

Beliefs regarding influenza vaccination among Healthcare workers in Jizan

Mohammed A. Khormi, Abdullah S. Majrashi, Ali A. Salawi, Yahya A. Doshi, Hussein A. Sanba, Akram M. Alhazmi, Ahmed H. Altaher, Khadija M. Mashhor

Abstract: Influenza is considered as a serious disease that may lead to severe complications and even death. Annually, tens of thousands die from flu-related complications worldwide. Flu vaccines provide adequate protection from infection with influenza viruses. It's crucial that healthcare workers get vaccinated against influenza. However, the vaccination rates are usually low. This may be due to unawareness of influenza disease seriousness in addition to some concerns regarding efficacy and safety of flu vaccine.

Objectives: This study was conducted to assess the awareness level about flu vaccine among healthcare workers in Jizan, Saudi Arabia.

Subjects and methods: This was a cross-sectional study. An anonymous web-based questionnaire about demographic characteristics in addition to participants' knowledge in relation to vaccination was filled by 329

participants from Jizan, Saudi Arabia.

Results: Level of participant's knowledge about flu vaccine was found to be significantly affected by several factors including occupation where the highest scores were reported among physicians, pharmacists and nurses ($p < 0.001$). In addition, workers in the clinical field got significantly higher scores compared to those working in the non-clinical field ($p = 0.001$). Participants who intend to receive the flu vaccine for the next season showed significantly higher knowledge scores ($p < 0.001$).

Conclusion: It's very important to ensure a high level of awareness among healthcare professionals about flu vaccination in order to improve vaccination rates and mitigate the risks associated with flu infections in Saudi Arabia.

Keywords: Influenza, Seasonal Flu, Vaccination, Knowledge, Saudi Arabia

Introduction: Influenza is considered as a serious disease that can result in significant rates of morbidity and mortality. It can cause severe complications and even death. Pulmonary complications are very common and mainly include primary and secondary bacterial infection. They both may cause pneumonia.¹

There are some differences between flu seasons. Moreover, people get affected with influenza infection differently based on their characteristics. However, millions of patients get infected every year, hundreds of thousands are hospitalized and tens of thousands die from flu-related complications worldwide.²

The main strategy for controlling and prevention of influenza (seasonal or pandemic) for the past decades has been vaccination.^{3, 4}

A meta-analysis was conducted in 2011 to explore the effectiveness of influenza vaccines. The findings included that the vaccines provide moderate protection against influenza. The vaccine consistently shows adequate efficacy in children aged up to 7 years. However, the evidence of protection among elderly individuals aged 65 years or more is not enough.⁵

It's crucial that healthcare workers (HCWs) get vaccinated against influenza every year. This is because vaccination of HCWs will eventually minimize the morbidity and mortality associated with influenza among patients.⁶

However, the vaccination rates are usually low. The most commonly reported reasons for not getting vaccinated include that some HCWs don't believe that the vaccine works adequately. Other HCWs think that they don't need to get vaccinated.⁷

There is no doubt that increasing the awareness of flu vaccination importance among HCWs can significantly enhance their adherence and compliance to vaccination recommendations that will eventually have a positive effect on their patients.⁸ The current study was conducted to assess the awareness level about flu vaccination among healthcare workers in Jizan, Saudi Arabia

Materials and Methods

Subjects: This cross-sectional study was conducted using an anonymous web-based questionnaire. A total of 329 healthcare workers from Jizan, Saudi Arabia took part in this survey.

Participants were asked to fill an anonymous questionnaire about their demographic characteristics, occupation, medical history and flu vaccination history in addition to other questions related to their knowledge in relation to flu vaccination. The study was conducted during the period from 30-October-2017 to 18-November 2017. Institutional review board approval was obtained before conducting any study-related procedures.

Data collected: The questionnaire was consisted of 27 questions. Eight questions collected general information about age, gender, nationality, religion, marital status and occupation. Seven questions were about medical history and flu vaccination history. The remaining 12 questions collected data about knowledge of healthcare workers in relation to the importance of flu vaccination. A five-point likert scale was used in each question.

Provided options for knowledge module included (strongly agree, agree, neutral, disagree or strongly disagree). A relevant score from 1 to 5 for each of the previous answers was assigned. The total knowledge score for each patient was calculated based on his answers and the scores were correlated to demographic characteristics, occupation, medical history and flu vaccination history.

