



The Attitudes of Undergraduate Nursing Students to Childhood Vaccines

Hemşirelik Lisans Öğrencilerinin Çocukluk Çağı Aşılarına Yönelik Tutumu

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Abstract

Aim: This study aims to determine the attitudes of undergraduate nursing students studying at a public university toward childhood vaccines and investigate whether students' attitudes change according to sociodemographic characteristics, vaccination history, and perceived level of knowledge.

Material and Method: This descriptive study was conducted with 83 students studying in the Department of Nursing at a public university in Konya between May 2020 and September 2021. The data were collected using the Information Form and the Public Attitude toward Vaccination-Health Belief Model Scale. The data were analyzed through descriptive statistics and the Mann Whitney U and Kruskal Wallis non-parametric tests.

Results: When the childhood vaccination attitude scores of the students were examined according to their sociodemographic characteristics, it was seen that there was a statistically significant difference between gender and the perceived barriers attitude score; between the economic status of the family and the perceived severity and perceived barriers attitude scores; the location of the high school graduated and the perceived severity, perceived susceptibility, perceived benefit and health motivation attitude scores. When the distribution of students' childhood vaccination attitude scores across their childhood vaccination history and perceived level of knowledge about vaccines was examined, it was observed that there was a statistically significant difference between having sufficient knowledge about childhood vaccines and the perceived barriers attitude score.

Conclusion: Our study revealed that gender, economic status, the location of the high school graduates, and the perceived level of knowledge about childhood vaccines affect vaccination attitudes.

Keywords: Vaccine, children, attitude, vaccination refusal, nursing

Öz

Amaç: Bir kamu üniversitesinde eğitim gören hemşirelik lisans öğrencilerinin çocukluk çağı aşılarıyla ilgili tutumunu belirlemek ve öğrencilerin tutumunun sosyodemografik özellikler, aşı öyküsü ve algılanan bilgi durumuna göre farklılık gösterip göstermediğini incelemektir.

Gereç ve Yöntem: Tanımlayıcı türde olan araştırmamız Mayıs 2020-Eylül 2021 tarihleri arasında Konya'da bir Kamu Üniversitesinde Hemşirelik bölümünde eğitim gören gönüllü 83 öğrenci ile yapılmıştır. Veriler bilgi formu ve Aşıyla ilgili toplum tutumu-sağlık inanç modeli ölçeği ile toplanmıştır. İstatistiksel analizlerde tanımlayıcı istatistikler; Nonparametrik testlerden Mann Whitney U ve Kruskal Wallis testi kullanılmıştır.

Bulgular: Öğrencilerin çocukluk çağı aşı tutum puanları sosyodemografik özelliklere göre incelendiğinde cinsiyet ile algılanan engel tutum puanı alt boyutunda; ailenin ekonomik durumu ile algılanan duyarlılık ve algılanan engel tutum puanı alt boyutları arasında; mezun olunan lisenin yeri ile algılanan duyarlılık, algılanan ciddiyet, algılanan yarar ve algılanan sağlık sorumluluğu tutum puanları arasında istatistiksel olarak anlamlı bir farklılık olduğu belirlenmiştir ($p<0.05$). Öğrencilerin çocukluk çağı aşı tutum puanları ile çocukluk çağı aşı öyküsü ve algılanan bilgi durumu özelliklerine göre dağılımı incelendiğinde çocukluk çağı aşıları hakkında yeteri kadar bilgi sahibi olma durumu ile algılanan engel tutum puanı alt boyutu arasında istatistiksel olarak anlamlı bir farklılık olduğu belirlenmiştir ($p<0.05$).

