CERASUS JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Evaluation of vaccine hesitancy/refusal in Giresun province

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Received: 20 March 2024
Accepted: 25 April 2024
Published: 14 June 2024

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Abstract

Objective

This study aimed to determine the frequency of vaccine hesitancy/refusal specifically in the province of Giresun, identify the related factors behind these behaviors, and determine the factors that could influence families in making these decisions.

Methods

This is a decriptive study. The data for this study were obtained from 'Vaccine Refusal Form' filled in by family physicians and 'Vaccination Refusal Reasons Survey' prepared by the Public Health Services Department of the Giresun Provincial Health Directorate is also filled out by families and sent to the Directorate at the end of each month along with the refusal forms. The study encompassed data from the years 2019 to 2023 inclusive.

Results

The number of infants/children who had not received at least one vaccine due to family refusal was 98 in 2019, and this number increased each year, reaching 99, 184, 213, and 317 in the subsequent years. These children including 431 girls (47,3%) and 480 boys (52.7%). According to the live birth data and Birth Notification System information released for Giresun province, the rate of vaccine hesitancy/refusal calculated was 2.3% in 2019 and increased each year to 2.5%, 4.8%, 5.7%, and 8.9% for the years 2020, 2021, 2022 and 2023, respectively. 43.9% of the mothers and 51.7% of the fathers were university graduates. The majority of mothers were housewives (70.8%), followed by teachers (9.0%). Among fathers, 37.9% were industrial workers, 13.2% were religious officials, 13.2% were self-employed, and 9.9% were teachers.

Conclusion

Vaccine hesitancy/refusal is emerging as a problem growing day by day, and remains significant regardless of the education level and occupation of those who engage in it. Policies that can prevent misinformation on this subject should be developed and implemented swiftly.

Keywords: Vaccine hesitancy; vaccine refusal; Giresun

You may cite this article as: Bulut B, Özek Ü, Bulut M, Şahin B. Evaluation of vaccine hesitancy/refusal in Giresun province. *Cerasus J Med.* 2024;1(2):109-116.

Introduction

Providing immunizations is an essential health service aimed at preventing babies, children, or adults from contracting infections by vaccinating them before the period of highest risk [1]. Through vaccination, between 3.5 to 5 million deaths caused by diseases like diphtheria, tetanus, pertussis, influenza, and measles are prevented each year. In 2022, 12.9 million children worldwide did not receive any vaccination. [2].

In recent years, there has been a significant increase globally in parents opting not to vaccinate their children. Consequently, there has been a rise in childhood infectious diseases. Due to these developments, the World Health Organization (WHO) has made the issue of vaccination a priority. It established the 'Vaccine Hesitancy Working Group' in 2012 to conduct research. According to the report prepared by the group, there are two main attitudes related to why people do not get vaccinated. The first is 'vaccine hesitancy,' which involves delaying becoming vaccinated or refusing to accept one or more vaccines. The second is 'vaccine refusal,' characterized by the deliberate non-acceptance of all vaccines [3].

In Türkiye, especially in the last decade, similar processes have been experienced regarding vaccine refusal. According to the 2018 data of the Türkiye Demographic and Health Survey (TDHS), 2% of children aged 12-23 months and 3% of children aged 24-35 months have never been vaccinated. Among children aged 24-35 months, the proportion of those who received all basic vaccines is 72% [4]. In recent years, vaccination rates have been declining due to false reports and negative rumors surrounding vaccination programs [5].

According to the Family Medicine Information System data of the Ministry of Health while the vaccination rates in Türkiye are at 99.5% for DaBT 3, 98.1% for BCG, and 99.3% for HBV, the vaccination rates for MMR and KPA Booster are 95.2% and 95.3%, respectively [6]. One of the objectives of the Expanded Immunization Program, which constitutes the basis of vaccination services in Türkiye, is to achieve and maintain a 95% vaccination rate nationwide for each antigen using effective vaccines [1]. In light of the current situation, it is clear that there might be challenges in achieving this goal for some antigens. Vaccine hesitancy and refusal can be considered major obstacles to reaching the target vaccination rates.

