

# BMJ Open Acceptance of COVID-19 vaccines in Palestine: a cross-sectional online study

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## ABSTRACT

**Introduction** In Palestine (West Bank and Gaza), there have been more than 320 890 known cases of COVID-19, resulting in 3452 deaths. The detrimental effects of the virus can be seen in the nation's health, economy and government operations, leading to radical uncertainty that is exacerbated by the absence of any definitive treatment or vaccines. The level of knowledge about and trust in treatment and vaccination varies worldwide. This study aims to assess the willingness of Palestinians to receive a COVID-19 vaccine and their knowledge about such vaccines.

**Methods** An online survey of adults over 18 years old (n=1080) was conducted in Palestine in October 2020. Using multivariate logistic regression, we identified correlates of participants' willingness to get a COVID-19 vaccine.

**Results** We found that about 63% of participants were willing to get a COVID-19 vaccine. However, acceptance varied with the specific demographic variables that were investigated. Women, married participants and those aged 18–24 years are more likely to take the vaccine. Further, participants with good knowledge about the vaccine and its side effects are more willing to get the vaccine.

**Conclusion** The availability of a safe and effective COVID-19 vaccine in Palestine is crucial to decrease the burden of COVID-19 morbidity and mortality. In addition, to ensure a high vaccination rate, health awareness campaigns should target those who are not willing to get the vaccine, especially those who are more vulnerable and the elderly.

## INTRODUCTION

The novel coronavirus (COVID-19) was first detected in Wuhan in 2019, signalling the start of a severe global pandemic.<sup>1</sup> Since then, COVID-19 has infected over 107 532 472 people and caused 2 354 212 deaths worldwide. As of April 2021, COVID-19 has infected 317 961 Palestinians and caused 3406 deaths.<sup>2</sup> This has resulted in serious consequences for world health and the global economy and forced governments to operate in a context of radical uncertainty, as there were previously no definitive treatments or vaccines.<sup>3</sup> Consequently, many countries have acknowledged these tremendous problems and are cooperating to improve the situation. Vaccines for

## Strengths and limitations of this study

- This study is the first to estimate the willingness of people to receive a COVID-19 vaccine in Palestine.
- This study has a good and high participation rate.
- This study is a cross-sectional online survey; therefore, it was subjective to participation bias.

COVID-19 are an important health measure to help bring the pandemic under control, and several promising vaccines have already been approved and are considered safe and effective. Several countries have started the process of vaccinating their populations using Pfizer/BioNTech, Moderna, Sputnik V, Sinopharm and Oxford-AstraZeneca vaccines.<sup>4 5</sup> Since the virus poses a significant threat to public health, vaccination is an essential intervention; however, public perception toward the uptake of COVID-19 vaccines has not yet been determined.

Determann and colleagues found that disease and vaccination programmes influence respondents' receptiveness to vaccines during a pandemic, which affects vaccine uptake.<sup>6</sup> Previous studies have shown that the general population's intention to accept or decline a vaccine is influenced by their perception of personal risk, attitude toward vaccination and ethnicity. Kourlaba and colleagues reported that the acceptance rate for vaccination was 57.7% in Greece,<sup>7</sup> while a behavioural model developed by Schwarzer and colleagues predicted that 29.4% (95% CI: 28.6% to 30.2%) of the French population of working age would refuse the COVID-19 vaccine.<sup>8</sup>

The medical services in Palestine are fragmented and are provided by the Palestinian Ministry of Health (PMOH), non-governmental health institutions, military medical services, United Nations (UN) Relief and Works Agency, and the private sector.<sup>9</sup> The number of medical cadres registered in various medical associations in Palestine has reached 31 873, of which 24 432 (76.6%)

are in the West Bank and 7441 (23.3%) are in the Gaza Strip.<sup>10</sup> Thus, after 1 year of battling with COVID-19, the healthcare system in Palestine is facing a crisis due to the spread and increase in the infection rate of COVID-19. Hospitals, which are already operating beyond their capacity, are being overloaded by new cases of COVID-19. Health providers are being faced with extraordinary levels of demand, as hospital beds are now essentially filled by COVID-19 cases and the number of infections is increasing.<sup>11</sup> To decrease the incidence of COVID-19, lower the demand for intensive care and reverse the course of the COVID-19 epidemic, a large portion of the population must be vaccinated within a short period. In the absence of prophylaxis through a vaccine, the surge in cases will likely continue.

Saied and colleagues observed that acceleration in the rate of vaccine development compared with the past had aroused speculation about whether or not such vaccines are safe to use.<sup>12</sup> Furthermore, they noted that the side effects of the new COVID-19 vaccinations are still unknown. People on social media are providing misleading information about the new vaccines. Consequently, the WHO has administered a serious warning that this epidemic could turn into an 'infodemic'. This refers to a phenomenon that occurs when people start spreading debunked news and false information based on anecdotal evidence.<sup>13</sup> Qattan and colleagues stated that people need to accept the vaccine to implement a vaccination programme successfully; this requires that the government build more public trust in emergency-released vaccines.<sup>14</sup>

Effective control of the COVID-19 pandemic via widespread vaccination will require achieving sufficient herd immunity among the population; for COVID-19, this requires a vaccination rate of about 67%.<sup>15</sup> However, due to growing uncertainty and confusion among the general population regarding vaccines' effectiveness and safety, it is unclear whether the availability of vaccines will be met with a high uptake. Information is currently lacking about people's acceptance of COVID-19 vaccines and the factors that may influence their acceptance.<sup>16</sup> Therefore, this study aims to assess the willingness of the general public to get a COVID-19 vaccine in Palestine (West Bank and Gaza). This information will be crucial for planning future campaigns to improve vaccine uptake among the Palestinian population.

## METHODS

We conducted a cross-sectional web-based study to assess the willingness of the Palestinian population to receive a COVID-19 vaccine. Participation was limited to those who were 18 years or older and residing in Palestine. Data were gathered anonymously online through a self-administered questionnaire designed using Google Forms distributed on different venues on social media such as Facebook and WhatsApp platforms, universities and different unions' websites. We anticipated a minimum sample of

384 responses using the 95% CI for population, and we limited the study by 2 months, and accepted any response in this period. Participants (n=1080) were informed that participation was voluntary and confidential, and they can stop completing the survey at any time.

## Data collection

The survey items were developed based on information about the COVID-19 pandemic provided by the WHO (online supplemental file 1).<sup>17</sup> A pilot testing was conducted on 46 participants who were excluded later from the study. Furthermore, face validity with three Palestinian experts in the field of epidemiology was used to ensure the integrity of the questionnaire. The survey questionnaire consisted of several sections: demographic information, health status, and knowledge about the nature of the COVID-19 virus, treatment and prevention modalities. In addition, the survey collected information about priority groups that should be vaccinated and participants' willingness to be vaccinated.

Demographic data included questions about gender, age, geographical region, locality (city, village or camp), marital status, educational level, employment status, income, smoking status and disease status.

We then assessed items that might affect participants' willingness to be vaccinated, their knowledge regarding treatment modalities and prevention of COVID-19, and if such knowledge affected their willingness to be vaccinated. We asked participants whether certain medications would be of benefit to treat or prevent COVID-19 infection. Furthermore, participants were asked about the role of plasma from recovered patients with COVID-19 in treating the infection. We also asked whether the vaccine would be safe or not once it is available and whether the vaccine would provide immunity against COVID-19 instead of transmitting the infection.

We also assessed the participants' knowledge of which priority groups should be vaccinated, and acceptance of COVID-19 vaccination was assessed by asking them about their willingness to get the vaccine once it becomes available in Palestine. In addition, trust in the vaccination process was evaluated by asking them if they would accept having their children vaccinated and if they trusted the scientists involved in COVID-19 vaccine development.

Knowledge and attitude scores were calculated by adding up the number of correct answers (ie, the first answer option) for each question. Each variable was given equal weight, and each score was recoded into three equal groups.

## Statistical analysis

Analysis of the data was completed using IBM SPSS V.26.0. Descriptive measures are presented as frequencies and percentages. Pearson's  $\chi^2$  was used for the comparison of categorical variables. Bivariate analysis was conducted to measure the correlation between participants' willingness to get a COVID-19 vaccine and other independent variables. Multivariate logistic regressions were also

performed to identify the variables associated with vaccine acceptance among Palestinians. Results were considered significant when the p value was less than 0.050. CIs (95% CI) and ORs were also determined.

### Patient and public involvement

No patients were involved in this study.

## RESULTS

### Participant characteristics

Of the 1080 participants, half were young adults between the ages of 25 and 44 years (49.9%) and more than half were female (58.6%). The majority of participants came from the south of West Bank (46.8%) and lived in the city (59.7%). Just over half of the participants were married (53.2%) and the vast majority had bachelor's degrees (66.0%). About 41.1% of the participants were healthcare workers. Sixty-six and a half per cent of participants never smoked, and only 18.3% of participants had at least one medical disease. Less than half of the participants had been tested for COVID-19 (40.9%). Only 14.1% reported a personal history of COVID-19 infection, while 94.9% reported a history of COVID-19 infection among family members (table 1).

### Willingness to get a COVID-19 vaccine

Around 63% of participants were willing to get a COVID-19 vaccine (table 2). Based on participants' knowledge about the nature of the COVID-19, participants who were willing to be vaccinated were those who considered COVID-19 to be a real virus (69%), compared with those who believed it was fabricated (39%) and those who did not know what COVID-19 was (39%,  $p<0.001$ ). Participants who thought they were susceptible to COVID-19 infection were willing to take the vaccine (65%), compared to those who did not or those who did not know if they were susceptible respectively (48%, 41%,  $p = 0.012$ ). Also, participants who thought that following the safety measures (wearing a mask correctly and keeping a safe physical distance) were more willing to receive the vaccine, compared to those who did not believe in such measures and those who did not know (face masks: 66%, 39%, 31%,  $p<0.001$ ; distancing: 65%, 45%, 47%,  $p=0.007$ ) (online supplemental table 1).

