

***Acceptability of SARS-CoV-2 Vaccine Booster dose among Physicians
in Egypt: a cross sectional study***

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Abstract

Nearly 60 major medical organizations have advocated for mandatory COVID-19 vaccination among healthcare. COVID-19 vaccination efforts have faced obstacles due to hesitancy and mistrust. Similar challenges are anticipated for COVID-19 booster shot initiatives, raising concerns regarding the acceptance of additional doses.

Aim: To identify the determinants of acceptability of Egyptian physicians for SARS-Co-V2 booster vaccine.

Methods: A cross-sectional online-based study that targeted a sample of Egyptian physicians living and working in Egypt since January 2020. Several psychometrically valid and reliable tools were used to measure: general attitude towards vaccines, confidence in SARS-CoV-2 booster vaccine, demographic questions. And questions targeting the attitudes and prospective acceptance of a booster vaccine

Results: Half of the participants (51.6 %) were willing to receive the COVID-19 booster dose. Several factors were identified as significant predictors for booster vaccine acceptance, including being male, having chronic medical conditions, no previous COVID infection, and receiving multiple types of COVID-19 vaccines (P value 0.015, 0.025, 0.048, <0.001 respectively). Conversely, the main reason for unwillingness to receive the booster dose was the fear of multiple boosters and its consequences.

Conclusion: Of particular concern is the spread of vaccine hesitancy among health care workers. This group is generally regarded as the most trusted source of information, awareness, and encouragement for vaccine uptake within the community.

Key words: Covid 19, Booster vaccine acceptance, Egyptian Physicians

Introduction

The COVID-19 pandemic has resulted in significant global mortality and morbidity. By early 2021, vaccines were developed to combat COVID-19, proving highly effective in preventing infections, hospitalizations, and deaths [Pawlowski et al, 2021]. However, several studies have indicated a decrease in protection against infection a few months after initial vaccination [Nanduri et al,2021, Rosenberg et al,2021]. Additionally, immunocompromised patients have shown an increased risk of hospitalizations following breakthrough infections [Nanduri et al, 2021, CDC, 2022]. A recent systematic review and meta-regression analysis found that vaccine effectiveness against severe COVID-19 declined by approximately 8% (95% confidence interval (CI): 4-15%) over a six-month period across all age groups, and by 32% (95% CI: 11-69%) for individuals above 50 years of age [Feikin et al, 2021].

The mounting evidence suggests that Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has the potential to undergo mutations over time, resulting in the circulation of multiple variants globally. To address this, nearly 60 major medical organizations have advocated for mandatory COVID-19 vaccination among healthcare and long-term care employers [Alhasan et al, 2021]. However, COVID-19 vaccination efforts have faced obstacles due to hesitancy and mistrust. Similar challenges are anticipated for COVID-19 booster shot initiatives, raising concerns regarding the acceptance of additional doses [Paul et al, 2021, Sallam 2021]. The reasons for this hesitancy are complex, influenced by cultural factors and often not fully understood. Various factors come into play, including perceptions of infection risk and severity, confidence in vaccines, personal values and emotions, as well as environmental and social contexts. COVID-19 vaccine hesitancy carries unique characteristics tied to the rapid development and novel techniques employed in vaccine production [WHO, 2021]. Of particular concern is the spread of vaccine hesitancy among healthcare workers (HCWs), as this group is generally regarded as the most trusted source of information, awareness, and encouragement for vaccine uptake within the community [Khairy et al, 2023].

To propose interventions aimed at increasing the uptake of booster doses against newly emerging variants, it is crucial to conduct an initial exploratory baseline assessment. This assessment should focus on quantifying the level of acceptance and investigating the factors that influence it among a significant group of influential professionals within the Egyptian community, specifically physicians residing and practicing in Egypt.

Objective: To identify the determinants predicting the acceptability of Egyptian physicians for SARS-CoV-2 vaccine booster dose

Volunteers and Methods

Study design and sampling: A cross-sectional online-based study that targeted purposeful sample of Egyptian physicians living and working in Egypt since January 2020. The questionnaire was developed on Google Form and distributed through Egyptian physician's social media groups. Data was collected over two months (March to May 2023).

