

Compliance with Influenza Vaccination in Israel in Two Successive Winters, 1998/1999 and 1999/2000

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Key words: influenza, vaccination, survey, elderly, health care personnel

Abstract

Background: Although influenza is usually a mild self-limiting disease it can cause serious complications in high risk groups. The economic costs of influenza are large due to the burden on the health system and absenteeism from work. There is evidence that the vaccine is underused in groups targeted for vaccination.

Objectives: To estimate: a) the compliance rate with the influenza vaccination in Israel during the winter seasons of 1998/1999 and 1999/2000, b) the role of health care personnel and the media in influencing compliance, and c) the reasons for lack of compliance in the elderly.

Methods: Two national population-based random telephone surveys of 1,500 households were performed during October 1999 and January 2000 to survey influenza vaccination compliance prior to the winters of 1998/1999 and 1999/2000 respectively. Each survey was performed during four successive evenings. The response rate was 78.1% for the first survey and 79.1% for the second.

Results: Vaccination compliance was similar in both surveys. The average rate of vaccination was 6% for the population under 65 years and 50% for the population of 65 years and above. The overall vaccination rate was around 10%. The family physician was the main authority to recommend the vaccination, followed by the community nurse. Absence of recommendation and lack of faith in the efficacy of the vaccine were the main reasons for non-compliance.

Conclusion: Compliance rates with influenza vaccine in targeted groups in Israel remain relatively low. Health care personnel should be more involved in promoting the vaccine.

IMAJ 2000;2:742-745

Among the upper respiratory tract infections commonly encountered during winter, influenza most frequently predisposes patients to bacterial pneumonia. It is also the only respiratory virus for which there is a licensed vaccine. In Israel, as in other countries, health authorities recommend that all persons aged 65 or older, chronically ill patients and certain occupational groups be vaccinated annually against influenza.

Compliance with vaccination at age 65 and over in different countries has been reported to be from 10–14% [1,2] to 50% [2]. According to a clinic-based survey conducted by the Communicable Disease Surveillance Centre in London [3], about 9% of the population in England and Wales were vaccinated against influenza during the autumn and winter of 1995/1996. These included 24% of high risk patients due to chronic illness, compared with 6% of those with no known risk factors.

In several studies, unawareness of being at increased risk for influenza and fear of side effects were given as reasons for not receiving the vaccination [2,4–8]. In a study carried out in the Netherlands [4], age older than 50 years and multiple indications were found to be positively related to compliance, and beliefs in the absence of side effects and in the efficacy of the vaccine were most positively associated with compliance. Sending reminder letters by family physicians was shown to be a simple way to improve uptake of influenza vaccines by high risk patients [1,4,6,7,9–12].

In a hospital-based survey in Jerusalem in 1990, only 30% of the subjects eligible because of advanced age and/or chronic illness reported having received the vaccine [13]. No national based data on this subject have been reported in Israel.

Methods

Questions about compliance with influenza vaccination were included in two quarterly national surveys monitoring acute morbidity in Israel. In the survey held in October 1999, questions were asked about the 1998/1999 winter; and in the second, carried out in January 2000, questions were asked about the 1999/2000 winter. Data were collected by telephone interviews by means of a structured questionnaire. The interviewee had to be at least 18 years old, and was asked to report for all the household members. The questionnaire was translated into Arabic, Russian and English in order to facilitate interviewing non-Hebrew speakers. Each survey was completed during four successive evenings.

The sample size, originally computed to accommodate the objectives of the acute morbidity surveys, required 750 households (about 3,000 people). In order to achieve this number, based on a predicted response rate of 50%, a

random sample of 1,500 telephone numbers was taken from the national telephone directory. The resulting samples included about 300 people aged 65 and over. On the assumption of a 50% compliance with influenza vaccination, the expected 95% confidence interval for this group was $\pm 5.7\%$. Differences in the percentage compliance were tested by means of the chi-square test.

Results

Influenza vaccination rate

In the survey on the 1998/1999 winter, 848 households participated yielding a sample of 2,968 persons. In the second survey 877 households were included, yielding a sample of 3,084 persons. The overall and age-specific rates of influenza vaccination in the two successive seasons are shown in Table 1. The overall rate of vaccination was around 10% in both winter seasons. The age-specific rates were almost the same in all the age groups except for age 25–34. In this age group the vaccination rate was significantly higher in the 1999/2000 winter (5.2%) compared to the 1998/1999 season (1.2%). Due to the general similarity between the two winters surveyed, the averages of the age-specific rates were computed, and are shown in Figure 1. Generally, the vaccination rates were low until the 35–44 age group where they increased, reaching around 50% in the oldest group (65+). No sex differences were observed in all the age groups (data not shown).

