness regarding COVID-19 vaccinations so that the KAP can be improved and the disease can be eradicated.

***Keywords***

*Attitude, Knowledge, Physiotherapy, Vaccination.*

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## Introduction

COVID-19, an illness based on the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-2), specifically impacts individuals with chronic underlying conditions, including immunological deficiencies, heart diseases, respiratory ailments, and diabetes[1]. As per the World Health Organization (WHO), evidence suggests that fever, tiredness, sore throat, and cough are COVID-19's most typical symptoms, associated with shortness of breath, whereas some experience the loss of sense of smell and taste[2]. It is an infectious illness that spreads throughout various countries, raising concerns for world health per the Pan American Health Organization's (PAHO) epidemiological report published on January 16, 2020.

The struggle for COVID-19 knowledge, treatment, and vaccination against its proliferation and disastrous effects has been in progress since its outbreak[3]. The literature indicates the lack of a particular therapy for COVID-19, which has led to investigating other therapies, including blood thinners and corticosteroids, to try to lessen the disease's consequences[4]. WHO marked vaccines as the most potent tool for public health. In addition to advising vaccination to achieve herd immunity, the WHO lists necessary COVID-19 preventions, such as wearing masks, observing social distancing, and refraining from crowded areas. Prior research has indicated geographical disparities in the general public's awareness and perspectives on pandemics[5]. Many research centers are engaged in ongoing research projects to find certain medicinal compounds that may successfully cure the illness[6].

More than 100 COVID-19 vaccines are undergoing diverse testing and development phases. While rare adverse events like anaphylaxis and thrombotic incidents that result in fatalities are occasionally reported, the vaccines are generally thought to be safe despite these incidents. After balancing the pandemic's risk and severity, WHO has approved their use, especially for the most vulnerable groups. As a result, many nations have launched extensive vaccination campaigns for their society[7].

A distinct level of receptivity often characterizes the acceptance of novel medical interventions within the public sphere. Vaccine hesitancy stands as a significant concern among populations, influenced by multiple factors, including public perception, communication strategies, and the prevailing media landscape, all known to contribute to this hesitancy[8]. A sizable segment of the public still has doubts about the COVID-19 vaccinations because of worries about unanticipated side effects and a lack of clarity regarding the duration of vaccine efficacy[9].

Pakistan, a country with five provinces and a population estimated at 242.4 million according to the Worldometer, reported the first instance of COVID-19 on February 26, 2020[10]. Since then, Pakistan has recorded 1,581,936 COVID-19 positive cases and 30,664 deaths, till October 17 2023. Authorities have taken proactive steps to stop the virus's spread, such as offering free vaccinations to individuals, launching awareness campaigns, and more[11]. A recent study conducted in Uganda among medical students unveiled decreased COVID-19 vaccination acceptance, lower levels of subjective assessments of the potential concerns linked to COVID-19, and the majority relying on false information from various social platforms[12]. However, the KAP and subtle nature of COVID-19 significantly impact the vaccination process. The vaccines for COVID-19 got approval for public usage worldwide in 2021[13-14]. Evidence shows that medical students are the trusted source of health care information for society, like vaccination[15]. Therefore, this survey intended to assess the KAP of COVID-19 vaccinations in Physiotherapists in Pakistan. This study will be crucial in highlighting the current awareness trends of COVID-19 vaccinations so that healthcare authorities can take necessary actions to increase awareness to eradicate the disease.

## Methodology

### *Study Design*

Cross-sectional survey.

### *Duration, Site and Population of Study*

This cross-sectional survey was undertaken on Physiotherapy students across all the provinces of Pakistan from January to July 2022.

### *Sample Size Calculation*

Since no published study addresses the KAP of physiotherapy students regarding COVID-19 vaccination in Pakistan. Therefore, we have used the best possible estimation, i.e. 50%. The calculation of sample size is determined by employing Cochran's formula:

$$n = \frac{Z^2\ p*q}{e^2}$$

"n" represents the number of samples. The value of "z" is 1.96 at a 95% confidence level. **"**p" represents the prevalence estimate, equal to 50% or 0.5. (This is the most accurate approximation as no study has been found). The value of "q" is equal to one minus the value of p. "e" represents the proportion of sampling error (.05).

$$n = \frac{((1.96)2\ (0.5)\ (0.5))}{(0.05)^2}$$

$$n = 385$$

However, to increase the effect size the sample size of 500 was taken.

### *Sampling Technique*

Data was collected using the convenience sampling technique.