This study aimed to determine the frequency of vaccine hesitancy/refusal specifically in the province of Giresun, identify related factors behind these behaviors, and determine the factors that could influence families in making these decisions.

Materials and Methods

This study is a descriptive study was conducted among families living in Giresun province who exhibit vaccine hesitancy/refusal behavior. The permission for this study has been obtained from the Giresun Training and Research Hospital Ethics Committee with decision number 20.11.2023/23.

According to practices of the Turkish Ministry of Health, when it is time for a child to be vaccinated, their registered physician contacts their family to arrange to administer the vaccine. However, if a family refuses vaccination, and as a result, the family physician cannot administer the vaccine, they are required to fill out and have signed a 'Vaccine Refusal Form'. These forms, documenting the refusal, are sent to the Giresun Provincial Health Directorate at the end of each month. Families refusing vaccination can be identified through these forms.

In addition to the vaccination refusal form, since 2019, a 'Vaccination Refusal Reasons Survey' (including data about gender, identity of the family member refusing vaccination, mother's education level, father's education level, mother's occupation, father's occupation, average monthly household income, type of vaccine refused, reasons for vaccine refusal) prepared by the Public Health Services Department of the Giresun Provincial Health Directorate is also filled out by families and sent to the Directorate at the end of each month along with the refusal forms. These surveys have been archived by the Giresun Provincial Health Directorate since 2019.

The data for this study were obtained from these two forms using archival scanning methods. The study encompassed data from the years 2019 to 2023 inclusive. It was considered vaccine hesitancy/refusal if at least one vaccine dose has not been administered

despite being due according to the vaccination schedule. The total number of live births, which was used in calculating the vaccine refusal rates for the years 2019, 2020, 2021, and 2022 (4237, 4002, 3801 and 3742, respectively) was obtained from Turkish Statistical Institute (TSI). The data for the number of live births in the year 2023 (3546) was based on the Birth Notification System, since this number has not yet been disclosed by TSI.

As descriptive statistics, qualitative data were given in numbers and percentages.