The bivariate analysis measuring participants' willingness to be vaccinated against COVID-19 and their knowledge about the treatment and prevention of COVID-19 infection showed that those who were willing to get the vaccine were those who thought that it would be safe (91%), compared with those who did not think it would be safe (28%) and those who did not know (66%,  $p<0.001$ ). Participants were also more willing to get the vaccine if they thought that the vaccine would not cause side effects (79%), compared with those who thought that it would (55%) and those who did not know (72%,  $p<0.001$ ); if they thought that the vaccine should be given every year (74%), compared with those who thought it should not

**Table 1** Participant characteristics (n=1080)

Characteristic	n (%)
<b>Gender</b>	
Female	633 (58.6)
Male	447 (41.4)
<b>Age groups (years)</b>	
18–24	368 (34.1)
25–34	311 (28.8)
35–44	228 (21.1)
>45	173 (16.0)
<b>Geographical region</b>	
Middle of West Bank	295 (27.3)
North of West Bank	147 (13.6)
South of West Bank	535 (46.8)
Gaza Strip	103 (9.5)
<b>Locality</b>	
City	645 (59.7)
Village	357 (33.1)
Camp	78 (7.2)
<b>Marital status</b>	
Married	575 (53.2)
Not married	505 (46.8)
<b>Educational level</b>	
Diploma or less	114 (10.6)
Bachelor	713 (66.0)
Higher education	253 (23.4)
<b>Employment status</b>	
Health professionals	444 (41.1)
Non-health professionals	636 (58.9)
<b>Income</b>	
Excellent	84 (7.8)
Very good	325 (30.1)
Good	496 (45.9)
Less than good	99 (9.2)
Bad	43 (4.0)
Very bad	33 (3.1)
<b>Smoking status</b>	
Cigarette only	158 (14.6)
Shisha only	140 (13.0)
Cigarette and shisha	29 (2.7)
Electronic cigarette	9 (0.8)
Ex-smoker	26 (2.4)
Never smoke	718 (66.5)
<b>Having at least one underlying medical disease</b>	
Yes	198 (18.3)
No	882 (81.7)
<b>Personally reported with COVID-19</b>	

Continued



**Table 1** Continued

Characteristic	n (%)
Yes	152 (14.1)
No	721 (66.9)
Do not know	204 (18.9)
Reported any family member(s) infected with COVID-19	
Yes	1022 (94.9)
No	0 (0.0)
Do not know	55 (5.1)
Had tested for COVID-19	
Yes	440 (40.9)
No	637 (59.1)

(53%) and those who did not know (60%,  $p<0.001$ ); and if they believed that the COVID-19 vaccine would not transmit the infection instead of providing immunity (79%), compared with those who believed that it would (38%) and those who did not know (52%,  $p<0.001$ ). Moreover, those who did not think that vitamins (such as vitamin C) and plasma from recovered patients with COVID-19 would be of benefit for preventing infection were more willing to get the vaccine compared with those who answered 'yes' or 'do not know' (vitamins: 73%, 57%, 66%,  $p<0.001$ ; plasma: 68%, 66%, 58%,  $p=0.024$ ). Participants' knowledge about the utility of antiviral or antimalarial medications to treat the infection, and giving the vaccine separately from other vaccines, did not significantly affect their willingness to receive the vaccine (online supplemental table 2).

Participants were in favour of distributing vaccines to all age groups, as well as pregnant women and the immunocompromised (online supplemental table 3). Participants' attitudes toward getting a COVID-19 vaccine (table 3) were also assessed based on their trust in vaccination. Participants who were willing to receive the vaccine were those who agreed to give their children the vaccine (94%,  $p<0.001$ ), trusted scientists and researchers (88%,  $p<0.001$ ), thought that the period in which the vaccine was developed was sufficient (80%,  $p<0.001$ ), and thought that information regarding vaccine development should be clear and accessible (74%,  $p<0.001$ ), compared with those who disagreed or did not know (online supplemental table 4).

In the multivariate logistic regression (table 4), participants were more likely to be willing to receive a COVID-19 vaccine if they were married (OR=4.48, 95% CI: 1.668 to 12.044), living in a camp (OR=2.36, 95% CI: 0.701 to 7.945) or living in Gaza (OR=7.13, 95% CI: 1.679 to 30.303). Participants who had high positive attitude scores toward vaccination would be more likely to accept the vaccine (OR=110.62, 95% CI: 28.329 to 431.0), along with those who had moderate knowledge scores regarding which priority groups should be vaccinated (OR=1.60, 95% CI: 0.768 to 3.318), and those who had

**Table 2** Bivariate analysis correlates of getting a COVID-19 vaccine for participant characteristics

Willingness to take the vaccine (n=889)			
Characteristic	Yes n (%)	No n (%)	P value
Gender			
Female	296 (58.3)	212 (41.7)	<0.001
Male	268 (70.3)	113 (29.7)	
Age groups (years)			
18–24	219 (73.5)	79 (26.5)	<0.001
25–34	161 (61.0)	103 (39.0)	
35–44	106 (56.1)	83 (43.9)	
>45	78 (56.5)	60 (43.5)	
Geographical region			
Middle of West Bank	139 (57.4)	103 (42.6)	<0.001
North of West Bank	83 (68.6)	38 (31.4)	
South of West Bank	270 (61.2)	171 (38.8)	
Gaza Strip	72 (84.7)	13 (15.3)	
Urban/rural settings			
City	341 (64.8)	185 (35.2)	0.53
Village	184 (62.0)	113 (38.0)	
Camp	39 (59.1)	27 (40.9)	
Marital status			
Married	280 (68.3)	193 (33.6)	0.005
Not married	284 (59.2)	132 (40.8)	
Educational level			
Diploma or less	56 (57.7)	41 (42.3)	0.25
Bachelor	380 (65.3)	202 (34.7)	
Higher education	128 (61.0)	82 (39.0)	
Employment status			
Health professionals	247 (64.8)	134 (35.2)	0.46
Non-health professionals	317 (62.4)	191 (37.6)	
Income			
Excellent	45 (64.3)	25 (35.7)	0.005
Very good	166 (63.6)	95 (36.4)	
Good	272 (66.2)	139 (33.8)	
Less than good	36 (43.9)	46 (56.1)	
Bad	27 (75.0)	9 (25.0)	
Very bad	18 (62.1)	11 (37.9)	
Smoking status			
Cigarette only	88 (65.7)	46 (34.3)	0.069
Shisha only	87 (71.3)	35 (28.7)	
Cigarette and shisha	13 (61.9)	8 (38.1)	
Electronic cigarette	6 (100.0)	0 (0.0)	
Ex-smoker	17 (73.9)	6 (26.1)	
Never smoke	353 (60.5)	230 (39.5)	
Having at least one underlying medical disease			

Continued

**Table 2** Continued

Willingness to take the vaccine (n=889)			
Characteristic	Yes n (%)	No n (%)	P value
Yes	92 (62.2)	56 (37.8)	0.72
No	472 (63.7)	269 (36.3)	
Personally reported with COVID-19			
Yes	82 (65.1)	44 (34.9)	0.82
No	381 (63.6)	218 (36.4)	
Do not know	101 (61.6)	63 (38.8)	
Reported any family member(s) infected with COVID-19			
Yes	540 (64.1)	303 (35.9)	0.10
No	0 (0.0)	0 (0.0)	
Do not know	24 (47.8)	22 (52.2)	
Had tested for COVID-19			
Yes	242 (64.0)	136 (36.0)	0.76
No	322 (63.0)	189 (37.0)	

high trust scores for vaccination were also more willing to get the COVID-19 vaccine (OR=11.80, 95% CI: 4.092 to 34.006).

Participants were less likely to be willing to get a COVID-19 vaccine if they were male (OR=0.86, 95% CI: 0.425 to 1.754), aged 45 years and older (OR=0.11, 95% CI: 0.024 to 0.472), had a bachelor's degree (OR=0.65, 95% CI: 0.124 to 1.629) or were non-healthcare professionals (OR=0.85, 95% CI: 0.412 to 1.767), and participants who had a high knowledge score regarding the nature of the COVID-19 (OR=0.18, 95% CI: 0.065 to 0.492) and who had a moderate score toward the treatment and prevention of COVID-19 infection (OR=0.74, 95% CI: 0.332 to 1.629).

## DISCUSSION

This study aimed to evaluate the acceptance of COVID-19 vaccines among Palestinians. Around 63% of the study population showed a positive attitude toward vaccination against COVID-19. Our results were consistent with similar studies exploring the willingness of the population to be inoculated with the COVID-19 vaccine in Saudi Arabia (64.7%), China (72.5%) and the USA (80%).<sup>18</sup> As vaccines become available, it will be necessary to monitor changes in people's willingness and how that will affect vaccine uptake, since people's intentions do not always reflect their actual behaviour.<sup>16</sup> Having a better understanding of the factors influencing people's decisions to accept an emergency-released vaccine can help authorities to manage the pandemic better.<sup>18</sup>

Many studies have shown that willingness to receive a vaccine is linked to several factors, including the risk of being infected with the virus; the severity of the virus; the safety, efficacy and adverse outcomes of the vaccine; a lack of knowledge about the nature of vaccine-preventable

diseases; and misconceptions and misinformation related to the vaccine.<sup>18 19</sup>

This study has highlighted several factors that may increase or decrease people's willingness to receive the vaccine. Perceived risk of becoming infected was a positive predictor of the intention to be vaccinated.<sup>18 19</sup> Our results were consistent with those of previous studies and showed that 65% of participants believed that they could be susceptible to COVID-19 infection.

