



2023

Section: Psychiatry

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Samra, Mohammed Faris El-metwally; Abuhegazy, Hesham Mahmoud Mohamed; and El-Deeb, Mohamed Mohamed Abd-elkhalik (2023) "Psychological variables, beliefs and barriers associated with willingness of healthcare providers to be vaccinated against COVID-19 virus," *Al-Azhar International Medical Journal*: Vol. 4: Iss. 7, Article 5.

DOI: <https://doi.org/10.58675/2682-339X.1907>

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Psychological Variables, Beliefs and Barriers Associated with Willingness of Healthcare Providers to be Vaccinated Against COVID-19 Virus

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Abstract

Background: The coronavirus disease 2019 (COVID-19) vaccine appears to be a necessary component to halt the spread of the pandemic. HCWs are among the groups with the greatest risk of contracting an infection.

Aim and objectives: Aim of the study was to investigate beliefs and barriers related to COVID 19 vaccine and to correlate it with anxiety, depression and stress levels between vaccinated and unwilling to be vaccinated healthcare providers.

Patients and methods: This was a comparative cross-sectional analytical study between vaccinated and unvaccinated healthcare workers.

Results: As regard relation between being vaccinated or not and DASS-21, 7.5% of total participants shows moderate expression, 14.8% shows mild expression and 77.8% shows normal expression with significant higher in normal expression participants among vaccinated group vs non-vaccinated.

Conclusion: In contrast to expectations, there was a significant amount of reluctance and resistance to the COVID-19 vaccine. Notably, baseline acceptance for immunisation is still low in many nations, and public trust in immunisation is also low. Concerns about safety, efficacy, and potential side effects were the main obstacles to the COVID-19 vaccine's acceptability, which is in line with research conducted in other nations across various population groups. The most popular information source for COVID-19 and vaccination was social media.

Keywords: Barriers, Beliefs, COVID-19 virus, Healthcare providers, Psychological, Vaccination, Willingness

1. Introduction

The 2019 new Corona virus (COVID-19), which was originally identified in December 2019, has been rapidly spreading over the world. This virus has severe health effects, including death, overburdened healthcare systems, and instability in the economy. Understanding how the COVID-19 pandemic affects mental health is urgently needed in order to prevent the development of severe mental disorder as a secondary effect.¹

The World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of worldwide significance on January 30, 2020.² On March 11, they made the first global pandemic

declaration since they did so for the 2009 H1N1 influenza pandemic.³ Over 5.2 million COVID-19 cases and over 330,000 confirmed deaths were reported as of May 24, 2020, respectively.⁴ People have been strongly urged to keep their distance from others, cover their faces, and frequently sanitise their hands.⁵

Certain segments of the population may experience mental health issues including anxiety and sadness as a result of the uncertainties surrounding this epidemic.⁶

A sense of apathy in daily activities is thought to characterise depression. It is hypothesised that individuals unvaccinated against a pandemic will experience anxiety, worry, and depression because

Accepted 3 January 2023.
Available online 7 November 2023

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<https://doi.org/10.58675/2682-339X.1907>

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to a fear of the unknown (in this case, the coronavirus). A timely response to mental health during the COVID-19 epidemic has been proposed for by Xiang et al.⁷ while keeping in mind the concerns about psychological discomfort expressed around the globe. In addition, the World Health Organization 8 published public interest guidelines to address potential psychological problems.

Aim of the study was to investigate beliefs and barriers related to COVID-19 vaccine and to correlate it with anxiety, depression and stress levels between vaccinated and unwilling to be vaccinated healthcare providers.

2. Patients and methods

This was a comparative cross-sectional analytical study between vaccinated and unvaccinated healthcare workers. Inclusion criteria: Healthcare workers with the following criteria: Between 18 and 65 years of age, both males and females, without major psychiatric illness, such as schizophrenia, without chronic physical illness affecting anxiety and depression and willing to participate in the study. Exclusion criteria: Less than 18 years old or more than 65, individuals with major psychiatric illness, individuals with chronic physical illness that may affect anxiety and depression and refusal to participate in the study.

