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Research Article

Public Perception and Acceptance of COVID-19 Vaccines in Iraq During the Pandemic

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Abstract

Background and Objective: The rapid development and deployment of COVID-19 vaccines constituted a critical global public health response; however, vaccine hesitancy posed a substantial challenge, particularly in low- and middle-income countries such as Iraq. Mistrust, misinformation and sociopolitical factors were reported to influence vaccine uptake. This study aimed to assess public perception, acceptance and hesitancy toward COVID-19 vaccines in Iraq during the pandemic and to identify key sociodemographic and informational determinants influencing vaccination behavior. **Materials and Methods:** A cross-sectional survey was conducted among 1,747 participants across Iraq. Vaccine acceptance was defined as receipt of at least one vaccine dose, while hesitancy included delayed or refused vaccination due to concerns regarding safety, efficacy, or other factors. Public perception reflected attitudes and beliefs toward vaccination irrespective of vaccination status. Data were analyzed using descriptive statistics and inferential tests to examine associations between sociodemographic variables, exposure to misinformation and vaccine acceptance, with statistical significance set at $p < 0.05$. **Results:** Among the participants, 42.7% were vaccinated and 57.3% were unvaccinated. Vaccine acceptance was significantly higher among men, older individuals and participants with higher educational attainment ($p < 0.001$). The most commonly reported reasons for vaccine hesitancy were concerns about long-term side effects (72.4%) and distrust in vaccine manufacturers (41.9%). Exposure to misinformation via social media platforms showed a significant association with increased vaccine hesitancy ($p = 0.03$). **Conclusion:** The findings identify critical sociodemographic and informational factors influencing COVID-19 vaccine acceptance in Iraq. Targeted public health interventions focusing on women, younger populations and individuals with lower educational levels are warranted. Strengthening evidence-based communication strategies to counter misinformation and rebuild public trust may improve vaccine uptake. Future studies should explore longitudinal trends and intervention effectiveness to address persistent vaccine hesitancy.

Key words: COVID-19, vaccine acceptance, vaccine hesitancy, public perception, Iraq, social media, misinformation, public health

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Almost four years after the outbreak was declared a global health emergency, the World Health Organization (WHO) advised transitioning from emergency response to long-term management of the pandemic¹. COVID-19, caused by SARS-CoV-2, was first identified in Wuhan, China, in December 2019 and rapidly spread worldwide². On 11 March 2020, the WHO officially declared COVID-19 a global pandemic, prompting unprecedented public health interventions globally. As of June 2023, more than 767.5 mL confirmed cases and approximately seven million deaths had been reported worldwide³.

In Iraq, the first confirmed case was reported on 24 February 2020. By June 2023, more than 2.4 mL confirmed cases and over 25,000 deaths had been documented⁴. To mitigate the spread of the virus, the Iraqi government implemented several public health measures including lockdowns, curfews, travel restrictions and large-scale vaccination campaigns⁵.

Vaccination has long been considered one of the most effective and cost-efficient strategies for preventing infectious diseases and reducing mortality⁶. COVID-19 vaccines were developed at unprecedented speed through international scientific collaboration and accelerated regulatory processes, providing an essential tool for controlling the pandemic⁷. Evidence from clinical trials and real-world studies has demonstrated that vaccines significantly reduce severe illness, hospitalization and death associated with COVID-19 infection⁸⁻¹⁰.

Despite strong scientific evidence supporting vaccine safety and effectiveness, vaccine hesitancy remains a major global public health challenge¹¹. Public attitudes toward COVID-19 vaccination are influenced by several factors, including demographic characteristics, social influences, trust in health institutions and exposure to misinformation¹².

In March 2021, the Iraqi Ministry of Health began distributing several COVID-19 vaccines, including Pfizer-BioNTech, Oxford-AstraZeneca and Sinopharm, through vaccination centers across all governorates¹³. However, vaccine uptake remained relatively low despite the availability of vaccines and national awareness campaigns. Studies conducted in various regions have reported that misinformation, mistrust in pharmaceutical companies and concerns about vaccine safety contribute significantly to vaccine hesitancy¹⁴⁻¹⁶.

