Research Article

Assessment of seasonal flu immunization status among adult patients visiting al-Sharaee Primary Health Care Center in Makkah al-Mokarramah

Mulham Fouad Korani

Al-Sharaee Primary Health Care Center, Directorate of Health Affairs, Ministry of Health, Makkah, Saudi Arabia.
Correspondence: Mulham Fouad Korani, E-mail: drmulham@yahoo.com

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Abstract

Background: On the basis of epidemiologic data and worldwide experiences on influenza vaccination, both seasonal and H1N1 vaccinations are recommended for anyone 6 months of age or older who is at risk of becoming ill or of transmitting the viruses to others. Overall, the rates and seriousness of a possible complication of influenza vaccination are much smaller than the risk of serious complications and mortality from influenza infection.

Objectives: To determine the prevalence of seasonal flu immunization status as well as factors associated with its acceptance among adult Saudi patients visiting the general clinic at al-Sharaee Primary Health Care Center in Makkah.

Materials and Methods: This was a cross-sectional analytic study conducted among 200 adult Saudi patients visiting the general clinic at al-Sharaee Primary Health Care Center in Makkah in June 2013. Data were collected from participants themselves in the presence of the researcher using a predesigned questionnaire. The questionnaire consisted of dependent variable (seasonal flu immunization status) and independent variables (age, gender, educational level, marital status, job status, home/living, barriers hindering factors (fear of injection, side effects, being busy, fear of infection, desire to avoid medication, belief the vaccine was not effective, safety issue, inadequate policies, and because there was no obligation from Ministry of Health).

Results: A total of 200 adult Saudi patients (100 men and 100 women) visiting the general clinic at al-Sharaee Primary Health Care Center in Makkah were recruited to explore their seasonal flu immunization status. Overall, the age of the participants ranged between 18 and 66 with a mean of 33.96 ± 10.88 years. Only 18.5% of the participants had a history of receiving seasonal influenza vaccine. The majority of the participants claimed that they were at risk of getting flu infection (72.5%). Main sources of information were Ministry of Health (54.0%) and mass media (53.0%). Of the participants, 23% men and 14% women gave information about the history of seasonal flu vaccination with no statistically significant difference. Regarding reasons for seasonal flu vaccine refusal, concern about the vaccine's side effects was the most reported response from both genders (76.6% men and 57.0%women), and overall it was 66.3%. Believing that the vaccine is not safe was the second reported response from both genders (45.5% men and 33.7% of women), and overall it was 39.3%. The difference between men and women was statistically significant ($p < 0.05$).

Conclusion: According to the results of this study, seasonal flu vaccination rate was low although majority of participants claimed that they were at risk of flu infection. Most of the participants believed that the vaccine was not safe. However, it was determined that reasons to refuse were mostly the vaccine's side effects and not believing in the vaccine's protectiveness.

KEY WORDS: Seasonal, flu, vaccine, acceptance, Saudi Arabia

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Introduction

Influenza viruses cause annual epidemics and occasional pandemics that have claimed the lives of millions.[1] Influenza continues to pose a major global public health problem. There is a need to better understand the pathogens and transmission of pandemic influenza viruses so that we may develop improved methods of prevention and control.[2]

The 2009 swine flu pandemic was a global outbreak of a new strain of H1N1 influenza virus, often referred to colloquially as "swine flu." Although the virus, first detected in March 2009, contains a combination of genes from swine, avian (bird), and human influenza viruses, it is not spread by eating pork or pork products.[3,4]

Influenza A virus strains caused three global pandemics during the 20th century: the Spanish flu in 1918, the Asian flu in 1957, and the Hong Kong flu in 1968. It also caused several pandemic threats over the past century, including the pseudo-pandemic of 1947, the 1976 swine flu outbreak, and the 1977 Russian flu, all caused by the H1N1 subtype.[5]

In March 2009, this novel strain of swine-origin influenza-A (H1N1) caused human infection in Mexico and spread to all regions in the world in the following 3 months. On June 11, 2009, the World Health Organization declared that a global pandemic of H1N1 was underway. This action was a reflection of the spread of the new H1N1 virus, not the severity of illness caused by the virus.[6]

