Assessment of the willingness to Vaccinate Against COVID-19 Among Adult Saudi Population in Makkah AL-Mokarramah, 2021

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Abstract:

Background:

Vaccination against COVID-19 is the key to controlling the pandemic. 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, vaccines save millions of lives each year. Vaccine hesitancy is a potential threat to global public health. Since there is a vaccine against the COVID-19 pandemic, much less is known about its acceptance in the community. It is important to understand the correlates of COVID-19 vaccine hesitancy in the Saudi public and the reasons why individuals intend to refuse a COVID-19 vaccine. The COVID-19 vaccine is an effective measure to manage the pandemic as it prevents severe illness and death. Developing immunity through vaccination means there is a reduced risk of developing the illness and its consequences. This immunity helps you fight the virus if exposed.

Aim of the study: To assessment of the willingness to Vaccinate Against COVID-19 Among Adult Saudi Population in Makkah AL-Mokarramah, 2021

Method: Cross sectional study, a web-based, conducted using snowball sampling. Study participants have be recruited across from regions, including major cities (Makkah AL-Mokarramah) in Saudi Arabia. Key factors that predict vaccine acceptance among

respondents has been modeled. A self-administered questionnaire was designed and has been send to the study participants through social media platforms and email. Our total participants were (800)).

Results: distribution details of study participants of willingness to Vaccinate against COVID-19 among Adult Saudi Population (n=809). The reasons for rejection of vaccine the majority of the participants 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 trust don't encourage me to take the new Corona virus vaccine were (14.6%).

Conclusion: During the pandemic period, a strong demand for and high acceptance of COVID-19 vaccination has been shown among the Saudi Arabia population, many adults are willing to get a COVID-19 vaccine, though acceptability should be monitored as vaccine development continues, while concerns about vaccine safety may hinder the promotion of vaccine uptake. In addition, Anxiety and depression levels amongst Population at Saudi Arabia in healthcare were found to be high when assessed Vaccinate Against COVID-19 pandemic.

<u>**Keywords:**</u> Willingness, Vaccinate, Against, COVID-19, Adult, Saudi Arabia, Population.

1.Introduction

The coronavirus 19 2019 (COVID-19) pandemic has forced a heavy disease burden around the world, and there are right now no particular antiviral medicines for COVID-19. [1,2] In Saudi Arabia, from Jan 3 to 25 December 2020, there have been 361,725 affirmed instances of COVID-19 with 6,159 deaths.[3]

Coronavirus has arisen as an American health disparity, with racial and ethnic minorities showing the most elevated burden of illness and passing's in the US because of COVID-19[4] As indicated by the Centers for Disease Control and Prevention (CDC), Black and Hispanic people are 4.7 and 4.6 occasions more probable, individually, to be hospitalized for COVID-19 contrasted with Whites [5] .

The Spread of Coronavirus Disease 2019 (COVID-19) has prompted the lamentable loss of numerous human living, also as the burden of enormous financial and social disturbance across the world [6,7]. Alongside defensive measures, for example, social separating and isolate, a viable immunization will be the best system for moderating the spread of COVD-19 and advancing positive clinical and financial results [8]

With more than 4,000,000 confirmed coronavirus(COVID-19) cases and more than 150,000 passing's, the United States (U.S.) keeps on engaging the general public health emergency emerging from the pandemic spread of the SARS-CoV-2 infection (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. [9]

Protective behaviors are critical to overseeing pandemics confronted with the coronavirus disease 2019 (COVID-19) pandemic, the advancement of COVID-19 immunizations has been advancing at a remarkable rate. And immunization is a key defensive conduct for COVID-19.[10] On December 11, 2020, the Food and Drug Administration (FDA) gave an Emergency Use Authorization (EUA) for the Pfizer-Biotech COVID-19 (BNT162b2) antibody (Pfizer, Inc; Philadelphia, Pennsylvania) [11] Vaccination projects can prompt herd immunity without requiring   an enormous extent of the populace to be infected.[12] 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[13] The coronavirus illness 2019 (COVID-19) pandemic has forced a heavy disease trouble around the globe, and there are presently no particular antiviral medicines for COVID-19 [14-15]. As vaccination is perhaps the best and cost-elective health interventions to forestall irresistible infections, immunizations against COVID-19 are viewed as critical to forestall and control COVID-19 [16,17]. The adequacy of immunizations likewise relies upon the individual eagerness to be inoculated. This ability could be negatively affected by influenced by doubts and worries that exist in the population about the security and suitability of immunizations. To be sure, the idea of 'vaccine hesitancy' has been considered by the World Health Organization (WHO) as "one of the main ten dangers to worldwide health. [13] If an excessive number of people delay about being vaccinated, herd immunity may not be reached. [14]

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.[18]   In this research, we intend to provide some insights into this willingness to be vaccinated and attention to this important issue.

