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Knowledge, Attitudes and Practice of Health Care Workers in Oncology, Hemodialysis and Transplantation Towards Influenza Vaccination in Isfahan, Iran

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ARTICLE INFO	ABSTRACT

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Introduction: Influenza is a viral disease which is self-limited in immunocompetent patients but it can be dangerous in immunocompromised patients. In these patients, it may lead to severe viral and/or bacterial infection that may often lead to death. Therefore, prevention of influenza in immunocompromised patients is very important; consequently health care workers' belief is also important. This study aimed to evaluate knowledge, attitude and practices of health care workers in oncology, hemodialysis and transplantation towards influenza vaccination in hospitals of Isfahan in 2017.

Methods: In this descriptive cross-sectional study selected health care workers filled a questionnaire. In the first section of the questionnaire the subjects were asked about their demographic characterization and in the second section about their knowledge, attitude and practices. At the end, data were evaluated and analyzed using SPSS software.

Results: This study evaluated 110 units, among which 72 were (65.5%) female and 38 (34.5%) were male. Mean age of individuals was 32.7±7 years and mean time of their working acquaintance was 8.49±6.8 years. Attitude of the health care workers was good but only 58 units from 110 (52.7%) had been vaccinated.

Conclusion: Considering the knowledge and attitude of the participants and their low proportion of vaccination, it seems that there should be programs for improving the vaccination in health care workers in Iran Moreover, Iran should model on the countries that have better vaccination coverage in their health care workers.

Keywords: Influenza, Human, Vaccination, Health Personnel, knowledge, Attitude

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Introduction

The flu is a common cold disease caused by RNA influenza virus. Although the disease is a common cold, but symptoms sometimes are severe. According to the World Health Organization (WHO), a large number of people die of this disease every year, and annually 3 to 5 million people catch the disease and between 250 and 500,000 cases are dead. [1, 2].These figures are different in different countries, and in addition to the pathogenicity and mortality, rates of absence from work and school are also significant. In the United States, 50 in 1000 people are reported to have influenza per year. In this country, 189 million students each year are absent from school because of influenza, and according to statistics, roughly 129 million days a year, the parents and children of these children do not work due to their children's illness [3].

The Eastern Mediterranean Regional Office (EMRO) has a report of over one thousand death in 2010. It also reported over 3672 cases of H1N1 and 147 deaths, up to 10 February 2010 in Iran. Due to the sudden onset of symptoms and muscle aches, influenza is differentiated from other viral causes of common cold [4].

The virus of the disease is transmitted to people in various ways, through three main known ways [5]: 1) Transmission through the droplet 2) Transmission through droplet nuclei or aerosols and 3) Contact transmission.

Children under the age of two, the elderly over the age of 65, people with chronic diseases such as heart, lung, kidney, liver, blood and metabolic diseases such as diabetes and immunocompromised patients increasingly develop the risk of having the disease, and influenza can lead to issues such as hospitalization, the need for medical treatments and even death in these patients [2, 6]. As stated, people who are vulnerable and susceptible to influenza are immunocompromised. Immunity of these patients may be due to different reasons: such as taking immune suppressive drugs, having exposure to radiation, malnutrition, or developing immune-comprising diseases. These patients are susceptible to infectious diseases, including influenza, and studies indicate their high mortality rates, for example, in a study by Cooksley, et al., the rate of flu-related mortality in cancer patients is estimated up to 9% [7].

The most important factors in the transmission of the disease to the patients, and especially to vulnerable patients, are health personnel, either nurses or doctors. The statistics show that 11 to 59 percent of health care workers may be infected with influenza [2, 8]. Although influenza patients can be treated with anti-influenza drugs, vaccination of patients, especially patients at risk, is of paramount importance [9]. On the other hand, health personnel can also prevent the onset of disease by vaccination and ultimately the spread of the disease to other patients. However, studies show that vaccination is not welcomed by all health personnel. This is especially important for nurses and doctors who take care of the immunocompromised patients (such as transplant unit nurses), and they may transmit the disease to their patients   if they are not vaccinated.

Therefore, it is important to study the lack of willingness of this group of health care personnel to influenza vaccination, and the barriers should be identified and resolved as far as possible, to eliminate the risk of the transmission of disease from this group to the immunocompromised patients According to the above mentioned statements, studying the knowledge, attitude and performance of this group of health personnel is important. This study tried to evaluate these criteria in personnel who were working in the oncology, hemodialysis and transplantation units of hospitals affiliated to Isfahan University of Medical Sciences.

Methods

This is a cross-sectional descriptive study which was carried out in 2017 in wards of Onychology, Hemodialysis and transplant of hospitals, affiliated to Isfahan University of Medical Sciences.