Sonuç: Araştırmamızda cinsiyet, ekonomik durum, mezun olunan lisenin yeri, çocukluk çağı aşıları hakkında bilgi durumunun aşı tutumları üzerinde etkili olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Aşı, çocuk, tutum, aşı reddi, hemşirelik



INTRODUCTION

Immunization is an important preventive health service that ensures the reduction of infant mortality and the eradication of many infectious diseases.^[1] The World Health Organization (WHO) considers immunization as an important intervention in public health to prevent diseases and deaths that result from diseases and which could be eliminated through vaccination.^[2] Thanks to immunization, babies, children, and society are protected against diseases; relapse of diseases and the sequelae caused by diseases are prevented; death rates are reduced; epidemics and pandemics are prevented, and health expenditures can be prevented be incurred by diseases are minimized.^[3]

Although vaccination services at the community level are implemented in practice, the attitudes known as not accepting or delaying vaccination are defined as vaccine rejection.^[4] The parties that show an anti-vaccine attitude are families, health workers, and society. While the number of anti-vaccination families in our country was 183 in 2011, it increased to 23,000 in 2018.^[5] In retrospect, some populations have been skeptical of vaccination since the introduction of the vaccine; They showed the vaccine as the cause of some pathological problems and also suggested that the side effects of the diseases developed due to the substances in the vaccine.^[6] It is an event that took place in England, which still has echoes today and forms the basis of the claims of anti-vaccine opponents about the relationship between vaccine and autism.^[7] In this case, Wakefield et al.^[8] published an article in a journal and suggested that there is a relationship between MMR (measles, rubella, mumps) vaccine and autism. Most families have not had their children vaccinated for MMR due to the fear of their child having autism, so MMR vaccination rates in England and Wales have remained low for many years, with vaccination rates even lower than 80%.^[8] Afterward, a major epidemic occurred in the 2000s.^[9] Studies conducted in the USA have associated decreases in vaccination rates with vaccine-preventable outbreaks.^[10] Another issue regarding vaccine opposition is the view that thiomersalin in the vaccine will cause autism.^[11] Thiomersal, an organic compound, has been used in multiple-dose vaccines since the 1930s and helps prevent pathogen contamination. The American Academy of Pediatrics and the Public Health Service wanted to gain a protective perspective by recommending that mercury content be kept away from all vaccines, but it led to the formation of anti-mercury groups.^[12] Thereupon, America, England, and Denmark conducted three large epidemiological studies and as a result, it was revealed that there is no relationship between mercury and autism.^[13] However, mercury-containing vaccines have led to an increase in anti-vaccination, and the US has not implemented mercury-containing vaccines since 2001 in order not to decrease vaccination rates.^[14]

According to the current studies, the reasons for being an anti-vaccine are negative attitudes about vaccines in

social media, lack of knowledge about vaccines, mistrust of vaccine benefit, fears about side effects of the vaccine, age of children, the belief that sick children will have a low tolerance to the vaccine, the belief that vaccines can cause different diseases, social characteristics, and cultural structure.^[15,16] It has been revealed that worldwide vaccination rates have decreased by approximately 85%, and in Turkey, the vaccination rate decreased from 98% in 2017 to 96% in 2018.^[17] The decrease in vaccination rates in the world and our country leads to an increase in vaccine-preventable diseases. For example, the incidence of measles in our country increased from 0.01 in 2016 to 0.09 in 2017.^[18]

Anti-vaccine attitudes risk public health, and health workers have important duties to change these attitudes.^[19] The duties of nurses in this process from the planning of the immunization services to the evaluation of the results are learning the benefits, indications, and contraindications of the vaccine and informing individuals about these; learning about the cold chain practices for the protection of the vaccine, complying with the general principles and taking the necessary precautions against any reaction.^[20] The key roles of nurses in safe immunization are researcher, planner, educator, and practitioner. In this process, health workers can change attitude and behavior in every individual they are in contact with, and therefore in society.^[21]

Studies have revealed that the level of knowledge about vaccines, the number of children, the sources of information about vaccines, educational status, socioeconomic status, and the cost of vaccines influence vaccination attitude.^[22,23] There are limited studies on whether the person's age, the number of siblings, whether their vaccinations are complete, the education level of the mother and father, and the place where they live for a long time affect the vaccination attitude. This study aims to fill this gap in the literature. The data obtained about the vaccination attitude of nursing students is believed to be useful in terms of drawing attention to the subject and presenting information that can be used in nursing education.

The study aims to determine the attitudes of undergraduate nursing students studying at a public university about childhood vaccines and to investigate whether students' attitudes differ across their sociodemographic characteristics, vaccination history, and perceived knowledge.

