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PERCEPTION OF INFLUENZA VACCINE SAFETY AND EFFICACY AMONG PRIMARY CARE CHRONIC ILLNESS PATIENTS IN DAMMAM & KHOBAR, KSA, 2021

Community Medicine

Maryam Alruwaili	Residents of Family Medicine, Family Medicine Academy- El Cluster – Ministry of Health – Eastern Province, KSA
Norah Alkhaldi	Residents of Family Medicine, Family Medicine Academy- El Cluster – Ministry of Health – Eastern Province, KSA
Abeer Alhashel*	Residents of Family Medicine, Family Medicine Academy- El Cluster – Ministry of Health – Eastern Province, KSA *Corresponding Author
Norah Alwakeel	Residents of Family Medicine, Family Medicine Academy- El Cluster – Ministry of Health – Eastern Province, KSA
Rasha Alawwad	Specialist of Family Medicine, Family Medicine Academy- El Cluster – Ministry of Health – Eastern Province, KSA
Mohamed Alamin	Professors of Community Medicine and Public Health, Ministry of Health – Eastern Province, KSA

ABSTRACT

Background: Chronic illnesses patients are highly recommended to be vaccinated due the fact that they might get more complications in comparison with healthy adults. This study aims to analyze the perception about safety and efficacy of influenza vaccine among primary care chronic illness patents more specifically: diabetic, hypertensive and asthma in eastern province, KSA 2021. **Methodology:** This is a descriptive cross-sectional study done among adults with chronic illnesses (diabetic, hypertensive and asthmatic) attending Dammam & Khobar, Primary care centers, 2021. The questionnaire was adopted from previous validated questionnaire taken from a study with similar aims. **Results:** The study included 384 participants, 55.2% of them were males and 48.3% of them were above 50years old. Only 62% of study participants had influenza vaccine. Only 62.6% of participants thought that influenza vaccine is safe and19.1% thought there were absolute contraindications for the vaccine. Two thirds (68.2%) thought that it is safe for diabetic patients, 55.4% think that it is safe for asthmatic patients and 65.5% think that it is safe for hypertensive patients. 9.5% think there are serious side effects of the seasonal influenza vaccine. Two thirds (66.6%) think that influenza vaccination is effective in preventing influenza infection. Conclusion: This study found that overall influenza vaccine coverage is reasonable. Perception about the vaccine is good among good and there were low knowledge among Saudi patients with chronic diseases. Communication and awareness of influenza and its vaccine in this population is a critical first step, and all healthcare professionals and public health workers can play a key role in this regard.

KEYWORDS

Introduction:

Seasonal influenza vaccine is a globally recommended method to reduce the severity, duration and the need of hospitalization caused by influenza virus infection. The peak of the infection is seen in winter. Yearly incidence among general population varies from 7% up to 18% dependent on the risk factor and the health statues of the patient. (1)

Influenza vaccine is known to be the most effective method to face influenza infection by reducing the influenza infection hospitalization and death. (2- 5) Routine influenza vaccine is recommended to be taken by the general population who are older than 6 months according to the Saudi thoracic society recommendations. (1) Special emphasis on vaccinating high risk group such as patient with chronic illnesses.

Coverage rate of influenza vaccine is low in the general population including chronic illness's patients (diabetic, hypertensive and asthmatic patients). Many studies focused on studying the general to study the general population perception about influenza vaccine. However, literature didn't have enough information regarding chronic illnesses population perception to influenza vaccine in the eastern province.

One study done in Brazil aimed to explore the reasons for vaccine refusal in old adults with hypertension found that the fear of side effects of the vaccine and the low protection that the vaccine will provide are the two main reasons for vaccine refusal. (6) Another study among health care workers with chronic illness and H1N1 done in 2012 found that the majority who did not receive the vaccine do not believe in the efficacy or safety of the vaccine. (7)

A study done in period 2007 to 2013 among diabetic patients to find the reason for vaccine acceptance or refusal showed that the main reason for vaccine refusal among this population was their believe of not being at risk for influenza infection. Another major reason was their negative believes about the side effects and the reaction of the vaccine. (8)

Coverage rate of influenza vaccine was studied. In 2017, a study conducted in Shanghai found that the coverage rate of the influenza vaccine among high-risk groups was significantly low in comparison with pneumococcal vaccine. (9) A systemic review done by WHO (2005 – 2016 aimed to have an understanding of influenza vaccine hesitancy in different risk groups and under different circumstances to increase coverage of seasonal influenza vaccines. (3)

Results showed that there is lack of confidence due to low perceived vaccine effectiveness and low perceived severity of disease were the most reported barriers to seasonal influenza vaccine uptake among chronically ill patients.