### *Selection Criteria*

- ***Inclusion Criteria***
  - Physiotherapy students aged 18 to 35 years.
  - Physiotherapy college/university student.
  - A resident of Pakistan.
  - Voluntary interest in participating in the study.

- ***Exclusion Criteria***
  - Lack of internet access.

### *Data Collection Procedure*

After the approval of synopsis by ERC (Ref#: ERC-CIRS-2021-23) data collection was started. The 16-items questionnaire was incorporated using a Google Form, among Physiotherapy students across five provinces of Pakistan. The questionnaire consists of information and four sections (sociodemographic, knowledge: 6 items, attitudes: 6 items, and perceptions: 6 items) based on pertinent queries from earlier literature[16–19]. The sociodemographic section included age, marital status, family type, etc. Furthermore, a pre-validated questionnaire was utilized, i.e., Cronbach alpha of knowledge items =0.68 and attitudes items = 0.77. 20.

### *Ethical Considerations*

The Ethical Review Committee granted the ethical approval. (Ref#: ERC-CIRS-2021-23).

### *Data Analysis*

IBM SPSS software for Windows version#26 was utilized for the data analysis. The descriptive statistics were run to ascertain the KAP of physiotherapy students regarding COVID-19 vaccination in Pakistan.

## Results

The survey was completed by 500 physiotherapy students from Pakistan's five provinces. Most of the responses, i.e., 79.4%, were from Sindh, and the lowest response rate recorded was from Balochistan, 1.4% (Figure-1).

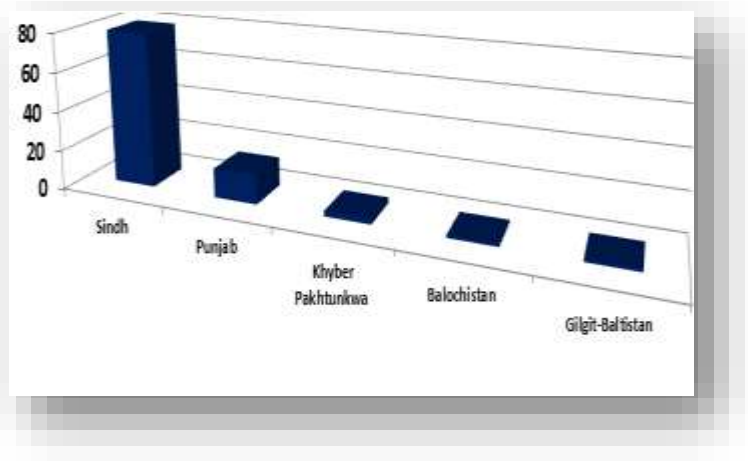


***Figure-1 Province-wise distribution of the Physiotherapy students across Pakistan (N=500)***

Most of the participants, i.e., 445 (89%), were 18-23 years old. Female participation was higher than male participation, i.e., 84.4% and 15.6% respectively. A total of 326 participants were living in the nuclear family system. All 500 participants received the necessary vaccination during their lifetime (Figure-2).

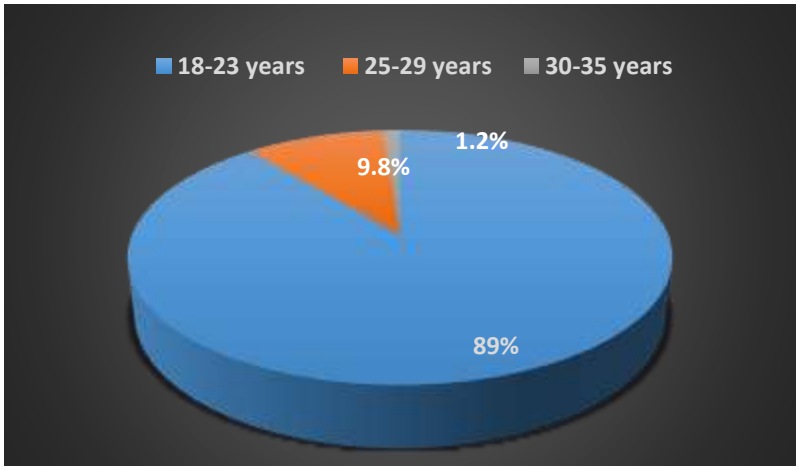


***Figure-2 Age of the participants (N=500)***

It was found that all 500 participants knew about the COVID-19 vaccination. However, 482 (96.4%) were sure about its effectiveness. Participants who believed that vaccinations induce allergy and autoimmune responses were 356 and 347, respectively. However, 386 participants agreed that using too many vaccinations is risky (Table-1).

