

# INVESTIGATION OF KNOWLEDGE, ATTITUDE AND BEHAVIOURS OF PARENTS REFUSING CHILDHOOD VACCINES IN MALATYA, AN EASTERN CITY OF TURKEY

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## SUMMARY

**Objectives:** The modern rise of vaccine rejection in society can alter the current progress that has been made towards the control and prevention of certain diseases, possibly even resulting in epidemics involving these preventable diseases. The aim of this study is to analyse the knowledge, attitude and behaviours of parents in Malatya city who rejected childhood vaccines.

**Methods:** This descriptive, cross-sectional study was conducted between September–November 2019. The study includes parents who rejected vaccines and are registered in the family medicine clinics of Malatya city – total of 453 participants. The objective was to include all parents and avoid a sampling procedure. However, only 151 (33%) parents agreed to participate. These parents who rejected vaccines were individually contacted by phone. Descriptive data was represented by number (n) and percentage (%). The chi-square test was utilized in the statistical analysis of data and  $p < 0.05$  was considered significant in all evaluations.

**Results:** Mothers in the study group had a mean age of  $26.07 \pm 3.64$ , while the fathers were on average  $30.03 \pm 4.59$  years of age; 98% of parents were aware of the health risks that vaccine rejection presented; 93% of parents were not satisfied with the explanation, insight, and advice that the healthcare personnel provided regarding vaccines. All parents of the study group stated the following: vaccines should not be administered because other children in their close environment acquired a disease as a result of vaccination, vaccines can harm the immune system of children – not yet fully developed, vaccines are unsafe and endanger the health of children.

**Conclusions:** It can be said that parents who have obtained a lot of false information possess altered decisions and views on vaccinations, to the point where they accept the risks presented by preventable diseases. In addition, individuals lose trust following negative experiences with vaccination.

**Key words:** vaccination, parents, knowledge

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## INTRODUCTION

Vaccination is a practical and cost-effective method of disease prevention (1). In order to avoid outbreaks of preventable diseases that have vaccines, a vaccination ratio of at least 95% must be achieved across communities and countries worldwide (2). In 2018, the global percentage of people who were vaccinated against measles was nearly 86% for the first dose and 69% for the second one (3). According to a report that was published by the World Health Organization (WHO), the worldwide incidence of measles decreased to a minimum in the year 2016. However, in 2019 measles cases worldwide increased to 869,770. It is the highest measles cases number reported since 1996 (4). In our country, the ratio of vaccination for measles has similarly declined; 98% of people received the first and second doses in 2013, while the 2018 vaccination rates for the first and second doses were 96% and 86%,

respectively (5). According to the Turkish Health Statistics Yearbook, the incidence rate of measles has shown a tenfold increase from 0.09 per 100,000 in 2017 to 0.87 per 100,000 in 2018 (6).

While vaccine hesitancy is defined as the refusal of some vaccinations for any reason, vaccine rejection means to refuse vaccinations entirely (7). Vaccine rejection is not only hazardous to the health of individuals who refused to be vaccinated, but also to the people around them (8). In our modern society, vaccination contributes heavily to the protection of the general public health and is one of the key components of a healthy society. Due to an increase in vaccine rejection in Turkey and the rest of the world as well, the WHO ranked vaccine rejection as one of ten threats that affect our modern world in 2019 (7). Therefore, it is highly important to understand the knowledge, attitude and behaviours of individuals that choose to refuse vaccination, as well as the reasoning behind their decisions.

The aim of this study is to examine the socio-demographic characteristics and knowledge, attitude and behaviours of parents who refuse childhood vaccinations in Malatya city.

## MATERIALS AND METHODS

This descriptive, cross-sectional study was conducted between September–November 2019. This study was approved by the Malatya Provincial Health Directorate and also by the Scientific Research and Publication Ethics Committee of Inonu University. The province of Malatya has a population of 800,165 people, making it one of Turkey's 30 major cities. Additionally, Malatya has a significant position because it is responsible for 65–80% of the world's total dried apricot production and it is a location geographically recognized by the European Union for its apricot (9, 10). Although vaccination rates vary for different vaccine types; it was between 97.9–99.5 in 2017, 98.8–99.4 in 2018, and 98.5–99.2 until May 2019; the rate of children with vaccine refusal was 2.1–0.5% in 2017, 1.2–0.6% in 2018, and 1.5–0.8% until May 2019. The entire study group consisted of 453 parents who refused vaccinations. The objective was to include all parents and avoid a sampling procedure, however, only 151 (33%) parents agreed to participate. These parents who rejected vaccines were individually contacted by phone for the purpose of conducting a survey.

The survey form was prepared by the research team following a thorough analysis of the literature. The first section of the survey consisted of the socio-demographic characteristics of the children and parents who rejected vaccines. The second section included questions regarding parent's mentality, behaviour, and understanding of childhood vaccines. Research data was analysed using the SPSS software program, version 22.0. Descriptive data was represented by number (n) and percentage (%). The chi-square test was utilized in the statistical analysis of data and  $p < 0.05$  was considered significant in all evaluations.

