Original Article :

Knowledge and Confidence of Doctors Advising and Counseling Patients on COVID-19 Vaccines in Kingdom of Saudi Arabia.

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Received on Dec, 15, 2024, accepted for publication on Apr, 28, 2025, dx.doi.org/10.5455/mjhs.2026.01.008

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Abstract

Background and Aims:
While COVID-19 continues to rage worldwide, effective vaccines are highly anticipated in the Kingdom of Saudi Arabia. However, doctors still have concerns regarding their confidence in counseling patients about the COVID-19 vaccine in Saudi Arabia. this study aimed to assess how confident are healthcare providers in giving counseling to patients about COVID-19 vaccine in Saudi Arabia.

Methods:
cross-sectional study was conducted from June 2022 to August 2022 via online questionnaires to investigate the confidence and knowledge of the doctors regarding the COVID-19 vaccine who live in Saudi Arabia.

Result:
332 out of 400 was completed the questionnaire, significant differences were found between the qualification of the participant as, interns and residents show significantly lower confidence compared to consultants. Specifically, interns have a mean difference of -1.578 ($p = 0.004$), Vaccine development and vaccine trials" and "Vaccine efficiency," with mean scores notably higher than those of interns, residents, and specialists. Specifically, consultants show significantly higher confidence in vaccine development and trials compared to other ranks, as indicated by the ANOVA results ($F = 5.050$, $p = 0.002$). However, the ANOVA results also reveal that confidence levels in areas such as "Vaccine administration," "After vaccine administration," "Vaccine misinformation," and "Vaccine information" do not show significant differences between ranks ($p > 0.05$).

Conclusion:
The study found that doctors confidence levels ranging from low to moderate. The researchers recommend further investigation into the adverse effects of COVID-19 vaccine trials in other countries.

Key words:
Saudi Arabia, doctors, covid-19 vaccines, counseling, confident

Introduction:

The first human cases of COVID-19 were indeed identified in Wuhan, China, in December 2019[1,2] The virus outbreak posed significant challenges due to limited understanding of its origin, nature, mechanism, and prevention at that time[1,3] This lack of understanding contributed to the difficulty in containing the spread of the virus, despite strict lockdown attempts[3].

Meanwhile, The World Health Organization declared the COVID-19 outbreak a "Public Health Emergency of International Concern" on 30th of January 2020 [4] and a pandemic on 11 March 2020[5]. The domino effect of COVID-19 would not only be limited to individuals, but also extend to have a major impact on the economy[6] and the most important impact relevant for this study is the COVID-19 effect on the healthcare system[4]. To tackle the spread of the virus, many pharmaceutical companies have made the vaccine available for public use. The first vaccines to be approved globally by the World Health Organization (WHO) on December 31, 2020, were Pfizer-BioNTech, followed by AstraZeneca/Oxford COVID-19 vaccines on February 15, 2021; Johnson & Johnson vaccines on March 12, 2021; Moderna vaccines on April 30, 2021; Sinopharm vaccines on May 7, 2021; and Sinovac vaccines on June 1, 2021[7]. Of those mentioned vaccines only 3 are currently used in the kingdom of Saudi Arabia. Pfizer-BioNTech, Oxford/AstraZeneca and Moderna vaccines[8].

As there is no absolute certainty of the possible outcome of administering the vaccines therefore no clear comparison among them, doctors may find it difficult to recommend one vaccine above the other for certain groups of people, i.e., individuals with a chronic condition or pregnant women. Some of the rare reported adverse effects were pericarditis in Pfizer and blood clotting in AstraZeneca/Oxford[9]. The vaccines are continued to be promoted by world leaders and government officials as a way to encourage the public to take them. One method for promoting vaccination in Saudi Arabia was when King Salman[10] and the Prince Mohammed bin Salman[11] appeared on national television taking the vaccine, which motivated the public. In Saudi Arabia, A total of 68,534,631 vaccination doses had been given as of April 24, 2023[12] .

