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Research Article
Awareness of Vaccination and Attitudes Towards Vaccine Refusal Among Healthcare Workers at a University Hospital

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Abstract

Background and Objective: Immunity, susceptibility and carrier status of healthcare workers against infections are very important. Therefore, ensuring the immunity of healthcare workers in vaccine-preventable diseases is an important issue that needs to be addressed. This research was conducted to determine the general vaccination status, knowledge, attitudes towards vaccines and vaccine refusal among healthcare workers and students. **Materials and Methods:** This descriptive study was conducted with hospital staff and students from medical and health sciences faculties. A total of 550 individuals working and studying at Gaziantep University Sahinbey Research and Application Hospital were selected by an appropriate method and face-to-face interviews were conducted using a questionnaire. The Chi-square, t-test, ANOVA, Kruskal Wallis, Mann-Whitney U Test were used in the analyses together with descriptive statistics. **Results:** The participants had an average age of 37.1±8.2, with 52.4% being male. The 80.7% of healthcare workers had a bachelor's degree or higher. The 77.5% of the participants believed they were at risk for infectious diseases. The 92.7% of the participants thought that healthcare workers should receive the Hepatitis B vaccine and 54% reported having received this vaccine. The 17.1% of healthcare workers stated that they had refused vaccination. The 89.6% of the participants mentioned refusing the influenza vaccine. Young healthcare workers expressed more hesitation when vaccinating their children. **Conclusion:** Efforts should be made to increase vaccination rates among healthcare workers. Vaccine refusal and hesitancy pose a threat not only to the individual but also to public health, suggesting a need for more comprehensive solutions to address vaccine refusal.

Key words: Vaccine refusal, Gaziantep, influenza vaccine, healthcare worker, healthcare student

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Today, healthcare workers face many occupational risks. These infections and sharps injuries are the most important ones. Health infectious disease factors that employees will acquire from the work environment; other patients, others[1]. It also poses a risk to healthcare professionals, family members and society. With this healthcare professionals can transmit infections acquired from the community to patients and other healthcare professionals. It can also be carried to its employees[2]. Therefore, the immunity, susceptibility and sensitivity of healthcare workers to infections. It is very important whether it is a carrier or not. For this reason, health benefits in vaccine-preventable diseases. Ensuring the immunity of employees is an important issue that needs to be addressed. Vaccinations, which are of vital importance in protecting the health of the society, are generally. While it is carried out successfully in childhood, it does not receive sufficient attention in adulthood[3]. Vaccination is the most effective, safest and cost-efficient approach to protect human health and prevent infectious diseases. Every individual has the right to be immunized against diseases for which effective and safe vaccines are available[4]. Now-a-days, healthcare workers are exposed to various occupational risks, with infections and sharp object injuries being among the most significant. The pathogens that healthcare workers may acquire from their work environment pose a risk to other patients, fellow healthcare workers, family members and the community. Furthermore, healthcare workers can transmit infections they acquire from the community to patients and other healthcare workers[5].

This research, conducted among healthcare workers working at Gaziantep University Sahinbey Research and Application Hospital, aims to draw attention to awareness of vaccines recommended for healthcare workers, childhood immunizations included in the National Immunization Schedule (NIS), vaccine refusal and the factors affecting these decisions. The study intends to set the stage for future research, contribute to the existing literature on this topic and encourage discussions. This study aimed to identify the healthcare workers' susceptibility to vaccine-preventable diseases, their concerns about receiving vaccinations, barriers to getting vaccinated, their desire for information about vaccinations and how they prefer to receive this information. These findings are expected to assist in developing new strategies to increase vaccination rates among healthcare workers, reduce vaccine refusal and hesitancy and improve the overall health of both healthcare workers and the community.

