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## ELDERLY PATIENTS KNOWLEDGE AND ATTITUDES REGARDING INFLUENZA VACCINATION IN BEKAA

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## ELDERLY PATIENTS KNOWLEDGE AND ATTITUDES REGARDING INFLUENZA VACCINATION IN BEKAA

### Abstract

*Elderly are among the main targets of influenza which is a common preventable infectious disease associated with high mortality and morbidity. The most cost-effective measure to prevent influenza is Vaccination, yet the vaccine uptake is known to be low. In Lebanon, there are no national surveillance programs or awareness campaigns for influenza in the country. There is a lack in the Data of the uptake of the influenza vaccine knowledge and attitudes of the Lebanese population towards. Aim: This study aims to assess the impact of educational program implementation on recognizing of influenza and adhering to vaccination. Method: Pre-Posttest research design was implemented in the study; 125 elderly patients aged 65 and above participated in the study. Setting: the study was conducted at two main Hospitals and one outpatient center in central Bekaa between April and March 2019. Results: A total of 125 completed the questioners. The results of this study revealed that there is a clear lack of knowledge about influenza common symptoms and its treatment. 87.6% thought it is appropriate to take antibiotics for influenza. Knowledge regarding the seasonal influenza vaccine effectiveness and side effects was poor. Undermining the effect of influenza and misconceptions on the effectivity of the vaccine is among the main reasons for not receiving the influenza vaccination. There was a clear significant improvement of knowledge and believes changes post educational intervention knowledge among elderly patients. Conclusion: Educational intervention on seasonal Influenza and its vaccination significantly increase the level of knowledge, believes, and positive attitudes regarding influenza and the value of vaccination. Undermining the effect of influenza and misconceptions on the effectiveness of the vaccine could much be improved by increasing awareness and knowledge.*

### Keywords

Influenza Virus, Influenza Vaccine, Elderly, Knowledge, Beliefs, Bekaa.

## 1. INTRODUCTION

Influenza is caused by influenza virus that leads to an acute respiratory illness, it exists as three types: A, B or C. type A is found in humans, birds and other mammals, and it's known that it causes influenza pandemics (Centers for Disease Control (CDC, 2019a).

During winter months, outbreaks emerge since influenza is a highly contagious infection, virus particles present in the respiratory tract infection in large numbers in saliva, sputum or phlegm, thus resulting in the transmission of the small aerosolized particles that spread through coughing, sneezing and talking, and then infecting the next person by inhaling it (CDC, 2020).

According to most experts, influenza viruses spread mainly by droplets made when people cough, sneeze, or talk that land in the mouths or noses of people who are nearby or on the nearby objects and surfaces. Touching their mouth, nose, or possibly eyes after contaminating someone's hand is believed too to transmit the virus. When the virus particles attach to the upper respiratory tract, and uncomplicated influenza infection occurs. If the viral particle extends down into the lungs (CDC, 2019b).

Pneumonia, is the most common complication of influenza that occurs. When the lungs become infected by bacteria then secondary bacterial pneumonia may occur .Other rarer complications may occur, such as spread of the virus to cause disease in the heart, muscles or brain (CDC, 2020).

Influenza is associated with high mortality and morbidity; it is a common preventable infectious disease. The most cost-effective measure to prevent influenza is Vaccination, but still the vaccine uptake is low (Khoury & Salameh, 2015).

In Lebanon, since the influenza vaccine is not part of the national vaccination program then it is paid for out-of-pocket. Moreover, there are no national surveillance programs or awareness campaigns for influenza in the country. There is a lack of data on the uptake of the influenza vaccine, knowledge, and attitudes of the Lebanese population towards (Khoury & Salameh, 2015).

It was noticed that Influenza vaccination reduces the risk of hospitalization and death that are influenza-related by 70% .it was estimated among vaccinated elderly in nursing homes that 30-40% reduction in the incidence of illness, 50–60% reduction in pneumonia and hospitalization and reduction in mortality rate 70 to 100%.

Moreover, other studies have shown that healthy working adults category benefit from vaccination against influenza economically and health-related (“Influenza vaccine effectiveness in preventing hospitalizations and deaths in persons 65 years or older in Minnesota, New York, and Oregon (Puig-Barberà et al., 2014).