In the literature review a study done among a general practitioner (GP) who work in the UK to assess their confidence in counselling patients about COVID-19 vaccine The participants showed a marked low confidence in answering critical questions regarding vaccine safety and efficacy which are commonly asked by

the public[13]. however a study done among health care worker globally measuring their knowledge about COVID-19, and they found among the study participants, a strong gap in the sources of information, low levels of understanding, and varied perspectives on COVID-19[14]. on the other hand., according to the study done in India, the majority of health care workers (HCWs) had a good attitude, an appropriate degree of knowledge, and were generally practicing safely [15]. whereas a study conducted in Saudi Arabia among 510 health care worker they found that Approximately 72.2% of HCWs had a favorable attitude, and two-thirds (67.8%) had adequate knowledge[16]. Even though there are numerous studies on doctors' knowledge regarding COVID-19 pandemics, there have been no studies conducted in Saudi Arabia measuring the confidence of Saudi doctors regarding counselling their patients. COVID-19 vaccines, so this study aimed to find out how confident doctors are in counseling patients about the COVID-19 vaccine in Saudi Arabia.

Materials and Methods:

A cross-sectional questionnaire-based study conducted to assess confidence of doctors to counsel patients about COVID-19 vaccines in Saudi Arabia. The inclusion criteria were doctors who work at hospital, healthcare centres and clinic who dealing with COVID-19 patients and welling to answer our questionnaire. Whereas exclusion criteria were doctors who don't deal with covid-19 patients and doctors who refuse to answer our survey.

Study instrument:

The survey was taken from a previous study(Armitage, 2021)[13] then questionnaire was submitted to 20 doctors as a pilot; subsequently, the results were statistically analyzed using Cronbach's alpha. The reliability coefficient yielded 0.929 across 24 items of the scale. This suggests a high level of internal consistency for assessing perceptions and concerns related to vaccine development, administration, misinformation, safety, efficacy, eligibility, and distribution. final version with 29 questions was created. Five questions in the first section assessed demographic information. In the second section, 24 questions evaluated physicians' confidence in their understanding and provided counseling to patients regarding COVID-19 vaccination on nine distinct topics, including: vaccine development and vaccine trials, vaccine safety, vaccine efficiency, vaccine eligibility and prioritization vaccine? practicalities of delivering vaccines to patients, vaccine administration, after vaccine

administration, vaccine misinformation, vaccine information.

Construct validity:

The concept validity of the scale was tested through the process of items' development and a group of experts to validate that the scale effectively measures public perceptions and concerns of vaccines. The scale items cover vaccine development, administration, safety, efficacy, misinformation, and accessibility that align with the theoretical frameworks and previous research on vaccine-related attitudes. A group of expert reviewers in public health and epidemiology were asked to critically read the content of the scale to confirm its relevance, clarity, and appropriateness to assess the accurate construct. The strong conceptual grounding and expert validation support the scale's validity in assessing vaccine-related perceptions

Data source and collection:

the population were collected via snowball simple sampling technique in Saudi Arabia between June and August 2022. The estimated sample size was 400. Then online questionnaire was generated through Google Form and distributed through social media network (WhatsApp, Instagram, Facebook, Snapchat…etc)
The estimated sample size is:

$$N = (Z\ 2\ ) \times P\ (1-P)/E2\ ,$$

$$N = (1.962\ ) \times 0.5\ (1-0.5)/(0.052 = 384-400),$$

where N is the sample size, E is the margin of error, Z is the critical value, and P is the prevalence.

Ethical considerations:

Ethical approval was taken from Research Ethics Committee(REC), Arabian Gulf University, College of Medicine and Medical Science with number E1-PI-4-22/Group1. Answering the questioner where consider as an approval to participate to this study, the information that acquires from applicants were anonymous. After the completion of the research, the applicants' answers were discarded for confidentiality and privacy purposes.

Statistical analysis:

The data were statistically analyzed using One-Way ANOVA test was used to compare confidence levels according to participants' position, followed by a post-hoc analysis using the LSD test to identify specific differences between groups. Excel and SPSS v.29 (IBM, Inc., Armonk, NY, USA) were used for data collection, tabulation, and analysis.

Results:

Fig 1. represents the sociodemographic characteristics of the sample. 332 out of 400 was completed the questionnaire and majority of participants were males with

a percentage of 60.5%. 25 - 30 years old participants were the majority among other age groups with a percentage of 52.7% followed by the 31 - 40 years age group with 33.7% and lastly came the >40 years age group with only 15.7%. 50.6% is the percentage of the primary health care doctors. The survey included 33.7% of resident physicians, followed by specialists, interns, and consultants (30.1%, 27.1%, and 9%, respectively). 25.9% of participants were doctors with more than ten years of experience (fig1).