Based on a census of employees in these sectors, the total number of people surveyed was estimated

to be 140, including 90 in oncology, 35 in hemodialysis and 15 in transplant wards. The study population consisted of nurses, doctors, health care workers and assistants of the above mentioned units.

In this survey, people in the selected sectors were chosen by census and after obtaining informed consent, they enrolled in the study. The staffs that did not fill out the questionnaire completely or during the completion of the questionnaire resigned from the study for specific reasons were excluded. Finally, 110 participants who completed the questionnaires carefully were included in the study and the the data were analyzed.

At the beginning, a questionnaire for validity and reliability was provided to a member of the faculty of social medicine and three faculty members of the infectious ward of Alzahra Hospital in Isfahan. After obtaining their consent, the questionnaire was given to twenty employees of the selected units. After completing them, the validity, internal and external reliability of the questionnaire were evaluated by Cronbach's alpha (85%) and Intraclass Correlation Coefficient (ICC) (0.87). After this step, a validated questionnaire was distributed among all employed personnel in the selected sectors and they were asked to carefully study and complete it.

The first part of the questionnaire was about the demographic characteristics of the selected research units' worker: age (years), gender (male and female), education (level), occupation (doctor, nurse, caregiver and services) and work experience (in terms of year). The participants were also asked about the special diseases that they might have including cardiovascular disease, chronic respiratory disease, kidney disease, liver disease, blood diseases, metabolic diseases (such as diabetes), autoimmune diseases and other diseases, for which use of the flu vaccine might be necessity.

In the second part of the questionnaire, the level of knowledge, attitude and performance of the participants were asked. It consisted of 34 questions, categorized in three parts: knowledge, attitude, and performance.

At the end of the study, the data were analyzed using SPSS statistical software, related tables were drawn and the appropriate statistical tests were carried out.

This study is approved by ethical committee of research in Isfahan University of Medical Sciences and the number IR.MUI.rec.1396.3.1392 is assigned to it.

Results

In this study, 110 subjects participated, 72 (65.5%) were female and the remaining 38 (34.5%) were male.

The mean age of the subjects was 32.7 ± 7 years and their mean of their working occupation was 8.49 ± 8.9 years. 74 (67.3%) of the subjects were nurses (Table 1).

Table 1. Frequency of subjects participating in the study according to their job

Frequency Job	Frequency	Relative frequency
Physician	13	11.8%
Nurse	74	67.3%
Health crew	14	12.7%
Service crew	9	8.2%
Total	110	100%

A: Participants' Knowledge Score:

In this section, 8 questions were considered. The correct answer was scored one and the incorrect answers or questions that were not answered, the score was considered zero, and finally the total score obtained was considered as the evaluation criterion for the level of knowledge in participants.

The questions that are used to assess the participants' knowledge are given in the table below:

1- Influenza transmission is possible through hospital staff to hospitalized patients.

2. Despite vaccination, there is still the risk of developing influenzaa.

3. The flu for the patients who referd to this unit is important and dangerous.

4. Having special diseases, such as cardiovascular disease or chronic illness, increase the need for vaccination.

5. When is the best time to get vaccinated?

Early spring □   before the onset of influenza season □   in influenza season □

6. What is the most important way to prevent influenza?

Washing hands □   Using vaccination □   Using mask □

7. How often should an influenza vaccine be used?

One-time □   Monthly □   Seasonal □   Annual □

8. How long does vaccination work?

Immediately after injection □   One week □   Two weeks □   One year □

With one point for correct answers and zero points for unanswered or false answers, the minimum score was 0 and maximum was 8, the score obtained was based on the scale of 0 to 20, and the mean score of knowledge was calculated 4.4 75/14 . These scores were classified into three categories: Bad (Under 10), Moderate (10-14) and Excellent (15-20).

These statistics show that, regardless of occupation and education level, most subjects obtained a good score on knowledge, out of a total of 110 participants, 78 (70.9%) obtained high score and 24 (21.8%) obtained middle score, and only 8 (7.3%) had low score.

Most of the subjects with a high score were in the nursing group. Although, the highest number of participants was in this group, it should be noted that 69.9% of them had a high score. On the other hand, the participating physicians had also a high score of 9/76%, and none of them had a low score (Table).

Table 2. Frequency distribution of the subjects studied in terms of their degree of knowledge by occupation Score score

Occupation	High	Middle	low	Total
Physician	10	3	0	13
	76.9%	23.1%	0%	100%
	12.8%	12.5%	0%	
Nurse	51	18	5	74
	68.9%	24.3%	6.8%	100%
	65.4%	75%	62.5%	
Health crew	8	3	3	14
	57.1%	21.4%	21.4%	100%
	10.3%	12.5%	37.5%	
Service crew	9	0	0	9
	100%	0%	0%	100%
	11.5%	0%	0%	
Total	78	24	8	110
	70.9%	21.8%	7.3%	100%
	100%	100%	100%	100%

B: Evaluating the Attitudes of Participants:

In the attitude section, 17 questions reflecting participants' attitudes were designed .Questions were graded from -2 to +2 in a Likert spectrum ("I totally agree: +2, " I Agree: +1, "I have no idea: Zero", "I disagree: -1", and "I totally disagree: -2".

