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Research Article

Knowledge, Attitudes, and Perceptions about COVID-19 and its Vaccine among Patients with Rheumatoid Arthritis: A Qualitative Study

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Abstract

Background: Despite the importance of vaccines in preventing COVID-19, the willingness to receive COVID-19 vaccines is lower among RA patients than in the general population. ***Objective***: To determine the extent of COVID-19 knowledge among RA patients and their attitudes and perceptions of COVID-19 vaccines. ***Methods***: A qualitative study with a phenomenology approach was performed through face-to-face, individual-based, semi-structured interviews in the Baghdad Teaching Hospital, Baghdad, Iraq, rheumatology unit. A convenient sample of RA patients using disease-modifying anti-rheumatic drugs was included until the point of saturation. A thematic content analysis approach was used to analyze the obtained data. ***Results***: Twenty-five RA patients participated in this study. Regarding knowledge about COVID-19, most participants were able to define COVID-19, realize its contagious nature, and see the need for masks to get protection from this infection, while only a minority knew COVID-19 symptoms. Most participants obtained information about COVID-19 from TV programs and the public. Regarding COVID-19 vaccines, about 1/4 of the participants knew vaccine side effects, and only 12% of them had positive attitudes toward the vaccine. Additionally, 19 participants were unwilling to take the vaccine. The most common reasons behind this reluctance to take the vaccine include fear of the vaccine's short- and long-term side effects and the worsening of RA. ***Conclusion***: RA patients' knowledge about COVID-19 and its vaccines was poor, and their attitudes toward COVID-19 vaccines were negative.

Keywords: COVID-19, KAP, Rheumatoid arthritis, Vaccine.

المعرفة والمواقف والتصورات حول COVID-19 ولقاحه بين مرضى التهاب المفاصل الروماتويدي: دراسة نوعية

الخلاصة

الخلفية: على الرغم من أهمية اللقاحات في الوقاية من COVID-19 ، فإن الرغبة في تلقي لقاحات COVID-19 أقل بين مرضى التهاب المفاصل الروماتويدي منها في عموم السكان. **الهدف**: تحديد مدى معرفة COVID-19 بين مرضى التهاب المفاصل الروماتويدي ومواقفهم وتصوراتهم للقاحات COVID-19. **الطريقة**: تم إجراء دراسة نوعية مع نهج الظواهر من خلال مقابلات وجها لوجه، فردية، شبه منظمة في مستشفى بغداد التعليمي، بغداد، العراق، وحدة أمراض الروماتيزم. تم تضمين عينة ملائمة من مرضى التهاب المفاصل الروماتويدي باستخدام الأدوية المضادة للروماتيزم المعدلة للمرض حتى نقطة التشبع. تم استخدام نهج تحليل المحتوى الموضوعي لتحليل البيانات التي تم الحصول عليها. **النتائج**: شارك خمسة وعشرون مريضا من مرضى التهاب المفاصل الروماتويدي في هذه الدراسة. فيما يتعلق بالمعرفة حول COVID-19 ، تمكن معظم المشاركين من تعريف COVID-19، وإدراك طبيعته المعدية، ورؤية الحاجة إلى الأقنعة للحصول على الحماية من هذه العدوى، بينما كانت أقلية فقط تعرف أعراض CONID-19. حصل معظم المشاركين على معلومات حول COVID-19 من البرامج التلفزيونية والجمهور. فيما يتعلق بلقاحات COVID-19، كان حوالي 4/1 من المشاركين يعرفون الآثار الجانبية للقاح، وكان لدى 12٪ منهم فقط مواقف إيجابية تجاه اللقاح. بالإضافة إلى ذلك، كان 19 مشاركا غير راغبين في أخذ اللقاح. تشمل الأسباب الأكثر شيوعا وراء هذا الإحجام عن أخذ اللقاح الخوف من الآثار الجانبية قصيرة وطويلة الأجل للقاح وتفاقم التهاب المفاصل الروماتويدي. **الأستنتاج**: كانت معرفة مرضى التهاب المفاصل الروماتويدي ب COVID-19 ولقاحاته ضعيفة، وكانت مواقفهم تجاه لقاحات COVID-19 سلبية.

