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Original Research Article

Behavior Changes toward Preventive Actions after Second Vaccination of Coronavirus -19 among Students University of Hail: Cross-Sectional Study

Mohamed Ahmed Babikir Bealy[1, 2*], Hisham Ali A Al Yateem[3], Jassam Adel A Alessa[3], Ahmed Mohammed A Al Zain[3], Ehab Kamal Ahmed Sogeir[4]

[1]Pathology Department, College of Medicine University of Hail, KSA
[2]Histopathology and Cytology, Faculty of Medical Laboratory, University of Kordofan Elobied, Sudan
[3]College of Medicine, University of Hail, KSA
[4]Department of Family and Community Medicine, University of Hail, KSA

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***Corresponding author:** Mohamed Ahmed Babikir Bealy
Pathology Department, College of Medicine University of Hail KSA

Abstract

Background: The severe respiratory syndrome coronavirus (COVID-19) pandemic has affected many aspects of life, much vaccine adopted to minimize morbidity and mortality due to COVID-19. ***Aim*:** To assess behavior changes after taken second dose of COVID-19 vaccine among students in university of Hail. ***Methodology*:** This cross-sectional questionnaire based study involved 350 participants from Hail University, Saudi Arabia. We distributed online questionnaire to determine differences in the protective measures before and after the second dose of COVID-19. ***Results*:** We included 350 participants from Hail University in Saudi Arabia in this study. Declines at different levels was detected in all protective measures after the second dose of COVID-19 vaccine that were in the questionnaire compared to before taking the second dose of COVID-19 vaccine. The significance of the behavior changes after receiving second dose of COVID-19 vaccine compared to behavior changes before receiving second dose of COVID-19 vaccine ($P<0.0001$). ***Conclusion*:** the second dose of vaccine resulted noticeable changes in preventive measurement behavior in university of Hail students.

Keywords: Vaccine, Behavior, University of Hail students.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a deadly disease that continues to affect many countries in the world and is caused by infection with the coronavirus subtype severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) [1]. The World Health Organization (WHO) declared on 30 January 2020 a covid 19 outbreak of a public health emergency of international concern [2] and more than 400 million cases of COVID-19, and not less than 6 million deaths confirmed worldwide, out of which more than 700 thousand cases were in Saudi Arabia during the last three years [3].

The most important public health measure to protect people from COVID-19 worldwide are vaccines since SARS-CoV-2 is highly contagious and infects populations widely and globally [4]. As the COVID-19 pandemic is going through the world, the mass vaccination of newly approved vaccines for COVID-19 has begun around the world. COVID-19 vaccines have been approved in Saudi Arabia (Pfizer/BioNTech, Oxford-AstraZeneca, and more) recently [5].

Regulations and guidelines have been established by many countries such as personal protective equipment (PPE) and maintaining social distancing to get rid of the COVID-19. World Health Organization (WHO) emphasized that using protective measurements, such as wearing masks, are very effectives to dispose of the COVID-19 [6].

Despite of the set the guidelines of protective measurements and giving up vaccination, evidence shows that citizens decrease their adherence of using protective measurements. Study found that after getting influenza vaccine, people decrease their compliance and interacted with each other more [7]. Furthermore, following vaccine against human papillomavirus

(HPV), women were less likely to adhere to the protective measurements [8].

Health policy and vaccination programs in Saudi Arabiaare surely affected by commitment of people to the protective measurements. According to my knowledge, only a few studies if any have done to assess people'scompliance to the preventive actions. The aim of this study to fill this gab and assess the behavior and attitude toward the preventive actions after the second vaccination of Covid-2019 among students of Hail University in Saudi Arabia.

MATERIAL AND METHODS

This cross- sectional survey study aimed to assess the behavior change after second doss of COVID-19 vaccine among student in university of Hail. To achieve this goal questionnaire was designed and generalized to target participant online. Google form questionnaire was prepared and distributed through WhatsApp via students WhatsApp groups. In the beginning of question are the description and all information of the study needed were clearly stated, moreover it was clarify for participant that by answering and resending your response that indicate you are agree to be part of this study. The replies were collected beginning 01/ 11/2021 to 30/12/2021.

