

Assessment to Receive the Vaccinate Against COVID-19 Among Adult Saudi Population 2020

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Abstract:

1. Background

The world health organization (WHO) declared COVID-19 a worldwide pandemic on 11th March 2020. COVID-19 also referred to as coronavirus disease 2019 is a rising respiratory disease that is caused by a novel coronavirus which was initially detected in December 2019 in Wuhan, China, the disease is extremely infectious and therefore the outbreak has been declared a worldwide pandemic by the WHO. Developing immunity by vaccination implies that the danger and effects of the disease are decreased. This immunity will help you combat the infection when exposed. Vaccinations are a crucial new instrument in the fight against COVID-19. The vaccinations of COVID-19 protect against the condition as the immune reaction to the SARS-Cov-2 virus develops .

Aim of the study: To assess the prevalence of the acceptance of COVID-19 vaccine and their determinants among adult Saudi population.

Method: A cross-sectional survey done with a snowball sample. Study participants from regions spanning in the main cities in Saudi Arabia (Riyadh, Jeddah). The logistical regression analysis has been used to model key parameters foreseeing the acceptance of vaccines among responders. A self-administered questionnaire was created and sent via social media sites and email to the study participants. All of our people attended (800).

Results: the reasons for rejection of vaccine the majority of the participants answer they don't think the vaccine is safe were(43.5%)followed by they don't think the vaccine is effective were(28.4%), while other reasons were(18.4%), while they don't trust the sources that encourage the vaccinate were(15.6%), but The sources I trust don't encourage me to take the new Corona virus vaccine were (14.6%), while i am not satisfied with vaccinations L am not convinced of general vaccinations, including the vaccine against the new Corona virus were(13.3%).

Conclusion: the need of developing effective communication strategies emphasizing vaccine science in ways that are accessible to individuals with lower levels of education and vaccine literacy to increase vaccination uptake, the demand for and high acceptability of COVID-19 vaccinations among the Saudi populations was significant. A lot of adults are eager to get a COVID-19 vaccine, in order to broaden the coverage of vaccination, immunization programs must remove obstacles to vaccine quality and comfort.

Keywords: Assessment, Receive, Vaccinate, COVID-19, Adult, Saudi, Population.

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1.Introduction

The outbreak of Coronavirus Disease 2019 (COVID-19) has led to the tragic loss of many human lives, as well as the imposition of enormous economic and social disruption across the world [1]. Alongside defensive measures, such as social isolation, viable vaccination is the greatest way to reduce COVID-19 transmission and provide good clinical and economical outcomes [2] Vaccines represent one of the top public health achievements in the 21st century, and the use of immunization has been a major contributor against preventable diseases. However, vaccine hesitancy is a growing challenge for immunization [3] The United States continues to engage in a broad public health emergency resulting from the pandemics spread of SARS-CoV-2 infections with over 4,000,000 confirmed coronaviruses(COVID-19) and over 150,000 passing cases (COVID-19 Dashboard, 2020). All around the world, starting at 25 December 2020, there have been 77,920,564 affirmed instances of COVID-19, including 1,731,901 deaths, reported to WHO. [4] The pandemic of Coronavirus 19 2019 (COVID-19) has placed a severe load on illness throughout the world and there are no specific antivirals for COVID-19 at now. (1-3) In Saudi Arabia, from Jan 3 to 25 December 2020, there have been 361,725 affirmed instances of COVID-19 with 6,159 deaths. [5] There are currently 138 candidate vaccines in preclinical evaluation and 29 candidate vaccines in clinical evaluation making a total of 167 vaccine candidates under development [2]. However, three COVID-19 vaccines have been developed but only the Comirnaty COVID-19 mRNA vaccine has received WHO Emergency Use Listing Procedure/Prequalification (WHO EUL/PQ) authorization. However, three COVID-19 vaccines have been developed but only the Comirnaty COVID-19 mRNA vaccine has received WHO Emergency Use Listing Procedure/Prequalification (WHO EUL/PQ) authorization. This made the Pfizer/Bio NTech vaccine the first to receive emergency validation from the WHO since the outbreak began a year ago. Hence, in order to be able to use these vaccines to eradicate the disease, reluctance to accept them by the population has to be reduced to the barest minimum. [6] The progress of COVID-19 vaccinations has advanced at a remarkable rate, and protective behaviors are essential to monitor pandemics in the 2019 coronavirus disorder (COVID-19) pandemic. And vaccination is a crucial COVID-19 protective behaviour. [7] Emergency Use Authorisation (EuA) for Pfizer-Biotech antibody COVID-19

(BNT162b2) was issued by the Food and Drug Authority (FDA) on 11 December 2020. (Pfizer, Inc; Philadelphia, Pennsylvania) [8] Vaccination initiatives can quickly cause herd immunity without having to infect a huge proportion of the population [9]. An expected immunization inclusion of 55% to 82% of the populace is expected to accomplish the herd immunity required to grown the vulnerable adult populations [10] immunizations likewise relies upon the individual eagerness to be inoculated. This capacity can be negatively affected by questions and concerns regarding the safety and appropriateness of vaccinations that exist in the public. Certainly the World Health Organization (WHO) regarded the notion of 'vaccine reluctance' to be 'one of the top 10 threats to global health. [11] In case of significant delays in vaccination, the herd's immunity cannot be achieved [12]. In many countries, there are significant obstacles to participation and community immunity for vaccination hesitation and disinformation. [13] The results for the 2009 H1N1 pandemic, for instance, indicated that the willingness to take the 2009 H1N1 pandemic vaccination from 17% to 67% was reduced in studies in Australia, America, Greece, the United Kingdom and France [14,15]. Conquering vaccine hesitancy to moderate the pandemic will require targeted health communication techniques that viably arrive at the subpopulations destined to not accept COVID19 inoculation and that work to improve the primary concerns of the vaccine-hesitant utilizing scientific evidence. [16]

