

Hospital Nurses' responsiveness to Uptake Vaccination against Theinfluenza Virus

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Abstract

Aim: Understanding the nurses' behavior toward up taking the flu vaccination.

Methods: Quantitative research,120RN from 10 wards in 3 general hospitals filled questionnaire.

Results: Higher vaccination coverage among RNs in Israel was associated with positive perceptions toward the effects of vaccination, previous vaccinations, and younger age and less seniority. The vaccination rate of nurses in pediatrics wards vs. the others was significantly higher.

Summary: We demonstrated valuable information to improve the nurses' compliance to be vaccinated, and its results can be used by managers in health care institutes to increase the body of knowledge on the issue.

Keywords: Nurses responsiveness, uptake vaccination, influenza virus, perceptions, previous vaccinations, age and seniority,

I. Introduction

Awareness of the influenza disease and its damages is increasing worldwide. According to the CDC report for the 2012–2013 influenza season^[1], there was a modest increase in the vaccination coverage rate among healthcare workers from 67% in 2011–2012 to 72% in 2012–2013 to the current 75% coverage.

An influenza pandemic could occur at any time and affect public health, since the flu is a serious illness that could result in complications that increase morbidity and mortality^[2]. Nevertheless, there is a worldwide problem in the population concerning vaccination against influenza, especially among health care workers in general and nurses in particular. It is necessary to clarify the motives that influence nurses' intention to be vaccinated. Preliminary talks with hospital nurses concerning their responsiveness to uptake vaccination against the influenza virus revealed that they have passive and active resistance to having an injection against flu virus for themselves, and some of them even expressed disbelief about the quality of the vaccine. Due to the importance of this issue and the fact that not much research had been done in Israel about the reasons for uptake, or refusal to be vaccinated, the researchers would like get some answers to the reasons for vaccination in order to enlarge the number of the vaccinated hospital nurses for everyone's benefit.

II. Literature Review

An influenza pandemic could occur at any time and affect public health, since the flu is a serious illness that could result in complications that increase morbidity and mortality, especially in high-risk groups^[2]. Nevertheless, the world has a general problem in the field of vaccination against influenza in the population and in particularly among health care workers, especially nurses. Jonansen et al.^[3] claimed that only a small percentage of nurses in North and South Dakota in the United States wished and intended to be vaccinated, and they also ignored participating in studies of influenza vaccine.

According to the US Department of Public Health reports, in 2010 less than 60% of the nurses were vaccinated against influenza^[4]. Moreover, it was found that the levels of vaccination among healthcare workers remain low despite the unambiguous recommendation of the CDS and WHO to get vaccinated^[5].

Black et al.^[6] claimed that among vaccinated healthcare employees, the most common reasons given for vaccination were: protecting myself from flu (43.5%), my employer requires me to be vaccinated for flu (25.5%), and protecting patients from getting the flu (8.5%). Among unvaccinated healthcare employees, the most common reasons given for not being vaccinated were: I might get sick from the vaccine (20.1%), I don't think that flu vaccines work (16.3%), and I don't need it (16.0%).

Almost every year, medical and health staff in Israel and the whole community was asked to get vaccinated against influenza in accordance with the guidelines of the Ministry of Health. However, according to Ministry of Health data, only about 24% were vaccinated against the flu^[7]. That is why it is important to understand the difference between the reality situations, versus ought to get immunization against influenza. The researchers investigated the motives that influence nurses' vaccination practice, and focused on four key

variables: nurses' perceptions about vaccination, previous vaccinations, nurses' age and seniority, and work climate.

Nurses' perceptions about vaccination: Perception is a process by which individuals interpret their sensory impressions in order to give meaning to their environment^[8]. In other words, people might see the same thing but interpret it differently, and this interpretation is due to their individual perception. Perceptions differ due to the observer's individual personality and context, and the situation in which the perception takes place. On an organizational level, managers are interested in why people perceive different incidents the way they do. Studies have shown that compared with individuals who did not receive the vaccine, individuals that were vaccinated have a stronger belief that influenza is a serious disease and that the fact that they were vaccinated will have health benefits^[9].

