Original Article

COVID-19 Vaccine–Related Misinformation in The Iraqi Community

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ABSTRACT

Background: The recent coronavirus (SARS-CoV-2) pandemic has created a serious public health concern worldwide. Shortly after the successful mapping of the genome sequence of SARS-CoV-2 and the declaration of the pandemic by the World Health Organization (WHO) in early 2020, scientists and pharmaceutical companies raced against time in efforts to develop vaccines. As of the 18th of February 2021, the WHO had approved at least seven different vaccines to be rolled out worldwide. However, despite the seriousness of the pandemic and its rapid spread, Iraqi society still refrains from taking vaccines against the disease. Although there is an increase in vaccination with the availability of coronavirus vaccines in Iraq, the rate remains below the level required to achieve herd immunity in Iraqi society soon.

Objectives: To assess the spread of COVID-19 vaccine related misinformation in the Iraqi community.

Methods: A cross-sectional study based on an internet survey that contained a 14-item questionnaire to assess public knowledge related to the COVID-19 vaccine.

Results: A total of 1066 participants completed the survey questionnaire. The study showed a high level of COVID-19 vaccine–related misinformation in the Iraqi community. Individuals who are unemployed with low education levels and living in rural areas, those who did not take the vaccine, and those who were unwilling to advise others to take the vaccine had significantly increased the level of COVID-19 vaccine–related misinformation. In addition, this study found that the most common sources of information among participants were websites and social media.

Conclusions: COVID-19 vaccine–related misinformation is widely spread. This aspect must be considered in any planned public measure that aims to control the pandemic.

Keywords: COVID-19 vaccine, Misinformation, Knowledge, Iraq.

INTRODUCTION

The recent contagious respiratory infectious disease caused by a novel coronavirus (SARS-CoV-2) has created a serious public health concern worldwide, causing the severe acute respiratory syndrome (SARS) outbreak.[1] The first cases of COVID-19 were identified in Wuhan, China, at the end of December 2019, and by the 12th of March 2020, the World Health Organization (WHO) had classified the new threat as a pandemic. The virus has now affected every country globally, recording a large number of deaths in each.[2] As of the 11th of May 2021, around 160 million cases and 3 million deaths were reported globally.

The first COVID-19 case in Iraq was reported on the 24th of February 2020. From then, the number of new cases rose rapidly. As of the 11th of May 2021, Iraq recorded around 1 million cases and 16 thousand deaths, putting it in the twenty-fourth place in terms of total cases.[3]

Most people infected with the COVID-19 virus experience mild to moderate symptoms of respiratory infections, including fever, dry cough, and tiredness. However, patients often recover without specific treatment. A severe illness that requires hospital admission is more likely to happen in older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer.[7]

The COVID-19 pandemic has led to a catastrophic situation around the world. Policies are needed to ease the impact of the pandemic.[4] The primary strategy pursued by most countries worldwide to reduce disease transmission has often been through non-pharmaceutical interventions. These include the implementation of a policy of wearing masks, hand hygiene through washing or sanitization, social distancing, travel limitations, and school closures, in addition to partial or complete lockdowns.[5-7] The non-pharmaceutical interventions were doubtlessly able to hinder the progression of the disease.

Still, the most promising strategy to curb the spread of the pandemic and give hope to reducing mortality and morbidity remains within the capacity of medical technology. This medical technology includes effective, safe, and easily accessible antiviral drugs and vaccines. In this case, until December 2020, no antiviral agent was approved specifically to work against the new SARS-CoV-2.[6,7]

A vaccine is a biological preparation that provides active acquired immunity to a particular infectious disease. It is one of the most reliable and cost-effective public health interventions ever implemented and saves millions of lives each year.[8,9] Any vaccine should undergo six stages of development before being used. These are the exploratory, pre-clinical, clinical development, regulatory review and approval, manufacturing, and quality control stages.