2. Literature review:

In the Cameroon as of 17th August 2020, had registered 18,599 cases of COVID-19 with 16,540 recoveries and 406 deaths. This gives a recovery rate of 88.9% and a with an overall death rate of 2.1% [17]. However, recent trends show that new cases of infection continue to emerge despite the control measures put in place by the World Health Organization (WHO) and the Ministry of Public Health in Cameroon. It is becoming evident that an efficacious vaccine would be required to put COVID-19 under control and eventually eradicate it.[18]

In a study conducted worldwide in 19 countries, 13,426 individuals from 19 countries were examined in June 2020 to determine possible acceptance rates and variables affecting COVID-19 vaccines. Of them, 71.5% showed their genuine or some degree susceptibility to taking vaccination COVID-19, and 61,4% stated their intention to accept the proposition from their employers to do so. Acceptation differences rose from about 90% in China to less than 55%. (in Russia). Respondents who announced a higher degree of confidence in government statistics had to take a vaccination and accept their supervisor' advice to do so [19]. The survey Acceptance of COVID-19 Vaccine in South-Eastern Asia was conducted in July 2020 with a cross-sectional study in Indonesia. Of 1359 respondents, 93.3 percent (1268/1,359) of the respondents were likely to desire 95 percent of successful vaccines to be vaccinated, but this acceptability for a half-liability vaccine decreased to 67.0 percent (911/1,359). For a 95% compelling vaccination, which was a health worker, and which was more at risk from the illness COVID-19, greater acceptance was associated with a changed chances proportion (aOR): 2,01; 95% CI: 1,01, 4,00 and OR, 2,21; 95% CI: 1,07, 4,59 separately (aOR: 0.15; 95 percent CI: 0.04, 0.63). As a

medical professional for a 50% appealing vaccination, more noteworthy acceptance was also associated with aR: 1.57; CI: 95%: 1.12, 2.20. They indicate a substantial impact on the viability of the design of the vaccine on the acceptability of COVID-19 immunization. It may be difficult to prepare the general populace for a vaccination that is somewhat efficient. [20] In the wake of a survey of 4362, Australians aged 18 and more, which was launched in April 17–21, approx. 1 month after lockdown estimated was laid out in Australia and likely changes in health and health framework capabilities were still very important, the research evaluation of the willingness to vaccine against COVID-19 in Australia took place in June 2020. Lack of health skills and poorer levels of education were all linked to hesitant vaccination against flu and COVID-19 ($p < 0.001$; index) overwhelmingly, the reaction of government (75.4% ([3288/4362])) and of the federal government was generally quite certain (65.2% (2845/4362)). [19]. On Feb 2021 in request to end the progressing pandemic, the COVID-19 immunization has been outlined as the ideal arrangement. Substantial numbers of vaccine candidates are being developed are being created and a few clinical preliminaries have as of late been delivered with positive outcomes, prompting various nations supporting explicit immunizations for execution in inoculation programs. In Bangladesh, the public authority has effectively begun the COVID-19 inoculation carry out [13] Research evaluating variables affecting COVID-19 acceptance of vaccines in the US has been released. The authors embraced joint decision-making by means of an online survey on 9 July 2020 to assess the automatically announced likeliness of the participants to choose and receive a hypothetical vaccine based on seven attributes: efficacy, protection duration, major antagonistic occasions, small unfavorable opportunities, the approval process of the US FDA; the country of origin and political support. An important finding that vaccine acceptance rates are higher when adopted by public health organizations rather than politicians underlines the need to build public trust which requires "a unified, proactive and extraordinarily visible correspondence structure in government agency offices to inform the general public on these cycles consistently." They encourage public health organizations to "facilitate a general awareness amongst the public of such processes by means of regular, coherent and visible communication" [21].

2.1 Rationale

Increasing the vaccination against COVID-19 rates continues to be a challenge for Saudi Arabia. Despite the high infected by COVID-19 rate, there are still many people who opt not to get vaccinated and be protected, there are still several factors and reasons have come into play for people who do not get the vaccine about COVID-19. The purpose of this study was to assess the prevalence of the acceptance of COVID-19 vaccine and their determinants among adult Saudi population, possible acceptance rates and factors that influence acceptance attempts of the COVID-19 vaccine should also underline the relevance of vaccinations in developing herd immunity and speeding up the return to normality. Policymakers may also play a significant role

in affecting vaccine absorption and promoting appropriate public health initiatives in order to obtain good results.

2.2 Aim of the Study

To assess the prevalence of the acceptance of COVID-19 vaccine and their determinants among adult Saudi population .

