COVID-19 VACCINE HESITANCY; ESTABLISHING A BASE LINE TO ACCELERATE VACCINE UPTAKE AND RESTORE NORMAL LIFE IN BENI-SUEF CITY, EGYPT

Sameer Hamdy Hafez[1], Hussein Mohamed Magdi Fakhreldin Mohamed[2]

Hayam Ahmed Mohamed

[1] Lecturer of Community Health Nursing, Faculty of Nursing, Beni-Suef University,

[2] Lecturer of Psychiatric and Mental Health Nursing, Faculty of Nursing, Beni-Suef University,

[3] Assistant professor of Medical Surgical Nursing, Faculty of Nursing, Benha University

ABSTRACT

Background: COVID-19 vaccine hesitancy is a great challenge to control the current pandemic. **Aim:** Study aims to study COVID-19 vaccine hesitancy; establishing a base line to accelerate vaccine uptake and restore normal life in Beni-Suef City. **Subjects and method: Design:** Cross-sectional design was used. **Setting:** The current study was performed in Beni-Suef city. **Subjects:** A convenient sample consists of 800 participants was chosen. **Tools:** The first was structured interview composed of 6 parts o assess, personal data, medical history, barriers, suggestions, willing to take the vaccine and knowledge about COVID-19 vaccine. The second was attitude scale used to assess the attitude regarding COVID-19 vaccine. **Results:** The data showed that friends were the main source of information for 38.7% of the studied sample while health team was the main source for only 8.7% of the studied sample. Only 31% have satisfactory knowledge, 67% have negative attitude regarding the vaccines. 73.1% not willing to take the vaccine. **Conclusion:** The current study concluded that the total level of knowledge, attitude and willing to take the vaccine is low among the studied sample. Additionally the total level of knowledge, total level of attitude, medical history of chronic diseases age, education and residence were significantly associated with the willing of studied sample to take the vaccine. **Recommendations:** Nursing staff and health team members should be involved in health education programs via mass media and via personal communications. Further studies aimed at improving population awareness and attitudes regarding COVID-19 vaccines.

Keywords: COVID-19 Vaccine Hesitancy, Restore Normal Life in Beni-Suef City, Vaccine Uptake.

INTRODUCTION

The growing of COVID-19 pandemic affects negatively the communities and economies around the world. All health organizations in all countries collaborated to control the COVID-19 pandemic. Many countries in the world were affected by this deadly disease which is caused by COVID-19 which has become a pandemic outbreak on 11 March 2020 (**Paul, Steptoe and Fancourt, 2021**).

At the end of March 2021, more than 120 million cases were diagnosed around the world. Clinical manifestations of COVID-19 ranged from asymptomatic to severe pneumonia and death. The usual symptoms are fever, dry cough, fatigue, sputum production, and shortness of breath. On average symptoms takes 5–6 days from when someone is infected with the virus for symptoms to appear, however it can take up to 14 days (**Huynh, Nguyen, Lam, Pham and Nguyen, 2021**).

Management of COVID- 19 was carried out through several complementary axes to each other. The first axis was concerned with some precautionary measures to prevent the spread of infection between individuals within the same society and between countries. The second axis was by developing medical protocols to treat critical cases and the third axis by strengthening the immunity of individuals. The main goal for all research centers to discover the vaccine to prevent the transmission and control the pandemic of COVID-19 (**WHO, 2021**).

Serums protect lives of people each year by preparing the immunity to detect and destroy the foreign bodies. If the body is later exposed to those disease-causing germs, the body has the ability to destroy them. The ministries of health in the world should prepare all the necessary resources for the largest vaccination campaign in history after vaccination approval. All health sectors should ensure equitability and support the population to take the vaccine (**Wake, 2021**).

There is no doubt that the vaccination rate is a great influencing factor to achieve the herd immunity. Vaccines are the most effective mechanism to prevent the infection among people. All institutions are rushing to devise the appropriate vaccination to eliminate this pandemic (**Loomba, Figueiredo and Piatek, 2021**).