2. Literature review:

On June 2020, a research reviewed 13,426 individuals in 19 nations to decide potential acceptance rates and factors impacting acknowledgment of a COVID-19 vaccine was evaluated by a worldwide study among 19 nations. Of these, 71.5% of members revealed that

they would be truly or to some degree liable to take a COVID-19 vaccine, and 61.4% announced that they would accept their employer's' proposal to do as such. Differences in acceptance rates went from practically 90% (in China) to under 55% (in Russia). Respondents announcing more significant levels of trust in data from government sources were bound to acknowledge an immunization and accept their boss' recommendation to do as such. [2] an research evaluating willingness to vaccinate against COVID-19 in Australia was distributed in June 2020 in the wake of directing an online study of 4362 Australians matured 18 years and more established during April 17–21, roughly a month after lockdown estimates had been enacted in Australia and when likely passings and health framework capacity were still of great concern. Lacking health proficiency and lower schooling level were altogether connected with a hesitance to be immunized against both flu and COVID-19 (p<0•001; index) Outstandingly, a high extent in general were certain about the state (75•4% [3288/4362]) and federal (65•2% [2845/4362]) government's reaction. In Australia, attitudes towards a COVID-19 vaccine appear, by all accounts, to be surer than announced in France in late March,4 which may to a limited extent reflect more prominent trust in the public authority. Be that as it may, our information show efforts are needed to target vaccine education to those with lower education and health literacy.[19]

On July 2020 a Cross-Sectional Study in Indonesia was directed to survey Acceptance of a COVID-19 Vaccine in Southeast Asia. They found that among 1,359 respondents, 93.3% of respondents (1,268/1,359) might want to be vaccinated for a 95% successful vaccine, but this acceptance diminished to 67.0% (911/1,359) for a vaccine with half viability. For a 95% compelling vaccine, being a healthcare worker and having a higher seen danger of COVID-19 disease were related with higher acceptance, changed chances proportion (aOR): 2.01; 95%CI: 1.01, 4.00 and an OR: 2.21; 95%CI: 1.07, 4.59, separately; compared to civil servants, being resigned was related with less acceptance, (aOR: 0.15; 95%CI: 0.04, 0.63). For a 50% compelling vaccine, being a medical care specialist was likewise connected with more noteworthy acceptance, aOR: 1.57; 95%CI: 1.12, 2.20. They inferred that acceptance of a COVID-19 immunization was profoundly affected by the pattern viability of the vaccine. Preparing the general population to accept a vaccine with relatively low effectiveness may be difficult.[20] On research was distributed to evaluate factors influencing COVID-19 vaccine acceptability in the US. The authors embraced a decision based conjoint investigation by means of an online overview directed on 9 July 2020 to survey participant's self-announced probability of choosing and getting a hypothetical vaccine based on seven attributes: efficacy; duration of protection; major antagonistic occasions; minor unfriendly occasions; US FDA

approval process;; nation of source; and political endorsement. A key finding that vaccine acceptability rates are higher when embraced by public health organizations rather than politicians highlight the need to build trust among the public, which requires "a unified together, proactive, exceptionally noticeable correspondence structure inside government health agencies offices to advise the general population consistently about these cycles". They encourage public health agencies to "prioritize facilitating a broad understanding among the public of these processes through frequent, consistent, and visible communication", as well as engagement with those groups most affected by the pandemic. [21,22]

Rationale

The COVID-19 pandemic is a major problem in our society and most expected to continue to enormous burdens of mortality while severely disrupting societies and economies worldwide. Governments must be ready to ensure large-scale equitable access and distribution once safe and effective vaccines become available.by conducting this study, it will help us to estimate the level of this problem. This requires sufficient health system capacity and strategies to enhance acceptance of, and trust in, the vaccine and its delivery in many countries, vaccine hesitancy and misinformation present substantial obstacles to achieving coverage and community immunity potential acceptance rates of a COVID-19 vaccine and factors influencing acceptance efforts should also highlight the importance of vaccines in achieving herd immunity and accelerating a return to normalcy. Policymakers can also play an important role in influencing vaccine uptake and fostering effective public health interventions to achieve positive vaccination outcomes.