Questionnaire

Questionnaire was include socio- demographic information and questions about behaviors changes before and after vaccination these include: wearing mask in public pleas and indoors, wearing gloves, touch your own face, sterilizing or wash hand after coming from outside. In addition, questions related to follow social distances like shaking hands and kissing when greeting people, going outside home and behavior in usual gathering like mosque and classroom their asked question concerning reaction when feeling symptoms like those of COVID-19.

Inclusion and exclusion criteria

All students in university of Hail who receive first and second dose of COVID-19 vaccine regardless to the type of it. Those who did not take two dose were excluded and students from outside university.

Ethical approval:

Approval was obtained from university of Hail ethical committee. No H 2021-243.

Statistical Analysis

Data analysis was performed using SPSS (version 22) Descriptive statistics were done for the socio-demographic data. The paired samples t-test was done for certain variables with a significance level indicated by P-value less than 0.001.

RESULT

The current study involved 350 participants currently students in university of Hail Saudi Arabia, Their age range were between 17 - 26years. Most of participant's age group was 18 -24 years, above 24 years and less than 18 years respectively, represented 53.7%, 40% and 6.3% in this order. 160(45.7%) of participants were male while remaining 190 (54.3%) were female. About participants specialization 129(36.9%) were from health sciences colleges, 90(25.7%) were from scientific and engineering college, 27(7.7) were from humanitarian college and 104(29.9%) from other than mentioned above colleges. Concerning participants social status the majority of them were unmarried 200(57.1%), followed by 141(40.3%) were married and few were separated 9(2.6%). Mainstream of participants were Saudi represent 98.3% whereas the few non-Saudi denote 1.7% as shown in Table 1. Behavior changes significantly differ after receiving second dose of COVID-19 vaccine in different level compared to that before receiving second dose of COVID-19 vaccine, when participants asked questions concerning wearing mask in public pleases before second dose always, sometime and never were 78.9%, 16.6% and 4.6% respectively, while after second dose were 46.6%, 40.6% and 12.6% corspenatly which statistically significant different ($P<0.0001$), other measure (wearing mask indoors, wearing gloves, touch your own face, sterilizing or wash hand after coming from outside. In addition, questions related to follow social distances like shaking hands and kissing when greeting people, going outside home and behavior in usual gathering like mosque and classroom and their asked question concerning reaction when feeling symptoms like those of COVID-19), furthermore show statistically significant different in behavior changes before and after second dose of vaccine as demonstrated in Table 2.

Fig 1 show the description of study population by nationality and sex in which nearly 98.9% of female were Saudi and residual 1.1% were non-Saudi, yet about 97.5% of male were Saudi and the other 2.5% were Non-Saudi. Concerning age groups and sex, the higher percent of male found in age group 18-20 years, which constitute 39%, and the percent in the same group for female was 15%. However, the higher percent of female accumulate at age group of > 24 represent 35% in which male was 5%. As stated in Fig 2.

In Fig 3 study population descriptive by social status and sex, in which about 35% of female were married while married male were 5%, and 2% of female separated in case of 1% of male separated. Concerning specialization the highest percent of female were from other specialty followed by health and scientific engineering and at last humanitarian college constituted 47%, 22% and 8% respectively, whereas in male health

colleges is the highest followed by scientific engineering, humanitarian and finally other college established 54%,31%,9% and 6% correspondingly. As revealed in Fig 4.

Table 1: Distribution of study population by socio-demographic characteristics

Socio-demographic information	Number	Percentages
Age		
<18	22	6.3
18 - 24	188	53.7
>24	140	40.0
Total	350	100.0
sex		
Male	160	45.7
Female	190	54.3
Total	350	100.0
Specialization		
Health	129	36.9
Scientific/Engineering	90	25.7
Humanitarian	27	7.7
Other	104	29.7
Total	350	100.0
Social status		
Married	141	40.3
Unmarried	200	57.1
Separated	9	2.6
Total	350	100.0
Nationality		
Saudi	344	98.3
Non Saudi	6	1.7
Total	350	100.0

