CHAPTER ONE

INTRODUCTION AND LITERATURE REVIEW

1.1 Introduction:

Corona virus disease 2019 (COVID-19) is defined as an illness caused by a novel corona virus. COVID-19 is an emerging respiratory infection that was first discovered in December 2019, in Wuhan city, Hubei Province, China, finally named severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). SARS-CoV-2 belongs to the larger family of ribonucleic acid (RNA) viruses, leading to infections, from the common cold, to more serious diseases, such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (1). The main symptoms of COVID-19 have been identified as fever, dry cough, fatigue, myalgia, shortness of breath, and dyspnea .Some people become infected but don't develop any symptoms. About 80% recover from the disease without needing special treatment. Around 1 out of every 6 people who gets COVID-19 becomes seriously ill and develops difficulty breathing.

Older people, and those with underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness (2).

COVID-19 is characterized by rapid transmission, and can occur by close contact with an infected person. Studies to date suggest that the virus that causes COVID-19 is mainly transmitted through contact with respiratory droplets rather than through the air. This is why it is important to stay more than 1 meter (3 feet) away from a person who is sick (2). COVID-19 has spread widely and rapidly, from Wuhan city, to other parts of the world, threatening the lives of many people (3). By the end of January 2020, WHO

announced a public health emergency of international concern and called for the collaborative effort of all countries, to prevent its rapid spread. Later, the WHO declared COVID-19 a “global pandemic” (1).

COVID-19 is characterized by high morbidity and mortality rates alongside other ailments. Regarding it as the most widespread disease that threatened societies and caused spiritual, material and medical losses, led to the collapse of the global economy and the health system in the most countries. The shutting down of social activities through-out the world to mitigate the spread of the pandemic has led to a global lockdown, causing a downturn and global economic fall due to a break in the global supply chain (4).

As of September 20, 2020, the outbreak of the coronavirus disease (COVID-19) had been confirmed in over 210 countries or territories. The virus had infected over 31 million people worldwide, and the number of deaths had totaled almost 961 thousand. The most severely affected countries outside of China include the U.S., Italy, Brazil Iran, Spain, Germany, and Mexico (5) .Experts have worried about COVID-19 spreading to Africa, because many of the healthcare systems on the continent are inadequate, having problems such as lack of equipment, lack of funding, insufficient training of healthcare workers, and inefficient data transmission. It was feared that the pandemic could be difficult to keep under control in Africa, and could cause huge economic problems if it widely spread (6).

WHO rated Sudan as “at-risk” for COVID-19 spread based on risk profile and capacity of the country to respond to a potential outbreak. Sudan’s health system is marked by decades of limited investment, underfunding, and lack of qualified staff, infrastructure, equipment, medicines and

supplies. The surveillance system doesn't cover the entire country and is structurally weak with long delays between alert and confirmation of an outbreak (7). On 13 March, Sudan reported its first novel corona virus case in Khartoum, a man who died on 12 March 2020 and had visited the United Arab Emirates in the first week of March. Sudan stopped issuing visas for, and flights to, eight countries, including Italy and neighboring Egypt, over fears of the corona virus .With the declaration of the state of emergency and the development of precautionary measures in accordance with the recommendations of the WHO.

COVID-19 is spread in 16 Sudanese states out of 18, and Khartoum is the most affected by the disease, as the majority of cases are concentrated in it. The number of cases gradually increased to 13,535 and the number of deaths had totaled 836 (8). In Sudan, the COVID-19 pandemic came to be added to the wholesale crises that Sudan is suffering, Close schools, universities, and all land, air and sea crossings led to negative impact on the economic situation of the country. some hospitals operate at less than their full capacity, with some departments stopping, while others work with fewer teams due to quarantining of a large number of cadres as a result of suspicion or positive cases, in addition to not joining work in the absence of transportation, while others stopped providing their services due to Sterilization all this led to the threatened the lives of many patients, especially the elderly. And the health situation in the country has worsened. The country is completely locked up; the residents are advised to stay home and not to leave home without emergent needs. There are limited public transportation, limited banking services.

As there is no proved treatment against SARS-CoV-2 till the moment, Strong infection control measures are the primary intervention to minimize the spread of the virus in both health care settings and the community (9).