Several COVID-19 vaccines were adopted around the world. More than 3.51 billion doses have been administered across 180 countries, according to data collected by Bloomberg. The latest rate was roughly 30.5 million doses a day. More than 3.51

billion doses have been administered—enough to fully vaccinate 22.9% of the global population. The rate of vaccination in Egypt is considered low, there were 4851349 administered doses for 2.4% of the population **(Randall, Sam, Tartar, Murray and Cannon, 2021)**.

The disclosure of immunization is considered as among the awesome human accomplishments when it comes to keeping the health of population. Immunization is the foremost successful way of controlling irresistible infections; however victory is challenged by people and bunches who select to delay taking the vaccine. Welling or delaying the vaccine have serious impact on controlling this pandemic as these partly determine the extent to which people infected or protected from the disease. Reluctance to be inoculated can be driven by a few reasons such as negative restorative family encounters that are related to immunizations of the guardians, concerns approximately the security of the antibodies, mindfulness, seen defenselessness to sickness, seen moo seriousness of sickness and for devout or moral reasons **(Zewude and Habtegiorgis, 2021).**

Community health nurses have great roles to improve the vaccine acceptance among population through planning, identification of target groups, community engagement and mobilization, service delivery, and in tracking and follow-up. Alongside other community-based providers, CHWs are key interlocutors, with their knowledge of "last mile" health service delivery, experience encouraging vaccine uptake, and produce evidences that increase trust and credibility within population. With the rate of vaccines uptake is low, it is very urgent to assess the acceptance of COVID-19 vaccinations **(WHO, 2021).**

AIM OF THE STUDY

The current study aims to study COVID-19 vaccine hesitancy; establishing a base line to accelerate vaccine uptake and restore normal life in Beni-Suef City through:

1. Assess the willing of the participants to take the vaccine

2. Determine level of knowledge among the studied sample

3. Determine level of attitude about COVID-19 vaccine among the studied sample.

4. Identify perceived barriers of the studied sample toward COVID-19 vaccination.

5. Explore the suggestions of the studied sample that accelerate the uptake the

COVID-19 vaccine.

6. Assess factors associated with the participants' willing to take the vaccine.

Research questions

1. What is the percentage of the studied sample who will take the vaccine?
2. What are the level of knowledge and the level of attitude regarding COVID-19 vaccine among the studied sample?
3. What are the perceived barriers and suggestions regarding taking the COVID-19 vaccine among the studied sample?
4. What are the factors associated with the willing of the studied sample?

SUBJECTS AND METHOD

Design:

Cross sectional descriptive design was used

Setting:

The current study was conducted in Beni-Suef city, Egypt.

Subjects:

Population in Beni-Suef city is 589,276 and population size over 18 years old is 359,458. There for the sample size should be more than 599 according to the following formula:

$$\text{Sample size} = \frac{(Z^2) \times (p) \times (1-p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal used for sample size needed (0.05)

c = confidence interval, expressed as decimal (.04 = ±4)

Sampling technique:

Researchers included 800 participants who live in Beni-Suef city through convenient sampling.

Tools of data collection

Two tools were designed by the researcher for the collection of the required data based on review of relevant literature **(WHO, 2021; CDC, 2021; Paul, Steptoe, and Fancourt, 2021)**.

Tool 1: Structured interviewing questionnaire and it composed of 6 parts: -

Part one: personal data

It consists of 5 items, and was designed to collect data about age, gender, place of living, educational level, and occupation

Part two: Medical history of the studied sample about having chronic diseases

Part three: Knowledge questionnaire

Questionnaire was used to determine the total level of knowledge of the studied sample. It consist of 10 items as following over view about covid-19 pandemic, about the immunity, and about the vaccination, mechanism of covid-19 vaccine, benefits of vaccination, target population, side effects, home care to the side effects, warning signs after vaccination.

Scoring system:

The answers of participants scored–three points if correct response, two if incomplete response and one if don't know. The total points are converted to percentage and divided to two categories, unsatisfactory (<50%), and satisfactory (≥ 50%).

