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ORIGINAL ARTICLE

Attitudes of Parents Living in Rural and Urban Areas in Kütahya Province Towards Childhood Vaccines

Kütahya İlinde Kırsal ve Kentsel Bölgede Yaşayan Ebeveynlerin Çocukluk Çağı Aşılarına Yönelik Tutumları

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Abstract

Objective: The aim of the study was to investigate the attitudes of parents living in rural and urban areas towards childhood vaccinations using the health belief model.

Method: The study is of descriptive comparative research type. The study was carried out interviews with parents between June and September 2021. A total of 254 parents, 153 from the urban area and 101 from the rural area, participated. In the study, descriptive questionnaire, vaccine-related community attitude-health belief model scale were used as data collection tools. Descriptive statistics, Spearman correlation analysis, Kruskal-Wallis test, Mann-Whitney U test were used in the analysis of the data.

Results: The total score of vaccine-related community attitude-health belief model scale was found to be 87.63±9.84 for parents in urban areas and 89±6.44 for parents in rural areas. Perceived sensitivity, perceived importance/seriousness, perceived benefit, health responsibility sub-dimensions were higher, and perceived disability sub-dimension scores were found to be lower in those who thought that childhood vaccinations were necessary and had them done ($p<0.05$). It was determined that 97% of parents living in rural areas and 92.2% of parents living in urban areas had the vaccines included in the childhood vaccination calendar. 67.3% of parents living in rural areas stated that "vaccination is a legal obligation and every newborn baby/child should be vaccinated compulsory".

Conclusion: It has been observed that the mean scores of parents' vaccination attitude in both urban and rural areas are at a moderate level.

Keywords: Child health, childhood, health belief model, vaccination attitude, behavioral health

Öz

Amaç: Çalışmanın amacı Kütahya ilinde kırsal ve kentsel bölgede yaşayan ebeveynlerin sağlık inanç modeli kullanılarak çocukluk çağı aşılarına yönelik tutumlarının araştırılmasıdır.

Yöntem: Çalışma betimsel karşılaştırmalı araştırma türündedir. Çalışma, Haziran-Eylül 2021 tarihleri arasında velilerle görüşmelerle gerçekleştirilmiştir. Kentsel bölgeden 153, kırsal bölgeden 101 olmak üzere toplam 254 ebeveyn katılmıştır. Çalışmada veri toplama araçları olarak araştırmacılar tarafından hazırlanıp geliştirilen tanımlayıcı anket formu ve aşıyla ilgili toplum tutumu-sağlık inanç modeli ölçeği kullanılmıştır. Verilerin analizinde tanımlayıcı istatistikler, Spearman korelasyon analizi, Kruskal-Wallis testi, Mann-Whitney U testi kullanılmıştır.

Bulgular: Aşıyla ilgili toplum tutumu-sağlık inanç modeli ölçeği toplam puanı kentsel bölgedeki ebeveynlerin 87,63±9,84, kırsal bölgedeki ebeveynlerin ise 89±6,44 bulunmuştur. Çalışmaya katılan ebeveynlerin yaş ortalaması 34,83+9,14 bulunmuştur. Çocukluk çağı aşılarının gerekli olduğunu düşünenlerin ve yaptıranların algılanan duyarlılık, algılanan önem/ciddiyet, algılanan yarar, sağlık sorumluluğu alt boyutları daha yüksek, algılanan engel alt boyutu puanları daha düşük bulunmuştur ($p<0,05$). Çocukluk çağı aşı takviminde yer alan aşıları kırsal bölgede yaşayan ebeveynlerin %97'sinin kentsel bölgede yaşayan

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ebeveynlerin ise %92,2'sinin yaptırdığı tespit edilmiştir. Kırsalda yaşayan ebeveynlerin %67,3'ü "aşı uygulamasının yasal zorunluluk olması ve doğan her bebek/çocuğa zorunlu olarak aşı yapılması gerektiğini" ifade etmişlerdir.

Sonuç: Hem kentsel hem de kırsal bölgedeki ebeveynlerin aşı tutumu puan ortalamalarının orta düzeyde olduğu görülmüştür.