Public awareness and adherence to control measures plays a vital role in limiting the spread of the infection, especially in middle and low-income countries, where health systems have, at best, the moderate capacity to respond to outbreaks. The most practical available solution to prevent the spread of the virus is to limit the community activities between people to prevent infection through the government's action rules. Social distance and self-isolation; and lockdown are important nationwide social measures (10). After all, (WHO) offers the most effective preventive measures: maintain physical distance (minimum 3 feet or 1 meter) from other persons; the hands must be cleaned immediately after contact with the respiratory tract; avoid touching eyes, nose and mouth frequently; regular cleaning and disinfection of environmental and other frequently touched surfaces; improve living space airflow by opening as many windows and doors as possible; fever, cough, and difficulty in breathing, seek immediate treatment (2).

Vaccines save millions of lives each year. Vaccines work by training and preparing the body's natural defenses – the immune system – to recognize and fight off the viruses and bacteria they target. After vaccination, if the body is later exposed to those disease- causing germs, the body is immediately ready to destroy them, preventing illness. As of 18 February 2021, at least seven different vaccines across three platforms have been rolled out in countries. Vulnerable populations in all countries are the highest priority for vaccination. At the same time, more than 200 additional vaccine candidates are in development, of which more than 60 are in clinical development. COVAX is part of the ACT Accelerator, which WHO launched with partners in 2020. COVAX, the vaccines pillar of ACT Accelerator, convened by CEPI, Gavi and WHO, aims to end the acute phase of the COVID-19 pandemic by:

- speeding up the development of safe and effective vaccines against COVID-19;
- Supporting the building of manufacturing capabilities; and
- Working with governments and manufacturers to ensure fair and equitable allocation of the vaccines for all countries – the only global initiative to do so.

Vaccines are a critical new tool in the battle against COVID-19 and it is hugely encouraging to see so many vaccines proving successful and going into development. Working as quickly as they can, scientists from across the world are collaborating and innovating to bring us tests, treatments and vaccines that will collectively save lives and end this pandemic. Safe and effective vaccines will be a game changer: but for the foreseeable future we must continue wearing masks, physically distancing and avoiding crowds. Being vaccinated does not mean that we can throw caution to the wind and put ourselves and others at risk, particularly because it is still not clear the degree to which the vaccines can protect not only against disease but also against infection and transmission. (11).

1.2 Literature Review:

In study conducted in Bangladesh aimed to investigate community knowledge, attitudes and perceptions towards COVID-19 vaccinations through an exploratory and anonymous population-based e-survey conducted among 1658 general individuals (55.6% male; mean age=23.17±6.05 years; age range=18-65 years). The survey was conducted using a semi-structured and self-reported questionnaire containing informed consent along with four sections (i.e., socio-demographics, knowledge, attitudes, and perceptions).

The mean scores of knowledge and attitudes were 2.83±1.48 (out of 5) and 9.34±2.39 (out of 12) respectively. About a quarter of participants thought that the COVID-19 vaccination available in Khartoum is safe, only 60% will have the vaccination and about two-thirds will recommend it to family and friends. In the multiple regression models, higher SES, having university/ higher levels of education, holding nuclear families and having previous history of essential vaccines uptake were associated with knowledge; whilst attitudes were significantly associated with being female and having previous history of essential vaccines uptake. Just over half of the participants thought that everyone should be vaccinated and 61% responded that health workers should be vaccinated first on priority basis. 95% vaccine should be administered free of charge in Bangladesh and almost 90% believed that the COVID-19 vaccine may have side effects.

The findings reflect inadequate knowledge but more positive attitudes towards COVID- 19 vaccine among the general population in Bangladesh. In order to improve knowledge, immediate health education programs need to be initiated before mass vaccination schedule. (12)

Patrick and et al conducted study to assess the determinants of willingness to uptake COVID-19 vaccines among residents of Osun State through a descriptive cross-sectional study design was employed.

Seven hundred and forty-four respondents were enrolled from three selected local government areas using a multistage sampling method.

About three-quarters (59.1%) of the respondents were willing to take the vaccine. There was a significant association between positive perception and willingness to take COVID-19 vaccine, $p<0.001$. Being a healthcare worker, having good knowledge of the disease, and willingness-to-pay for the vaccine were significant determinants of willingness to

uptake COVID-19 vaccine. Presence of misconception had a negative effect on the uptake of COVID-19 vaccine.