2.3 Objectives:

- To evaluate the prevalence of the acceptance of COVID-19 vaccine (Riyadh, Jeddah,) in Saudi Arabia.

3. SUBJECTS AND METHODS

3.1 Study design:

Cross-sectional surveys are conceived utilizing the Monkey® Platform Survey and a technique for snowball samples is utilized. Initially, the researchers will distribute the survey link with their key contacts in social media (Twitter, Whats App, Telegram) and by e-mail (aged 18 and above).

3.2 Study setting / study area:

Study participants will be recruited across the country, including four major cities (Riyadh, Jeddah) in Saudi Arabia. They are distinguished by their environment and the large number of residents in them, as well as the large number of foreigners one of the most important characteristics of (Riyadh, Jeddah) is its locations, which is characterized good environment and the large number of residents in them, as well as It is visited by many tourists from inside and outside the Kingdom, especially foreigners interested in natural scenes and to moderate its atmosphere throughout the year.

3.3 Study population:

The researcher selected participants will be recruited across the Kingdom, including four major cities (Riyadh, Jeddah) in Saudi Arabia. Key factors that predict vaccine acceptance among respondents will be modeled

- **Inclusion Criteria:** All Saudi residents who are more than 20 years of age. Study participants will be recruited across the Kingdom of Saudi Arabia, including major cities (Riyadh, Jeddah), and other minor cities
- **Exclusion criteria:** Saudi younger than 20 years - Non-Saudi

3.4 Study Sample:

From the prior literature analysis, around 50% of the study participants had shown hesitation in the acceptance of a vaccination. We estimated sample size for 600 persons in which we assumed an adult population of Saudi Arabia to be 23,468,225[22] with a 50% vaccination admission and a 4% error range (95% CI: 46%-54%). The sample size necessary to take into consideration a 30% loss due to invalid (non-responsiveness, dropout, unacceptable or incomplete instances) (800).

3.5 Sampling technique:

The researcher has been using simple random sample technique. The researcher obtained the approval from family medicine program administrator, After that, The researcher has been Permission from the regional Research and Ethical Committee and participants. The online survey will be disabled when the sample size is achieved, the primary participants will be requested to rollout the survey further.

3.6 Study field: Study has been conducted take place between 1-3-2020 to 31-3-2020.

3.7 Data collection methods:

Based on past research and Frameworks, the self-administered questionnaire is designed to assess acceptability of vaccination for newly produced Covid-19 virus vaccine. It was developed in English and afterwards translated into Arabic. The questions were first pre-tested and reviewed and concluded following testing by the pilot. Before the survey was completed, participants had to comply with the use of a forced answer question and survey forms. The survey is estimated to take ~10 min to complete.

To collect the information, a set of questions were constructed and developed. All questions were closed-ended, with tick boxes provided for responses.

The survey included of questions that examined 1) demographic background, exposure to information from COVID-19, and COVID-19 experiences; 2) desire to obtain a COVID-19 vaccination; 4) History and attitude of immunization in the season such as seasonal influenza vaccines for the prior season.

Respondents submitted self-reported demographic data including sex, age, geographic position, marital status and parenting. Participants are asked to identify if they know about COVID-19 friends, neighbors or coworkers. It will be questioned if participants approve VOC19 immunization and if they vaccine against seasonal infection. Specific questions addressing the grounds for vaccine hesitation were put to the respondents who declined the vaccination option COVID-19.

3.8 A Pilot study

A pilot study was performed during the first pre-tests and revisions and completions after tests by the pilot. A Forced Answers Questionnaire and survey questions asked participants to give consent before finishing the survey. This study has been conducted and all suggestions taken into consideration.

3.9 Data Management and Analysis:

For the demographic features of the sample, descriptive statistics (frequencies, percent) will be generated. The frequency and percentage of vaccine acceptance of COVID-19 and the influenza status reported are also calculated. A logistic regression analysis will be performed to evaluate the relationships (odds ratios) of demographic variables with vaccination uptake COVID-19.

3.10 Ethical consideration :

- Permission from family medicine program was obtained .

- Permission from the regional Research and Ethical Committee was be given to conduct our study.
- All the subjects has been participate voluntarily in the study .
- Privacy of information and confidentiality has been maintained .
- Full explanation about the study and its purpose was carried out to obtain their participation.

3.11 Budget: Self-fund

4. Results:

Willingness to Vaccinate Against COVID-19 Among Adult Saudi Population in Saudi Arabia. (Riyadh, Jeddah)2020

Table 1: distribution of the socio-demographic details of study participants of willingness to Vaccinate against COVID-19 among Adult Saudi Population (n=809)

	N	%
Age		
20-25	324	40.0
26-30	202	25.0
31-40	210	26.0
41-50	57	7.0
51-60	13	1.6
More than 60	3	0.4
Gender		
Female	363	44.9
Male	446	55.1
Marital status		
Single	455	56.2
Married	305	37.7
Divorced	45	5.6
Widower	4	0.5
Number of children		
None	587	72.6
1-2	96	11.9
More than 2	126	15.6
level of education		
Primary/ Intermediate	17	2.1
Secondary school	182	22.5
University	531	65.6
Postgraduate Studies	79	9.8