A cross-sectional survey was conducted in 2019 among patients with type 2 diabetes at Security Forces Hospital Riyadh, aimed to know the Prevalence of influenza and pneumococcal vaccine uptake in this population. (10) It showed that older individuals, unmarried individuals, those with less education, and those living with certain chronic conditions were less likely to receive the influenza vaccine. those who received the vaccine had strong belief that the influenza vaccine is important for diabetics, believe in the efficacy of the vaccine and they were not worried about the side effects.

In Southwestern Saudi Arabia a study was done to assess Coverage Status and Its Determinants of influenza vaccination among type 2 diabetes patients 2018-2019. (11) Out of 353 T2DM patients included in the study, seasonal influenza vaccination coverage was 61% in year 2017. Factors associated with non-vaccination were; poor influenza and its vaccine knowledge illiteracy, and more than 10 years disease duration.

A cross sectional survey was done in Pretoria, South Africa (12) to evaluate knowledge, attitudes and practices regarding seasonal influenza and influenza vaccination among diabetics found that the level of knowledge and perception were the main barriers for taking

the vaccine. Health care provider's advice was an important predictor of previous influenza vaccination and they were advised to continue educating & motivating all diabetics to get vaccinated for influenza at least once yearly.

In 2017, a study aimed to assess the knowledge and attitudes of Saudi nationals regarding seasonal influenza vaccinations was done. (13) This study included 1298 adult Saudi nationals who were 19 years old or more. A total of 44.53% of the participants had been vaccinated with the seasonal influenza vaccine. 36.67% knew that individuals with chronic diseases should be given the seasonal influenza vaccine. Vaccinated participants in this study showed a higher level of knowledge compared to non-vaccinated participants. Most of the participants reported that the most reliable source of information was healthcare worker advice.

Another cross-sectional study was conducted in Al-Madinah city to explore association between knowledge of influenza vaccine and vaccination status among general population. (14) The study showed poor knowledge and attitude toward influenza vaccination among general population but a relatively accepted rate of vaccine uptake.

In the eastern province. A cross sectional study was done to measure the uptake of influenza vaccine and to assess knowledge, attitudes, and practices towards influenza vaccine among adults attending primary healthcare centers in Dammam (15), Saudi Arabia. 50.4% of the participants had received an influenza vaccine at least once, and 57% have good knowledge about it. Health care workers were the best way to get information according to the participants.

The reason behind the low coverage rate among chronic illness patients has not been clarified yet. In contrary the justification for the community perception has been emphasized in one study in the general population in the eastern province PHC visitors.

Chronic illnesses patients are highly recommended to be vaccinated due the fact that they might get more complications in comparison the healthy adults. The perception and knowledge of influenza vaccine is understudied in the chronic illness patients even though they essentially need the vaccine to avoid many lethal complications caused by influenza virus. The decision to take the influenza vaccine is highly influenced by the patient's perception of the vaccine safety and efficacy as many patients ask about these major two point in the vaccine.

Focusing on the perception of the chronic illness population as their believes toward the vaccine affect their intake. Understanding this point will ultimately lead to know the reason for vaccine refusal and therefore working on formulating educational techniques to correct the misconceptions our targeted group have regarding influenza vaccine.

As family physicians, knowing the patient ideas about the vaccine will guide us to better practice through understanding the misconceptions & work on correcting them which will lead to patient's acceptance to receive the vaccination and hopefully higher coverage rate in the chronic illness clinic patients. Our research is about the perception of safety and efficacy of influenza vaccine among primary care chronic illness patients: Diabetic, Hypertensive and asthmatic in eastern province.

This study will help us understand the misconceptions about safety and efficacy regarding the flu vaccine in this specific population which may lead to vaccine refusal. It will also help in building a health education plan to this specific population in the eastern province. Thus, this study aims to study the perception about safety and efficacy of influenza vaccine among primary care chronic illness patents more specifically: diabetic, hypertensive and asthma in eastern province 2021.