Sample size calculation:

A minimal sample size calculated was 384 participants by using Open Epi-version 3 software open-source calculator [https://www.openepi.com/SampleSize/SSPropor.htm]. Sample size $n = \frac{DEFF * Np(1-p)}{[(d^2/Z^2_{1-\alpha/2} * (N-1) + p * (1-p))]$, considering the Egyptian physician population of 445000 and 7000 students graduated per year [a total of 452000] as per Egyptian medical syndicate registries, since the topic is recently introduced for the Egyptian community at the time of writing with no enough data on outcome from previous similar research, a hypothesized % frequency for the outcome was set to be 50% with 95% confidence level, 5% margin of error. And by adding 20% to the minimum calculated sample for the possibility of nonresponse the final sample size included were 461 participants.

Questionnaire and data collection:

The online survey consisted of closed-ended questions in English language directed to Physicians, it required 5-10 minutes to complete. It consists of several psychometrically valid and reliable tools to measure the following constructs: general attitude towards vaccines, confidence in SARS-CoV-2 booster dose and demographic questions. Attitudes towards vaccines and prospective

acceptance of a booster dose of Coronavirus vaccine questions were modeled on World Health Organization (WHO) Strategic Advisory Group of Experts (SAGE) on Immunization's vaccine hesitancy Likert scale questions [WHO,2014], and was also adapted from prior studies that assessed vaccine hesitancy using a standardized tool to measure vaccine attitude [Luyten et al, 2019] and another survey on public perceptions of SARS-CoV-2 from the Vaccine Confidence Project [Adva et al ,2021]. Additional questions were incorporated to address prospective acceptance of Coronavirus booster vaccine; factors influencing participants' opinions, including political and social variables; and how the SARS-CoV-2 pandemic has impacted their willingness to vaccinate.

Inclusion criteria: Egyptian Physicians, living and working in Egypt since January 2020, all age group, specialties, and all health sectors were eligible to participate.

Exclusion criteria: Age below 24 years {average age of medical school graduation}, Egyptian physicians living and working outside Egypt and those who refuse to participate in this study.

Piloting: Pilot testing was performed on forty subjects to check the clarity of the questionnaire. Data was not included in the final data set.

Statistical analysis: Completed forms were exported into a Microsoft Excel spread sheet. Statistical Package for the Social Sciences (SPSS) software version 23 (Chicago, IL, USA) was used for data analysis. A descriptive analysis was performed using the counts and percentages for categorical variables and means and standard deviations for continuous measures. Chi square test, Fisher's exact test, and The Student's t test were used for bivariate analysis to assess the factors that can affect the acceptance of the vaccine. Multivariate logistic regression models was performed to explore potential predictors for acceptance of the booster dose. Adjusted odds ratio (AOR), and 95% confidence interval (95% CI) were obtained from logistic regression models (backward, stepwise method). P-values equal to or less than 0.05 was considered statistically significant.

Ethical Consideration: The Research ethics committee, Faculty of medicine -Cairo University had revised and approved the protocol (**approval number: N28- 2022**). Participants was informed about the study objectives by a clear statement at the beginning of the electronic survey. The anonymity of participants was guaranteed all through the study, no personal identifiers were requested. Participation in this study was voluntary, and participants received no compensation in return. Electronic informed consent was obtained from the participants at the start of the questionnaire. The participant has the right to withdraw, by not completing the questionnaire at any point without providing any explanation.

Results

Four hundred seventy three 473 physicians responded to the questionnaire. Their age ranged from 25 to 68 years with mean and standard deviation of 38.95 ± 7.88 years. Three quarters of participants were married (79.3 %) ,females (74.6%). Nearly one quarter of them (26.8%) have three or more children. Two thirds of them (67.9%) reported having an elderly family member with medical conditions. One fifth of them (19.9%) were suffering from chronic diseases. Most common chronic diseases were cardiovascular diseases, asthma and diabetes (8.9%, 5.5%, and 4.7% respectively). Years since graduation ranged from 1 years to 42 years with mean and standard deviation of 16.9 ± 7.69 years. Their specialties varied from medical, surgical and academic specialties where half of them

