



IMPACT OF KNOWLEDGE AND ATTITUDES OF HEALTH CARE WORKERS TOWARDS SEASONAL INFLUENZA VACCINATION OF PATIENTS ATTENDING IN PRIMARY HEALTH CARE AT SAUDI ARABIA 2022

Wajd Abdullatif Mohammed Abualamah^{1*}, Bashaer Abdullah Ali Khuzae², Rana Khalid Mustafa Rajab³, Majid Talat Tounsi⁴, Mohammad Abdullah Abdulmajeed Alshareef⁵, Aeshah Ayidh Albariqi⁶, Ghali Marzioog Almajnooni⁷, Misfer Masud Almajnoonj⁸, Muniyib Ahmed Alghamdi⁹, Fawziah Khader Dhafer. Almuwallad¹⁰, Mead Basher Rdnh¹¹, Ghazi Ali Al-Ghashmari¹², Ali Mulhi Mohammed Althurwi¹³, Musawi Abdu Mohammed Otayfi¹⁴, Abdulkhaliq Mohsen Alhazmi¹⁵, Ahmed Abdu Ahmed Amri¹⁶, Fahad Ahmed Abdu Jabur¹⁷, Abdullah Mahdi Ali Khawaj¹⁸

Abstract

The seasonal influenza vaccine is an important preventive measure against influenza and its associated complications. In Saudi Arabia there is a seasonal influenza vaccination policy, the influenza vaccine is from the national immunization program. Data on vaccination coverage remain scarce with no previous surveillance programs or awareness campaigns implemented in the country. The seasonal influenza vaccine is beneficial for both the patients attending in Primary Health Care and infants. It is considered as primary prevention for patients attending in Primary Health Care and it decreases the serious outcomes when infection does occur. Health care workers are associated with immunological and physiological changes in many the Patients. Influenza in Patients attending in Primary Health Care has been associated with higher rates of morbidity and mortality, the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) advocate influenza vaccination, influenza is an acute respiratory disease of global importance due to its pandemic potential.

Aim of the study: study sought to understand Knowledge and attitudes of health care workers towards seasonal influenza vaccination of patients attending in Primary Health Care at Saudi Arabia 2022.

Methods: Knowledge, attitudes (KA) study was administered to 200 patients attending in Primary Health Care aged 18 and older attending public health institutions in Saudi Arabia. This cross-sectional study was conducted among 200 participants from health care centers in Saudi Arabia, during the from September 2022 to December 2022

Results: shows the majority age most of participants 35-50 were (42.0%) gender majority of participants were(57.0%) were female, regarding the HCWs classification majority of participants health professionals (nurses, midwives) were (45.0%), regarding the level of education the most of participant postgraduate were (49.0%).

Conclusion: This study of Knowledge and attitudes concerning influenza vaccination among patients attending in Primary Health Care various factors emerged as key determinants influencing the intention of patients to undergo influenza vaccination. They include age, geographic residence, related health conditions or underlying disease(s). Notably, majority of patients who did not believe in vaccine's protection against influenza still expressed a willingness to be vaccinated. Another portion of patients indicated their intention to receive the influenza vaccine.

Keywords: Impact, Knowledge, attitudes, health care, workers, seasonal, influenza vaccination, Patients, attending, Primary Health Care, Saudi Arabia.

^{1*}Preventive medicine and public health, Infectious diseases control management, Saudi Arabia.

²Nursing specialist, Hera'a General Hospital, Saudi Arabia.

³Nurse specialist, Hera'a General Hospital, Saudi Arabia.

⁴General Doctor, Al-Maabada Health Center, Saudi Arabia.

⁵General Doctor, Al-Zaher Health Center, Saudi Arabia.

⁶Dental technician, El khadra health center, Saudi Arabia.

⁷Nursing technician, El khadra health center, Saudi Arabia.

⁸Nursing technician, El khadra health center, Saudi Arabia.

⁹Pharmacy technician, El khadra health center, Saudi Arabia.

^{10,11}Nursing technician, Health center Aljumum, Makkah, Saudi Arabia

¹²Pharmacy technician, Sulaymaniyah Health Center, Saudi Arabia.

^{13,14,15,16,17,18}Epidemiology Supervision Technician, Health Affairs in Jazan, Saudi Arabia.

