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Research Article

Influenza Vaccine Uptake among Palestinian Hospitals' Health Care Workers: Barriers and Motivators

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Abstract

Background

Immunization of health care workers (HCWs) is beneficial and effective in reducing nosocomial infections among elderly patients and other patients at risk. In the meantime, it has also been promoted as means of reducing staff illness. This study aims to identify influenza vaccine uptake by HCWs in North West Bank and to assess the reasons for accepting or rejecting the vaccine.

Methods

A cross sectional study was conducted using a structured self-administered questionnaire. A Proportionate stratified sampling technique was used to select the study participants from the North West Bank hospitals during Jan 2014.

Results

Influenza vaccination uptake was reported among 21% of among the Health care workers. The most common motivators for being vaccinated were being afraid of transmitting flu to family (70.5%) and to patients (53.8%), while concerns that the healthy person does not need vaccination (49%) and thoughts that the vaccine is not effective against swine flu (41.1%) were the most common barriers for not being vaccinated

Conclusions

Uptake of influenza immunization among HCWs is low. Attitudes to one's health and to the value of influenza immunization affect the uptake. Health authorities should build message highlighting how the benefit of vaccination outweighs risk.

Keywords: Health Care Workers; Influenza Vaccine; Motivators; Barriers; Palestine.

Introduction

Influenza is a major health problem affecting all people, mainly elderly, children, and people with co-morbidities [1, 2]. It greatly contributes to global mortality and morbidity and has important economic consequences. Each year, seasonal flu affects 5-10% of the world's population, causing 3-5 million severe infections and resulting in 250 000-500 000 deaths [3]. Nosocomial transmission of influenza is an important cause of patient morbidity and mortality, and healthcare workers (HCWs) are the most significant reservoirs [4, 5].

Influenza vaccination is the most effective means of preventing influenza virus infection and its potential severe complications. Immunization of HCWs is thought to be beneficial and effective in reducing nosocomial infections among high risk patients [5]. Immunizing HCWs prevents a significant number of influenza infections, hospitalizations, and deaths among the patients they care for [6-8]. A study of 20 hospitals found that mortality among patients was significantly lower in the hospitals providing HCW with influenza vaccination [8].

The World Health Organization (WHO) and The Centers for Disease Control and Prevention (CDC) recommends that all HCWs should receive the influenza vaccine annually [9, 10]. Consequently, there has been a trend to recommend immunization of HCWs in many Countries. Despite this, influenza vaccine uptake still low [11].

The influenza vaccination rate is variable between countries in the Middle East countries. A study conducted by Abu-Gharbieh E and her colleagues to determine the vaccination rates of HCWs in three Gulf countries showed that the vaccination rate was 24.7%, 67.2% and 46.4% in UAE, Kuwait and Oman, respectively [12]. Qureshi and his colleagues assessed the influenza vaccine uptake in Saudia Arabia and found it 28% [13].

Many personal and organizational factors have been identified to influence its uptake by HCWs [13, 14]. Attitudes to one's health and to the value of influenza immunization affect the uptake as does the delivery of the immunization program [15], in addition to lack of knowledge about influenza infection and a lack of convenient access to vaccine [16].

Most of the Middle East countries adopt the recommendations and guidelines set by the international health agencies and provide vaccination programs to all HCWs against influenza virus both seasonal and pandemic. In Palestine, the Ministry of Health (MoH) distributes the seasonal influenza vaccine through primary health care directorates freely for HCWs. However, there is no exhaustive and comprehensive data on compliance with influenza vaccine recommendations in Palestine.

The present study was conducted to assess HCWs' attitudes toward influenza vaccination and the extent of their vaccine uptake. Subsequently, future interventions to improve influenza vaccination rates can be better targeted and, therefore, potentially more successful.