| Table-1 Knowledge of physiotherapy students about the COVID-19 vaccine (N=500) | |
|---|---|
| **Variables** | **n (%)** |
| **Do you have knowledge on the COVID-19 vaccine's efficacy?** | |
| *Yes* | 482 (96.4%) |
| *No* | 18 (3.6%) |
| **Is using immunizations in excess dangerous?** | |
| *Yes* | 386 (77.2%) |
| *No* | 114 (22.8%) |
| **Do allergic responses go up after the vaccination?** | |
| *Yes* | 356 (71.2%) |
| *Don't Know* | 144 (28.8%) |
| **Is there a rise in autoimmune illnesses after the vaccination?** | |
| *Yes* | 347 (69.4%) |
| *Don't Know* | 153 (30.6%) |
| **How did you first learn about COVID-19 vaccines?** | |
| *Mass media* | 185 (37%) |
| *Social media* | 156 (31.2%) |
| *Internet* | 90 (18%) |
| *Newspaper* | 6 (1.2%) |
| *Family members and relatives* | 63 (12.6%) |

It was discovered that 57% of the respondents had a favorable opinion of the vaccine's safety. The importance of COVID-19 vaccination was agreed upon by 80.6%. A total of 69.6% of the participants firmly believed that without vaccination, it is impossible to stop the spread of COVID-19. Hence, they believed that vaccines should be distributed fairly, regardless of any discrimination (87.6%) (Table-2). According to 415 participants, everyone should get vaccinated especially health workers (68.6%). However, 321 individuals (64.2%) thought the COVID-19 vaccine had harmful effects (Table-3).

| Table-2 Attitude of physiotherapy students towards COVID-19 vaccine (N=500) | |
|---|---|
| **Variables** | **n (%)** |
| **The recently developed COVID-19 vaccinations are secure.** | |
| *Disagree* | 34 (6.8%) |
| *Undecided* | 181 (36.2%) |
| *Agree* | 285 (57%) |
| **The COVID-19 vaccination is crucial for us.** | |
| *Disagree* | 22 (4.4%) |
| *Undecided* | 75 (15%) |
| *Agree* | 403 (80.6%) |
| **If the COVID-19 vaccination is made accessible in Pakistan, I will take it without hesitation.** | |
| *Disagree* | 25 (5%) |
| *Undecided* | 56 (11.2%) |
| *Agree* | 419 (83.8%) |
| **I will promote and advocate for the immunization of my friends, family, and other relatives.** | |
| *Disagree* | 22 (4.4%) |
| *Undecided* | 48 (9.6%) |
| *Agree* | 430 (86%) |
| **Vaccination is indispensable for reducing the occurrence of COVID-19.** | |
| *Disagree* | 78 (15.6%) |
| *Undecided* | 74 (14.8%) |
| *Agree* | 348 (69.6%) |
| **The COVID-19 vaccination ought to be given to everyone equally.** | |
| *Disagree* | 22 (4.4%) |
| *Undecided* | 40 (8%) |
| *Agree* | 438 (87.6%) |

| Table-3 Perception of physiotherapy students towards COVID-19 vaccine (n=500) | |
|---|---|
| **Variables** | **Frequency (%)** |
| **Do you believe the recently developed COVID-19 vaccination might have adverse effects?** | |
| *Yes* | 321 (64.2%) |
| *No* | 179 (35.8%) |
| **Do you believe that the COVID-19 pandemic can be eliminated without the use of vaccines if everyone in society continues to practice preventative measures?** | |
| *Yes* | 197 (39.4%) |
| *No* | 303 (60.6%) |
| **Who, in your opinion, ought to have received vaccinations?** | |
| *Those who have not yet contracted COVID-19* | 52 (10.4%) |
| *COVID-19 affected individuals* | 25 (5%) |
| *Recovering recently from COVID-19* | 8 (1.6%) |
| *Everyone* | 415 (83%) |
| **Who do you believe should receive their vaccinations first?** | |
| *Public generally* | 111 (22.2%) |
| *Workers in healthcare* | 343 (68.6%) |
| *Public and private employee* | 22 (4.4%) |
| *Teacher and Student* | 21 (4.2%) |
| *Businessman* | 2 (0.4%) |
| **If the government did not supply the vaccination free of charge, would you still purchase it?** | |
| *Yes* | 302 (60.4%) |
| *Don't know* | 198 (39.6%) |

## Discussion

The WHO has formally identified COVID-19 as a pandemic[21]. Because of the contagious nature of the disease and its worldwide repercussions, vaccination is the most potent weapon and effective preventive strategy against COVID-19, especially for frontline healthcare workers. Therefore, this survey intended to study the KAP of Physiotherapy students towards COVID-19 vaccination across Pakistan.