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INTRODUCTION

The recent coronavirus disease pandemic of 2019 (COVID-19) is one of the world's greatest crises [1]. The clinical course of COVID-19 is varied, ranging from asymptomatic states to severe respiratory problems and multi-organ dysfunction [2]. Most fatalities and serious illnesses from COVID-19, such as acute respiratory distress syndrome (ARDS), occurred among older persons and individuals with pre-existing medical conditions [3,4]. In this regard, it was found that rheumatoid arthritis (RA) patients are at a high risk of mortality from COVID-19 not only because of the inflammatory nature of the disease but also because of their low immunity level that results from the use of disease-modifying anti-rheumatic drugs (DMARDs) [5]. Vaccination is an important and effective tool to prevent infections in the general population as well as in patients with autoimmune and inflammatory rheumatic diseases [6]. Acceptance to get COVID-19 vaccines is positively correlated with the individual's knowledge about the COVID-19 risks [7] and vaccines [8], besides personal attitudes towards the immunization process in general [8]. Furthermore, the willingness to receive COVID-19 vaccines was found to be lower among RA patients than in the general population [9]. Only a few studies were conducted in Iraq to assess the public and healthcare workers' knowledge, attitudes, and perceptions towards COVID-19 vaccines [10,11], while no studies focused on RA patients. Thus, this study aimed to ascertain the knowledge level about COVID-19 among RA patients and determine their knowledge, attitudes, and perceptions towards COVID-19 vaccines.

METHODS

Study design and setting

A qualitative study with a phenomenology approach was performed through face-to-face, individual-based, semi-structured interviews with RA patients to get an in-depth understanding of their knowledge about COVID-19, as well as their knowledge, attitudes, and perceptions about COVID-19 vaccines. All interviews were conducted in a specific room used for research at the Rheumatology Unit, Baghdad Teaching Hospital, Baghdad, Iraq, by the main study researcher (a male pharmacist with a Master's degree in clinical pharmacy who is currently conducting this research to pursue his Ph.D. degree in clinical pharmacy) using Arabic, which is the national language of Iraq. The interview guide was developed by reviewing relevant literature and validated by a group of three experts in the field of COVID-19 research [7,9]. The questions in the interview guide were open-ended, and probes for each question were also used as necessary to elicit further clarification.

Ethical approval

The Scientific and Ethical Committee validated the study in the College of Pharmacy, University of Baghdad. Verbal consent was obtained from all participants included in the study. The authors informed the participants about the purpose of the study at the beginning of each interview. Meanwhile, the respondents were informed that their participation was voluntary.

Study sample and data collection

The study sample includes patients previously diagnosed with rheumatoid arthritis who attended the rheumatology unit at Baghdad Teaching Hospital for routine care and follow-up (ambulatory clinic follow-up). The inclusion criteria were adults with confirmed RA who were diagnosed according to the ACR/EULAR 2010 Rheumatoid Arthritis Classification Criteria [12], and the patient was treated with either conventional disease-modifying anti-rheumatic drugs (coDMARDs) or biological DMARDs (boDMARDs), besides not receiving any dose of the COVID-19 vaccine. Patients who had impaired physical or mental conditions and those with hearing problems were excluded. A convenient sample strategy was used to enroll the sample of participants in the present qualitative study. The sample size in this study was based on relative saturation concerning the issues being discussed, the point at which there appeared to be nothing more to be learned, and redundancy. All eligible patients were informed about the aim of this study, and only patients who provided their informed consent were included in the study and interviewed on the same day of eligibility checking. The obtained data during each interview was documented by recording the interview using a Galaxy A32 smartphone. Each interview consumes approximately 10–15 minutes. Initially, all interviews were transcribed verbatim in Arabic and then translated by the main researcher into English for the purpose of data presentation. The translated content was coded manually by the main researcher and confirmed by other study authors, and these codes were used for the qualitative data sorting. A thematic content analysis approach was used to analyze the obtained data.