Part four: Barriers questionnaire

This part used to identify the barriers of studied sample to take the vaccine. It consists of 7 barriers. Each item was given score one if was expressed by the participant and zero for not expressed.

Part five: Suggestions questionnaire

It was composed of nine items to explore the suggestions of the studied sample to accelerate the intake of the vaccine. Each item was given score one if was suggested by the participant and zero for not suggested.

Part six: willing questionnaire

This part was used to assess willing to take the vaccine. If the participant will take the vaccine is scored one and in will not take the vaccine is scored zero. The participants who

will take the vaccine select from three choices as following as early as possible, next month and after three months.

Tool 2: Attitude scale

It was used to assess the attitude of the studied sample regarding Covid-19 vaccine. It consists of 8 items each item was given (3) points for sure, (2) points for may be and (1) point for not sure. The total points are converted to percentage and classified to three levels, negative (<50%), average ($\geq$ 50% to 74%) and positive attitude ($\geq$ 75%).

Validity:

The face and content validity of the tools were done by five experts in community health nursing who evaluated the tools for clearance, appropriateness, applicability and comprehensiveness. According to their opinion, the researchers do some modifications

Reliability

. The reliability of the structured interview to assess the total level of knowledge, barriers suggestions and willing to take the vaccine was assessed in the present study and the Cronbach's alpha coefficient was 0.91. Additionally the scale to assess the attitude of the studied sample was reliable with Cronbach's alpha coefficient 0.87.

Field work:

Data collection of the study was started at the beginning of May 2021 and completed by the end of July 2021.

The researcher first explained the aim of the study to the participants and reassures them that information collected will be treated confidentiality and that it will be used only for the purpose of the research.

The collection of data was done immediately after oral informed consent from the participants. Participants were interviewed using the structured tools. The time consumed to collection of data ranged from 10-15 minutes.

Information was collected from places where residents gather, such as parking lots, and after Friday prayers. Participants are assured that it is the first time they fill out the questionnaire.

Pilot study:

A pilot study was conducted on 50 participants to ensure the validity and reliability of the tools, and to estimate the time needed to collect the data. The participants who shared in the pilot study were not included in the main study sample.

Ethical Consideration

The acceptance of the ethical committee was taken before the collection of data. All principles of ethics in research were followed. The aim of the study and the procedures were explained then verbal consent was taken from each participant. The participants were assured regarding their rights to refuse and regarding the confidentiality of their information and additionally assured regarding there are no costs to participate in the study.

IV- Statistical Design:

The collected data were organized, tabulated, and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA. The number and percentage distribution was calculated. Chi square test was used to detect the statistical differences between variables. The level of significant was adopted at $p<0.05$.

RESULTS

Table (1): Shows the distribution of personal characteristics and history of chronic diseases of studied participants. The data reveals that 59.8% of studied sample are males and 27.5% of the studied sample less than 30 years and 25.6 % were ≥50 years old. Concerning to the level of education 35.7 % of the studied sample is not educated, while only 13.7% % have bachelor degree. As to the occupation type, 30% of them are governmental employee followed by 23.7% work in the field of hand craft. In concern of the residence 62.7% of studied sample are living in rural area. The data added that 36.6% of the studied sample has one or more of chronic diseases, 49.4% of the studied sample who reported having chronic diseases suffer from hypertension followed by 34.8% had diabetes mellitus, 26.6% had chronic obstructive pulmonary diseases, 22.1% had liver cirrhosis and finally 13.6% had renal failure.

Table (2): Reveals the frequency distribution of studied sample regarding to main source of information about Covid-19 vaccine. The data shows that friends were the main source of information for 38.7% of the studied sample followed by 30% reported social media as the main source while health team was the main source for only 8.7% of the studied sample.