***Corresponding Author:** Wajd Abdullatif Mohammed Abualamah

*Preventive medicine and public health, Infectious diseases control management, Saudi Arabia.

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INTRODUCTION

Influenza is a respiratory illness that affects the respiratory tract. Influenza is recognized as a global public health concern that impacts approximately 5% to 10% of the population and results in fatalities ranging from 250,000 to 500,000 deaths each year.[1]

Annual influenza vaccination is recommended by the CDC's Advisory Committee on Immunization Practices (ACIP) for all persons starting at age 6 months who do not have contraindications.[2] It also recommends that all women who are pregnant or who might be pregnant during the influenza season receive the influenza vaccine, in addition to Healthcare workers (HCWs).[3] , as well as the potential delay or suspension of healthcare services. It lowers the risk of morbidity and death among highly vulnerable patients, such as patients with cancer.[4,5]

Influenza is an acute respiratory illness of global importance due to its potential to result in a pandemic. The 2009 influenza A (H1N1) pandemic illustrated the substantial impact this disease had on the people, as the Primary Health Care rate for this group was high greater than that observed in the general population [6]. The World Health Organization (WHO) Strategic Advisory Group of Experts (SAGE) has recommended pregnant women as one of the risk groups prioritized for seasonal influenza vaccination [7], also individuals have an increased risk of severe illness and attending the primary Health Care due to influenza [8]. Complications associated with influenza in individuals are primarily related to immunological changes that make them more susceptible to influenza viruses [9]. These related factors combined with the negative effects of influenza on the pulmonary and cardiovascular systems significantly increase the risk of morbidity toward population. [10]. Furthermore, influenza infection can lead to adverse neonatal outcomes [11] Patients attending in Primary Health Care are more susceptible to severe illness also pregnant women are more susceptible to Influenza and adverse outcomes of influenza, and vaccination is the most effective preventive measure for Patients, mother and infant , the coverage rate of influenza immunization in Saudi Arabia is below national targets, despite the World Health Organization's (WHO) recommendation to prioritize patients for vaccination[12]

Seasonal influenza is one of the most common infectious diseases globally. Although it is a preventable infectious disease with mostly acute mild respiratory symptoms like fever, sore throat,

rhinorrhea, muscle aches, headache, and cough, however, it can also lead to serious complications like pneumonia, acute respiratory distress syndrome (ARDS), secondary bacterial infection, encephalopathy, and encephalitis.[13,14] The global estimation of seasonal influenza by World Health Organization (WHO) is that 5–10% of adults and 20–30% of children acquire the infection every year.[15] The cumulative incidence in the kingdom of Saudi Arabia from January to December 2018 was 17.52 per 100,000 population. Unfortunately, there is no estimation of seasonal influenza among pregnant women.[16]

The seasonal influenza vaccine (flu vaccine) is an important preventive measure against influenza and its associated complications [17]. The vaccine protects against 3 or 4 influenza viruses that are expected to circulate in the upcoming flu season [18]. The directors of the WHO collaborating centers, laboratories, and academies recommend the composition of the flu vaccine based on surveillance and clinical studies [19]. The Centers for Disease Control and Prevention (CDC) recommend all individuals aged ≥ 6 months take the vaccine by the end of October each year [20]. Priority is given to healthcare workers and other high-risk groups [21, 22]. The flu vaccine provides several benefits including protection against flu infection, severity, and hospitalization, especially in high-risk groups [23].

Literature Review

In Jordan, the influenza vaccine is not part of the Ministry of Health (MOH) vaccination program. However, Jordanian citizens are recommended to receive an annual influenza vaccine by many health agencies. Many studies have shown the spread of influenza among HCWs, who are considered a high-risk group. For this reason, the influenza vaccination is recommended for them throughout the autumn and winter seasons. [24] Peng ZB et al,(2018) reported that The average annual vaccination rate for influenza vaccine in China is only 2–3%. In most areas, influenza vaccinations require paying for themselves. Only a few provinces and cities, such as Beijing, Shanghai, Karamay in Xinjiang Province, Shenzhen in Guangdong province and Xinxiang in Henan province, have implemented free influenza vaccinations for the elderly or children [25]

A study carried out in Lebanon in 2015, the overall vaccination rate was 27.6%. In Arab countries, the vaccination rates are variable. [26]

Because of low vaccination adherence among HCWs and the circulation of influenza and SARS-CoV-2 viruses in the 2020/2021 (autumn/winter season), the circulation of SARS-CoV-2 and influenza viruses has posed a public health challenge, according to the Centers for Disease Control and Prevention. SARS-CoV-2 and seasonal influenza have been shown to result in more severe disease, and it has been proposed that a flu vaccine may help in distinguishing between the two infections. [27,11].