Understanding public perception and behavioral drivers of vaccine acceptance is essential for developing effective public health strategies. Therefore, the present study aims to

assess public perception, acceptance and hesitancy toward COVID-19 vaccination among the Iraqi population during the pandemic and to identify the main sociodemographic and informational factors influencing vaccination decisions.

MATERIALS AND METHODS

Study design: This cross-sectional study employed a self-administered online questionnaire distributed via social media platforms, including WhatsApp, Facebook, Viber and Telegram. The survey was developed and hosted using LimeSurvey, with IP-based controls implemented to restrict participation to users located in Iraq and to minimize duplicate or ineligible responses.

Ethical considerations: Ethical approval was obtained from the Research Ethics Committee (REC), Al-Turath University, Baghdad, Iraq (Approval No.: Not issued/Not available; approved on 17 January 2023). The study was conducted in accordance with the principles of the Declaration of Helsinki. Participation was voluntary and respondents could withdraw at any time without consequence.

Study participants and sampling: Eligible participants were Iraqi residents aged ≥ 18 years. A total of 1,747 participants were included after providing informed consent. Recruitment was conducted using non-probability convenience sampling. The questionnaire was disseminated via a Google Forms link, ensuring anonymity, confidentiality and secure data storage with restricted access. Data collection occurred between 1 June 2021 and 19 June 2021.

Inclusion criteria:

- Participants aged 18 years and older
- Residents of Iraq
- Individuals who provided informed consent to participate in the study
- Participants were able to understand and respond to the survey questions

Exclusion criteria:

- Individuals under 18 years of age
- Non-residents of Iraq
- Individuals who did not provide informed consent
- Participants were unable to understand the survey language
- Responses with substantial missing data or incomplete surveys

Questionnaire: The questionnaire consisted of four parts.

Part 1 included sociodemographic data (age, sex, educational level and address of the participant).

Part 2 included questions about COVID-19 vaccine safety and effectiveness, the expected complications of vaccines in the future, the willingness of participants to take the vaccines and questions about the effect of untrusted news about the COVID-19 vaccine on the participant's decision, in addition to a question of whether the participant had been vaccinated or not yet.

Part 3 included questions directed at non-vaccinated participants regarding the reasons that they are non-vaccinated and the reasons that make them hesitant about the vaccines.

Part 4 included questions directed at participants who were already receiving vaccines about the vaccine's side effects, the period in which symptoms appear and their suggestions that could encourage people to receive vaccines.

Validity of the questionnaire: The survey instrument underwent pre-testing with a small sample size to enhance question clarity and response options. Targeted sampling maintained diverse demographic representation, while precise inclusion and exclusion criteria kept the data current. Data gathering methods like online surveys via social media enhanced reach and response accuracy, while anonymity encouraged actual participation. Data entry required separate researchers to double-enter data and run automated checks

for inconsistencies. Data collectors received extensive training and regular monitoring ensured procedure adherence. Furthermore, thorough data cleaning and validation procedures, as well as meticulous documentation, maintained the study's transparency and reliability.

Statistical analysis: Microsoft Excel (Microsoft Corporation, Redmond, WA, USA) and SPSS (version 25.0; IBM Corporation, Armonk, NY, USA) were used for data entry and statistical analyses. A rigorous descriptive analysis was used to compare the characteristics of vaccinated and unvaccinated respondents. This included analyzing the distribution of age, gender and education level within each category. Data are expressed as frequencies, Tables, or Figures. A p-value of <0.05 was considered statistically significant.

RESULTS AND DISCUSSION

A total of 1,747 participants were included in this study; 746 (42.7%) received the COVID-19 vaccine (either one or two doses), while 1,001 (57.3%) remained unvaccinated. Among the participants, 939 (53.7%) were from central governorates, 119 (6.8%) from the North and 689 (39.4%) from the South (Table 1).

The distribution of vaccinated and non-vaccinated participants based on their features is shown in Table 2. There was a significant association among the 18-19 years age group, men and secondary school education ($p < 0.001$).

