

Attitudes toward COVID-19 Vaccination: Cross-sectional Study in Anbar Province, Iraq

Ahmed K. Al-Delaimy, Ruya Abdulhadi M. Saeed, Moawiah Khatatbeh¹

Department of Family and Community Medicine, College of Medicine, University of Anbar, Ramadi, Iraq, ¹Department of Public Health, College of Medicine, University of Yarmouk, Irbid, Jordan

Abstract

Background: On March 2020, the World Health Organization announced that coronavirus disease 2019 (COVID-19) has become a pandemic. In Iraq, since the start of applying the national COVID-19 vaccine campaign, many people refused to take the COVID-19 vaccine for various reasons, which has led to the further spread of the disease and the pandemic. **Objectives:** To determine some factors for refusing COVID-19 vaccination and the beliefs about the COVID-19 vaccine among Iraqi people in Anbar Province, Iraq. **Subjects and Methods:** A household-based cross-sectional study and a face-to-face interview were done on 814 participants who were involved in the survey. A convenient sample approach was followed in this study to recruit participants from 11 different areas in the entral, southern, and northern of Anbar Province, Iraq, including urban and rural regions. A questionnaire form was applied to participants enrolled in the study, and the principal researcher carried out a written interview by face-to-face with the participant. An analysis of data carried out using cross-tabulated chi square test to identify variables associated with vaccine acceptance, in addition to descriptive statistics. **Results:** A majority (71.7%) of the population did not take any type of COVID-19 vaccine; among those who took the COVID-19 vaccine, 58.4% took only one dose of vaccination. Among people who did not take any type of vaccine, a high percentage of 72.1% said that they did not trust it. Others (14.3%) did not take it because their friends and relatives did not take it. A significant difference ($P = 0.001$) was found regarding the characteristics of those who took the vaccine and those who did not take it, including age, gender, occupation, place of residence, education level, and having had COVID-19. **Conclusion:** A high prevalence of COVID-19 vaccine refusal was found in places in Anbar Governorate based on rumors, media communication, and behavioral attitudes needs many efforts from health workers in primary health-care centers and other health staff in other health institutions to increase people's knowledge about the vaccine to lessen COVID-19 vaccine hesitancy.

Keywords: Attitude, coronavirus disease 2019, coronavirus disease 2019 vaccination

INTRODUCTION

The World Health Organization (WHO), on January 30, 2020, declared that the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) outbreak constituted a Public Health Emergency of International Concern.^[1,2] Coronavirus disease 2019 (COVID-19) is caused by the virus called SARS-CoV-2. It is a ribonucleic acid virus of the subfamily *Coronavirinae*, which belongs to the family *Coronaviridae* and is in the order *Nidovirales*.^[3]

A lot of COVID-19 vaccinations have been introduced for trials, but a limited number of them have been approved internationally for use. Vaccination, in general, has some side effects on humans; for example, in injectable polio vaccine, redness and swelling are often seen in arms. Rarely, autism and

vaccine-associated paralytic poliomyelitis following measles and oral polio vaccine, respectively.^[4] COVID-19 vaccine has a few side effects, such as local pain and swelling in the arm, headache, muscle pain, tiredness, and fever.^[4,5]

The COVID-19 vaccine works based on stimulating the immune system and involves identifying lymphocytes derived from the protein antigen among genetic sequences of

Address for correspondence: Dr. Ahmed K. Al-Delaimy, Department of Family and Community Medicine, College of Medicine, University of Anbar, Ramadi, Iraq. E-mail: ahmedks@uoanbar.edu.iq

Submitted: 10-May-2024 **Revised:** 16-May-2024

Accepted: 18-May-2024 **Published:** 21-Aug-2024

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Al-Delaimy AK, Saeed RA, Khatatbeh M. Attitudes toward COVID-19 vaccination: Cross-sectional study in Anbar Province, Iraq. IRAQI J COMMUNITY MED 2024;37:70-5.