Anahtar Kelimeler: Çocuk sağlığı, çocukluk çağı, sağlık inanç modeli, aşı tutumu, davranışsal sağlık

Introduction

The primary aim of health services provided to individuals and communities is to protect health, improve the current health status, and ensure the rehabilitation of deteriorated health status (1). Many declarations have been published to protect and improve health. These declarations first started with Alma-ata in 1978 and continued (2). The main purpose of the declaration of Alma-ata and the subject that is emphasized in the declaration is the primary health services. The Republic of Turkey declared the goal of "health for all", which is mentioned in primary health care services, in 2001. Within the scope of these goals, the first one to be realized is to control the infectious diseases that threaten public health with the gradual programs to be provided by 2020 and try to eradicate and eliminate them as much as possible (3).

Primary health services are uncompromised and minimal services that should be delivered to every segment of society justly as a priority, and immunization is among these services (2). In the fight against immunization and infectious diseases, the greatest achievement in biomedical and public health is vaccines. Because only the protection of individuals provides limited benefits in the protection of health whereas vaccines are an important investment that can be made for the protection of society. Vaccines are indispensable for a healthy and good future in welfare (1,4,5).

Childhood requires a sensitive approach since a child's development will be built on a solid basis and will provide a healthy future both individually and socially. Acquiring the right to a healthy life and maintaining healthy living conditions are the most fundamental rights of every child and duties that parents must fulfill (6). However, some reasons push some families to vaccinate their children or prevent them from being vaccinated. In a study, families stated several reasons for non-vaccination: Not trusting vaccine ingredients (mercury, aluminum), not trusting the mechanisms of action of the vaccines, religious reasons (pig products), side effects that can be seen after vaccination (fever, convulsions, allergies), the foreign origin of vaccines, the belief that vaccines will cause harmful effects (SSPE, hyperactivity, infertility), negative news in the press, and other reasons. It is of great importance to get a baby/child vaccinated in order to obtain the right to a healthy life (6,7).

Main Points

- The rate of families who thought that childhood vaccines were necessary was 93.7%; the rate of families who had childhood vaccinations was 94%.
- 87.8% of the parents did not encounter any side effects.
- The mean score of the parents living in the urban area on the health responsibility subdimension was found to be higher than that of the parents living in the rural area.
- It was seen that the mean scores of the parents living in the urban and rural areas on the public attitude towards vaccination scale-health belief model were moderate.

Successful and effective immunization provides protection from childhood vaccine-preventable diseases, as well as control the mortality and morbidity rates caused by the same diseases in youth, adulthood, and old age. With immunization, currently, around 4-5 million child deaths have been prevented and more than 1 billion children have benefited from vaccination services in the last 10 years (8). According to Turkish Demographic and Health Survey 2018 data, the rate of children aged 15-26 months who were never vaccinated was 1.6% whereas this rate increased to 2.9% in 2013. The rate of fully vaccinated children was 80.5 in 2008 and decreased to 74.1 in 2013. The resistance of infants to vaccine-preventable infectious diseases has decreased and the number of children who were not fully vaccinated has further increased by 77,694 (7-9). There are some health models that can be used to explain the importance of vaccination to families and the importance of vaccination in protecting and improving health. The health belief model (HBM) is one of these models.

HBM is a frequently used well- and old-established model that examines the reasons that encourage individuals to exhibit health behaviors when it comes to their health, their perceived benefits and seriousness, or the reasons that prevent them from protecting their health (10). Although there are studies conducted with the HBM regarding the early diagnosis of breast cancer, prevention of colorectal cancer, early diagnosis of cervical cancer, and accidents, studies using the HBM regarding vaccination have examined only urban parents' or rural parents' attitudes towards childhood vaccinations (11-18). For this reason, it is thought that this study, which aimed to evaluate the attitudes of parents living in rural and urban areas, towards childhood vaccinations will contribute to the literature.

Research questions:

- What are the parents' knowledge and opinions about vaccines?

- What are the mean scores of the parents living in the urban area on the public attitude towards vaccination scale - HBM and its subdimensions?

- What are the mean scores of the parents living in the rural area on the public attitude towards vaccination scale - HBM and its subdimensions?

- Is there a significant difference between the mean scores of parents living in the urban area and parents living in the rural area on the public attitude towards vaccination scale-HBM?

- Is there a significant difference between the mean scores of parents on the public attitude towards vaccination scale-HBM in terms of their socio-demographic characteristics?