Reasons for non-compliance in the elderly

Table 2 summarizes the respondents' answers to the question on reasons for non-compliance among the elderly. A marginally significant difference ($P=0.054$) was found between the two surveys regarding the reasons given for non-compliance. Absence of recommendation was the most frequent reason (20%) received for elderly people who did not get the vaccine in the 1998/1999 winter, followed by disbelief in the efficacy of the vaccine to prevent influenza (13.7%). In the second survey, conducted during the recent 1999/2000 winter, the relative importance of the first reason, "No one recommended," dropped abruptly to 6.7%. The relative importance of disbelief in the efficacy of the vaccine as a reason for not

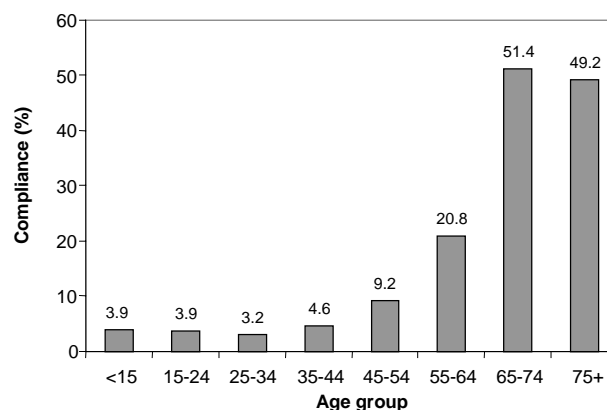


Figure 1. Compliance with influenza vaccination by age group in Israel (average of 1998/99 and 1999/00 winters).

Table 2. Reasons for non-compliance with vaccination among the elderly (age 65+) in Israel during two successive years

Abstention reasons	1998/1999 winter* (n=95)		1999/2000 winter* (n=119)	
	No.	%	No.	%
No one recommended	19	20.0	8	6.7
Disbelief in the efficacy of the vaccine	13	13.7	26	21.9
Fear of side effects	6	6.3	12	10.1
Didn't think that he/she was at high risk	8	8.4	7	5.9
Other**	31	32.6	41	34.4
Unknown	18	19.0	25	21.0
Total***	95	100.0	119	100.0

* For the difference between the two seasons, Chi square = 10.9, $P=0.054$.

** Other reasons not defined in the questionnaire.

*** Data not available for 22 persons in the first survey and for 21 persons in the second.

getting the vaccine was now higher (21.9%). Additional reasons to those defined in the questionnaire, such as fear of side effects and lack of risk perception, were given in similar proportions in the two surveys. The relative weights of other reasons not defined in the questionnaire

Table 1. Compliance with influenza vaccination by age group in two successive winters (1998/1999 and 1999/2000) in Israel

Age (yr)	1998/1999 winter				1999/2000 winter			
	n	No.	%	95% CI	n	No.	%	95% CI
<15	792	27	3.4	2.3–4.9	864	38	4.4	3.1–5.6
15–24	499	19	3.8	2.3–5.9	508	20	3.9	2.4–6.0
25–34	425	5	1.2	0.4–2.7	422	22	5.2	3.3–7.8
35–44	434	22	5.1	3.2–7.6	420	17	4.1	2.4–6.4
45–54	381	41	10.8	7.7–13.9	354	27	7.6	5.1–10.9
55–64	190	38	20.0	14.3–25.7	241	52	21.6	16.4–26.8
65–74	171	91	53.2	45.7–60.7	182	90	49.5	42.2–56.7
75+	75	38	50.0	38.3–61.7	93	45	48.4	37.9–59.0
65+	246	129	52.4	46.2–58.7	275	135	49.1	43.2–55.0
All	2,968	281	9.5	8.4–10.6	3,084	311	10.1	9.0–11.1

Table 3. Who recommended the vaccination among vaccinated persons, by age group, in 1998/1999 and 1999/2000 winters in Israel

Who recommended the vaccination?	1998/1999 winter*				1999/2000 winter*			
	<65		≥65		<65		≥65	
	No.	%	No.	%	No.	%	No.	%
Family physician	68	45.0	71	55.5	73	41.7	72	55.0
Community nurse	8	5.3	13	10.2	12	6.9	9	6.9
Reminder from a community clinic	1	0.7	10	7.8	2	1.1	14	10.7
Get vaccinated every year	6	4.0	7	5.5	19	10.9	18	13.7
Family members	8	5.3	5	3.9	11	6.3	1	0.8
Friends	1	0.7	0	0.0	6	3.4	7	5.3
Media	20	13.2	7	5.5	17	9.7	2	1.5
Other**	33	21.8	12	9.4	32	18.3	8	6.1
Unknown	6	4.0	3	2.3	3	1.7	0	0.0
Total	151	100.0	128	100.0	175	100.0	131	100.0

* Differences between the two seasons: for age <65 chi square = 11.7, $P=0.17$; for age ≥65 chi square = 22.5, $P=0.004$, between age groups chi square=60.2, $P=0.001$.