Table 1: Characteristic features of participants

	N	Percent (%)
Age		
8-19 years	202	11.6
20-29 years	682	39.0
30-39 years	610	34.9
40-49 years	173	9.9
50-59 years	66	3.8
≥60 years	14	0.8
Sex		
Men	953	54.6
Women	794	45.4
Geographical regions		
Central Governorates	939	53.7
North	119	6.8
South	689	39.4
Education		
Primary school	15	0.9
Secondary school	158	9.0
University student	392	22.4
College/Institution	936	53.6
Higher education	246	14.1
Received COVID-19 vaccine (either one or two doses)		
Yes	746	42.7
No	1001	57.3

Table 2: Distribution of vaccinated and non-vaccinated participants according to their features

	Vaccinated		Non-vaccinated		p value
	N	Percent (%)	N	Percent (%)	
Age					
18-19 years	38	18.8	164	81.2	<0.001
20-29 years	258	37.8	424	62.2	
30-39 years	313	51.3	297	48.7	
40-49 years	88	50.9	85	49.1	
50-59 years	40	60.6	26	39.4	
≥60 years	9	64.3	5	35.7	
Sex					
Men	461	48.4	492	51.6	<0.001
Women	285	35.9	509	64.1	
Education					
Primary school	4	26.7	11	73.3	<0.001
Secondary school	42	26.6	116	73.4	
University student	101	25.8	291	74.2	
College/Institution	459	49.0	477	51.0	
Higher education	140	56.9	106	43.1	
Total	746	42.7	1001	57.3	1747

Table 3: Frequency of respondents according to their knowledge regarding the COVID-19 vaccine

	N	Percent (%)
Initial thought about the effectiveness of the COVID-19 vaccine currently available in health institutions.		
Useful	1010	57.8
Not useful	193	11.0
I do not know	544	31.1
Initial thought about the negative effects of vaccines on individual health in the future.		
Yes	506	29.0
No	522	29.9
I do not know	719	41.2
Have any concerns about the COVID-19 vaccine?		
Yes	901	51.6
No	846	48.4
Have confirmative information regarding incidences of fatality or the development of certain complications after receiving the COVID-19 vaccine.		
Yes	429	24.6
No	1318	75.4
Registration for COVID-19 vaccine dose via the MoH electronic link.		
Yes	785	44.9
No	962	55.1
Have access to the COVID-19 vaccine available in health institutions.		
Yes	1406	80.5
No	341	19.5
Sufficient MoH public education about the importance of the COVID-19 vaccine via media.		
Yes	523	29.9
No	1224	70.1
Will the COVID-19 vaccine provide adequate protection from infection with SARS-CoV-2 in the future?		
Yes	609	34.9
No	456	26.1
I do not know	682	39.0
Access and impact of warning materials about the risks of the COVID-19 vaccine that have been spread on social media.		
Yes, I watched it and I am affected	402	23.0
No, I did not watch it	454	26.0
Yes, I watched it and I was not affected	891	51.0
Do you encourage people to receive the COVID-19 vaccine?		
Yes	1252	71.7
No	495	28.3
Have you got a vaccine appointment through the MoH platform?		
Yes, I registered and I have not received a message yet about the date of the vaccine	224	12.8
Yes, I registered and I received a message about the vaccination date	570	32.6
No, I did not register	953	54.6
Total	1747	100.0

Table 4: Frequency of vaccinated respondents according to COVID-19 vaccine side effects

Questions and answers for vaccinated participants n = 746	N	Percent (%)
Side effects that you have experienced after being given the vaccine (MCQ)		
Fever	141	18.9
Pain at the site of injection of the vaccine with swelling	207	27.7
Tiredness and fatigue	204	27.3
Joint pain	103	13.8
Headache	215	28.8
All the above	276	37.0
None	83	11.1
When did the side effects appear?		
After 24 hrs	357	47.9
After 2 days	11	1.5
Immediately	266	35.7
I do not remember/did not appear	112	15.0

Table 5: Frequency of non-vaccinated respondents according to their reluctance about the COVID-19 vaccine