Before the COVID-19 pandemic, no vaccine for any disease had ever been produced in less than several years. Also, there was no known vaccine to prevent coronavirus infection in humans.[9,10] Even so, shortly after successfully mapping the genome sequence of SARS-CoV-2 and the declaration of the pandemic by WHO in early 2020, scientists

and pharmaceutical companies raced against time to develop vaccines.[2,11]

As of the 18th of February 2021, at least seven different vaccines were approved by WHO to be rolled out worldwide. Currently, more than 200 additional vaccines are in development, of which more than 60 are in clinical development. The vulnerable populations are the highest priority for vaccination.[12]

By March 2021, Iraq received more than 300 thousand doses of the AstraZeneca COVID-19 vaccine in addition to the previous 50 thousand doses of Sinopharm BBIBP-CorV COVID-19 vaccine.[13] However, despite the seriousness of the pandemic and its rapid spread, Iraqi society still refrains from taking vaccines against the disease to an extent.

Although there is an increase in vaccination with the availability of coronavirus vaccines in Iraq, the rate remains below the level required to achieve herd immunity in Iraqi society shortly. As of the 18th of April 2021, only around 190 thousand people had received the vaccine.[14]

In this study, we aim to highlight one of the most critical factors that contribute to reducing people's willingness to get vaccinated: the extent of the spread of false information about the COVID-19 vaccine in Iraqi society. We also aim to study some factors that may contribute to the spread of such information.

MATERIALS AND METHODS

Participants

This cross-sectional study was based on an internet survey done between the 1st of April and the 11th of May 2021, around one month after the introduction of the COVID-19 vaccine in Iraq. The authors published the link to the survey through social media platforms. The questionnaire was designed to be easily opened and answered through smartphones, tablets, and computers. At the beginning of the questionnaire, information about the survey, its purpose, and the instructions to answer the questions were mentioned. It was also mentioned that participants' privacy would be taken into account for participation and that any information that could lead to the person's identification would not be published or stored. People then continued the survey and answered the questions. Ethical approval for this study was obtained from the Ethical Committee in Basra Health Directorate.

Measures

The survey questionnaire consisted mainly of two parts: the demographics and the information. The demographic variables included age group, gender, occupation, level of education, marital status, and place of residence. The information variables included 14 questions about the common misinformation spread in the community regarding the COVID-19 vaccine; these questions were formulated after reviewing the CDC and WHO websites for the frequently asked questions and common

myths about the new COVID-19 vaccines. The participants had to answer each question by choosing Yes, No, or Maybe. Also, there were three other questions in the survey. These asked about the most common source of information that the participant usually used to get information about the new outbreak, whether the participants would get the vaccine or not, whether the participant would encourage others to take the vaccine.

Statistical analysis

The participants' final score was calculated from their correct answers in the 14 information questions. Then, a multivariable linear regression analysis using the demographic variables as independent variables and the final score as the dependent variable has been used. The statistical significance level was set at $p < 0.05$ (two-sided). SPSS version 25 was used for data analyses.

RESULTS

Only those who agreed to participate in the electronic survey were included in the study. A total of 1066 participants completed the survey questionnaire. The two most common age groups were 36–45 and 46–55 (34 and 28% respectively). Of them, 768 (72%) were female, and 298 (28%) were male. Further, 602 (57%) had completed their college education and held a bachelor's degree. Most of the participants (935 of them, i.e., 88%) were married, and 761 (71%) lived in urban areas. Regarding the then current work of the participants, 208 (20%) were not working (i.e., they were students, unemployed, or retired), 608 (57%) were working in governmental or private sectors, and 250 (24%) were employed in the health sector. 692 (65%) had already received at least one shot of the vaccine, and 684 (64%) of the participants showed their willingness to advise others to take the vaccine (Table 1).

Table 1: Demographic features of the participants with the mean and SD of their misinformation score (N =1066).