Aim of the Study

To assessment of the willingness to Vaccinate Against COVID-19 Among Adult Saudi Population in Makkah AL-Mokarramah, 2021.

Objectives:

To assessment of the willingness to Vaccinate Against COVID-19 Among Adult Saudi Population in Makkah AL-Mokarramah, 2021

SUBJECTS AND METHODS

Study design:

Cross-sectional survey is designed using Survey Monkey platform and a snowball sampling strategy will be used. Initially, the study investigators will share the survey link in social media and through emails to their primary contacts (aged 18 and above).

Study setting / study area:

Study participants has be recruited from cities Makkah AL-Mokarramah, 2021 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 Makkah AL-Mokarramah, 2021 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.

Study population:

The researcher selected participants has be from cities Makkah AL-Mokarramah, 2021 in Saudi Arabia. Key factors that predict vaccine acceptance among respondents has be modeled

> **Inclusion Criteria :** All Saudi residents who are more than 18 years of age . Study participants has be recruited Makkah AL-Mokarramah Saudi Arabia.

> **Exclusion criteria**: Saudi younger than 18 years - Non-Saudi

Study Sample:

From the previous literature review of vaccine hesitancy in the community, it is estimated that about 50 % of the study participants showed hesitancy towards accepting a vaccine. Assuming the adult Saudi population to be 23,468,225 with a vaccine acceptance of 50% and margin of error of 4% (95%CI: 46% -54%), we calculated a sample size of 600 individuals. To account for a 30% loss from invalid cases (non-response, dropout, ineligible, or incomplete cases), the sample size required is (800).

Data collection methods:

The self-administered questionnaire is designed based on previous studies and frameworks to assess vaccine acceptance for newly developed vaccine for Covid-19 virus. The questionnaire was developed in English and was then translated into Arabic. The questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take ∼10min 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 consisted of questions that assessed 1) demographic background, exposure to COVID-19 information and COVID-19 experience; 2) intention to receive a COVID-19 vaccine; 3) the impact of the COVID-19 pandemic on respondents' income and psychological status 4) vaccination history, such as seasonal influenza vaccination in the past season; (5) acceptance and attitude for COVID-19 vaccination .

Demographic data including sex , age , geographic location, marital status, and parenthood status were self-reported by responders. The participants are asked to indicate whether they know of friends, neighbors or colleagues who have been infected with COVID-19. Participants will be asked whether they vaccinate themselves against seasonal infuenza, and whether they accept COVID19 vaccination. Responders declining the COVID-19 vaccine option were presented with specific questions regarding the reasons for vaccine hesitancy.

A Pilot study

Was carried out at the questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. This study has been conducted and all suggestions taken into consideration.

Data Management and Analysis:

Descriptive statistics (frequencies, percentage) will be calculated for the sample demographic characteristics. Additionally, the frequency and percentage of COVID-19 vaccine acceptance and reported influenza vaccination status will be calculated. To assess the associations (odds ratios) of demographic factors with COVID-19 vaccine acceptance, a logistic regression analysis will be used.

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-funded

	N	%
Age		
18-25	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

Results:

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

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

There were 809 participants, and the majority age was(40.0%) in (18-25)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%)

 Table 2: 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 L am not convinced of general vaccinations, including the vaccine against the new Corona virus were(13.3%).

Table 3: 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

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%	0.001	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%	0.005	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 5 show that is a significant relation between reasons for rejection and age in the not safe were P-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-value=0.072. followed by not effective were(40.0%) and P-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-value=0.769. followed by not trust the sources that encourage the vaccine were(54.8%) and P-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-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- 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-value=0.323.followed by not trust the sources that encourage the vaccine were(73.0%) and P-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-value=0.353. Followed by Not convinced of were(65.7%) and P-value=0.962.