Research Questions

1. What is the childhood vaccination attitude level of undergraduate nursing students?
2. Do students' childhood vaccination attitude scores differ according to their sociodemographic characteristics?
3. Do the childhood vaccination attitude scores of the students differ according to their vaccination history and level of knowledge?

MATERIAL AND METHOD

Research type

This is a descriptive- correlation study.

Research population and the sample

The study's target population is 168 senior nursing students studying at Selçuk University, Faculty of Nursing. Given the effect size of 0.35, 95% statistical power, and 0.05 significance level, the minimum sample size was determined as 83 (24). International students were excluded from the study due to language and cultural differences.

Data collection tools and procedure

The questionnaires were prepared electronically, and a research link was created (<http://www.surveey.com/SurveyStart.aspx?lang=1&surv=70b99bc0ddc54bc396dfafcb01a67e6d>). Then, the online survey link was shared with the senior students through their social media accounts (WhatsApp and Instagram). The Information Form and the Public Attitude toward Vaccination-Health Belief Model Scale were used to collect data.

Information Form

The researchers' information form based on the literature consists of 11 questions and two parts.^[16,22,23,25-28] The first part includes questions regarding sociodemographic characteristics [age, gender, education level of parents, place of residence for the longest period, economic situation, location of the high school (city center/town), and the number of siblings]. The second part includes questions about childhood vaccination history and perceived level of knowledge (whether they have enough information about childhood vaccines and whether they were completed).

The Public Attitude toward Vaccination-Health Belief Model Scale

The scale was developed by three researchers^[25] to measure public attitudes towards vaccination. It measures individuals' attitudes towards childhood vaccines. The scale consists of five factors: perceived severity (4 questions), perceived susceptibility (4 questions), perceived benefit (5 questions), perceived barriers (8 questions), and health motivation (5 questions). The responses revealing the vaccination attitudes of individuals are rated on a five-point Likert scale from "5-strongly agree" to "1- strongly disagree". The content validity of the scale was examined. Based on expert opinion, it was found to be between 0.769-1.00. In addition, exploratory and explanatory factor analyses were performed and it was reported that the validity was high. Five factors explain 68.9% of the total variance. Internal consistency and invariance over time were also examined to test reliability. Cronbach's alpha was found to be 0.86 for the whole scale and between 0.85 and 0.90 for the factors. High scores indicate a positive attitude towards vaccines in all factors except for the perceived barriers factor. On the other hand, low perceived barriers' low scores indicate positive attitudes towards vaccination.^[25]

Data Analysis

In statistical analyses, descriptive statistics were shown with numbers and percentage distributions. The Kolmogorov-Smirnov/Shapiro test was used to understand whether the data showed normal distribution. The Mann Whitney U and Kruskal Wallis tests, which are non-parametric, were used because the data were not suitable for normal distribution. Statistical significance was set at $p < 0.05$.

Ethical Issue

Ethics Committee was obtained from Selçuk University, Faculty of Medicine, Non-Interventional Research Ethics Committee (Date: 17.06.2020, Decision No: 2020/253), and institutional permission was obtained from the Dean of the Faculty of Nursing. Informed consent was obtained from the nursing students who agreed to participate in the study. The study followed the principles of the Declaration of Helsinki.

RESULTS

Table 1. Sociodemographic characteristics, vaccination history, and perceived level of knowledge of the participants

Variables		Number	%
Gender	Female	68	81.92
	Male	15	18.08
Mother's Education Level	Primary School	64	77.1
	High School	13	15.66
	University	6	7.22
Father's Education Level	Primary School	50	60.24
	High School	17	20.48
	University	16	19.27
Place of residence for the longest period	Village	12	14.45
	District	18	21.68
	City	53	63.85
	Good	11	13.25
Economic Situation	Moderate	67	80.72
	Poor	5	6.02
The number of siblings	0	11	3.61
	1-2	18	21.68
	3 and	26	31.32
Location of the high school	Metropolitan	21	25.3
	City center	52	62.65
	Town	10	12.04
Childhood vaccination history	Fully vaccinated.	72	86.74
	Unvaccinated	3	3.61
	I Don't Know	8	9.63
Perceived level of knowledge about childhood vaccines	Yes	45	54.21
	No	15	18.07
	Undecided	23	27.71

The mean age of the students was 22.27 ± 1.025 . 81.92% of the students are women, 77.1% of the mothers and 60.24% of the fathers of the students are primary school graduates, 63.85% of the participants live in the city, 80.72% perceive their economic situation as moderate, 31.32% have three or

more siblings and 62.65% graduated from a high school in the city. When the students' childhood vaccination history and knowledge status were examined, it was revealed that 86.74% were fully vaccinated. 18.27% of the students stated that they had insufficient knowledge about vaccines and 27.71% reported that they were undecided about their knowledge of vaccines.