The influenza vaccine is recommended in the elderly population. However, immunization Coverage varies globally. It has been reported as low as 10–20 % in some countries (Worasathit et al., 2015).

## 2. METHODS AND MATERIALS

### 2.1. Research Aim

This project aims to Increase influenza vaccination uptake, to record influenza vaccination status, knowledge, and attitudes towards the influenza vaccine pre and post, to increase attitudes positivity that may enhance the acceptance of vaccination. And To increase the sustainability of the immunization program in older people.

### 2.2. Research Hypothesis

Educational campaigns regarding influenza vaccination among elderly influence acceptance will enhance the knowledge and attitude of influenza and vaccination among elderly patients in Bekaa, Lebanon.

### 2.3. Design

A pre-posttest research design was implemented in the study.

### 2.4. Setting

The study took place at two hospitals in central Bekaa: Mayas and Taanyal Hospitals in addition to one outpatient center.

## **2.5. Ethical Considerations**

Before conducting the study, ethical approvals were gained from the hospitals, and approval in taking part in the study was taken from each participant through a consent form.

## **2.6. Participants**

All elderly patients that are 65 years and above that are hospitalized were included in the study. Old patients outside the age range. Old patients who are blind, old patients that are in ICU and CCU and old patients that their health is bad enough and can't handle or deal with people are excluded from this study. Participants were distributed over two hospitals and one outpatient center in the central Bekaa. In this study, a total of 127 participants have taken part in the study.

## **2.7. Method of Measurement**

Primary data was collected were collected face to face interviews with each participant using a questionnaire after obtaining written informed consent from all participants.

Participants were asked to fill a validated questionnaire measuring the knowledge and attitude toward influenza vaccination before and after the education tool.

A Video that was approved by the World Health Organization (WHO) and approval was taken from Pascal the Pharmacists. This video describes health belief about influenza and it is vaccination as an action to prevent such infectious disease. Video content includes influenza infection, complications, transmission, influenza prevention, and influenza vaccination effectiveness and side effects. To ensure participants could clearly understand the message, the educational video contained images as well as written information. Participants have surveyed the same tool after the educational tool was applied. When the education session was ended and we collected both pre and post data, and a brochure was distributed among the participants.

## **2.8. Data Collection**

Data were collected over one month. All patients approached have accepted to share in this study by signing the informed consent. After the 125 elderly patients were asked the questions of the survey and they responded to it, it was closed. Elderly patients first attended an education session to ensure participants could clearly understand the message, the educational video contained images as well as written information. A brochure was distributed to all the participants that contain information on Seasonal influenza, Signs and symptoms, prevention, categories that are suspected to, and how it spread. After that, on spot, the participants were asked to refill up the same questioner after education.

## **2.9. Data Analysis**

Analysis of data was done using the Statistical Package and Social Solutions (SPSS).

Statistical analysis of the collected data to compare the results between Pre and Post of each participant. Descriptive analysis was used first to describe the participant's characteristics and the frequencies and percentiles of each stage. A paired T-test was used to study and compare the mean difference between pre and post of each question where p value was set at <0.05.

# **3. RESULTS**

## **3.1. Patient's Distribution among Hospitals**

Participants were distributed over two hospitals and one outpatient center in the central Bekaa. In this study a total of 127 participants have taken part in the study, however, 1.6 % ( n=2) did not complete the post-test and were eliminated from the study. A total of 127 (N=125) participant's responses (pre and post-test) were taken for analysis. The majority of participants 48.0% (n=61) were from Taanayal General Hospital, 35.4% (n=45) were from Mayas hospital and 15.0% (n=19) were from the outpatient center. Table 1. Illustrates the distribution of patients among the two hospitals and the outpatient center.