Methodology

A cross sectional study was conducted in Jan 2014 using a self-administrated questionnaire. It included 9Governmental and Non-Governmental hospitals in the North West bank of Palestine. The study population represents all HCWs who have direct contact with patients; including physicians and nurses from Surgical, Medical and Pediatric ward and from other specialized wards like Intensive Care Units and Emergency units.

Using 95% confidence level, effect size 20% and a 0.05 absolute precision, the total calculated sample size was 380 HCWs. This number was divided to 160 physicians and 220 nurses based on their proportion in the total study population. To compensate for HCWs' non response, we added an extra 40 HCWs (≈10%) to the calculated sample. Proportionate stratified sampling technique was used to select and invite physicians and nurses. The required sample from each hospital was allocated according to its proportion of the total eligible study population.

The main variables assessed in this study were the Influenza vaccine uptake, and the HCWs' attitude towards influenza infection and vaccine in addition to the barriers hindered the HCWs to uptake the vaccine. A Self-administered, anonymous questionnaire was used as study tool. It was constructed based on literature review and covered the demographics, medical history, and seasonal influenza vaccine uptake of the participants, in addition to causes of receiving or refusing the vaccine.

The questionnaire was pre-tested with a convenient sample of 20 HCWs of the study population to ensure the clarity, time, and ease of administration and refinements were made on the basis of feedback from the pilot test. Those who participated in the piloting were excluded. To assess the internal consistency of the questionnaire, the Cronbach's α was computed and ranged from 0.65 to 0.85 which indicates good and high level of consistency.

SPSS version 17 was used for data entry and analysis. Descriptive statistics of the responses were generated. P values of <0.05 was considered significant and the Chi-squared test was used to assess significant differences between categorical variables. Odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated using multivariable logistic regression, in order to measure the associations between HCWs' characteristics, knowledge and attitudes and vaccination status.

The study was approved by the Institutional Review Broad (IRB) of An-Najah National University and approvals were obtained from the Palestinian MoH and private hospitals ad-

ministrations. Study aim and objectives were attached to each questionnaire and Participants' privacy and confidentiality were assured.

Results

Overall of 420 HCWs (physician and nurse) were approached and invited to assess their influenza vaccination status. A total of 380 physicians and nurses completed and returned the questionnaire giving an overall response rate of 90 %.

The median age of the participants was 32.3 years; ranging from 22 to 67 years. Female gender constituted 41.1% of the participants; 18.5% of them were physicians and 81.5% were nurses. Regarding seasonal vaccine uptake, 21% of the overall participants reported received it (Figure 1). On the other hand, 128 (33%) of the participants reported that they are willing to receive it the next year.

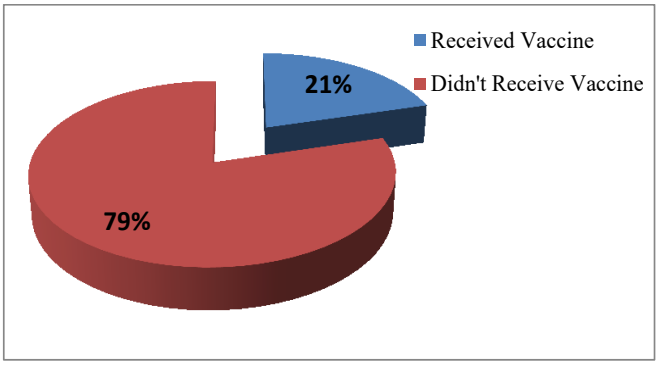

Figure 1. Distribution of vaccine uptake among health care workers.

Vaccine uptake was higher among males and in the age group <30 years. Nurses took the vaccine more than doctors with proportion (1.3: 1). However, these differences between different groups were not statistically significant. Non-governmental hospitals HCWs showed significantly higher vaccine uptake (28.5%) compared to governmental hospitals' HCWs (17%) (P-value=0.008). One quarter of participants who indicated that they deal with high risk patients received the influenza vaccine compared to about 11% of the participants who stated that they don't deal with high risk patients (p-value=0.02) (Table 1).