When the distribution of childhood vaccination attitude scores of the students across sociodemographic characteristics was examined, it was observed that there was a statistically significant difference between gender and the perceived barriers attitude scores ($p < 0.05$). It was revealed that the perceived barriers attitude scores of the male students were higher than those of the female students. Furthermore, a statistically significant difference was found between the economic status of families and the factors of

perceived severity and perceived barriers attitude scores ($p < 0.05$). It was determined that the students caused this difference with good economic status and their perceived severity scores, and the students with a bad economic status and their perceived barriers attitude scores. It was also found that there was a statistically significant difference between the locations of the high schools the students graduated from and their perceived severity, perceived susceptibility, perceived benefit, and health motivation ($p < 0.05$). This difference seems to stem from the students who graduated from a high school in the city. It was determined that there was no significant difference between the mother's education level, father's education level, place of residence for the longest period, and the number of siblings, and the factors the Public Attitude toward Vaccination-Health Belief Model Scale ($p > 0.05$) (**Table 2**).

Table 2. Distribution of the students' childhood vaccination attitude scores across sociodemographic characteristics

Variables		Perceived Severity Median (Min-Max)	Perceived Susceptibility Median (Min-Max)	Perceived Benefit Median (Min-Max)	Perceived Barriers Median (Min-Max)	Health Motivation Median (Min-Max)
Gender	Female	18 (15-20)	16.50 (12-20)	22 (17-25)	14.50 (8-27)	23 (17-25)
	Male	18 (12-20)	18 (4-20)	21 (16-25)	22 (12-40)	22 (17-25)
	Test p	MU: 98.500 p:0.889	MU:522.000 p:0.824	MU:444.500 p:0.428	MU:857.500 *p:0.000	MU:432.000 p:0.349
Mother's education level	Primary school	18 (12-20)	17 (12-20)	22 (16-25)	15 (8-40)	23 (17-25)
	High school	17 (16-20)	18 (14-20)	22 (18-25)	16 (9-22)	21 (18-25)
	University	18 (16-20)	15.5 (4-20)	22.5 (19-25)	15 (11-24)	23 (19-25)
Father's education level	Test p	KW:0.45 p:0.623	KW:1.296 p:0.523	KW:0.798 p:0.671	KW:0.133 p:0.936	KW:1.618 p:0.445
	Primary School	18 (12-20)	16 (12-20)	22 (16-25)	16 (8-40)	23 (17-25)
	High School	17 (15-20)	16 (12-20)	22 (18-25)	15 (8-27)	23 (18-25)
Place of residence for the longest period	University	19.5 (16-20)	18.5 (4-20)	23.5 (19-25)	12 (8-24)	24 (18-25)
	Test p	KW:2.935 p:0.232	KW:2.718 p:0.257	KW:1.729 p:0.421	KW:5.568 p:0.062	KW:0.709 p:0.701
	Village	17.5 (12-20)	16 (13-20)	21.5 (16-25)	16 (8-40)	22 (17-25)
Economic situation	District	17 (16-20)	16.5 (13-20)	22 (19-25)	14.5 (8-22)	21.5 (19-25)
	City	18 (14-20)	18 (4-20)	23 (17-25)	15 (8-40)	23 (17-25)
	Test p	KW:1.272 p:0.529	KW:0.608 p:0.738	KW:0.467 p:0.792	KW:1.773 p:0.412	KW:0.85 p:0.958
The number of siblings	Good (a)	20 (16-20)	18 (14-20)	25 (19-25)	15 (9-40)	24 (20-25)
	Moderate (b)	18 (12-20)	17 (4-20)	22 (16-25)	15 (8-29)	23 (17-25)
	Poor (c)	16 (15-20)	16 (13-20)	20 (18-23)	20 (17-30)	21 (20-24)
Location of the high school	Test p	KW:6.247 *p:0.044 a>b, c	KW:1.664 p:0.435	KW:5.120 p:0.077	KW:7.030 *p:0.030 c>a, b	KW:2.931 p:0.231
	0	19 (16-20)	17.5 (16-20)	22.5 (17-25)	11.5 (8-16)	25 (20-25)
	1-2	17 (14-20)	17 (14-20)	16 (4-20)	21 (17-25)	22 (17-25)
The number of siblings	3 and	18 (12-20)	18 (13-20)	22.5 (16-25)	15 (8-40)	23.5 (17-25)
	Test p	KW:3.958 p:0.138	KW:3.644 p:0.162	KW:2.496 p:0.287	KW:3.570 p:0.168	KW:5.796 p:0.055
	Metropolitan (a)	18.5 (14-20)	18.5 (4-20)	23 (17-25)	14.5 (8-40)	23 (18-25)
Location of the high school	City center (b)	17 (12-20)	16 (14-20)	21 (16-25)	16 (8-40)	22 (17-25)
	Town (c)	16 (16-20)	15 (13-20)	20 (20-25)	17 (8-20)	20 (18-25)
	Test p	KW:7.219 *p:0.027 a>b, c	KW:9.261 *p:0.010 a>b, c	KW:6.118 *p:0.047 a>b, c	KW:2.030 p:0.362	KW:6.325 *p:0.042 a>b, c