They concluded that to achieve high COVID-19 vaccine coverage, there is a need for health promotion interventions to correct misconceptions about COVID-19. Government and private donor interventions may be required to subsidize the vaccine to care for the populace who are willing to uptake but unable to pay for the vaccine. (13)

Padhi and et al concluded that in their study in Saudi Arabia addressing socio-demographic determinants relating to the COVID-19 vaccination may help to increase uptake of the global vaccination program to tackle future pandemics. Targeted health education interventions are needed to increase the uptake of the future COVID-19 vaccine. (14).

Sherman and et al through online cross-sectional survey of 1,500 UK adults found that 64% of participants reported being likely to be vaccinated against COVID-19; 27% were unsure and 9% reported being unlikely to be vaccinated. Personal and clinical characteristics, previous influenza vaccination, general vaccination beliefs, and beliefs and attitudes about COVID-19 and a COVID-19 vaccination explained 77% of the variance in vaccination intention. Intention to be vaccinated was associated with more positive general COVID-19 vaccination beliefs and attitudes, weaker beliefs that the vaccination would cause side effects or be unsafe, greater perceived information sufficiency to make an informed decision about COVID-19 vaccination, greater perceived risk of COVID-19 to others but not oneself, older age, and having been vaccinated for influenza last winter (2019/20). Conclusions: Despite uncertainty around the details of a COVID-19 vaccination, most participants reported intending to be vaccinated for COVID-19. Actual uptake will likely be lower. Vaccination

intention reflects general vaccine beliefs and attitudes. Campaigns and messaging about a COVID- 19 vaccination should emphasize the risk of COVID-19 to others and necessity for everyone to be vaccinated. (15).

Lazarus JV, Ratzan SC, Palayew A, Gostin LO and et al surveyed 13,426 people in 19 countries to determine potential acceptance rates and factors influencing acceptance of a COVID-19 vaccine. Of these, 71.5% of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine, and 61.4% reported that they would accept their employer's recommendation to do so. Differences in acceptance rates ranged from almost 90% (in China) to less than 55% (in Russia). Respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so. (16).

1.3 Justification:

Vaccination is an important public health tool and one of the most important advances in community in the fight against infectious diseases. It is therefore clear that a safe, highly effective, and globally acceptable and equitable vaccination program, together with pre-existing precautionary measures, is essential to effectively contain the outbreak.

The study aimed to investigate community attitudes and perceptions towards COVID-19 vaccinations. Our study present insights regarding the willingness of community and this will better provide insights to address barriers to widespread COVID-19 vaccination acceptance and to ensure that community attitudes must be positive towards vaccine.

1.4 Objective:

1.4.1 General objective:

- To study the community attitudes, and perception toward covid-19 vaccinations.

1.4.2 Specific objective:

1. To Study perceptions of communities that may have significant concerns and questions about COVID-19 vaccines.
2. To Study attitudes of communities that may have significant concerns and questions about COVID-19 vaccines.
3. To study side effect concern of communities regarding COVID-19 vaccine
4. To determine the significance of difference in knowledge and perception of COVID- 19 with socio-demographic characteristics.

CHAPTER TWO

MATERIALS AND METHODS

2.1 Study design:

- This was a cross-sectional, descriptive, community-based study.

2.2 Study area:

- This study was conducted in five localities (Khartoum, Khartoum Almanshia, Omdurman, Shrq Alnail, Umbadda) in Khartoum state, Sudan.

2.3 Study duration:

- The study was conducted between the periods 20th Agustus to 20th October 2021.

2.4 Study Populations:

- The Study population was selective from different areas (residential areas, main roads, and transportation station and public markets) to include individuals from different sectors and backgrounds. Preventive measures, such as wearing medical masks and disposable gloves, maintaining a physical distance and wiping hands with sterilizer were taken.

2.5 Sampling:

- The five localities of Khartoum were stratified and Participants were selected from each locality by convenience.

2.5.1 Sample size calculation:

- The total number of respondents was 400 after excluding those who refused to take part in the study and those did not complete the questionnaire correctly. The sample size was calculated for cases from the equation n = z2 pq/d2, where n = sample size, z = level of confidence = 1.96 (95% CI), P = prevalence. Since similar studies in Sudan on this topic are lacking, we assumed 50% prevalence of having inadequate knowledge, attitudes, and practice. Therefore, P = 0.5, q = 1–p = 0.5, d = desired margin of error = 0.05. Thus, the required sample size was estimated as (1.96) (1.96) (0.5) (0.5)/ (0.05)2 = 384 participants. I've deliberately increased the sample size to as many as I can. Because I want the results to be accurate and reflected the reality as possible.