Study Procedure: Participants in the study were subjected to: Measurement instrument for vaccination acceptance: It discussed the following information: Individual traits: gender, age, place of residence, family income, and socioeconomic standing. Additionally, it asked about one's impression of their own health, the likelihood that they would contract COVID-19, whether they had already contracted the virus or knew someone who had, whether they were vaccinated against the seasonal flu, and where they learned about COVID-19. Last but not least, the degree of acceptance or reluctance toward the COVID-19 vaccine, opinions about the vaccination (16 questions), (13 questions) Perceived barriers to and motivations for immunisation, as well as preferred COVID-19 vaccine type 20 students who were not included in the final study's analysis were used to calculate the Cronbach's alpha, which was then used to assess the questionnaire form's internal consistency. To prevent partial answers and missing data, the majority of the questions were designated as obligatory answers (Saied et al., 2021). The Depression-Anxiety-Stress-21 Scale (DASS-21) to compare the levels of depression, anxiety, and stress among healthcare workers (Iovibond et al., 1995)

2.1. Statistical analysis

Data were entered into the computer and assessed using the IBM SPSS software package, version 20.0 (IBM Corp., Armonk, New York). Number and percentage were utilised to describe qualitative data. The distribution's normality was assessed using the Kolmogorov-Smirnov test. The range (minimum and maximum), mean, standard deviation, median, and interquartile range were used to characterise quantitative data (IQR). At the 5% level of significance, the results' significance was evaluated.

The used tests were: χ^2 test: To contrast various groupings using categorical variables. Mann Whitney test: used to compare two groups under study for quantitative variables with aberrant distributions.

Table 1. Distribution of the studied cases according to demographic data (n = 400).

Demographic data	Number (%)
Age (years)	
Min.–Max.	26.0–31.0
Mean \pm SD.	28.38 \pm 1.13
Median (IQR)	28.0 (28.0–29.0)
Sex	
Male	321 (80.2)
Female	79 (19.8)
Residence	
Urban	400 (100.0)
Marital status	
Single	332 (83.0)
Married	66 (16.5)
Widowed	1 (0.3)
Divorced	1 (0.3)
Having children	
No	340 (75.0)
Yes	60 (15.0)
Living with family	
Yes	357 (89.2)
No	43 (10.8)
History of chronic diseases	
No	355 (88.8)
Yes	45 (11.2)
Having a family member who suffers from a chronic disease	
No	104 (26.0)
Yes	296 (74.0)
living with a geriatric	
No	140 (35.0)
Yes	260 (65.0)
vaccinated	
No	120 (30.0)
Yes	280 (70.0)
Occupation	
Pharmacist	3 (0.8)
Physical therapist	1 (0.2)
physician	315 (78.8)
Nurse	79 (19.8)
Dentist	2 (0.4)

IQR, Inter quartile range, SD: Standard deviation.

3. Results

Table 1.

A total of 400 participants with mean age 28.3 years, 80.2% were males and 19.8% were females, all from urban, 11.2% of participants having chronic disease, 74% of them had a member in family suffering from chronic disease, 65% living with geriatric, 70% of participants were vaccinated and 30% non vaccinated, 0.8% were pharmacy, 0.2% physical therapy, 78.8% medicine, 19.8% nursing and 0.4% dentistry [Fig. 1](#).

26% of participants had no contact with covid cases on the other hand 74% had a contact with covid cases [Table 2](#).

48% of cases evaluated their health condition as very good, 44.5% good, 7.5% neutral, with significant higher in participants with very good health condition among vaccinated participants vs non vaccinated 29% evaluate rate of the level of knowledge as very good, 36.5% good, 34.5% neutral, with significant higher in participants with very good knowledge among vaccinated participants vs non vaccinated 41% of participants were confirmed case of covid on medical examinations, 28.8% diagnosed with coronavirus but infection was not confirmed, 23.8% have not had corona, 6.5% had no idea, with significant higher of confirmed cases with medical examination among vaccinated cases vs non vaccinated, [Table 3](#).