The reasons for being vaccinated or not are described in table 2 and 3. The frequencies of reasons were almost equal between physicians and nurses. The most common reasons for being vaccinated were being afraid of transmitting flu to family (70.5%) and to patients (53.8%) (Table 2). The most common reasons for being not vaccinated were the concern that the healthy person does not need vaccination (49%) and thoughts that the vaccine is not effective against swine flu (41.1%) (Table 3).

Table 1. Characteristics of participants in relation to influenza vaccine uptake.

Characteristic	Vaccinated No=78 (%)	Not Vaccinated No=302 (%)	P-value*
Age			
< 30 years	28 (35.9%)	142 (47.0%)	0.329
30-39 years	26 (33.4%)	90 (29.8%)	
40-49 years	15 (19.2%)	45 (14.9%)	
≥ 50 years	9 (11.5%)	25 (8.3 %)	
Gender			
Male	49 (21.8%)	175 (78.2%)	0.435
Female	29 (18.6%)	127 (81.4%)	
Work Function			
Physicians	28 (17.5%)	132 (82.5%)	0.213
Nurse	50 (22.7%)	170 (77.3%)	
Work Place			
Governmental	43 (16.7%)	214 (83.3%)	0.008
Private	35 (28.5%)	88 (71.5%)	
Work Experience			
≤5 years	30 (38.5%)	179 (47.1%)	0.225
6-15years	30 (38.5%)	128 (33.7%)	
> 15 years	18 (23%)	73 (19.2%)	
Current Smoker			
Yes	30 (24.2%)	94 (75.8%)	0.281
No	48 (18.7%)	208 (81.3%)	
Contact with high risk Patients			
Yes	64 (25%)	191(75%)	0.02
No	14(11.2%)	111(88.8%)	

*Chi-squared test

It is worth to mention the statistically significant reasons of rejecting the vaccine when comparing nurses to physicians; 16.6% of physicians concern about vaccine side effects whereas 36.4% of nurses do that (p-value <0.001). Surprisingly, 20% of nurses are afraid of injections in contrast to 4% of physicians (p-value<0.001) (Table 3).

Table 2. Reasons cited by physicians and nurses for being vaccinated (n=78)

Reasons of accepting vaccination	Total HCWs (n=78)	Physicians (n=28)	Nurses (n=50)	p-value*
Afraid of transmitting flu to family	55 (70.5%)	19(67.8%)	36(72%)	0.772
Afraid of transmitting flu to patients	42 (53.8%)	16(57.1%)	26(52%)	0.603
Afraid from swine flu	42 (53.8%)	12(42.8%)	30(60%)	0.159
I deal with high risk patients	38 (48.7%)	13(46.4%)	25 (50%)	0.811
MOH recommendations	38 (48.7%)	14(50%)	24 (48%)	0.811
Influenza is dangerous	23 (29.5%)	5 (17.8%)	18(36%)	0.098

Participants rated their level of agreement for a series of statements regarding Influenza disease and vaccine (Table 4). More than two third (71.8%) of vaccinated HCWs perceived themselves susceptible to influenza infection compared to 56% of the non-vaccinated group (p-value=0.011). Regarding severity, 30.8% of vaccinated HCWs think that influenza is a life threatening disease compared to only 15.9% of the non-vaccinated group (p-value=0.003). Moreover, majority of the vaccinated group (64.1%) feel protected when receive the vaccine in con-

trary to the unvaccinated group (p-value<0.001). Only 18% of vaccinated HCWs doubt about the efficacy of vaccine compared to 35.6% of the unvaccinated group (p-value=0.003).

Table 3. Reasons cited by physicians and nurses for not being vaccinated (n=302).

