The role of the patient care team in elderly people decision on influenza vaccination

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Abstract

Understanding the elderly decision-making process on influenza vaccination is important in developing appropriate strategies to increase uptake. Our objective was to explore the decision making process on influenza vaccination among an elderly population. Prospective documentation of baseline data and vaccination status of elderly primary care patients was followed by a telephone survey 5 months later to explore their decision making process. Baseline data and vaccination status were documented on 1313 patients out of whom 51% received the influenza vaccine. Telephone survey was attempted in all of them and eventually 950 (72.4%) were interviewed. When members of the patient care team (PCT) provided information on the vaccine, were consulted about it and were actively involved in the vaccination decision, each resulted in a significantly higher ($p < 0.0001$) rate of immunization. After logistic regression analysis, only consultation with PCT remained significantly associated with higher ($p < 0.0001$) immunization rate. Our findings emphasize the central role of the PCT in improving uptake of the influenza vaccine and point at the stages where change can, and should, be made.

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1. Introduction

Influenza is a common illness that may affect up to 20% of the population annually [1]. Older people, over 65 years, are particularly susceptible to develop serious respiratory complications and account for more than 85% of the deaths attributed to influenza each year in the UK [2].

There is good evidence that influenza vaccination is effective and reduces mortality [3], morbidity [4] and is probably cost effective [5]. Christenson et al. [6] demonstrated that providing individuals aged 65 and older with influenza vaccine leads to substantial health benefits and to a reduction of mortality from all causes in this age group. However, despite that and the clear policy of health authorities, only 20–40% of the target population in Britain and 38.6% in Sweden [6] were vaccinated [7,8]. Despite a gradual increase in immunization rate, more than a third were not immunized according to a U.S. national survey in 1997 [9].

The external validity of randomised controlled trials of preventive interventions is questionable [10]. Patients who agree to participate in such trials tend to be affluent and better educated and to adopt a healthier lifestyle than those who do not participate [10]. Consequently, it may be difficult to generalize on the feasibility and effectiveness of an intervention from studies conducted on different populations.

Understanding the reasons why the elderly are vaccinated or not, their decision making process and what affects it are important. Several studies have compared vaccinated and non-vaccinated patients using elements from the health belief model and other variables, that relate to beliefs and attitudes of significance to lay elderly people [11]. These studies have identified health service “triggers” as a factor in increasing adherence [12] and provided us with an insight.
into the elderly’s perception of their health and the impact of vaccination on it [11]. Most studies did not find correlation between adherence and sociodemographic variables such as gender, age, education or marital status [13]. There is evidence that provider’s recommendation improved it [14]. However, these studies were based on reported, not documented, immunization. They explored neither the various stages in the decision making process nor the influence of the patient care team (PCT) on it. A better understanding of the decision making processes within defined subgroups of elderly people may enable us to direct specific interventions at them.

The aim of the study was to examine the correlation between the characteristics of the elderly population and their vaccination status. To achieve that we combined accurate patient’s records on demographics and documented vaccination, with a telephone interview that assessed their attitude regarding influenza vaccination and their decision making process. This combined method of data collection enhances the reliability of the results.

2. Method

2.1. Setting

An urban primary care clinic in northern Israel serving about 10,000 registered individuals (17.34% aged 65 years or more), many of them immigrants from the former Soviet Union and other countries [15]. The primary care team (PCP) consist of seven physicians, five nurses and three receptionists. In September 1998, a campaign promoting influenza vaccination targeted at elderly people (age 65 or more) was launched. Postcard reminders were sent to all of them and posters in various languages, inviting them to receive the vaccine, were positioned in the clinic. The vaccination process was simplified to improve uptake. It was centered in the nursing unit enabling swift vaccination, free of charge, without the need for an appointment with the family physician, a prescription or a visit to the pharmacy to purchase the vaccine. We have observed in previous years that these were dropout points of candidates for vaccination. Housebound patients were offered the vaccination at home. Channeling the entire process through the nursing unit enabled us to keep accurate records of it. The campaign continued from mid-September 1998 until the end of December.

2.2. Data collection

Data collection, using a structured telephone interview, started on May next year and lasted until the end of August. The questionnaire explored various medical, social and demographic aspects of the elderly and their decision making process on vaccination. We specifically explored the sources of information on the vaccine, who was consulted about it and how and by whom the decision to take it or not was made. It was conducted by 35 trained volunteers and eventually, interviews were conducted in Hebrew, English, Russian, Romanian, Spanish, Yiddish and Ethiopian. The whole interviewing process was piloted twice with all the volunteers to ensure its validity, reliability and uniformity.

2.3. Statistical analysis

The data was analysed with the aid of SPSS-PC. Most of the above mentioned variables were collapsed into dichotomies. Associations with vaccination status were examined using Pearson’s Chi-square test. Multivariant analysis was performed with immunization status (vaccinated versus not vaccinated) as the main dependent variable using multiple logistic regression.

3. Results

The results are presented in a manner that enables comparison between characteristics of those who were vaccinated to those who were not as the main dependent variable.