Table 2: Distribution of study subject by behavior practice before and after

Did you wear a mask in public places?	Number	Percentage			P value
Before receiving second dose of COVID-19 vaccine			**After receiving second dose of COVID-19 vaccine**		
Always	276	78.9%	163	46.6%	**0.0001**
Sometime	58	16.6%	142	40.6%	
Never	16	4.6%	45	12.9%	
Total	350	100.0%	350	100.0%	
Did you wear a mask indoors?					
Always	244	69.7%	152	43.4%	**0.0001**
Sometime	81	23.1%	153	43.7%	
Never	25	7.1%	45	12.9%	
Total	350	100.0%	350	100.0%	
Were you wearing gloves?					
Always	29	8.3%	7	2.0%	**0.0001**
Sometime	138	39.4%	49	14.0%	
Never	183	52.3%	294	84.0%	
Total	350	100.0%	350	100.0%	
Did you touch your face?					
Always	70	20.0%	130	37.1%	**0.0001**
Sometime	168	48.0%	174	49.7%	
Never	112	32.0%	46	13.1%	
Total	350	100.0%	350	100.0%	
Did you sterilize your hands or wash them when coming from outside?					
Always	252	72.0%	144	41.1%	**0.0001**
Sometime	83	23.7%	152	43.4%	
Never	15	4.3%	54	15.4%	

Did you wear a mask in public places?	Number	Percentage			P value
Total	350	100.0%	350	100.0%	
Were you following social distancing measures?					
Always	227	64.9%	91	26.0%	**0.0001**
Sometime	105	30.0%	189	54.0%	
Never	18	5.1%	70	20.0%	
Total	350	100.0%	350	100.0%	
Did you shake hands with people when meeting them (e.g., Kissing)					
Always	33	9.4%	69	19.7%	**0.0001**
Sometime	124	35.4%	236	67.4%	
Never	193	55.1%	45	12.9%	
Total	350	100.0%	350	100.0%	
Did you go out of the house?					
Never go out	44	12.6%	8	2.3%	**0.0001**
For necessity	220	62.9%	97	27.7%	
Always	86	24.6%	245	70.0%	
Total	350	100.0%	350	100.0%	
When you feel symptoms like those of Covid 19 (fever, cough...) what is your reaction?					
Temporarily isolated from family	64	18.3%	79	22.6%	**0.0001**
Thinking about having a PCR smear	59	16.9%	66	18.9%	
Both of them	206	58.9%	99	28.3%	
I don't care	21	6.0%	106	30.3%	
Total	350	100.0%	350	100.0%	
In the usual gatherings (mosques, classrooms, etc...)					
Make sure to keep the social distance	238	68.0%	123	35.1%	**0.0001**
Dealing with nature	92	26.3%	145	41.4%	
I don’t care	20	5.7%	82	23.4%	
Total	350	100.0%	350	100.0%	