The most important step against H1N1 pandemic was prevention, which means, first of all, the adherence to rules of hygiene and the use of vaccination. On the basis of epidemiologic data and worldwide experiences on influenza vaccination, both seasonal and H1N1 vaccinations were recommended for anyone 6 months of age or older who was at risk of becoming ill or of transmitting the viruses to others. Overall, the rates and seriousness of a possible complication of influenza vaccination were much smaller than the risk of serious complications and mortality from influenza infection.[7]

This study was aimed to assess the seasonal flu immunization status among adult patients in Makkah Al-Mokarramah.

Methods

A cross-sectional analytical study was carried out among adult Saudi patients visiting the general clinic at al-Sharaee Primary Health Care Center in Makkah, Saudi Arabia, in June 2013. The Kingdom of Saudi Arabia (KSA) is the largest Arab country in the Middle East occupying about 80% of the Arabian peninsula. Makkah is the holiest city on earth to Muslims, which is located in the western region of the KSA. Health-care services are provided in the holy capital through a network of health-care centers, four general hospitals, and one specialist hospital in conjunction with few private hospitals and several private dispensaries and polyclinics.To make health services accessible to everyone, the city is divided into seven health sectors (Al-sharaee, Al-adel, Al-kakyeea, Al-nwaryeea, Al-zahir, Al-kamel and Kolese). Each sector consists of a group of primary care centers. The researcher conducted his study in al-Sharaee Primary Health Care Centre, which is considered the most crowded primary care center in Al-sharaee sector. It serves a population of approximately 43,000 in Makkah, of which approximately 17,000 are adults and 26,000 below the age of 18 years.

Considering the total number of adult population in the al-Sharaee area (≈17,000) and using Epi Info program for calculation of sample size, it was observed that the rate of seasonal flu immunization accounted for 50%. To get the maximal sample size and by using the worst acceptable percentage as 7%, with 95% confidence level, the calculated sample size was 194 patients, which was rounded off to 200 patients (100 patients from each gender).Systematic random sampling technique according to sample size was adopted. The factorial number was calculated by the estimated number of patients visiting al-Sharaee Primary Health Care Center daily and the given time to collect the data. According to the sample size needed, which was 200 patients during the given period of time (i.e., 4 weeks) and according to the male/female ratio at al-Sharaee area, which is 48% for male and 52% for female, the researcher decided to take 100 male patients in the first 2 weeks of research and an equal number of female patients in the next 2 weeks. Because the number of adults visiting the general clinic exceeded 100 patients for both males and females, the researcher selected 10 subjects every day (i.e., 50 subjects every week, 100 men in the first 2 weeks and 100 women in the next 2 weeks). Therefore, the whole sample size was considered within the available time for data collection.

A self-administered questionnaire was prepared and adapted by the researcher from many references and articles discussing seasonal flu vaccines. The questionnaire was in simple Arabic and pre ample letter was issued to explain the aim of study, request to participate, and appreciation for response.

A pilot study was conducted at al-Sharaee Primary Health Care Centre in Makkah, Therefore, methodology and validity of questionnaire were tested and necessary changes were considered. Such changes included a list of reasons for accepting or refusing seasonal flu vaccination as well as source of information.

Permissions from appropriate authorities were sought, verbal consent was obtained from each patient, and confidentiality of data and ethical issues were considered.

Statistical Package for Social Sciences (SPSS) software, version 18.0, was used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics (Student's *t*-test to compare the means of continuous variables between the two groups and χ^2-test for the association and/or the difference between two categorical variables) were applied. *p*-Value $\leqslant 0.05$ was considered statistically significant.

Results

A total of 200 adult Saudi patients (100 men and 100 women) visiting the general clinic at al-Sharaee Primary Health Care Center in Makkah were recruited to study their seasonal flu immunization status.