Access this article online

Quick Response Code:



Website:
www.journalijcm.org

DOI:
10.4103/IRJCM.IRJCM_21_24

SARS-CoV-2.^[3] Vaccination, in general and for COVID-19 specifically, should be affordable, accessible to the population, and trustable, confident, and convenient for people.^[6,7]

Worldwide, as of March 10, 2023, more than 13 billion vaccine doses have been administered.^[8] In Iraq, although with more than 2 million cases and 25,375 coronavirus-related deaths reported in the country since the pandemic began, many people were not convinced to take a vaccine against the COVID-19 disease. As of August 19, 2023, 13,499,865,692 vaccine doses have been administered so far.^[1]

Not only COVID-19 vaccination faced a misinformation about it, in 2019, in Pakistan, the polio vaccine eradication program was refused by some groups of people due to the effect of social media videos misinformation about the vaccine.^[9] In Bulgaria, more than 30% of university students' knowledge about COVID-19 were from social media.^[10] A national study in Iraq showed that the main causes related to refusing the COVID-19 vaccine were vaccine safety and side effects.^[11]

The current study was conducted to determine some factors for refusing COVID-19 vaccination and the beliefs about the COVID-19 vaccine among Iraqi people in Anbar Province, Iraq.

SUBJECTS AND METHODS

A household-based cross-sectional study and a face-to-face interview were done on 814 participants who were involved in the survey. A convenient sample approach was introduced in this study from 11 different areas in the central, southern, and northern (Ramadi, Fallujah, Khaldia, Qaiam, Haditha, Saqliwayia, Karma, Falahat, Al-Wafa, Al-Tammim, and Al-Jazera) of Anbar Governorate, Iraq, including urban and rural regions. Ethical approval sought from the Ethical Approval Committee of the University of Anbar (Reference number 101-on August 7, 2023).

For eligible participants, all consecutive households available during the period data collection were included in the survey. Data collection was conducted during September and October in the year 2021.

Inclusion criteria include all family members, male and female, aged 18 years old and above, whether they took or did not take the COVID-19 vaccine, and whether they had one or two doses of the vaccine. While any family member under 18 years old, mentally retarded, and not willing to participate in the study was excluded from the study. Verbal consent was obtained from each household before asking questions to the participants. The sample size was calculated using the equation for the sample size to reach the required sample = 904, using a margin of error of $\pm 5\%$ and a confidence level of 95%.^[12]

Questionnaire participants ($n = 814$) were invited to fill out a survey by asking face-to-face interview questions specifically tailored to assess their knowledge, perception of whether they prefer to be infected with SARS-CoV-2 rather than taking vaccine, attitude toward COVID-19 vaccines acceptance, and the reasons for COVID-19 vaccine hesitancy.

The questionnaire was created from the literature review.^[9,10] Questionnaires were developed initially in English and then translated to Arabic. A pilot test ($n = 34$) was applied in the Arabic language questionnaire distributed to participants and was not included in the analysis. Privacy and confidentiality of participants' answers applied in this study. Experts from the community medicine department of the college checked the questionnaire for any confusion and repeated questions.

The data were collected using a semi-structured household questionnaire. Sociodemographic information, including age, gender, educational status, marital status, and income, were questioned of participants. Other questions were related to vaccination: any side effect from the COVID-19 vaccine, intake of routinely scheduled vaccine during participants' life, COVID-19 vaccine intake, attitude and rejection toward of COVID-19 vaccine from one member of the family, attitude toward affecting participants' opinion on others concerning COVID-19 vaccine, reasons of rejecting COVID-19 vaccine, and any intension to change his attitude toward COVID-19 and takes the vaccine.

A structured interview was carried out where the interviewer prepared closed-ended questions in the form of a face-to-face interview schedule. Initially, the study was designed to reach 900 participants, but a drop rate happened; therefore, the response rate was 91%. The drop rate was due to either missing a lot of information (neglected form) or refusing to participate.

Analysis of the data was carried out using analytic cross-tabulated *P* value test to identify variables associated with vaccine acceptance and descriptive statistics (means, frequencies, and percentages of the answers) using the Statistical Package for the Social Sciences (SPSS) version 21 SPSS Inc., Chicago, IL, USA. and MS Excel.

RESULTS

Results obtained in the current study on 814 with slightly more males (428; 52.5%) than females (386; 47.5%), 257 (31.5%) from urban residents, 344 (42.3%) from the sub-urban and the rest 213 (26.2%) were rural residents, as shown in Table 1.

In Table 2, a high percentage of people under study did not take the COVID-19 vaccine (581; 71.4%). While only 22 participants (2.8%) did not take the required national vaccination during their life. Forty-four (5.4%) of people under study prefer to be infected with COVID-19 infection rather than taking the COVID-19 vaccine.

Table 3 describes the significant difference in different variables when taking COVID-19 vaccination. It was found that older age and male, private job, suburban areas, higher level of education, and infected with COVID-19, all were significant with a $P = 0.001$.