Figure 1 Distribution of the degree of rejection for vaccines (acceptable, fairly acceptable, unacceptable) score.
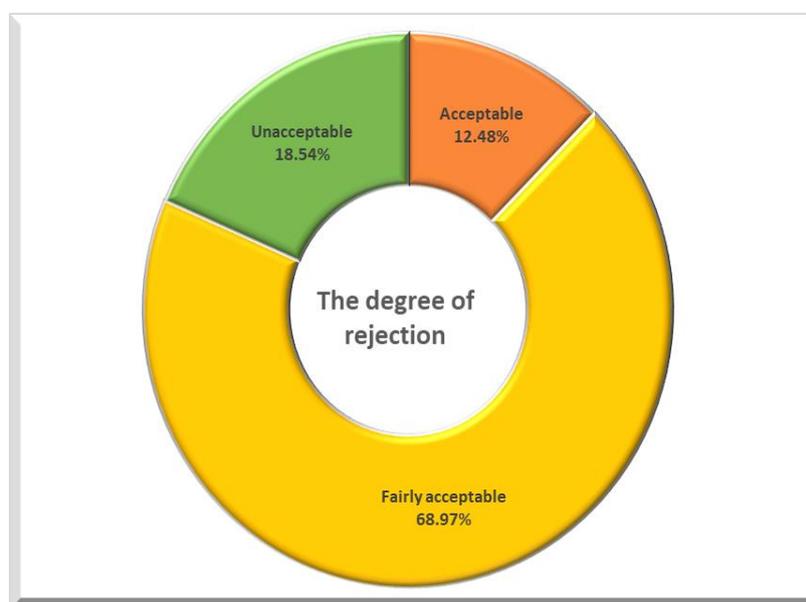

Table 4: Distribution the relation of socio-demographic data (Age, Gender, Marital status, Number of children, level of education) and The degree of rejection

Demographic data		The degree of rejection		F or T	ANOVA or T-test	
		N	Mean ± SD		Test value	P-value
Age	18-25	324	25.321 ± 5.133	F	1.517	0.182
	26-30	202	25.312 ± 4.609			
	31-40	210	24.810 ± 4.838			
	41-50	57	24.140 ± 4.665			
	51-60	13	26.231 ± 3.395			
	More than 60	3	20.333 ± 2.082			
Gender	Female	363	25.700 ± 4.607	T	3.179	0.002*
	Male	446	24.610 ± 5.039			

Marital status	**Single**	455	25.103	±	5.080	F	1.073	0.359
	Married	305	24.938	±	4.774		
	Divorced	45	26.267	±	3.313		
	Widower	4	23.750	±	2.217		
Number of children	**None**	587	25.175	±	4.832	F	1.306	0.272
	1-2	96	25.438	±	4.956		
	More than 2	126	24.484	±	5.013		
level of education	**Primary/ Intermediate**	17	26.059	±	4.308	F	2.696	0.045*
	Secondary school	182	25.368	±	4.616		
	University	531	25.186	±	4.957		
	Postgraduate Studies	79	23.684	±	4.874		

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

Discussion

Vaccination is considered one of the most outstanding public health inventions in the 21st century. However, its acceptances is varied with space, time, social class, ethnicity, and contextual human behavior.[23,24] Our study, first of its kind in Saudi Arabia, used a web-based self-administered questionnaire and collected from Makkah AL-Mokarramah, 2021 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%)

Table 2 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). In line with other studies support our study about the reasons for rejection (50.29%) would delay vaccination until the vaccine's safety is confirmed. The vaccination acceptance rate was lower compared to earlier studies conducted in Saudi Arabia prior to the country's approval of the vaccine [25] or even before the vaccine was available.[26]