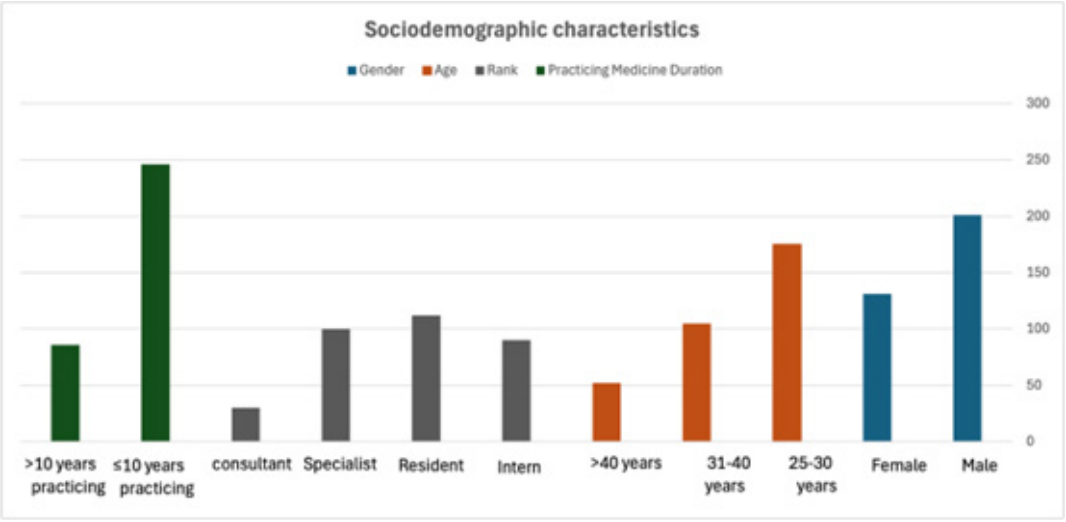


Figure 1: Sociodemographic characteristics.

Participants' answers to the questions were categorized as low confident, moderate confident and high confident. To determine how confident are healthcare providers in counselling patients about the COVID-19 vaccine, table1 shows that confidence is generally high in areas such as the overall development and administration of vaccines, with notable percentages expressing high confidence in the necessity of continuing public health measures post-vaccination and the practicality of vaccine delivery locations. However, there are significant gaps, particularly concerning specific aspects of vaccine trials and misinformation. For instance, a substantial portion of respondents expressed low confidence regarding the inclusion of certain groups in trials and the choice of vaccines available to patients. Confidence in understanding vaccine safety, especially for specific groups, and the detailed efficacy of vaccines, also varies, with many respondents showing uncertainty. The high level of concern about vaccine misinformation underscores

the need for improved public education. Overall, while there is a solid foundation of confidence in general vaccine information and logistics, addressing these areas of uncertainty could further bolster public trust and understanding.

Table 1: Participant Confidence Levels in Counseling Patients about COVID-19 Vaccines.