Although wearing a mask correctly and keeping a safe social distance are crucial for reducing the spread of COVID-19, the Centers for Disease Control and Prevention (CDC) has stated that these measures alone will not be sufficient to stop the spread of the virus. Thus, using COVID-19 vaccines combined with these measures will be vital for stopping the pandemic.<sup>20</sup> As reported in our study, participants who understood the importance of the measures mentioned above were more willing to get the vaccine. Therefore, governments and health agencies should do more to try and increase public awareness of the effectiveness of these measures.

According to the CDC, none of the existing COVID-19 vaccines will cause people to become infected with COVID-19. Furthermore, they confirmed that all the vaccines had been carefully assessed through clinical trials. COVID-19 vaccines have also been shown to decrease the seriousness of infection even if a person does become infected.<sup>20</sup> This supports our finding where most participants shared the same belief regarding the safety and effectiveness of the vaccine. Some participants who were reluctant to get the vaccine were worried about the side effects of the novel vaccine and its impact on their overall health. However, most of our study participants believed that the vaccine would not cause any serious side effects.

The WHO has stated that every human being anywhere in the world who could benefit from a safe and effective COVID-19 vaccine should quickly have access to one.<sup>21</sup> Some of Palestine's neighbouring countries such as Jordan and Egypt have started their vaccination campaigns,<sup>22</sup> and Palestinians also have the right to have fair and equal access to necessary healthcare, including COVID-19 vaccines, to face the burden of the pandemic, especially that physical implications such as path of the wall that has taken through West Bank and long-lived siege in Gaza that resulted in isolation from healthcare and making the vulnerable people in the society inaccessible to health services.<sup>9</sup> However, according to a correspondence published in *The Lancet*, the UN has stated that the majority of Palestinians are unlikely to have access to the available vaccines in the near future.<sup>23</sup>

As of March 2021, the limited vaccines that were available to Palestinians were used to cover the first phase of vaccination according to the priorities suggested by a study conducted in China; this includes maintaining necessary services such as healthcare and national security. The second stage will then aim to reduce the number of severe cases, thereby decreasing the number of hospitalisations, admissions to intensive care units and deaths. As a third

**Table 3** Attitude of study participants toward getting a COVID-19 vaccine

	Willing to take the vaccine (n=889)		
Question	Yes n (%)	No n (%)	P value
Would you agree to participate in clinical trials for testing efficacy of COVID-19 vaccine?			
Agree	211 (91.7)	19 (8.3)	
Disagree	291 (50.4)	286 (49.6)	<0.001
Do not know	62 (75.6)	20 (24.4)	
Would you agree to pay to get the vaccine, if not provided freely?			
Agree	381 (94.1)	24 (5.9)	
Disagree	123 (30.4)	282 (69.6)	<0.001
Do not know	60 (75.9)	19 (24.1)	
Would you get the vaccine from another country which either produces it, or has it, if not available in Palestine?			
Agree	234 (92.5)	19 (7.5)	
Disagree	181 (39.8)	274 (60.2)	<0.001
Do not know	149 (82.3)	32 (17.7)	
Would you advise people to get the COVID-19 vaccine?			
Agree	468 (91.9)	41 (8.1)	
Disagree	16 (7.8)	189 (92.2)	<0.001
Do not know	80 (54.3)	95 (45.7)	
Would you take the COVID-19 vaccine, if it has mild side effects?			
Agree	437 (90.9)	44 (9.1)	
Disagree	76 (22.8)	257 (77.2)	<0.001
Do not know	51 (68.0)	24 (32.0)	
Score of attitude toward COVID-19 vaccine*			
(0)	21 (8.3)	232 (91.7)	
(1)	61 (44.5)	49 (55.5)	
(2)	104 (85.2)	18 (14.8)	<0.001
(3)	157 (96.3)	6 (3.7)	
(4)	162 (95.3)	8 (4.7)	
(5)	71 (100.0)	0 (0.0)	
Low score	21 (8.3)	232 (91.7)	
Moderate score	153 (65.9)	79 (34.1)	<0.001
High score	157 (96.3)	6 (3.7)	

\*The first option in each question above is considered the true answer; (0) represents no true answers answered by the participants, (1) represents one true answer answered by the participant and so on. Low score (represents the first 1/3 of the answers), moderate score (represents the second 1/3 of the answers) and high score (represents the third 1/3 of the answers).

stage, vaccination could be extended to the general population to decrease and ultimately stop the burden of viral transmission and symptomatic infections.<sup>24</sup>

According to Yang and colleagues,<sup>24</sup> the groups that should be prioritised to receive the COVID-19 vaccine are essential workers, which include healthcare providers as a top priority (according to the Palestinian Central Bureau of Statistics, the number of healthcare providers in Palestine in 2019 was 45 379 workers, including nurses, Medical Doctors, dentists and pharmacists); high-risk individuals who may experience severe or fatal outcomes; and those who contribute to viral transmission, especially those who

work to maintain daily activities such as transportation, food services, law enforcement and civil services.

Furthermore, the healthcare system in Palestine remains submissive to Israel, with the Israeli state holding ultimate authority over healthcare budgets, border crossings, building permits, and pharmaceutical imports and exports. Consequently, MOH hospitals are basic compared with hospitals within Israel and lack many resources, especially specialist personnel, while the doctors practising in the West Bank have limited opportunities for training and continued professional development due to imposed permit sanctions. Vaccine

**Table 4** Multivariate logistic regression of willingness to get a COVID-19 vaccine

Variable	OR	95% CI	P value
Gender			
Female	1.00		
Male	0.86	0.425 to 1.754	0.68
Age group (years)			
18–24	1.00		
25–34	0.22	0.079 to 0.594	0.003
35–44	0.12	0.031 to 0.468	0.002
>45	0.11	0.024 to 0.472	0.003
Geographical region			
Centre of West Bank	1.00		
North of West Bank	1.47	0.439 to 4.909	0.53
South of West Bank	1.51	0.671 to 3.777	0.32
Gaza Strip	7.13	1.679 to 30.303	0.008
Locality			
City	1.00		
Village	1.02	0.484 to 2.161	0.95
Camp	2.36	0.701 to 7.945	0.17
Marital status			
Not married	1.00		
Married	4.48	1.668 to 12.044	0.003
Educational level			
Diploma or less	1.00		
Bachelor	0.65	0.124 to 1.629	0.22
Higher education	0.85	0.162 to 2.636	0.55
Employment status			
Health professionals	1.00		
Non-health professionals	0.85	0.412 to 1.767	0.67
Knowledge score towards nature of the virus			
Low	1.00		
Moderate	0.51	0.224 to 1.173	0.11
High	0.18	0.065 to 0.492	0.001
Knowledge score towards treatment and prevention			
Low	1.00		
Moderate	0.74	0.332 to 1.629	0.47
High	0.77	0.282 to 2.077	0.60
Knowledge score towards priority groups			
Low	1.00		
Moderate	1.60	0.768 to 3.318	0.21
High	1.23	0.386 to 4.924	0.73
Attitude score towards vaccination			
Low	1.00		
Moderate	13.91	6.042 to 32.041	<0.001
High	110.62	28.329 to 431.0	<0.001
Trust in vaccination score towards vaccination			
Low	1.00		

Continued



Table 4 Continued

Variable	OR	95% CI	P value
Moderate	2.90	1.109 to 7.073	0.029
High	11.80	4.092 to 34.006	<0.001

availability is therefore much lower in Palestine than in Israel.<sup>9</sup> Building a plan to improve acceptance among those who are less willing to receive the vaccine will be crucial, as identified by the study results. Therefore, frontline healthcare providers should be aware of data regarding the safety of the vaccines and advise people to get the vaccine based on solid scientific evidence, as their recommendation and willingness to receive the vaccine are known to be driving factors that could positively affect the people's vaccination intentions.<sup>25 26</sup> Lessons learnt from previous pandemics such as SARS and Middle East Respiratory Syndrome (MERS) suggest that trusted information and guidance from professionals are crucial to controlling the spread of disease.

Our study has shown that higher trust scores were linked to a greater interest in being vaccinated. According to the PMOH's annual health report from 2018, 99.8% of children were given the diphtheria–tetanus (DT) vaccine and oral polio vaccine in the first grade, and 99.5% of children got the DT vaccine in the ninth grade.<sup>10</sup> This shows that Palestinians appreciate and believe in the ability of vaccines to control diseases. In comparison, a cohort study conducted in the USA found that more than 10% of parents reported delaying or refusing vaccinations for their children, also a study was conducted among parents in Turkey showed that they had a low willingness rate to give their children the COVID-19 vaccine.<sup>27 28</sup> Although UK and European populations showed positive attitudes toward vaccination, about 10% still showed distrust in or were unwilling to get vaccines.<sup>29</sup>

Trust in vaccines is strongly associated with compliance with vaccine uptake. Until the sufficient supply of COVID-19 vaccine is available, addressing vaccine hesitancy and building confidence among the population will be vital. This will require direct and clear communication from government officials to provide information about how the vaccine works and its development. Vaccination programmes must address public concerns about the level of vaccine effectiveness and the time needed for protection. The promotion of vaccination programmes should be adopted and encouraged by the leaders of municipalities, religious societies and non-governmental organisations, as well as those in the private sector.<sup>30</sup> Trust in the type of vaccine offered is very important. The scientific debate on which is the most effective vaccine with the least side effects might influence people's willingness to get the vaccine. The influence of the type of vaccine on people's acceptance was not studied in our study, but we are documenting a current observation of people avoiding a certain type of vaccine because of its

side effects. Further research is needed to have a better understanding of people's choices and decisions.