Variables		Number and % of participants		Mean Misinformation Score	SD	ANOVA
Sex	Male	298	28%	7.59	4.103	0.857
	Female	768	72%	7.64	4.117	
Age groups (in years)	16-25	74	7%	9.2	3.85	0.000
	26-35	193	18%	7.02	4.196	
	36-45	364	34%	7.27	4.021	
	46-55	294	28%	7.68	4.145	
	Above 55	141	13%	8.6	4.097	
Marital state	Not married	131	12%	8.34	3.764	0.032
	Married	935	88%	7.52	4.15	
Education level	Primary school or less	29	3%	9.9	3.635	0.000
	Secondary School	158	15%	9.8	3.179	
	College	602	57%	8.17	3.699	
	Higher education degree	277	26%	4.94	4.144	
Work	Not working	208	20%	8.77	3.791	0.000
	Work in other sectors	608	57%	8.42	3.694	
	Work in health sector	250	24%	4.72	3.997	

Living	Rural area	305	29%	8.69		3.807	0.000
	Urban area	761	71%	7.2		4.153	
Already vaccinated	No	692	65%	9.52		6.166	0.000
	Yes	374	35%	4.11		3.259	
Willing to advise others to take the vaccine	No	382	36%	10.55		2.761	0.000
	Yes	684	64%	5.99		3.823	
Total		1066	100%	7.62		4.11	

The 14 COVID-19 vaccine–related misinformation in the survey and the number and percentage of the participants who did not correctly respond to each one of them are shown in Table 2.

Table 2: COVID-19 vaccine–related misinformation and the number and the percentage of individuals who incorrectly responded to them (N= 1066).

	COVID-19 vaccine-related misinformation	The number of the participant who wrongly responded to the information	
1	The pandemic of COVID-19 disease does not exist, and what is happening now is only media exaggeration.	98	9.2%
2	Both the disease and the vaccine are made by certain countries to take advantage of the situation and achieve their interests.	663	62.2%
3	Those who have previously had COVID-19 do not need to be vaccinated anymore.	437	41.0%
4	The vaccine is proved to be highly dangerous for pregnant and breastfeeding women, and a pregnancy test must be done before taking it	894	83.9%
5	The vaccine can make you get COVID-19 disease because it contains the virus.	561	52.6%
6	When PCR is done for a person who received the vaccine, it will be positive due to the vaccine itself.	729	68.4%
7	The vaccine is dangerous for people with heart disease, high blood pressure, and diabetes. Therefore, they should not be vaccinated.	673	63.1%
8	The vaccine is proved to affect fertility.	594	55.7%
9	The vaccine causes dangerous complications due to blood clotting.	663	62.2%
10	The vaccine can alter a person's genetic material (DNA).	639	59.9%
11	A particular test must be made to diagnose COVID-19 before vaccination.	889	83.4%
12	The vaccine contains an electronic chip used to spy on humans.	371	34.8%
13	Religion, in general, does not encourage vaccination.	216	20.3%
14	The vaccines are of different types; some are better than others, so one must wait until the best type is available.	700	65.7%

The final misinformation scores for the participants ranged from 0 to 14, with a mean equal to 7.62, SD = 4.11, suggesting an overall 54.4% (7.62/14 * 100%) misinformation score rate on the 14 questions. Apart from the 'Sex' variable, the final score for correct answers was significantly different across all other variables ($p < 0.05$), as shown in table 1.

Multivariable linear regression analysis showed that participants who did not work, had low education levels, lived in rural areas, who did not take the vaccine, and those who were unwilling to advise others to take the vaccine were associated significantly with

the final increase score for misinformation (Table 3).

Table 3: Results of multiple linear regressions of the factors related to the level of misinformation about the COVID-19 vaccine (N=1066, R Square 0.52).