21.5% of participants said that the reason for concerning about corona vaccine is the Lack of sufficient information about the side effects, 8.5% due to the Lack of sufficient information about the vaccine and 70% were not worried about getting vaccinated with insignificant differences between vaccinated and non vaccinated group [Table 4](#).

As regard Relation between being vaccinated or not and DASS-21, 7.5% of total participants shows moderate expression, 14.8% shows mild expression and 77.8% shows normal expression with significant higher in normal expression participants among vaccinated group vs non vaccinated.

4. Discussion

Compared to the general population, Chinese healthcare workers (HCWs) shown a high level of acceptance for the COVID-19 vaccination. Only 20% of HCWs in the US prefer not to take the new COVID-19 vaccine, according to a different survey. Further research among South Carolina college students revealed that the students' decision to obtain the COVID-19 vaccination was influenced by the information resources that were available to them.⁸

It is imperative to give truthful and precise information on the safety and effectiveness of vaccines in order to increase consumer trust, particularly among hesitant and sceptical people. A COVID-19 vaccine is also expected to face major public opposition given the widespread practise of avoiding influenza vaccination in Saudi Arabia at the moment.⁹

The main aim of this study was to investigate beliefs and barriers related to COVID-19 vaccines and to correlate it with anxiety, depression and stress levels between vaccinated and unwilling to be vaccinated healthcare providers. This comparative cross-sectional analytical study was conducted including 400 vaccinated and unvaccinated healthcare workers. The duration of the study ranged from 6 to 12 months.

As regard demographic data; A total of 400 participants with mean age 28.3 years, 80.2% were

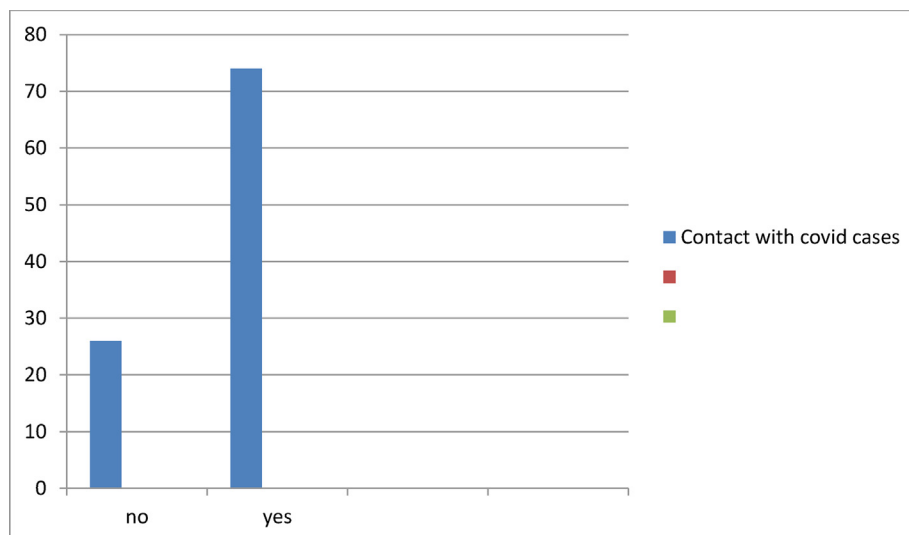


Fig. 1. Distribution of the studied cases according to Contact with covid cases.

Table 2. Relation between Being vaccinated or not and choosing the right evaluation (n = 400).