We could not find any recent studies that investigated the 'predictors of vaccine attitudes of Palestinians' and how such attitudes are associated with individuals who are not willing to receive the COVID-19 vaccine, except for one study by Salameh and colleagues that investigated university students' knowledge of and attitude toward COVID-19 and only assessed if they would get the vaccine when it is available.<sup>31</sup>

The results of our study will help the government, policymakers and healthcare professionals to effectively provide informative data during vaccination programmes. However, further research is needed to investigate those who are uncertain or less willing to get the vaccine, since they are considered as a target group for interventions to increase confidence in vaccination.

Our study is the first to estimate the willingness of people to receive a COVID-19 vaccine in Palestine and reflects the positive attitude of Palestinians toward receiving the vaccine, so that it can be used as a guide for future vaccine uptake. Immunisation with a safe and effective COVID-19 vaccine is an important strategy to reduce COVID-19-related morbidity and mortality and to help restore societal functioning. Although vaccines are currently in short supply, the ministry conveys to the population that the vaccine is on its way. Thus, it is important that the population get the vaccine.

Furthermore, to manage those who do not wish to be inoculated, public health authorities need to consider people's concerns about novel vaccines, such as 'personal risk perception and vaccination attitude', and address these concerns through awareness campaigns that aim to educate the public about the vaccine's safety and how it will help mitigate public health risks.<sup>19</sup>

The higher the vaccine acceptance rate, the easier it will be for governments to quickly contain the spread of COVID-19 and better implement health management plans. It will be the responsibility of health agencies to build trust in the COVID-19 vaccine within communities.<sup>32</sup>

This study was the first one in Palestine to estimate the population's acceptance, and so predicting the people's attitudes toward vaccination in order to help the policymakers to put the appropriate measures to face the pandemic. The study was also strengthened by having high participation rate at 1080 participants, especially when the people started to have study fatigue and boredom due to many studies conducted about COVID-19. However, our study might be subjective to certain limitation such as participation bias, since the people



who are interested in the vaccine are the ones to be responding to the survey.

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## REFERENCES

- Wu Y-C, Chen C-S, Chan Y-J. The outbreak of COVID-19: an overview. *J Chin Med Assoc* 2020;83:217–20.
- Palestinian Ministry of Health. CORONAVIRUS - COVID19 surveillance system, 2021. Available: <http://site.moh.ps/index/covid19/>
- Allain-Dupré D, Chatry I, Michalun V, et al. *The territorial impact of COVID-19: managing the crisis across levels of government*. Paris: OECD Publishing, 2020.
- Wouters OJ, Shadlen KC, Salcher-Konrad M, et al. Challenges in ensuring global access to COVID-19 vaccines: production, affordability, allocation, and deployment. *Lancet* 2021;397:1023–34.
- Loo K-Y, Letchumanan V, Ser H-L, et al. COVID-19: insights into potential vaccines. *Microorganisms* 2021;9:605.
- Determann D, Korfage IJ, Lambooi MS, et al. Acceptance of vaccinations in pandemic outbreaks: a discrete choice experiment. *PLoS One* 2014;9:e102505.
- Kourlaba G, Kourkouni E, Maistrelli S, et al. Willingness of Greek general population to get a COVID-19 vaccine. *Glob Health Res Policy* 2021;6:1–10.
- Schwarzinger M, Watson V, Arwidson P, et al. COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics. *Lancet Public Health* 2021;6:e210–21.
- Keelan E. Medical care in Palestine: working in a conflict zone. *Ulster Med J* 2016;85:3–7.
- Palestinian Health Information Center. Health annual report Palestine 2018. Nablus, Palestine: Ministry of health, 2019. Available: [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjazoObzpjwAhXNhf0HHdGACg8QFJAAegQIBBAD&url=https%3A%2F%2Fhealthcluster.org%2Fadmin%2Ffile\\_manager%2Fuploads%2Ffiles%2F1%2FHealth%2520Annual%2520Report%2520Palestine%25202018.pdf&usq=AOvVaw3Z7VYqsRB3Q1Oh\\_Yj4Y8cn](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjazoObzpjwAhXNhf0HHdGACg8QFJAAegQIBBAD&url=https%3A%2F%2Fhealthcluster.org%2Fadmin%2Ffile_manager%2Fuploads%2Ffiles%2F1%2FHealth%2520Annual%2520Report%2520Palestine%25202018.pdf&usq=AOvVaw3Z7VYqsRB3Q1Oh_Yj4Y8cn)
- WHO. Coronavirus disease 2019 (COVID-19) situation report 71, 2021. Available: <https://www.un.org/unispal/document/coronavirus-disease-2019-covid-19-who-situation-report-71/>
- Saied SM, Saied EM, Kabbash IA, et al. Vaccine hesitancy: beliefs and barriers associated with COVID-19 vaccination among Egyptian medical students. *J Med Virol* 2021;93:4280–91.
- WHO. *Behavioral considerations for acceptance and uptake of COVID-19 vaccines: WHO technical Advisory group on behavioral insights and sciences for health*. Geneva: World Health Organization, 2020. <https://apps.who.int/iris/handle/10665/337335>
- Qattan AMN, Alshareef N, Alsharqi O, et al. Acceptability of a COVID-19 vaccine among healthcare workers in the Kingdom of Saudi Arabia. *Front Med* 2021;8:83.
- Randolph HE, Barreiro LB. Herd immunity: understanding COVID-19. *Immunity* 2020;52:737–41.
- Reiter PL, Pennell ML, Katz ML. Acceptability of a COVID-19 vaccine among adults in the United States: how many people would get vaccinated? *Vaccine* 2020;38:6500–7.
- WHO. Coronavirus disease (COVID-19): vaccines, 2020. Available: [https://www.who.int/news-room/q-a-detail/coronavirus-disease-\(covid-19\)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=Cj0K-CQApY6BBhCsARIsAOI\\_GjZGhzsiNOvfv7KkCr10HN2LqknAc-QYZ19OF4IHC7YTV81ehKS1V088aAmG8EALw\\_wcB](https://www.who.int/news-room/q-a-detail/coronavirus-disease-(covid-19)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=Cj0K-CQApY6BBhCsARIsAOI_GjZGhzsiNOvfv7KkCr10HN2LqknAc-QYZ19OF4IHC7YTV81ehKS1V088aAmG8EALw_wcB)
- Nguyen T, Henningsen KH, Brehaut JC, et al. Acceptance of a pandemic influenza vaccine: a systematic review of surveys of the general public. *Infect Drug Resist* 2011;4:197–207.
- Al-Mohaithef M, Padhi BK. Determinants of COVID-19 vaccine acceptance in Saudi Arabia: a web-based national survey. *J Multidiscip Healthc* 2020;13:1657–63.
- CDC. Benefits of getting a COVID-19 vaccine, 2021. Available: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html>
- WHO. COVID-19 vaccines, 2021. Available: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines>
- International Monetary Fund. Transcript of April 2021 middle East and central Asia department press briefing, 2021. Available: <https://www.imf.org/en/News/Articles/2021/04/11/tr041121-transcript-of-april-2021-middle-east-and-central-asia-department-press-briefing>
- Martin S, Arawi T. Ensure Palestinians have access to COVID-19 vaccines. *Lancet* 2021;397:791–2.
- Yang J, Zheng W, Shi H, et al. Who should be prioritized for COVID-19 vaccination in China? A descriptive study. *BMC Med* 2021;19:1–3.
- Gidengil CA, Parker AM, Zikmund-Fisher BJ. Trends in risk perceptions and vaccination intentions: a longitudinal study of the first year of the H1N1 pandemic. *Am J Public Health* 2012;102:672–9.
- Kaplan AK, Sahin MK, Parildar H, et al. The willingness to accept the COVID-19 vaccine and affecting factors among healthcare professionals: a cross-sectional study in turkey. *Int J Clin Pract* 2021;75.
- Glanz JM, Wagner NM, Narwaney KJ, et al. A mixed methods study of parental vaccine decision making and parent-provider trust. *Acad Pediatr* 2013;13:481–8.
- Yilmaz M, Sahin MK. Parents' willingness and attitudes concerning the COVID-19 vaccine: a cross-sectional study. *International Journal of Clinical Practice* 2021;16:e14364.
- Paul E, Steptoe A, Fancourt D. Attitudes towards vaccines and intention to vaccinate against COVID-19: implications for public health communications. *Lancet Reg Health Eur* 2021;1:100012.
- Lazarus JV, Ratnan SC, Palayew A, et al. A global survey of potential acceptance of a COVID-19 vaccine. *Nat Med* 2021;27:225–8.
- Salameh B, Basha S, Basha W. Perceptions, and prevention practices among Palestinian university students during the COVID-19 pandemic: questionnaire-based survey. *Inquiry* 2021;58:0046958021993944.
- Guidry JPD, Laestadius LI, Vraga EK, et al. Willingness to get the COVID-19 vaccine with and without emergency use Authorization. *Am J Infect Control* 2021;49:137–42.

**Questionnaire for:****A Study to evaluate the willingness and attitudes of population in Palestine towards future COVID-19 Vaccine****English Form****Background:**

Corona virus infection is a current pandemic international infectious Disease. Palestine is one of the countries affected by the infection. There is no current treatment for corona virus according Centers for Disease Control and Prevention and World Health Organization. Scientists are working very hard to produce a vaccine, which will produce immunity against the virus. There is no approved vaccine has been produced so far, but few teams reach advanced steps towards producing the future vaccine. Regarding that, we need to know the population opinion in Palestine about the possible future covid-19 virus vaccine using the following questionnaire.

Your participation is voluntary, you do not have to answer any question you do not want to, and you can withdraw from the completing the study any time. Survey takes 7-10 minutes to go.