Statistical analysis: Data were statistically described in terms of frequencies (number of cases) and valid percentages for categorical variables. Mean, standard deviations, minimum and maximum were used to describe numerical variable. Comparison of numerical variables between the subgroups was done using Kruskal Wallis test for non-parametric data. Spearman's correlation was used to investigate the relationship between non-parametric numerical variables. P values less than 0.05 were considered statistically significant. All statistical calculations were done using computer program IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA) release 21 for Microsoft Windows.

Results

Participants' characteristics: Age of participants ranged from 18 to 55 years with a mean (\pm SD) value of 28.07 \pm 6.7 years. Out of 329 participants, 59.4% were males and 40.6% were females.

Half of the participants (50%) were single, 46.6% were married, 3.1% were divorced and 0.3% were widowed.

Regarding nationality, 92.9% of participants were Saudi while 7.1% were of other nationalities. While regarding religion, 98.5% were Muslims, 1.2% were Christians while 0.3% were of other religions.

Regarding occupation, 20.1% of the participants were physicians, 9.9% were pharmacists, 11.7% were nurses, 5.2% were administrative worker, 12.3% were technicians and 40.7% occupy other positions in the healthcare sector.

When asked about the nature of their work in the healthcare sector, 66.9% answered that their work is clinical while the work nature of 33.1% was non-clinical.

Regarding the number of years of working in the healthcare field, the majority of participants (64.3%) answered that they have been working for less than 5 years, 22.3% have been working for 5 to 10 years while 13.4% have been working in the healthcare field for more than 10 years.

Table 1 Demographics of participants

Age (years)	Minimum	Maximum	Mean	Std. Deviation
	18.0	55.0	28.07	6.7
Gender	Males		Females	
	Count	%	Count	%
	193	59.4	132	40.6

Nationality	Saudi				Not Saudi						
	Count		%		Count		%				
	301		92.9		23		7.1				
Religion	Muslim		Christian		Other						
	Count		%		Count		%				
	318		95.8		4		1.2				
Working years	<5 years		5 to 10 years		> 10 years						
	Count		%		Count		%				
	202		64.3		70		22.3				
Nature of Work	Clinical				Non-Clinical						
	Count		%		Count		%				
	214		66.9		106		33.1				
Marital status	Single		Married		Divorced		Widowed				
	Count		%		Count		%				
	117		36.3		194		60.2				
				9		2.8		2		0.6	

Medical history: The majority of participants (84.2%) reported that they have at least one medical condition while 15.8% didn't report any previous medical conditions.

Bronchial asthma was the most frequent condition as reported in 25 (7.6%) participants, followed by diabetes as reported in 16 (4.9%), renal disorders as reported in 9 (2.7%) and cardiovascular disorders as reported in 6 (1.8%) participants.

Influenza and vaccination status: Participants were asked if they have ever been diagnosed with influenza where 39.5% said "no", 37.7% said "yes" and 22.8% said that they are not sure.

The majority of participants (71.6%) said that they have been vaccinated against influenza at least one time before while 28.4% said that they have never been vaccinated against influenza or they can't remember. A total of 22.2% reported that they were vaccinated once, 18.8% were vaccinated twice, 28.7% were vaccinated more than twice while 30.2% said that they were not vaccinated or they can't remember the number of vaccination times.

Regarding vaccination for the current season (2016/2017), 37.0% said that they were vaccinated while 63.0% were not vaccinated for this season. While regarding vaccination for the next season, 46.3% said that intent to get vaccinated, 38.9% said that they are not sure while 14.6% said that they will not get vaccinated.

Level of knowledge among healthcare workers: The knowledge score of participants ranged from a minimum value of 29 to a maximum value of 56 (out of 60) with a mean (\pm SD) of 42.3 \pm 4.7. Significantly different scores were reported among certain subgroups while some factors were found to have no significant effect on the

knowledge score. This will be detailed in the coming sections.

Factors affecting knowledge of healthcare worker regarding vaccination:

Demographics: Data showed no significant correlation between age and knowledge score (Spearman's correlation coefficient is 0.04, $p=0.488$).

The same as age, gender was found to have no significant effect on knowledge score ($p=0.419$).

The same as gender and age, nationality was found to have no significant effect on knowledge ($p=0.183$).

The same was reported for marital status as the knowledge score of single, married, divorced and widowed participants didn't differ significantly ($p=0.831$).