Results

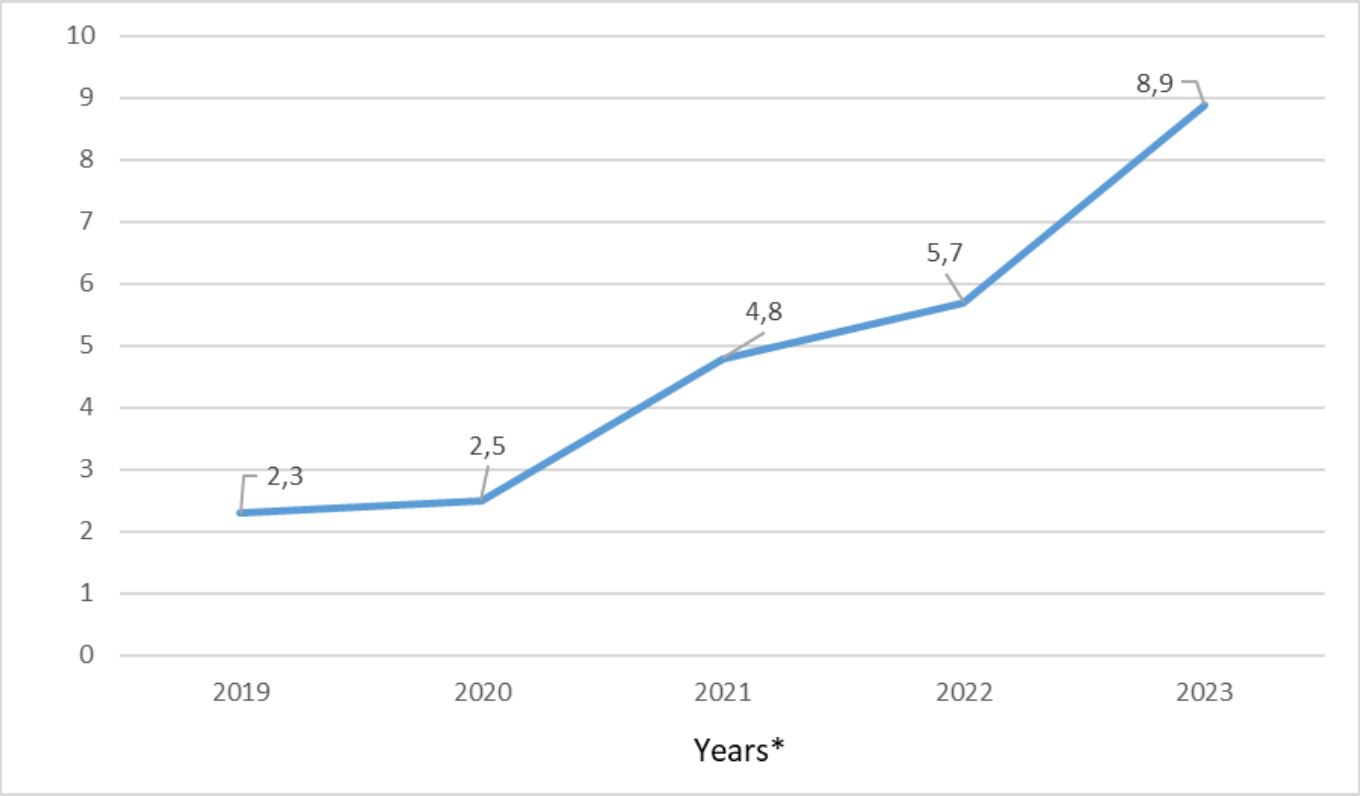
The number of infants/children who had not received at least one vaccine due to family refusal was 98 in 2019, and this number increased each year, reaching 99, 184, 213, and 317 in the subsequent years. These children including 431 girls (47,3%) and 480 boys (52.7%). According to the live birth data and Birth Notification System information released for Giresun province, the rate of vaccine hesitancy/refusal calculated was 2.3% in 2019 and increased each year to 2.5%, 4.8%, 5.7%, and 8.9% for the years 2020, 2021, 2022 and 2023, respectively (Figure 1).

When the reasons for vaccine refusal were examined, the most common reason was identified as 'I think the vaccine could be harmful' (26.9%), followed by 'I don't believe in the benefits of the vaccine' (26.6%), 'I am afraid of the side effects of all vaccines' (23.5%), and 'I don't think my child needs vaccination' (15.5%) (Table 1).

When the education levels of the parents engaging in vaccine refusal behaviors were examined, it was noteworthy that 43.9% of the mothers and 51.7% of the fathers were university graduates (Table 2).

The occupational distributions of parents engaging in vaccine refusal behavior are presented in Table 3. According to this, the majority of mothers engaging in vaccine refusal behavior were housewives (70.8%), followed by teachers (9.0%). Among fathers, 37.9% were industrial workers, 13.2% were religious officials, 13.2% were self-employed, and 9.9% were teachers.

Figure 1. Frequency of Vaccine Hesitancy/Refusal in Giresun, 2019-2023.



* The number of live births used in calculating vaccine refusal rates for the years 2019, 2020, 2021, and 2022 was obtained from the TSI. The data for the number of live births in the year 2023 is based on the Birth Notification System since this has not yet been disclosed by the TSI.

Table 1. Reasons for Vaccine Hesitancy/Refusal in Giresun, 2019-2023.

Reasons (N=911)	n	%
I think the vaccine could be harmful.	245	26.9
I don't believe in the benefits of the vaccine.	242	26.6
I am afraid of the side effects of all vaccines.	214	23.5
I don't think my child needs vaccination.	141	15.5
Due to the health of my child.	81	8.9
There is no specific reason.	63	6.9
I do not trust the contents of vaccines.	57	6.3
There are negative opinions about this vaccine in the media.	53	5.8
I don't think my child will contract the disease that this vaccine is designed to prevent.	49	5.4
I do not approve of the vaccination due to my beliefs.	48	5.3
My child had a problem with this vaccine before.	37	4.1
I experienced problem after the vaccination.	26	2.9
I don't trust it because it's a foreign vaccine; if it were a domestic one, I would get it.	23	2.5
I have a phobia of any kind of needles.	21	2.3
A relative of mine experienced a problem after this vaccine.	20	2.2
Community leaders/my immediate family/my other relatives did not want me to.	9	1.0

Table 2. Education Levels of Parents Engaging in Vaccine Hesitancy/Refusal Behavior in Giresun, 2019-2023.