At the same time, other variables such as family income and changing attitudes toward vaccination, did not show any significance in having the COVID-19 vaccine.

Table 1: Sociodemographic characteristics of the study population (n=814)

	Frequency, n (%)
Age (years)	
18–29	335 (41.1)
30–49	406 (49.9)
≥50	73 (9)
Gender	
Male	428 (52.5)
Female	386 (47.5)
Marital status	
Married	598 (73.4)
Single	216 (26.5)
Education	
Illiterate	42 (5.2)
Primary	516 (63.3)
Elementary	109 (13.3)
College	147 (17.9)
Occupation	
Employed	531 (65.2)
Unemployed	283 (34.8)
Residence	
Urban (center of city)	257 (31.5)
Suburban	344 (42.3)
Rural	213 (26.2)
Family income per month (thousands Iraqi dinar)	
<500	411 (50.5)
500–750	300 (36.8)
>750	103 (12.6)
Have had COVID-19?	
Yes	580 (71.3)
No	234 (28.7)

Table 2: Factors related to coronavirus disease 2019 vaccine (n=814)

	Frequency, n (%)
Did got the COVID-19 vaccine?	
Yes	233 (28.6)
No	581 (71.4)
When were young, take all required vaccines?	
No	22 (2.8)
I don't know	276 (33.9)
Some of them	351 (43.1)
All of them	165 (20.2)
Think will change mind about taking the vaccine	
I don't know	553 (67.9)
No	83 (10.2)
Perhaps	149 (18.4)
Depend on circumstances	29 (3.6)
Would prefer to be infected with COVID-19 rather than taking the vaccine?	
Don't prefer	658 (80.8)
Prefer	44 (5.4)
Rather prefer	104 (12.8)
Highly prefer	8 (1)

COVID-19: Coronavirus disease 2019

Table 3: Cross-tabulation of factors associated with having coronavirus disease 2019 vaccine

	Having COVID-19 vaccine		P
	Yes, n (%)	No, n (%)	
Gender			
Male	153 (35.7)	275 (64.3)	0.001
Female	80 (20.7)	306 (79.3)	
Age (years)			
18–29	80 (23.9)	255 (76.1)	0.001
30–49	120 (29.6)	286 (70.4)	
≥50	33 (45.2)	40 (54.8)	
Education level			
Illiterate	7 (16.7)	35 (83.3)	0.001
Reads and writes	22 (21.6)	80 (78.4)	
Primary	29 (26.6)	80 (73.4)	
Secondary	102 (24.6)	312 (75.4)	
College	72 (49.3)	74 (50.7)	
Postgraduate	1 (100.0)	0	
Occupation			
Laborer	76 (30.2)	176 (69.8)	0.001
Employee	119 (44.1)	151 (55.9)	
Private job	5 (55.6)	4 (44.4)	
Unemployed	33 (11.7)	250 (88.3)	
Place of residence			
Urban (center of city)	38 (14.8)	219 (85.2)	0.001
Suburban	116 (33.7)	228 (66.3)	
Rural areas	79 (37.1)	134 (62.9)	
When were young, take all required vaccines?			
No	2 (9.1)	20 (90.9)	0.001
I don't know	43 (15.6)	233 (84.4)	
Some of them	90 (25.6)	261 (74.4)	
All of them	98 (59.4)	67 (40.6)	
Have COVID-19?			
Yes	128 (55.4)	103 (44.6)	0.001
No	105 (18.1)	475 (81.9)	

COVID: Coronavirus disease 2019

Figure 1 shows different side effects presented among those who were vaccinated; local pain had the highest percentage (85.3%) among other symptoms. While fever was (50%), headache (38.1%), nausea (6%), and fatigue (4.6%). In addition, 66.5% of people refused the vaccination and to less extent, they strongly rejected it (12.2%).

In Figure 2, a high percentage (72.1%) was among people understudy who did not take any type of vaccine because they do not trust it, while 14.3% of them did not take it because their friends and relatives did not take it. Almost a quarter of participants (24.9%) only think that COVID-19 is more dangerous and complicated than the vaccination itself in comparison to more than half (58.6%) of them they do not know which vaccine is more effective on health. In addition, almost no participant knew the components of the vaccination (99.6%).

Another finding is that almost three-quarters of people (72%) were not encouraged or told to take vaccination for their benefit. Moreover, among the rest of the 28%, there were parents (27.3%), friends (19.9%), his doctors (14.3%), and social media (13.4%) among the highest prevalence, as shown in Figure 3.