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(50.1%) carried doctoral degree or its equivalents. Most of them were affiliated to public institutions or both public and private. (Table 1)

Table 1:
Basic characteristics of study participants:

Variable	Number	Percent	
Sex	Male	120	25.4
	Female	353	74.6
Marital Status	Single	98	20.7
	Married	375	79.3
Number of Children	0	104	22.0
	1	58	12.3
	2	184	38.9
	3 or more	127	26.8
Have an elderly family member alive	Yes with no medical condition	114	24.1
	Yes with medical condition	321	67.9
	No	38	8.0
Have chronic diseases	No	379	80.1
	Yes	94	19.9
Chronic diseases (more than one choice allowed)	Cardiovascular diseases	42	8.9
	Asthma	26	5.5
	Diabetes	22	4.7
	Cancer	9	1.9
	Immunodeficiency (primary or secondary)	9	1.9
	Chronic pulmonary disease	3	0.6
	Liver diseases	2	0.4
	Chronic kidney disease	1	0.2
Degree	Bachelor	81	17.1
	Diploma	11	2.3
	Master	144	30.4
	Doctoral degree or other equivalent degree	237	50.1
Specialty	Academic	131	27.7
	Medical	263	55.6
	Surgical	79	16.7
Affiliation	Public	308	65.1
	Private	49	10.4
	Public and private	116	24.5

More than half (60.7%) of participated physicians reported confirmed COVID 19 infection. Half of reported COVID 19 infections (51.6%) were in 2021. Nearly one third (29.2 %) of reported infections were before vaccination. Regarding COVID 19 infection among family members, two thirds of reported infections (67.4%) were mild and managed at home with only 7.2% severe infections with mortality. (Table 2)

Table 2:

History of COVID 19 infection among participated physicians and their family members.

	Variable	Number	Percent
Previous COVID 19 infection confirmed by PCR or by Labs and CT Chest	No	186	39.3
	Yes, prior to vaccination	138	29.2
	Yes, between first and second doses	12	2.5
	Yes, after receiving all doses	75	15.9
	Yes, before and after vaccination	62	13.1
Previous COVID 19 infection among family members	No	53	11.2
	Yes, mild infection and managed at home	319	67.4
	Yes, severe infection and hospitalization	67	14.2
	Yes, sever infection and mortality	34	7.2
Date of last COVID 19 infections	2020	50	17.4
	2021	148	51.6
	2022	89	31.0

Most of participated physicians (89.2%) reported receiving COVID 19 vaccination. Most commonly received vaccines were AstraZeneca, followed by BioNTech-Pfizer, and Sinopharm (37.4%, 26.1%, and 25.8% respectively). Less than one fifth (17.7%) of vaccinated physicians reported receiving more than one type of COVID 19 vaccine. Most of those who received COVID 19 vaccines (94.3%) reported at least receiving 2 doses of the vaccine. COVID 19 vaccine was obligatory in the work places for three quarters (76.7%) of participating physicians. (Table 3)

Table 3:

COVID 19 vaccination history among studied physicians.

	Variable	Number	Percent
History of COVID 19 vaccination	No	51	10.8
	Yes	422	89.2
Type of COVID 19 vaccine received (more than one type allowed) among who received vaccines 422)	AstraZeneca	158	37.4
	BioNTech-Pfizer	110	26.1
	Sinopharm	109	25.8
	Sinovac	45	10.7
	Janssen/Johnson&Johnson	35	8.3
	Sputink	17	4.0
Number of received doses of COVID 19 vaccine? (among who received vaccines 422)	Moderna	12	2.8
	1 dose	24	5.7
	2 doses	286	67.8
	3 doses	103	24.4
	more than 3 doses	9	2.1
Corona virus vaccination was obligatory in your workplace	No	68	14.4
	Yes	363	76.7
	Do not know	42	8.9
Types of COVID 19 vaccine received (total 422)	One	347	82.2
	Two	71	16.8
	Three	4	0.9

Table (4):

Willingness to take COVID 19 vaccine booster dose by characteristics of study participants.