Another study of military personnel in central Saudi Arabia revealed an influenza vaccine coverage rate of 17.8%.¹² A person's decision to receive the seasonal influenza vaccine depends on several factors, including beliefs and attitudes about influenza and the influenza vaccine. [28] In Slovenia, unvaccinated people cited 2 main reasons for not getting the seasonal influenza vaccine: the perception that they were in good health and therefore did not need the vaccine, and a fear of side effects. Many of those who did get the vaccine said they felt it was important to be vaccinated by their family physicians since they had confidence in them.[29] In a German study in 2010, 'fear of side effects' and the opinion that 'vaccination was not necessary' were the major reasons cited for receiving a pandemic vaccination.[30]

Rosano et al,(2019) found that Since 2020, Hangzhou has started to provide free influenza vaccines to individuals with a Zhejiang household registration who are 70years old and above. About 250,000 people are vaccinated each year. In addition, about 50,000 elderly people aged 60 and above receive influenza vaccines at their own expense each year in Hangzhou, and the influenza vaccine coverage rate for this age group is about 15%. In Hangzhou and other parts of China [31], influenza vaccination rates among the elderly are still low.

Studies involving the willingness of the elderly to be vaccinated, have shown that multi-component interventions, such as reminders and persuasion to vaccinate at a community level, can help increase the vaccination rate and reduce the incidence of influenza in the elderly (29)

Rational.

There are limited studies discussing knowledge, attitudes, concerns, behaviors, and barriers associated with the readiness to receive seasonal influenza vaccine among HCWs during the seasonal influenza pandemic after the emergence of COVID- infection. A study was conducted

during the COVID-19 pandemic to assess Primary Health Care at Saudi Arabia HCWs' willingness to get the flu vaccine as well as identify factors that influence this willingness in Italy. As a whole, 68% of the sample indicated a willingness to get the flu vaccine in the 2020–2021 seasons, with 95% of those who had previously received vaccination and 45.8% of individuals who hadn't been vaccinated against influenza in the last six seasons. All of the variables in this study were measured, including the usability of the influenza vaccine in trying to distinguish influenza manifestations from all those prompted by seasonal influenza, worry about the potential of transmitting influenza to admitted primary Health Care at Saudi Arabia 2023 patients, lack of regard for influenza vaccine adverse reactions, and the desire to obtain and flu vaccines in the preceding year. A significant rise in demand for influenza vaccine has been reported.

Aim of the study

To understand Knowledge and attitudes of health care workers towards seasonal influenza vaccination of patients attending in Primary Health Care at Saudi Arabia 2022.

Methodology

Study Design

A Cross-sectional descriptive study

Study area

The study was carried out in Saudi Arabia which is located at the center of the Primary Health Care at Saudi Arabia. It has a holy value for all Muslims worldwide who travel to it annually to perform Hajj and to visit the Holy Masjid and Kaaba towards which Muslims turn in prayers. The city has sectors of PHC. Each sector consists of a group of Primary Health Care Centers. The researcher is concerned with one of the inner PHC.

Study Population

The study was conducted among influenza vaccination of patients attending in Primary Health Care at Saudi Arabia in 2022.

Selection criteria:

A- Inclusion criteria:

- All patients attending in Primary Health Care.
- Both males and females.
- All nationalities.

Exclusion criteria:

- Age <35 years

Sampling technique:

The researcher used Multi-stage random sampling technique, giving each sector code number from PHC After that, by using random number generator, the minimum number was one, and the maximum was seven, the generation number. Then simple random sampling technique was applied to select the PHC. Also, convenience sampling technique was utilized to select the participants in the study.