Discussion

This study showed that almost three-quarter of participants were not vaccinated with the COVID-19 vaccine, and the highest percentage of such rejection was due to the loss of trust in it. A review paper done by Dror *et al.* demonstrates the main reason for refusing vaccines in general was they are against it in general (anti-vaccination attitudes) and loss of trust in vaccines,^[13] in addition to other factors such as education, gender, and age. This result is similar to our result, where it was found the influence of age, gender, and income was related to the acceptance of the COVID-19 vaccine.

Our study showed a high percentage of side effects of the COVID-19 vaccine among participants (only local pain at

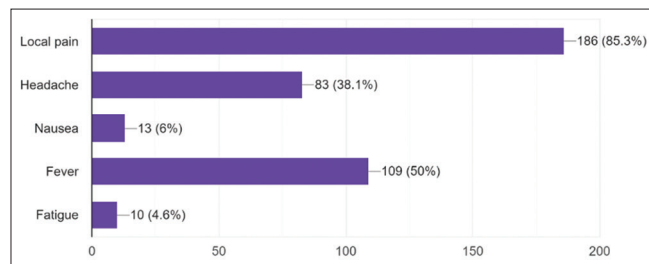


Figure 1: Different side effects of vaccination

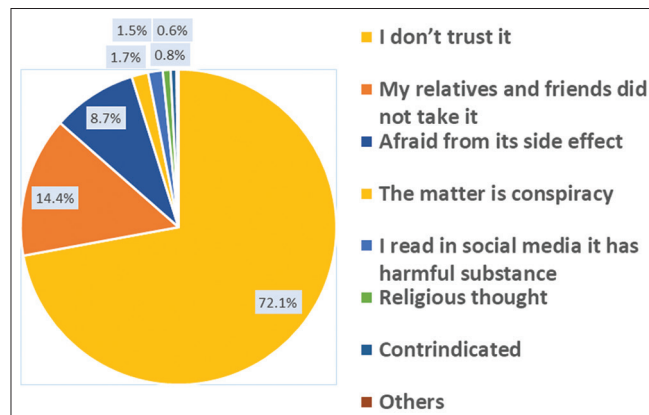


Figure 2: Causes of refusal to take coronavirus disease 2019 vaccine

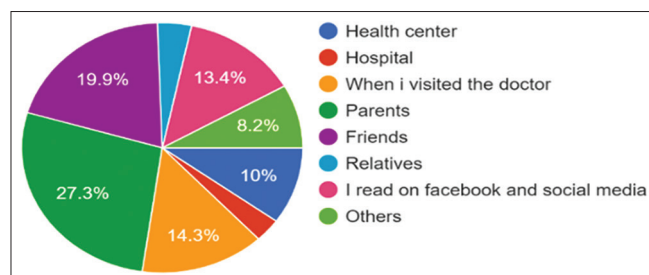


Figure 3: Persons that encourage population to take vaccine

the site of subdermal injection). A study in the United Arab Emirates interpreted that there was no hospitalization entrance after the COVID-19 vaccine, and only mild side effects were observed, such as local pain, headache, and fatigue.^[14]

Although a recent study in Iraq states that the impact of vaccination on health workers and the scientific evidence that it offered immunity,^[15] still the WHO registration as of January 1, 2023, shows that less than half of Iraqi people (19,557,364 [48.62 vaccine doses administrated per 100 population]) whom took COVID-19 vaccination, with a current population of Iraq 45,680,301. Since the beginning of national vaccination campaigns worldwide, it was obvious that almost in each country there are some individuals, groups of people who refuse to take vaccination, or what is called anti-vaccination propaganda.^[16]

This approach and attitude by some groups of people happens all the time and does not depend on the type of vaccine. Hussain *et al.* mentioned in their paper that refusing to take the measles vaccine in a group of people due to panic of it in relation to autism in young children is a similar example of this current anti-vaccination movement.^[17] Another event happened in the 70s and 80s where two parents refused that their children take a vaccine against pertussis due to an article they read about the neurological consequences of this particular vaccine.^[18] The acceptance level of COVID-19 vaccine in this study was (28.3%). In a study done by Al-Mohaithef and Padhi in Saudi Arabia, a country neighboring Iraq, the acceptance level was high (64.7%).^[7] In Jordan, a cross-sectional study include 3100 participants where the acceptance percentage was low (37.4%).^[19] While in a study that include more than 20 countries, the acceptance percentage ranged from 54.8% to 88.6%.^[20]