Education Level	n	%
Mother (n=757)		
Literate	7	0.9
Elementary school graduate	65	8.6
Middle school graduate	99	13.1
High school graduate	254	33.6
University graduate	332	43.9
Father (n=748)		
Literate	3	0.4
Elementary school graduate	37	4.9
Middle school graduate	65	8.7
High school graduate	256	34.2
University graduate	387	51.7

Table 3. Distribution of Occupations of Parents Engaging in Vaccine Hesitancy/Refusal Behavior in Giresun, 2019-2023.

Occupation	n	%
Mother's (n=742)		
Housewife	525	70.8
Teacher	67	9.0
Healthcare professional	38	5.1
Industrial worker	31	4.2
Religious official	19	2.6
Other civil servant	18	2.4
Self-employed	14	1.9
Engineer	8	1.1
Security guard	4	0.5
Other	18	2.4
Father's (n=737)		
Industrial worker	279	37.9
Religious official	97	13.2
Self-employed	97	13.2
Teacher	73	9.9
Other civil servant	67	9.1
Security guard	27	3.7
Police officer	25	3.4
Farmer	12	1.6
Engineer	11	1.5
Healthcare professional	9	1.2
Retired	5	0.7
Lawyer	4	0.5
Unemployed	10	1.4
Other	21	2.8

Discussion

This research covers the years 2019-2023, during which the frequency of vaccine hesitancy/refusal, which was identified as 2.3% in 2019, increased every subsequent year, reaching 8.9% in 2023. In a study conducted in Giresun province in 2018, the rate was noted as 1.2% [7]. The data clearly indicates an increasing frequency of vaccine hesitancy/refusal behavior in recent years in Giresun province. In a nationwide study conducted in Türkiye in 2020 and 2021, the frequency of vaccine hesitancy/refusal was found to be 11.2%, highlighting that this issue is a serious concern across the country [8]. According to the TDHS 2018 data, the proportion of children who have never been vaccinated did not show a significant change between 1993 and 2018 [9]. The data for the last five years, which will be revealed in the TDHS 2023 data, is eagerly awaited, as it will reflect the increasing prominence of vaccine hesitancy and refusal.

Examining the reasons for vaccine hesitancy/refusal in our research, the most frequently cited statements were 'I think the vaccine could be harmful,' 'I don't believe in the benefits of the vaccine,' 'I am afraid of the side effects of all vaccines,' and 'I don't think my child needs vaccination.' Evaluating the statements 'I think the vaccine could be harmful' and 'I am afraid of the side effects of all vaccines' together, they made up 50.4% of responses. Similarly, assessing 'I don't believe in the benefits of the vaccine' and 'I don't think my child needs vaccination' together, the percentage was 42.1%. In other words, families often exhibited vaccine hesitancy/refusal due to the belief that the vaccine could be harmful and/or the vaccine had no benefits. In a study conducted by Kurt et al., it was found that 99% of families exhibiting vaccine hesitancy/refusal behavior believed that vaccines were not safe, and 71.7% believed that vaccines were not necessary [10]. Similar reasons have been highlighted in many studies conducted in our country [11-13]. In an international study involving a total of 16 countries, including Türkiye, the percentage of families expressing concerns about the potential harm of chemicals in vaccines and the possibility of vaccine side effects was determined to be 69.4%. Views regarding the possibility of side effects and the perception that vaccines are unnecessary have also been found to be prominent in different societies [14-16].