Also the reasons the daily confirmed new COVID-19 cases in the country had started to decline at that time which could in turn resulted in alleviated worries among healthcare workers and contributed to weaker intentions to vaccinate COVID-19, concerning the acceptance of the COVID-19 vaccinations, this study found that concerns regarding the vaccine's safety and efficacy and fear of adverse reactions were the most important predictors of vaccine refusal, also identified the expedited vaccine trials as a reason for lack of intent to vaccinate. Taken together these findings reaffirm results from previous studies of vaccine uptake during the influenza pandemic[27] MOH.(2020) support our study , health authorities have highlighted that the Saudi Food and Drug Authority in the KSA has stringent procedures in place to ensure the safety, effectiveness, and strengths of COVID-19 vaccine before permitting its use. They have also emphasized that approval came only after reviewing all scientific data that confirms the safety and efficacy of the vaccine, however uncertainties still exist[30] . But other studies reported high acceptance of COVID-19 vaccination among the Chinese population during the COVID-19 pandemic. Most (91.3%) of the participants stated that they intended to receive COVID-19 vaccination if it was developed successfully and approved for listing in the future. While others (47.8%) would delay the vaccination until they confirmed the vaccine's safety. The acceptance of COVID-19 vaccination in China was higher than that of the H1N1 vaccine, not only in other countries and regions, which ranged from 17% to 67% [28,29]

the relation between the degree of rejection for vaccines and the reasons rejection vaccines show there a significant relation between all items of reasons rejection and degree of rejection a COVID-19 vaccine were P-value=<0.001 in receiving a COVID-19 vaccine at the same time as regularly scheduled vaccines were X2 303.936 , increase in the agree and were (18.8%), there a significant relation between I am worried that the vaccine itself will give me COVID-19 were X2 100.017 increase in the disagree, were (27.3%), there a significant relation between I would rather build immunity by exposure to an infected individual than receive the vaccine were X2 21.933, increase in the disagree, (22.2%), a significant relation between I would be more likely to get the vaccine if it was required to travel internationally

were X2 21.933 , increase in the strongly agree were (33.1%), there a significant relation between Not everyone who is eligible for the vaccine needs to receive it because herd immunity is sufficient to protect everyone were X2 138.633 increase in the Uncertain were (35%), there is a significant relation between I am worried about side effects of the vaccine and the degree of rejection were X2 80.462, increase in the Strongly agree (27.6%), there a significant relation between The side effects of the vaccine are likely to be worse than COVID-19 itself and were X2 170.413 , increase in the uncertain, (38.3%)(see table 3)

Support our study other studies the results of this study suggest and the relation between the degree of rejection for vaccines and the reasons rejection vaccines, greater perceived risk of COVID-19 to themselves. It can thus be argued that the perceived risk of COVID-19 might remain even after being infected with the virus. The significant positive association between being previously infected with COVID-19 and vaccine intention found in this study supports this speculation.[16,30] also support our study other studies. In terms of vaccination history, vaccine intention was found to be correlated with previous acceptance of a certain type of vaccine. Earlier studies have identified habit (past vaccination behavior) as a strong determinant of future vaccination behavior [31] In comparison, we found that Chinese residents held strong beliefs about the each of COVID-19 vaccination as 89.5% thought that vaccination is an elective way to prevent and control COVID-19, even though the vaccine is still under development. This positive attitude towards COVID-19 vaccination and the large perceived pandemic impact may explain the high acceptance of COVID-19 vaccination among Chinese adults, as they perceive strong benefits from vaccination compared with the risk according to the health belief model[32,33] .

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-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-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-value=0.353. Followed by Not convinced of were(65.7%) and P-value=0.962. (See table 4)

Support our study other studies acceleration of COVID-19 vaccine development and listing for application for the public is therefore urged in response to the COVID-19 pandemic at this stage [34]. Although a high acceptance rate has been observed, there are still some barriers in the process of moving from the vaccination intention to real uptake behavior. Around half of respondents (47.8%) with vaccination intention would delay vaccination until the safety of the vaccine is confirmed, and concerns or uncertainty about vaccine safety led to their vaccine hesitation and also not trust the sources that encourage the vaccine, not convinced of. Public concern about vaccine safety has frequently been reported as the major obstacle to vaccination decision-making, especially for newly introduced vaccines which have not been fully tested in the real world[31,32]

Conclusion

This is the first community-based study under a highly restricted environment that assessed the public's intent to accept the hypothetical COVID-19 vaccine in the Kingdom with a representative sample. The study participant has a good intention to accept the vaccine, Participants' perceived risk and trust in the health system were found to be significant predictors towards the intention of the COVID-19 vaccine in the Kingdom. Further study should corroborate our findings with public health promotion interventions. Health education targeting various socio demographic groups should be taken as a priority to increase the COVID-19 vaccine uptake behavior in the country, and elsewhere

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