Items	High confident	Moderate confident	Low confident
	n (%)	n (%)	n (%)
Vaccine development and vaccine trials			
1. Why multiple vaccines are being developed?	125 (37.7)	129 (38.9)	78 (23.5)
2. The speed at which vaccines are being developed.	64 (19.3)	119 (35.8)	149 (44.9)
3. The inclusion of clinically extremely vulnerable patients in vaccine trials.	51 (15.4)	117 (35.2)	164 (49.4)
4. The inclusion of BAME groups in vaccine trials.	54 (16.3)	116 (34.9)	162 (48.8)
5. The for-profit nature of some pharmaceutical companies developing vaccines.	59 (17.8)	120 (36.1)	153 (46.1)
Vaccine administration			
21. Whether patients will be able to choose which approved vaccine they receive (e.g., the one with the highest efficacy).	92 (27.7)	124 (37.3)	116 (34.9)
After vaccine administration			
22. Whether patients should continue to follow public health guidance (e.g., mask-wearing, physical distancing, etc.) after receiving an approved vaccine.	123 (37)	107 (32.2)	102 (30.7)
Vaccine misinformation			
23. Instances of vaccine misinformation (including anti-vax conspiracy theories).	74 (22.3)	110 (33.1)	148 (44.6)
Vaccine information			
24. Access up-to-date, trustworthy, and usable information designed for health professionals.	128 (38.6)	122 (36.7)	82 (24.7)
Vaccine safety			
6. The overall reported safety profile of approved vaccine(s).	86 (25.9)	132 (39.8)	114 (34.3)
7. The common side-effects associated with approved vaccine(s).	83 (25)	136 (41)	113 (34)
8. The safety profile of approved vaccine(s) for specific groups (e.g., over 80 years old, co-morbidities, pregnancy, children).	69 (20.8)	103 (31)	160 (48.2)
9. The potential for adverse effects not yet seen in vaccine trials.	74 (22.3)	97 (29.2)	161 (48.5)
Vaccine efficiency			
10. The overall reported efficacy of approved vaccine(s).	85 (25.6)	136 (41)	111 (33.4)
11. The number of doses required to achieve this efficacy.	74 (22.3)	113 (34)	145 (43.7)
12. Whether the efficacy of approved vaccine(s) refers to mortality, severe disease, asymptomatic infection, viral transmission, long COVID, or a combination of these outcomes.	74 (22.3)	113 (34)	145 (43.7)

Items	High confident	Moderate confident	Low confident
	n (%)	n (%)	n (%)
13. The efficacy of approved vaccine(s) for specific groups (e.g. over 80 years old, co-morbidities, pregnancy, children).	61 (18.4)	116 (34.9)	155 (46.7)
14. The potential benefits to patients who have previously been infected with COVID-19.	69 (20.8)	129 (38.9)	134 (40.4)
15. The potential need for future boosters (e.g., annually).	58 (17.5)	105 (31.6)	169 (50.9)
Vaccine eligibility and prioritization			
16. The order in which groups will be offered an approved vaccine (i.e., the priority list).	113 (34)	114 (34.3)	105 (31.6)
17. The rationale for this priority list.	100 (30.1)	122 (36.7)	110 (33.1)
18. The eligibility of patients participating in vaccine trials to receive an approved vaccine.	63 (19)	123 (37)	146 (44)
Practicalities of delivering vaccines to patients			
19. Where eligible patients will be able to receive an approved vaccine (e.g., GP practice, hospital, mass vaccination center, nursing home, etc.)?	144 (43.4)	110 (33.1)	78 (23.5)
20. How eligible patients will be offered an approved vaccine (e.g., patient contacts surgery, surgery contacts patient, etc.)?	88 (26.5)	120 (36.1)	124 (37.3)
	125 (37.7)	129 (38.9)	78 (23.5)

To find out whether confidence levels in counselling about the COVID-19 vaccine vary based on the sociodemographic characteristics, the independent samples t-test was used to compare the confidence levels based on participants' gender, specialty, and practicing medicine duration. One-Way ANOVA test was used to compare the confidence levels based on participants' age and rank.

Tables 2 and 3 shows the results of rank differences in confidence levels related to COVID-19 vaccines among the study participants. Table 2 shows that consultants generally exhibit the highest confidence across most areas, including "Vaccine development and vaccine trials" and "Vaccine efficiency," with mean scores notably higher than those of interns, residents, and specialists. Specifically, consultants show significantly higher confidence in vaccine development and trials compared to other ranks, as indicated by the ANOVA results ($F = 5.050$, $p = 0.002$). Similarly, significant differences are observed in confidence related to "Vaccine safety" ($F = 3.656$, $p = 0.013$), suggesting that consultants have greater confidence in this area as well. However, the ANOVA results also reveal that confidence levels in areas such as "Vaccine administration," "After vaccine administration," "Vaccine misinformation," and "Vaccine information" do not show significant differences between ranks ($p > 0.05$), indicating that these areas are perceived with similar confidence levels across all professional ranks.

Table 2: Descriptive statistics of rank differences in confidence levels related to COVID-19 vaccines .