	N	Percent (%)
What are the reasons that you are non-vaccinated yet? (MCQ)		
Obsessions caused by the warnings posted on social media	273	27.3
Obsessions caused by warnings from friends about possible complications that may happen from the vaccine in the future	269	26.9
Obsessions due to interviews with healthcare providers about the risks of the vaccine published on TV or social media	106	10.6
Lack of trust in vaccines producing companies and or countries	419	41.9
Personal obsessions	185	18.5
MoH did not give enough assurances about the safety of the vaccine and there is no health insurance for people who may suffer from the vaccine	352	35.2
Advice from friends and relatives who are working in health institutions not to receive the vaccine	49	4.9
I do not have enough time to go to health institutions and receive the vaccine	115	11.5
There is difficulty in reaching the health institution	124	12.4
Root of fear from COVID-19 vaccine		
My fear about receiving the vaccine is based on scientific rational	276	27.6
My fear about receiving the vaccine is based on my perception and fear of its complications in the future	725	72.4

Table 6: Vaccine hesitancy by media influence

Media influence factor	Non-vaccinated respondents (N)	Percentage (%)
Warnings posted on social media	273	27.3
Warnings from friends about possible complications	269	26.9
Interviews with healthcare providers discussing vaccine risks (TV/social media)	106	10.6
Lack of trust in vaccine-producing companies and countries	419	41.9
Personal concerns and anxieties about the vaccine	185	18.5
MoH did not provide enough assurances or health insurance coverage	352	35.2
Advice from friends and relatives in healthcare against vaccination	49	4.9
Lack of time to visit a vaccination center	115	11.5
Difficulty accessing a health institution	124	12.4

Of the participants, 57.8% believed that the COVID-19 vaccine available at health institutions was useful, while 41.2% were uncertain about potential negative health effects. Additionally, 51.6% expressed concerns about the COVID-19 vaccine. Moreover, 75.4% had not heard or could not confirm any reports of fatalities or severe complications after receiving the vaccine in their vicinity.

Regarding vaccine accessibility, 80.5% of participants had access to COVID-19 vaccines in health institutions, while 44.9% registered via the electronic link of the Iraqi MoH to book their vaccine dose. However, only 29.9% of

participants believed that the Iraqi MoH media provided sufficient educational content regarding the importance of COVID-19 vaccination through television or social media.

Further, 39% were uncertain about whether the COVID-19 vaccine provided long-term protection against SARS-CoV-2. 51% of respondents watched social media warnings about the risks of the COVID-19 vaccine but were not affected by them, while 71.7% encouraged others to take the COVID-19 vaccine. However, 54.6% did not register for vaccination through the Ministry of Health platform (Table 3).

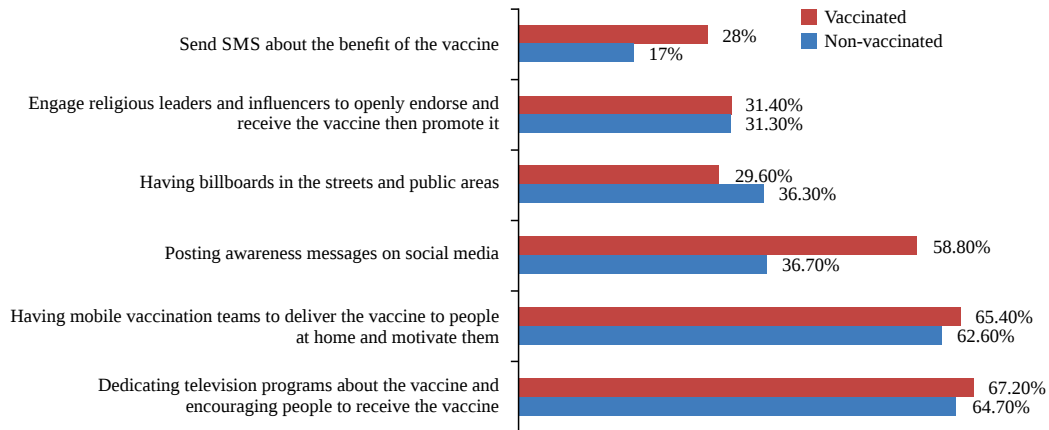


Fig. 1: Suggestions from vaccinated and non-vaccinated participants to encourage people to receive the COVID-19 vaccine