Region		
Riyadh region	490	60.6
Jeddah region	319	39.4

There were 809 participants, and the majority age was(40.0%) in (20-25)years, while the age(31-40)were(26.0%). The majority of them were male(55.1%), while female(44.9%). the most of the participants was Single(56.2%) while married(37.7%), They have none of children (72.6%) level of education university (65.6%) while Secondary school were(22.5%) while They live in Riyadh region were(60.6%)

Table 2: Description of the all of the statements that apply to your experience with COVID-19

	N	%
I have tested positive for a COVID-19 infection		
No	568	70.2
Yes	241	29.8
How severe were the symptoms you experienced when you had the new Corona virus?		
Moderate symptoms but health care providers were not contacted	154	63.9
Moderate symptoms and health care providers were contacted	73	30.3
Severe symptoms/hospitalization	14	5.8
An immediate family member has tested positive for COVID-19 infection		
No	520	64.3
Yes	289	35.7
How severe were the symptoms of the COVID-19 infection of your immediate family member?		
Moderate symptoms but health care providers were not contacted	216	63.9
Moderate symptoms and health care providers were contacted	100	29.6
Severe symptoms/hospitalization	22	6.5
An extended family member has tested positive for COVID-19 infection		
No	216	26.7
Yes	593	73.3
How severe were the symptoms of the COVID-19 infection of your extended family member?		
Moderate symptoms but health care providers were not contacted	323	54.5
Moderate symptoms and health care providers were contacted	171	28.8
Severe symptoms/hospitalization	99	16.7
A friend has tested positive for COVID-19 infection		
No	293	36.2
Yes	516	63.8

How severe were the symptoms of the COVID-19 infection of your friend who does not live with you?		
Moderate symptoms but health care providers were not contacted	356	69.0
Moderate symptoms and health care providers were contacted	131	25.4
Severe symptoms/hospitalization	29	5.6
A coworker has tested positive for COVID-19 infection		
No	353	43.6
Yes	456	56.4
How severe were the symptoms of the COVID-19 infection of your coworker?		
Moderate symptoms but health care providers were not contacted	301	66.0
Moderate symptoms and health care providers were contacted	127	27.9
Severe symptoms/hospitalization	28	6.1

With respect to an infection with COVID-19, you have positive for an infection with COVID-19 Most participants answer No (70.2 percent) while YES (29.8 percent) was the majority of participants with moderate symptoms, with respect to severe symptoms experienced by the new Corona virus but were not contacted by health care providers(63.9 percent) but moderated symptoms and health workers were contacted (30.3 percent). Many participants responded Yes, (73.3%), but replies were no, (26.7%), as regards the severity of your extended family member's COVID infection, a majority of participants had moderate signs, but health care providers had no contact,(54.5%), and moderate symptoms and health care providers were contacted(28.8%), while others reported no. While most participants answered yes. Most participants answered Yes (63.8 percent) but no were (36.2 percent) on how severe the symptoms were for your friend, who does not live with you and COVID-19, the majority of the respondents did not have moderate symptoms but healthcare professionals were not contacted (69.0 percent) (27.9 percent)

Table 3: Description of the reasons for rejection

Reasons for rejection		
I don't think the vaccine is safe	352	43.5
I don't think the vaccine is effective.	230	28.4
I don't trust the sources that encourage the vaccine	126	15.6
L am not convinced of general vaccinations, including the vaccine against the new Corona virus	108	13.3
The sources I trust don't encourage me to take the new Corona virus vaccine.	118	14.6
Other	149	18.4

Regarding the description of the reasons for rejection of vaccine the majority of the participants answer they don't think the vaccine is safe were(43.5%)followed by they don't think the vaccine is effective were(28.4%), while other reasons were(18.4%), while they don't trust the sources that encourage the vaccinate were(15.6%), but The sources I trust don't encourage me to take the new Corona virus vaccine were (14.6%), while i am not satisfied with vaccinations I am not convinced of general vaccinations, including the vaccine against the new Corona virus were(13.3%).