Items	Rank	n	Mean	SD
Vaccine development and vaccine trials	Intern	90	8.72	2.71
	Resident	112	8.42	2.46
	Specialist	100	9.30	2.53
	Consultant	30	10.30	3.04
Vaccine administration	Intern	90	1.97	0.83
	Resident	112	1.81	0.75
	Specialist	100	2.07	0.76
	Consultant	30	1.77	0.86
After vaccine administration	Intern	90	2.12	0.82
	Resident	112	2.03	0.82
	Specialist	100	2.08	0.82
	Consultant	30	1.97	0.85
Vaccine misinformation	Intern	90	1.72	0.73
	Resident	112	1.75	0.81
	Specialist	100	1.82	0.80
	Consultant	30	1.90	0.84
Vaccine information	Intern	90	2.21	0.77
	Resident	112	2.00	0.76
	Specialist	100	2.24	0.81
	Consultant	30	2.10	0.80
Vaccine safety	Intern	90	7.34	2.14
	Resident	112	6.79	2.15
	Specialist	100	7.80	2.30
	Consultant	30	7.30	2.58
Vaccine efficiency	Intern	90	10.76	3.20
	Resident	112	10.34	3.11
	Specialist	100	11.13	3.31
	Consultant	30	10.23	3.96
Vaccine eligibility and prioritization	Intern	90	5.83	2.02
	Resident	112	5.53	1.96
	Specialist	100	5.88	1.93
	Consultant	30	5.83	2.23
Practicalities of delivering vaccines to patients	Intern	90	4.04	1.32
	Resident	112	3.84	1.44
	Specialist	100	4.37	1.29
	Consultant	30	4.23	1.52
Total	Intern	90	44.72	10.80
	Resident	112	42.50	11.06
	Specialist	100	46.69	10.62
	Consultant	30	45.63	13.70

Table 3: One-Way ANOVA results of rank differences in confidence levels related to COVID-19 vaccines.

		Sum of Squares	df	Mean Square	F	Sig.
Vaccine development and vaccine trials	**Between Groups**	103.039	3	34.346	5.050	.002
	Within Groups	2230.632	328	6.801		
	Total	2333.672	331			
Vaccine administration	**Between Groups**	4.426	3	1.475	2.397	.068
	Within Groups	201.839	328	.615		
	Total	206.265	331			
After vaccine administration	**Between Groups**	.770	3	.257	.378	.769
	Within Groups	222.902	328	.680		
	Total	223.672	331			
Vaccine misinformation	**Between Groups**	.990	3	.330	.530	.662
	Within Groups	204.516	328	.624		
	Total	205.506	331			
Vaccine information	**Between Groups**	3.698	3	1.233	2.022	.111
	Within Groups	199.929	328	.610		
	Total	203.627	331			
Vaccine safety	**Between Groups**	54.762	3	18.254	3.656	.013
	Within Groups	1637.479	328	4.992		
	Total	1692.241	331			
Vaccine efficiency	**Between Groups**	39.751	3	13.250	1.235	.297
	Within Groups	3520.406	328	10.733		
	Total	3560.157	331			
Vaccine eligibility and prioritization	**Between Groups**	8.092	3	2.697	.678	.566
	Within Groups	1305.146	328	3.979		
	Total	1313.238	331			
Practicalities of delivering vaccines to patients	**Between Groups**	15.683	3	5.228	2.776	.041
	Within Groups	617.606	328	1.883		
	Total	633.289	331			
Total	**Between Groups**	963.356	3	321.119	2.596	.052
	Within Groups	40580.412	328	123.721		
	Total	41543.768	331			

As for the items that show statistically significant differences, the post-hoc test was analyzed in Table 4 to determine which groups differ. For vaccine development and trials, interns and residents show significantly lower confidence compared to consultants. Specifically, interns have a mean difference of -1.578 (p = 0.004) and residents have a mean difference of -1.880 (p = 0.001) compared to consultants, indicating that consultants feel much more confident in this area. Similarly, there is a significant difference between residents and specialists (mean difference = -0.880, p = 0.015), with specialists feeling more confident. Though

the difference between specialists and consultants is not significant, it approaches significance (mean difference = -1.000, p = 0.066), suggesting a trend towards higher confidence among consultants. For vaccine safety, the confidence differences are also notable. Residents exhibit significantly lower confidence compared to specialists (mean difference = -1.014, p = 0.001). Although the differences between other ranks are not statistically significant, the trend suggests varying levels of confidence across different professional ranks.