Table 7: Trust in information sources and vaccine acceptance

Information source	Vaccinated (N = 746) (%)	Non-Vaccinated (N = 1001) (%)	p value
Healthcare Professionals (Doctors, Nurses)	69.2	24.3	<0.001
Iraqi Ministry of Health (MoH)	51.6	18.2	<0.001
Scientific research papers/WHO reports	48.7	14.9	<0.001
Social media (facebook, twitter, whatsapp)	15.3	63.5	<0.001
TV news channels	34.1	40.8	0.041
Friends and family	21.8	52.6	<0.001

Among the 746 vaccinated participants, 37% reported experiencing multiple side effects, including fever, swelling and pain at the injection site, fatigue, joint pain and headache. 47.9% experienced side effects within 24 hrs of receiving the vaccine, while only 11.1% of participants did not experience any side effects (Table 4).

There were 1,001 non-vaccinated participants, of whom the main reason for non-vaccination was lack of trust in vaccine-producing companies and countries (41.9%). Additionally, 72.4% feared taking the vaccine based on perception and fear of future complications, while 27.6% had scientific-based concerns about the vaccine (Table 5).

Media influence and vaccine hesitancy: Media exposure played a critical role in vaccine hesitancy. 27.3% of non-vaccinated individuals reported that social media warnings influenced their decision, while 26.9% cited warnings from friends and family members. 10.6% were influenced by interviews with healthcare professionals on TV and social media and 41.9% expressed distrust toward vaccine-producing companies and governments. 35.2% of non-vaccinated respondents believed the Iraqi Ministry of Health (MoH) did not provide enough assurances or health insurance coverage for vaccine side effects (Table 6).

To address vaccine hesitancy, vaccinated and non-vaccinated participants suggested several measures:

- 64.7% of vaccinated and 67.2% of non-vaccinated participants supported dedicated television awareness programs about the vaccine
- 62.6% of vaccinated and 65.4% of non-vaccinated participants supported mobile vaccination teams to provide vaccines at home
- 36.7% of vaccinated and 58.8% of non-vaccinated participants recommended posting awareness messages on social media (Fig. 1)

These findings emphasize the need for targeted media literacy programs, transparent health communication strategies and improved access to credible vaccine information to counteract misinformation and increase vaccine acceptance.

Media influence, misinformation and psychological barriers to vaccine acceptance: Media platforms played a critical role in shaping public perception of COVID-19 vaccines, influencing both acceptance and hesitancy. Our analysis reveals that trust in information sources, exposure to misinformation and psychological fears significantly affected individuals' vaccination decisions.

Table 8: Demographic breakdown of media influence on hesitancy

Demographic group	Social media influence (%)	TV news influence (%)	Friends and family influence (%)
18-19 years	41.5	22.1	38.7
20-29 years	36.2	27.4	31.1
30-39 years	28.5	31.9	27.8
40-49 years	19.7	40.5	23.4
50-59 years	12.4	51.2	18.9
≥60 years	8.3	54.6	12.7
Primary school	61.2	24.3	59.5
Secondary school	48.6	29.5	41.7
University student	38.5	34.2	33.1
College/Institution	27.8	38.4	29.3
Higher education	14.2	45.9	19.1

Table 9: Psychological and behavioral impact of misinformation on hesitancy

Psychological Impact	Non-vaccinated (N = 1001) (%)
Fear of severe vaccine side effects	72.4
Anxiety about long-term health complications	65.3
Mistrust in government health policies	58.7
Conspiracy beliefs (e.g., vaccine microchips, population control)	41.9
Preference for "natural immunity" over vaccination	38.2
Avoiding vaccination due to family pressure	32.5

Trust in information sources and vaccine acceptance: The primary sources of vaccine-related information varied significantly between vaccinated and non-vaccinated participants (Table 7). Healthcare professionals were the most trusted source among vaccinated participants (69.2%), while non-vaccinated individuals (63.5%) relied primarily on social media. This difference was statistically significant ($p < 0.001$).