RESULTS

A total of 25 in-depth interviews were conducted with rheumatoid arthritis patients. Twenty-four participants were female, and one was male. Participants ranged from 25 to 70 years old, with a mean of 47.84 years. The mean value of disease duration was 12.88 years. Regarding the educational status of the participants, 4 of them had a BSc degree, 5 had a secondary school qualification, and 9 graduated from primary school. On the other hand, 7 participants were illiterate. Nineteen participants lived in Baghdad, 2 in Diyala, 2 in Wasit, 1 in Maysan, and 1 in Nasiriyah. Three participants had already recovered from COVID-19, while others

were not infected. Five participants were using etanercept alone, three were using MTX, and 17 were using a combination of etanercept and one traditional DMARD. Five participants had high disease activity, 15 had moderate disease activity, and 5 had low disease activity. The themes obtained in this study are shown in Table 1.

Table 1: Study themes

Theme	Category
General knowledge about COVID-19	Definition of COVID-19
	The cause of COVID-19
	The symptoms of COVID-19
	COVID-19 protection methods
	Benefits of the vaccine
	Vaccine side effects
COVID-19 vaccines	Difference between vaccines
	Acceptance to take the vaccine
	Reasons to refuse to take the vaccine

Sixteen participants defined COVID-19 as a respiratory disease. However, only two participants mentioned that COVID-19 is a viral respiratory infection. Additionally, two participants mentioned that COVID-19 is a pandemic disease. One participant considered COVID-19 to be a disease that is not different from all other diseases. Six participants mentioned that COVID-19 is a dangerous and fatal disease. "COVID-19 is a serious respiratory disease" [female, 27 years]. "COVID-19 is a pandemic fatal disease" [female, 45 years]. Ten participants mentioned at least one symptom of COVID-19. Five participants considered COVID-19 to have flu-like symptoms. Fever was mentioned as a symptom of COVID-19 by 4 participants, shortness of breath (SOB) by 3 participants, cough by 2 participants, and loss of smell by 2 participants. On the other hand, one participant mentioned additional symptoms like diarrhea, headache, sneezing, and loss of appetite. "COVID-19 is similar to the flu, in which the patient suffers from coughing, fever, and sneezing." [Female, 61 years]. "COVID-19 can cause chest tightness, loss of appetite, and loss of smell" [female, 63 years]. Twenty-one participants realized the contagious nature of COVID-19, while three considered COVID-19 a non-contagious disease. Only one participant had any idea about the contiguity of COVID-19. "It is a serious contagious disease. [Female, 27 years]. Twenty-two participants agreed on the necessity of masks to protect against COVID-19. Hand hygiene was considered one of the COVID-19 protection methods by 17 participants, while only 10 participants mentioned the need for social distancing to prevent COVID-19. Two participants mentioned all COVID-19 protection measures (masks, social distancing, and good hygiene); 20 participants were able to mention 2 measures; and 3 participants mentioned one protection method. Participants mentioned that they got information about COVID-19 protection measures from TV programs (*n*=18), public (*n*=7), social media (*n*=3), physicians (*n*=3), and street advertisements (*n*=2). "Social distancing with regular use of face masks and hand hygiene is necessary to protect a person from COVID-19. I got such information from my physician and TV awareness programs" [female, 41 years]. Participants mentioned that they obtained their information about COVID-19 from TV programs (*n*=12), public (friends, neighbors, and family members) (*n*=13), personal experience with the disease (*n*=5), physicians (*n*=4), and social media (*n*=2). "I get information about COVID-19 from TV programs, from my friends, and from my doctor" [female, 41 years]. "I usually depend on Facebook to get recent information about COVID." [Female, 27 years]. Seven participants had negative attitudes toward the COVID-19 vaccine and did not think of any benefit to using the vaccine. Ten participants had no idea about the vaccine and its benefits. Three participants considered the benefit of the vaccine to be questionable. Only four participants considered the vaccine to be useful to prevent the infection. Only one participant mentioned that the vaccine can only prevent the infection for 6 months. "The vaccine can protect COVID-19, but for 6 months only." [Female, 67 years]. "I don't think that the vaccine can protect me from COVID-19." [Female, 38 years]. Eighteen participants did not know the side effects of the COVID-19 vaccine. Seven participants mentioned at least one side effect of the COVID-19 vaccine, such as fever (*n*=3), headache (*n*=2), stroke (*n*=2), fatigue (*n*=2), and renal damage (*n*=1). "The vaccine can cause strokes and even death." [Female, 50 years]. "The vaccine can cause fever and weakness." [Female, 38 years]. Most participants (*n*=22) did not know about the types of COVID-19 vaccines. Only 3 participants mentioned that there is more than one vaccine, such as Pfizer (*n*=3), and Sinopharm (*n*=2). Two participants mentioned a difference between COVID-19 vaccines; one participant mentioned that Pfizer can provide greater protection from COVID-19 than all other vaccines. One participant mentioned that Sinopharm is the best vaccine because it is a live-attenuated vaccine. "The Chinese vaccine is better than other types because it is a weakened virus" [female, 52 years]. "The Pfizer vaccine provides greater protection than other types" [female, 45 years]. Nineteen participants did not agree to take the vaccine. Six participants were willing to take the vaccine; however, they will do so after a confirmation about vaccine safety from their caring physician. "No, I will not take the vaccine; it is unimportant." [Female, 32 years]. "I will take the vaccine only if my physician tells me it is safe for me because, as you know, I suffer from rheumatoid arthritis and use a biological treatment" [female, 41 years]. Twenty-one participants were reluctant and/or refused to take the COVID-19 vaccine because they had a fear of the negative impact of the vaccine on their health in the future (*n*=8), aggravating RA by the vaccine (*n*=4), being infected by COVID-19 (*n*=1), becoming infertile (*n*=1), having a stroke (*n*=1), or severe body aches (*n*=1), and even death (*n*=1). Three participants did not specify any reason, while one participant did not fear taking the vaccine and considered it the only way to get rid of the COVID-19 pandemic. "I'm afraid to take the vaccine because I heard from friends that its benefit is not