Table (3): The table shows that about the half of the studied sample have complete and correct answer regarding Covid-19 pandemic and target population for the vaccine (43.2% and 47.5% respectively) while only 9.5% and 13.8 % has complete answer about the mechanism of the vaccine and types of it respectively. The table shows that about the half of the studied sample have wrong answers or no answer regarding definition of vaccination and side effects (44.3 % and 55.3% respectively). The data clarifies that about one third (31%) of the studied sample had satisfactory knowledge regarding the vaccination process of Covid-19 and the rest (69%) had unsatisfactory knowledge.

Table (4): The table shows that more than two thirds of the studied sample not sure about the safety, effectively and considering the vaccine the best way to avoid the complication of the disease (69.7 %, 68.6% and 66.8% respectively). The table also reveals that 80.3% and 77.7 % of the studied sample respectively not sure about taking the vaccine if not free and they not sure about encouraging their friends and family members to take the vaccine. The table also clarifies that about three quarter of the studied sample not sure about the contribution of the vaccine to control the vaccine and not sure about the benefits of the vaccine (74.3% and 74.5% respectively). As a conclusion to that table 18% of the studied sample had positive attitude and 15% had average level of attitude while about two thirds 67% had negative attitude regarding the vaccine.

Table (5): Shows the frequency distribution of studied sample to their willing to be vaccinated. The table reveals that 73.1% not willing to take the vaccine while 5.6% will take the vaccine as early as possible, 7.5% will take in the next month and 13.7% planned to take it after 3 months.

Table (6): Reveals that the majority 87.1% of studied sample is unwilling to take the vaccine because of the side effects still unknown for long term and about three quarter (73.5%) of the studied sample refuse because they think that the vaccines contain toxic ingredients that can harm health. The data added that the following barries; the vaccine made in china and perceived that covid-19 vaccines can give them covid-19 selected by (73.5%, 72.3% and 70.4% respectively) from the studied sample.

Table (7): Shows that 100% of the studied sample suggested does more studies to ensure safety of the vaccines followed by 76.7% suggested educational program about the mechanism of the vaccine and 70% suggested replacing injection with tablets. The table also reveals that 65.6% reported the effectiveness should be more than 90%, 59.7%

suggested vaccines made in USA or England and 44.5% suggested equitable distribution for the centers of vaccination.

Table 8: Clarifies significant association between age, educational level, residence, medical history to having chronic diseases, level of knowledge and level of attitude of the studied sample with their willing to take the vaccine where $P < 0.05$.

Table (1): frequency distribution of studied participants according to personal data and history of chronic diseases. (n= 800 participants)

Items	N	%
Gender		
Female	321	40.1
Male	479	59.8
Age		
Less than 30	220	27.5
30-<40	185	23.1
40-<50	190	23.7
≥50	205	25.6
Education		
Not educated	286	35.7
Basic education	196	24.5
Secondary education	208	26
Bachelor degree	110	13.7
Occupation		
House wife	185	23.1
Governmental employee	312	30
Hand craft	190	23.7
Post retirement employee	113	14.1
Residence		
Rural	502	62.7
Urban	298	37.2
Are you have any chronic diseases		
Yes	293	36.6
No	507	63.3
If yes (293) and more than one answer is allowed		
Diabetes mellitus	102	34.8
Hypertension	145	49.4
Liver cirrhosis	65	22.1
Chronic obstructive pulmonary diseases	78	26.6
Renal failure	40	13.6

Table (2): frequency distribution of the participants regarding their main source of information about COVID-19 vaccine (n=800 participants).

Items	N	%
T.V	180	22.5
Social media	240	30
Friends	310	38.7
Healthcare team	70	8.7

Table (3): frequency distribution of the participants regarding their knowledge about the vaccination process of Covid-19 (n=800 participants).