- Is there a significant difference between the mean scores of parents on the public attitude towards vaccination scale-HBM in terms of their knowledge and opinions?

Material and Methods

The research has a comparative and descriptive design and was carried out between June-September 2021. The research is a two-centered study. In order to make a comparison between the rural and urban areas, the study was carried out in family health center (FHC) located in the central district of Kütahya in the urban region and in the village house located in the rural area. In the study, "purposeful sampling", one of the non-probability sampling methods, was used in the selection of the sample. Although the main rule in sampling is to determine a sample group that will represent the entire population, in some cases, the researcher can determine the sample oneself, taking into account the subject of the research and using his/her knowledge and experience (19). FHC, one of the FHCs located in the central district of Kütahya constitutes the "urban sample" due to its location and total population whereas the health house district constitutes the "rural sample". The sample of the study was determined in line with these purposes and calculated as 377 with a margin of error of 5% and a confidence interval of 95%. Two hundred fifty-four included were included in the study and 68% of the calculated sample size was reached.

The inclusion criteria of the research were being a parent aged between 18-65 and volunteering to participate in the study. The data were collected by the researcher between 06/01/2021 and 09/01/2021 using the face-to-face interview technique. For data collection, a descriptive questionnaire prepared and developed by the researchers and the public attitude towards vaccination scale-HBM was used. A total of 47 questions were asked by the researcher to each individual in the research group. The dependent variable was the mean scores of parents on the public attitude towards vaccination scale-HBM. The independent variables were the socio-demographic characteristics of the parents and their knowledge and opinions about vaccines.

The descriptive questionnaire was created by the researchers and consists of 21 questions that determine the socio-demographic characteristics (13 questions) of the individuals who agreed to participate in the study and their knowledge and opinions about vaccines (8 questions). The public attitude towards vaccination scale-HBM was developed by Tanyer et al. (20). The scale has a 5-point Likert-type rating system and consists of 26 items. The Cronbach alpha value of the scale was 0.89. The scale is not evaluated based on the total score, but each of the five subdimensions is evaluated separately. A decrease in the score on the barrier subdimension indicates a positive attitude; an increase in the scores on other subdimensions indicates a positive attitude. The Cronbach alpha reliability coefficient was 0.88 for the susceptibility subdimension, 0.86 for severity, 0.81 for benefit, 0.80 for barrier, and 0.71 for health responsibility (20). In terms of the reliability of the items, it can be said that the questionnaire is quite reliable since the Cronbach alpha coefficient for the entire scale was 0.738 (21).

Statistical Analysis

In data analysis, descriptive statistics (mean, standard deviation, minimum, median, maximum) were used to define continuous variables. Non-parametric tests (Mann-Whitney U, Kruskal-Wallis) were used since the data did not show normal distribution in the Kolmogorov-Smirnov test. The statistical significance level was taken as 0.05. The IBM SPSS 25 program was used in the analysis of the data. Institutional permission was taken from Kütahya Provincial Directorate of Health and Ethics Committee approval was received in order to carry out the study (decision no: 2021/08-16). "Informed voluntary consent form" was filled in by each participant who agreed to participate in the study.

Results

A total of 254 individuals participated in the study. Of the participants, 153 were included from the urban area and 101 from the rural area. The mean age of the participants was 34.83+9.14. The mean age of the parents from the urban area was 32.84+6.8 and the mean age of those from the rural area was 37.86+11.17. Of the parents included in the study, 81.1% were female and 18.9% were male. The mean age of the participants was 34.83+9.14. 96.5% of the participants were married. 65% of the female participants were unemployed; 21.7% were government officials. Of the male parents included in the study, 24.4% were government officials, 20.5% were workers, and 41.7% had other jobs. 23.6% of female parents were primary school graduates and 29.5% had a bachelor's degree. 23.6% of male parents were primary school graduates and 26.4% had a bachelor's degree. The rate of parents with health insurance was 71.3% and the rate of those who perceived their economic status as moderate was 48% (Table 1).