Variable	Willingness to take booster		P value	
	No	Yes		
	No (%)/ Mean (SD)	No (%)/ Mean (SD)		
Age	38.6 (7.59)	39.2 (8.14)	0.147	
Sex	Male	48(21.0)	72 (29.5)	0.033
	Female	181 (79.0)	172 (70.5)	
Marital Status	Single	48 (21.0)	50 (20.5)	0.900
	Married	181(79.0)	194 (79.5)	
Number of Children	0	51 (22.3)	53 (21.7)	0.777
	1	27 (11.8)	31 (12.7)	
	2	85 (37.1)	99 (40.6)	
	3 or more	66 (28.8)	61 (25.0)	
Have chronic diseases	No	197 (86.0)	182 (74.6)	0.002
	Yes	32 (14.0)	62 (25.4)	
Have an elderly family member alive	Yes with no medical condition	69 (30.1)	45 (18.4)	0.012
	Yes with medical condition	143 (62.4)	178 (73.0)	
	No	17 (7.4)	21 (8.6)	
Degree	Bachelor	35 (15.3)	46 (18.9)	0.767
	Diploma	5 (2.2)	6 (2.5)	
	Master	71 (31.0)	73 (29.9)	
	Doctoral degree or other equivalent degree	118 (51.5)	119 (48.8)	
Specialty	Academic	68 (29.7)	63 (25.8)	0.613
	Medical	125 (54.6)	138 (56.6)	
	Surgical	36 (15.7)	43 (17.6)	
Affiliation	Public	152 (66.4)	156 (63.9)	0.359
	Private	19 (8.3)	30 (12.3)	
	Public and private	58 (25.3)	58 (23.8)	
Corona virus vaccination is now obligatory in your workplace	No	39 (17.0)	29 (11.9)	0.212
	Yes	168 (73.4)	195 (79.9)	
	Don't know	22 (9.6)	20 (8.2)	

Among participants, males, having chronic disease, and those have an elderly family member with medical conditions were willing to take booster dose of COVID 19 vaccine with statistically significant difference (p value 0.033, 0.002 and 0.012 respectively) (Table 4). Willingness to take COVID 19 booster dose was significantly higher among physicians who reported not having history of COVID 19 infection, those with recent history of infection, those who received COVID 19 vaccine and those who received more than one type of vaccine. (P value < 0.001, 0.003, < 0.001, < 0.001 respectively) (Table 5).

Table (5):

Willingness to take COVID 19 vaccine booster dose by factors related to previous COVID 19 infection and vaccination

Variable		Willingness to take booster		P value
		No	Yes	
		No (%)	No (%)	
Have you been infected with COVID 19 confirmed by PCR or by Labs and CT Chest?	No	81 (35.4)	105 (43.0)	< 0.001
	yes, prior to vaccination	91 (39.7)	47 (19.3)	
	yes, between first and second doses	5 (2.2)	7 (2.9)	
	yes, after receiving all doses	32 (14.0)	43 (17.6)	
	yes, before and after vaccination	20 (8.7)	42 (17.2)	
Date of last COVID 19 infections	2020	33 (22.3)	17 (12.2)	0.003
	2021	81 (54.7)	67 (48.2)	
	2022	34 (23.0)	55 (39.6)	
Have you been vaccinated against COVID-19?	No	49 (21.4)	2 (0.8)	<0.001
	yes, 1 dose	15 (6.6)	9 (3.7)	
	yes, 2 doses	147 (64.2)	139 (57.0)	
	yes, 3 doses or more	18 (7.9%)	94 (38.5)	
Severity of side effects after first dose of COVID-19 vaccine	No side effects/negligible side effects	94 (41.4)	133 (58.6)	0.680
	Medium severity	61 (43.6)	79 (56.4)	
	Very high severity	19 (48.7)	20 (51.3)	
Number of COVID-19 vaccine received	One	171 (49.3)	176 (50.7)	< 0.001
	More than one	9 (12)	66 (88)	
Corona virus vaccination is now obligatory in your workplace	No	39 (17.0)	29 (11.9)	0.212
	Yes	168 (73.4)	195 (79.9)	
	Do not know	22 (9.6)	20 (8.2)	