2.5.2 Inclusion criteria:

- Sudanese nationals of both sexes and aged 18 years and above and who had agreed to participate were included and considered appropriate for the study.

2.6 Exclusion criteria:

- Health care workers (physician, specialist, pharmacist, nurses, medical laboratories technician, X-ray technician…etc.) And medical students were excluded for this study.

2.7 Data collection process:

- Data were collected using a pre designed pretested questionnaire data were collected via a 19-item structured, Arabic language, close ended and self-administered questionnaire, some of the questionnaire was used by researcher to record answers from

respondents who not formally educated. The questionnaire consisted of two parts: demographics and KAP, in addition to the consent question.

- The questionnaire had 19 questions. In order to have a better assessment of overall knowledge, each correct answer in the knowledge domain carried 1 mark while wrong answer carried 0 marks, this gave a total score range of 0 – 1 then converted to percentages.

  In an attitude section, a likert scale was used; yes and no were scored 1 and 0 marks respectively, also for negatively quoted question reverse scoring was used, this gave a score range of 0 – 9 then converted to percentages.

  For perception a likert scale was used; yes and no were scored 1 and 0 marks respectively, also for negatively quoted question reverse scoring was used, this gave a score range of 0 – 9 then converted to percentages.

  The scores in knowledge, attitude and perception domains were not normally distributed were expressed as median then were categorized as poor (less than median) and good (median and above).

2.8 Data analysis:

- For analysis of data, Statistical Package for Social Sciences software, version 23.0 (IBM SPSSInc., Chicago, IL) was used. Initially, all information gathered via questionnaire. Both descriptive and inferential statistics involving Pearson Chi-Square Test and One

Way ANOVA-Test. A p-value of less than 0.05 was considered statistically significant.

2.9 Ethical considerations:

- Ethics approval for this study was conducted under permission from Napata college Human Research Ethics Committee department of clinical and industrial pharmacy on August 2021 and collection of data was be started after obtaining approval from Napata college and informed consent was taken verbally from all study participants.

CHAPTER THREE

RESULTS

Table No 3.1: Represent the age of the participants:

Age	Percentage
Under 18	17%
18 years	28%
Above 18 years	55%
Total	**100.00%**

Majority of respondents 55% were (Above 18 years) and 28% were (18 years) and other 17% Under 18).

Table No 3.2: Represent the Gender of participants:

Gender	Percentage
Male	70%
Female	30%
Total	**100.00%**

70% from participants in the study were males while others were female.

Table No 3.3: Represent the educational level of participants:

Variable	Percentage
Primary	7%
Secondary	21%
University	72%
Total	**100.00%**

Table No 3.4: Represent participant's knowledge regarding COVID-19 vaccine:

Sentences	Yes		NO		Probably	
	freq	%	freq	Per	freq	%
1. The concern of participants about COVID-19 vaccine side effects	280	73%	70	18%	34	9%
2. The best way to avoid complications of COVID-19 is vaccination	190	49%	124	32%	70	18%
3. Do you think the vaccine is too expensive	97	25%	225	59%	62	16%
4. Vaccine will not stop the infection	152	40%	107	28%	125	33%
5. You do not need a vaccine because you are following all the precautions?	88	23%	169	44%	127	33%
6. Are you afraid of needles?	88	23%	169	44%	127	33%
7. Do you think the COVID-19 vaccine is a conspiracy?	100	26%	203	53%	81	21%
8. Do you think you do not need to be vaccinated because you are young and healthy?	114	30%	211	55%	59	15%
9. Do you think the COVID-19 vaccine would be safe	189	49%	165	43%	30	8%
10. Do you think the COVID-19 vaccine would be effective	179	47%	116	30%	89	23%
11. If a COVID-19 vaccine is available, would you take it?	138	36%	129	34%	117	30%
12. Would you take the vaccine if it was provided for free?	176	46%	141	37%	67	17%
13. Would you get vaccinated if your doctor advised you to do so?	199	52%	116	30%	69	18%
14. Would you take the vaccine if it was mandatory by your job?	200	52%	121	32%	63	16%
15. Would you take the vaccine if it was mandatory by the government (Ministry of Health)?	140	36%	126	33%	118	31%
16. Would you get vaccinated if your friends or family members were vaccinated?	210	55%	107	28%	67	17%
17. Would you get vaccinated if you knew more studies that prove the vaccine is safe and effective?	179	47%	131	34%	74	19%
18. Would you get vaccinated if there was another method other than injection?	172	45%	158	41%	54	14%
19. Do you refuse vaccination in any way?	105	27%	185	48%	94	24%
Total	**2996**	**41%**	**2773**	**38%**	**1527**	**21%**

73% from participants concern about COVID-19 vaccine side effects.