Choose the right evaluation	Total (n = 400) Number (%)	Are you vaccinated or not		Test of Sig.	P
		No (n = 120) Number (%)	Yes (n = 280) Number (%)		
How do you evaluate your health condition in general?					
Neutral	30 (7.5)	30 (25.0)	0 (0.0)	$\chi^2 = 112.435^a$	<0.001 ^a
Good	178 (44.5)	70 (58.3)	108 (38.6)		
Very good	192 (48.0)	20 (16.7)	172 (61.4)		
How would you rate the level of your knowledge					
Neutral	138 (34.5)	30 (25.0)	108 (38.6)	$\chi^2 = 35.865^a$	<0.001 ^a
Good	146 (36.5)	70 (58.3)	76 (27.1)		
Very good	116 (29.0)	20 (16.7)	96 (34.3)		
Have you been diagnosed with Coronavirus in the previous period?					
I have no idea	26 (6.5)	0 (0.0)	26 (9.3)	$\chi^2 = 139.931^a$	<0.001 ^a
No, I have not had corona	95 (23.8)	17 (14.2)	78 (27.9)		
Yes, but infection is not confirmed	115 (28.8)	83 (69.2)	32 (11.4)		
Yes, a confirmed case of medical examinations	164 (41.0)	20 (16.7)	144 (51.4)		
Has someone in your close circle (such as a family member or close friend) been infected with the corona virus in the previous period?					
I have no idea	26 (6.5)	0 (0.0)	26 (9.3)	$\chi^2 = 153.313^a$	<0.001 ^a
No, I have not had corona	45 (11.3)	17 (14.2)	28 (10.0)		
Yes, but infection is not confirmed	115 (28.8)	83 (69.2)	32 (11.4)		
Yes, a confirmed case of medical examinations	214 (53.5)	20 (16.7)	194 (69.3)		
What is your percentage of risk of exposure to the infection with the Corona virus?					
Min. – Max.	3.0–7.0	3.0–6.0	3.0–7.0	U = 14451.0 ^a	0.021 ^a
Mean ± SD.	5.07 ± 1.25	4.79 ± 1.05	5.19 ± 1.31		
Median	5.0	5.0	5.0		

χ^2 , Chi square test; SD, Standard deviation; U, Mann Whitney test.

P: P value for comparing between the studied categories.

^a Statistically significant at $P \leq 0.05$.

males and 19.8% were females, all from urban, as regard marital status 83% were single, 16.5% married, 0.3% widow or divorced. 75% have no children on the other hand 15% having children, 89.2% living with families, 10.8% living alone. 11.2% of participants having chronic disease, 74% of them had a member in family suffering from chronic disease, 65% living with geriatric. 70% of participants were vaccinated and 30% non-vaccinated, 0.8% was pharmacy, 0.2% physical therapy, 78.8% medicine, 19.8% nursing and 0.4% dentistry. 7.5% had low social and economic level, 64.3% have medium level, and 28.2% had high level, Average monthly

income insufficient in 28%, barely sufficient without saving in 43.8%, sufficient with enough spare in 28.2%. 26% of participants had no contact with covid cases on the other hand 74% had a contact with covid cases.

While on the study of Adejumo *et al.*,¹⁰ The survey included 1470 health professionals in all. With a mean age of 406 years, about 38.2% of the participants were in the 31 to 40 age range. 88.2% of the population had a tertiary degree, 61.5% were married, and 64.3% were men. Sixty-two percent (65.2%) of the respondents had less than ten years of work experience. The present study showed that 48% of

Table 3. Relation between being vaccinated or not and the reasons for the participants' concerns/worries about the new corona virus vaccine (n = 400).

	Total (n = 400) Number (%)	Are you vaccinated or not		χ^2	P
		No (n = 120) Number (%)	Yes (n = 280) Number (%)		
What are the reasons for your concerns/worries about the new corona virus vaccine					
You are not worried about getting vaccinated	280 (70.0)	0 (0.0)	280 (100.0)	400.0 ^a	<0.001 ^a
Lack of sufficient information about the vaccine	34 (8.5)	34 (28.3)	0 (0.0)		
Lack of sufficient information about the side effects	86 (21.5)	86 (71.7)	0 (0.0)		

χ^2 : Chi square test.

P: P value for comparing between the studied categories.

^a Statistically significant at $P \leq 0.05$.

Table 4. Relation between being vaccinated or not and DASS-21 (n = 400).