KW: Kruskal Wallis; MU: Mann Whitney U, * $p < 0.05$

When the distribution of the childhood vaccination attitude scores of the students across their childhood vaccination history and perceived level of knowledge was examined, it was seen that there was a statistically significant difference between having sufficient knowledge about childhood vaccines and the perceived barriers attitude score ($p < 0.05$). It was found that this difference stemmed from the students who did not think that they had enough knowledge about vaccines. No significant difference was found between perceived severity, perceived susceptibility, perceived benefit, and health motivation attitude scores and having sufficient knowledge about childhood vaccines and completeness of childhood vaccines ($p > 0.05$) (Table 3).

DISCUSSION

When the vaccination attitude scores, sociodemographic characteristics, childhood vaccination history, and the perceived knowledge levels of the undergraduate nursing students were evaluated, it was determined that there were significant differences between vaccination attitude scores and gender, economic status, the locations of the high schools the students graduated from and having knowledge about childhood vaccines.

When the vaccination attitude scores of the students were evaluated according to gender, it was determined that the male students obtained higher scores than the female students in the perceived barriers factor, and the male students had a more negative attitude towards vaccination. In their study with healthcare professionals, Barbara et al. (2020) found that men were vaccinated more than women.^[29] As opposed to our research, the study conducted by Topaloğlu et al. (2013) revealed no significant relationship between the status of parents vaccinating their children and gender.^[30] In the study conducted by Başar et al. (2019), no significant relationship was found between the level of knowledge about the Human papillomavirus (HPV) vaccine and gender.^[31] It is seen that our research finding is different from the studies in the literature.

In parallel to the studies in the literature, our study revealed a significant difference between the factors of perceived severity and perceived barriers and the economic status and the vaccination attitude score. It has been determined that the students with good economic status had a positive attitude towards vaccination, while the students with poor economic status had a more negative attitude. In their study, Bülbül et al. (2013) found that the rate of having the vaccines provided by the state free of charge is higher than having the paid vaccines.^[32] Özer et al. (2016) reported that the factors that affect the acceptance of the chickenpox vaccine are the cost of the vaccine and whether the vaccine is administered by a specialist.^[26] Polat et al. (2017) found that families with social security had their children regularly vaccinated.^[33] Brown et al. (2018) revealed that the vaccine acceptance rate was higher in families with good economic status, while this rate decreased as the economic situation worsened.^[34] Studies in the literature support our research findings. Individuals with good economic status seem to adopt positive attitudes and behaviors concerning vaccination.