Variables	Coef.	SE.	Sig.
(Constant)	14.49	0.78	0.00
Age group	0.40	0.09	0.00
Sex	0.21	0.20	0.30
Marital state	-0.19	0.31	0.53
Education level	-0.87	0.14	0.00
Work status	-1.92	0.38	0.00
Living area	-0.58	0.20	0.00
Already vaccinated	-3.45	0.22	0.00
Willing to advise others to take the vaccine	-2.39	0.21	0.00

The two most common sources of information that the participants depended on to obtain information about the COVID-19 vaccine were internet websites (35%) and Facebook (27.7 %) (Table 4).

Table 4: The most common source of information used by the participants (N = 1066).

Source of information	Frequency	Percentage
Websites	382	35.8
Facebook	295	27.7
WhatsApp	147	13.8
Friends and relatives	82	7.7
TV and radio	76	7.1
Other sources	84	7.9
Total	1066	100

DISCUSSION

This study examined the spread of misinformation related to the COVID-19 vaccine among the community in Iraq. To the authors' knowledge, no such studies have addressed this topic before. The study found that, among the 1066 participants, the overall misinformation rate was 54.4% on the 14 vaccine-related misinformation presented by the electronic survey, thus reflecting a high level of misinformation spread about the COVID-19 vaccine in public.

The previous studies to assess the misinformation regarding COVID-19 in the Iraq community found a high level of misinformation about the disease in general, with a significant increase in social classes with low-level education and those who lived in rural areas.[15] The false information about the COVID-19 vaccine is a global problem that hinders the measures against the spread of the pandemic. A survey done in 2020 showed that up to one-third or more of the people indicated that they might refrain from taking the COVID-19 vaccines if released through emergency use authorization. Their rationale included concerns about vaccine efficacy, potential side effects, expedited development, and causes related to the political climate. The healthcare workers were no different from the rest of the population as they also showed high rates of hesitancy toward the COVID-19 vaccine.[16] Another study done in 2021 showed that, in the African American community, structural

racism and historical experiences with the biomedical community were also a factor influencing vaccine acceptance.[17]

The vaccine has to have an efficacy of at least 80%, and at least 75% of the total population should be vaccinated to extinguish an epidemic and prevent the need for any other measures (e.g., wearing masks or social distancing).[18]

Understanding who the public trusts to obtain reliable information on a vaccine will be critical to any awareness efforts for COVID-19 vaccination. This study found that the most common sources of information are websites and social media, which may highlight the importance of these sources being targeted by health authorities to spread the correct information that encourages people to get vaccinated.

Study limitation

This study comes with limitations. The most important is that it is based on an electronic survey that may not reflect the general population. In general, online surveys are completed only by literate persons who have access to the internet and are sufficiently biased to be interested in the subject. However, many participants in this study (1066) may mitigate these limitations to some extent. Therefore, it can help achieve the study objective, highlighting the spread of COVID-19 vaccine–related misinformation in the Iraqi community.

Another significant limitation is the timing of the study, which was around one month after the introduction of the vaccine in Iraq. This could have led to the underdevelopment of correct knowledge among the community. However, the knowledge and information of the COVID-19 vaccine started to develop and spread in the community as early as the beginning of the pandemic, so doing the study to assess the public knowledge around this time can be accepted.

CONCLUSION AND RECOMMENDATIONS

The study showed that the Iraqi community has a high level of COVID-19 vaccine–related misinformation. Prevalent incorrect information about the vaccine in a neighborhood may affect the acceptance of the vaccination process. The authorities should follow up on the spread of such information and stop it in all possible ways, as it is one of the essential factors that prevent the achievement of the coverage required to control the pandemic.

This study also showed that the spread of false information is linked to living in rural areas and the low level of education, indicating the need to intensify health education for these segments of the society to eliminate the spread of misleading information about COVID-19 vaccines.

In addition, this study found that the most common sources of information among participants were websites and social media, reflecting the importance of using them in people's education.

Conflict of interest

None to declare.

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