Data collection tool:

A self-administered validated questionnaire was used. The questionnaire was translated to Arabic by forward-backward technique and then was piloted among 20 participants, after permission was taken through email from the researcher, with some modification and preamble letter was issued to explain the aim of the study, request to participate, and appreciation for a response. Then, the questionnaire was validated by three consultants. After that, the first part included questions on socio demographic characteristics such as age, sex, marital status, educational level and history of chronic disease. The second part included questions on influenza vaccination knowledge, attitudes and questions about vaccination status.

Data collection technique:

After the arrival of the patient to the PHCC, they should go to the reception first to register and ensure the presence of the center's card. Then, the receptionist gives a number to every patient who waits until called by the nurse to detect the vital signs. During that period of waiting the researcher will select patient conveniently until the target number achieves and gives the questionnaire for

answering after taking the consent.

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 was used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using Chi-Square tests (χ^2) to test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 was considered statistically significant. Pilot study:

Was piloted among 20 participants, after permission was taken through from the researcher, with some modification and preamble letter was issued to explain the aim of the study, request to participate, and appreciation for a response. Then, the questionnaire was validated by three consultants. A pilot study was conducted in one PHC in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire was clear and no defect was detected in the methodology.

Ethical considerations:

The ethical approval for this study was obtained from the ethical committee for health research in Saudi Arabia (2022). The objectives of the study were explained to the participants and confidentiality was assured. Participation was voluntary. A written consent was obtained from the participants. Permission from the joint program of family medicine was obtained; permission from the Directorate of Health Affairs of the Holy Capital Primary Health Care was obtained.

Budget: Self-funded

RESULTS

Table 1: Distribution of socio-demographic characteristics of participants in primary health care center (n-200)

	N	%
Age		
<35	70	35
35-50	84	42
>50	46	23
Gender		
Male	86	43
Female	114	57
HCWs classification		
Medical residents/students/trainees	24	12
Health professionals (nurses, midwives)	90	45
Medical Doctors	62	31
Administrative/logistic services	24	12
Marital status		

Married	152	76
unmarried	48	24
Level of education		
Diploma	44	22
undergraduate	58	29
Postgraduate	98	49
Smoking status		
Non-smoker/ex-smoker	76	38
Current smoker	124	62
Influenza vaccination		
Vaccinated	146	73
Non vaccinated	54	27
Do you have any chronic medical conditions?		
No	126	63
Yes	74	37
Do you have medical insurance?		
No	84	42
Yes	116	58
Have you ever had the seasonal influenza vaccine		
No	112	56
Yes	88	44

The study included 200 participant table 1 show the remaining socio-demographic characteristics of the health care workers, regarding age most of participants 35-50 were (42.0%) followed by <35 years were (35.0%) while >50 years were (23.0%) , regarding the gender majority of participants were(57.0%) were female while male were (43.0%), regarding the HCWs classification majority of participants health professionals (nurses, midwives) were (45.0%) while medical doctors were (31.0%) followed by medical residents/students/trainee and administrative/logistic services were (12.0%), regarding the marital status the most of participant were (76.0%) married while unmarried were (24.0%), regarding the level of education the most

of participant postgraduate were (49.0%) while undergraduate were (29.0%) followed by diploma were (22.0%) , regarding the Smoking status the majority of participant current smoker were (62.0%) while Non-smoker/ex-smoker were (38.0%), regarding the Influenza vaccination most of participant vaccinated were (73.0%) while non-vaccinated were (27.0%), regarding you have any chronic medical conditions most of participant answer No were (63.%) while Yes were (37.0%), regarding you have medical insurance most of participant answer Yes were (58.0%) while No were (42.0%), regarding you ever had the seasonal influenza vaccine most of participant answer No were (56.0%) while Yes were (44.0%).