Table 1: Distribution among Hospitals

		Frequency	Percent
Valid	Mayas Hospital	45	35.4
	Taanyal General	61	48.0
	Out patient	19	15.0
	Total	125	98.4
Missing	System	2	1.6
Total		127	100.0

### 3.2. Socio-Demographic Characteristics of the Study Participants

As shown in Figure 1, the ages of the groups that have participated in this study ranged between 65 and 96 (Mean= 74.1, SD= 8.07023). In addition gender distribution showed that 49.6 % (n=63) were males and 48.8% (n=62) were female, thus almost equally distributed among genders (Figure 2). 64.4% (n=82) were married, 21.3% (n=27) were widows, 7.1 % (n=9) were divorced, and 5.5% (n=7) were separated. Nearly 73.6% (n=92) were retired non health related job, 19.2% (n=24) were employed non health related job, 6.4% (n=8) were employed health related job and 1% (n=0.8) retired health-related job. Moreover the results of the study showed that the majority level of education of the participants 42.5% (n= 54) are illiterate- No schooling, 32.3% (n=41) were primary educated, 11.8% (n=15) had high school or equivalent, and 2.4% (n=3) had Masters or Professional degree. (Table 2)

Table 2: Demographic Characteristics.

Variable	Category	Total number (%)
<b>Gender</b>	Male	63(49.6%)
	Female	62(48.8%)
<b>Marital Status</b>	Married	82(64.4%)
	Divorced	9(7.1%)
	Separated	7(5.5%)
	Widow	27(21.3%)
<b>Occupation</b>	Retired Health-related job	0.8 (1%)
	Retired Non-Health related	92(73.6%)
	Employed Health-related job	8(6.4%)
	Employed non-health-related job	24(19.2%)
<b>Level of educational</b>	Illiterate –No Schooling	54(42.5%)
	Primary Education	41(32.3%)
	High school or equivalent	15(11.8%)
	Bachelor's degree or equivalent	12(11%)
	Master's/ Professional degree	3(2.4%)

### 3.1. Knowledge about Influenza Vaccination

An average of 32% of participants correctly answered questions concerning knowledge about influenza vaccination.

78% (n=125) of participants believed that flu is caused by a virus, 87.6% thought it is appropriate to take antibiotics for influenza, and 82% (n=125) believed that it can be prevented. On the other hand, only 28.2% (n=11) knew about the appropriate time to take influenza vaccine (before the flu season starts), 23.1% (n=9) answered correctly on how the vaccine is given, and 30.4% (n=38) answered correctly that it is not the same as the common cold. Less than half of the participants answered correctly concerning the questions related to the spreading of flu, flu season, and how long the vaccine protects for.

After the education session, the extreme majority of patients (Mean average 91.4, p=0.000) answered correctly the same questions post-test as shown in the Table. 3 below.

Table 3: Knowledge of influenza and vaccine.

Question	Pre-Test Corrected Answers n (%)	Post-Test Corrected Answers n (%)	Chi-square	P-Value
It is caused by virus	37(29.6)	117(93.6)	78.013	0.000
It can be prevented	37(29.6)	121(96.8)	82.012	0.000
It can spread from one person to the other	52(41.6)	124(99.2)	70.014	0.000
It is the same as common cold	38 (30.4)	118(94.4)	74.298	0.000
Do you take antibiotics for influenza	28(22.4)	123(98.4)	93.011	0.000
Occur at a certain period of the year	56 ( 44.8)	115(92)	51.754	0.000
For how long the vaccine protect	15(38.5)	111(88.8)	xxx*	0.000
Appropriate time to take the vaccine	11(28.2)	98(78.4)	xxx**	0.000
How is the vaccine given	9(23.1)	112(81.6)	xxx***	0.001
Mean	32%	91.4%		

> 2 options questions, Wilcoxon Signed Ranks Test Z Value -4.524, \*\* Z = -4.973, \*\*\* > Z = -3.416

### 3.2. Knowledge of Common Symptoms of Flu

An average of 54.2% of participants correctly answered questions concerning knowledge of common symptoms of flu.

74.4% (n=93) answered correctly that Headache and Fever are common symptoms of the flu. Also, 60% (n=75) agreed that Cough is a common symptom of flu, 55.2% (n=69) answered correctly that Running Nose is a common symptom. Moreover, 21.6% (n=98) have answered correctly that Diarrhea and abdominal pain are not a common symptom of flu, 84.8 % (n=106) have answered correctly that Vomiting is not a common symptom of flu. And 41.6% (n=52) have answered correctly that Sneezing is not a common symptom. Less than half of the participants answered that Muscle Ache, Sore throat, and Fatigue.

After the education session, a mean average of 71.9% answered correctly the same questions post-test as shown in the Table. 4 below.