The rate of parents who did not have problems regarding transportation to the health institution was 78.7%; the rate of families who thought that childhood vaccines were necessary was 93.7%; the rate of families who had childhood vaccinations was 94%. 57.5% of the parents

received information about childhood vaccinations from an institution-person and 42.5% of the parents participating in the study did not receive information about childhood vaccinations from any person/institution. The FHC was the institution where parents received information about childhood vaccinations with the highest rate (23.6%). The rate of parents who had the opinion about the execution of childhood vaccination services that "vaccination should be a legal obligation; every newborn/child should be vaccinated" was 56.7% and the rate of those who thought that "the decision to have vaccination should belong to the mother/father; if the mother/father does not allow vaccination, the child must not be vaccinated" was 43.3% (Table 2).

87.8% of the parents did not encounter any side effects (expected side effects such as fever, pain). Of the parents who experienced side effects in their children after vaccination, 5.9% encountered fever. The rate of parents who had information about non-routine vaccines was 36.6% and the rate of those who did not have information was 63.4%. Of the parents, 25.2% had non-routine vaccinations and 74.8% did not have non-routine vaccinations. The rate of parents

Table 1.
Socio-demographic Characteristics of Parents

		City n	City %	Dirt n	Dirt %	Total n	Total %
Gender	Female	113	73.9%	93	92.1%	206	81.1%
	Male	40	26.1%	8	7.9%	48	18.9%
Mother's job	Unemployed	66	43.1%	99	98.0%	165	65.0%
	Government official	55	35.9%	0	0.0%	55	21.7%
	Permanent worker	9	5.9%	1	1.0%	10	3.9%
	Other	19	12.4%	0	0.0%	19	7.5%
Father's job	Unemployed	3	2.0%	20	19.8%	23	9.1%
	Government official	59	38.6%	3	3.0%	62	24.4%
	Permanent worker	10	6.5%	1	1.0%	11	4.3%
	Worker	26	17.0%	26	25.7%	52	20.5%
	Other	55	35.9%	51	50.5%	106	41.7%
Mother's educational status	Illiterate	0	0.0%	16	15.8%	16	6.3%
	Primary school graduates	11	7.2%	49	48.5%	60	23.6%
	Middle school	7	4.6%	30	29.7%	37	14.6%
	High school	36	23.5%	6	5.9%	42	16.5%
	Bachelor's degree	75	49.0%	0	0.0%	75	29.5%
	Graduate	24	15.7%	0	0.0%	24	9.4%
Father's educational status	Illiterate	1	0.7%	5	5.0%	6	2.4%
	Primary school graduates	7	4.6%	53	52.5%	60	23.6%
	Middle school	5	3.3%	32	31.7%	37	14.6%
	High school	44	28.8%	9	8.9%	53	20.9%
	Bachelor's degree	65	42.5%	2	2.0%	67	26.4%
	Graduate	31	20.3%	0	0.0%	31	12.2%
Health insurance	There is	149	97.4%	32	31.7%	181	71.3%
	None	4	2.6%	69	68.3%	73	28.7%
Perceived economic status	Very good	23	15.0%	1	1.0%	24	9.4%
	Good	68	44.4%	10	9.9%	78	30.7%
	Moderate	59	38.6%	63	62.4%	122	48.0%
	Bad	2	1.3%	20	19.8%	22	8.7%
	Very bad	1	0.7%	7	6.9%	8	3.1%
Problem of transportation to health institution	There is	7	4.6%	47	46.5%	54	21.3%
	None	146	95.4%	54	53.5%	200	78.7%

who got their children vaccinated against rotavirus, which is one of the non-routine vaccines, was 10.2% and the rate of parents who got their children vaccinated against rotavirus and meningitis was 15% (Table 2).

The mean score of parents on the perceived susceptibility subdimension was 16.02±3.01; the mean perceived severity score was 15.36±3.08; the mean perceived benefit score was 18.8±3.46; the mean perceived barrier score was 18.04±5.54; the mean health responsibility score was 19.96±3.46. The mean total score was 88.17±8.66. There was a statistically significant difference in perceived severity and health responsibility distributions according to the place where the data were collected ($p<0.05$). The mean perceived severity score of those living in the rural area was high and their mean health responsibility score was low (Table 3).

