Knowledge, Acceptance and Perception on COVID-19 Vaccine Among Sudanese People in Khartoum State, 2020- 2021

Abstract

Aim: This a descriptive cross sectional community based study aimed to find out the extent of information and acceptance of Corona vaccines by Sudanese citizens.

Background: Coronaviruses are enveloped positive sense RNA virus with spike like projection on it is surface. Four coronaviruses namely HKU1, NL63, 229E and OC43 have been in circulation in human and generally cause mild respiratory disease.

Methods: Questionnaires were distributed to 150 participants after obtaining their consent to participate. The participants were divided into three groups: Khartoum, Omdurman and Khartoum North. It was ensured that the questionnaires were filled out correctly, Data had been entered, cleaned, and analyzed using SPSS version 22.0. Descriptive statistics in term of frequency tables with percentages and graphs.

Result: The majority of the participants had information about the disease in the majority of the khartoum north city (88%), Although most of those who were affected were residents of Khartoum (37%). Information about Corona vaccines was similar in the three cities. Opinions differed about the safety of vaccines in the cites khartoum (20%), omdurman 13% and khartoum north 47%.

Conclusion: This study realized that the information of the participants in the study was weak, and the majority of them showed their dissatisfaction with the procedures of the health authorities, as well as their lack of confidence in the authority of vaccines. In conclusion, it is necessary to increase the dose of awareness among the citizens, as it is necessary to find research on a larger scale.

Key words: Pfizer BioNTech – vaccines – SARS.CoV-2 – Moderna - Johnson and Johnsons

1.Introduction

Coronaviruses are enveloped positive sense RNA virus [1] with spike like projection on it is surface. Four coronaviruses namely HKU1, NL63, 229E and OC43 have been in circulation in human and generally cause mild respiratory disease.

1.1. Covid-19

There is a new public health crises threating the world [1] with emergence and spread of 2019 novel coronavirus (2019-nCOV) or severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) the virus originated in bats and was transmitted to human through yet unknown intermediary animals in Wuhan, Hubei province, China in December 2019.

1.1.1. The common clinical features of Covid-19

are fever, cough, sore throat, headache, fatigue and breathless [1]. The subset of patient by end of the first week the disease can progress to pneumonia, respiratory failure and death.

1.2. Covid-19 vaccine:

Vaccine response depend upon their interaction with immune system [2]. The goal is to provide immunological bases that should guide vaccine design and vaccination strategies. Early inflammatory events that follow vaccine administration take place at the injection site are essential in determining outcome of vaccination. Acritical aspect of vaccine efficacy is the duration of procreation. In most cases it depends on antibody persistence and quality of memory induced by priming doses. Both T- and B-cell memory are slowly maturing and this allow sufficient delay before boosting. Response to live viral vaccine are more disseminated and exposure to vaccine antigen is often prolonged this may greatly influence the establishment and duration of immunologic memory [2].

1.2.1. Covid-19 vaccine Types:

1.2.1.1. Pfizer –BioNTech:

Pfizer has said its Covid-19 vaccine was more than 90 per cent effective in trials, calling the development “a great day for science and humanity”. Pfizer and German partner BioNTech are the first drug makers to release successful data from a large-scale clinical trial of a coronavirus vaccine. The companies said they have so far found no serious safety concerns and expect to seek US authorization this month for emergency use of the vaccine. Roughly 42 per cent of the trial’s global participants had racially and ethnically diverse backgrounds, Pfizer and BioNTech said [3].

1.2.1.2. Moderna:

The Moderna COVID-19 vaccine, is a COVID-19 vaccine developed by American company Moderna, the United States National Institute of Allergy and Infectious Diseases (NIAID), and the Biomedical Advanced Research and Development Authority (BARDA). It is authorized for use in people aged twelve years and older in some jurisdictions and for people eighteen years and older in other jurisdictions to provide protection against COVID-19 which is caused by infection by the SARS-CoV-2 virus. It is designed to be administered as two or three 0.5 mL doses given by intramuscular injection at an interval of at least 28 days apart [4] .

1.2.1.3. Johnson and Johnsons:

The Janssen COVID-19 vaccine, or Johnson & Johnson COVID-19 vaccine, is a COVID-19 vaccine that was developed by Janssen Vaccines company , Netherlands,[5] ,[5] a subsidiary of American company Johnson & Johnson. It is a viral vector vaccine based on a human adenovirus that has been modified to contain the gene for making the spike protein of the SARS-CoV-2 virus that causes COVID-19. The body's immune system responds to this spike protein to produce antibodies.[6] The vaccine requires only one dose and does not need to be stored frozen.