Specific objectives:

1. To know the perception of diabetic, hypertensive and asthma patients regarding the efficacy of influenza vaccine
2. To understand the perception of diabetic, hypertensive and asthma patients regarding the safety of influenza vaccine
3. To gain an understanding about major misconception among diabetic, hypertensive and asthma patients regarding the safety and efficacy of influenza vaccine

Materials and Method:

Study design: This is a descriptive cross-sectional study

Study population and setting: The study included adult PHC visitors who have at least one of the three chronic illnesses (Diabetes Mellitus, hypertension and asthma) in Dammam and Al Khobar, Eastern Province 2021.

Inclusion criteria:

Have chronic illnesses (diabetes ,hypertension and asthma).
Age group between 18 to 65 years.

Exclusion criteria:

Age below 18 years old.

Sampling: Cluster random sampling was employed in a multistage process. The cities of Dammam and Khobar were grouped together. We chose five PHCCs from Dammam and three from Khobar at random, then 270 participants from Dammam and 114 from Al Khobar Primary Care Centers at random. The Rao soft programme was used to compute a sample size of 384 based on a 50% anticipated response distribution, a 5% acceptable error, and a 95% confidence interval.

Study variables:

The dependent variables are
1. the perception of diabetes, hypertension and asthma patients about the safety of influenza vaccine.
2. the perception of chronic illnesses patients (diabetes, hypertension and asthma) regarding influenza vaccine efficacy.

The independent variables:
1. Demographic characteristics: Age, gender, Marital status
2. Educational characteristics: Education level, Occupation
3. Vaccine related: Previous influenza vaccination status

Data Collection tool: The questionnaire was adopted from validated questionnaire taken from previous study with similar aims (15). However, the questionnaire has been edited to fit our study population. The questionnaire has 3 sections, demographic variables, infeluenza vaccine safety and efficacy. Trained data collectors were recruited to assist in questionnaire distribution to the patients in selected primary care centers.

Content validity of the tool: Four experts in the field of statistics and infection control have revised the edited questionnaire for content validity. Moreover, a pilot study was conducted to check the clarity of the questionnaire and test its reliability.

Data analysis plan:

Descriptive analysis:
1. Categorical variables were measured using number and percentages.

Inferential analysis:

To analyze association between two categorical variables we used chi square.
1. To analyze the association between 2 categorical variables and continuous variable we used T test.
2. Alpha level was set as 0.05. P value equal to or less than 0.05 will consider statistically significant.

Ethical consideration:

All study participated have voluntarily participated in the research and informed consent was taken from them. Participants have the right to withdraw from the study at any time without undesirable consequence and guaranteeing full justice to all of them. Confidentiality of patients' information was reserved. Access to the information was only granted to researchers for study purposes only. Safeguard information was applied. IRB approval obtained from IRB committee in MOH, Dammam health network.

Results:

Total of 384 chronic disease patients participated in the study, 55.2% of them were males and 44.8% were females. Only 27.1% of participants were 50- 59 years old and 21.2% were 60- 65 years old. Most (89.7%) of participants were Saudi. 37.9% of participants had diploma or university degree, 28.1% had secondary school, and 24.1% had preparatory school.

Table (1): Sociodemographic characteristics of participants (n=384)

Parameter		No.	%
Gender	Male	212	55.2
	Female	172	44.8
Age	18 -29	36	9.3
	30- 39	53	13.8
	40 - 49	66	17.2
	50 - 59	104	27.1
	60 - 65	81	21.2
	More than 65	44	11.4
Nationality	Saudi	344	89.7
	Non-Saudi	40	10.3
Education level	Illiterate	29	7.7
	Primery	93	24.1
	Secondary	108	28.1
	Diploma/University	146	37.9
	Postgraduate	8	2.1
Occupation	freelance	35	9.0
	Medical sector employee	19	5.0
	employee in non medical sector	107	27.9
	retired	97	25.2
	Student	12	3.2
	Unemployed	114	29.7

The majority (62.2%) of the participants received the influenza vaccine. About half of the vaccinated participants receive vaccine annually and only 17.5% reported that vaccine causes side-effects**.**