Table 4: Knowledge of common symptoms of flu

Flu Symptoms	Pre-Test Corrected Answers n (%)	Post-Test Corrected Answers n (%)	Chi-square	P-Value
Headache	93(74.4)	121(96.8)	22.781	0.000
Fatigue	20(16)	27(21.6)	0.973	0.324
Cough	75(60)	116(92.8)	32.653	0.000
Muscle ache	51(40.8)	98(78.4)	29.779	0.000
Fever	93(74.4)	117(93.6)	13.225	0.000
Sore throat	50(40)	33(26.4)	4.655	0.031
Running nose	69(55.2)	106(86.4)	27.245	0.000
Diarrhea	98(78.4)	99(79.2)	0.000	1.000
Mean	54.2	71.9		0.04

### 3.3. Knowledge Regarding Flu vaccine Side Effects

Regarding the side effect of the vaccine, 0.8% (n=38) had shown that no side effect of the vaccine which is not significant. 32.6% (n=38) relieved that Nausea is a side effect 13.2% (n=38) showed that Fever is a side effect, 13.2% (n=38) showed that Headache is also a side effect, and 13.1% (n=38) showed that Muscle Ache is a side effect, such results are highly significant.

But regarding to Soreness or swelling at injection site 0.8% (n=38) showed it as a side effect which indicates that the result is not highly significant.

### 3.4. Attitudes Regarding Seasonal Influenza and Influenza Vaccine Pre-test

An average of 16.9% of participants correctly answered questions concerning attitudes regarding seasonal influenza and influenza vaccine.

Only 13.6% (n=17) agreed that influenza vaccination is important among elderly and should be taken yearly, same percent of people agreed also that influenza vaccine prevent serious complication among elderly. 12% (n=15) revealed that they don't need the flu vaccine because they have life immunity against it. Only 30.4% (n=38) revealed that If there is an effective vaccine to prevent flu they will take it.

After the education session, the extreme majority of patients (Mean average 93.4 %, p=0.000) answered correctly the same questions post-test as shown in the Table. 5 below.

Regarding the Attitudes Regarding Seasonal Influenza and Influenza Vaccine, Influenza vaccination is important among elderly and should be taken yearly the result was (Z=-9.609b, p=0.000), also Influenza vaccine prevents serious complication among elderly the result was (Z=-9.296b, p=0.000), for the statement that flu is a mild illness and therefore vaccination is not necessarily the result was ( Z=-9.020c, p= 0.000). Moreover, the results were ( Z=-8.033c, p= 0.000) regarding that no need for the flu vaccine because I have life immunity against flu, in all questions the value of Z shows the number of positive answers that are significantly higher than pre positive answers since all p values were less than 0.05.

Also, a significantly higher result between pre and post was indicated that if there was an effective vaccine to prevent flu, they would take it (Z=-7.739b, p=0.000) where p value is less than 0.05. (Table 5)

Moreover, the Chi-square test was carried out to show that 93% (n=125) don't take antibiotics for influenza, 85% (n=125) reveal that hand sanitizer kills flu virus which indicates that such results are highly significant. Also, Chi-square test was carried out to explore the prevention of transmission of flu, 76.1% (n=125) reveal that washing hands prevent the transmission, 60.1% (n=125) reveal that avoid touching doorknobs prevent the transmission, 54.3% (n=125) reveal that Avoid close contact, 51.1% (n=125) Don't touch your face and 28.1% (n=125) Stay at home when you are sick. All results were highly significant.

Table 5: Attitudes toward influenza vaccine Pre-test Post-test

Statement:	Pre-test correct answer n (%)	Post-test correct answers n (%)	Z	P-Value
Influenza vaccination is important among elderly and should be taken yearly.	17(13.6)	125(100)	-9.609b	0.000
Influenza vaccine prevent serious complication among elderly	17(13.6)	124(99.2)	-9.296b	0.000
Flu is mild illness and therefore vaccination is not necessary.	19 (15.3)	120(96)	-9.020c	0.000
I don't need the flu vaccine because I have life immunity against flu	15(12)	102 (81.6)	-8.033c	0.000
If there is an effective vaccine to prevent flu ... I will take it.	38(30.4)	113(90.4)	-7.739b	0.000
Mean	16.9%	93.4%	-	0.000

#### 3.4.1. Reasons for not receiving influenza vaccination previously

69.6% (n=87) didn't hear before about such a vaccine.