1.3. Side effects of Covid 19 vaccine

COVID-19 vaccination helps protect people from getting COVID-19. Some people have side effects from the vaccine, which are normal signs that their body is building protection. These side effects may affect their ability to do daily activities, but they should go away in a few days. Some people have no side effects, and allergic reactions are rare. Adverse effects that could cause a long-term health problem are extremely unusual following any vaccination, including COVID-19 vaccination. If adverse effects occur, they generally happen within six weeks of receiving a vaccine dose. For this reason, during clinical trials, the U.S. Food and Drug Administration (FDA) collected data on each of the authorized COVID-19 vaccines for a minimum of two months (eight weeks) after the final dose. CDC, FDA, and other federal agencies continue to monitor the safety of COVID-19 vaccines even now that the vaccines are in use [7] .

1.3.1. Common Side Effects

1.3.1.1. On the arm where you got the shot:

- Pain
- Redness
- Swelling

1.3.1.2.Throughout the rest of your body:

- Tiredness
- Headache
- Muscle pain
- Chills
- Fever
- Nausea

2. Materials and methods

Khartoum State is one of the eighteen states of Sudan. Although it is the smallest state by area, it is the most populous. It contains the country's second largest city by population, Omdurman, and the city of Khartoum, which is the capital of the state as well as the national capital of Sudan. The capital city contains offices of the state, governmental and non-governmental organizations, cultural institutions, and the main airport.

2.1. Data Collection

Questionnaires were distributed to 150 participants after obtaining their consent to participate. The participants were divided into three groups: Khartoum, Omdurman and Khartoum North. It was ensured that the questionnaires were filled out correctly, Pre testing was done to ensure quality survey instruments and fieldwork procedures were conducted. The fieldwork was coordinated by the Research Team Members, who will also provide the overall supervision during fieldwork to ensure quality and consistency among the teams. Then data collectors were carry out the fieldwork.

2.2. Data Management

Data had been entered, cleaned, and analyzed using SPSS version 22.0. Descriptive statistics in term of frequency tables with percentages and graphs. Chi square test and t- test statistical tests applied to calculate P value.

3. Result and discussion

This study was conducted in the state of Khartoum, and the study targeted both sexes (fig.2) in the age groups over 20 years (fig.1), with different jobs (fig.4), different level of education (fig.5) Taking into account the presence of chronic diseases (gig.3), in order to find out information about the Corona virus.

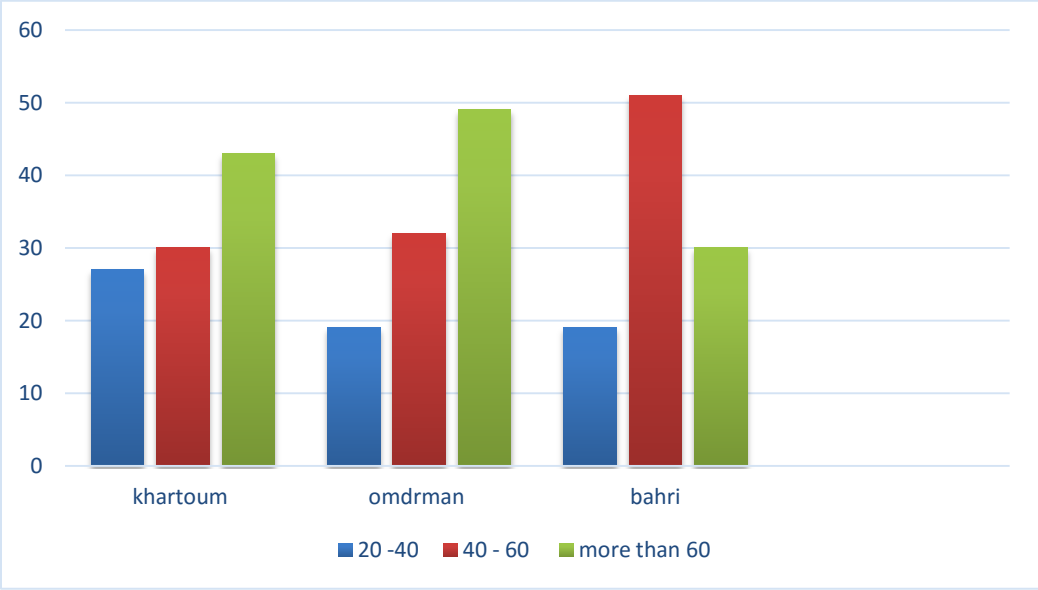

Fig.1: Distribution of the participant among age.