Being male, with chronic medical conditions, not infected with COVID 19 before and receiving more than one COVID 19 vaccine were significant predictors of willingness to take COVID 19 booster dose (P value 0.015, 0.025, 0.048, <0.001 respectively) (Table 6)

Table (6):

Determinants of willingness to take COVID 19 booster dose among study participants: (Multiple logistic regression backward stepwise method)

	B	Sig.	OR	95% CI for OR	
				Lower	Upper
Sex (male)	0.628	0.015	1.874	1.128	3.115
Having chronic condition	0.616	0.025	1.852	1.082	3.172
Previous COVID 19 infection	-0.453	0.048	0.636	0.405	0.996
COVID 19 vaccine numbers	1.823	<0.001	6.189	2.933	13.059
Constant	-2.065				

Variable(s) entered on step 1: sex, age, having chronic medical condition, having elderly family member with medical condition, previous COVID 19 infection, previous COVID 19 vaccination, number of received vaccines, and severity of side effects after first dose.

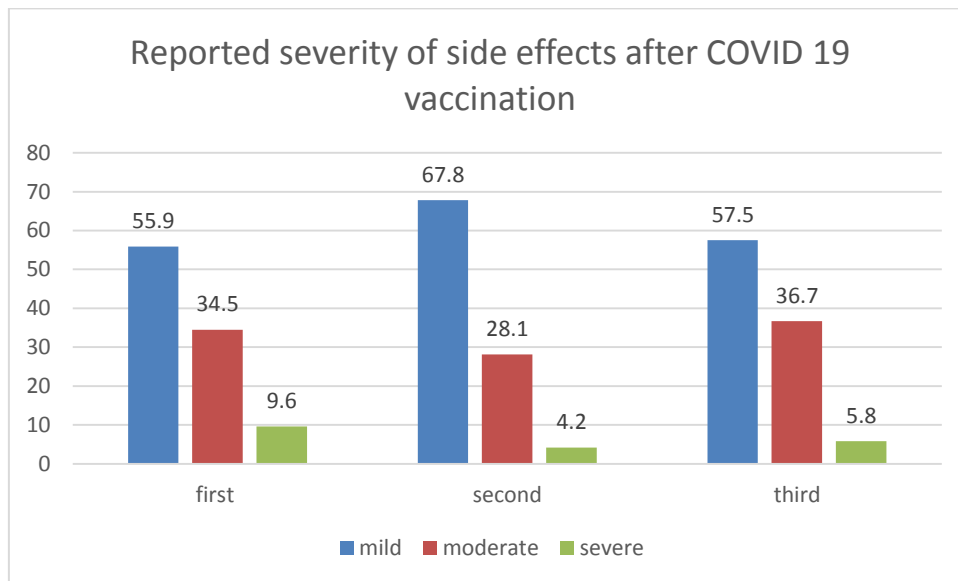


Figure 1:

Reported severity of side effects after COVID 19 vaccination.

More than half of participants reported mild side effects after COVID 19 vaccination. (Figure 1).

Nearly half (51.6%) reported their intention to get booster dose when it is publically available.

About one fifth of them don't know (20.5 %).

While only 27.9 % don't intend to ever get the booster dose. (Figure 2)

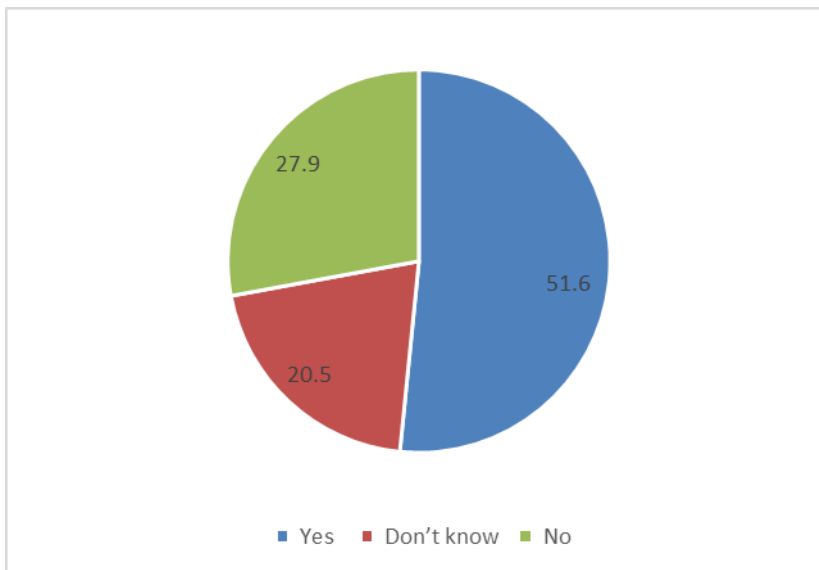


Figure 2:
willingness to take COVID 19 vaccine booster dose among study participants