Additionally, only 18.2% of non-vaccinated individuals trusted the Ministry of Health (MoH), compared to 51.6% of vaccinated individuals. Scientific research papers and WHO reports were rarely consulted by hesitant individuals (14.9%), highlighting a lack of access to reliable information.

Demographic breakdown of media influence on hesitancy:

The impact of social media and traditional news sources on vaccine hesitancy varied across age and education groups (Table 8):

- Younger individuals (18-19 years old) were the most affected by social media misinformation (41.5%), showing higher susceptibility to misleading content
- Older individuals (50+ years old) were more influenced by TV news (51.2%), highlighting a shift in how different age groups consume health information
- Individuals with primary or secondary school education relied heavily on social media and friends/family for vaccine-related decisions, whereas higher-educated individuals trusted official health sources

Psychological and behavioral impact of misinformation on vaccine hesitancy: Misinformation not only affected knowledge but also contributed to fear and anxiety, leading many individuals to avoid vaccination (Table 9):

- 72.4% of non-vaccinated individuals feared severe vaccine side effects, showing that fear-based misinformation was a major factor in hesitancy
- 41.9% believed in conspiracy theories, such as vaccines containing microchips or being used for population control
- 32.5% reported avoiding vaccination due to family pressure, highlighting the role of cultural and social influences

This study revealed that more than 80% of the participants had access to the COVID-19 vaccine, yet only 42.7% received it. Vaccine uptake was higher among men than women and was significantly associated with age and education level. Acceptance was more prevalent among older and highly educated individuals, while it was lower among participants aged 18-19 years, secondary school students and early university students. These findings are consistent with previous studies by Dhanani and Franz¹⁵, Al-Mohaithef and Padhi⁴ and Yu *et al.*⁹, which suggest that demographic characteristics significantly influence vaccine acceptance. Similar patterns have also been reported in studies conducted in Middle Eastern and global populations, where age, educational level and socioeconomic factors were significant predictors of vaccine acceptance.

More than half of the participants (57.8%) expressed confidence in the COVID-19 vaccine, believing it to be useful, aligning with the observations of Dubé and MacDonald¹⁶, who highlighted the importance of public confidence in vaccination programs. However, only 35% believed that the vaccine would provide long-term protection from SARS-CoV-2 and 51.6% reported concerns about its safety. Additionally, 39% of respondents were uncertain about the vaccine's ability to prevent future infections, potentially reflecting insufficient public health education. This is further supported by the fact that approximately 70% of participants believed that the Iraqi Ministry of Health (MoH) did not provide sufficient educational content regarding vaccination through traditional or digital media channels.

Several key factors contributed to vaccine hesitancy. Among the non-vaccinated participants, 41.9% expressed distrust in vaccine producers and 72.4% feared potential long-term complications. Similar concerns have been widely documented in global studies examining vaccine hesitancy and public trust in pharmaceutical companies and governmental health authorities. Additionally, there was a lack of mechanisms to verify information about vaccine safety, making it difficult for individuals to distinguish between reliable and misleading sources.

Social media played a particularly significant role in shaping vaccine attitudes. Approximately 74% of participants reported encountering warning materials about COVID-19 vaccines on online platforms and 23% admitted that these materials directly influenced their decision not to get vaccinated. Similar findings have been reported by Al-Marshoudi *et al.*¹⁷, who found that peer influence and social media played a crucial role in vaccine refusal and by Bianco *et al.*¹⁸, who emphasized the contribution of social media to vaccine misinformation and public misjudgment. Other studies have also highlighted that exposure to misleading or unverified health information on digital platforms significantly increases vaccine hesitancy and reduces trust in vaccination campaigns.

Despite concerns, 71.7% of participants stated that they would encourage others to receive the vaccine, which aligns with findings reported by Abebe *et al.*¹⁹. Among vaccinated individuals, 37% experienced multiple side effects, including fever, injection-site pain, fatigue, joint pain and headaches. These findings are consistent with reports from Cheng *et al.*²⁰, which documented similar short-term post-vaccination reactions among vaccinated populations. Importantly, 11% of vaccinated participants reported no side effects, further supporting the safety profile of currently available COVID-19 vaccines.