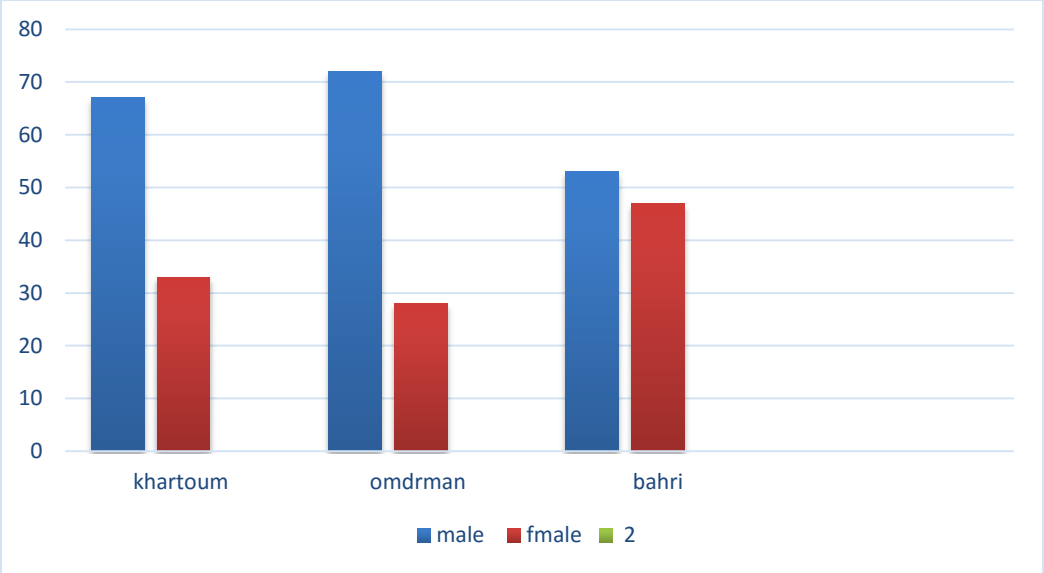

Fig.2: distribution of the participant among gender

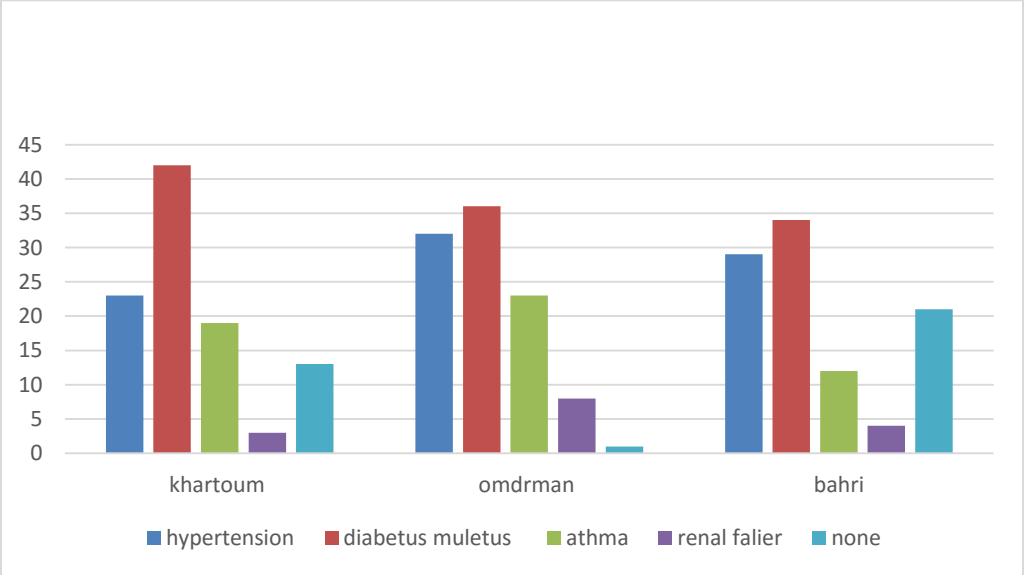

Fig.3: distribution of the participant among present of chronic illnesses

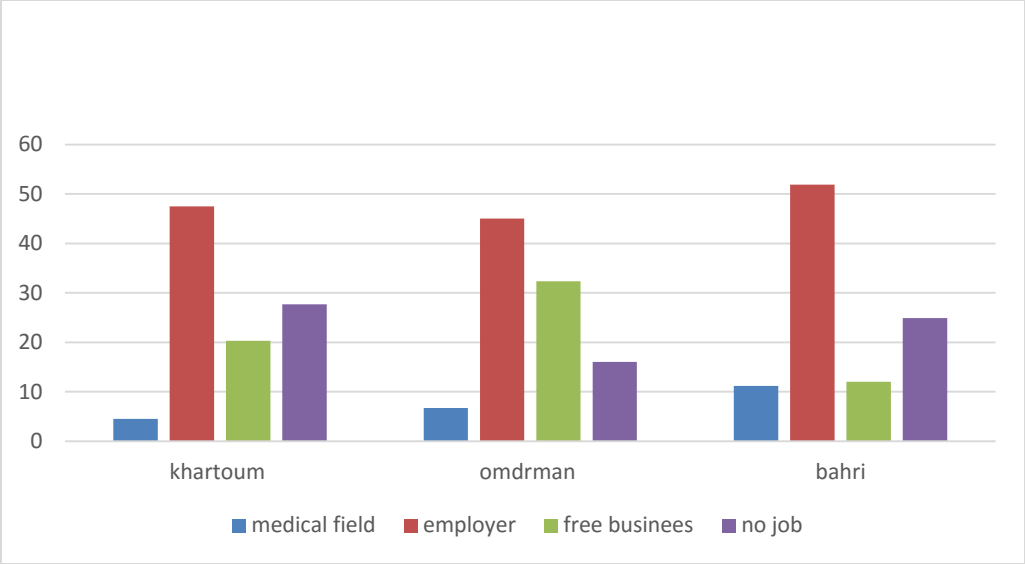

Fig.4: distribution of the participant among job.

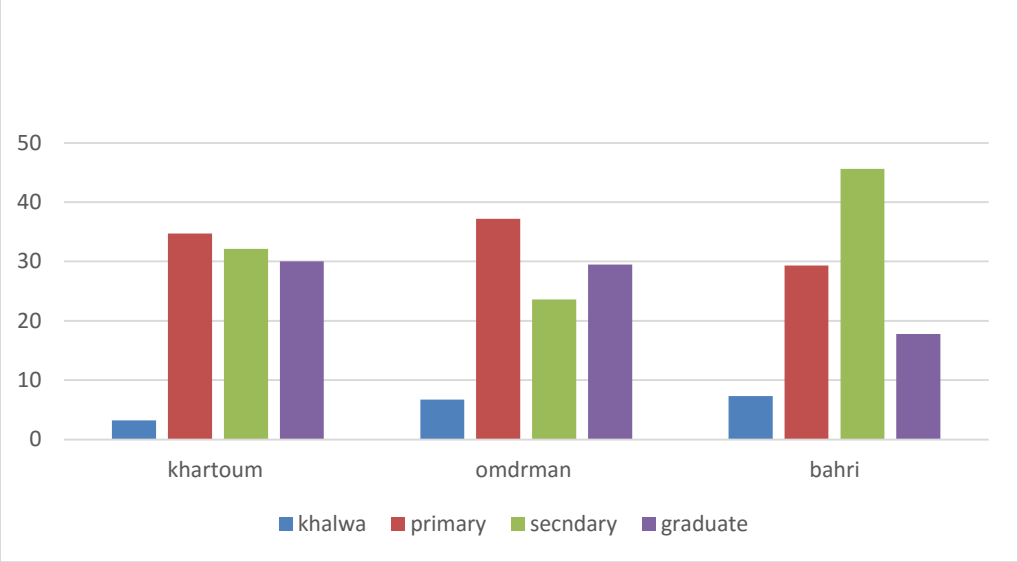

Fig.5: distribution of the participant among education level

Refer to information about the Corona virus and its vaccines we find that The majority of the participants had information about the disease in the majority of the khartoum north city (88%), Although most of those who were affected were residents of Khartoum (37%). Information about Corona vaccines was similar in the three cities. Opinions differed about the safety of vaccines in

the cites khartoum (20%), omdurman 13% and khartoum north 47%. When the participants were asked if they were satisfied with the health authorities' roles, the majority answered with dissatisfaction (table1).