Table 1 shows their sociodemographic characteristics. Overall, the age of the participants ranged between 18 and 66 years with a mean of 33.96 ± 10.88 years. The age of

Table 1: Sociodemographic characteristics of the participants (n = 200)

Sociodemographic variables	Males (n = 100)	Females (n = 100)	p-Value
Age (years)			
Range	18-66	18-58	0.027
Mean ± SD	35.66 ± 11.53	32.26 ± 9.96	
Marital Status, N **(%)**			
Single	36 (36.0)	23 (23.0)	0.167
Married	58 (58.0)	66 (66.0)	
Divorced	4 (4.0)	6 (6.0)	
Widow	2 (2.0)	5 (5.0)	
Educational level			
Less than secondary	11 (11.0)	8 (8.0)	0.022
Secondary	43 (43.0)	30 (30.0)	
University	38 (38.0)	59 (59.0)	
Postgraduate	8 (8.0)	3 (3.0)	
Home/Living			
Alone	8 (8.0)	4 (4.0)	0.325
With parents	39 (39.0)	31 (31.0)	
With spouse	10 (10.0)	12 (12.0)	
With spouse and children	43 (43.0)	53 (53.0)	
Job status			
At work	57 (57.0)	60 (60.0)	0.774
Nonworking	43 (43.0)	40 (40.0)	

women, as a separate group, ranged between 18 and 58 years with a mean of 32.26 ± 9.96 years whereas the age of men ranged between 18 and 66 years with a mean of 35.66 ± 11.53 years. The difference between men and women regarding age was statistically significant ($p < 0.05$). Most of the participants from both genders were married (66.0% women and 58.0% men) with no statistically significant difference between them. Less than half of the men were either university (38.0%) or postgraduate (8.0%) degree holders compared to more than half of women (59.0% were university and 3.0% were postgraduate degree holders). The difference between men and women regarding their educational level was statistically significant ($p < 0.05$). More than half of the participants from both groups were employed (60.0% women and 57.0% men); there was no statistically significant difference.

Approximately one-third of the participants (35.0% men and 30.0% women) had history of chronic diseases. In men, diabetes mellitus was reported among 25 patients (25%) and hypertension among 9 patients (9%), whereas in women, diabetes was reported among 6 patients and hypertension among 16 patients. Overall, there was no statistically significant difference between men and women regarding history of chronic diseases. Considering individual chronic diseases, the difference between men and women was statistically significant ($p < 0.01$), as men tend to be more diabetic than females whereas women tend to be more hypertensive than men.

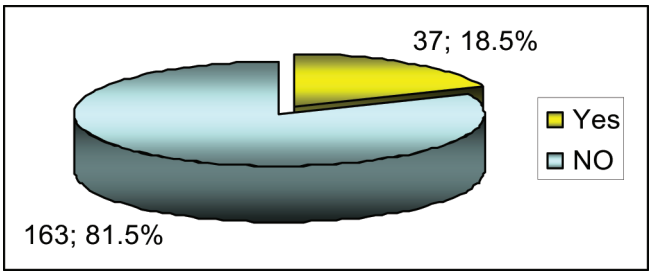

Figure 1: Distribution of the participants according to history of seasonal flu vaccination.

Figure 1 shows that 18.5% of the participants from both genders were vaccinated against seasonal flu. Twenty-three percent men and fourteen percent women had a history of seasonal flu vaccination, as shown in Table 2. However, this difference was not statistically significant. In addition, Table 2 shows that one-third (33.3%) of participants in the age group > 50 years were vaccinated against seasonal flu as compared to only 14.3% and 8.3% of those in the age groups ⩽25 years and 41–50 years, respectively. However, the association between age and seasonal flu vaccination was not statistically significant. Regarding marital status, Table 2 shows that exactly half (50.0%) of divorced participants were vaccinated against seasonal flu as compared to only 11.9% and 19.4% of those singles and married, respectively. These differences were statistically significant ($p < 0.05$). Less educated participants (education below secondary level) were more vaccinated against seasonal flue (31.6%) as compared to those with university level education or higher (19.6% and 9.1%). However, the difference was not statistically significant (Table 2). Home/living status, job status, and history of chronic diseases were not significantly associated with the history of seasonal flu vaccination, as shown in Table 2.