As observed, similar reasons for vaccine hesitancy/refusal have been identified in different regions of our country and in various other countries and societies worldwide. The beliefs that vaccines are harmful and unnecessary seem to be prevalent. Therefore, in addition to ensuring that accurate information is disseminated to the public, it is particularly crucial to prevent misinformation from becoming widespread. In this regard, as highlighted in a study conducted in Sweden, families exhibiting vaccine refusal behavior tend to use social media and internet searches more frequently as sources of information than other groups [15]. To effectively disseminate information, social media and internet channels should specifically be utilized, and policies should be formulated to counteract misinformation propagated through these platforms.

When the educational backgrounds of the families exhibiting vaccine hesitancy/refusal behavior were examined, it was determined that 43.9% of the participating mothers and 51.7% of the fathers in our study were university graduates. Reviewing the literature, varying percentages, ranging from 40% to 70%, can be observed with regard to the educational status of families with vaccine hesitancy/refusal in which the parents have undergraduate degrees or higher [7, 8, 10, 11, 13, 14]. However, in a study conducted by Hasar et al., no difference in terms of education level was found between the group exhibiting vaccine hesitancy/refusal behavior and the control group [13]. Similarly, in a study conducted by Byström et al., no difference was observed in this regard [15]. A nationwide cross-sectional study conducted in France says that more highly educated parents were delayers or refusers more often than those with less education [17]. On the other hand, according to a study conducted in Italy, lower education among the parents, both mother and father, was significantly associated with vaccine refusal [18]. It can be said that the effect of education level on vaccine hesitancy/refusal varies across different populations. In this context, when designing information campaigns, how to reach an audience with low and high level of education should be considered, and the content should be designed accordingly, providing satisfactory explanation and answers to any questions people may have and also easy to understand.

When the occupational statuses of the families exhibiting vaccine hesitancy/rejection behavior were examined, it was noteworthy that 70.8% of the mothers in our study were housewives, followed by 9.0% who were teachers, and 5.1% who were healthcare workers. In fathers, the most common occupation was industrial worker, accounting for 37.9%, followed by 13.2% who were religious officials, another 13.2% who were self-employed, and 9.9% who were teachers. In a previous study conducted in Giresun, 14.8% of mothers were identified as teachers, and 11.1% as healthcare workers. In the same study, 25.9% of the fathers were teachers and 20.4% were religious officials [7]. In a nationwide study conducted by Tekin et al., it was determined that occupational status did not have a statistically significant impact on vaccine hesitancy/refusal [8]. However, when looking at occupational status, similar to the educational background, the finding that individuals in socially valued professions,

such as teachers, religious officials, and healthcare workers also engaged in vaccine hesitancy/refusal, provides insight into the magnitude and complexity of the issue. In particular, the fact that this group included healthcare workers poses a serious question that needs to be thoroughly examined. When formulating policies and preparing information on the topic of vaccines, this aspect of the issue must also be taken into consideration.

Limitations

Due to a considerable proportion of the participants (51.5%) did not disclose their income, and also significant fluctuations in inflation over the years, income information was not included in the analysis on the grounds that a reliable assessment could not be made.

Since the ages of the children were not queried in the survey form, it was not possible to analyze which vaccines each child had/had not received according to the vaccination schedule. Therefore, the frequencies of vaccine refusal and vaccine hesitancy could not be presented separately. Based on this feedback, the survey form will be revised.

Conclusion

Vaccine hesitancy/refusal is emerging as a problem growing day by day, and remains significant regardless of the education level and occupation of those who engage in it. Policies that can prevent misinformation about contents of vaccines and potential harms should be developed and implemented swiftly. Accurate information should be disseminated to the public in a clear and unambiguous manner, leaving no room for doubt, especially through the use of internet and social media platforms, and with the cooperation of all sectors under the coordination of the government.

Funding: There is no institution or person supporting this study.

Conflict of Interest: None of the authors have a conflict of interest.

Authors' contribution: Concept: B.B., U.O., M.B., Design: B.B., U.O., M.B., Data Collection or Processing: B.B., U.O., B.S., Analysis or Interpretation: B.B., Literature Search: B.B., M.B., Writing: B.B., U.O., M.B.

Ethical Declaration: The permission for this study has been obtained from the Giresun Training and Research Hospital Ethics Committee with decision number 20.11.2023/23.

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