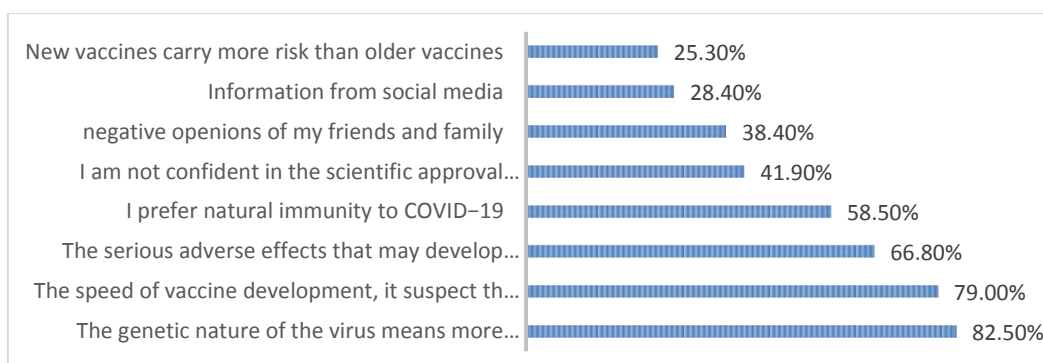


Figure (3):
Factors contributed to the unwillingness to take booster dose of SARS-CoV-2 vaccine (Total 229)

Those who were unwilling to take the booster dose reported many factors contributing to their opinion. The genetic change nature of SARS-coV-2 which means more and more boosters, the speed at which the vaccine was reached which may suspect its efficiency, the serious side effects that may develop after vaccination, and the preference of natural immunity rather than vaccination (82.5, 79.0, 66.8, 58.5 respectively). (Figure 3)

Discussion

COVID 19 booster vaccine acceptance remains an urgent Challenge inflicting a public health concern. High uptake of the vaccine is crucial, especially among health care workers, to achieve a high effectiveness with the continuous threats of emerging variants [Lopez et al, 2021]. The Egyptian government have a heavy mission to implement a successful vaccination program with high coverage. Prior planning for any vaccination program to ensure high acceptance is highly recommended by the WHO. Two main approaches to be adopted for a successful plan include: Categorizing and prioritizing the population based on the need for vaccination and the other impactful approach is to increase the demand and alleviate the concerns related to the vaccine. [Fares et al, 2021]. Programs of vaccination could impact lifestyle of vaccinated individuals, attitude, and behaviors due to protection they received [Raghda et al, 2023] The current study Addresses factors linked to COVID-19 booster vaccine acceptance and hesitancy among health care physicians, using different research methods and approaches help decision makers to better understanding how physicians feel, think, decide and provide deep insights to the authorities about the potential concern, obstacles that may threat the desirable vaccination coverage.

Nearly half (51.6%) of the studied physicians were willing to receive the booster dose. On the other hand, 27.9% expressed unwillingness, while 20.5% remained undecided. The rate at which COVID-19 vaccinations are accepted varies between countries. While most developed countries have a significant response to vaccination, Egypt still faces challenges in achieving widespread vaccination. In Africa as a whole, the acceptance rate of vaccination has been estimated to be extremely low [Hend et al, 2023]. Comparing these results to published data, it was observed that acceptance rates among healthcare workers in *France (2020) and Saudi Arabia (2021)* were higher, at 77.6% and 70% respectively [Detoc et al., 2020; Barry et al., 2020]. Contradictory findings were reported in another Egyptian study, where 21% of participants agreed to receive the vaccine, 28% disagreed, and 50% remained undecided [Fares et al., 2021]. Similar studies conducted in the USA (2021) reported a 36% acceptance rate and 56% hesitancy among healthcare workers [Shekhar et al., 2021], while a study in Congo (2020) reported a 28% acceptance rate for COVID-19 vaccination among healthcare workers [Kabamba et al., 2020].