If you agree to participate in this study, please complete the survey, given that any personal information will be confidentially preserved. Your participation is appreciated.

This study approved by the IRB committee from Bethlehem University, Palestine.

The responsible researchers are:

- 1-Hassan J. Zawahrah: Jordan University of Science and Technology/Faculty of Medicine  
2-Dr. Hanan Saca-Hazboun: Bethlehem University/ <sup>2</sup>Faculty of Nursing and Health Science  
3-Dr.Shatha S. Melhem: Jordan University of Science and Technology/ Obstetrics and Gynecology Dep.  
4-Dr.Rabee Adwan: Makassed Charitable Society Hospital/<sup>4</sup>Infectious Diseases Unit  
5-Dr.Ali Sabateen: Augusta Victoria Hospital/ <sup>4</sup>Infectious Diseases Unit  
6-Prof. Niveen M.E. Abu Rmeileh: Birzeit University/ Institute of Community and Public Health

If you have any question or comment about the study, please contact via email on the following address: [hjzawahrah16@med.just.edu.jo](mailto:hjzawahrah16@med.just.edu.jo)

**Section One: Demographic questions****1- Have you ever participated in this study?**

1. Yes
2. No

**2- What is your gender?**

1. Female
2. Male

<b>3- What is your age?</b>	
	-----
<b>4- Where do you live?</b>	
1.	Jerusalem
2.	Bethlehem
3.	Hebron
4.	Abu Dis
5.	Ramallah
6.	Nablus
7.	Jenin
8.	Tulkarm
9.	Qalqilyah
10.	Salfit
11.	Tubas
12.	Gaza
13.	North Gaza
14.	Khan Yonis
15.	Der Elbalah
16.	Jericho
<b>5- Do you live in urban or rural areas?</b>	
1.	City
2.	Village
3.	Camp
<b>6- What is your marital status?</b>	
1.	Single
2.	Married
3.	Divorced
4.	Widow/widower
5.	Other
<b>7- What is your Educational level?</b>	
1.	Below Tawjihi
2.	Tawjihi
3.	Diploma degree
4.	Bachelor degree
5.	Master degree or higher
<b>8- What is your occupation?</b>	

1. Healthcare provider
2. Non-healthcare provider
3. Housewife
4. Student
5. Other

**9- How do you evaluate your monthly income compared to people live around?**

1. Excellent
2. Very good
3. Good
4. Less than good
5. Bad
6. Very bad

**10- A question about smoking; are you:**

1. Cigarette smoker only
2. Shisha smoker only
3. Cigarette and shisha smoker
4. Electronic cigarette smoker
5. Ex-smoker
6. Not smoker

**11- Do you have a chronic disease?/ you can choose more than one answer:**

1. Heart diseases
2. DM
3. Respiratory diseases
4. Hematological diseases
5. Kidney diseases
6. Liver disease
7. Neurological diseases
8. Immunological diseases
9. Rheumatologic diseases
10. Endocrine diseases
11. Other
12. I do not have chronic diseases

**12- Do you take a medication regularly?**

1. Yes
2. No



**Section two: Questions related to people's knowledge and attitude about COVID-19 vaccine****13- Do you believe that Corona is:**

1. Real viral infection
2. Just conspiracy
3. Don't know what corona virus is
4. There is no corona virus

**14- Have you infected by corona virus?**

1. Yes
2. No
3. Don't know

**15- Do you have relatives infected by corona virus?**

1. Yes
2. No
3. Don't know

**16- Have you had a test (nasopharyngeal swap) for corona infection?**

1. Yes
2. No
3. Don't know

**17- Do you think the information about corona vaccine is available and accessible for people?**

1. Yes
2. No
3. Don't know

**18- Do you think an international effort would be better to make the vaccine than a single team?**

1. Yes
2. No
3. Don't know

**19- Do you think it is necessary to have more than one vaccine to prevent the infection?**

1. Yes
2. No
3. Don't know

**20- Do you think a vaccine against covid-19 virus can be produced?**

1. Yes
2. No

3. Don't know
<b>21- Do you think corona virus infection can be prevented?</b>
1. Yes
2. No
3. Don't know
<b>22- Do you think patient with corona virus will produce self immunity against the virus when recovered?</b>
1. Yes
2. No
3. Don't know
<b>23- Do you think the vaccine of corona virus should be free?</b>
1. Yes
2. No
3. Don't know
<b>24- Do you think you are at high risk to be infected with corona virus?</b>
1. Yes
2. No
3. Don't know
<b>25- Do you think our body will produce self immunity against corona without a vaccine?</b>
1. Yes
2. No
3. Don't know
<b>26- Do you believe that a good hygiene and washing hands for 20 seconds would help to prevent the infection?</b>
1. Yes
2. No
3. Don't know
<b>27- Do you think that wearing a mask correctly would help to prevent the covid-19 infection?</b>
1. Yes
2. No
3. Don't know
<b>28- Do you think keeping a safe distance of at least one meter would help to prevent the COVID-19 infection?</b>
1. Yes
2. No

3. Don't know
<b>29- Do you think that following the health instructions would aid to prevent the COVID-19 infection?</b>
1. Yes
2. No
3. Don't know
<b>30- Do you think antiviral medication can prevent corona infection better than the vaccine?</b>
1. Yes
2. No
3. Don't know
<b>31- Do you think Anti Malarial drugs would help to prevent the corona infection better than the vaccine?</b>
1. Yes
2. No
3. Don't know
<b>32- Do you think taking vitamins such as vitamin C would help to prevent the corona infection better than the vaccine?</b>
1. Yes
2. No
3. Don't know
<b>33- Do you think that plasma* from recovered COVID-19 patients and which may have antibodies against the virus, would help to prevent the infection compared to a vaccine?</b> *Plasma is the liquid component of the blood and contains different constituents and one of them is the antibodies.
1. Yes
2. No
3. Don't know
<b>34- Do you think flu vaccine can prevent the corona infection?</b>
1. Yes
2. No
3. Don't know
<b>35- What is the best way to produce an effective immunity against the corona, by your opinion?</b>
1. Herd Immunity
2. Vaccination
3. Anti malarial drugs

4. Anti viral drugs
5. Plasma from recovered corona patients
6. Following the health instructions
<b>36- Do you think the corona vaccine would be safe?</b>
1. Yes
2. No
3. Don't know
<b>37- Do you think the future vaccine against corona will produce side effects?</b>
1. Yes
2. No
3. Don't know
<b>38- If you know the possible future vaccine name, what is the most effective vaccine will be?</b>
1. The Oxford University vaccine
2. The Russian vaccine
3. The Chinese vaccine (Sinovac)
4. The American vaccine (Moderna)
5. The Australian vaccine (BCG vaccine)
6. Other vaccine
7. Don't know, did not hear about them
8. More than one can be effective
<b>39- Do you think that the period (months to one year) scientists and researchers used is enough to produce an effective vaccine, given that the Russian one is already produced?</b>
1. Yes
2. No
3. Don't know
<b>40- Do you think corona vaccine should be given annually?</b>
1. Yes
2. No
3. Don't know
<b>41- Do you think corona vaccine should be given alone and not combined with other vaccines?</b>
1. Yes
2. No
3. Don't know



<b>42- Do you believe corona vaccine can produce the covid-19 infection instead of protect against it?</b>
1. Yes
2. No
3. Don't know
<b>43- Do you think taking a medication for long time (regualrly) will affect the efficiency of the vaccine?</b>
1. Yes
2. No
3. Don't know
<b>44- Do you think the effect of vaccine will be less in smokers?</b>
1. Yes
2. No
3. Don't know
<b>45- Do you think corona vaccine will cause long term health issues?</b>
1. Yes
2. No
3. Don't know
<b>46- Do you think corona vaccine could be linked to cancer?</b>
1. Yes
2. No
3. Don't know
<b>47- Do you think corona vaccine could cause chronic health problems?</b>
1. Yes
2. No
3. Don't know
<b>48- Do you think corona vaccine should be given to newborn?</b>
1. Yes
2. No
3. Don't know
<b>49- Do you think vaccine should be given to children less than 18 years old?</b>
1. Yes
2. No
3. Don't know
<b>50- Do you think corona vaccine should be give to pregnant women?</b>
1. Yes
2. No

3. Don't know
<b>51- Do you think the vaccine should be introduced to elderly people?</b>
1. Yes
2. No
3. Don't know
<b>52- Do you think the vaccine should be given to immunocompromised patients?</b>
1. Yes
2. No
3. Don't know
<b>53- Do you think corona patient should take the vaccine?</b>
1. Yes
2. No
3. Don't know
<b>54- Who do you think should get the vaccine if available in the first order?</b>
1. Elderly
2. Pregnant women
3. Immunocompromised patients
4. Health care providers
5. People with chronic diseases
6. Healthy people
7. Children
8. Don't know
<b>55- Would you accept to participate in vaccine testing trial, voluntary?</b>
1. Agree
2. Disagree
3. Don't know
<b>56- Would you accept to take the vaccine against corona virus if available?</b>
1. Agree
2. Disagree
3. Don't know
<b>57- If the vaccine was not granted for free, would you pay 150 NIS to get the vaccine?</b>
1. Agree
2. Disagree
3. Don't know
<b>58- If the vaccine is not available in Palestine, would you ask for it from other country which has it?</b>

1. Agree
2. Disagree
3. Don't know
<b>59- Will you advise other people to take the vaccine?</b>
1. Agree
2. Disagree
3. Don't know
<b>60- Do you trust scientist and researchers thoughts about the corona vaccine?</b>
1. Yes
2. No
3. Don't know
<b>61- If the vaccine produce mild side effects, do you still want to take it?</b>
1. Agree
2. Disagree
3. Don't know
<b>62- Would you accept to introduce the vaccine to your children if available?</b>
1. Agree
2. Disagree
3. Don't know
<b>63- Do you collect information about the corona vaccine? If yes, what is the most common source you get the info from?</b>
1. News
2. Social media
3. Scientific articles
4. Health care providers (e.g., MD's)
5. TV
6. Radio
7. Not interested
<b>64- Would you take the seasonal flu vaccine this year?</b>
1. Yes
2. No
3. Don't know
<b>65- Did you take the seasonal flu vaccine last year?</b>
1. Yes
2. No
3. Don't know
<b>66- Have you ever refused taking any type of vaccine previously?</b>

1. Yes
2. No
3. Don't know

The survey items were developed based on information about the COVID-19 pandemic provided by the World Health Organization (WHO).