Items	Complete answer		Not complete answer		Don't know	
	N	%	N	%	N	%
Over view about covid-19 pandemic	346	43.25	454	56.75	0	0.0
Over view about the immunity	178	22.25	380	47.5	242	30.25
Definition of the vaccination	235	29.3	210	26.25	355	44.37
Types of covid-19 vaccine	111	13.8	200	25	489	61.1
Mechanism of covid-19 vaccine	76	9.5	82	10.25	642	80.25
Benefits of vaccination	213	26.62	467	58.3	120	15.0
Target population	380	47.5	120	15.0	300	37.5
Side effects	190	23.75	167	20.87	443	55.3
Home care to the side effects	145	18.12	87	10.87	568	7.1
Warning signs after vaccination	124	15.5	180	22.5	496	62.0
Total						
Satisfactory knowledge	248 (31%)					
Unsatisfactory knowledge	552 (69%)					

Table (4): frequency distribution of the participants regarding their attitude toward the vaccine. (n=800 participants)

Items	Sure		May be		Not sure	
	N	%	N	%	N	%
Do you think that COVID-19 vaccination, whenever available, would be safe?	153	19.1	89	11.1	558	69.7
Do you think that COVID-19 vaccination, whenever available, would be effective?	139	17.3	112	14.0	549	68.6
Do you think that the best way to avoid the complications of COVID-19 is by being vaccinated?	142	17.7	123	15.3	535	66.9
If COVID-19 vaccination will be not free, are you planning to get it?	82	10.3	75	9.4	643	80.4
You will encourage your friend and family to be vaccinated	129	16.1	49	6.1	622	77.8
The vaccination will contribute to control the outbreak	136	17.0	69	8.6	595	74.4
The benefits of the vaccine are more than the side effects	132	16.5	72	9.0	596	74.5
I think that all people should be vaccinated to promote public health	137	17.1	84	10.5	579	72.3
Total level of attitude						
Positive	144 (18%)					
Average	120 (15%)					
Negative	536 (67%)					

Table (5): frequency distribution of the participants to their willing to be vaccinated (n=800 participants)

Items	N	%
As early as possible	45	5.6
Next month	60	7.5
After 3 months	110	13.7
Not willing to take the vaccine	585	73.1

Table (6): frequency distribution of the participants who are unwilling to take the vaccine regarding their perceived barriers (n=585 participants)

Items	N	%
Covid-19 vaccines can give you covid-19	412	70.4
Covid-19 vaccines can compromise your fertility	360	61.5
Vaccines contain toxic ingredients that can harm you	430	73.5
The side effect still unknown for long term	510	87.1
I already had the disease	143	24.4
I had a chronic disease	312	53.3
The vaccine made in china	423	72.3

Table (7): frequency distribution of the participants regarding their suggestion to improve the willingness to take the vaccination. (n=800 participants)

Items	N	%
Do many studies to ensure the safety of the vaccination	800	100.0
The effectiveness of the vaccine should be more than 90%	525	65.6
The effectiveness should last for 5 years	430	53.7
Vacation to the employee after vaccination	290	36.2
Follow up side effects	245	30.6
Replacing injection with tablets	560	70.0
Equitable distribution for the centers of Vaccination	356	44.5
Educational program about the mechanism of the vaccine	614	76.7
The vaccine should be Manufactured in the USA or England	478	59.7

Table (8): association between personal data, history of chronic diseases, level of knowledge and attitude of the participants with their willing to take the vaccine (n=800 participants)

Items	N	Willing (215)		Unwilling (585)		X^2	P
		N	%	N	%		
Age						**77.3**	**0.00001**
Less than 30	220	92	41.81	128	58.18		
30-<40	185	70	37.83	115	62.16		
40-<50	190	35	18.42	155	81.57		
≥50	205	18	8.78	187	91.21		
Education						**137.6**	**0.00001**
Not educated	286	30	10.4	256	89.5		
Basic education	196	36	18.3	160	81.6		
Secondary education	208	78	37.5	130	62.5		
Bachelor degree	110	71	64.5	39	35.4		
Residence						**21.2**	**0.00001**
Rural	502	107	21.3	395	78.6		
Urban	298	108	36.2	190	63.7		
Gender						**0.19**	**0.65**
Female	321	89	27.7	232	72.2		
Male	479	126	26.3	353	73.6		
History of chronic diseases							
Have	293	40	13.6	253	86.4	41.1	**0.00001**
Not diagnosed with chronic diseases	507	175	34.5	332	65.5		
Level of knowledge							
Satisfactory	412	141	34.2	271	65.8	23.341	0.0001
Unsatisfactory	388	74	19.1	314	80.9		
Level of attitude							
Positive	144	103	71.5	41	28.5		
Average	120	81	67.5	39	32.5	368.2	0.00001
Negative	536	31	5.7	505	94.3		