Majority of the main reasons that the participants had never received influenza vaccination before included vaccination is not necessary because flu is just a minor illness (70.8%), (30.2%) forget, another reason is that the vaccine is not effective, (17.9%) didn't take it for the reason that it has serious side effect, other reasons are fear of needles and injection (12.3%), have alternative protection (4.7%), expensive(4.7%) and others because they react to it the first time they attempted to it (4.7%).(Table 6).

Table 6: Reasons for not receiving influenza vaccination previously.

Reason	N (%)
I have alternative protection	106 (4.7)
It is not necessary because flu is just a minor illness	106 (70.8)
It is expensive	106 (4.7)
Forget	106 (30.2)
Fear of needles and injection	106 (12.3)
The vaccine is not effective	106 (26.4)
It has serious side effect	106 (17.9)
I reacted to it the first time I attempted it	106(4.7)

### 3.4.2. Factors influencing decision for vaccination

Factors that influenced the decision for vaccination included advice from the doctor that it is important (20, 40%) being told by fellow patients that it is effective 19(5.3%) and the vaccine made available free of charge (19, 21.1%).Table 7

Table 7: Reasons for not receiving influenza vaccination previously.

Factors	Participants (%)
Advice from the doctor	20 (40)
Advice from fellow patients	19(5.3)
Vaccine made available free of charge	19(21.1)

## 4. DISCUSSION

Regarding patient characteristics, gender was equally distributed, it noticed that patients who were employed or still employed in health-related jobs have more knowledge about Influenza and its vaccine, also it was noticed that illiterate people have no knowledge or haven't heard about influenza and its vaccine at all, compared to patients that have Bachelor or Master's degree.

This study showed a significant increase in influenza vaccination coverage of elderly patients. Influenza and vaccine knowledge rose from among patients from 32% up to 91.2% attending before and during the intervention. The percentage of participants who had heard of influenza infection in the elderly in our study 30.4 % which is very low concerning a similar study with people living along the Thai-Myanmar border were the percentage was 76.4% (Rukmanee et al., 2014).

Regarding elderly Knowledge pre-interventions, the results revealed that the elderly patients who participated in the study have a low knowledge level about influenza, its vaccination preventive measures. The elderly scored a mean percentage of 32% on the scale from 1 to 20 which defines the knowledge level regarding Seasonal influenza and influenza vaccination. A similar study that was conducted in 2017 in this study used a questionnaire similar in structure to the questionnaire used in this study in two major tertiary hospitals in Pretoria, South Africa. Knowledge of elderly reported that the mean knowledge percentage was also extremely low 11% (Olatunbosun, Esterhuizen, & Wiysonge, 2017).

Patients didn't hear before about the vaccine and the ones who've heard about it didn't take it. Similar to a study majority of patients who have heard about the influenza vaccine before believe in its effectiveness and safety, only half of them have ever been vaccinated before (Olatunbosun et al., 2017).

Participants and patients in my study weren't familiar with the symptoms and they revealed that they have miss conception regarding them. While in that similar study Participants were well aware of the common symptoms of seasonal influenza as the majority believed that running nose, sneezing, headache, sore throat, and cough are associated with influenza-related illness (Olatunbosun et al., 2017).

In this study, influenza vaccine uptake among elderly is low as only 31.6% of participants have previously been ever vaccinated against influenza. This is similar to the findings in a study done in 2007 in Singapore where the vaccine uptake was 30.6% (Tan, Lim, Teoh, Ong, & Bock, 2010).

However, the uptake of influenza vaccine among diabetics in Singapore has been largely attributed to increased public awareness of the vaccine following the SARS epidemic in 2003, indicating that it might have induced the public to seek vaccination against influenza (Lau, Yang, Tsui, & Kim, 2006)

Such Uptake is higher among participants with a better perception of the vaccine being able to prevent complications and its yearly importance. Therefore, better knowledge of both the vaccine and flu influence the decision to get vaccinated. In Lebanon, since the influenza vaccine is not part of the national vaccination program then it is paid for out-of-pocket. Moreover, there are no national surveillance programs or awareness campaigns for influenza in the country. There is a lack of Data on the uptake of the influenza vaccine, knowledge, and attitudes of the Lebanese population towards (Khoury & Salameh, 2015).