Table (2): Vaccination, annually vaccinated and side effects of vaccine among vaccinated participants (n= 384)

Parameter		No.	%
Recived influenza vaccine	Yes	239	62.2
	No	145	37.8
Receive the vaccine annually (n=239)	Yes	124	51.7
	No	115	48.2
The vaccine caused side effects (n=239)	Yes	42	17.5
	No	197	82.5

As for perception and knowledge, 62.6% of participants think that influenza vaccine is safe. 19.1% think there are absolute contraindications for the vaccine. About quarter (24.1%) of the participants think that vaccine may cause influenza. 21% knew that vaccine is safe during pregnancy. The majority (68.2%) think that it is safe for diabetic patients. 55.4% think that it is safe for asthmatic patients.

You have two main objectives in this study, you need to present results showing these 2 outcomes. Please separate table 3 into 2 tables and give clear titles

Table (3): Participants perception towards influenza vaccine safety (n= 384)

	Yes	No	Don't know
Influenza vaccine is safe	240 62.6%	26 6.6%	118 30.8%
There are absolute contraindications to the influenza vaccine	73 19.1%	101 26.3%	210 54.6%
Vaccines may cause influenza	93 24.1%	154 40.1%	137 35.8%
The vaccine may interact with antibiotics or other medications	128 33.2%	71 18.6%	185 48.3%
The influenza vaccine is safe during pregnancy	81 21.0%	87 22.5%	216 56.5%
The influenza vaccine is safe for patients with diabetes	261 68.2%	14 3.4%	109 28.4%
The influenza vaccine is safe for patients with high blood pressure	251 65.5%	18 4.5%	115 30.0%
The influenza vaccine is safe for patients with asthma.	212 55.4%	21 5.3%	151 39.3%
A patient with a very high temperature can receive the influenza vaccine	38 9.8%	224 58.4%	122 31.8%
There are serious side effects of the seasonal influenza vaccine	37 9.5%	172 44.8%	175 45.6%

Table (4): Participants perception towards influenza vaccine efficacy

	Yes	No	Don't know
Influenza vaccination is effective in preventing influenza infection	255 66.6%	35 9.0%	94 24.4%
Using the seasonal influenza vaccine is the best way to avoid influenza complications	257 67.1%	37 9.5%	90 23.3%
Medication with herbs and natural materials such as honey and ginger are better than the influenza vaccine	119 31.0%	182 47.5%	83 21.5%
Seasonal influenza vaccine can protect against influenza in chronically ill patients	242 63.1%	41 10.6%	101 26.3%
Diabetics should be vaccinated with influenza vaccine	239 62.3%	44 11.4%	101 26.3%
High blood pressure patients should be vaccinated with influenza vaccine	231 60.2%	41 10.6%	112 29.2%
Asthma patients should be vaccinated with influenza vaccine	210 54.6%	41 10.6%	133 34.7%

The majority (65.5%) of the participants think that it is safe for hypertensive patients. Only 9.5% think there are serious side effects of the seasonal influenza vaccine and66.6% think that influenza vaccination is effective in preventing influenza infection.

Table (5): Association between vaccine taking and sociodemographic characteristics of participants

		Received Influenza vaccination		Total (N=384)	P value
		Yes	No		
Gender	Male	134	78	212	0.536
		56.4%	53.1%	55.2%	
	Female	103	69	172	
		43.6%	46.9%	44.8%	
Age	18 - 29	25	11	36	0.542
		10.3%	7.7%	9.3%	
	30 - 39	32	21	53	
		13.7%	14.0%	13.8%	
	40 - 49	39	27	66	
		16.2%	18.9%	17.2%	
	50 - 59	71	34	104	
		29.5%	23.1%	27.1%	
	60 - 65	45	36	81	
		18.8%	25.2%	21.2%	
	More than 65	28	16	44	
		11.5%	11.2%	11.4%	
National ity	Saudi	216	128	344	0.264
		91.0%	87.4%	89.7%	
	Non-Saudi	22	18	40	
		9.0%	12.6%	10.3%	
Educati on level	Illiterate	18	11	29	0.238
		7.7%	7.7%	7.7%	
	Primary / Intermediate	54	39	93	
		22.6%	26.6%	24.1%	
	secondary	60	48	108	
		25.2%	32.9%	28.1%	