Study made by Tahir and their colleague in Pakistan represent that a majority (70.8%) of respondents will accept the COVID-19vaccine if available, and 66.8% showed a positive attitude towards vaccination. Monthly family income, education level, self-diagnosis of COVID-19 or a friend, family member, or colleague are significant factors influencing the acceptance of COVID-19 vaccination. The dogma of being naturally immune to COVID-19 was a key reason for the refusal of the vaccine. Less than half (48%) of those who refuse will vaccinate themselves if government officials have made it compulsory. A third (33.9%) of participants were willing to pay up to (7 USD) 1000 Pkr (Pakistani Rupees) for the vaccine [8].

Other study made by Mohamed and their colleague among Malaysians represent that

A total of 1406 respondents participated, with the mean age of 37.07 years (SD = 16.05) years, and among them 926 (65.9%) were female. Sixty-two percent of respondents had poor knowledge about COVID-19 vaccine (mean knowledge score 4.65; SD = 2.32) and 64.5% were willing to get a COVID-19 vaccine. High knowledge scores associated with higher education background, higher-income category and living with who is at higher risk of getting severe COVID-19. They were more likely to be willing to get vaccinated if they were in a lower age group, have higher education levels and were female [9]. Alqudeimat *et al* represent that in total, 53.1% (1,257/2,368) of the participants were willing to accept a COVID-19 vaccine once available. Male subjects were more willing to accept a COVID-19 vaccine than females (58.3 vs. 50.9%, $p < 0.001$). Subjects who viewed vaccines in general to have health-related risks were less willing to accept vaccination (aPR = 0.39, 95% CI: 0.35-0.44). Moreover, participants who previously received an influenza vaccine were more likely to accept a COVID-19 vaccine (aPR = 1.44, 95% CI: 1.31-1.58). Willingness to get vaccinated against COVID-19 increased as the self-perceived chances of contracting the infection increased ($p < 0.001$) [10].

Khan *et al* He justified vaccine resistance in Pakistan by saying "Recently, two well-known political figures raised conspiracy theories against COVID-19 vaccines in Pakistan, stating that COVID-19 is a grand illusion and a conspiracy against Muslim countries. This theory is much discussed in the local community, supporting COVID-19 vaccine hesitancy" [11].

In certain European countries where by willingness to take the vaccine was found to be 62% in France, 80% in Denmark, and the UK [12]. A study from the USA showed 57.6% intended to take the vaccine [13]. An Indonesian study showed 93.3% and 67 of participants would want to get vaccinated provided the effectiveness was 95 and 50%, respectively [14]. Financial constraints are one of the identified reasons for reduced vaccination uptake [8]. Pakistan is a developing country with a poverty rate of 75.4%, as reported in 2015 [4]. Thus, it is understandable why family income plays a crucial role in vaccine acceptance.

Table 1: knowledge about corona virus 2 and their vaccines.

	Khartoum			**Omdurman**			**Khartoum north**			**P value**
	Yes %	**No %**	**Don't know %**	**Yes %**	**No %**	**Don't know %**	**Yes %**	**No %**	**Don't know %**	
Hearing about corona virus	71	19	10	75	13	12	88	10	2	.189
Affected by corona virus	37	40	23	26	70	4	12	80	8	.044
Contact with affected persons	13	27	60	24	60	16	41	12	47	.078
Death a relative person with covid19	7	80	13	16	24	60	18	70	12	.224
information about Covid-19 Vaccines	40	12	48	56	27	17	54	27	19	.407
Do you think vaccines are safety	20	40	40	13	77	10	47	45	28	.458
Satisfaction with the role of the authorities in the vaccination process	3	85	12	16	57	27	31	43	26	.026

P value significant at (.05,.01, .001)

4. Conclusion

This study realized that the information of the participants in the study was weak, and the majority of them showed their dissatisfaction with the procedures of the health authorities, as well as their lack of confidence in the authority of vaccines. In conclusion, it is necessary to increase the dose of awareness among the citizens, as it is necessary to find research on a larger scale.

Ethical approval

It is not applicable.

Competing interests

Authors have declared that no competing interests exist.

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