The role of media and commercial interests in shaping vaccine perception was also a crucial factor influencing public attitudes in Iraq. While traditional and social media served as essential channels for disseminating health information, they also contributed to fear, misinformation and skepticism regarding vaccine safety. Studies conducted in Iraq and neighboring regions have similarly reported that misinformation, particularly on social media platforms, significantly contributes to vaccine hesitancy and public fear regarding COVID-19 vaccination programs²⁰⁻²⁵.

Our findings indicate that 51% of participants had seen warning materials about COVID-19 vaccines on social media and 23% acknowledged that such materials influenced their decision not to be vaccinated. Furthermore, only 29.9% of participants believed that the Iraqi Ministry of Health provided sufficient educational materials through television or social media, highlighting the limitations of official communication strategies in countering misinformation effectively. These observations are consistent with systematic reviews that demonstrate how misinformation spreads rapidly through digital platforms and contributes to public uncertainty regarding vaccination²⁶.

A significant issue was the exaggeration of vaccine risks in media narratives, particularly on social media and television. Among non-vaccinated participants, 27.3% reported that their hesitancy was fueled by social media warnings about vaccine risks and 26.9% cited warnings from friends and relatives influenced by these reports. These findings suggest that sensationalized media coverage may amplify fear and uncertainty regarding vaccine safety, even in the absence of strong scientific evidence²⁷.

Beyond misinformation, commercial interests also played a role in shaping vaccine discourse. Media outlets and digital platforms often amplified vaccine-related controversies to increase audience engagement and advertising revenue, thereby contributing to confusion and skepticism among the public. Similar concerns have been raised in international studies examining vaccine communication, where conflicting information regarding booster doses, long-term effects and vaccine effectiveness contributed to declining public trust in vaccination programs²⁸.

Finally, strategies aimed at improving vaccine uptake should include targeted awareness campaigns, transparent communication from health authorities and improved access to vaccination services. For example, mobile vaccination programs and community-based vaccination initiatives have been shown to significantly increase vaccine coverage among underserved populations²⁹. Such interventions may play an important role in addressing vaccine hesitancy and improving vaccination rates in Iraq and other developing countries.

CONCLUSION

This study provides comprehensive insights into the complex interplay of social, psychological and media-driven factors influencing COVID-19 vaccine hesitancy in Iraq. Despite widespread vaccine availability, acceptance remained suboptimal, largely due to mistrust in vaccine manufacturers, misinformation on social media and inadequate public health communication.

One of the most critical findings was the significant role of media and commercial interests in shaping public perception. The proliferation of fear-inducing narratives and conflicting reports from various stakeholders contributed to public uncertainty and skepticism, reinforcing hesitancy. The dominance of unregulated misinformation over scientific discourse highlights the urgent need for effective media strategies to promote vaccine confidence.

To enhance vaccine uptake, health authorities must implement targeted, evidence-based interventions that counter misinformation, build trust and improve access to reliable health information. This includes strengthening public health messaging through diverse communication channels, engaging community leaders to address vaccine-related fears and integrating media literacy programs to help individuals critically assess vaccine-related content.

Furthermore, policymakers should address structural barriers to vaccination, including socioeconomic disparities, logistical challenges and gaps in healthcare communication. Future research should focus on longitudinal analyses of media narratives, the psychological impact of misinformation on vaccine decision-making and the effectiveness of policy-driven strategies in improving public health resilience.

By adopting a multi-faceted, data-driven approach, Iraq can improve public confidence in vaccination programs and enhance preparedness for future public health crises.

Further research is needed to validate these findings in regional and international settings. Such studies should meticulously account for the unique aspects of awareness and motivational materials, including timing, intensity and specific target groups, where the outcomes can support policymakers and healthcare providers in yielding effective control strategies.

SIGNIFICANCE STATEMENT

This study highlights key factors influencing COVID-19 vaccine acceptance in Iraq, including sociodemographic characteristics and misinformation exposure. The findings provide evidence for developing targeted public health

strategies to address vaccine hesitancy. It emphasizes the importance of trust-building and effective communication to improve vaccine uptake and supports evidence-based policymaking for managing current and future public health challenges.

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