3.1. Non-responders

Interview was attempted with 1313 patients, in which the recorded rate of influenza immunization was 51%, and was successfully completed with 950 (72.4%) of them. The various reasons for the interview failure, and their respective immunization status, are presented in Table 1. The participants which were interviewed were younger than the non-interviewed, and had higher immunization rate (Table 2).

3.2. Sample

Some characteristics of the Interviewed study population are presented in Table 3. The total of those reporting any chronic disease was 69.5% with no difference between immunized (69.9%) and non-immunized (69.1%).

<table>
<thead>
<tr>
<th>Reason</th>
<th>Immunized No.</th>
<th>Immunized %</th>
<th>Not immunized No.</th>
<th>Not immunized %</th>
<th>Total No.</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could not be reached</td>
<td>49</td>
<td>36.8</td>
<td>149</td>
<td>64.8</td>
<td>198</td>
<td>15.1</td>
</tr>
<tr>
<td>Communication problems</td>
<td>23</td>
<td>17.3</td>
<td>16</td>
<td>7</td>
<td>39</td>
<td>2.9</td>
</tr>
<tr>
<td>Deceased</td>
<td>34</td>
<td>25.5</td>
<td>23</td>
<td>10</td>
<td>57</td>
<td>4.3</td>
</tr>
<tr>
<td>Refused</td>
<td>16</td>
<td>12</td>
<td>24</td>
<td>10.4</td>
<td>40</td>
<td>3.1</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>8.3</td>
<td>18</td>
<td>7.8</td>
<td>29</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>133</td>
<td>100</td>
<td>230</td>
<td>100</td>
<td>363</td>
<td>27.6</td>
</tr>
</tbody>
</table>

$p < 0.0001$.
3.3. Comparison between immunized and non-immunized

The documented rate of influenza immunization among the interviewed group was 56.4% (95% confidence interval: 53.3–59.5%), 43.6% (95% confidence interval: 40.5–46.7%) were not immunized. Among the immunized population the PCT (physician 45% and nurse 5.2%) were the main source of knowledge (50.2%) compared with only 23.8% among the non-immunized (p < 0.0001). Among the immunized population the PCT (physician 77.1% and nurse 4.7%) were the main source for counseling (81.8%) compared with only 30.6% among the non-immunized (p < 0.0001). Among the non-immunized population 43.3% did not consult at all compared with only 11.9% among the immunized population (p < 0.0001). Counselling with a family member and/or a friend was more popular among the non-immunized (13.6%) than the immunized population (4.7%), (p < 0.0001).

During the pilot of the study questionnaire, it was found that some of the elderly perceived that the decision on the vaccination was made by somebody else and they just complied with it. To explore this interesting notion, we specifically asked them who made the decision on vaccination (Table 3). Among the immunized population, the health care team reportedly took the decision in 57.3% of the cases, while only 13.7% reported so among the non-immunized (p < 0.0001). Willingness to receive the vaccine next year was 73.6% in the immunized group and only 22.7% in the non-immunized. The physician decided in 57.4% of the participants, 82.5% in the later group, 72% reportedly decided by them on immunization compared with 39.7% in the immunized group (p < 0.0001). Counseling with a family member and/or a friend was more common among the non-immunized (36.8%) than the immunized population (24.7%), (p < 0.0001).

Among the immunized participants, 66.7% thought it contributed to their health, 12.5% thought it did not and 20.8% did not have any opinion. Previous immunization rate was 73.6% in the immunized group and only 22.7% in the non-immunized. Willingness to receive the vaccine next year was obtained from 57.4% of the participants, 82.5% among the immunized group and only 25.1% of the non-immunized.

Immunization rate varied among different subgroups. Table 4 lists the prevalence of different subgroups in the study population, their immunization rates, the level of statistical significance of the bivariate associations, their odds ratio and 95% confidence level. Eastern Europe descents, single marital status, age older than 80 years old and fewer years in the country were associated with lower immunization rate. It was higher among participants with complementary income (i.e. in addition to the social security fees), those living with a spouse and those who were more fluent in Hebrew.

Large differences in immunization rates were obviously observed between those who knew about the existence of the immunization and those who didn’t (59% versus 17%, O.R. 6.87, p < 0.0001). When the source of knowledge about influenza immunization was the PCT, it resulted in higher immunization rate than when it was obtained from other sources. Counseling with the PCT, compared with others, increased the immunization rates to 78% versus 26%, respectively (O.R. 10.2, p < 0.0001).

When the decision on immunization was perceived to be taken by the PCT, compared with others (including the patients), the rates were even higher (85% versus 40%, O.R. 8.5, p < 0.0001). When the decision to receive the vaccine was taken by the patient alone it resulted in immunization rates of 42.5%. The rates were even lower when others were involved (22.2%). Immunization rates were higher in those with history of previous immunization (82% versus 32%, O.R. 9.52, p < 0.0001), and those who claim they would take the immunization again next year (82.5% versus 17.5%, O.R. 14.1, p < 0.0001). Gender (57% versus 56%, p = 0.77) and reported chronic disease (57% versus 56%, p = 0.79) were not statistically significant variables.