DASS-21	Total (n = 400) Number (%)	Are you vaccinated or not		χ^2	P
		No (n = 120) Number (%)	Yes (n = 280) Number (%)		
Expression					
Normal	311 (77.8)	57 (47.5)	254 (90.7)	109.069 ^a	<0.001 ^a
Mild	59 (14.8)	33 (27.5)	26 (9.3)		
Moderate	30 (7.5)	30 (25.0)	0 (0.0)		
Anxiety					
Normal	271 (67.8)	17 (14.2)	254 (90.7)	232.832 ^a	<0.001 ^a
Mild	99 (24.8)	73 (60.8)	26 (9.3)		
Moderate	30 (7.5)	30 (25.0)	0 (0.0)		
Stress					
Normal	214 (53.5)	40 (33.3)	174 (62.1)	83.344 ^a	<0.001 ^a
Mild	156 (39.0)	50 (41.7)	106 (37.9)		
Moderate	30 (7.5)	30 (25.0)	0 (0.0)		

χ^2 , Chi square test.

P: P value for comparing between the studied categories.

^a Statistically significant at $P \leq 0.05$.

cases evaluated their health condition as very good, 44.5% good, 7.5% neutral, with significant higher in participants with very good health conditions among vaccinated participants vs non vaccinated. 29% evaluate rate of the level of knowledge as very good, 36.5% good, 34.5% neutral, with significant higher in participants with very good knowledge among vaccinated participants vs non vaccinated.

Our results were supported by the study of Saied *et al.*, 2021 As they noted, the majority of respondents (95.4%) reported having an ordinary to a very good health state. More over half of the students who reported having a poor health condition were hesitant to receive the immunisation (53.8%; 42 out of 78), while only 33.3%; 6 out of 18 students who reported having a very poor health status, and the difference between the groups was statistically significant ($P = 0.001$). In total, 38.7% of respondents said there was an 80% chance of contracting COVID-19, 26.2% said there was a 60% chance, and 25.6% said there was a 40% chance. In the Barry *et al.* trial, 1058 (70%) of the 1512 participants were willing to get the COVID-19 vaccination when it became available. Most respondents (795; 52.6%) said they would be willing to obtain a vaccine as soon as feasible. However, 35.6% said they would rather wait a few months before having one, and 11.8% said they would never consent to receiving any conceivable vaccine. In their study, Magadmi and Kamel¹¹ shown that participants were unsure about the safety (55.4%) and efficacy (56.1%) of a potential COVID-19 immunisation when it became available. The majority, though (46%), concurred that having the vaccine is the most effective way to prevent COVID-19 problems. In conclusion, just one-third of the participants expressed support for the COVID-19 immunisation.

In the study we have in our hands, 70% of participants believe there is sufficient evidence on the safety of corona vaccination, while 30% don't, with a statistically higher among the group that received the vaccination vs. those who did not. 35% of participants prefer the Sputnik V vaccine made in Russia, 11.4% prefer Sinovac made in China, 17.9% prefer Moderna, 24.3% prefer Pfizer, and 11.4% have no idea what the differences are between the other types. However, in Saied *et al.* investigation, 's 14 The most common reasons given for not getting the COVID-19 vaccine were ignorance of the vaccine's potential side effects (possibly 74.2% and unknown 56.3%), lack of knowledge of the vaccine itself (72.8%), the cost of the vaccine (if it is not free), and lack of trust in the immunisation source (55.1%). The total knowledge score in Huynh *et al.*'s study's was 7.281.56. (0–9). With all $P < 0.05$, the univariate analysis revealed significant differences in the groups' intentions to receive vaccination as well as their knowledge of COVID-19, including the existence of a vaccine and the severity of the disease. In addition, Mubarak *et al.*¹² found that 81.6% of participants believed they knew enough about COVID-19. Furthermore, 68.4% of respondents think Saudi society has access to enough information concerning COVID-19. 90.4% of participants overall expressed confidence in the health system's capacity to control this pandemic. According to the current study, 40.5% think it is crucial to trust in the corona vaccine, 13.3% think it is somewhat crucial, and 29.5% think it is really essential. Our findings were supported by Saied *et al.*'s study, Results revealed that most respondents (90.5%) thought the COVID-19 vaccine was essential, that everyone in the neighbourhood should have it when it became available (92.6%), and that immunisation should be required for the general public (69.7%), especially for healthcare