As shown in Figure 2, the majority of participants claimed that they are at risk of getting flu infection (72.5%). Considering gender, 66.0% men and 79.0% women claimed that they are at risk of getting flu infection. This difference was found to be statistically significant ($p < 0.03$).

Table 3 shows the differences between men and women regarding sources of information about seasonal flue. All participants claimed that they had information about seasonal flue. Nineteen percent of the participants reported that they had information about seasonal flu from more than one source. Overall, the main source of information was mass media (53.0%) and Ministry of Health (54.0%). The main source of information was found to be mass media in men (67.0%) and Ministry of Health in women (63.0%). The second source of information was Ministry of Health for men (41.0%) whereas it was mass media for women (39.0%). The Internet was the source of information among 7% and 17% of men and women, respectively. These differences were statistically significant ($p < 0.001$).

From Figure 3, it is obvious that more than half of men (55.0%) and exactly half of women (50.0%) claimed that seasonal flu vaccination was useful whereas only 7% of

Table 2: Predictors for seasonal flu vaccination among participants (*n* = 200)

Variables	Seasonal flu vaccination		*p*-Value
	Yes (*n* = 37) , no. (%)	No (*n* = 163), no. (%)	
Age (years)			
⩽25 (*n* = 56)	8 (14.3)	48 (85.7)	
26–40 (*n*=90)	20 (22.2)	70 (77.8)	0.087
41–50 (*n* = 36)	3 (8.3)	33 (91.7)	
>50 (*n* = 18)	6 (33.3)	12 (66.7)	
Gender			
Male (*n* = 100)	23 (23.0)	77 (77.0)	0.072
Female (*n* = 100)	14 (14.0)	86 (86.0)	
Marital status			
Single (*n* = 59)	7 (11.9)	52 (88.1)	
Married (*n* = 124)	24 (19.4)	100 (80.6)	0.038
Divorced (*n* = 10)	5 (50.0)	5 (50.0)	
Widow (*n* = 7)	1 (14.3)	6 (85.7)	
Educational level			
Less than secondary (*n* = 19)	6 (31.6)	13 (68.4)	
Secondary (*n* = 73)	11 (15.1)	62 (84.9)	0.328
University (*n* = 97)	19 (19.6)	78 (80.4)	
Postgraduate (*n* = 11)	1 (9.1)	10 (90.9)	
Home/Living			
Alone (*n* = 12)	5 (41.7)	7 (58.3)	
With parents (*n* = 70)	10 (14.3)	60 (85.7)	
With spouse (*n* = 22)	5 (22.7)	17 (77.3)	0.145
With spouse and children (*n* = 96)	17 (17.7)	79 (82.3)	
Job status			
At work (*n* = 117)	24 (20.5)	93 (79.5)	0.248
Nonworking (*n* = 83)	13 (15.7)	70 (84.3)	
History of chronic diseases			0.421
Yes (*n* = 65)	13 (20.0)	52 (80.0)	
No (*n* = 135)	24 (17.8)	111 (82.2)	

men and 5% of women claimed that it was not useful. The difference between men and women was not statistically significant.

Table 4 shows the reasons for having seasonal flu vaccination among those had it (*n* = 37). To follow the Ministry of Health recommendations was the most reported response from both genders (82.6% and 78.6% of men and women,

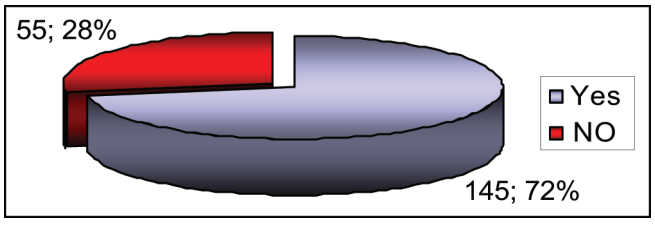

Figure 2: Concerns of the participants regarding the risk of seasonal flu infection