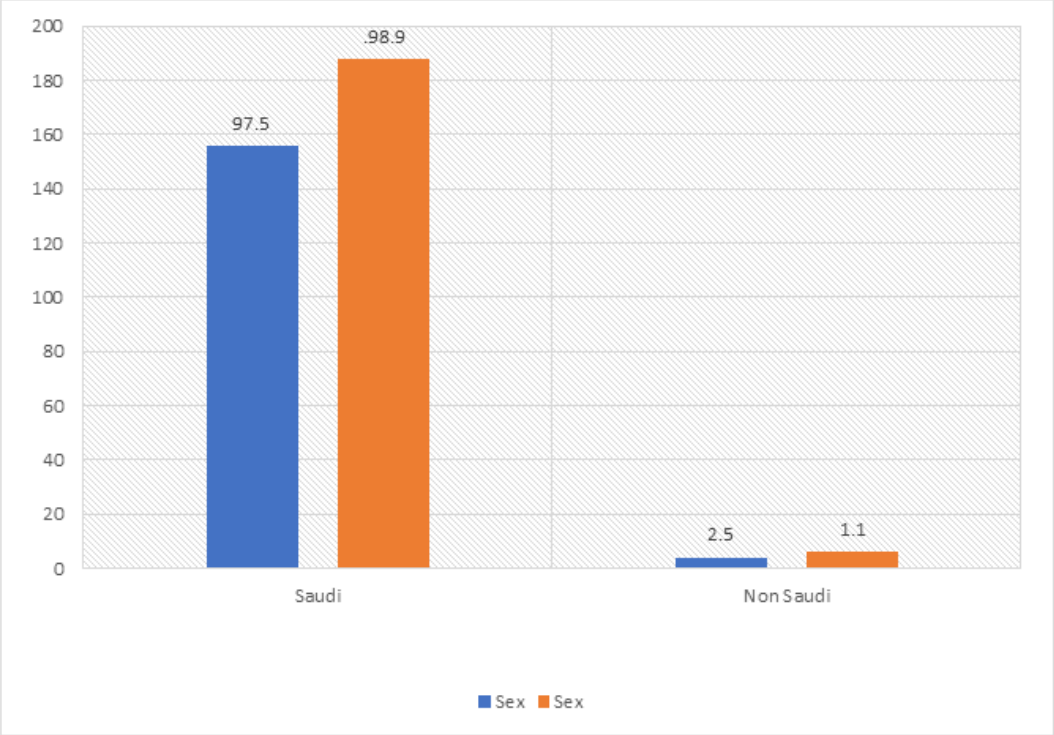

Fig 1: Description of study population by nationality and sex

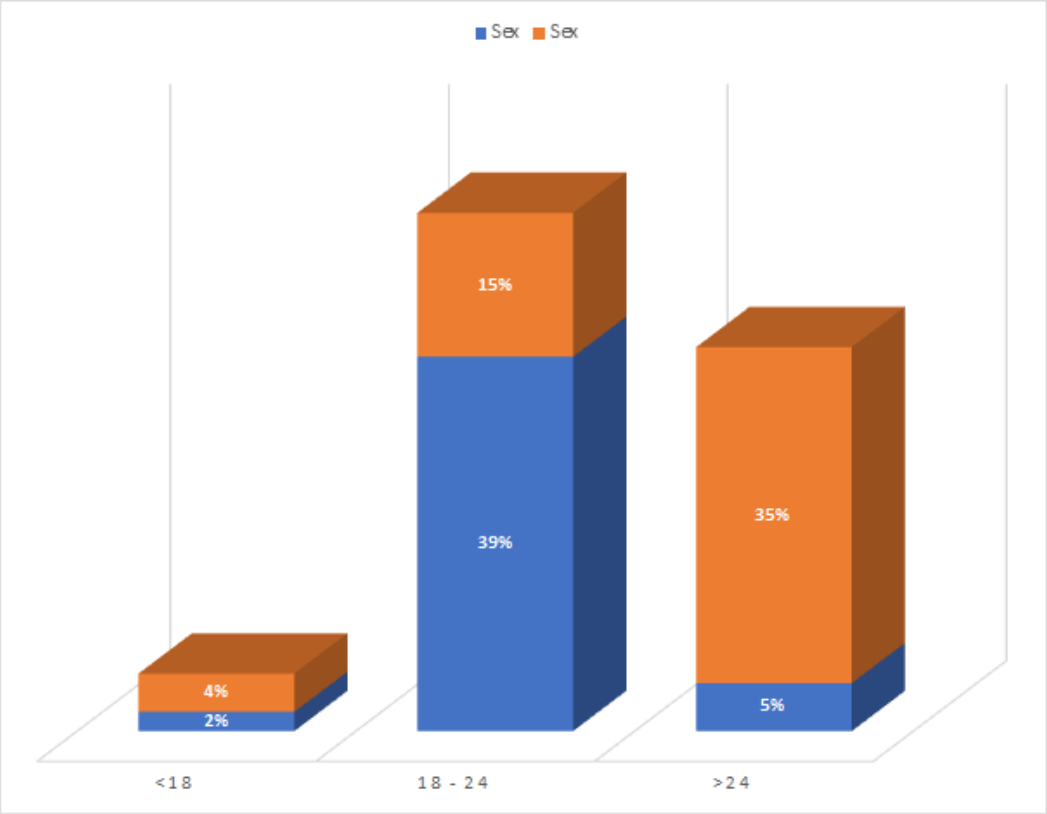

Fig 2: Description of study population by Age and sex

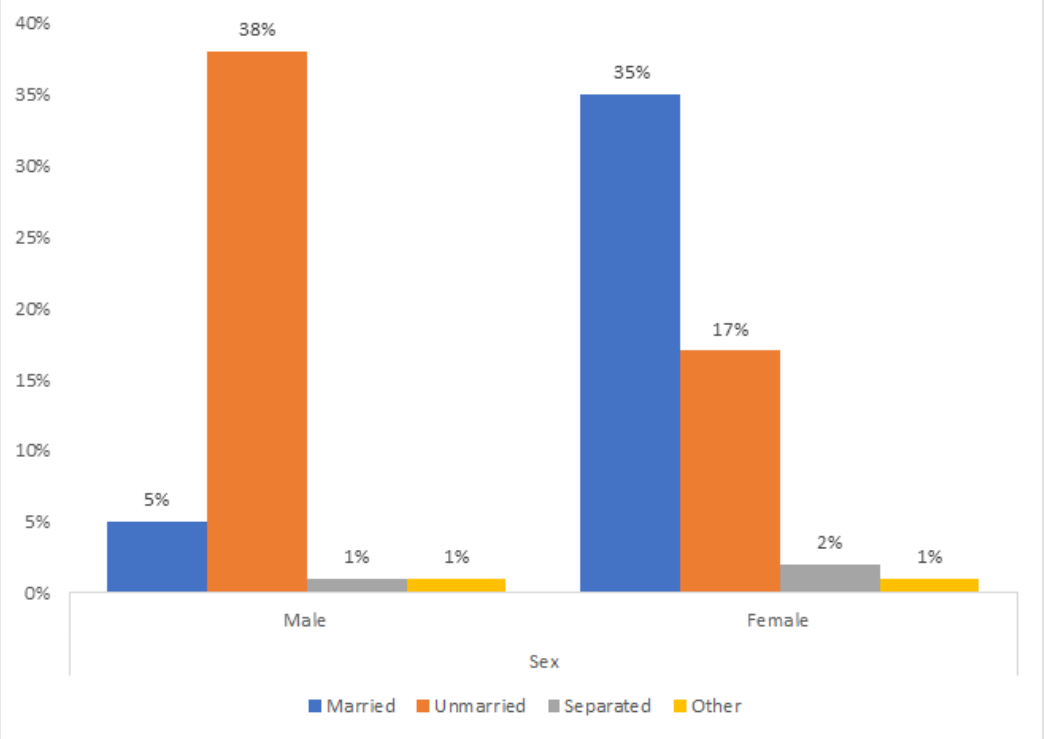

Fig 3: Description of study population by social status and sex

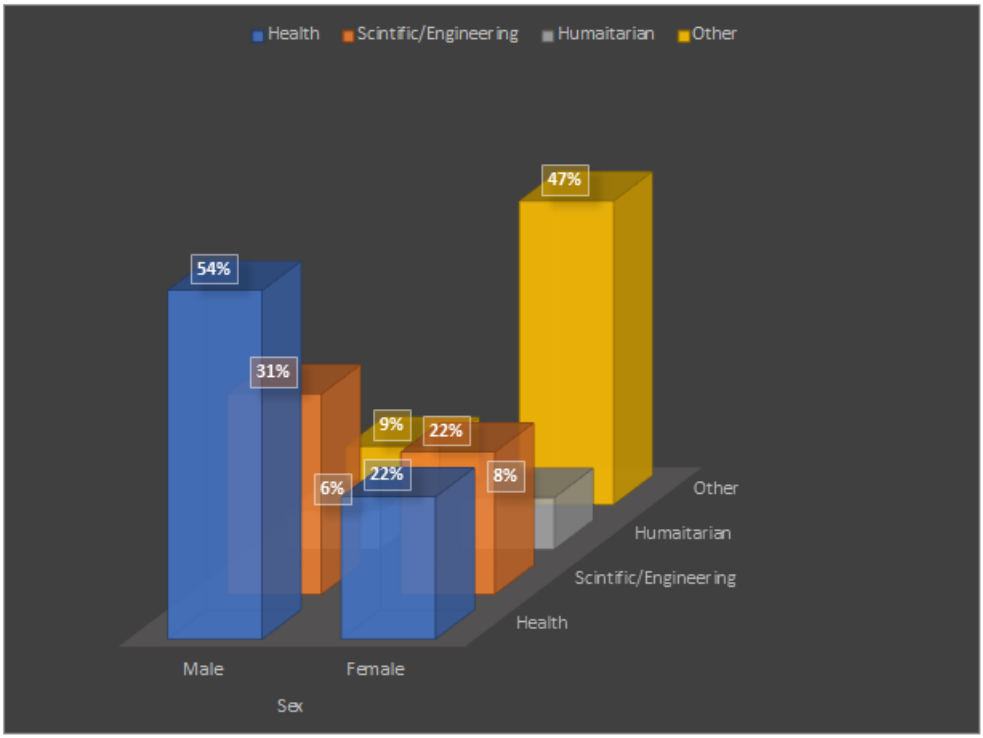

Fig 4: Description of study population by specialization and sex

DISCUSSION

Achievement of adopting vaccines for covid-19 caring hopes to continue surviving, although people can be infected after fully vaccinated but it might to reduce disability and death [9].

Study proposed that it is theoretically people may increase their preventive health measures after taking immunizations because they knowledge that their social behavior would be recorded [7]. Moreover, the findings of this study showed that when we did ask the respondents if they sterilized hands and wash them when coming from outside before they take the second dose, their respond were always sterilized hands and wash them. However, after the second dose, their respond were sometimes sterilized hands and wash them with statistically significant. We also found that participates chose that they were never shake hands with people when meeting them, but after the second dose their choice were shaking always and kissing sometimes. According to our knowledge, no research has been done discussing the behavior changes before and after taking COVID-19 vaccination. However, other study done in Hail, Saudi