	Diploma/University	100	46	146	
		41.9%	31.5%	37.9%	
	Postgraduate	6	2	8	
		2.6%	1.4%	2.1%	
Occupation	Medical sector ployee	15	4	19	0.133
		6.4%	2.8%	5.0%	
	Non medical sector employee	69	38	107	
		29.1%	25.9%	27.9%	
	freelance	17	18	35	
		7.3%	11.9%	9.0%	
	retired	64	33	97	
		26.9%	22.4%	25.2%	
	Student	9	3	12	
		3.8%	2.1%	3.2%	
	Unemployed	63	51	114	
		26.5%	35.0%	29.7%	

Table (6): Association between the perception of vaccine safety and sociodemographic characteristics of participants

		Think the influenza vaccine is safe			Total (N=384)	P value
		Yes	No	Don't know		
Gender	Male	125	12	75	212	0.076
		51.7%	48.0%	63.8%	55.2%	
	Female	116	13	43	172	
		48.3%	52.0%	36.2%	44.8%	
Age	18 - 29	24	1	11	36	0.٧١٤
		9.7%	4.0%	9.5%	9.3%	
	30 - 39	29	6	18	53	
		11.9%	24.0%	15.5%	13.8%	
	40 - 49	41	5	20	66	
		16.9%	20.0%	17.2%	17.2%	
	50 - 59	70	5	29	104	
		29.2%	20.0%	24.1%	27.1%	
	60 - 65	48	7	26	81	
		19.9%	28.0%	22.4%	21.2%	
	More than 65	30	1	13	44	
		12.3%	4.0%	11.2%	11.4%	
Nationality	Saudi	213	24	107	344	0.549
		89.0%	96.0%	89.7%	89.7%	
	Non-Saudi	27	1	12	40	
		11.0%	4.0%	10.3%	10.3%	
Education level	Illiterate	17	1	11	29	0.097
		7.2%	4.0%	9.5%	7.7%	
	Primary / Intermediate	52	5	36	93	
		21.6%	20.0%	30.2%	24.1%	
	secondary	63	6	39	108	
		25.8%	24.0%	33.6%	28.1%	
	Diploma/University	103	12	31	146	
		42.8%	48.0%	25.9%	37.9%	
	Postgraduate	6	1	1	8	
		2.5%	4.0%	0.9%	2.1%	
Occupation	Medical sector employee	10	3	6	19	0.530
		4.2%	12.0%	5.2%	5.0%	
	Non medical sector employee	67	7	33	107	
		27.5%	28.0%	28.4%	27.9%	
	freelance	18	3	14	35	
		7.2%	12.0%	12.1%	9.0%	
	retired	64	6	27	97	
		26.3%	24.0%	23.3%	25.2%	
	Student	10	1	1	12	
		4.2%	4.0%	0.9%	3.2%	
	Unemployed	73	5	36	114	
		30.5%	20.0%	30.2%	29.7%	

Discussion:

Influenza is one of the most serious global public health issues, potentially causing serious health problems, including death, in vulnerable populations (such as children, pregnant women, the elderly, and people with chronic illnesses) [11]. The significance of annual influenza vaccination is emphasized in various media outlets and healthcare settings, particularly prior to the annual pilgrimage season [12]. This study aims to explore the perception about safety and efficacy of influenza vaccine among primary care chronic illness patents more specifically: diabetic, hypertensive and asthma in eastern province 2021.

In our study, only 62% of participants were vaccinated. Seasonal influenza vaccination coverage was 61 percent in Southwestern Saudi Arabia [11]. In terms of yearly vaccination rates among other risk categories, the majority of nations reported rates below 50% [12]. Military personnel, employees in the food and chemical sectors, and blood donors in Saudi Arabia were found to have immunisation rates of 17.8% and 58.1 percent, respectively [13,14]. It was 50.4 percent [20] in Saudi Arabia's western province. In Morocco, individuals with influenza-like disease and severe acute respiratory illness had a vaccination rate of 3.9 percent [15]. Another research on a group of rheumatoid arthritis patients in Egypt and Morocco found immunisation rates of 28.7% and 42.3 percent, respectively [16]. The coverage rate of the influenza vaccine was studied in one study in Shanghai in 2017 and found that the coverage rate of the influenza vaccine among high-risk groups was significantly lower than that of the pneumococcal vaccine. (9)