These variations in acceptance rates can be attributed to several factors. Firstly, the current study included physicians only not all health care workers at most, the timing of the studies may have played a role, as physicians had more time to make informed decisions based on improved understanding of the natural history of COVID-19 infection and the development, efficacy, and potential side effects of the vaccine. Additionally, the initial panic during the early stages of the pandemic, which resulted in significant loss of life, may have contributed to higher acceptance rates in certain countries. Furthermore, disparities in vaccine availability and the varying efficacy and side effects of different vaccines could have influenced acceptance rates within and across populations. Lastly, the level of trust between healthcare authorities and healthcare workers could also impact vaccine acceptance, as it varies among different nations and even within the same population.

Studying the Characteristics of those who were willing to receive the booster vaccine, including the history of previous COVID 19 infection and vaccination, was important to understand the mindset of the studied sample compared to other nations, get enough knowledge about who is going to be more critical to target in the future vaccination campaigns and hence better preparedness to create

a well-planned vaccination programs tailored to the community needs and eventually improving the vaccination coverage in the near future. Males, having chronic disease, and those have an elderly family member with medical conditions, were willing to take booster dose of COVID 19 vaccine with statistically significant difference (p value 0.033, 0.002 and 0.012 respectively). Willingness was also significantly higher among physicians with no history of COVID 19 infection, those with recent history of infection, those who received COVID 19 vaccine and those who received more than one type of vaccine. (P value < 0.001, <0.003, < 0.001, < 0.001 respectively). In the current study, the determinants that predicted the acceptance of booster vaccine as per the regression analysis included being a male, with chronic medical conditions, not infected with COVID 19 before and receiving more than one COVID 19 vaccine were significant predictors of willingness to take COVID 19 booster dose. The manifested side effect after primary dose of COVID 19 vaccine varied from mild to severe but mostly was mild among those who received the vaccine. The bivariate analysis was insignificant between the willingness to receive the booster vaccine and the side effects experienced after the first dose of vaccine.

The current study results agreed with similar studies reviewed in a meta-analysis study where the odds of acceptance of vaccination among males were significantly higher compared to females among health care workers. In similar context in a study on Algerian population having a chronic illness increased the likelihood of booster dose vaccine acceptance by 1.4 and likewise in a Saudi Arabia study 2022. Previous COVID-19 infection had a significant predictor on booster dose acceptance among the HCWs: 0.001 (95% CI: 0.001–0.003, p = 0.023) **[Abdelmoneim et al, 2022]**.

History of receiving more than one type of COVID vaccines was a strong predictor to COVID 19 booster acceptance in the current study. Many studies had revealed an association between previous vaccination habits, particularly seasonal influenza, with support for receiving COVID-19 vaccination. This postulates that hesitancy for the COVID-19 vaccine can be a previously rooted hesitancy. Nevertheless, some responded that COVID-19 vaccine hesitancy is a different case as they have chosen to previously receive other vaccine and vaccinate their children. This highlights the complexity of hesitancy in terms of history of previous vaccination habits **[Peterson, 2022]**. Contradicting results were reported as being previously vaccinated against covid showed no statistical effect on booster dose acceptance among HCWs: 0.54 (95% CI: -0.03 to 1.13, p = 0.065) **[Abdelmoneim et al, 2022]**.

It was important to Study the factors that may contribute to the unwillingness to the booster vaccine among the studied group. These factors represent the main concerns that hinders the vaccine acceptability, threaten the success of vaccination programs and desirable coverage: The fear of more boosters due to genetic changeable nature of SARS-coV-2, the speed of booster development may question efficacy, fear of serious side effects that may develop after vaccination, and the preference of natural immunity rather than vaccination (82.5%, 79.0%, 66.8%, 58.5 % respectively). Comparable issues were evident in corresponding research pertaining to perceptions about the outcomes of the vaccine: This area emerged as one of the most commonly observed themes across various studies, specifically focusing on beliefs surrounding vaccine safety, effectiveness, and importance. Among the 30 studies, apprehensions regarding safety primarily revolved around the potential occurrence of adverse events. Additionally, 10 studies highlighted apprehensions regarding the rapid pace at which COVID-19 vaccines were being developed **[J. Crawshaw et al, 2022]**.