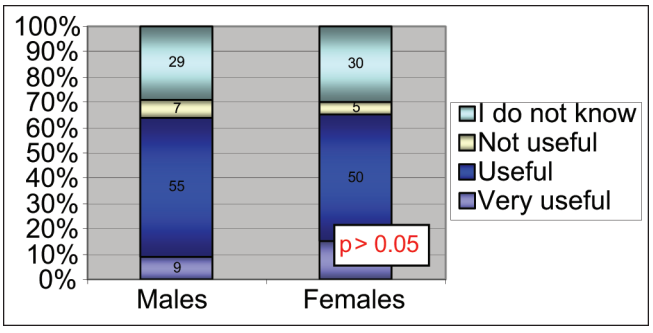

Figure 3: Comparison between men and women regarding usefulness of seasonal flu vaccination

Table 3: Source of information regarding seasonal flu among participants (n = 200)

Source of information	Males (n=100), no. (%)	Females (n=100), no. (%)	Total (n = 200), no. (%)
Mass media	67 (67.0)	39 (39.0)	106 (53.0)
Internet	7 (7.0)	17 (17.0)	24 (12.0)
Ministry of Health	41 (41.0)	63 (63.0)	104 (52.0)
Friends	9 (9.0)	6 (6.0)	15 (7.5)

Table 4: Reasons for accepting seasonal flu vaccination (n = 37)

Reasons	Males (n = 23), no. (%)	Females (n = 14) no. (%)	Total (n = 37) no. (%)
It is effective	12 (52.2)	9 (64.3)	21 (56.8)
To decrease the transmissionin high-risk patients	8 (34.8)	3 (21.4)	11 (29.7)
To follow the Ministry of Health recommendations	19 (82.6)	11 (78.6)	30 (81.1)

p = 0.685

respectively) and overall (81.1%). Claiming that the vaccine was effective was the second reported response from both genders (52.2% and 64.3%), and overall it was 56.8%. Decreasing the transmission to high-risk patients was the least reported response from both genders; 34.8% men and 21.4% women, and overall it was 29.7%. The difference between men and women was not statistically significant.

Table 5 shows the reasons for refusal of seasonal flu vaccination among those rejected it (n = 163). Concern about side effects of the vaccine was the most reported response from both genders (76.6% and 57.0% of men and women, respectively), and overall it was 66.3%. Believing that the vaccine was not safe was the second reported response from both genders (45.5% and 33.7% of men and women, respectively), and overall it was 39.3%, followed by the desire to avoid medications in men (27.3%) and believing that the vaccine was not effective in women (32.6%). The difference between men and women was statistically significant ($p < 0.02$).

Discussion

In this study, only 18.5% of the participants got vaccinated against seasonal flu. Although a majority of them claimed that they are exposed to the risk of flu infection and the seasonal flu vaccine was useful. This low rate of vaccination was similar to that reported in Turkey, Greece, Germany, and Italy.[8–11]

A rapid increase in the number of pandemic influenza cases worldwide and the heightened saturation of information about the disease and its spread enforce a high percentage of our respondents from both genders to believe that they were at risk of contracting the infection. In another study, a low level of anxiety toward flu has been reported.[12] This could be attributed to the nature of our population who are more anxious about their health status.

It is important to know what proportion of the population is concerned about contracting a disease because those who are concerned would be expected to take more precautions. In a telephonic survey of 2,081 persons aged 16 years or over, the New South Wales Department of Health found that only 48.3% of those interviewed were willing to comply with precautionary measures.[13] In the present study, more than two-thirds of all participants (72.0%) reported that they are at risk of contracting flu infection. The concern was significantly higher among women (79.0% versus 66.0%). Those with a higher level of education were more vaccinated.