Table 2.
Information and Opinions of Parents on Vaccines

		City n	City %	Dirt n	Dirt %	Total n	Total %
Childhood vaccinations requirement	Necessary	142	92.8%	96	95.0%	238	93.7%
	Not required	11	7.2%	5	5.0%	16	6.3%
Getting childhood vaccines	Made by	141	92.2%	98	97.0%	239	94.1%
	Not made	12	7.8%	3	3.0%	15	5.9%
Information on childhood vaccines	There is	105	68.6%	41	40.6%	146	57.5%
	None	48	31.4%	60	59.4%	108	42.5%
Childhood vaccines information resource	Not received	48	31.2%	60	60%	108	42.5%
	FHC	60	39.0%	0	0.0%	60	23.6%
	Health house	0	0%	38	38%	38	15.0%
	Other	46	29%	2	2.0%	48	19.1%
Legal obligation childhood vaccines	Should be a legal obligation	76	49.7%	68	67.3%	144	56.7%
	Not legal obligation	77	50.3%	33	32.7%	110	43.3%
Experiencing post vaccine side effects	Encounter	23	15.0%	8	7.9%	31	12.2%
	Not encounter	130	85.0%	93	92.1%	223	87.8%
Non-routine vaccines information status	Has information	88	57.5%	5	5.0%	93	36.6%
	No information	65	42.5%	96	95.0%	161	63.4%
Getting non-routine vaccinations	Made by	63	41.2%	1	1.0%	64	25.2%
	Not made	90	58.8%	100	99.0%	190	74.8%

Table 3.
Comparison of Parents' Scores from the Scale Sub-dimensions of Community Attitude to Vaccination-health Belief Model

	City	Dirt	Total		
	Mean + SD Med (min-max)	**Mean + SD Med (min-max)**	**Mean + SD Med (min-max)**	**z/H***	**p**
Perceived susceptibility	15.74±3.51 16 (4-20)	16.45±1.98 16 (12-20)	16.02±3.01 16 (4-20)	-1.054	0.292
Perceived severity	14.99±3.5 16 (4-20)	15.92±2.19 16 (8-20)	15.36±3.08 16 (4-20)	**-2.067**	**0.039**
Perceived benefit	18.75±4.03 20 (5-25)	18.86±2.37 19 (13-25)	18.8±3.46 19 (5-25)	-1.350	0.177
Perceived barrier	17.84±6.24 17 (8-33)	18.35±4.29 18 (8-30)	18.04±5.54 17 (8-33)	-1.454	0.146
Health responsibility	20.31±3.74 21 (8-25)	19.43±2.94 19 (11-25)	19.96±3.46 20 (8-25)	**-3.334**	**0.001**
Total score	87.63±9.84 89 (57-118)	89±6.44 89 (73-112)	88.17±8.66 89 (57-118)	-0.034	0.973

**Mann-Whitney U, SD=standard deviation*

Those who thought that childhood vaccines were necessary had a higher total score. The mean total score of those who had childhood vaccinations was higher. The mean total score of those who received information about childhood vaccinations from an institution/person was higher. The mean total score of those who thought that "vaccination should be a legal obligation; every newborn/child should be vaccinated" about the execution of childhood vaccination services was higher. No significant correlation was determined between the side effects that parents encountered/did not encounter in their children after vaccination and their total score. No significant correlation was found between having/not having information about non-routine vaccines and the total score. The mean score of those who had non-routine vaccines was higher (Table 4).

Discussion

According to the study results, it was observed that parents living in rural and urban areas believed that childhood vaccinations were necessary and got their children vaccinated. In the study conducted by Seskute et al. (22), it was found that 75.3% of mothers believed that childhood vaccinations were necessary and that the benefits outweigh the harms. In another study, 95.1% of parents were found to believe in the protective effects of vaccines (23).

According to the study results, although most of the parents had their children vaccinated, 12 (7.8%) in the urban area and 3 (3%) in the rural area did not have their children vaccinated. In the literature, various reasons have been reported as to why some parents are anti-vaccine. Some reasons are the presence of mercury in vaccines and the

Table 4.
Community Attitude to Vaccination-health Belief Model Scale Scores According to Parents' Knowledge and Views on Vaccines