This variation in the acceptance level of the COVID-19 vaccine could be due to the laws and legislation of each country. In some Arab countries, it is mandatory to take the vaccination. In Iraq, although the percentage of accepting the COVID-19 vaccine is low in almost all governorates, still there were some differences between different governorates, for example, in Baghdad (the capital city of Iraq), citizens are not allowed to enter official government departments without demonstrating the official COVID-19 vaccination card with two doses stamped by the Ministry of Health, this matter is not so restricted in other provinces including Anbar Governorate. A trust factor against COVID-19 raised strongly in our survey, and publically before and during the study; we noticed the reason for that is due to the different social media spreading a lot of talks, videos, and news scaring people about COVID-19.

In a study in Canada, revealing people's perceptions of the safety of the H1N1 vaccine found that 35.2% have opposition over it is safety, and to a higher percentage (41.4%) believe it was unsafe. The study come up with that anti-vaccine propaganda through Internet websites and social media remained common during the epidemic-pandemic crisis.^[21] Agendas used through online anti-vaccination rumors writing about the chemical toxicity of vaccines, changing scientific

hypotheses and introducing alternatives and that they are innocent and not against vaccines and they are under inspection.^[22] It is the rumors spread from laypeople and even from educated people. Rumors combined with local cultural beliefs in Iraq resulted in refusing to take COVID-19, and this is one of the reasons that this country still has cases of COVID-19, with 665 cases daily as of January 6, 2022, and the vaccine uptake level of COVID-19 still not sufficient to protect people against rapidly spreading disease. Opposition against vaccines could be due to political and legal causes, and anti-vaccine activists seen in London in the 19th century after a mandatory law for parents to vaccinate their children. Another opposition is the religious reason and the claiming of the devil's action in refusing vaccines.^[23]

In our study, primary health centers' role in educating people about the COVID-19 vaccine was poor and they represent only 10% of persons who encouraged people to take the vaccine. The health workers, including medical and the paramedical staff have many health duties, including health education to people to provide them with knowledge about the necessity of the COVID-19 vaccine in decreasing mortality and morbidity of infected people. Tafuri *et al.* bring up this concern in their study that it is the responsibility and commitment of medical staff and the intense interest of trained health workers to educate the public, patients, and parents about the correct scientific information about vaccination instead of searching websites and media where they could influence by one of the anti-vaccine movement writers or rumors.^[24]

In the current study, only 2.8% of participants did not take the Iraqi national vaccination during their lifetime, which can be due to the guidance of health workers in primary health centers. Peters in his study explains the importance of trusted professional people such as health-care workers and their involvement in vaccine intervention and recommendations to overcome people's refusal against vaccine.^[25]

Limitations

Due to the spread of COVID-19 in many areas in Anbar Province and due to self-funded research, many areas were not included in the study, so the sample size population does not represent the whole province, and this matter can be considered as one of the limitations to this study. The second limitation is that health workers and medical staff in primary health centers were not involved in the current study, and future studies can involve them to know their opinions and attitude toward vaccination in general and to COVID-19 specifically.

CONCLUSION

COVID-19 vaccine prevents the serious condition of COVID-19 cases and the admission to hospital, particularly to the intensive therapy and care unit and to the critical care unit. Nevertheless, still, people and groups in this study are refusing to take the vaccine. Many rumors by writers and social media (Facebook, Twitter, WhatsApp, telegram, etc.) are influencing public opinion and trust about the COVID-19

vaccine. Although the majority of people prefer to take the COVID-19 vaccine than to be infected with COVID-19, the survey showed that people are still in fear to be take vaccine. More efforts should be made by the primary health centers, health workers, and medical staff to educate the public about the COVID-19 vaccine and that it has a safe, scientific, and healthy action on the human body by stimulating immunity.

Ethics approval and consent to participate

The Research Ethics Committee at the College of Medicine, University of Anbar approved the study. All Participants were taken verbal consent for and the voluntary and anonymous participation.

Acknowledgments

The authors thank the study participants for their contribution to the research. Thanks to the Education College, Department of English Language, University of Anbar for reviewing the manuscript's language grammar.