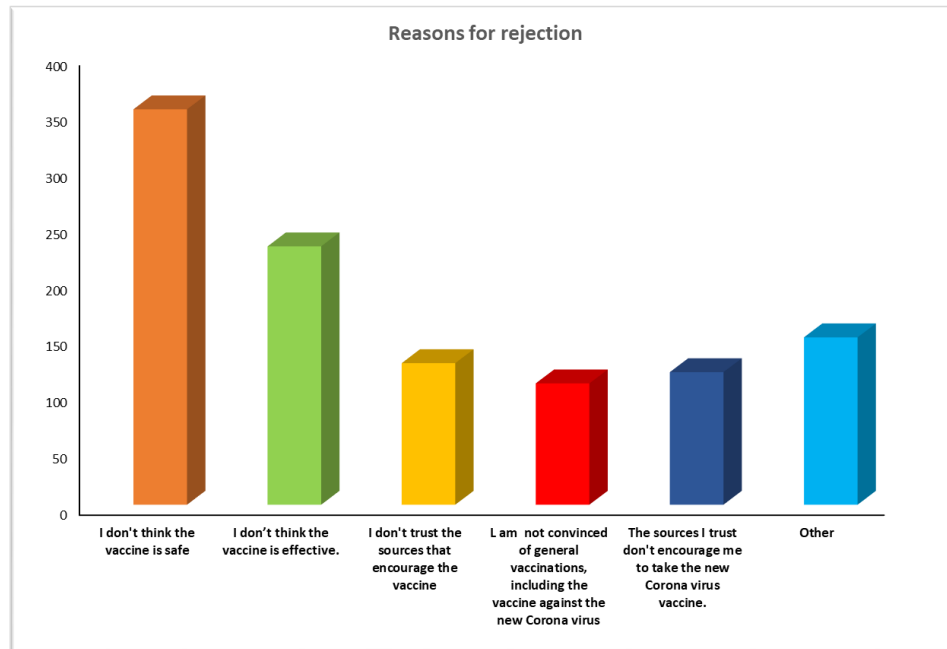


Figure 1 Description of the reasons for rejection

Table 4: Distribution the relation between reasons for rejection(Not safe, Not effective, Not trust the sources that encourage the vaccine, Not convinced of) and socio-demographic data(Age, Gender, Marital status, Number of children, level of education, Region) Adult Saudi Population

Reasons for rejection		Not safe		P-value	Not effective.		P-value	Not trust the sources that encourage the vaccine		P-value	Not convinced of		P-value
		N	%		N	%		N	%		N	%	
Age	18-25	118	33.5%	0.01	92	40.0%	0.100	44	34.9%	0.646	46	42.6%	0.072
	26-30	89	25.3%		68	29.6%		34	27.0%		35	32.4%	
	31-40	113	32.1%		53	23.0%		38	30.2%		22	20.4%	
	41-50	25	7.1%		10	4.3%		8	6.3%		5	4.6%	
	51-60	7	2.0%		6	2.6%		2	1.6%		0	0.0%	
	More than 60	0	0.0%		1	0.4%		0	0.0%		0	0.0%	
Gender	Female	160	45.5%	0.769	115	50.0%	0.065	57	45.2%	0.928	57	52.8%	0.077
	Male	192	54.5%		115	50.0%		69	54.8%		51	47.2%	
Marital status	Single	174	49.4%	0.05	123	53.5%	0.040	62	49.2%	0.086	54	50.0%	0.255
	Married	154	43.8%		87	37.8%		51	40.5%		43	39.8%	

	Divorced	23	6.5%		20	8.7%		11	8.7%		10	9.3%	
	Widower	1	0.3%		0	0.0%		2	1.6%		1	0.9%	
Number of children	None	243	69.0%	0.144	166	72.2%	0.914	92	73.0%	0.272	81	75.0%	0.323
	1-2	47	13.4%		29	12.6%		19	15.1%		15	13.9%	
	More than 2	62	17.6%		35	15.2%		15	11.9%		12	11.1%	
level of education	Primary/ Intermediate	6	1.7%	0.548	6	2.6%	0.320	4	3.2%	0.353	3	2.8%	0.962
	Secondary school	87	24.7%		61	26.5%		22	17.5%		24	22.2%	
	University	225	63.9%		142	61.7%		85	67.5%		71	65.7%	
	Postgraduate Studies	34	9.7%		21	9.1%		15	11.9%		10	9.3%	

Table 4 show that is a significant relation between reasons for rejection and age in the not safe were $P\text{-value}=0.001$ and no significant relation between Reasons for rejection and age (increase in aged between 18 - 25 years were not convinced of were (42%) and $P\text{-value}=0.072$. followed by not effective were (40.0%) and $P\text{-value}=0.100$. Regarding gender that is no significant relation between reasons for rejection and gender (increase in male were not safe of were (54.5%) and $P\text{-value}=0.769$. followed by not trust the sources that encourage the vaccine were (54.8%) and $P\text{-value}=0.928$. Regarding marital status that is a significant relation between reasons for rejection and marital status (increase in single were not effective, not safe respectively and not convinced of (53.5%, 49.4%, 50.0%) and $P\text{-value}$ respectively =0.005, 0.040, 0.255 and no significant relation between Reasons for rejection and marital status (increase single were encourage the vaccine were (49.2%) and $P\text{-value}=0.040$. Regarding number of children that is no significant relation between reasons for rejection and number of children (increase in none were not convinced of were (75.0%)) and $P\text{-value}=0.323$. followed by not trust the sources that encourage the vaccine were (73.0%) and $P\text{-value}=0.272$. Regarding level of education that is no significant relation between reasons for rejection and number of children (increase in university were not trust the sources that encourage the vaccine were (67.5%)) and $P\text{-value}=0.353$. Followed by Not convinced of were (65.7%) and $P\text{-value}=0.962$.

Table 5: Distribution of the degree of rejection for vaccines (acceptable, fairly acceptable, unacceptable) score.

The degree of rejection			Score	
	N	%	Range	Mean \pm SD
Acceptable	101	12.5	10-39.	25.098 \pm 4.879
Fairly acceptable	558	69.0		
Unacceptable	150	18.5		
Total	809	100.0		

The degree of rejection for vaccines the majority of the participants fairly acceptable were (69.0 %) followed by unacceptable and the data ranged from (10- 39) by mean +SD (25.098±4.879).