The health belief model^[10] explains preventive behavior concerning health and is used to examine a wide range of preventive behaviors, including vaccination against influenza. The model refers to six categories: A. Perceived sensitivity to the possibility of getting the flu disease - a person who perceives that s/he has a low-probability to be sick, will have less intention to be vaccinated; B. Perceived severity of the flu - a person who perceives that flu is a serious disease with serious consequences tends to be vaccinated; C. Perceived usefulness of the vaccination - a person who perceives the positive usefulness of the flu vaccine to prevent infection will intend to get the vaccination; D. Barriers preventing the individual to be vaccinated - barriers may be high cost, inconvenience caused by the vaccination, or discomfort involved in traveling to the HMOs for immunization; E. Reasons for action - catalyzing factors for taking the vaccination, such as past experience, information about the disease, or medical recommendations that encourage vaccination; F. The feeling of being able to make the change - whether an individual believes that s/he is able to meet the commitment to be vaccinated (self-efficacy).

However, Leitmeyer, Buchholz and Kramer^[11] argued that the perception that the vaccine is effective or the perception that you are at risk alone are not enough to cause an employee to be vaccinated. Raftopoulos^[2] added that a large part of those who participated in the study did not consider themselves at risk of harm from influenza due to age or chronic illnesses, so they did not need to be vaccinated. Individuals, who thought they were candidates to be vaccinated, stressed mainly their proximity to patients at high risk. A study conducted in Canada among health workers in emergency departments supported the link between the care for patients at high risk and workers' perception of their likelihood to become sick with the flu. Saluja, Theakston and Kaczorowski^[12] found that less than a third of employees believed that their patients were at increased risk for flu following contagion from the staff, but two thirds believed that they were at risk of infection from their patients. Abramson and Levi^[13] performed a survey among the staff of 27 primary care community clinics in Jerusalem. The variables that were associated with performance of immunization were age, attitude-perception (the belief that it is desirable to immunize), and previous years' performance of immunization.

In conclusion, while some studies have found that a positive perception leads to vaccination, it is ambiguous, and our research is going to study this question: Will we find a link between Israeli hospital nurses' perception about flu vaccination, and their actual vaccination against the flu virus.

Previous vaccination: Beguin, Boland and Ninane^[14] researched the issue of low vaccination rate among hospital health care workers. They found that the variables with the highest impact on the vaccination rate were vaccination the previous year, belief that vaccination was highly effective, and affirmation that prevention was important. Riphagen-Dalhuisen, Gefenaite and Hakand^[15] strengthened this issue, and found that having a family that is usually vaccinated was statistically significantly associated with a higher vaccine uptake.

Age and seniority in the organization: Age is one of the variables that influence the decision to be vaccinated, since the age of nurses is related to a feeling of good health. On one hand, Rhudy et al.^[4] claimed that nurses perceived themselves as healthy, young and active, and did not see the need to be vaccinated against flu. However, less young nurses were more likely to be vaccinated. Stephenson et al.^[16] explained that adult health workers were more aware that they were at risk due to their advanced age, and they had higher awareness of the vaccination campaign that encouraged national immunization, and medical reasons were cited as the reason for vaccination. It seems that there is a consensus that a public servant who becomes immune is typically older than those who are not vaccinated^[17; 18]. Shahrabani et al.^[18] also noted in their article a number of differences concerning the nurses' age that affect the rate of vaccination and vaccination reasons. Immunization of experienced nurses is affected by the benefits of the vaccine, and their decision is based on knowledge and experience acquired by age and seniority.

In conclusion, we can find different results concerning the connection between age and seniority concerning nurses' uptake of the vaccination.

Work climate: Carlucci and Schiuma^[19] defined organizational climate as a characteristic of an organization that distinguishes it from other organizations, and reflects the norms, values and attitudes of corporate culture. Organizational climate refers to elements such as comments, opinions, attitudes and behavior in relation to conflicts within the organization, and it can be also be a result of culture^[20]. The great importance of organizational climate is an understanding of how an organization creates values, perceptions and even knowledge. Reinforcing the importance of organizational climate especially in healthcare organizations can be found in Purohit and Verma^[21]. Clarke^[21] examined the effect of organizational climate on the nurses' injury by needles, and found that hospital organizational climate had significantly reduced the incidence of contact injuries. The understanding of organizational climate is important, and we therefore looked for a relationship between organizational climate and the actual vaccination against influenza among nurses in Israel. In addition, checking the connection between the different types of the nurses' wards (geriatric, pediatric, intensive care, etc.) and vaccine uptake might be an interesting issue to look for. The researchers did not find articles about this connection in the professional literature.