49% from participants stated that vaccination is the best way to avoid COVID-19 complications.

59% from participants stated that vaccine is too not expensive.

Only 40% from participants stated that vaccine will not stop infection while 28% stated that vaccine will stop it.

44% from participants don't need vaccine cause they were following all precautions while 23% will need vaccine even they follow precautions.

23% from population afraid from needle while 44% will take it.

26% from participants think that vaccine is a conspiracy while 53 % don't.

30% stated that no need to be vaccinated cause they are young and healthy while 55% stated that they need the vaccine despite they are young and healthy.

49% think that vaccine will be safe while 43% stated it will not be safe.

47% stated that the vaccine will be effective while 30% stated that it will not be effective.

36% from participants will take the vaccine while 34% will not take it. 30% probably will take it.

46% from participants will take the vaccine if it is free while 37% will never take it; put 17% probably will take it.

If the doctors advise participants to take vaccine 52% will take it, 30% will not take it and 18% probably will take it.

52% will take vaccine if it is mandatory by their jobs, 32% will not take it even it is mandatory while 16% probably will take it.

36% from participants will take vaccine if it is mandatory by the government, 33% will not take it and 31% probably will take it.

55% from participants will get vaccinated if their family or friends were vaccinated, 28% will not, while 17% probably will be vaccinated.

If participants knew more studies prove vaccine safety and efficacy, 47% will be vaccinated, only 34% will not be vaccinated while 19% will probably vaccinated.

45% from participants will be vaccinated if there another method other than injection, 41% will not be vaccinated by the other method while 14% probably will be vaccinated.

27% from participants will refuse vaccination any way, 48% will not refuse it while 24% will probably refuse it.

Attitude of participants regarding COVID-19 vaccination:

Table 3.5 shows that he descriptive statistics of attitude scores were that the lowest percent was 0 and the highest was 9. The average mark was between 2.522 – 6.9479 (mean +– SD).

Table No 3.5: Attitude scores of population towards COVID-19:

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Attitudes	384	.00	9.00	4.7350	2.21292

Perception of participants regarding COVID-19 vaccination:

Table No 3.6: Perception scores of population towards COVID-19:

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Perception	384	0	9	4.6525	2.03152

The descriptive statistics of perception scores were the lowest percent was 0 and the highest was 9. The average mark was between 2.620 – 6.684 (mean ± SD).

Table No 3.7: Association between attitude and demographic data of participants:

One way ANOVA-test					
Variables		**N**	**Attitude score**		**P- value**
			Mean	**Std. Deviation**	
Education	Primary	27	4.9138	2.24221	.017*
	Secondary	80	4.4429	2.20028	
	University	277	5.1212	2.16858	
Gender	Male	267	4.9110	2.12296	.056
	Female	117	4.4817	2.31949	
Age	18 Years	108	4.4773	2.17265	.56
	Over 18	210	4.6781	2.21412	
	Under 18	66	5.5556	2.13065	

* *P* value <0.05 that's considered as statistically significant.

There is a significant association between knowledge and Education level, *(p* = 0.017). (People with university education level had good attitude compared to pre- university educated).

Table No 3.8: Cross tabulation and association of side effects concerning versus different educational levels:

Variable	Response		Education			Total
			Primary	Secondary	University	
Are you concerned about the side effects of the COVID-19 vaccine	NO	Count	39	181	100	320
		%	12.2%	56.6%	31.3%	100.0%
	Yes	Count	19	29	32	80
		%	23.8%	36.3%	40.0%	100.0%
Total	Prob	Count	58	210	132	400
		%	14.5%	52.5%	33.0%	100.0%

Chi-Square= 12.415[a] P value = 0.002

There is significant association between side effect concern and educational level of different participants (P value = 0,002). (People with university education level had good knowledge regarding side effects concern compared to pre-university educated).