DISCUSSION

To end the continuing pandemic, the COVID-19 vaccine has been devised being one absolute solution. Substantial numbers of vaccine applicants have been developed and numerous clinical trials have been published with definite results, leading to several countries supporting specific vaccines for implementation. In Egypt, the COVID-19 vaccination has been started, bearing hope as part of pandemic salvation. Although the many vaccination services and awareness programs, the newness of the vaccine poses questions and hesitation regarding the whole efficiency. This study aimed to study the phenomena COVID-19 vaccine hesitancy and establishing a base line to accelerate vaccine uptake and restore normal life in Beni-Suef City.

Study participants reported a huge range of COVID19-related misinformation, usually through friends and social media in accordance with **Lockyer Islam, Rahman, Dickerson, Pickett and Sheldon (2021)** who studied the misinformation and vaccine hesitancy in Bradford, United Kingdom, and revealed that COVID19 vaccine-related misinformation results in confusion, emotional distress, and mistrust. More than two-thirds of the study sample reported unsatisfactory knowledge related to the COVID19 vaccination process, which could be related to unreliable sources of information they reported. This result is in congruence with **Enitan, Oyekale, Akele, Olawuyi, Olabisi, Nwankiti, et al. (2020)** who assessed the knowledge, perception, and readiness of Nigerians to participate in the COVID-19 vaccine trial and reported unsatisfactory knowledge in almost all the participants. On the other hand the results of the current study were contradicted with **Huynh et al. (2021)** they reported that the total knowledge of the participant was relatively good with a mean score of 7.11 ± 1.77 (0–9).

The results of the current study revealed that about two thirds of studied sample had negative attitude regarding covid -19 vaccines, that the overall hesitation toward vaccination is attributed to safety issues, doubts about effectiveness, and fear of complications or side effects. The results of current study were supported by **Freeman Loe, Chadwick, Vaccari, Waite, Rosebrock et al. (2020)** who conducted a study titled with COVID-19 vaccine hesitancy in the UK: the Oxford coronavirus explanations, attitudes, and narratives survey. The results of current study were in agreement with **Afolabi and Ilesanmi (2021)** in their prospective study about the COVID-19 vaccine hesitancy in Africa, which revealed a wide range of vaccine hesitation in Africa,

and that is an old phenomenon for newly introduced vaccines to face some challenges one of which is hesitation.

On the other hand **Schwarzinger, Watson, Arwidson, Alla and Luchini, (2021)**, reported that more than half of the sample had positive attitudes and good intentions to take the vaccine from trusted sources, however, the current study revealed general negative attitudes and no willingness to take the COVID19 vaccine among the study participants. The contradiction may be due to a lack of information regarding coronavirus, COVID19, vaccination in general, and COVID19 vaccine in particular among the study sample in comparison to the former study.

The results of current study showed that the vaccination acceptance was low among the studied sample. The results of current study were supported by **Mannan and Farhana (2020)**, who reported that Egypt was the lowest country worldwide to accept the COVID19 vaccine as reported by **Sallam (2021)** who conducted a systematic review of vaccination acceptance, and found a higher acceptance of the vaccine in studies conducted in Eastern Africa. The contradiction may be related to knowledge, as general knowledge among current study participants was relatively low regarding COVID19 and its vaccine. Supporting this claim, the study of **Sallam Dababseh, Yaseen, Al-Haidar, Taim, Eid et al. (2020)** and **Azlan et al., (2020)** conducted in Jourdan and Malaysia respectively regarding knowledge and attitudes of COVID19 vaccine, a satisfactory knowledge among participants was reported in both studies with a higher level of acceptance to COVID19 control and willingness for vaccination. In addition, a positive attitude toward COVDI19 vaccination was correlated with higher knowledge in Ireland, the USA, Spain, Mexico, and UK as reported by **(Roozenbeek, Schneider, Dryhurst, Kerr, Freeman et al., 2020)**.