The main aim of this research was to examine preferred variables concerning nurses' uptake of the influenza virus vaccination, as we believe that understanding them is the basis for nurses' compliance for the benefit of health promotion. The researchers believe that the number of vaccinated nurses can be increased by examining the relevant variables and gaining deeper understanding about the factors that enhance vaccination willingness.

Research hypotheses:

1. The more positive hospital nurses' perceptions about uptake of the influenza virus vaccination are, the more responsive they will be.
2. Nurses that were vaccinated a year ago will be more responsive to be vaccinated again.
3. The lower the nurses' age and seniority is, the higher their uptake of the influenza virus vaccination will be.
4. The more positive the work climate is, the higher nurses' uptake of the influenza virus vaccination will be.

Method

Research design: This study represents a correlative, quantitative research paradigm.

Participants and procedure: The data was collected in 2015. The study population consisted of 120 Registered Nurses working in 10 wards in 3 general hospitals in Israel.

Using convenience sampling, the authors approached the nurses and invited them to participate in the study. All the nurses agreed voluntarily and the data was anonymous. It was performed via hardcopy questionnaires. Out of the 198 questionnaires, 120 were returned (total response rate 60.6%).

Ethical consideration: Health professionals participated on a voluntary basis, and their rights to anonymity and confidentiality were ensured.

Measures

The independent variable of the current research was hospital nurses' responsiveness to uptake a vaccination against the influenza virus. The question that was addressed to the nurses was: Were you vaccinated this year against the influenza virus, yes or no? In addition, the survey instrument was organized into two scales of questions: A. Work climate scale (organizational and ward climate; adapted from Shoham and Gonen)^[23]. Six questions on a 7-point Likert scale were presented. For example: "The overall atmosphere created in our ward encourages vaccination against influenza". The Cronbach alpha for those questions is 0.77. B. In order to understand nurses' perception concerning uptake of the vaccination^[24; 3], six questions on a 7-point Likert scale were asked. The nurses were asked about their perceptions on the attitudes of the head nurse, society and patients towards taking a vaccine. In addition, they were asked about their personal responsibility concerning the vaccination, and the benefits and importance of vaccination. For example: Do you believe that nurses who work in hospital have a professional responsibility to be vaccinated against the flu every year? The Cronbach alpha is 0.72. The reliability and validity of the measures have been investigated, and have been proven meaningful and practical.

Data analysis: The survey data were analyzed using the SPSS software (version 20), and included T-tests for dependent and independent samples, χ^2 tests, and calculation frequencies.

III. Results

120 nurses responded to the questionnaire. Out of the respondents, 71.4% of them were born in Israel, 87% were women, and the average age was 36.8. 61% of the nurses declared that they had been vaccinated against the flu in the current year.

As can be seen in Table 2, when we compare the numbers of vaccinated nurses from the three hospitals, in hospital 2all the participants indicated that they had beenvaccinated.

Table 2. numbers of vaccinated nurses from the three hospitals

	N	Vaccinated- N	Not vaccinated- N
Hospital 1	35	12	23
Hospital 2	52	52	0
Hospital 3	30	9	21

We will describe the research results by the hypotheses:

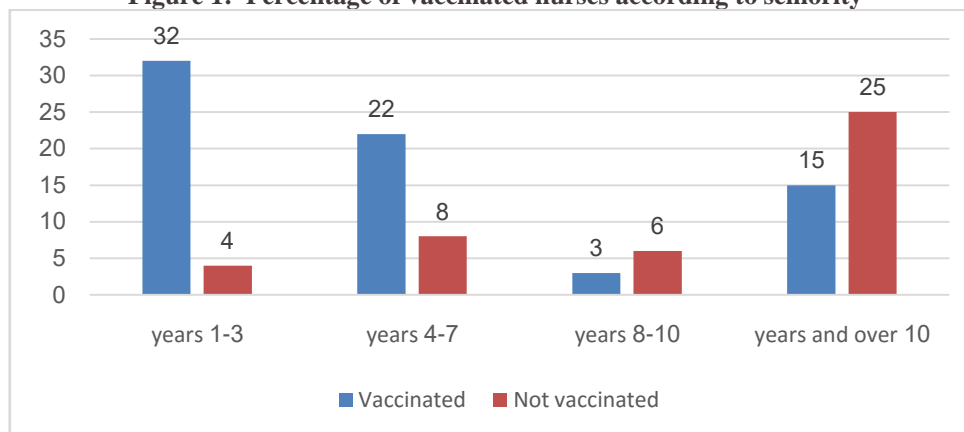
Hypothesis 1: The more positive hospital nurses' perceptions about uptake of the influenza virus vaccination are, the more responsive they will be. We examined whether there was a difference in perceptions about vaccination against influenza among the nurses who participated in the survey. For this purpose we tested statements such as: "The flu vaccination's benefits outweigh the risks and the side effects", "My patients believe that I should get the flu vaccine" etc. The survey findings indicate that there is a significant difference: nurses who were vaccinated against the influenza virus have agreed more with the different perceptions associated with this vaccine ($M = 5.56$) compared to nurses who were not vaccinated against influenza ($M = 4.20$), $t(59) = 7.6$, $p < 0.001$.

Hypothesis 2: Nurses that were vaccinated a year ago will be more responsive to be vaccinated again. We examined whether a nurse who was vaccinated during the current year, does it as a pattern, every year. The findings suggest that there is a strong and significant correlation, $\chi^2(2) = 78.28$, $p < 0.001$. 73% of the unvaccinated nurses during the current year, were not vaccinated in past years either. In contrast, 86.3% of the nurses that were vaccinated in the current year were also vaccinated annually.

Hypothesis 3: The lower the nurses' age and seniority is, the higher their uptake of the influenza virus vaccination will be. We examined differences between seniority and age of nurses vaccinated against the influenza virus. Younger nurses were vaccinated against influenza ($M = 34.18$) more than older nurses were ($M = 40.66$), $t(113) = 3.97$, $p < 0.001$. It was also found that nurses with less seniority ($M = 2.01$) were vaccinated more than nurses with more years of experience were ($M = 3.21$), $t(113) = 3.97$, $p < 0.001$.

Figure 1 displays the number of the vaccinated nurses according to their seniority. It can be seen that the percentage of the nurses with less seniority who were vaccinated is higher than the others. The findings show that nurses with lower seniority tend to be vaccinated more than nurses with higher seniority.

Figure 1: Percentage of vaccinated nurses according to seniority



Hypothesis 4: The more positive the work climate is, the higher nurses' uptake of the influenza virus vaccination will be. We examined the departmental and organizational climate among nurses who were vaccinated against the influenza virus. No significant difference was found in the organizational climate among the two groups of nurses (vaccinated and not vaccinated). It was interesting to find a significant difference between the types of the nurses' work ward, concerning the nurses' uptake of the influenza virus vaccination. Nurses working with children seem more willing to be vaccinated. As part of the research question, we examined the relationship between the type of the nurse's ward and her performance of vaccination against the influenza virus. The findings suggest that there is a strong connection with the type of ward. It was found that 83.6% of the vaccinated nurses worked in wards where the patients were children (maternity, newborn or premature

wards). In contrast, only 16.4% of the vaccinated nurses worked in wards where the patients were adults (internal medicine, emergency, etc.).

IV. Discussion

This study represents some interesting work concerning Israeli hospital nurses' flu vaccination uptake in their workplace. The article adds valuable information to improve their compliance to be vaccinated, and its results can be used by policymakers and/or managers in health care institutes for its innovative ideas that increase the body of knowledge on the issue.