MATERIALS AND METHODS

Study area: This study, which has a descriptive-cross-sectional design, included healthcare workers and academic staff of Gaziantep University Hospital, as well as students in the 4th, 5th and 6th grades of the medical faculty and final year nursing students during the 2017-2018 academic year, comprising a total population of 3400 individuals (N: 3400). As there were no studies on vaccine refusal in Gaziantep a prevalence rate of 16%, obtained from a study conducted in the USA, was used to calculate the sample size. To reach the calculated sample size in this study, stratified and simple random sampling methods were used. The sample size was determined using the formula[6]:

$$n = \frac{NZ2PQ}{d2\ (N-1)+Z2PQ}$$

where, n represents the sample size, N is the population size, P is the estimated prevalence, Q is 1-P and d is the margin of error. In order to reach the 499 participants obtained, the number of individuals to be reached was determined using stratification. Subsequently, the individuals on the acquired lists were numbered. Using a random number table, individuals to be reached were determined from the lists. If contact could not be established with an individual, a new individual selected randomly from the same stratum was reached to complete the sample selection. A total of 550 individuals studying, working and interning at Gaziantep University Sahinbey Research and Application Hospital were included in the study. The total population consisted of 3484 individuals. The proportional number of individuals to be included in each group was determined by stratifying the groups.

Study design: Face-to-face interviews were conducted with the participants in the study. Prior to the survey, verbal consent was obtained from the participants and explanations about the research were provided. The questionnaire included three sections with 31 questions: Demographic information, behaviors and attitudes regarding vaccines and vaccine refusal and it was created based on a review of the literature. Participants were informed that the results would be kept confidential and used for scientific purposes. Additionally, after the questionnaire was administered to each healthcare worker, information about vaccines and vaccine refusal was provided, emphasizing the importance of healthcare professionals providing health education simultaneously.

Ethical consideration: The approval of Gaziantep University Rectorate was obtained to conduct the study. Before the study, approval was obtained from the SANKO University Clinical Research Ethics Committee with the number 2018/05 dated 17/05/2018.

Statistical analysis: The data obtained were analyzed using the SPSS (Statistical Package for the Social Sciences) version 22 statistical package program. In data analysis, descriptive statistics were used along with ANOVA, Kruskal-Wallis, Mann-Whitney U, Chi-square and t-tests. Advanced analysis was performed for significant values in multi-eye chi-square tables. Categorical variables were expressed as numbers and percentages, while numerical variables were presented as Mean±Standard Deviation, along with the lowest and highest values. A p-value of $p<0.05$ was considered statistically significant.

RESULTS

A total of 550 individuals who work or study at Gaziantep University Hospital were included in the study. The distribution of participants according to their socio-demographic characteristics was shown in Table 1. The average age of the participants was 31.1±8.2 (Minimum = 19, Maximum = 67). Of the participants, 52.4% (288) were male and 47.6% (262) were female.

Regarding the occupations of the participants, 28.5% (n = 157) were nurses/midwives, 25.4% (n = 140) were students, 10.0% (n = 55) were research assistants, 8.4% (n = 46) were administrative staff, 7.3% (n = 40) were patient attendants, 7.1% (n = 39) were technicians, 5.5% (n = 30) were academic staff, 4.5% (n = 25) were cleaning staff, 2.0% (n = 11) were security personnel and 1.3% (n = 7) were pharmacists, biologists and physiotherapists. The distribution of participants by occupational group was shown in Table 2.

Approximately, 77.5% (n = 426) of the participants believed that healthcare workers were in the risk group for infectious diseases. Also, 77.5% (n = 426) of the participants claimed to have knowledge about the vaccines recommended for healthcare workers. Regarding obtaining information about the vaccines recommended for healthcare workers, 50.0% (n = 275) of the participants stated that they obtained information from the institution/doctor, 33.6% (n = 185) from books and 18.0% (n = 99) from the internet. Approximately, 53.3% (n = 293) of the participants reported that the entire cost of the vaccines recommended for healthcare workers was covered by the government. Moreover, 92.7% (n = 510) of the participants believed that hepatitis B vaccination was necessary for healthcare workers. About 54.0% (n = 297) of the participants had received the hepatitis B vaccine, while 34.5% (n = 190) had received the tetanus-diphtheria vaccine.