proven." [Female,40 years]. "I will not take the vaccine because I watched the news about the death of a Kuwaiti actor after taking the vaccine" [female, 50 years]. "The vaccine may aggravate my rheumatoid arthritis." [Female, 41 years]. Participants mentioned that they obtain their information about COVID-19 vaccines mainly from other people (friends, neighbors, and family members) (*n*=19), TV programs public (*n*=5), internet websites and social media (*n*=3), and physicians (*n*=2). Additionally, all those who get their information about vaccines from the public have negative attitudes toward the vaccine's benefit and are unwilling to take it. "My friend told me that the vaccine is dangerous to human health." [Male, 55 years]. "I always find information about COVID vaccines on Facebook and some TV programs." [Female, 50 years].

DISCUSSION

The results of this study showed that 2/3 of participating patients knew that COVID-19 is a respiratory disease; however, only 8% of participants mentioned that it is a viral respiratory disease. In contrast, 94% of the participants in a study conducted in Jordan had correct knowledge about the viral etiology of COVID-19 (13). This variation in knowledge may be attributed to the difference in the age and educational level of the population sample in the Jordanian study (university students) from that in the current one (rheumatoid arthritis patients) [14]. Regarding the symptoms of COVID-19, only 40% of participants knew about these symptoms, indicating poor knowledge. In contrast with this finding, most (76.7%) RA patients in Japan had a good knowledge of COVID-19 symptoms [15]. The main reason for obtaining such inconsistent results is the differences in study design: a questionnaire-based study with multiple-choice questions in the Japanese study and an interview-based qualitative study in the current one. The current study showed that 84% of the participants realized the contagious nature of COVID-19. Similarly, good knowledge about the contiguity of COVID-19 was detected among 75% of Indian individuals [16]. Regarding COVID-19 protective measures, the current study showed that most (88%) participants mentioned that masks are used to protect from COVID-19. This percentage was higher than that obtained by an online survey to assess knowledge among Kurdistan's general public (48%) [17]. The positive attitude toward using masks in the current study can be linked to the fact that 96% of current study participants were females, and it is well known that females are more persuaded and adherent to the recommendations of wearing masks in the war against COVID-19 [18]. Other protective measures, such as hand hygiene and social distancing, were less frequently reported (reported by 68% and 40%, respectively) by study participants. It is unclear whether this finding is due to poor knowledge or to forgetting such measures due to the non-adherence to protective measures during daily life as time passed from the days of reporting the first COVID-19 cases in Iraq [19]. Rheumatoid arthritis patients are at higher risk of developing COVID-19 complications; therefore, physicians (and healthcare providers) must share COVID-19-related information promptly and effectively with such patients [15]. Unfortunately, the results of the current study showed that most participants obtained information about COVID-19 from public TV programs (friends, neighbors, and family members), while only a few participants received this information from a physician, internet websites, and/or social media. In Jordan, a neighboring country to Iraq, the internet and TV programs were the common source of COVID information, while friends and family were the source of information for the minority [13]. This difference in methods of obtaining information about COVID-19 may be linked to the differences in the study sample. The first difference was the younger age of participants in the Jordanian study than in the current study, and it is well known that young adults have better knowledge and experience in getting benefits from digital technologies [20]. The second difference is that the Jordanian study included the general population, while in the current study, only rheumatoid arthritis patients were included. The current study showed that only 16% of participants had positive attitudes toward the vaccine's benefit in preventing COVID-19. This finding was close to a large cross-sectional study assessing the general knowledge and perception of the Iraqi public toward COVID-19 vaccines, in which only 30% of them knew vaccine effectiveness [21]. The small difference between the aforementioned study and the current one may be attributed to the difference in the study design, which led to a huge difference in the sample size between these studies (2640 vs. 25). According to the knowledge of the present study participants, the most commonly expected side effects of COVID-19 vaccines were fever, headache, fatigue, blood clots, and/or stroke. A similar expectation was detected in the Ethiopian study [22]. Regarding the available types of COVID-19 vaccines, the present study showed that only a few (12%) of participants had any idea about the available types of COVID-19 vaccines in Iraq. This poor knowledge about the registered types of COVID-19 vaccines may be linked to the fact that most participants obtained their information about COVID-19 vaccines from non-medical sources (friends, neighbors, family members, and social media). Poor educational and awareness programs about COVID-19 vaccines in Iraq may be an additional reason for this poor knowledge and negative attitudes about COVID-19 vaccines among the Iraqi population in general and rheumatoid arthritis patients in particular. The results of the current study showed that more than 3/4 of the participants did not agree to take the vaccine. This contrasts with a study conducted in Kurdistan, Iraq, where only 1/4 of the participants were reluctant to take the vaccine [10]. The higher hesitancy in taking the vaccine among the current study sample may be related to the different samples in these studies. Healthcare workers, mostly males (52%), with an

average age of 36 years, were included in the aforementioned study. RA patients, mostly females (96%), with an average age of 47.6 years, were included in the present qualitative study. In this regard, it is well known that female gender [23,24] and increasing age [25] are inversely correlated with an individual's acceptance of the vaccine. The current study showed that fear of the vaccine's short- and long-term side effects and worsening of RA were the main reasons behind the refusal to take the COVID-19 vaccine. Similar reasons were found among patients with systemic rheumatic diseases [26].

Study limitation

The setting of a single center was the primary limitation of this study. However, this center is responsible for many patients from various governorates in Iraq.

Conclusion

Knowledge about COVID-19 was poor among RA patients. In addition, the knowledge and attitudes toward COVID-19 vaccines were poor, which necessitated the need for educational and awareness programs among Iraqi RA patients to enhance their acceptance of vaccination.

Conflict of interests

No conflict of interests was declared by the authors.

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Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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