Table 4: LSD Post-Hoc Test for rank differences in confidence related to vaccine development and vaccine trials and vaccine safety.

Dependent Variable	Rank (I)	Rank (J)	Mean Difference (I-J)	Std. Error	.Sig
Vaccine development and vaccine trials	Intern	Resident	0.303	0.369	0.413
		Specialist	0.578-	0.379	0.128
		Consultant	1.578-	0.550	0.004
	Resident	Specialist	0.880-	0.359	0.015
		Consultant	1.880-	0.536	0.001
	Specialist	Consultant	1.000-	0.543	0.066
Vaccine safety	Intern	Resident	0.559	0.316	0.078
		Specialist	0.456-	0.325	0.161
		Consultant	0.044	0.471	0.925
	Resident	Specialist	1.014-	0.307	0.001
		Consultant	0.514-	0.459	0.264
	Specialist	Consultant	0.500	0.465	0.283

Discussion:

The concept of the commencement of a vaccine for the prevention of a pandemic was seen as an impossible measure, especially with the large numbers of severe cases all over the world. On the other hand, people were eagerly aspiring for the vaccine as a solution that will end the pandemic[17]

In this study, 332 Saudi doctors were participating in a self-structured questionnaire to assess their knowledge and confidence in advising and counseling patients on COVID-19 vaccines in Kingdom of Saudi Arabia.

The survey results indicate that the majority of respondents expressed high confidence in the overall development and administration of vaccines, as well as the need for continued public health measures and the practicality of vaccine delivery locations. However, there were significant gaps in confidence, particularly regarding specific aspects of vaccine trials and misinformation. A substantial proportion of respondents reported low confidence in the inclusion of certain groups in trials and the available vaccine options. Confidence in understanding vaccine safety, especially

for specific groups, and the detailed efficacy of vaccines, also varied, with many respondents exhibiting uncertainty. The high level of concern about vaccine misinformation underscores the need for enhanced public education. Although there is a solid foundation of confidence in general vaccine information and logistics, addressing these areas of uncertainty could further strengthen public trust and understanding.

In the present study the consultants show interns and resident showing lower confidence than consultant regarding vaccine development and vaccine trails items, this in consistent to a study done by Gadoth et al., 2020 In Los Angeles which done among more than thousand healthcare workers as most of the participant didn't trust the development process of the vaccine, these findings suggest a widespread lack of confidence in the vaccine development process among healthcare workers, which could have significant implications for public acceptance and uptake of future vaccines[18]. It is crucial for public health authorities to address these concerns and provide transparent information to build trust in the vaccine development process.

On the other hand, a question related to the reasons of developing multiple vaccine, the total participant showing moderate to high confidence (76.6%) in counseling patient in such a question and this in consistent to a study done

by Armitage, 2021 as (69.1%) of the participant showing fairly confident to high confident in counseling patient about the development reasons of multiple Covid-19 vaccines. It is crucial for healthcare providers to stay informed about the various vaccine options available and their respective benefits and risks[13]. so can help alleviate any doubts or uncertainties that may worries their patients.

The data reveals that 72% of physicians reported low to moderate confidence in their capacity to counsel patients on their willingness to receive any of the approved vaccines, while only 28% expressed high confidence in their counseling abilities. This finding suggests a need for additional training and education to effectively address patient concerns and provide accurate vaccine-related information.

However, 62.6% of doctors showed low to moderate confidence regarding counseling patients about whether they need to follow public health guidelines (e.g., mask-wearing, physical distancing, etc.). It had been approved that, in order to prevent the disease from spreading to others and themselves, those who have already received vaccinations or the COVID-19 vaccine booster dose should keep taking all the necessary precautions[19]. Conversely, a

majority of the participants who endorsed the practice expressed low self-assurance in providing counseling on patient misinformation. Nevertheless, insufficient confidence among physicians in delivering such counseling may be associated with heightened vaccine hesitancy within the healthcare workforce, as evidenced by findings from multiple studies.[20,21]

The present study found that 75.3% of participants reported moderate to high confidence in their ability to access reliable information about vaccines. This contrasted with a previous study conducted in the UK, where less than half of participants expressed similar levels of confidence in accessing trustworthy vaccine-related information, a lower proportion compared to the current sample[13] . The discrepancy may be attributable to the UK study being conducted during a time when vaccine-related information

However, residents exhibit considerably lower confidence in vaccine safety compared to specialists, which aligns with findings from a previous study conducted in Los Angeles where respondents expressed strong concerns about vaccine safety[18] , In a recent meta-analysis, Wu et al. summarized the safety profile of COVID-19 immunizations, concluding that the approved vaccines demonstrated a satisfactory short-term safety profile based on the available evidence[22].