The willing to take the vaccine among the studied sample in the current study was significantly associated with total level of knowledge, total level of attitude, medical history of chronic diseases age, education and residence. The current study results matching a global survey conducted by **Lazarus Ratzan, Palayew, Gostin, Larson, Rabin et al., (2020)** on 13,426 people in 19 countries regarding vaccine hesitation, age, education, and financial status were a huge determinant in vaccine hesitation, however, in their study, the willingness to take vaccine got higher with age, unlike the current study, younger participants thought it's not safe to receive the vaccine. The study of **Kourlaba**

Kourkouni, Maistreli, , Tsopela, Molocha, Triantafyllou et al. (2021) regarding the willingness of the Greek general population to get a COVID-19 vaccine is in agreement with the current study. They reported low knowledge level among participants and the higher the knowledge the higher the willingness to take the vaccine. The results of current study was supported by **Williams Gallant, Rasmussen, Nicholls, Cogan et al. (2020)** who aimed to identify and understand the barriers and facilitators to receiving a future COVID-19 vaccine. They reported that Willingness to receive a COVID-19 vaccination is currently high among high-risk individuals and had positive attitude toward the vaccine.

In the current study, participants reported the highest percentages of perceived anxiety related to vaccine safety in itself or its country of origin (Covid-19 vaccines can give covid-19, Vaccines contain toxic ingredients, side effect still unknown, the vaccine was made in china), this result is following previous studies conducted in the same field of interest, the study of **Dror, Daoud, Morozov, Layous, Esienbach et al. (2021)** who studied vaccine hesitancy relate to its country of origin, and **Issanov Akhmetzhanova, Riethmacher, and Aljofan (2021)** who studied knowledge, attitudes, and practice toward COVID-19 vaccination in Kazakhstan, both reported major concerns from Sinopharm -originated from China- however, it's milder side effects reported worldwide compared to other vaccines **(Saeed, Alsharabi, Alhaj, Alkokhardi and Adrees, 2021)**.

In agreement with the current study results, the study of **Griffith, Marani and Monkman (2021)** who studied COVID-19 vaccine hesitation in Canada via tweet analysis, reported a lack of knowledge, social influence, and emotion and beliefs about consequences as the most reported causes of vaccine hesitancy.

All current study participants reported that more studies should be conducted to ensure the safety of the vaccine, this is related to the fact that their information about the vaccine and vaccination preparation process is limited, however, all vaccines have been tested properly, study participants showed trust in vaccines manufactured in the USA or England. In contradiction with the current result, the study of **Tahir, Ramdhan, Taha, Abdullah, Karim et al. (2021)** who studied the public fear of COVID-19 vaccines in Iraqi Kurdistan region and revealed more fear of the USA and UK originated vaccines (Pfizer and AstraZeneca) rather than the Chinese originated (Sinopharm). The fear was closely related to the reported side effects of each vaccine and the contradiction is due to a lack of knowledge among currently study participants.

Moreover, almost two-thirds of study participants reported that the effectiveness of the vaccine should be more than 90% to take it willingly. The study is supported by **Kreps Prasad, Brownstein, Hewsen, Garibaldi et al. (2020)** who studied factors associated with US adults' likelihood of accepting COVID-19 vaccination and reported an increase in the vaccine efficacy associated with preferences for choosing a hypothetical COVID-19 vaccine.

In agreement with the current study results, the study of **Kwok,Li, Wei, Tang, Wang et al. (2021)** studied influenza vaccine uptake, COVID-19 vaccination intention and revealed that uncertain attributes such as effectiveness and side effects may contribute to the intention to take the vaccine.