Arabia showed that there is statistical significance in washed hands after coming back home, used soap to wash hands, used a hand sanitizer outside, wore a face mask while outside, and washed hands before preparing and/or eating food before and after COVID-19 [10]. Similarly, our study showed statistical significance in protective measures, such as wearing mask and using hand sanitizer,after taking second dose of COVID-19 vaccine.

Furthermore, when comparing social distancing behavior before and after the second dose, most of the participants reported that they were sometime keeping the social distance, whereas (20%) participants reported a decrease in social distancing. Following the second vaccination, (53.4%) respondents reported lower mask wearing than before receiving the vaccination compared to (46.6) who did not change their mask wearing behavior. Consistent with previous findings, the survey showed decreased social distancing and mask wearing in the most responses of the participants after the second dose. The reported decrease in mask wearing was less prevalent than the reported decrease in social distancing, which approximately occurred in most of the surveyed participants. These finding differ with study conducted in China included vaccinated responded their result was no statistical different in health behavior in vaccinated and undeceived vaccine group excluding type of gloves used [11].

A sequence of policies and procedures i.e. case isolation and traffic barring have been followed to stop virus distribution which show effectiveness in reduce spreading, however such measurements are not so far a solution, vaccination regardless type of antibodies reveal an effective prevention from COVID-19 [12]. In study conducted in Jordan about acceptance of COVID-19 vaccine show different acceptance level 37% of participant were accepted while 34% were not accepted and the remain 27% were neutral to obtain COVID-19 vaccine [13].

LIMITATIONS

Although our survey is concerned in assessing the health behavior in vaccinated students of Hail University in Saudi Arabia, it did not include all the population in Hail neither in Saudi Arabia. However, this study has some limitations. Due to the COVID-19 pandemic, the offline person-to-person survey is not possible; we have used WhatsApp to collect information that may limit the response to our survey. We only reached out to students who had access to WhatsApp. The findings of this study may differ from the real scenario because self-reported information may lead to information bias. Further study will beconducted to inspect the behavior changes due to the vaccine.

CONCLUSION

In conclusion, our research findings show that there is a behavioral change toward protective measures from COVID-19 taking the second dose of the vaccine among students of Hail University in Saudi Arabia, the significant conclusion of our research was that people were less likelyto engage in protective measures.

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