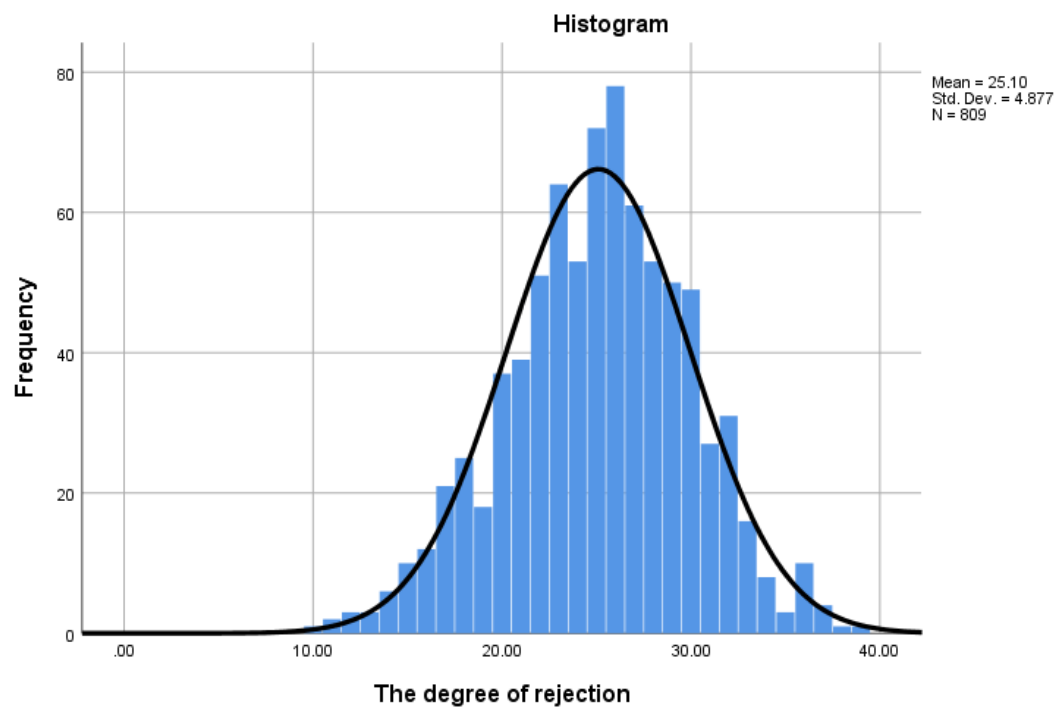


Figure 2 Histogram with normal curve description of the degree of rejection for vaccines score and frequency

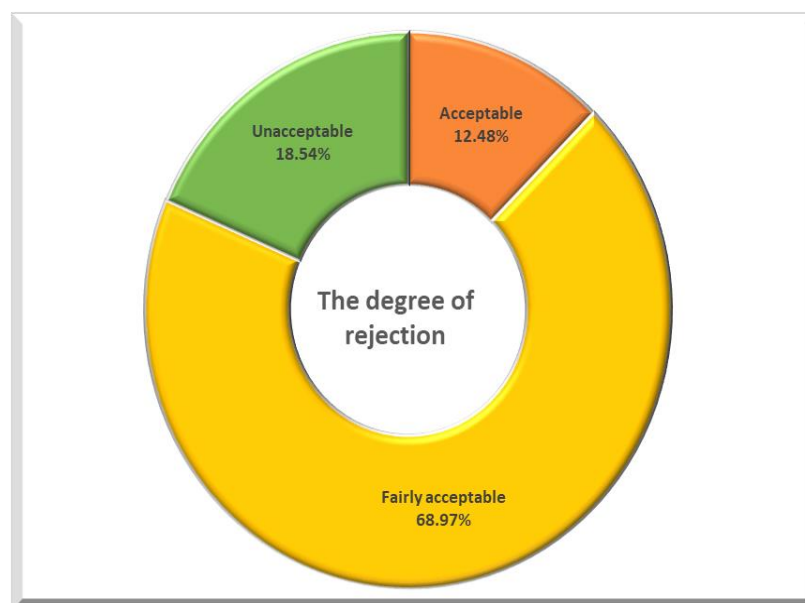


Figure 3 Distribution of the degree of rejection for vaccines (acceptable, fairly acceptable, unacceptable) score.

Table 6: Distribution the relation of socio-demographic data (Age, Gender, Marital status, Number of children, level of education, Region) and The degree of rejection

Demographic data		The degree of rejection		F or T	ANOVA or T-test	
		N	Mean \pm SD		Test value	P-value
Age	18-25	324	25.321 \pm 5.133	F	1.517	0.182
	26-30	202	25.312 \pm 4.609			
	31-40	210	24.810 \pm 4.838			
	41-50	57	24.140 \pm 4.665			
	51-60	13	26.231 \pm 3.395			
	More than 60	3	20.333 \pm 2.082			
Gender	Female	363	25.700 \pm 4.607	T	3.179	0.002*
	Male	446	24.610 \pm 5.039			
Marital status	Single	455	25.103 \pm 5.080	F	1.073	0.359
	Married	305	24.938 \pm 4.774			
	Divorced	45	26.267 \pm 3.313			
	Widower	4	23.750 \pm 2.217			
Number of children	None	587	25.175 \pm 4.832	F	1.306	0.272
	1-2	96	25.438 \pm 4.956			
	More than 2	126	24.484 \pm 5.013			
level of education	Primary/ Intermediate	17	26.059 \pm 4.308	F	2.696	0.045*
	Secondary school	182	25.368 \pm 4.616			
	University	531	25.186 \pm 4.957			
	Postgraduate Studies	79	23.684 \pm 4.874			