Table 1: Participant distribution according to socio-demographic characteristics

Socio-demographic characteristics	Number	Percentage
Age		
19-29	277	50.3
30-39	195	35.5
40-49	57	10.4
50 and over	21	3.8
Gender		
Male	288	52.4
Female	262	47.6
Marital status		
Married	306	55.6
Single	238	43.3
Divorced	6	1.1
Number of children		
No children	286	52.0
1	89	16.2
2	110	20.0
3	42	7.6
4	21	3.8
5	2	0.4
Education level		
Primary school	10	1.8
Middle school	11	2.0
High school	85	15.5
University and above	444	80.7
Total	550	100.0

Table 2: Distribution of participants by occupational groups

	Population		Sample	
Occupational group	Number	Percentage	Number	Percentage
Nurse/midwife	942	27.0	157	28.5
Student (medical school 4, 5, 6, health sciences 4 year)	783	22.4	140	25.4
Research assistant	349	9.9	55	10
Administrative staff	319	9.1	46	8.4
Patient attendant	287	8.2	40	7.3
Technician/technical staff	253	7.8	39	7.1
Faculty member	193	5.5	30	5.5
Cleaning staff	173	4.9	25	4.5
Security	113	3.2	11	2.0
Other*	72	2.0	7	1.3
Total	3484	100.0	550	100.0

Table 3: Distribution of participants' refusal of recommended vaccines by socio-demographic characteristics

	Vaccine refusal						
	Yes		No		Total		
Socio-demographic characteristics	Number	Percentage	Number	Percentage	Number	Percentage	p-value
Gender							
Male	21	7.3	267	92.7	288	100	0.026
Female	34	13.0	228	87.0	262	100	
Age group							
19-29	14	5.1	263	94.9	277	100	0.007
30-39	31	15.9	164	84.1	195	100	
40-49	7	12.3	50	87.7	57	100	
≥50	3	14.3	18	85.7	21	100	
Marital status							
Married	38	12.4	268	87.6	306	100	0.077
Single	16	6.7	222	93.3	238	100	
Divorced	1	16.7	5	83.3	6	100	
Child presence							
Yes	36	13.8	224	86.2	260	100	0.004
No	19	6.6	271	93.4	290	100	
Education level							
High school and below	7	6.6	99	93.4	106	100	0.195
University and above	48	10.8	396	89.2	444	100	
Occupation							
Physician	12	6.4	175	93.6	187	100	0.044
Non-physician	43	11.8	320	88.2	363	100	
Receiving health education							
Received	43	11.1	346	88.9	389	100	0.200
Not received	12	7.5	149	92.5	161	100	
Years in profession							
<5 Years	13	5.1	242	94.9	255	100	0.000
≥5 Years	42	14.2	253	85.8	295	100	

Among those who did not get vaccinated, 66.4% (n = 168) had hepatitis B immunity, which was the leading reason for not getting vaccinated. The percentage of those not getting vaccinated due to allergies ranged between 1.4 and 3.0%. The highest percentage (3.0%) of those stating allergies was among those who did not get the influenza vaccine. About 10.1% (n = 55) of the participants refused to get vaccinated.

It was determined that women, younger individuals (aged 19-29), individuals with children, non-physicians and those with more than 5 years of experience in their profession significantly refused vaccines ($p = 0.026$, $p = 0.007$, $p = 0.004$, $p = 0.044$ and $p = 0.000$, respectively). Marital status, education level, economic status, health insurance and receiving health education were found to have no significant impact on vaccine refusal ($p = 0.077$, $p = 0.399$, $p = 0.490$, $p = 0.246$ and $p = 0.200$, respectively). The distribution of the participants' refusal of recommended vaccines according to their socio-demographic characteristics was shown in Table 3.

DISCUSSION

In present study, which aimed to determine the thoughts of healthcare workers working and receiving education at Gaziantep University Sahinbey Research and Application Hospital regarding vaccines recommended for healthcare workers and childhood vaccines in the expanded immunization program, awareness about vaccine hesitancy and their perceptions about this concept, the answers related to professional experience revealed that 46.4% of the participants have been in their profession for the first 5 years, while 53.6% have been working for more than 5 years, a period in which they are more likely to be exposed to relevant diseases.