Reasons for rejecting vaccination	Total HCWs (n=302)	Physicians (n=132)	Nurses (n=170)	p-value
Vaccine is not needed by healthy person	148 (49%)	67 (50.7%)	81 (47.6%)	0.581
Vaccine is not effective against swine flu	124 (41.1%)	43 (32.5%)	81 (47.6%)	0.006
No recommendations from MOH	97 (32.1%)	44 (33.3%)	53 (31.1%)	0.688
Concerned about sides effects	84 (27%)	22 (16.6%)	62 (36.4%)	<0.001
Vaccine is not available	48 (15.9%)	21 (15.9%)	27 (15.8%)	0.997
Afraid of injections	42 (13.9%)	6 (04.5%)	36 (21.1%)	<0.001

*Chi-squared test

Table 4. Attitudes and opinions of HCWs in relations to their vaccination status

Question :	Vaccinated	Not Vaccinated	P-Value*
In all Probability I am at risk of getting Influenza			
Agree	56 (71.8%)	169 (56%)	0.011
Disagree or Undecided	22 (28.2%)	133 (44%)	
I am concerned about getting influenza infection			
Agree	36 (46.2%)	117 (38.7%)	0.234
Disagree or Undecided	42 (53.8%)	185 (61.3%)	
I am concerned about getting complications of the disease			
Agree	41 (52.5%)	129 (42.7%)	0.119
Disagree or Undecided	37 (47.5%)	173 (57.3%)	
In case I get Influenza, my life will be threatened			
Agree	24 (30.8%)	48 (15.9%)	0.003
Disagree or Undecided	54 (69.2%)	254 (84.1%)	
In case I get Influenza my work (career) will be affected			
Agree	51(65.4%)	173 (57.3%)	.195
Disagree or Undecided	27 (34.6%)	129 (42.7%)	
I feel better protected if I receive Influenza vaccination			
Agree	50 (64.1%)	118 (39.1%)	<0.001
Disagree or Undecided	28 (35.9%)	184 (60.9%)	
I doubt about the efficacy of Influenza vaccine			
Agree or Undecided	14 (18%)	107 (35.4%)	0.003
Disagree	64 (82%)	195 (64.6%)	
I fear of the side effects of Influenza vaccine			
Agree or Undecided	28 (36%)	119 (40%)	0.571
Disagree	50 (64%)	183 (60%)	

**Chi-squared test*

Predictors of vaccination

Multivariable logistic regression indicated that significant predictors of vaccination are the perceived severity of the disease, the perceived benefit of the vaccine, contact with high risk patients, history of influenza vaccination in the past, and working in private hospitals. On the other hand, the doubt about efficacy of the vaccine affects negatively its uptake (Table 5).

Table 5. Multivariate analysis of factors influencing influenza vaccine uptake.

Variables	OR (95% CI)#	P-value
In all Probability I am at risk of getting Influenza		
Agree	1.55(0.85-2.8)	0.152
Disagree or Undecided*	1	
In case I get Influenza, my life will be threatened		
Agree	1.9 (1.03– 3.6)	0.04
Disagree or Undecided*	1	
I feel better protected if I receive Influenza vaccination		
Agree	2.09 (1.19-3.7)	0.010
Disagree or Undecided*	1	
I doubt about the efficacy of Influenza vaccine		
Agree or Undecided	0.45 (0.22-0.89)	0.022
Disagree*	1	
Work place		
Governmental	0.506(.289-0.88)	0.017
Private*	1	
Contact with high risk Patients		
Yes	2.3 (1.2-4.5)	0.013
No*	1	
History of Influenza vaccine uptake		
Yes	3 (1.66-5.57)	<0.001
No*	1	

* Reference category, # Odds ratios and 95% confidence interval

Discussion

Influenza vaccination of HCWs is cost effective, reduces the productivity losses associated with influenza illness and minimizes the transmission of the disease from HCWs to their patients [17].