CHAPTER FOUR

DISCUSSION

73% from participants concern about COVID-19 vaccine side effects this was low percent compared to study conducted in Bangladesh found that 90% believed that the COVID-19 vaccine may have side effects. (12)

Only 40% from participants stated that vaccine will not stop infection.

44% from participants don't need vaccine cause they were following all precautions.

23% from population afraid from needle.

26% from participants think that vaccine is a conspiracy.

30% stated that no need to be vaccinated because they are young and healthy.

49% think that vaccine will be safe.

47% stated that the vaccine will be effective.

36% from participants will take the vaccine this was low compared to studies conducted by Patrick and et al which stated that about three-quarters (59.1%) of the respondents were willing to take the vaccine (13) and Lazarus JV and et al study stated that 71.5% of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine. (16)

These all when compared to study conducted by Sherman and et al stated that intention to be vaccinated was associated with more positive general COVID-19 vaccination beliefs and attitudes, weaker beliefs that the vaccination would cause side effects or be unsafe, greater perceived

information sufficiency to make an informed decision about COVID-19 vaccination (15).

46% from participants will take the vaccine if it is free.

If the doctors advise participants to take vaccine 52% will take it.

52% will take vaccine if it is mandatory by their jobs and 36% from participants will take vaccine if it is mandatory by the government this was low when compared to Lazarus JV study where the respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so. (16).

55% from participants will get vaccinated if their family or friends were vaccinated.

If participants knew more studies prove vaccine safety and efficacy, 47% will be vaccinated.

45% from participants will be vaccinated if there another method other than injection.

27% from participants will refuse vaccination any way.

The average descriptive statistics of perception scores between 2.620 – 6.684 (out of 9) and attitude scores between 2.522 – 6.9479 (out of 9), when compared to study conducted in Bangladesh the mean scores of knowledge and attitudes were between 1.35 - 4.31 (out of 5) and between 11.73 – 6.95(out of 12) respectively. (12)

There is a significant association between knowledge and Education level,

(p = 0.017). (People with university education level had good attitude compared to pre- university educated).

There is significant association between side effect concern and educational level of different participants (P value = 0,002). (People with university education level had good knowledge regarding side effects concern compared to pre-university educated).

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion:

Most of the participants are concerned about the side effects of the vaccine; do not know that the vaccine will stop the infection, do not believe in the conspiracy theory about taking the vaccine, will not take the vaccine, whatever the reasons and would take the vaccine if it was proven to be safe by further studies.

There is a significant association between knowledge and Education level, People with university education level had good attitude compared to pre- university educated.

There is significant association between side effect concern and educational level of different participants, People with university education level had good knowledge regarding side effects concern compared to pre-university educated.

4.2 Recommendations:

1. Health promotion programs to improve knowledge and address misconceptions will be a key measure to improve preparedness for vaccine uptake.
2. Government and NGO interventions to ensure free or subsidized vaccine availability, along with a health promotion intervention, will ensure high vaccine coverage.

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4.4 Appendix

Questionnaire

Personal Data:

1\ Age:

Under 18 18 years Above 18 years

2\ Gender

Male Female

3\ Education

Primary Secondary University

Knowledge of participants:

Sentences	**Yes**	**NO**	**Probably**
The concern of participants about COVID-19 vaccine side effects			
The best way to avoid complications of COVID-19 is vaccination			
Do you think the vaccine is too expensive			
Vaccine will not stop the infection			
You do not need a vaccine because you are following all the precautions?			
Are you afraid of needles?			
Do you think the COVID-19 vaccine is a conspiracy?			
Do you think you do not need to be vaccinated because you are young and healthy?			
Do you think the COVID-19 vaccine would be safe			
Do you think the COVID-19 vaccine would be effective			
If a COVID-19 vaccine is available, would you take it?			
Would you take the vaccine if it was provided for free?			
Would you get vaccinated if your doctor advised you to do so?			
Would you take the vaccine if it was mandatory by your job?			
Would you take the vaccine if it was mandatory by the government (Ministry of Health)?			
Would you get vaccinated if your friends or family members were vaccinated?			
Would you get vaccinated if you knew more studies that prove the vaccine is safe and effective?			
Would you get vaccinated if there was another method other than injection?			
Do you refuse vaccination in any way?			