In present study, 77.5% of the participants believed that healthcare workers were at risk for infectious diseases. However, in a study conducted among nurses in Erzurum, this rate was found to be 97.9%[7]. About 10.1% of the participants admitted to refusing vaccines. When asked which vaccine they refused, it was observed that the influenza vaccine had the highest refusal rate. It was determined that younger age groups and those with children refused vaccines more. The lack of a difference between individuals who had received health education and those who had not was also considered a striking result. In the United States, a study conducted in 2003 and 2004 found that the rate of refusing at least one vaccine among families was 6% and in a study in 2009, similar to current study, it was found to be higher (11.5%)[8,9]. In current study, the concept of vaccine refusal was generally questioned among healthcare workers, including both adult vaccines applied to them and child vaccines.

Influenza vaccination rates among healthcare workers vary between countries. The rate is higher in the United States of America (USA) due to vaccination policies, while it is lower in Europe as in this study[10].

In a multicentre study comprising 1398 healthcare workers across 20 emergency departments in the USA, it was reported that 94% were recommended vaccination and 86% received the vaccine[11]. Similarly, studies conducted with healthcare workers found that 80.9% in Canada and 76.9% in France had been vaccinated[12]. Studies have shown a potential correlation between the level of education and attitudes towards vaccines and vaccination[13,14].

In Turkey, with the current trend of increasing vaccine refusal, if it continues, it is estimated that the immunity rate will drop to the 80s in about 5 years. As a result, there might be significant increases in the incidence of diseases that we rarely encounter and perhaps cases we thought we eradicated may reappear.

In current study, when the age group of individuals who had reluctance or hesitation to have their children vaccinated was examined, a significant difference was observed among all age groups. The 30-39 and 40-49 age groups, which are likely to have children, had a high rate. Being married, not having received health education and having children again were associated with high rates of vaccine refusal. This poses a significant public health problem in terms of long-term herd immunity.

Implications in research; adult vaccinations are not fully prioritized by healthcare professionals. Future research should explore the effectiveness of vaccine programs in healthcare workers. The limitation of this study could be used small sample size.

Considering not only the individual but also the societal benefits of vaccines, it is necessary to inform all individuals, especially healthcare workers, about the societal benefits. Healthcare personnel should be vaccinated for the protection of occupational diseases. Although mandatory vaccination is implemented in Turkey, there is no legal regulation against vaccine refusals. New regulations may be needed depending on the situation of cases refusing vaccination. Refusing to have children vaccinated is not a right but a "Violation of rights" for society. Therefore, the Ministry of Health should regulate this legal gap just as it has supported vaccination practices so far. It has been observed that even in healthcare workers, the vaccination rates are not at a sufficient level. There is a need for efforts to make them more sensitive to this issue.

CONCLUSION

The study observed insufficient vaccination rates among healthcare workers. To protect them from occupational diseases, it is important to increase their knowledge and awareness and ensure they are vaccinated. Healthcare practitioners should receive training on vaccine refusal, regardless of their marital status or parental status. Studies have shown that healthcare professionals may be more likely to refuse vaccination and it is important to ensure that all practitioners are well-informed on the subject.

SIGNIFICANCE STATEMENT

It is necessary to ensure the continuation of vaccination practices, to inspect television channels and websites in order to protect against vaccine-preventable diseases and epidemics and to use real, scientific data on vaccines. Although compulsory vaccination is implemented, there is no

legal regulation against vaccine refusal. Considering not only the individual but also the social benefits of vaccines, all individuals, especially healthcare professionals, need to be informed about the social benefits. It has been observed that vaccination rates even among healthcare workers are not sufficient. Healthcare workers' knowledge and awareness about occupational diseases should be increased and they should be vaccinated to protect themselves from occupational diseases. Since it has been determined that healthcare workers who have children are more likely to refuse vaccines, training should be given to healthcare workers regarding vaccine refusal.

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