The survey findings indicate that there is a significant difference between the nurses' perceptions. Nurses who were vaccinated against the influenza virus have agreed more with the different perceptions associated with this vaccine compared to nurses who were not vaccinated against influenza. The nurses were asked about their perceptions about the attitudes of the head nurse, society and patients towards the vaccine. In addition, they were asked about their personal responsibility concerning the vaccination, and the benefits and importance of vaccination. Nativ et al.^[24] found that of those who believed that the vaccine was efficacious, 33% were vaccinated, compared to only 14% among those who did not believe so. These results are also consistent with the results of the study by Sharabani, Benzion and Din^[18] who found that belief in the usefulness of the vaccine is a significantly influential factor in the decision whether nurses have the flu vaccine. According to our research hypothesis, we indeed found a significant positive correlation between nurses' beliefs about the vaccine, i.e. the more positive the nurses' beliefs about the vaccine, the more nurses were vaccinated, which reinforces the importance of education efforts that need to be made^[17]. Some of the nurses' statements such as "the vaccine is not working" or "the vaccine will cause flu" were mentioned also by Abramson & Levi (2008) and Hollmeyer et al., (2009)^[16;13]. Similar results were observed in a Canadian study, which found that 28% of health workers feel they do not have enough information about the vaccine or its side effects^[12]. These data emphasize the importance of education and reinforcing positive perceptions and attitudes about vaccination. Hence, we should emphasize the importance in order to improve perceptions of nurses toward vaccination^[11] and highlight the benefits of vaccination^[25]. The authors believe that, on one hand, nurses have an important role in health centers, and, on the other hand, positive perception toward any change is crucial for its success. The relationship between the two could be a solution for many issues such as flu vaccine uptake. That is why, when there is a need to advance health promotion, it should be recommended to work toward nurses' positive perceptions for the success of the mission.

Our results support the second hypothesis, as was also found in Sharabani, Benzion and Din^[18], who claimed that vaccination in the past would predict future additional vaccination, and indeed, it is also strengthened by additional studies^[17;13]. Nurses who were vaccinated in the past, and consequently were not infected with the flu, experience for themselves the benefits of vaccination. Therefore, their response will grow, and sometimes it is worth to focus and make an effort among nurses to carry out the vaccine on those nurses who were not vaccinated at all. Abramson and Levi^[13] performed a survey among the staff of 27 primary care community clinics in Jerusalem. The variables that were associated with performance of immunization were age ($p < 0.001$), attitude-perception (the belief that it is desirable to immunize; $p < 0.001$), and previous years' performance of immunization ($p < 0.001$). Indeed, significant correlation was found between nurses' age and vaccination rate, but the relationship is negative; namely, the younger the nurse is, the higher the rate of vaccination against influenza is found. Respectively, as the nurse has less seniority, she accepts flu vaccination more than senior nurses do. We assume that the reason associated with these results is that they have young children, and are afraid to be sick and to expose them to the influenza. No differences were found with regard to organizational or departmental climate, and thus our hypothesis has not been verified. Perhaps it is due to the fact that the sample was too small and/or because it was a convenience sample. It was interesting to find that in search for differences between responding hospitals, only one hospital was found with 100% compliance. Investigation showed that at this hospital, only one department responded to the questionnaire, a neonatal intensive care unit. Work in this department requires the nurses to get vaccinated against the influenza virus and therefore we received such high response rates. Evidence of these results can also be found in a study by Nativ et al.^[24], who found that the vaccination rate was significantly higher in pediatrics wards (45%) vs. general medicine wards (10%; $p < 0.01$). Such differences between the types of the nurses' work wards can be also explained by the fact that nurses working with children would be more willing to be vaccinated.

The research may also raise the awareness of the issue and make the medical centers managers and the Health Ministry policy makers take up the challenge and perform additional studies which will benefit not just nurses and their patients, but will save them money related to less absence from work due to the flu.

Limitations

The present study has several limitations. First, the relatively small study sample included only 120 participants. The sample was a convenience sample which does not reflect all hospitals and departments.

Another limitation which may affect the results is a minority of men in the study. Out of 120 participants, only 16 were men. We do not have enough information to determine how this affects the results, but it is likely that it is significant.

V. Conclusions And Recommendations

The results of this survey showed that higher vaccination coverage among RNs in Israel was associated with positive perceptions toward the effects of vaccination, previous year vaccination, and younger age and seniority. The subject of flu vaccination among nurses is a relevant issue and a public health issue, and therefore we must continue to study it. We recommend conducting a further survey that is based on large sample sizes and is more diverse, which will include different hospitals and focus on a greater number of nurses in each department, so that we can better understand the effects of organizational climate on promotion of immunization for nurses and immunization-encouraging behavior. It should also be interesting to examine whether the government should enforce the influenza vaccine on the nurses, as they do in other vaccines like hepatitis, before entering work at a hospital.

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Conflict of interest

There are no possible conflicts of interest in the manuscript including financial, consultancy, institutional or other relationships that might lead to bias or conflict of interest.

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