This survey reveals that most medical students knew about the effectiveness of COVID-19 vaccination and its side effects, such as autoimmune and allergic responses. However, contrary findings were observed in the study conducted in Israel by Maayan et al., 2021 in which 25% of the students indicated a deficiency in their understanding of the vaccine[22]. Kelekar et al. claimed that knowledge and awareness should be included in the academic curriculum of medical students[23]. The survey findings revealed that most physiotherapy students believe that COVID-19 vaccination is essential and should be available to all and fairly distributed among all members of society. However, half of them were unsure about COVID-19 vaccination safety. Similar findings were observed by Lujain et al. in 2022, concluding that the primary causes of vaccine hesitancy include less confidence, insufficient knowledge, and not surety about its effectiveness[24].

According to this survey, the physiotherapy students perceived that vaccination had side effects and that COVID-19 could be eradicated if strict safety measures were implemented throughout Pakistan. Most participants believed everyone should get vaccinated; however, healthcare workers should be the first. A study by Vitoria emphasized that students who have assurance in public health were willing to get vaccinated and are less concerned about its harmful effects[25]. This study aligns with the research conducted by Haimanot et al. in 2021 within the adult demographic of Ethiopia. The research highlighted a satisfactory level of KAP regarding COVID-19[26]. Physiotherapy students deal with the complexity of clinical tasks and fight as frontline healthcare workers in every pandemic. Therefore, the attitudes of physiotherapy students regarding COVID-19 vaccination, including both acceptance and hesitancy, have been the subject of several studies, shedding light on the factors influencing their attitudes. Research has indicated that vaccine hesitancy is prevalent among healthcare students, including physiotherapy students, with varying levels of acceptance reported in different regions. For example, a study in the United Arab Emirates assessed attitudes, perspectives, and symptoms experienced by physiotherapy students before and after receiving COVID-19 vaccinations, highlighting the importance of understanding their perspectives[27]. Similarly, a study conducted in India discovered vaccine hesitancy among medical students, highlighting the necessity to tackle the determinants that impact their attitudes towards COVID-19 vaccination[28].

Furthermore, research conducted in Egypt examined the perception of COVID-19 threats and compliance with preventive practices implemented by medical students following their vaccination against COVID-19, emphasizing the significance of understanding students' behaviors post-vaccination[29]. Furthermore, a global systematic review identified varying prevalence rates of vaccine reluctance against COVID-19 among students, highlighting the need for customized interventions to address this issue[30]. Furthermore, a multidisciplinary investigation conducted on healthcare students highlighted the necessity of thorough vaccination instruction to tackle vaccine hesitancy among students[31].

Conversely, research conducted in China emphasized the significance of tackling vaccine hesitancy among teachers and students, underscoring the necessity for focused interventions to

enhance vaccine acceptance in educational environments[32]. Collectively, these studies underscore the importance of understanding the KAP of COVID-19 vaccination in physiotherapy students and the need for tailored interventions to address vaccine hesitancy and promote acceptance within this population. As per the current literature, this research is the first to address the knowledge, attitudes, and perceptions of physiotherapy students from all five provinces of Pakistan with an optimal sample size. Some limitations, such as the convenient sampling technique, may introduce selection bias, and because the data was gathered online, there may have been biases in the study's conclusions. Aside from having such constraints, this survey is critical in providing indicators for health policymakers about health education and COVID-19 vaccination awareness. Future research with a large sample size and evaluating the effects of various interventions requires time.

## Conclusion

In conclusion, it is imperative for physiotherapy students to recognize the crucial role of general awareness in promoting COVID-19 vaccination uptake. By prioritizing education and communication, healthcare authorities can empower individuals to make informed decisions about vaccination, ultimately contributing to the eradication of COVID-19. This underscores the urgency for physiotherapy students to engage in public health initiatives aimed at improving KAP regarding COVID-19 vaccinations, thereby playing a vital role in the global effort to control and eradicate the disease.

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***Conflict of Interest***

*None.*

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*None.*

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**AUTHORS' CONTRIBUTION**

The following authors have made substantial contributions to the manuscript as under:

**Conception or Design:** Anjum O, Shaikh HA

**Acquisition, Analysis or Interpretation of Data:** Tazeem R

**Manuscript Writing & Approval:** Zaidi WR, Shaikh HA

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.