Regarding age, results show no significant relation between the degree of rejection and age were $F=1.517$ and $P\text{-value}=0.182$, increase(51-60 years), the mean +SD were (26.231 \pm 3.395), regarding gender show a significant relation between the degree of rejection and gender were $T=3.179$ and $P\text{-value}=0.002$, increase(female), the mean +SD were (25.700 \pm 4.607), regarding marital status show no significant relation between the degree of rejection and marital status were $F=1.073$ and $P\text{-value}=0.359$, increase(Divorced), the mean +SD were (26.267 \pm 3.313), regarding number of children show no significant relation between the degree of rejection and number of children were $F=1.306$ and $P\text{-value}=0.272$, increase(have 1-2 child), the mean +SD were (25.438 \pm 4.956), regarding level of education show a significant relation between the degree of rejection and level of education were $F=2.696$ and $P\text{-value}=0.045$, increase(Primary/ Intermediate), the mean +SD were (26.059 \pm 4.308).

5. Discussion

Vaccination is widely regarded as one of the most important public health innovations of the twenty-first century. Its acceptability, however, varies with time, place, socioeconomic class, ethnicity, and surrounding human behavior.[23,24] Our study, first of its kind in Saudi Arabia, used a web-based self-administered questionnaire and collected responses across the Kingdom, including major cities (Jeddah, Riyadh) Of the 809 study participants, age was(40.0%) in (18-25)years, the majority of participants were male(55.1%), most of the participants was Single(56.2%), they have none of children (72.6%) level of education university (65.6%), the majority live in Riyadh region were(60.6%).

The majority of the individuals answered yes when asked if they had tested positive for a COVID-19 infection. No (70.2%), while the majority of the participants had moderate symptoms but were not contacted by health care providers (63.9%), when an immediate family member tested positive for COVID-19 infection, the participants became infected (35.7%), and when the severity of the symptoms you experienced when you had the new Corona virus, the majority of the participants had severe symptoms but were not contacted by health care providers (63.9%). Yes, were (73.3 percent), when asked how severe were the symptoms of your extended family member's COVID-19 infection, the majority of the participants said moderate symptoms but that health care providers were not contacted were (54.5 percent), and when asked if a friend had tested positive for COVID-19 infection, the majority of the participants said Yes were (54.5 percent) (63.8 percent). (Figure 2)

In this study, more than half of the participants were hesitant to be contacted by health-care professionals, with just a tiny number wanting to visit a health-care practitioner or seek hospital treatment. When compared to previous Saudi Arabian research, the unwillingness to be contacted by health care professionals was high or comparable. [25-26] This reported unwillingness to see health care professionals might be explained by two factors. To begin with, this research took place shortly after the Saudi government authorized the COVID-19 vaccination. During that time, the spread of anti-vaccination propaganda on various social media platforms has increased, perhaps leading to skepticism about the new vaccine. Infected people are afraid of being compelled to take the vaccine, which is similar with earlier findings from the United States of America (USA)[27], Australia[19], and Turkey. [28] Table 3 and figure 1 the description of the reasons for rejection of vaccine the majority of the participants answer they don't think the vaccine is safe were(43.5%)followed by they don't think the vaccine is effective were(28.4%), while other reasons were(18.4%), while they don't trust the sources that encourage the vaccinate were(15.6%), but The sources I trust don't encourage me to take the new Corona virus vaccine were (14.6%), while i am not satisfied with vaccinations L am not convinced of general vaccinations, including the vaccine against the new Corona virus were(13.3%).(see table 3). Our study regarding the causes for rejection (50.29 percent) would delay vaccination until the vaccine's safety is proven, which is in accordance with other studies. The rate of vaccine adoption was lower than in earlier studies in Saudi Arabia before or before the vaccine was licensed [26]. [25] Concerns regarding the safety and effectiveness of the vaccine, together with