Additionally, our participants expressed low confidence in questions regarding the safety of vaccines for particular groups and the potential for undetected adverse effects. This demonstrated a significant lack of confidence between the qualifications of our participants, aligning with the findings of a published study conducted among healthcare workers in Saudi Arabia. That study found that the most important predictors of vaccine refusal among Saudi Arabian healthcare workers were concerns about vaccination efficacy and safety, as well as fear of unfavorable side effects[23]. The limited and variable data regarding vaccinations for vulnerable populations, such as older adults, children, pregnant or lactating individuals, and those with pre-existing medical conditions, may contribute to this issue[24].

The participants exhibited a low to moderate level of confidence in the vaccine's efficacy, particularly regarding the need for a future booster dose. In this regard, 82.5% of respondents expressed low to moderate confidence. This heightened hesitancy toward the booster dose was nearly identical to the findings of a 2022 study conducted in Greece, which revealed that a significant number of nurses lacked confidence in receiving the new COVID-19 vaccine or a second booster dose[25]. The

COVID-19 pandemic containment efforts may be hampered by this hesitancy and lack of confidence. It is important to note that a study was conducted to predict the effectiveness of a COVID-19 booster dose, and the prediction was that combining the original vaccinations with a booster dose to boost immunity against SARS-CoV-2 variant viruses can greatly improve protection against both symptoms and severe disease[25].

Doctors who participated in the study replied to the questions of vaccine eligibility and prioritizing, with results falling into the low, moderate, and high confidence categories. This hesitation may be linked to a general unwillingness to accept vaccine eligibility [26]. Some doctors expressed low confidence in determining vaccine eligibility and prioritization due to the evolving nature of the virus and the limited data available. Additionally, concerns about the potential side effects and long-term effectiveness of the vaccines may contribute to their hesitation.

The researchers recommend that more intensive research is still needed to find more about the other side effects of the COVID-19 vaccine trials in other countries and the impact of those trials on people in different countries.

The study limitation was related to the results are based solely on self-reported responds; as such, they may not fully represent the participants' true knowledge and confident. As well as the snowball sampling technique was used which reduce the representativeness of the sample.

Conclusion:

The study found that most doctors scored low to moderate confidence rates in many aspects of the stud. Whereas that a high level of confidence was noted in practicalities of delivering vaccines to patients, vaccine eligibility and prioritization, vaccine information, after vaccine administration, and a question related to the reason for developing multiple vaccines.

References:

1. Awadasseid A, Wu Y, Tanaka Y, Zhang W. Initial success in the identification and management of the coronavirus disease 2019 (COVID-19) indicates human-to-human transmission in Wuhan, China. Int J Biol Sci. 2020;16(11):1846.
2. Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, et al. The incubation period of coronavirus disease 2019 (COVID-19) from publicly reported confirmed cases: estimation and application. Ann Intern Med. 2020;172(9):577–82.
3. Kraemer MUG, Yang CH, Gutierrez B, Wu CH, Klein B, Pigott DM, et al. The effect of human mobility and