We performed a logistic regression analysis to assess the effect of each variable while controlling for the others. Consulting about immunization with a team member (odds
and decision on immunization (odds ratio: 2.9405, $p < 0.0001$), remained significantly associated with immunization. In addition, the other two significant variables were previous immunization: yes versus no (odds ratio: 3.0264 for yes, $p < 0.0001$) and will take immunization again: yes versus no (odds ratio: 5.8401 for yes, $p < 0.0001$).

### 4. Discussion and conclusion

#### 4.1. Discussion

The influenza vaccination rate of 56.4% in our study population is slightly higher than the about 50% reported in a national survey in Israel [16]. It is lower than the 68.1%
reported by Abramson [13], and the 1997 United States figure of 65.5% [9]. However, the figures are not readily comparable since these surveys are based on vaccination as reported by the elderly whereas we report the vaccination rate based on the records of the actual vaccination when it was given. The vaccination was available only in the clinic. This notion is important because it provides a reliable discrimination between the immunized and the non-immunized. Since this information was independent of the interviews it eliminated the recall bias that is inevitable when data is based only on a telephone interview that takes place months later. (In our study, 548 claimed they were immunized while only 490 actually did, positive predictive value of 89.4%). Response rate for the interview was 72.4%, slightly lower than the 78.7% reported by Abramson [13], probably because our population has more immigrants (97.6% versus 69.1%). The non-responders were slightly older than the responders and their immunization rate was significantly lower (37% versus 56% among the responders) as was assumed, but not proven, by Abramson [13]. Several characteristics of the elderly were associated with low rate of documented influenza immunization. These variables were Eastern European decent, less than 10 years in Israel, not married or not living with a partner as reported elsewhere [13,17,18]. They may point at the elderly that are less likely to receive the vaccine, but none of these variables can be modified. Bivariant analysis of the association between the actual influenza immunization and the various stages in the immunization decision-making process also contributed to our understanding. All the variables, namely knowledge about the vaccine, the source of the information, who was consulted about receiving the vaccine and who made the decision about it, had a significant association with immunization. Past immunization and willingness to receive the vaccine next year showed the same association. However, it is interesting to note that nearly 20% of the previously vaccinated say that they will not take it again, probably because they do not think it is helpful or may be harmful.

When using the logistic regression analysis model, the variables that remained showing highly significant association with immunization rate were only those related to the decision making process. Unlike the personal characteristics of the elderly we described, these variables can, and should, be modified and they depend mostly on the attitude and behaviour of the PCT.

4.2. The decision making pattern

From our results emerged an interesting pattern that was not described previously (Table 5 or Fig. 1). Most (93%) of the study population knew about the influenza immunization alas only 59% actually received it. Mere 39% of them stated that the source of the knowledge about the vaccine was the doctor or nurse but this produced vaccination rate of 73.5%. Only 60% said that they consulted their family doctor about the influenza vaccine but among those who did so vaccination rate was 80%. Eighty-two percent of those that were immunized

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (%)</th>
<th>Immunization rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know about the influenza immunization</td>
<td>93</td>
<td>59</td>
</tr>
<tr>
<td>Source of the knowledge is the doctor or nurse</td>
<td>39</td>
<td>73.5</td>
</tr>
<tr>
<td>Consulted with their family doctor</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Immunized previously</td>
<td>52</td>
<td>82</td>
</tr>
<tr>
<td>Intend to receive influenza</td>
<td>57</td>
<td>82.5</td>
</tr>
<tr>
<td>Immunization next year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision on immune by doctor or nurse</td>
<td>39</td>
<td>85</td>
</tr>
</tbody>
</table>

Fig. 1. The decision making pattern.
Previously were vaccinated this year and 82.5% of them state that they intend to receive it next year. This pattern, combined with our finding of 85% immunization rate among those that perceived that the decision on immunization was made by the PCT, emphasizes the central role of the PCT in improving uptake.

This last mentioned finding was reported by others as well [13,18]. Abramson [13] also states that 24.4% of the non-immunized reported that they would have chosen to be immunized had their physician recommended it. Igoe et al. demonstrated how a simple invitation from the doctor for influenza vaccination could dramatically improve the immunization rates [19]. Another study showed that information received from health visitors was associated with more frequent occurrence of positive beliefs about influenza vaccination and with higher acceptance of vaccination, irrespective of positive or negative beliefs regarding it [20]. A recent study claims that positive experiences with doctors can overcome patient’s reservations about antihypertensive drugs [21]. This indicates that our findings probably apply to other situations where improved adherence is sought.

4.3. Conclusion

Summarizing our findings, the main factors strongly associated with higher immunization rate among the elderly are relate to the decision-making process regarding the vaccination. We demonstrated that the PCT plays a central role in it and pointed at the stages where they can, and should, make the change.

4.4. Practice implications

A recent study confirms that for elderly people, untargeted influenza vaccination is of confirmed benefit against serious outcomes [22]. The members of the PCT should establish themselves as the main source of health related information for their patients. They should be initiative, provide them with clear and evidence based advise and play an active role in their decision making process on influenza immunization and other health promoting activities. Such an initiative can be a powerful incentive for better health.

References