**Reference:**

WHO. Behavioral considerations for acceptance and uptake of COVID-19 vaccines: WHO technical advisory group on behavioral insights and sciences for health. World Health Organization; 2020. <https://apps.who.int/iris/handle/10665/337335>



## دراسة علمية عن اعتقاد الناس في فلسطين وسلوكياتهم حول اللقاح المحتمل ضد فيروس كورونا المستجد

أهلاً بك،

تعتبر عدوى فيروس كورونا المستجد (كوفيد-19) هي المسبب للوباء المنتشر عالمياً على مدى واسع، فلسطين وكباقي الدول، تأثرت بالوباء حيث يقدر عدد الاصابات بالفيروس في فلسطين حسب احصائيات وزارة الصحة الفلسطينية (المرصد الخاص بالكوفيد-19) أكثر من 89550 إصابة مؤكدة، وتبعاً لمنظمة الصحة العالمية (WHO) ومنظمة الـ CDC الأمريكية، لا يوجد أي علاج تام لفيروس كورونا المستجد حالياً، بالإضافة أنه لا يوجد حالياً أي لقاح فعال ضد هذا الفيروس، العلماء يعملون بجد حتى يتمكنوا من إنتاج لقاح يساعد على منح أجسامنا مناعة ضد هذا الفيروس، الباحثون أصبحوا على بعد خطوات قريبة من إنتاج لقاح ضد الفيروس، لذلك نود معرفة اعتقاد الناس في فلسطين وآراءهم اتجاه اللقاح المحتمل في المستقبل ضد فيروس كورونا المستجد من خلال هذا الاستبيان.

مشاركتك في هذا البحث طوعية، ليس عليك الاجابة على اي سؤال لا تود اي الاجابة عليه، وتستطيع الانسحاب من هذه الدراسة في أي وقت. حيث تستغرق مدة استكمال الاستمارة مدة 7-10 دقائق فقط.

إذا وافقت على المشاركة، ندعوك للإجابة على أسئلة الاستمارة، حيث أن أي معلومات شخصية إن وجدت، سوف تكون سرية ولن يتم مشاركتها مع طرف آخر.

علماً ان هذه الدراسة حاصلة على موافقة لجنة الابحاث العلمية (IRB) في جامعة بيت لحم.

الباحثون المسؤولون:

حسن زواهرة، جامعة العلوم والتكنولوجيا الاردنية\ كلية الطب

د. حنان حزيون، جامعة بيت لحم\ كلية التمريض

د. شذى ملحم، جامعة العلوم والتكنولوجيا\ قسم النسائية والتوليد

د. ربيع عدوان، مستشفى المقاصد

د. علي سباتين، مستشفى المطلع

د. نيفين ابو رميلة، جامعة بيرزيت \ معهد الصحة العامة والمجتمعية (ICPH)

إذا كان لديك اي استفسار حول الدراسة/ الرجاء التواصل من خلال البريد الالكتروني التالي:

[hjzawahrah16@med.just.edu.jo](mailto:hjzawahrah16@med.just.edu.jo)

### \* Required

- هل شاركت في هذه الدراسة من قبل؟ \*

Mark only one oval.

☐ نعم

☐ لا

- ما هو جنسك؟ \*

Mark only one oval.

☐ أنثى

☐ ذكر

3. \* ما هو عمرك؟

---

4. \* في أي محافظة تسكن؟

Mark only one oval.

- ☐ القدس
- ☐ بيت لحم
- ☐ الخليل
- ☐ ابو ديس
- ☐ رام الله
- ☐ نابلس
- ☐ جنين
- ☐ طولكرم
- ☐ قلقيلية
- ☐ سلفيت
- ☐ طوباس
- ☐ غزة
- ☐ شمال غزة
- ☐ خانيوس
- ☐ رفح
- ☐ دير البلح
- ☐ أريحا

5. \* أين تعيش حالياً؟

Mark only one oval.

- ☐ مدينة
- ☐ قرية
- ☐ مخيم

6. \* ما هي حالتك الاجتماعية؟

Mark only one oval.

- ☐ اعزب \ عزباء
- ☐ متزوج \ة
- ☐ منفصل \ة
- ☐ ارملة
- ☐ غير ذلك

7. \* ما هو تحصيلك العلمي؟

Mark only one oval.

- ☐ اقل من توجيهي
- ☐ توجيهي
- ☐ دبلوم
- ☐ بكالوريوس
- ☐ ماجستير او دكتوراة، ...، الخ

8. \* ما هي طبيعة عملك؟

Mark only one oval.

- ☐ (مقدم رعاية صحية (طبيب، ممرض، اخصائي مختبرات طبية، طبيب اسنان، صيدلة، ... الخ
- ☐ (غير مقدم للرعاية الصحية (معلم، مهندس، محامي، عامل، ... الخ
- ☐ ربة منزل
- ☐ طالب
- ☐ لا اعمل

9. \* كيف تقيّم دخلك الشهري مقارنة بالناس حولك؟

Mark only one oval.

- ☐ ممتاز
- ☐ جيد جدا
- ☐ جيد
- ☐ اقل من جيد
- ☐ سيء
- ☐ سيء جدا

10. \* سؤال خاص بالتدخين، هل انت ؟

Mark only one oval.

- ☐ مدخن سجائر فقط
- ☐ مدخن ارجيلة فقط
- ☐ مدخن سجائر وارجيلة
- ☐ سيجارة الكترونية
- ☐ مدخن سابق
- ☐ غير مدخن

11. \* !هل تعاني حاليا من أمراض مزمنة؟ يمكنك الإشارة الى اكثر من خيار

Check all that apply.

- ☐ (امراض القلب (مثل ضغط الدم وغيرها
- ☐ السكري
- ☐ (امراض الجهاز التنفسي (مثل الربو وغيرها
- ☐ (امراض الدم (امراض نزف الدم، لوكيميا
- ☐ (امراض اكلية (مثل الفشل الكلوي وغيرها
- ☐ امراض الكبد
- ☐ (امراض الجهاز العصبي (مثل باركنسون، الزهايمر، الصرع، وغيرها
- ☐ (امراض المناعة (نقص المناعة
- ☐ امراض الروماتيزم
- ☐ (امراض الغدد الصماء (مثل فرط او كسل الغدة الدرقية
- ☐ غير ذلك
- ☐ لا اعاني من امراض مزمنة

12. \* هل تتناول أي أدوية بشكل مزمن؟

Mark only one oval.

☐ نعم

☐ لا

13. \* ماذا تعتبر فيروس كورونا؟

Mark only one oval.

☐ عدوى فيروسية حقيقية

☐ (تعتقد أنه فيروس مصطنع) مؤامرة

☐ لا أعلم ما هو فيروس كورونا

☐ لا وجود لفيروس كورونا

14. \* هل أصبت بعدوى فيروس كورونا المستجد؟

Mark only one oval.

☐ نعم

☐ لا

☐ لا أعرف

15. \* هل أصيب أحد من أقربائك بعدوى فيروس كورونا المستجد؟

Mark only one oval.

☐ نعم

☐ لا

☐ لا أعرف

16. \* هل قمت بعمل فحص خاص بعدوى فيروس كورونا المستجد (مسحة من الانف)؟

Mark only one oval.

☐ نعم

☐ لا

17. \* هل تعتقد ان المعلومات المتوفرة حول تصنيع اللقاح المحتمل واضحة ويجب ان تكون في متناول الناس؟

Mark only one oval.

☐ نعم

☐ لا

☐ لا اعرف

18. \* هل تعتقد انه من الافضل أن يكون تعاون عالمي لانتاج اللقاح، بدلا من أن تصنعه دولة واحد؟

Mark only one oval.

☐ نعم

☐ لا

☐ لا اعرف

19. \* هل تعتقد انه من الضروري ان يتم انتاج اكثر من لقاح لمنع انتشار عدوى فيروس كورونا المستجد؟

Mark only one oval.