Financial support and sponsorship

This study was self-funded.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. World Health Organization. WHO Announces COVID-19 Outbreak a Pandemic 2020; 2020. Available from: <https://reliefweb.int/report/whoannouncesCOVID-19outbreak-pandemic-WorldReliefWeb>. [Last accessed on 2024 Apr 01].
2. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed* 2020;91:157-60.
3. Umakanthan S, Sahu P, Ranade AV, Bukelo MM, Rao JS, Abrahao-Machado LF, *et al.* Origin, transmission, diagnosis and management of coronavirus disease 2019 (COVID-19). *Postgrad Med J* 2020;96:753-8.
4. Ipp MM, Gold R, Goldbach M, Maresky DC, Saunders N, Greenberg S, *et al.* Adverse reactions to diphtheria, tetanus, pertussis-polio vaccination at 18 months of age: Effect of injection site and needle length. *Pediatrics* 1989;83:679-82.
5. Al-Ani RM. Ear, nose, and throat manifestations of COVID-19 and its vaccines. *World J Clin Cases* 2022;10:8808-15.
6. MacDonald NE, SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 2015;33:4161-4.
7. 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.
8. Mathieu E, Ritchie H, Ortiz-Ospina E, Roser M, Hasell J, Appel C, *et al.* A global database of COVID-19 vaccinations. *Nat Hum Behav* 2021;5:947-53.
9. Ittefaq M, Abwao M, Rafique S. Polio vaccine misinformation on social media: Turning point in the fight against polio eradication in Pakistan. *Hum Vaccin Immunother* 2021;17:2575-7.
10. Moskova M, Zasheva A, Kunchev M, Popivanov I, Dimov D, Vaseva V, *et al.* Students' attitudes toward COVID-19 vaccination: An inter-university study from Bulgaria. *Int J Environ Res Public Health* 2022;19:9779.
11. Al-Qerem W, Hammad A, Alsajri AH, Al-Hishma SW, Ling J, Mosleh R. COVID-19 vaccination acceptance and its associated factors among the Iraqi population: A cross sectional study. *Patient Prefer Adherence* 2022;16:307-19.
12. Raosoft I. Sample Size Calculator. Raosoft Inc.; 2020.
13. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrahi M, Zigron A,

- et al.* Vaccine hesitancy: The next challenge in the fight against COVID-19. *Eur J Epidemiol* 2020;35:775-9.
14. Saeed BQ, Al-Shahrabi R, Alhaj SS, Alkokhardi ZM, Adrees AO. Side effects and perceptions following Sinopharm COVID-19 vaccination. *Int J Infect Dis* 2021;111:219-26.
 15. Mohammed YA, Mohammed MA, Rajab KI. Prevalence of coronavirus disease-2019 among anaesthesiologists and anaesthesia technicians in al anbar governorate, Iraq. *Health (Irvine)* 2020;6:7.
 16. Wilson SL, Wiysonge C. Social media and vaccine hesitancy. *BMJ Glob Health* 2020;5:e004206.
 17. Hussain A, Ali S, Ahmed M, Hussain S. The anti-vaccination movement: A regression in modern medicine. *Cureus* 2018;10:e2919.
 18. Kulenkampff M, Schwartzman JS, Wilson J. Neurological complications of pertussis inoculation. *Arch Dis Child* 1974;49:46-9.
 19. El-Elimat T, AbuAlSamen MM, Almomani BA, Al-Sawalha NA, Alali FQ. Acceptance and attitudes toward COVID-19 vaccines: A cross-sectional study from Jordan. *PLoS One* 2021;16:e0250555.
 20. Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, *et al.* A global survey of potential acceptance of a COVID-19 vaccine. *Nat Med* 2021;27:225-8.
 21. Seeman N, Ing A, Rizo C. Assessing and responding in real time to online anti-vaccine sentiment during a flu pandemic. *Healthc Q* 2010;13:8-15.
 22. Kata A. Anti-vaccine activists, Web 2.0, and the postmodern paradigm – An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine* 2012;30:3778-89.
 23. Storm AE. "Religious Conviction and the Boston Inoculation Controversy of 1721," Undergraduate Honors Theses. William and Mary, Paper 400; 2011. Available from: <https://www.scholarworks.wm.edu/honorstheses/400>. [Last accessed on 2024 Apr 01].
 24. Tafuri S, Gallone MS, Cappelli MG, Martinelli D, Prato R, Germinario C. Addressing the anti-vaccination movement and the role of HCWs. *Vaccine* 2014;32:4860-5.
 25. Peters MD. Addressing vaccine hesitancy and resistance for COVID-19 vaccines. *Int J Nurs Stud* 2022;131:104241.