Figure (1): Distribution of socio-demographic characteristics regarding influenza vaccination

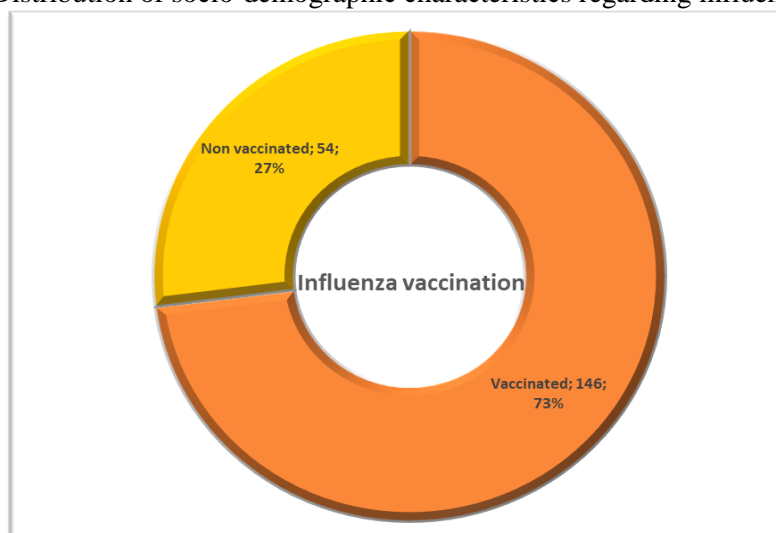


Table 2: Distribution of Knowledge and attitudes of health care workers towards seasonal influenza vaccination recommended among HCWs to patients

	N	%
Vaccination against influenza in the season		
Yes	84	42
No	116	58
Vaccination against influenza in the AH1N1 pandemic season		
Yes	130	65
No/Don't remember	70	35
Adherence to influenza vaccination		
Yes	116	58
No	84	42
Opinion about influenza mandatory vaccination among HCWs		
Favorable	122	61
Not favorable	78	39
Intention to get vaccinated with influenza vaccination		
Yes	154	77
No	46	23
HCWs at higher risk of contracting influenza than general population		
Not at all/Little	164	82
Somewhat/Very much	36	18
Increasing vaccine confidence among HCWs due to influenza pandemic		
Yes	172	86
No	28	14

Regarding the distribution of Knowledge and attitudes of health care workers towards seasonal influenza vaccination recommended among HCWs to patients table 2 show regarding the vaccination against influenza in the season most of participants answer No were (58.0%) followed by Yes were (42.0%), regarding the vaccination against influenza in the AH1N1 pandemic season majority of participants answer Yes were (65.0%) while No/Don't remember were (35.0%), regarding Adherence to influenza vaccination majority of participants answer Yes were (58.0%) while No were (42.0%), regarding Opinion about influenza mandatory vaccination among HCWs

most of participant answer Favorable were (61.0%) while not favorable were (39.0%), regarding intention to get vaccinated with influenza vaccination most of participant answer Yes were (77.0%) while No were (23.0%), regarding the HCWs at higher risk of contracting influenza than general population the majority of participant Not at all/Little were (82.0%) while Somewhat/Very much were (18.0%), regarding increasing vaccine confidence among HCWs due to influenza pandemic most of participant answer Yes were (86.0%) while answer No were (14.0%)

Table 3: Distribution of the factors affecting participants' practice toward seasonal influenza vaccine

	N	%
Reasons for getting vaccinated reported by participants who had ever received the vaccine (146)		
Compliance with physician's recommendation	90	61.64
Fear from catching H1N1 influenza	109	74.66
Worries about becoming severely ill following influenza infection	82	56.16
To prevent disease transmission to family members	105	71.92
Having a chronic medical condition	27	18.49
Reasons for not getting vaccinated [reported by participants who had never received the vaccine (54)]		
Not considering influenza as a threat	30	55.56
Doubts regarding the vaccine's efficacy	39	72.22
Doubts regarding the vaccine's safety	17	31.48
Time constraints	5	9.26
Unaware of vaccine availability	44	81.48

Regarding the Distribution of the factors affecting participants' practice toward seasonal influenza vaccine table 3 show regarding the **Reasons for**

getting vaccinated reported by participants who had ever received the vaccine (146) the majority of participants choose fear from catching

H1N1 influenza were (74.66%) followed by to prevent disease transmission to family members were (71.92%) while compliance with physician's recommendation were (61.64%) but Worries about becoming severely ill following influenza infection were (56.16%) while having a chronic medical condition were (18.49%).