In Tunisia, a study found that 19.4 percent of in pregnant women were vaccinated during the 2018–2019 influenza season, and 64.7 percent expressed willingness to be vaccinated in the following season regardless of vaccination status during the 2018–2019 seasons [23]. Several studies in Spain and other European countries have found that vaccination uptake among high-risk groups is lower than recommended rates, with a descending time-trend in vaccination uptake over the last years, particularly after the 2009 H1N1 pandemic [21]. In another study, the majority of respondents (152 with 47.8 percent) had already received the vaccines, compared to (70 with 22.0 percent) who had not. And the majority of respondents (95 with 29.9 percent) have already received the vaccines annually, compared to (23 with 7.2 percent) who have received the vaccine every three years [26]. Napolitano et al. discovered that nearly half of patients with chronic diseases visiting an Italian out-patient clinic in 2018–2019 were vaccinated against influenza [23]. However, according to Ye et al. and Mohr et al. [28, 29], only 7.8 percent of diabetic patients in China and less than 30 percent of patients with chronic pulmonary diseases in Germany received influenza vaccine.

In a study, conducted by Biberoglu et al. [25], which included all relevant risk groups and the elderly, influenza vaccination rates in people over 65, people with COPD, and people with diabetes mellitus were reported to be 5.9 percent, 14.9 percent, and 9.1 percent, respectively. Oncel et al. [26] discovered that influenza vaccination rates in people over the age of 65 and people with chronic diseases ranged from 6.7 to 27.3 percent. In our study, influenza vaccination rates in the adult population, people over the age of 65, and people with diabetes, hypertension and asthma ranged from 12.5 to 32.2 percent. The findings indicate that influenza vaccination rates in risk groups, such as the elderly and adults, are insufficient. As a result, setting goals for adult influenza vaccination rates and follow-up vaccination rates in target groups will help to increase vaccination rates [27].

As for the perception of vaccine safety and efficacy, our study reported that 62.6% of participants think that influenza vaccine is safe and 66.6% think that influenza vaccination is effective in preventing influenza infection. In Italy, 64.7 percent were aware that influenza can be prevented with vaccines and that patients with chronic diseases are at a higher risk of developing severe forms of influenza [17]. This finding was consistent with another study conducted in Italy, in which 64.2 percent of pregnant women correctly answered that influenza is more dangerous for pregnant women than for women who are not pregnant [18]. In contrast, a significantly lower level of knowledge was observed in a study conducted in the United States (US) among the general population, where only 19.6 percent of respondents indicated correct knowledge of the influenza vaccination recommendation [19]. In a study conducted in France on a sample of patients with severe influenza who arrived at the emergency department [20], Meanwhile,

other studies with different samples have revealed a higher level of knowledge. In Australia, 85.9% of healthcare workers were aware that seasonal influenza vaccination was recommended for them [19].

According to our results, there was no significant association between any of the sociodemographic characteristics of participants and influenza vaccine taking or knowledge of vaccine safety. This did not agree with the previous studies. According to one study, participants with fewer chronic illnesses were more likely to be immunized than those with three or more chronic illnesses. The most striking finding was that participants with hypertension, asthma, or chronic obstructive pulmonary disease (COPD) had a higher rate of vaccination [28]. Another study discovered that living in the city Centre, being over 65 years old, and being educated were statistically significantly higher (p 0.05) in vaccinated participants compared to non-vaccinated and vaccinated uneducated people. When comparing vaccinated and unvaccinated people, it was discovered that people with COPD and cardiovascular disease were statistically significantly less vaccinated (p 0.05) [27]

Conclusion:

This study found that overall influenza vaccine coverage is reasonable. Perception about the vaccine is good among good and there were low knowledge among Saudi patients with chronic diseases.

Recommendations:

Communication and awareness of influenza and its vaccine in this population is a critical first step, and all healthcare professionals and public health workers can play a key role in this regard. Future research should focus on both general practitioners and specialists adopting educational interventions for adults with chronic diseases.

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