fear of bad responses, led to a daily drop of COVID-19 cases in that country, which might have resulted in alleviating concerns for health professionals and weaker intents of vaccination COVID-19. With regard to the acceptability of COVID-19 vaccines, this study has shown that the safety, effectiveness and fear of side effects issues were among the data used together to corroborate results from prior studies on influenza pandemic vaccination uptake. [29] According to the Saudi Ministry of Health the Saudi Food and Drugs Authority is implementing stringent measures in order to verify safety, effect and strengths of COVID-19 before permitting its usage (2020). They emphasized that clearance only after a careful evaluation of all the scientific evidence confirmed the safety and effectiveness of the vaccine, while several uncertainties remain [30]. However, other studies revealed that COVID-19 vaccination was well accepted by the Chinese people during the COVID-19 epidemic. Most (91.3 percent), if they are successfully manufactured and certified for list in the future, stated they are anticipated to receive immunization with COVID-19. Others (47.8%) would delay immunization until the safety of the vaccine was verified. Acceptable immunizations of COVID-19, which varied between 17 percent and 67 percent, were not only acceptable in China, but also in other nations and places [31,32]. Table 4 show distribution the relation between reasons for rejection (Not safe, Not effective, Not trust the sources that encourage the vaccine, Not convinced of) and socio-demographic data (Age, Gender, Marital status, Number of children, level of education) Adult Saudi Population, show that is a significant relation between reasons for rejection and age in the not safe were $P\text{-value}=0.00$. Regarding marital status that is a significant relation between reasons for rejection and marital status (increase in single were not effective, not safe respectively and not convinced of (53.5%, 49.4%, 50.0%) and $P\text{-value}$ respectively $=0.005$, 0.040 , 0.255 . Regarding level of education that is no significant relation between reasons for rejection and number of children (increase in university were not trust the sources that encourage the vaccine were (67.5%) and $P\text{-value}=0.353$. Followed by Not convinced of were (65.7%) and $P\text{-value}=0.962$. (See table 4) .Other studies should back up our research. The findings of this study show that there is a link between the degree of vaccine rejection and the reasons for vaccine rejection, and that those who are more likely to reject vaccinations have a higher perception of COVID-19 risk. As a result, even after being infected with COVID-19, the virus's perceived danger might persist. This theory is supported by the findings of this study, which revealed a strong positive relationship between past COVID-19 infection and vaccination intention. Other studies [16,33] complement our research. Vaccine intention has been found to be associated with previous vaccine admission in terms of vaccination history. Habit (past vaccination behaviour) has been identified as a key predictor in prior research [33] of future vaccination behaviour. By contrast, we found that individuals in China strongly believed that vaccination against COVID-19 is an optional strategy to preventing and managing COVID-19 even if the vaccine is still developing. In accordance with the paradigm of health belief, Chinese people see considerable immune benefits as compared to danger that might explain their high adoption of the vaccine COVID-19 [34,35].

Other studies should be used to support our research. In response to the COVID-19 pandemic, it is thus recommended that COVID-19 vaccine development be accelerated and listed for public use [36]. Despite the high acceptance rate, there are still certain obstacles in the process of transitioning from vaccination intention to actual uptake behavior. Around half of those who planned to get vaccinated (47.8%) said they would wait until the vaccine's safety was confirmed, citing concerns or uncertainty about vaccine safety as a reason for their vaccine hesitancy, as well as a lack of trust in the sources that promote the vaccine, which they were not convinced of. Concerns regarding vaccine safety have been identified as a key impediment to vaccination decisions, particularly for newly released vaccinations that have not been thoroughly evaluated in the real world [37,38].

In the table (5) and figure (2, 3) show the degree of rejection for vaccines. The degree of rejection for vaccines the majority of the participants fairly acceptable were (69.0%) followed by unacceptable and the data ranged from (10-39) by mean +SD (25.098±4.879). (see table 5). This was the first investigation into the adoption of COVID-19 in large populations of a COVID-19 pandemic in Saudi Arabia and provided basic data for the ongoing monitoring of COVID-19 acceptance of vaccines by adult Saudis. The results of this research include: In analyzing vaccines reluctance and differentiating respondents on the foundation of acceptance levels, our results are pertinent to developing optional approaches and vaccination programs for persons with hesitation (okay, moderately acceptable, unacceptable). This observation reflects the findings of several prior studies [36]. In addition, the acceptance of vaccinated COVID-19 was shown to be geographically different. In the South of Saudi Arabia, health professionals were more likely to state that they planned to immunize against COVID-19 than those in the center region. Table 6 show distribution the relation of socio-demographic data (Age, Gender, Marital status, Number of children, level of education) and The degree of rejection in our study show a significant relation between the degree of rejection and gender were $T=3.179$ and $P\text{-value}=0.002$, increase(female), the mean +SD were (25.700±4.607) and also level of education show a significant relation between the degree of rejection and level of education were $F=2.696$ and $P\text{-value}=0.045$, increase(Primary/ Intermediate), the mean +SD were (26.059±4.308) but age, marital status, number of children, region show no significant relation between the degree of rejection. Our study in Australia revealed 13% of Australians will wait to find out whether adverse effects occur before vaccination is agreed, while acceptance is as high as 67% [16]. Two causes might cause the observed delay in immunization. The concern for the use of new vaccines during a pandemic differs from the concern for the use of established products in non-crisis situations such as uncertainty about new vaccines, new infectious diseases and concerns about the vaccine was developed during the survey period. First, there was still no evidence of the use of new vaccine safety as the benchmark. The hesitation reported on our study could, however, later decrease when the availability of a vaccine is achieved, since a quantitative study carried out by the Netherlands has shown that the safety of vaccines introduced by newly introduced vaccines is compared with the safety of vaccines already on the market (see table 6) [38].

6. Conclusion

This research highlights the need for data on factors that relate to COVID-19 vaccine hesitancy and consideration of the ways to respond to the specific needs of such persons to increase the vaccination uptake, community-based research in a very narrow context, which evaluated the public intent to accept a representative sample of the hypothetical COVID-19 vaccination in the Kingdom. A positive desire for the research participant to accept the vaccination was found to be important predictors of perceived risk and confidence in the health care system in Kingdom in relation to the intention of COVID-19 vaccine. Further research should confirm our results with measures to promote public health. The main goal should be health education addressing different socio-demographic groups to enhance the behavior of COVID-19 in the nation and overseas.

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