In our study, the perceived barriers score of the students who believed that they do not know about childhood vaccines was found to be higher, and it was determined that these students had more negative attitudes towards vaccines than other students. A systematic review reported that education about vaccination is important in immunization.^[35] Another study also stated that as parents are more informed about vaccination, they get their children vaccinated more.^[36] Thus, it is seen that having sufficient knowledge about vaccines is important in developing a positive attitude towards vaccines. Our study further revealed that the vaccination attitude of the students who completed their high school education in the city is positive. This finding may be attributed to the education and the correct information received in the schools located in cities. Our findings suggest that the importance of immunization can be understood and more positive attitudes about vaccines can be adopted if society's awareness is raised by imparting accurate information about childhood vaccines.

Table 3. Distribution of students' childhood vaccination attitude scores across their vaccination history and perceived level of knowledge

Variables		Perceived Severity Median (Min-Max)	Perceived Susceptibility Median (Min-Max)	Perceived Benefit Median (Min-Max)	Perceived Barriers Median (Min-Max)	Health Motivation Median (Min-Max)
Childhood vaccination history	Fully vaccinated.	18 (12-20)	17 (4-20)	22 (16-25)	15 (8-40)	23 (17-25)
	Unvaccinated	18 (17-20)	15 (15-16)	24 (20-25)	16 (15-20)	24 (21-25)
	I don't know	16.5 (14-20)	16 (12-20)	21 (17-25)	17 (9-40)	21 (19-25)
	Test p	KW:1.403 p:0.496	KW:2.858 p:0.240	KW:0.456 p:0.796	KW:2.029 p:0.363	KW:1.435 p:0.488
Perceived level of knowledge about childhood vaccines	Yes (a)	18 (16-20)	18 (12-20)	22 (17-25)	14 (8-40)	24 (18-25)
	No (b)	17 (12-20)	16 (4-20)	20 (16-25)	20 (11-40)	22 (17-25)
	Undecided (c)	17 (15-20)	16 (13-20)	22 (18-25)	16 (9-27)	22 (18-25)
	Test p	KW:2.902 p:0.234	KW:1.864 p:0.394	KW:3.917 p:0.141	KW:14.507 *p:0.001 b>a, c	KW:4.769 p:0.92

KW: Kruskal Wallis; MU: Mann Whitney U, *p<0.05

A study conducted in Brazil revealed that the 25-year-old group had the lowest vaccine acceptance rate, while the 60 and over age group had the highest vaccine acceptance rate.^[34] Nalbantoğlu et al. (2010) reported that hepatitis B vaccination rates decreased as age decreased.^[22] Since the age groups were very similar in our study, vaccine attitude scores were not evaluated according to age.

Our study revealed no statistical difference between the number of siblings, the education level of the parents, the place of residence for the longest period, whether the childhood vaccines were complete or not, and the vaccination attitude scores. The literature reports that there is a difference between the number of siblings, parental education level, place of residence for the longest period, whether childhood vaccines are complete or not, and vaccination attitude scores.^[30,31,33,37,38] These differences across studies may be attributed to the easy access to health services and the conscious behavior of people thanks to the developments in socio-cultural environments.

Limitations

The research is limited to a public university and the senior students studying at that university. All the senior nursing students in the university (n:168) were invited to the study; however, the study was completed with 83 students. Due to time constraints, the opportunities available, the interruption of education because of the COVID-19 pandemic, and difficulties in communicating with the target population face-to-face, the study had to be completed with this sample.

CONCLUSION

Our study revealed that gender, economic status, the locations of the high schools the students graduated from, and their perceived level of knowledge about childhood vaccines affect vaccination attitudes. It was also revealed that the nursing students think they do not have enough information about childhood vaccines. Nursing students, who have important duties in immunization, can be provided with adequate and accurate information about childhood vaccines. In this way, they can develop positive attitudes towards vaccination, and important steps can be taken in immunization by ensuring that society also has a positive attitude toward vaccines.

ETHICAL DECLARATIONS

Ethics Committee Approval: Ethics Committee was obtained from Selçuk University, Faculty of Medicine, Non-Interventional Research Ethics Committee (Date: 17.06.2020, Decision No: 2020/253), and institutional permission were obtained from the Dean of the Faculty of Nursing.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Note: Only the summary of this study was presented at the 5th International 23rd National Public Health Congress (13-18 December 2021).

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