Major predictors of vaccination in this study include being told by doctors and fellow patients who have been previously vaccinated and the availability of the vaccine free of charge.

Advice from doctors about the importance of vaccination has strongly influenced the decision to get vaccinated as 20 % ( 40) of those who were previously vaccinated were encouraged to do so by their doctors. This is similar to that in a similar study where the same questioner was used, Advice from doctors about the importance of vaccination has strongly influenced decision to get vaccinated as 97.6% of those who were previously vaccinated were encouraged to do so by their doctors (Olatunbosun et al., 2017).

While, post-intervention, this study supports the advantages of the educational program that was conducted in the hospitals (Mayas, Taanayl, and outpatient center) among elderly patients. The results indicate that there is a highly significant difference in the knowledge of the elderly regarding Seasonal Influenza and Influenza Vaccination in the test scores between pre and post-intervention with a mean percentage of 73.5 %. These results were supported by a study that was conducted in 2015 using a case-control study by Worasathit et al. (2015) established measuring acceptance of and willingness to pay for vaccination was administered during semi-structured interviews before and after education was significantly improved after the educational intervention.

However, Elderly Attitudes Regarding Seasonal Influenza and Influenza Vaccine results revealed that the elderly patients who participated in the study have a low attitude toward Seasonal Influenza and its vaccine.

The elderly scored a mean percentage of 9.1 % on the scale from 1 to 5 that defines the Attitude level regarding Seasonal influenza and influenza vaccination.

They were asked whether they agree, disagree, or don't know toward certain statements topics. Only 13.6% of the participants agreed that influenza vaccine is important among elderly and should be taken yearly, the same percentage for the statement that the vaccine prevents serious complications among elderly, only 15.3% didn't agree that flu is a mild illness and therefore vaccination is not necessary. Only 21.6% disagreed that they don't need the flu vaccine because they have life immunity against it. Lastly, they were asked if they agree to take the vaccine to prevent flu and only 30.2% agreed to take it. Compared to a similar study the percentage regarding the first question was 64.7% which is higher, regarding the second one 33.6% agreed also that the vaccine prevents serious complications among the elderly which is higher. 63% didn't agree that flu is a mild illness and there is no need for the vaccine which is much higher. 62.7% disagreed that they don't need the flu vaccine because they have life immunity against it which is higher. 81.2% agreed to take the vaccine which is much higher (Olatunbosun et al., 2017).

Moreover, regarding the difference in the elderly perception and attitude of Seasonal Influenza and its vaccination between pre and post-intervention, our results indicate that there was a significant difference in the elderly perception at the level of the first question which recorded 99.2 %, the second question with a percent of 96.2%, the 3rd one 91.6% and the last one with a 90.4%. The results indicate that the nurses had dispersed answers to the three posed questions, before the intervention.

## 5. CONCLUSION

Elderly patients are at high risk of developing serious complications of influenza, and they are more prone, more than others, to influenza virus. There is much lack of knowledge about the influenza common symptoms, its effect, and its treatment among elderly patients where most participants believed that it is appropriate to take antibiotics for influenza.

Moreover, Seasonal Influenza Vaccination uptake among elderly patients in Bekaa was found to be very low. This is dominantly linked and attributed to the poor knowledge of the vaccine and its benefits. There was too a clear lack of knowledge regarding flu vaccine side effects and misconceptions on the effectivity of the vaccine. Attitudes toward the influenza vaccine and its importance were very poor before the educational program. Factors influencing the decision for vaccination was much related to health care advice and the availability of free shots.

Conducting the educational intervention in both hospitals and outpatient centers resulted in a significant increase in the level of knowledge regarding the seasonal influenza and influenza vaccine among elderly patients who participated in the study. Moreover, influenza vaccination acceptance is associated with having positive attitudes which need strategies to improve such attitudes toward vaccination.

Results from this project showed that awareness and educational interventions improve the knowledge of the elderly and positively affect their attitude towards vaccine importance and uptake.

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