## RESULTS

As shown in Table 1, the mothers mean age was  $26.07 \pm 3.64$ , fathers mean age was  $30.03 \pm 4.59$ ; 59% of the mothers had completed primary education or lower, while 87% of the fathers had at least finished their high school education.

Two-thirds of the children who did not receive childhood vaccinations were boys and one-third were girls, and the method of delivery was C-section for every two out of three participants. Three out of four parents did not have their child administered vitamin K, while nearly all children were not fortified with vitamin D or iron supplements. The majority of parents accepted procedures such as heel blood tests, hip ultrasounds, and hearing tests. Although one in ten children did not received vaccine for hepatitis B, nine out of ten children did not receive all routine vaccines; 98% of parents were aware of the health risks that vaccine rejection presented; 93% of parents were not satisfied with the explanation, insight, and advice that the healthcare personnel provided regarding vaccines. The side effects of vaccines were the primary reason why 91% of parents did not want to have their child vaccinated.

The parents acquired their information regarding childhood vaccines from many sources, the distribution is as follows: 95.4%

**Table 1.** Socio-demographic distribution of parents who rejected childhood vaccines (N= 151)

| Socio-demographic characteristics of parents | n            | %   |
|--|--------------|-----|
| Age, mean (SD)                               |              |     |
| Mother                                       | 26.07 (3.64) |     |
| Father                                       | 30.03 (4.59) |     |
| Education status of mother                   |              |     |
| Primary education or below                   | 91           | 59  |
| High-school or above                         | 60           | 41  |
| Education status of father                   |              |     |
| Primary education or below                   | 20           | 13  |
| High-school or above                         | 131          | 87  |
| Monthly income of family                     |              |     |
| 2,000–4,000 Lira                             | 46           | 30  |
| 4,001–6,000 Lira                             | 77           | 51  |
| ≥6,001 Lira                                  | 28           | 19  |
| Total  | 151          | 100 |

gained their information from television, 93% from books, 34% from family, 32% from friends, 25% from healthcare providers, 20% from school education, and 16% through the Internet.

All parents of the study group stated the following: vaccines should not be administered because other children in their close environment acquired a disease as a result of vaccination; vaccines can harm the immune system of children – not yet fully developed; vaccines are unsafe and endanger the health of children; 71% believed that vaccines cause infertility (Table 2).

Table 3 compares various variables concerning the parents of the study group who rejected all childhood vaccines; 33% of parents who rejected vaccines due to its contents and 10% of those who rejected vaccines because of side effects refused all other vaccinations. Individuals who rejected vaccines due to their contents demonstrated a significantly higher rate of refusing all other vaccinations ( $p=0.039$ ).

## DISCUSSION

In regard to the age of individuals who refuse vaccination – mothers in the study group had a mean age of  $26.07 \pm 3.64$ , while the fathers  $30.03 \pm 4.59$  years. A national study conducted in Croatia compared vaccine hesitancy with age group and found it to be significantly higher in the groups of younger people (11). Because of their inexperience in previous vaccine-preventable diseases and also due to the widespread false information concerning vaccination from friends and the social environment, younger individuals make up the majority of vaccine rejection cases (12, 13). In addition, 59% of mothers have primary education level and below, while 87% of fathers have received high-school education or greater. Similarly, a case-control study conducted in Ankara showed that 63.6% of the mothers refusing vaccination achieved only primary education level while 57.6% of the fathers achieved high school level or above (14). In our study parents who deny vaccinations to their children usually consist of a mother with a low education status and a father with a greater level of education.

**Table 2. Knowledge, attitude and behaviours of parents towards childhood vaccination (N = 151)**

| Questions about knowledge, attitude and behaviours   | Agree |     |
|--|-------|-----|
|  | n     | %   |
| Vaccines should not be administered because a child I know acquired a disease as a result of vaccination | 151   | 100 |
| Vaccines can harm the immune system of children – not yet fully developed                                | 151   | 100 |
| Vaccines are unsafe and endanger the health of children  | 151   | 100 |
| Receiving the same vaccine more than once is unnecessary   | 150   | 99  |
| I am scared to have my child vaccinated because of side effects  | 150   | 99  |
| Vaccines do not offer any benefit  | 150   | 82  |
| Vaccines can cause infertility   | 130   | 71  |
| Vaccines can cause mental retardation and similar conditions because of chemical substances they contain | 47    | 31  |
| Vaccines are produced solely for the sake of profit  | 4     | 3   |