Regarding the reasons for not getting vaccinated [reported by participants who had

never received the vaccine (54) the majority of participants choose Unaware of vaccine availability were (81.48%) followed by doubts regarding the vaccine's efficacy were (72.22%) while not considering influenza as a threat were (55.56%) but doubts regarding the vaccine's safety were (31.48%) while time constraints were (9.26%)

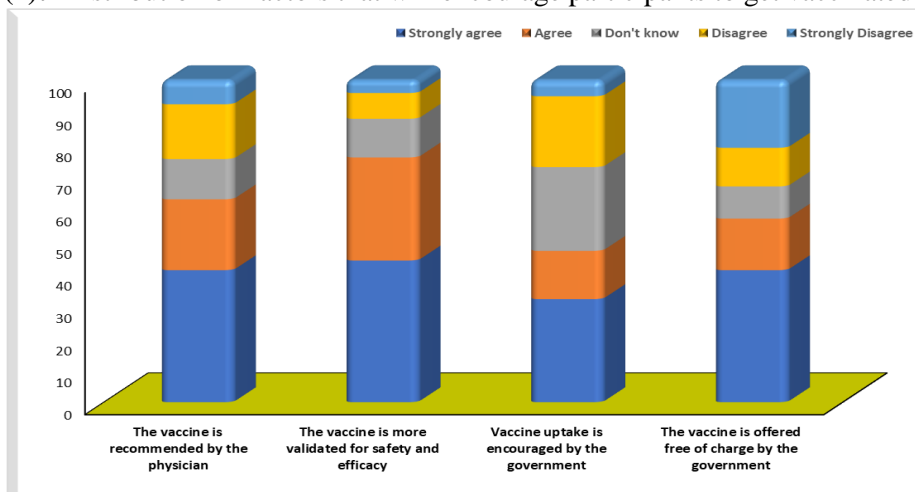
Table 4: Distribution of Factors that will encourage participants to get vaccinated in future.

	Factors					Strongly Disagree	% of agreement	Chi-square	
	N	Strongly agree	Agree	Don't know	Disagree			X ²	P-value
The vaccine is recommended by the physician	N	82	44	25	34	15	74.4	66.65	<0.001*
	%	41	22	12.5	17	7.5			
The vaccine is more validated for safety and efficacy	N	88	64	24	16	8	80.8	118.4	<0.001*
	%	44	32	12	8	4			
Vaccine uptake is encouraged by the government	N	64	30	52	44	10	69.4	43.4	<0.001*
	%	32	15	26	22	5			
The vaccine is offered free of charge by the government	N	82	32	20	24	42	68.8	62.2	<0.001*
	%	41	16	10	12	21			

Distribution of Factors that will encourage participants to get vaccinated in future table (4) showed that regarding vaccine is recommended by the physician was a significant relation were P=0.001 and X² 66.65 while % of agreement were 74.4 also showed that (41.0%) of the participant strongly agree while agree were (22.0%) but Don't know were (12.5%) followed by disagree were (17.0%), regarding vaccine is more validated for safety and efficacy was a significant relation were P=0.001 and X² 118.4 while % of agreement were 80.8 also showed that (44.0%) of the participant strongly agree while agree were (32.0%) but Don't know were (12.5%) followed by disagree were

(8.0%) , regarding Vaccine uptake is encouraged by the government was a significant relation were P=0.001 and X² 43.4 while % of agreement were 69.4 also showed that (32.0%) of the participant strongly agree while agree were (15.0%) but Don't know were (26.0%) followed by disagree were (22.0%), regarding vaccine is offered free of charge by the government was a significant relation were P=0.001 and X² 62.2 while % of agreement were 68.8 also showed that (41.0%) of the participant strongly agree while agree were (16.0%) but Don't know were (10.0%) followed by disagree were (12.0%) .

Figure (2): Distribution of Factors that will encourage participants to get vaccinated in future.