The participants' attitude was evaluated in the form of questions for which the answers were presented in Table (3).

Table 3. Frequency distribution of participants' responses to questions about their attitude to influenza vaccination

The criterion to measure attitude	Totally agree	agree	No comment	disagree	Completely disagree
1- I believe that influenza is potentially an important patient,	47 42.7%	45 40.9%	12 10.9%	6 5.5%	0 0%
2- I believe that I am at risk of developing influenza.	40 36.4%	45 40.9%	10 9.1%	11 10%	4 3.6%
3- I believe that the influenza vaccine plays an important role in the prevention of influenza.	31 28.2%	28 25.5%	33 30%	13 11.8%	5 4.5%
4. Encouragement and advice from colleagues and friends for vaccination is effective.	24 21.8%	35 31.8%	38 34.5%	11 10%	2 1.8%
5. I agree with the mandatory vaccine in health workers working on immunocompromised patients.	36 32.7%	41 37.3%	22 20%	8 7.3%	3 2.7%
6. I agree with the vacancy free of charge for health workers working with immunocompromised patients.	47 42.7%	47 42.7%	12 10.9%	4 3.6%	0 0%
7. I use vaccination to prevent my infection.	23 20.9%	31 28.3%	23 20.9%	27 24.5%	6 5.5%
8. I vaccinate to prevent the flu transmission to patients.	25 22.7%	35 31.8%	30 27.3%	18 16.4%	2 1.8%
9. Using vaccination is recommended by my doctor because of my underlying illness.	11 10%	17 15.5%	40 36.4%	29 26.4%	13 11.8%
10. I have a tendency to use vaccination because of hospital educations.	16 14.5%	29 26.4%	43 39.1%	20 18.2%	2 1.8%
11. I recommend using flu vaccination to my colleagues.	17 15.5%	42 38.2%	32 29.1%	17 15.5%	2 1.8%
12. I believe that using the vaccination will lead to the flu.	7 6.4%	31 28.2%	34 30.9%	30 27.3%	8 7.3%
13. Due to side effects, I am unwilling to use the vaccine.	8 7.3%	31 28.2%	31 28.2%	24 21.8%	16 14.5%
14. I am reluctant to use vaccination due to fear of injections.	20 18.2%	44 40%	24 21.8%	10 9.1%	12 10.9%
15. I do not want to use the vaccine because of its inaccessibility.	14 12.7%	41 37.3%	28 25.5%	20 18.2%	7 6.4%
16. I do not want to use vaccination because it costs a lot.	17 15.5%	41 37.3%	25 22.7%	24 21.8%	3 2.7%
17. I believe that there is no difference in the need for vaccination of personnel working in the immune comprised patients unit and the personnel working in other units.	19 17.3%	39 35.5%	28 25.5%	16 14.5%	8 7.3%

C: Evaluating the Participants' Performance

In this section, 7 questions were asked and recorded about the performance of the participants regarding the flu vaccination.

It should be noted that at the end two questions were designed to examine the frequency distribution of the reasons for the use or non-use of the flu vaccination.

In this section, according to the participants' response, the information is presented in Table (4).

Table 4. Frequency distribution of participants' responses to questions related to their performance about influenza vaccination

Criterion to measure performance	Yes	No
1. I used this flu vaccine this year.	30 27.3%	80 72.7%
2. I used influenza vaccination last year.	36 32.7%	74 67.3%
3. Because I have already been vaccinated and I have seen its effect, and I tend to be vaccinated in the following years.	34 30.9%	76 69.1%
4. In the past years, I regularly used the flu vaccination(every year)	15 13.6%	95 86.4%
5. In the past years, I have been using the flu vaccination(irregularly)	31 28.2%	79 71.8%
6. I do not vaccinate because I have a history of allergies (to eggs)	7 6.4%	103 93.6%

In this study, 52 (47.3%) of the subjects had not inoculated vaccine until now, and the rest had repeated the vaccination once or 8 times. Among them, 20 (18.2%) were vaccinated once and only one person (0.9%) had inoculated vaccination for 8 times.

From the 20 subjects who inoculated, 50% of them had been inoculated because of their working environment, and only 8 of them used vaccination to prevent the transmission of the disease to patients.

Among the subjects who did not inoculate, the reason of not using influenza vaccine was that 39% of them believed, vaccination is not affective, and 37% of them mentioned side effects of the vaccine as the reason they did not inoculate.