			Total score		
		n	**Mean + SD Med (min-max)**	**z/H***	**p**
Childhood vaccinations requirement	Necessary	238	89.37±6.98 89 (59-118)	**-5.513**	**<0.001**
	Not required	16	70.44±11.68 66.5 (57-97)		
Getting childhood vaccines	Made by	239	89.58±6.53 89 (73-118)	**-6.390**	**<0.001**
	Not made	15	65.8±7.72 65 (57-82)		
Information on childhood vaccines	There is	146	89.49±7.93 90 (57-118)	**-2.976**	**0.003**
	None	108	86.39±9.3 88 (58-112)		
Legal obligation childhood vaccines	Should be a legal obligation	144	90.51±6.59 90 (75-118)	**-4.044**	**<0.001**
	Not legal obligation	110	85.11±10.01 87 (57-106)		
Experiencing post vaccine side effects	Encounter	31	88.68±7.31 89 (67-102)	-0.197	0.844
	Not encounter	223	88.1±8.84 89 (57-118)		
State of knowledge on non-routine vaccines	Has information	93	88.44±9.36 90 (57-107)	-1.258	0.208
	No information	161	88.02±8.25 88 (58-118)		
Non-routine vaccinations	Made by	64	90.56±6.83 91 (75-107)	**-2.476**	**0.013**
	Not made	190	87.37±9.07 88 (57-118)		

**Kruskal-Wallis, **Kruskal-Wallis p<0.005, SD=standard deviation*

increase in questioning as the level of education increases (24,25). In a study, it was concluded that the reason why 56% of parents did not get their children vaccinated was the idea that vaccination was useless (26). As a result of the study, although the rate of vaccination was high, it was concluded that there were parents who did not get their children vaccinated.

According to the study results, the mean scores of those who thought that "vaccination should be a legal obligation; every newborn/child should be vaccinated" on the perceived susceptibility, severity, benefit, and health responsibility subdimensions were found to be significantly high and their mean score on the barrier subdimension was high. In a thesis study in which the knowledge, attitudes, and behaviors of parents about childhood vaccinations were examined, it was found that the mean susceptibility, severity, benefit, and health responsibility scores of parents who thought that vaccination should be done were high and it was concluded that this thought lowered the mean score on the barrier subdimension (14). In another thesis study, the mean scores of parents who thought that "vaccination should be a legal obligation; every newborn/child should be vaccinated" on the perceived susceptibility, severity, and benefit subdimensions were found to be high (15).

According to the study results, it was found that 12.2% of the families encountered side effects after vaccination and that they hesitated against vaccinations. In previous studies, one of the hesitations of the parents about vaccination was the side effects such as fever and pain seen after vaccination (27,28). In a study in which the causes of childhood vaccine rejection in Australia were examined, it was found that 35.9% of parents were afraid of the side effects of vaccines (29). In another study, it was found that 44% of parents did not have their children vaccinated completely and hindered them due to their concerns about the side effects of vaccines (30). This suggests that side effects prevent families from getting vaccinated.

57.5% of parents living in the urban area had knowledge of non-routine vaccinations but this rate was only 5% in the rural area. 41.2% of parents living in the urban area had non-routine vaccinations whereas this rate was found to be only 1% in the rural area. The low rate of these vaccinations, which are not routine and are provided by families, may be due to the fact that these vaccines are paid and families are not aware of these vaccines because more than half of the families (63.4%) stated that they were not aware of these vaccines. In a study, it was determined that the first one among the reasons why families did not get their children vaccinated against rotavirus, was that the families were not informed about the vaccines, and the second was the inability to get the vaccine because it was paid (31). In a different study, it was seen that the families received the most information about non-routine vaccines from the health personnel and then the media when used effectively (32).

Conclusion

It was seen that the mean scores of the parents living in the urban and rural areas on the public attitude towards vaccination scale-HBM was moderate. The mean score of the parents living in the urban area on the Health Responsibility subdimension was found to be higher than that of the parents living in the rural area. The mean score of the parents living in the rural area on the perceived severity subdimension was determined to be higher than that of the parents living in the urban area. The mean scores of the parents living in the urban area who had non-routine vaccinations on the perceived susceptibility, perceived benefit, perceived severity, and health responsibility subdimensions were found to be higher. Those who had information about non-routine vaccinations and got their children vaccinated had a lower mean score on the perceived barrier subdimension.

Ethics Committee Approval: Institutional permission was taken from Kütahya Provincial Directorate of Health and Ethics Committee approval was received in order to carry out the study (decision no: 2021/08-16).

Informed Consent: "Informed voluntary consent form" was filled in by each participant who agreed to participate in the study.

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