control measures on the COVID-19 epidemic in China. Science (1979). 2020;368(6490):493–7.
4. WHO. COVID-19 Public Health Emergency of International Concern (PHEIC) Global research and innovation for [Internet]. WHO. 2020 [cited 2023 Nov 22]. Available from: https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum
5. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. Acta bio medica: Atenei parmensis. 2020;91(1):157.
6. Elgin C, Basbug G, Yalaman A. Economic policy responses to a pandemic: Developing the COVID-19 economic stimulus index. Covid Economics. 2020;1(3):40–53.
7. APPROVED VACCINES [Internet]. Track Vaccine. . 2022 [cited 2024 Dec 14]. Available from: https://covid19.trackvaccines.org/vaccines/approved/
8. Tracker CV. COVID-19 vaccine tracker. COVID-19 Vaccine Tracker. 2021;
9. NHS. COVID-19 vaccines side effects and safety [Internet]. NHS. 2023 [cited 2023 Nov 22]. Available from: https://www.nhs.uk/conditions/covid-19/covid-19-vaccination/covid-19-vaccines-side-effects-and-safety/
10. arabnews. Saudi Arabia's King Salman receives COVID-19 vaccine. arabnews. 2021 Jan 8;
11. alarabiya. Coronavirus: Saudi Arabia's Crown Prince gets COVID-19 vaccine. 2020 Dec 25;
12. WHO. Saudi Arabia Coronavirus(COVID-19) statistics. [Internet]. WHO. 2023 [cited 2023 Nov 24]. Available from: https://covid19.who.int/region/emro/country/sa
13. Armitage R. GP confidence in counselling patients about COVID-19 vaccines: A cross-sectional survey. Public Health Pract (Oxf). 2021;2:100113.
14. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Knowledge and perceptions of COVID-19 among health care workers: cross-sectional study. JMIR Public Health Surveill. 2020;6(2):e19160.
15. Gopalakrishnan S, Kandasamy S, Abraham B, Senthilkumar M, Almohammed OA. Knowledge, Attitude, and Practices Associated With COVID-19 Among Healthcare Workers in Hospitals: A Cross-Sectional Study in India. Front Public Health. 2021;9:787845.
16. Almohammed OA, Aldwihi LA, Alragas AM, Almoteer AI, Gopalakrishnan S, Alqahtani NM.

Knowledge, attitude, and practices associated with COVID-19 among healthcare workers in hospitals: a cross-sectional study in Saudi Arabia. Front Public Health. 2021;9:643053.

17. Shields AM, Faustini SE, Kristunas CA, Cook AM, Backhouse C, Dunbar L, et al. Longitudinal protection following natural SARS-CoV-2 infection and early vaccine responses: insights from a cohort of community based dental health care professionals. medRxiv. 2021;2021–2.
18. Martin-Blais R, Gray A, Tobin NH, Ferbas KG, et al. Assessment of COVID-19 vaccine acceptance among healthcare workers in Los Angeles. Medrxiv. 2020;2011–20.
19. Corea F, Folcarelli L, Napoli A, Del Giudice GM, Angelillo IF. The impact of COVID-19 vaccination in changing the adherence to preventive measures: evidence from Italy. Vaccines (Basel). 2022;10(5):777.
20. Gagneux-Brunon A, Detoc M, Bruel S, Tardy B, Rozaire O, Frappe P, et al. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross-sectional survey. Journal of Hospital Infection. 2021;108:168–73.
21. Kabamba Nzaji M, Kabamba Ngombe L, Ngoie Mwamba G, Banza Ndala DB, Mbidi Miema J, Luhata Lungoyo C, et al. Acceptability of vaccination against COVID-19 among healthcare workers in the Democratic Republic of the Congo. Pragmat Obs Res. 2020;103–9.
22. Wu Q, Dudley MZ, Chen X, Bai X, Dong K, Zhuang T, et al. Evaluation of the safety profile of COVID-19 vaccines: a rapid review. BMC Med. 2021;19:1–16.
23. Qattan AMN, Alshareef N, Alsharqi O, Al Rahahleh N, Chirwa GC, Al-Hanawi MK. Acceptability of a COVID-19 vaccine among healthcare workers in the Kingdom of Saudi Arabia. Front Med (Lausanne). 2021;8:644300.
24. Deplanque D, Launay O. Efficacy of COVID-19 vaccines: From clinical trials to real life. Therapies. 2021;76(4):277–83.
25. Khoury DS, Docken SS, Subbarao K, Kent SJ, Davenport MP, Cromer D. Predicting the efficacy of variant-modified COVID-19 vaccine boosters. Nat Med. 2023;29(3):574–8.
26. Lazarus J V, Wyka K, White TM, Picchio CA, Rabin K, Ratzan SC, et al. Revisiting COVID-19 vaccine hesitancy around the world using data from 23 countries in 2021. Nat Commun. 2022;13(1):3801.