These results provide crucial insights for vaccination program authorities and decision-makers, as they navigate the landscape of booster vaccinations. The findings highlight the need to expand the future approach of vaccination programs to target a broader population and increase the uptake of booster vaccines. Addressing concerns related to the genetic variability of the virus and providing reassurance regarding the safety and efficacy of booster doses are essential in promoting acceptance among healthcare professionals like Egyptian physicians. By incorporating these insights into their strategies, authorities can effectively enhance vaccination rates and contribute to the ongoing efforts to combat the COVID-19 pandemic.

Conclusion

The findings of the study among Egyptian physicians indicate that, recovering the COVID-19 pandemic, approximately half of the participants were accepting and willing to receive the COVID-19 booster dose, while one-fifth remained undecided at the time of data collection. The study identified several significant predictors for booster vaccine acceptance, including being male, having chronic medical conditions, no history of COVID infection and receiving more than one type of COVID-19 vaccine. On the other hand, unwillingness to receive the booster dose was primarily driven by the fear of multiple boosters due to the virus's genetic variability.

Limitations of the Study: The utilization of an online survey employing convenience sampling restricts the generalizability of the findings to the entire population. Secondly, this study is susceptible to the constraints inherent in cross-sectional surveys, such as biases stemming from sampling, response, and recall. Lastly, it's important to note that the study was conducted during a period characterized by minimal media coverage concerning potential COVID-19 vaccines, which may have influenced the decision-making of the specific group under study.

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مدى قبول الجرعة التعزيزية للقاح سارس-كوف-2 بين الأطباء في مصر: دراسة مقطعية

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الملخص العربي

مقدمة: 60 منظمة طبية رئيسية بالتقريب دعت إلى اعتبار تطعيم فيروس كوفيد-19 إجبارياً بين العاملين في مجال الرعاية الصحية. واجهت جهود التطعيم ضد كوفيد-19 عقبات بسبب التردد والتشكك. ومن المتوقع وجود تحديات مماثلة لمبادرات الجرعات المعززة لكوفيد-19، مما يثير مخاوف بشأن قبول الجرعات الإضافية.

الهدف: تحديد عوامل قبول الأطباء المصريين للقاح سارس-كوف-2 المعزز.

الطرق: دراسة مستقطبة عبر الإنترنت استهدفت عينة من الأطباء المصريين الذين يعيشون ويعملون في مصر منذ يناير 2020. تم استخدام عدة أدوات سيكومترية صالحة وموثوقة لقياس: الاتجاه العام تجاه التطعيمات، الثقة في لقاح سارس-كوف-2 المعزز، وأسئلة تستهدف المواقف والقبول المحتمل للقاح المعزز.

النتائج: كان نصف المشاركين (51.6%) على استعداد لتلقي جرعة معززة من لقاح كوفيد-19. تم تحديد عدة عوامل كمتنبئات مهمة لقبول اللقاح المعزز، بما في ذلك كونه ذكراً، ووجود حالات طبية مزمنة، وعدم إصابة سابقة بكوفيد، وتلقي أنواع متعددة من لقاحات كوفيد-19 (قيمة $P = 0.015$ ، 0.025 ، 0.048 ، <0.001) على التوالي. بالمقابل، كان السبب الرئيسي لعدم الرغبة في تلقي الجرعة المعززة هو الخوف من الجرعات المتعددة وتبعاتها.

استنتاج: من المثير للقلق بشكل خاص شيوع تردد العاملين في مجال الرعاية الصحية لتلقي اللقاح. تعتبر هذه الفئة مصدرًا موثوقًا للمعلومات والتوعية والتشجيع على تلقي التطعيم في المجتمع. الكلمات الرئيسية: كوفيد-19، قبول اللقاح المعزز، الأطباء المصريون