Discussion

Influenza is of great importance in immunocompromised patients. Therefore, vaccination of these patients can play a very important role in the prevention of the disease and, ultimately, the mortality in these patients. However, the vaccination of these patients in some cases is not completely done. In a study that Meidani and his colleagues have done on chemotherapy patients, only 9% of the patients received the flu vaccine that 44.4% of the cases were inoculated because of chemotherapy and 55.6% used the flu vaccine for other reasons [10].

On the other hand, the vaccination of health personnel who take care of these patients is of great importance, because if they are infected, the chance of transmission of the disease to immunocompromised patients will increase.

Based on the results of this study, the participants, who were doctors, nurses, health care workers and service workers of the immunocompromised patients, had a relatively good level of knowledge, as a result, a high percentage of them (92.7%) showed medium to excellent level of knowledge. These results are consistent with similar studies. In a study by Honarvar and his colleagues in Shiraz on the personnel of all wards in public hospitals, their

knowledge score was 16.55 ± 2.75 (21 points), indicating 80% desirable knowledge [11]. These results indicate that knowledge and awareness of the personnel of hospitals, especially the wards with immunocompromised patients is at a desirable level. Therefore, due to the staff's good knowledge, it may be reasonable to take the necessary steps to create more positive attitudes and more correct practices regarding vaccine inoculation.

According to participants, the most important reason for vaccination is the presence of a high-risk working environment, and the second most important reason for vaccination has been the prevention of disease transmission to patients in the ward. In another study (2005-2006) conducted on health care workers in Shiraz, only 21% of health care workers were vaccinated and their main reasons of using influenza vaccine was their working environment (80%) and fear of transmission to the hospitalized patients (31%) [12].

In a study by Hoffman and his colleagues, the most important reason for inoculation was the prevention of transmission of disease to the patient and then the protection of patients [13]. In Huffman's study, fear of side effects is the most important inhibitor of vaccine inoculation, while in the present study, the ineffectiveness of the vaccine and vaccine side effects were important inhibitors of inoculation of the vaccine. This result was also found in the study of Darvishi and his colleagues in Tehran in 1394. In Darvishi's study, distrust of existing vaccines has also been a major inhibitor of vaccine inoculation [14]. Other studies in other European countries, such as the UK, have similar outcomes on attitudes. In a study by Canning and colleagues in England in 2003, concerns about side effects (11%), lack of need (29%) and lack of knowledge about the benefits and effects (18%) are the inhibitory causes of vaccine inoculation [15].

Since some patients are more susceptible to the flu, their vaccination is more important than others. According to Clarke et al., health care providers who take care of influenza-susceptible patients showed more interest in vaccination. At the end of his article, Clarke noted that further study on the efficacy of the vaccine and its complications may improve the attitude of health workers towards influenza vaccination [16].

However, in assessing the attitude of the participants in the present study, it can be said that the attitude of the subjects to the influenza vaccine was generally positive, and it was believed that vaccine should be inoculated. But what is evident in the performance of the participants is contrary to their level of knowledge and attitude. As the results showed, only 58 out of a total of 110 people (52.7%) were vaccinated, that is, one in two, had inoculated. Similar studies have been done in some other countries. In a study conducted by Mr. Lee and his colleagues in China in the year 2015-2014, only 13% of healthcare workers (HCWs) were vaccinated, among vaccinated individuals, doctors older than 45 years in the surgical ward were more likely to receive the flu vaccine [17]. In another study conducted in England between April 10, 2010 and October 10, 2010, only 37% of the subjects were vaccinated and 44.9% were not vaccinated in the last five years [18]. In a study conducted in Turkey (2012-2011), only 16.7% of health care workers were vaccinated, and approximately 45% had not been vaccinated against influenza [19].

On the other hand, studies in the United States have led to other results. In a study conducted in the United States in the years 2014-2013, a total of 2.75% of health workers received influenza vaccine, and the highest vaccination rate of Influenza was reported among doctors (92.2%) and nurses (92.5%) [20]. In another study conducted between resident physicians (2014-2013) by Imtiaz and colleagues in New Jersey, vaccination rates among medical assistants were 7.76 and the most common cause of non-vaccination among unvaccinated patients was the lack of time to visit and receive a vaccine [21].

It should be noted that in Iran, in a study conducted in Tehran in 2009 by Khazayipour and his colleagues, the coverage of influenza vaccine among health care staff was 66.9% and 80.6%

were already vaccinated, and 65.4% of the people expressed their desire to receive the vaccine next year. 51.4% mentioned the positive effect of the vaccine as a reason for their desire, and 23.1% expressed the adverse effect of the vaccine as the reason for the lack of willingness to vaccinate [22].

Conclusion

Therefore, it may be concluded that by informing and following other countries and regions with higher vaccine rates, we might be able to promote the status of vaccination everywhere in the country.

Acknowledgments

Conflict of interest

Authors declare that they have no conflict of interest in this study.

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