This study revealed low uptakes of the influenza vaccine with only 21% HCWs have been vaccinated. This result is lower than what has been reported in the United States (34.7%) [3], UAE (27%), Oman (46.4%) Kuwait (67.2%) [12] and Jerusalem (52.8%) [18]. This low vaccination uptake rate among HCWs in Palestine could be due to the lack of appropriate information about influenza vaccine and the perceived severity and benefits, which could constituted an important reason for not being vaccinated.

Previous history of influenza vaccination is positively associated with HCWs' decision to take the vaccine. The results from multivariable logistic regression showed that if the HCW takes the influenza vaccine previously, he is three times more likely to take influenza vaccine [OR=3, P-value<0.001]. This is in agreement with previous researches, which considered the history of receiving seasonal influenza vaccine as a positive predictor for receiving influenza vaccine [19, 20]. These findings suggest that previous attitudes and practices toward seasonal vaccine are strong predictors of current seasonal in-

fluenza vaccine uptake.

The vaccination uptake was higher among HCWs who believe they are at risk of getting the infection, those who perceive the influenza as severe infection, and among HCWs who believe the vaccine of benefit in protecting them from Influenza. On the other hand, HCWs who doubt about the efficacy of influenza vaccine are twice less likely to have the vaccine. This is in agreement with other previous studies [19, 21, 22], and it is clearly consistent with the health belief model in explaining why individuals may decide to accept vaccination and, conversely, why they decline; where perceived susceptibility, perceived severity and perceived benefit are among the main elements in decision process for up-taking immunization [23].

More than one fourth (28.5%) of HCWs at Non- Governmental hospital took the vaccine compared to 16.7% of HCWs at Governmental hospital. This could be explained by the fact that the vaccine was available at each Non- Governmental hospital, where as for the Governmental hospital HCWs they should take it from the primary health care directorate in each district. Availability of the vaccine at the workplace is a motivator to increase the uptake and to improve compliance. Some studies report improved uptake when the immunization is brought to the patient care areas [24]. This result should not mislead us and cancel the fact that, besides making the vaccine available at the workplace, intensified advertising campaign and offering a choice of influenza vaccines should be taken into consideration. Many studies indicated that making the vaccine available at the workplaces and advertising it are effective interventions to improve the vaccination rates [25, 26].

The results showed that the contact with high risk patients has positive effect of HCWs decision to take the vaccine. Logistic regression showed that if the HCW has contact with such patients, he/she is two and half times more likely to take influenza vaccine. Findings from previous studies did indicate that HCWs who report looking after high-risk patients show higher uptake for both pandemic and seasonal flu vaccine [27].

MoH recommendations didn't play a major role in convincing HCWs to uptake Influenza vaccine, as only half of vaccinated HCWs took the vaccine because of MoH recommendations. This finding should notify MoH to increase their awareness programs of the effectiveness of Influenza vaccine.

Despite the response rate was good, the study still has some limitations. All results are based on self-reported information therefore making it liable to information bias. However we think that self-reported answers carry good validity, because it is unlikely that participants spent time giving unreliable and biased views of their attitudes and behaviors as well as anonymity of the survey. Furthermore, we were not able to have the access to the list of names of HCWs therefore we couldn't select our sample randomly, which could affect the generalization of the results. Recall bias is another potential limitation; however, the survey was distributed in Jan 2014 of the influenza season in question, thus limiting the amount of time elapsed since the typical influenza vaccination season.

Conclusion and Recommendations

In conclusion, the uptake of influenza immunization by HCWs in hospitals in the North West Bank was sub-optimal. The most common motivators for being vaccinated were being afraid of transmitting flu to family and to patients, while concerns that the healthy person does not need vaccination and thoughts that the vaccine is not effective against swine flu were the most common barriers for not being vaccinated.

A comprehensive, concerted joint effort should be initiated by health care institutions to improve and sustain HCWs influenza vaccination rates at optimal levels. An educational program, aimed at removing the barriers that limit compliance to official recommendations for influenza vaccination, is needed besides ensuring vaccine availability and accessibility, particularly at HCWs work place.

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