Occupation: Unlike demographics, occupation was found to significantly affect the knowledge score as follows. Significantly higher knowledge scores ($p < 0.001$) were reported among physicians, pharmacists and nurses compared to other groups. The same was reported for the nature of work where workers in the clinical field got significantly higher scores ($p = 0.001$) compared to those working in the non-clinical field. On the other hand, number of working years showed no significant effect on knowledge score ($p = 0.742$).

Medical history: Knowledge scores of participants suffering from one or medical conditions didn't differ significantly from scores of participants with one or more medical condition ($p = 0.172$). In addition, previous diagnosis with influenza was found to have no significant effect on knowledge score ($p = 0.117$).

Status of influenza vaccination: Participants who were previously vaccinated against influenza showed significantly higher knowledge scores ($p < 0.001$) compared to those who were not previously vaccinated or don't remember.

Number of previous influenza vaccination significantly affected the knowledge score ($p = 0.001$) as the highest scores were reported among participants who were vaccinated 3 times or more followed by those who were vaccinated twice and those who were vaccinated one while the lowest scores were reported among participants who were not vaccinated before.

Moreover, significantly higher scores were reported among participants who got vaccinated for the current season ($p = 0.001$) and those intending to get vaccinated for the next season ($p < 0.001$).

Discussion

According to the Saudi guidelines for the prevention and control of seasonal influenza in healthcare settings, influenza infection can be introduced to a healthcare setting by patients, HCWs, or visitors. In addition, influenza outbreaks can occur and lead to increased absenteeism and decreased productivity among the staff. Hospital reports on influenza outbreaks provide evidence on the associated high risks. HCWs may transmit the infection to their patients specially those who are at high risk of the disease.⁹

The influenza surveillance in Saudi Arabia was published in 2017 in order to provide reliable and accurate information in order to make sure that the health systems are well-prepared against influenza to ensure protection of populations and individuals.¹⁰

This surveillance highlights the crucial role of healthcare workers in prevention and controlling influenza infection. Knowing that vaccination is the cornerstone for prevention of influenza infection because of its high efficacy in enhancing antibody production in vaccinated humans, it is important to make sure that the awareness level of healthcare workers about influenza is adequate and continuously monitored for identification of any areas for improvement.¹¹

This cross-sectional study was conducted to assess the awareness level about flu vaccine among healthcare workers in Jizan, Saudi Arabia using a web-based anonymous questionnaire. Responders were of different specialties of healthcare workers including physicians, pharmacists, nurses, administrative worker, technicians and workers in other positions in the healthcare sector.

Collected data showed an average (\pm SD) knowledge score of 42.3 ± 4.7 . This level is not satisfactory due to the high importance of HCWs recommendation and public education as key elements to enhancing influenza vaccination coverage rates.¹²

More than one third of participants (37.0%) said that they got vaccinated for the current season (2016/2017). This is higher than the vaccination rate in 2015 as reported in a previous study conducted in Saudi Arabia where the seasonal influenza immunization coverage rate was 20.7%.¹³

However, both percentages of vaccination coverage are still far from the target standard of 90% coverage among HCWs.¹⁴

In our study, no significant association was found between the level of knowledge and each of participants' age ($p = 0.488$), gender ($p = 0.419$), nationality ($p = 0.183$), or marital status ($p = 0.831$). On the other hand, occupation was found to significantly affect the knowledge score where significantly higher scores ($p < 0.001$) were reported among physicians, pharmacists and nurses. In addition, workers in the clinical field got significantly higher scores ($p = 0.001$) compared to those working in the non-clinical field.

This means that tailored educational programs and awareness campaigns should be conducted to healthcare professionals because they are the most reliable advisors for the Saudi population.¹⁵

Conclusion

The current study findings suggest that the levels of awareness as well as flu vaccination coverage among healthcare workers in Jizan, Saudi Arabia are far from the targeted levels. In addition, awareness level is highly affected by the occupation. And accordingly, conducting tailored awareness campaigns and educational programs for

each specialty will ensure better delivery of essential information about flu vaccination and eventually help controlling the disease through efficient immunization.

Additional studies in the same area are needed in order to further highlight the gaps in knowledge about flu vaccination among healthcare workers in Saudi Arabia in order to improve vaccination rates and ensure homogenous immunity among the population.

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