** Other sources were not defined in the questionnaire.

("Other" category) were almost the same in both surveys. Thus, there is no ground to assume that the undefined reasons biased the distribution of the defined ones.

Who recommended the vaccination?

Table 3 summarizes the answers on who recommended the vaccination for the two surveys, by two age groups: less than 65 years and 65 years and over. In both surveys, almost half of the persons younger than 65 years who were vaccinated did so at the recommendation of the health care personnel (family physician 45.1%, nurse 5.3%). The role of the health care personnel in achieving compliance with vaccination was far greater in the elderly (63.5% in the first survey and 72.6% in the second). Family physicians' recommendations and reminder letters from the community clinics were the main contributors to this effect. The media played a larger role for the younger group as a motive for vaccination compared to the elderly group (9.7% and 1.5% respectively in the 1999/2000 winter).

Discussion

Compliance with vaccination

In the present study we estimated that almost 50% of the population 65 years and over were vaccinated in the 1998/1999 and 1999/2000 winters, a rate quite close to the 44.8% found in Canada during the fall/winter of 1990/1991 [2]. This was higher than the rate found in Jerusalem in 1990 (30%) in certain groups eligible because of advanced age and/or chronic illness [13]. In our study we could not differentiate between high risk patients due to chronic illness and those with no known risk factors as was done in England and Wales [3], where 47% and 29% of patients aged 65 years or over of high risk group and with no recorded risk factors, respectively, had been vaccinated during the autumn and winter of 1995/1996. On the average, the compliance with influenza vaccination that we found for the elderly population is higher than that found in England and Wales. The overall rates of influenza

vaccination found in our study (9.5% and 10.1% for 1998/1999 and 1999/2000 seasons, respectively) resemble those published for England and Wales in the 1995/1996 winter (9%) [3], the Netherlands in 1994 (9%) [1] and Canada in 1990/1991 (13.8%) [2]. We found, for both seasons surveyed, that approximately 6% of the population less than 65 years old were vaccinated against influenza.

Our results are based mainly on proxy interviews. Nevertheless, we found that almost 50% of the elderly people in both surveys stated their vaccination status themselves. Misclassification by the other responders could bias our results to underestimate the vaccination rate of the elderly. MacDonald et al. [14] found in their validation study that self-report of influenza vaccination in elderly outpatients is a highly sensitive and moderately specific measure. In their study, self-report of influenza vaccination by means of a telephone survey had a sensitivity of 0.98 and specificity of 0.71 with kappa of 0.75.

Reasons for non-compliance

Disbelief in the efficacy of the vaccine, lack of risk perception and fear of side effects were given in our study as reasons for non-compliance by people of 65 years or over who had not been vaccinated. Absence of recommendation was also mentioned as a reason for not taking the vaccine, considerably more in the first survey than in the second. Almost 80% of the reasons for non-compliance were given by the responders themselves in both surveys. Their spouses, usually in the same age group, made up the remainder. Thus, it is possible to exclude interviewees' bias as a cause for the observed change of absence of recommendation between the two surveys. Recall bias may be a possible explanation for that change. The other three reasons shown in Table 2 are more connected to a whole life perception than the first one, and thus are less subjected to recall bias. This may explain the difference from the results of the first survey that was carried out more than 6 months after the winter season.

Who recommends immunization?

The health services have an important role in promoting influenza vaccination. Almost 60% of the people who reported being vaccinated in the 1998/1999 and 1999/2000 winters did so at the recommendations of the health care personnel. It seems that most of the promotion is done by the family physicians. Slater et al. [13] showed that vaccine recommendation by medical professionals increased the vaccination rate to 69.3%. Other studies showed that reminder letters from the family physician have a profound effect on compliance with influenza vaccine [1,4,6,7,9–12].

In conclusion, compliance rates with influenza vaccine in targeted groups remain relatively low. The health care personnel, and the nurses especially, have to be more involved in promoting the influenza vaccine during the autumn and winter seasons. They should deliver more information about the benefits of the vaccine and reduce the fear of side effects.

Acknowledgement: The authors thank Gil Harari MSc for performing the statistical tests.

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