**Table 3. Comparison of various variables concerning parents who rejected all childhood vaccines**

|                              |                            | Refusal of all vaccines |     |     |    | p-value            |
|------------------------------|----------------------------|-------------------------|-----|-----|----|--------------------|
|                              |                            | No                      |     | Yes |    |                    |
|                              |                            | n                       | %   | n   | %  |                    |
| Education status of mother   | Primary education or below | 71                      | 86  | 12  | 14 | 0.169 <sup>a</sup> |
|                              | High-school or above       | 132                     | 93  | 14  | 7  |                    |
| Education status of father   | Primary education or below | 14                      | 100 | 0   | 0  | 0.369 <sup>b</sup> |
|                              | High-school or above       | 120                     | 88  | 17  | 12 |                    |
| Reason for vaccine rejection | Side effects               | 109                     | 90  | 12  | 10 | 0.039 <sup>b</sup> |
|                              | Contents                   | 8                       | 67  | 4   | 33 |                    |

<sup>a</sup>Pearson chi-square test; <sup>b</sup>Fisher's exact test

In a case control study conducted in Turkey, it was found that the group rejecting vaccine had a lower percentage of vitamin D and Fe use (14). Another notable point in our findings is that the majority of parents accept procedures such as heel blood tests, hip ultrasounds, and hearing tests that do not supply any substance to the body, but reject applications such as vitamin D, Fe supplementation, and vitamin K, which may be the result of the individual's lack of trust in medical practices. The reason for this situation may be the lack of confidence in applications such as vitamin and mineral supplements and misinformation.

Almost all of the parents participating in this study who stated that although they knew the health risks of not vaccinating, they believed that vaccination weakens the immune system and endangers their child's health. It has also been shown that individuals who believed that the benefits and risks of vaccination were equal had greater trust in such applications (15). It can be said that parents who have obtained a lot of false information possess altered decisions and views on vaccinations to the point where they accept the risks presented by preventable diseases. In addition, individuals lose trust following negative experiences with vaccination (7). In our study, such participants declared themselves as being against vaccination because of children they knew have acquired disease through vaccines.

In a study investigating the causes of hesitancy for vaccination in Italian parents, the reasons were shown to be the fear of child-specific vaccines and their side effects, and they also felt that they had inadequate guidance about vaccinations from paediatricians (16). In our study group, most of the parents stated that they were

not satisfied with the answers, information or advice provided by healthcare personnel in regard to their questions about vaccination, and the most important reason for not complying with childhood vaccinations was the risk of side effects. Many studies have shown that there are concerns about the side effects of vaccines, and the information and advice given by physicians (17, 18). The first step that could lead to positive changes in the society's thoughts and views towards vaccines is that physicians and healthcare personnel should be properly trained in their communication skills, especially towards individuals who feel hesitant and concerned about having their child vaccinated.

It was determined that the highest information source of the parents in the study group was television, followed by family, friends, healthcare professionals, and the Internet. Similarly, in a study conducted in our country, it was determined that the most important source of information on vaccines was television (19). In another study, it was found that the insight of the mothers, whose sources of information on vaccination were healthcare workers, was significantly higher than those who acquired their information from the Internet, television, radio, family, friends, and neighbours. In the same study, the judgement of the group that wanted to postpone or refuse vaccinations was found to be limited compared to the other groups (20). In this case, the parents acquire false information from the Internet, television, family and friends and make the decision on vaccination of their children resulting in a situation that threatens the health of both their own child and the society. Therefore, accurate and effective information should be provided by healthcare professionals.

Ninety-nine percent of the parents who participated in the research stated that a vaccine does not need to be given more than once. However, it has been found that vaccination in infancy, such as the whooping cough vaccine, is not sufficient on its own, and that the immune system should be strengthened with booster shots in later periods (21). In addition, 82% of the study group stated that vaccines do not provide any benefits. This correlates with a study performed in Brazil, where it was found that the primary reason for the refusal of vaccination is because the participants believed that it was ineffective (22). In addition, it was found in our study that individuals who rejected vaccines due to their contents strongly refused all vaccinations. Although it has been shown that there is no significant relationship between autism and the contents of vaccines, these discussions have caused media to negatively focus on this topic and increase public anxiety (23–25). Likewise, 71% of the study group stated that vaccines cause infertility and 31% believed they resulted in disorders such as mental retardation. Although these theories have been refuted by other studies, this false information still lingers in the mind of individuals who are against vaccination. Due to the continuation of the socially accepted fertility, the thought that infertility is one of the post-vaccine side effects prevailing from the past to the present may still be high.

This study has three limitations: firstly, only people within a certain time period in the province were included. Secondly, only some of them agreed to participate in the study because of the sensitive group of individuals with vaccine refusal. Finally, the absence of a control group in the study is a limitation.

## CONCLUSIONS

In our study, it was determined that a lack of knowledge about vaccines was found in individuals who reject vaccination. In addition, it was observed that the insight they possessed was generally false information obtained from the Internet, television, friends and family. To counteract this, healthcare professionals should play a main role in programmes that are found across social media, television and the Internet and share the benefits as well as the scientific evidence regarding vaccines. Lastly, since non-vaccinated individuals put other people in the society at risk of disease, this decision should not be left to them, but rather should be made compulsory by law.

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## Conflict of Interests

None declared

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