One of the participants reported factors to increase the vaccine uptake is replacing COVID19 vaccine injection with tablets, this could be related to *trypanophobia*, which is as reported by **Mclenon and Rogers (2018)** is quite common. Lastly, more than three-quarters of participants required an educational program about the mechanism of the vaccine, which is required to increase the vaccine-related knowledge among participants and the general population.

CONCLUSION

The current study results concluded that about one third of the studied sample had satisfactory knowledge regarding the vaccination process of Covid-19 and the rest had unsatisfactory knowledge that may be because the health team members was the main source for only 8.7% of the studied sample. Furthermore about two thirds had negative attitude regarding the vaccine. About three quarter of the studied sample are unwilling to take the vaccine because of the side effects still unknown for long term and about three quarter of the studied sample refuse because the vaccines contain toxic ingredients that can harm health, the vaccine made in china and covid-19 vaccines can give you covid-19. The suggestions to improve the vaccine uptake were educational programs about the mechanism of the vaccine, replacing injection with tablets and increase the effectiveness of the vaccines. Additionally the willing of studied sample to take the vaccine is associated with the total level of knowledge, total level of attitude, medical history of chronic diseases age, education and residence.

RECOMMENDATION

1. Nursing staff and health team members should be involved in health education programs via mass media and via personal communication.

2. Further studies should be implemented on other Egyptian governorates to assess the differences in the public's willingness to be vaccinated

3. Further studies aimed at improving population awareness and attitude regarding COVID-19 vaccines

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الخلاصة

الخلفية: التردد بشأن تعاطي لقاح COVID-19 يمثل تحديًا كبيرًا للسيطرة على الوباء الحالي. الهدف: تهدف الدراسة إلى دراسة التردد في لقاح COVID-19 ؛ إنشاء خط أساس لتسريع وتيرة تعاطي اللقاح وإعادة الحياة الطبيعية في مدينة بني سويف. الموضوعات والطريقة: التصميم: تم استخدام التصميم المقطعي. الإعداد: أجريت الدراسة الحالية في مدينة بني سويف. عينة البحث: تم اختيار عينة مناسبة تتكون من 800 مشارك. الأدوات: كانت الأولى عبارة عن مقابلة منظمة تتكون من 6 أجزاء من التقييم ، والبيانات الشخصية ، والتاريخ الطبي ، والحواجز ، والاقتراحات ، والرغبة في أخذ اللقاح والمعرفة حول لقاح COVID-19. والثاني هو مقياس لتقييم الموقف من لقاح COVID-19. النتائج: أظهرت البيانات أن الأصدقاء كانوا المصدر الرئيسي للمعلومات لـ 38.7٪ من العينة المدروسة بينما كان الفريق الصحي المصدر الرئيسي لـ 8.7٪ فقط من العينة المدروسة. 31٪ فقط لديهم معرفة مرضية و 67٪ لديهم مواقف سلبية تجاه اللقاحات. 73.1٪ لا يرغبون في تعاطي اللقاح. الخلاصة: خلصت الدراسة الحالية إلى أن المستوى الإجمالي للمعرفة والسلوك والرغبة في أخذ اللقاح منخفض بين أفراد العينة المدروسة. بالإضافة إلى ذلك ، ارتبط المستوى الإجمالي للمعرفة والمستوى الإجمالي للموقف والتاريخ الطبي للأمراض المزمنة والعمر والتعليم والإقامة بشكل كبير مع رغبة العينة المدروسة في أخذ اللقاح. التوصيات: يجب أن يشارك طاقم التمريض وأعضاء الفريق الصحي في برامج التثقيف الصحي عبر وسائل الإعلام وعبر الاتصالات الشخصية. تهدف المزيد من الدراسات إلى تحسين وعي السكان والمواقف تجاه لقاحات COVID-19.

الكلمات المرشدة : التردد في تعاطي لقاح COVID-19 ، استعادة الحياة الطبيعية في مدينة بني سويف