☐ نعم

☐ لا

☐ لا اعرف



20. \* هل تعتقد انه من الممكن تصنيع لقاح فعال ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

21. \* هل تعتقد انه من الممكن تجنب بالاصابة بفيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

22. \* هل تعتقد ان الشخص المصاب بفيروس كورونا سوف يكون لديه مناعة ذاتية ضد الفيروس في حال تعافيه؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

23. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يكون متاحا بشكل مجاني؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

24. \* هل تعتقد انك معرض \ ة للإصابة بفيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

25. \* هل تعتقد ان اجسامنا قادرة على تصنيع مناعة ذاتية ضد فيروس كورونا المستجد دون الحاجة الى اللقاح؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

26. هل تعتقد ان تعقيم اليدين جيدا و غسلها لمدة 20 ثانية على الاقل سوف يساعد على الحد من انتشار العدوى بسبب \* فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

27. هل تعتقد ان لبس الكمامة بشكل صحيح (حيث تشمل تغطية الفم والانف معا) سوف يساعد على الحد من انتشار \* العدوى بسبب فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

28. هل تعتقد ان المحافظة على المسافة الآمنة مع الآخرين ( واحد متر ع الاقل) سوف يساعد على الحد من انتشار \*فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

29. هل تعتقد ان اتباع التعليمات الصحية سوف يساعد على منع انتشار العدوى مقارنة باللقاح المحتمل ضد فيروس \*كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

30. هل تعتقد ان الادوية المضادة للفيروسات مثل ريميسيفير سوف تساعد على التعافي من المرض بسبب فيروس \*كورونا مقارنة بالوقاية التي يمكن ان يوفرها اللقاح المحتمل ضد فيروس كورونا؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

31. هل تعتقد ان الادوية المضادة للملاريا سوف تساعد على علاج الاصابة بفيروس كورونا المستجد مقارنة بالوقاية التي \*يمكن ان يوفرها اللقاح المحتمل ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

32. هل تعتقد ان تناول الفيتامينات المقوية مثل فيتامين سي سوف توفر وقاية من عدوى فيروس كورونا المستجد مقارنة  
\*بالوقاية التي ممكن ان يوفرها اللقاح المحتمل ضد الفيروس؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

33. هل تعتقد ان البلازما\* التي يتم الحصول عليها من المتعافين من الفيروس والتي تحتوي على اجسام مضادة ضد  
الفيروس سوف تساعد على علاج الاصابة بالفيروس، مقارنة بالوقاية التي ممكن ان يوفرها اللقاح المتوقع انتاجه؟  
حيث ان البلازما هي احدى مكونات الدم، وهي مادة شفافة مائلة للون الاصفر وتحتوي على مكونات عدة، منها  
\*. الاجسام المضادة

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

34. \* هل تعتقد ان لقاح الأنفلونزا الموسمية سوف يساعد على الحد من انتشار العدوى بفيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

35. \* ماذا هي باعتقادك الطريقة المثلى للحصول على مناعة ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ مناعة القطيع (تحقق مناعة القطيع عندما تتكون مناعة ضد المرض لدى نسبة كبيرة من المجتمع، مما يجعل انتقال المرض من شخص لآخر غير مرجح. ونتيجة لذلك، يُصبح المجتمع بأكمله محميًا – وليس فقط أولئك الذين لديهم مناعة)
- ☐ لقاح فعال ضد الفيروس
- ☐ الادوية المضادة للملاريا
- ☐ الادوية المضادة للفايروسات
- ☐ البلازما من المتعافين من الفيروس
- ☐ اتباع التعليمات الصحية

36. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد سوف يكون آمنًا؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

37. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد سوف يتسبب في أعراض جانبية في حال اخذه؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

38. \* إذا سمعت عن اللقاحات المحتملة التي يتم العمل على انتاجها، مَن مِن اللقاحات التالية يمكن أن يكون الاكثر فعالية؟

Mark only one oval.

- ☐ لقاح جامعة أكسفورد \ بريطانيا
- ☐ اللقاح الروسي
- ☐ (اللقاح الصيني ) سينوفاك
- ☐ Moderna / لقاح شركة (مودرنا)-امريكا
- ☐ BCG اللقاح الاسترالي (لقاح مرض السل)
- ☐ لقاح اخر
- ☐ لم اسمع بهذه اللقاحات
- ☐ أكثر من لقاح ممكن ان يكون فعال

39. هل تعتقد ان الفترة التي يحاول فيها الباحثين والعلماء انتاج لقاح فعال ضد فيروس كورونا المستجد خلال عدة أشهر او \* سنة كافية لذلك، علما ان اللقاح الروسي بات اول لقاح ينتج في العالم؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

40. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يُؤخذ سنويا؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف



41. هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب انه يُعطى منفردا وبشكل منفصل عن اللقاحات  
الاجرى؟ \*

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

42. هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد سوف يتسبب بزيادة الاصابات بعدوى الكورونا، بدلا من  
اعطاء المناعة اللازمة لمنع العدوى؟ \*

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

43. \* هل تعتقد ان تناول الادوية المزمن لفترات طويلة سوف يؤثر على فعالية اللقاح المحتمل؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

44. \* هل تعتقد ان فعالية اللقاح المحتمل ضد فيروس كورونا المستجد سوف تكون قليلة عند المدخنين؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

45. \* هل تعتقد ان اللقاح المحتمل لفيروس كورونا المستجد سوف يسبب مشاكل عقلية؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

46. \* هل تعتقد انه من الممكن ان يكون اللقاح المحتمل ضد فيروس كورونا المستجد له علاقة بالسرطان؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

47. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد سوف يتسبب بمشاكل صحية مزمنة؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

48. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يعطى للمواليد الجدد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

49. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يقدم للأطفال دون سن 18 عاماً؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

50. \* هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يُعطى للمرأة الحامل؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

51. \* هل تعتقد ان كبار السن يجب ان يأخذوا اللقاح المحتمل ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

52. هل تعتقد ان اللقاح المحتمل ضد فيروس كورونا المستجد يجب ان يُعطى للمرضى الذين يعانون من نقص المناعة؟ \*

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

53. \* هل تعتقد ان الشخص المصاب بفيروس كورونا يجب ان يأخذ اللقاح في حال توفره؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

54. \* من هي باعتقادك الفئة الاكثر التي يجب ان تحصل اولا على اللقاح المحتمل ضد فيروس كورونا المستجد في

Mark only one oval.

- ☐ كبار السن
- ☐ المرأة الحامل
- ☐ مرضى نقص المناعة
- ☐ مقدمي الرعاية الصحية
- ☐ اصحاب الامراض المزمنة
- ☐ الاشخاص السليمين
- ☐ الاطفال
- ☐ لا اعرف

55. هل توافق على المشاركة في تجارب فحص فعالية اللقاح ضد فيروس كورونا المستجد بشكل طوعي، إذا أتاحت لك المشاركة؟ \*

Mark only one oval.

- ☐ اوافق
- ☐ لا اوافق
- ☐ لا اعرف

56. \* في حال وُجد لقاح فعال ضد فيروس كورونا المستجد، هل توافق على اخذ هذا اللقاح؟

Mark only one oval.

- ☐ اوافق
- ☐ لا اوافق
- ☐ لا اعرف

57. إذا لم يكن اللقاح مجانياً، هل ستقوم بدفع مبلغ من المال للحصول عليه، حيث من المتوقع ان تكون كلفة الجرعة الواحدة \* منه تقدر ب 150 شيكل؟

Mark only one oval.

- ☐ اوافق
- ☐ لا اوافق
- ☐ لا اعرف

58. إذا لم يكن اللقاح متوفراً في فلسطين، هل ستقوم بطلبه من البلد المصنّع للقاح للحصول عليه او طلبه من دولة تمتلكه؟ \*

Mark only one oval.

- ☐ اوافق
- ☐ لا اوافق
- ☐ لا اعرف

59. \* هل ستقوم بنصح الناس لأخذ اللقاح المحتمل ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ اوافق
- ☐ لا اوافق
- ☐ لا اعرف

60. \* هل تثق في آراء العلماء والباحثين حول اللقاح المحتمل ضد فيروس كورونا المستجد؟

Mark only one oval.

- ☐ اوافق  
☐ لا اوافق  
☐ لا اعرف

61. \* إذا كان اللقاح المحتمل يسبب بعض الاعراض الجانبية الخفيفة، هل ستوافق على أخذ اللقاح؟

Mark only one oval.

- ☐ اوافق  
☐ لا اوافق  
☐ لا اعرف

62. \* إذا كان لديك اطفال، هل ستوافق على اعطائهم اللقاح المحتمل ضد فيروس كورونا المستجد في حال توفره؟

Mark only one oval.

- ☐ اوافق  
☐ لا اوافق  
☐ لا اعرف

63. هل تقوم بجمع معلومات للمعرفة عن اللقاح المحتمل ضد فيروس كورونا المستجد، إذا كانت اجابتك نعم، ما هو مصدرك للحصول عليها؟ \*

Mark only one oval.

- ☐ الاخبار والجرائد  
☐ وسائل التواصل الاجتماعي  
☐ مقالات علمية  
☐ (مقدمي الرعاية الصحية (مثل الاطباء  
☐ التلفاز  
☐ الراديو  
☐ غير مهم 7.



64. \* هل انت مستعد لاخت لقاح الانفلونزا الموسمية هذه الموسم ؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

65. \* هل اخذت اللقاح ضد الانفلونزا الموسمية في الموسم الماضي؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

66. \* هل رفضت التطعيم من نوع معين من اللقاحات في الماضي؟

Mark only one oval.