workers (HCWs; 92.1%). Despite this, a sizable percentage of students (67.9%) and instructors (56.5%, respectively) believed vaccination was the most effective method of halting the COVID-19 epidemic. The current study's findings indicate that 30% of participants regretfully refuse immunisation, 26.5% accept immunisation with some reluctance, and 43.5% accept immunisation without any resistance. Our findings were corroborated by a study by El-Elimat et al.,¹³ which discovered that 37.4% of the subjects were in favour of obtaining COVID-19 immunisations, 36.3% were against it, and 26.3% were neutral. However, Saied et al.'s study indicated that only 34.9% of students (746 out of 2133) were in the acceptance group, 45.7% were in the reluctant group (974 out of 2133), and 19.4% were in the rejection group (413 out of 2133). A smaller percentage of Egyptian HCW acknowledged resistance (32.4%) and a higher level of acceptance (45.9%).¹⁴

The higher prevalence of co-morbidities or chronic illnesses among the medical staff may be the cause of the age-related disparity (older participants appear to accept more). 14 of the participants in the Saied et al. study stated that they were concerned about the safety, effectiveness, and adverse effects of the immunisations. HCWs from Egypt said they had similar concerns.¹⁴

These results may help to explain why, despite the fact that the students understand the value of the COVID-19 vaccine and support making vaccinations required, they still exhibit significant reluctance. This reluctance is likely a result of uncertainty regarding the safety of vaccinations, unknown potential side effects, and inaccurate information obtained from social media. Huynh et al research's¹⁵ also found that there were significant differences between the groups of participants who were willing and unwilling to receive vaccinations in each of the four vaccination beliefs subscales (susceptibility and severity, benefits, barriers to vaccination, and cues to action), as well as knowledge of the severity of illness (all $P < 0.05$). Our outcomes showed that with irrelevant contrasts between the inoculated and non-immunized gatherings, 21.5% of members credited their anxiety about the Crown immunization to an absence of data in regards to its secondary effects, 8.5% to an absence of data in regards to the actual immunization, and 70% to an absence of worry about getting immunization. Our outcomes upheld a concentrate by Saied et al.,¹⁶ which tracked down that absence of information on the immunization's expected secondary effects (possibly 74.2% and obscure 56.3%), obliviousness of the actual antibody (72.8%), an expense hindrance in the event that the immunization is not free (68.0%), and absence of

confidence in the inoculation source (55.1%) were the most often detailed boundaries to getting the Coronavirus vaccine. Mubarak et al.¹² additionally found that the most regular reasons given by the individuals who were not intending to get the immunization were stresses over its incidental effects (72.2%), the conviction that they did not need the antibody since they as of now pursue great cleanliness routines like cleaning up (40.7%), and absence of certainty that the immunization will forestall the contamination (12.9%). Most understudies who expressed they could never get the immunization (53.7%) said they did not plan to. As indicated by before concentrates by Sharon et al.¹⁷ and Di Genaro et al.,¹⁸ finding out about Coronavirus immunization, by and large, had both great and pessimistic effects since bogus data expanded individuals' mental feelings of anxiety while right data diminished those levels.¹⁹ Stress was demonstrated to be the most widely recognized (48.1%) emotional well-being result of the Coronavirus pandemic in the concentrate by Bareeqa et al., trailed by despairing (26.9%) and concern (21.8%). Female cutting-edge medical care experts displayed higher paces of nervousness and sorrow than the overall Chinese populace, as indicated by subgroup research.

4.1. Conclusion

In contrast to expectations, there was a significant amount of reluctance and resistance to the COVID-19 vaccine. Notably, baseline acceptance for immunisation is still low in many nations, and public trust in immunisation is also low. Concerns about safety, efficacy, and potential side effects were the main obstacles to the COVID-19 vaccine's acceptability, which is in line with research conducted in other nations across various population groups. The most popular information source for COVID-19 and vaccination was social media

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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