Discussion

This study has understood Knowledge and attitudes of health care workers towards seasonal influenza vaccination of patients attending in Primary Health Care at Saudi Arabia 2022. Influenza coexists in future winters, this understands in Knowledge and attitudes could help inform actions for the coming influenza seasons. Overall, this study found that the influenza vaccination coverage rate for the patients attending in Primary Health Care regarding the our study found that socio-demographic characteristics of the health care workers, regarding age most of participants 35-50 were (42.0%) regarding the gender majority of participants were (57.0%) were female regarding the HCWs classification majority of participants health professionals (nurses, midwives) were (45.0%) regarding the marital status the most of participant were (76.0%) married regarding the level of education the most of participant postgraduate were (49.0%) regarding the Smoking status the majority of participant current smoker were (62.0%) regarding the Influenza vaccination most of participant vaccinated were (73.0%) (See table 1)

In the context of the Influenza pandemic, the present study showed a relevant increase in the number of participants receiving or intending to receive the influenza vaccination. A case – control study of the 2022 influenza vaccine and increase the incidence of COVID among HCWs and patients attending in Primary Health Care showed significant findings that suggest the 2022 influenza vaccine may have had a protective association against COVID among HCWs.16 in our study regarding the distribution of Knowledge and attitudes of health care workers towards seasonal influenza vaccination recommended among HCWs to patients show regarding the vaccination against influenza in the season most of participants answer No were (58.0%) regarding the vaccination against influenza in the AH1N1 pandemic season majority of participants answer Yes were (65.0%) regarding Opinion about influenza mandatory vaccination among HCWs most of participant answer Favorable were (61.0%) regarding intention to get vaccinated with influenza vaccination most of participant answer Yes were (77.0%) regarding increasing vaccine confidence among HCWs due to influenza pandemic most of participant answer Yes were (86.0%) . (See table 2)

Assessing knowledge about influenza, its modes of transmission, and its preventive measures revealed

an acceptable median knowledge score but with critical knowledge gaps that were mostly related to H1N1-associated infection. The median knowledge score would seem to reflect the education level of the participants as most participants reported receiving a higher education degree. The exaggeration of the H1N1 fatality risk reported by the participants in the current study is in disagreement with a former study from China where only a minority believed that H1N1 has a high fatality rate [31]. On the contrary, although the majority correctly identified all influenza preventive measures, the influenza vaccine was the least recognized preventive strategy. This is similar to other studies from Italy and Jordan, where most participants did not recognize the vaccine as a major preventive measure to control influenza transmission [29]

in our study the distribution of the factors affecting participants' practice toward seasonal influenza vaccine show regarding the Reasons for getting vaccinated reported by participants who had ever received the vaccine (146) the majority of participants choose fear from catching H1N1 influenza were (74.66%) followed by to prevent disease transmission to family members were (71.92%) while compliance with physician's recommendation were (61.64%). Regarding the reasons for not getting vaccinated [reported by participants who had never received the vaccine (54) the majority of participants choose Unaware of vaccine availability were (81.48%) followed by doubts regarding the vaccine's efficacy were (72.22%) while not considering influenza as a threat were (55.56%) (See table 3)

This is different from a study in Saudi Arabia where less than one-fourth of participants reported receiving information from a healthcare provider [25]. In comparison, in a study from Jordan, a country that has the highest literacy rate in the Arab region [20], newspapers were the major source of influenza information [27]. In the United Kingdom, television and the Internet were the leading sources of knowledge about influenza [30]. in our study Distribution of Factors that will encourage participants to get vaccinated in future showed that regarding vaccine is recommended by the physician was a significant relation were $P=0.001$ and $X^2=66.65$ also showed that (41.0%) of the participant strongly agree regarding vaccine is more validated for safety and efficacy was a significant relation were $P=0.001$ showed that (44.0%) of the participant strongly agree regarding vaccine is offered free of charge by the government was a significant relation were

P=0.001 and X² 62.2 also showed that (41.0%) of the participant strongly agree. (See table 4)

Conclusion

Critical gaps in knowledge of influenza were identified among the public in Saudi Arabia. The study revealed a low vaccine uptake in the country and identified major determinants of vaccine acceptance and rejection. Optimizing vaccine acceptance and coverage can be achieved by collaboration between the healthcare sector and governmental authorities. Efforts ensuring the free-of-charge provision of the vaccine will assist in establishing equitable vaccine access. In addition, implementing education programs utilizing different audiovisual platforms is recommended to enhance positive attitudes toward influenza vaccine, raise awareness toward vaccine availability, consolidate the public's trust in the safety of the vaccine, and promote the vaccine among high-risk groups in the community who are in critical need of the vaccine.

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