In this study, most of the participants expressed belief that they found the vaccine neither protective nor safe. Similarly, in another study conducted in Hong Kong, 61.0% of the participants believed that the vaccine was not protective, and 63.0% of them believed that the vaccine was unsafe, as clinical experiments were not performed. Evidence about safety and efficacy was critical in determining the prevalence of uptake of vaccination.[14] Thus, health-care workers (HCW)

Table 5: Reasons for refusal of seasonal flu vaccination (n = 163)

Reasons	Males (n = 77), no. (%)	Females (n = 86), no. (%)	Total (n = 163), no. (%)
Desire to avoid medications	21 (27.3)	7 (8.1)	28 (17.2)
Concern about vaccine's side effects	59 (76.6)	49 (57.0)	108 (66.3)
Belief that the vaccine was not effective	12 (15.6)	28 (32.6)	40 (24.5)
Belief that the vaccine was not safe	35 (45.5)	29 (33.7)	64 (39.3)
The risk of acquiring disease was low	11 (14.3)	8 (9.3)	19 (11.7)
Not belonging to the groupsrecommended for vaccination	11 (14.3)	4 (4.7)	15 (9.2)
Fear of injection	4 (5.2)	4 (4.7)	8 (4.9)
Forgetting	4 (5.2)	2 (2.3)	6 (3.7)
It is an obligation from the Ministry of Health	6 (7.8)	12 (14.0)	18 (11.0)

$p < 0.02$

and the general public have to be convinced about efficacy and safety of the vaccine.

In terms of order of importance, "Declarations of the Ministry of Health," "Effectiveness of the vaccine" and "Decrease the transmission to high-risk patients" became influential in participant's vaccination. Results of study by Chor *et al*.[15] on HCW are in line with this study, and the most common reasons for uptake of the vaccine were stated as "protection demand" and "advice of health authorities."On the basis of these studies, we can say that health authorities' announcements and publications made through media and similar modes have a positive effect on vaccination.

Reasons such as "side effects of the vaccine," "not believing in the protectiveness of the vaccine," "believing that the vaccine was not safe," and "desire to avoid medications" are influential factors in participants' refusal to get vaccinated. In a study carried out in Turkey among HCW, same reasons have been reported including the Prime Minister's personal refusal of getting vaccinated as well as negative news about the vaccine in the media.[8] However, the most important obstacles defined in the study of Chor *et al*.[15] were "being anxious about the side effects" and "suspicions about the vaccine's safety." In another study, reasons to refuse the vaccine were expressed as anxiety about the vaccine's safety and efficiency.[16] It was found that there was anxiety about the safety, efficacy, and necessity of the vaccine.

In the study by Rachiotis *et al*.[9], the main reason to refuse the vaccine was fear of side effects, which was stronger in those who received information on the safety of the vaccine mainly from the mass media. In addition, the Turkish study reports that anxiety levels of people who did not rely on the vaccine were found to be significantly higher than those who relied on the vaccine. However, the levels of anxiety were not significantly high in those people.[8]

In a study conducted in Hong Kong that examined precautionary measures taken for SARS threat, , it is reported that young, less educated men were the least likely to take precautionary measures.[17] These findings differed from the results presented by Di Giuseppe *et al*.[18] who found that those with a higher perception of risk had a lower level of education and a lower socioeconomic level but were more likely to comply with precautionary measures that would limit the spread of the disease.

According to the results of this study and others, it is important to overcome this anxiety and to enable safety to convince people to get vaccinated in special vaccination campaigns. In our study, the advice of health authorities had a positive effect on people's decision to get vaccinated.

This study has several strengths. To the best of our knowledge, this is the first study conducted in Makkah, KSA to assess vaccination rate and factors associated with vaccine acceptance. In addition, it provides additional important information on the obstacles in vaccination. One weaknesses of this study is that it was conducted only in one center and had relatively low number of participants. In a recent review of behavioral responses to influenza pandemics in the 20th century,[19] it is reported that hand hygiene and respiratory etiquette were the only two measures that had strong support by scientific literature to lessen the spread of the diseases. School closure and screening of travelers had legal and ethical consequences when implemented whereas the other four measures, including isolation and wearing of a surgical mask or an N95 mask, are not cost-effective and would be difficult to implement over longer periods.[20,21] In this study, seasonal flu vaccination was the only studied measure for prevention.

Conclusion

According to the results of this study, seasonal flu vaccination rate was low although majority of participants claimed that they were at risk of flu infection. Most of the participants believed that the vaccine was not safe. However, it was determined that reasons of refusal were mostly the vaccine's side effects and not believing in the vaccine's protectiveness.

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