- ☐ نعم
- ☐ لا
- ☐ لا اعرف

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**Supplement Table1: Willing to be vaccinated by Knowledge of study population about the nature of COVID-19 virus**

Question	Willing to take the vaccine (n = 889)		
	Yes n (%)	No n (%)	P. value
<b>What is COVID-19?</b>			
Real virus	503 (69.1)	225 (30.1)	<0.001
Fabricated virus	54 (38.8)	85 (61.2)	
I Don't know what is COVID-19	7 (38.9)	11 (61.1)	
COVID-19 does not exist	0 (0.0)	4 (100.0)	
<b>Do you think that you are susceptible to get the COVID-19 infection?</b>			
Yes	542 (64.6)	297 (35.4)	0.012
No	12 (47.8)	11 (52.2)	
Don't know	11 (40.7)	16 (59.3)	
<b>Do you think washing hands for 20 seconds will limit the COVID-19 spread?</b>			
Yes	499 (64.6)	274 (35.4)	0.20
No	52 (55.3)	42 (44.7)	
Don't know	13 (59.1)	9 (40.9)	
<b>Do you think wearing the mask correctly will aid to limit COVID-19 spread?</b>			
Yes	533 (66.1)	273 (33.9)	<0.001
No	26 (38.8)	41 (61.2)	
Don't know	5 (31.3)	11 (68.7)	
<b>Do you think keeping a safe distance of at least one meter from others will help to restrict COVID-19 spread?</b>			
Yes	534 (64.9)	289 (35.1)	0.007
No	23 (45.1)	28 (54.9)	
Don't know	7 (46.7)	8 (53.3)	
<b>Do you think that following the health instructions compared with the possible COVID-19 vaccine will limit the spread of the corona infection?</b>			
Yes	483 (62.6)	288 (37.4)	0.36
No	54 (66.7)	27 (33.3)	
Don't know	27 (73.0)	10 (27.0)	
<b>Score of knowledge about the nature of COVID-19 virus<sup>a</sup></b>			
(0)	0 (0.0)	4 (100.0)	<0.001
(1)	1 (16.7)	5 (83.3)	
(2)	11 (47.8)	12 (52.2)	
(3)	12 (42.9)	16 (57.1)	
(4)	32 (45.7)	38 (54.3)	
(5)	141 (62.9)	83 (37.1)	

<b>(6)</b>	367 (68.7)	167 (31.3)	
low knowledge score	135 (60.0)	90 (40.0)	
Moderate knowledge score	298 (68.7)	136 (31.3)	0.05
High knowledge score	131 (57.0)	99 (43.0)	

<sup>a</sup>The first option in each question above is considered the true answer; (0) represents no true answers answered by the participants, (1) represents one true answer answered by the participant and so on. Low score (represents the 1<sup>st</sup> 1/3 of the answers), moderate score (represents the 2<sup>nd</sup> 1/3 of the answers), and high score (represents the 3<sup>rd</sup> 1/3 of the answers).

**Supplement Table2: Study population willingness to be vaccinated based on knowledge about prevention and treatment**

Question	Willing to take the vaccine (n = 889)		
	Yes n (%)	No n (%)	P.value
Do you think antiviral medications will help in recovery from COVID-19 infection?			
Yes	108 (63.2)	63 (36.8)	0.23
No	232 (66.7)	116 (33.3)	
Don't know	224 (60.5)	146 (39.5)	
Do you think anti-malarial medications will help in treating COVID-19 infection?			
Yes	43 (59.7)	29 (40.3)	0.15
No	274 (66.8)	136 (33.2)	
Don't know	247 (60.7)	160 (39.3)	
Do you think consumption of vitamins such as vitamin C will help in COVID-19 prevention?			
Yes	264 (56.7)	202 (43.3)	<0.001
No	212 (73.4)	77 (26.6)	
Don't know	88 (65.7)	46 (34.3)	
Do you think using plasma from recovered COVID-19 patients will help in treating COVID-19 infection?			
Yes	222 (66.3)	113 (33.7)	0.024
No	130 (68.4)	60 (31.6)	
Don't know	212 (58.2)	152 (41.8)	
Do you think the future COVID-19 vaccine will be safe?			
Yes	220 (90.5)	23 (9.5)	<0.001
No	61 (27.7)	159 (72.3)	
Don't know	283 (66.4)	143 (33.6)	
Do you think the future COVID-19 vaccine will cause side effects?			
Yes	261 (55.3)	211 (44.7)	<0.001
No	48 (78.7)	13 (21.3)	
Don't know	255 (71.6)	101 (28.4)	
Do you think the future COVID-19 vaccine should be given annually?			
Yes	247 (74.4)	85 (25.6)	<0.001
No	137 (52.9)	122 (47.1)	
Don't know	180 (60.4)	118 (39.6)	
Do you think the future COVID-19 vaccine should be given separately from other vaccines?			
Yes	366 (64.0)	206 (36.0)	0.88
No	54 (63.5)	31 (36.5)	
Don't know	144 (62.1)	88 (37.9)	
Do you think the future COVID-19 vaccine will increase			

<b>corona infection cases instead of providing immunity?</b>			
Yes	44 (38.3)	71 (61.7)	
No	349 (79.0)	93 (21.0)	< 0.001
Don't know	171 (51.5)	161 (48.5)	
<b>Score of knowledge about the COVID-19 prevention and treatment<sup>b</sup></b>			
(0)	27 (57.4)	20 (42.6)	
(1)	83 (64.3)	46 (35.7)	
(2)	112 (68.3)	52 (31.7)	
(3)	121 (58.2)	87 (41.8)	0.31
(4)	99 (65.1)	53 (34.9)	
(5)	66 (64.7)	36 (35.3)	
(6)	32 (62.7)	19 (37.3)	
(7)	11 (52.4)	10 (47.6)	
(8)	7 (77.8)	2 (22.2)	
(9)	6 (100.0)	0 (0.0)	
Low score	110 (62.5)	66 (37.5)	
Moderate score	233 (62.6)	139 (37.4)	0.85
High score	99 (65.1)	53 (34.9)	

<sup>b</sup>The first option in each question above is considered the true answer; (0) represents no true answers answered by the participants, (1) represents one true answer answered by the participant and so on. Low score (represents the 1<sup>st</sup> 1/3 of the answers), moderate score (represents the 2<sup>nd</sup> 1/3 of the answers), and high score (represents the 3<sup>rd</sup> 1/3 of the answers).

**Supplement Table3: Willingness to be vaccinated based on study population knowledge on priority groups to get the vaccine**

Question	Willing to take the vaccine (n = 889)		
	Yes n (%)	No n (%)	P.value
Do you think future COVID-19 should be given to newborn?			
Yes	230 (83.0)	47 (17.0)	<0.001
No	195 (48.4)	208 (51.6)	
Don't know	139 (66.5)	70 (33.5)	
Do you think future COVID-19 should be given to children younger than 18 years?			
Yes	343 (81.7)	77 (18.3)	<0.001
No	119 (41.9)	165 (58.1)	
Don't know	102 (55.1)	83 (44.9)	
Do you think future COVID-19 should be given to pregnant women?			
Yes	256 (81.3)	59 (18.7)	<0.001
No	121 (41.0)	174 (59.0)	
Don't know	187 (67.0)	92 (33.0)	
Do you think future COVID-19 should be given to elderly people?			
Yes	498 (72.8)	186 (27.2)	<0.001
No	22 (23.9)	70 (76.1)	
Don't know	44 (38.9)	69 (61.1)	
Do you think future COVID-19 should be given to immunocompromised patients?			
Yes	415 (71.7)	164 (28.3)	<0.001
No	56 (39.4)	86 (60.6)	
Don't know	93 (55.4)	75 (44.6)	
Score of knowledge about priority groups to be vaccinated <sup>c</sup>			
(0)	33 (23.6)	107 (76.4)	<0.001
(1)	40 (44.0)	51 (56.0)	
(2)	121 (59.9)	81 (40.1)	
(3)	137 (78.3)	38 (21.7)	
(4)	116 (77.3)	34 (22.7)	
(5)	117 (89.3)	14 (10.7)	<0.001
Low knowledge score	73 (31.6)	158 (68.4)	
Moderate knowledge score	258 (68.4)	119 (31.4)	
High knowledge sore	116 (77.3)	34 (22.7)	

<sup>c</sup>The first option in each question above is considered the true answer; (0) represents no true answers answered by the participants, (1) represents one true answer answered by the participant and so on. Low score (represents the 1<sup>st</sup> 1/3 of the answers), moderate score (represents the 2<sup>nd</sup> 1/3 of the answers), and high score (represents the 3<sup>rd</sup> 1/3 of the answers).



**Supplement Table4: Attitude of study participant's toward getting a COVID-19 vaccine based on their trust of vaccination**

Question	Willing to take the vaccine (n =889)		P. value
	Yes n (%)	No n (%)	
<b>Would you give the COVID-19 vaccine to your children if available?</b>			
Agree	406 (94.2)	25 (5.8)	<0.001
Disagree	75 (21.9)	267 (78.1)	
Don't know	83 (71.6)	33 (28.4)	
<b>Do you trust in scientists and researchers thoughts about future COVID-19 vaccine?</b>			
Agree	475 (88.0)	65 (12.0)	<0.001
Disagree	30 (14.6)	175 (85.4)	
Don't know	59 (41.0)	85 (59.0)	
<b>Do you think the period (6 to 12 months) in which the scientists trying to develop a COVID-19 vaccine is enough?</b>			
Ye	261 (77.9)	74 (22.1)	<0.001
No	163 (54.3)	137 (45.7)	
Don't know	140 (55.1)	114 (44.9)	
<b>Do you think information about COVID-19 vaccine production is clear and should be open to public?</b>			
Yes	264 (73.9)	93 (26.1)	<0.001
No	200 (52.9)	178 (47.1)	
Don't know	100 (64.9)	54 (35.1)	
<b>Score of attitude toward COVID-19 vaccine versus lack of trust<sup>d</sup></b>			
(0)	18 (10.8)	149 (89.2)	<0.001
(1)	73 (38.8)	115 (61.2)	
(2)	189 (81.8)	42 (18.2)	
(3)	181 (91.0)	18 (9.0)	
(4)	103 (99.0)	1 (1.0)	
Low score	18 (10.8)	149 (89.2)	<0.001
Moderate score	73 (38.8)	115 (61.2)	
High score	189 (81.8)	42 (18.2)	
<sup>d</sup> The first option in each question above is considered the true answer; (0) represents no true answers answered by the participants, (1) represents one true answer answered by the participant and so on. Low score (represents the 1 <sup>st</sup> 1/3 of the answers), moderate score (represents the 2 <sup>nd</sup> 1/3 of the answers), and high score (represents the 3 <sup>rd</sup> 1/3 of the answers).			