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Parents' and healthcare professionals' views and attitudes towards anti-vaccination

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ABSTRACT

Aims: Anti-vaccination is a sign of transition from sociality to individuality, although it is a dangerous situation for public health. The aim of our study was to determine the opinions and experiences of parents and healthcare professionals about vaccination and anti-vaccination and to evaluate the ethical dimension.

Methods: This was a descriptive, cross-sectional study. The study population consisted of parents referred to the department of paediatrics of a university hospital in Ankara, Türkiye and all physicians, nurses, and midwives in the department of paediatrics. The participants were surveyed on childhood vaccinations.

Results: The sample consisted of 80 parents and 36 healthcare professionals, 56.3% of the parents were female, and 68.8% had an undergraduate degree. The average age of healthcare workers was 44 years and 72.2% of them were female. Seven parents (8.8%) rejected vaccination. The frequency of parents who wanted to know more about the vaccines was 67.4%. The frequency of healthcare professionals stating that the decision of childhood vaccination should not be left to the family was 91.7%.

Conclusions: The vast majority of parents participating in our study were concerned that vaccines could have dangerous side effects. Parents needed more information about the vaccines. Healthcare professionals, on the other hand, were against leaving the decision to the parents in a childhood vaccination program and indicated a need for precautions against anti-vaccination.

Introduction

Vaccines are biological products used to stimulate the immune system for preventing infectious diseases. People are vaccinated for two reasons; to protect from the disease and to stop community spread. Vaccination is, therefore, one of the basic preventive health measures (1,2). Vaccinating a critical number of individuals in a community reduces the risk of outbreaks of infectious diseases and therefore protects other members of the community. Thanks to those who can be vaccinated, the protection of non-vaccinated sections of society is of philosophical value. The concept of "herd immunity" refers not only to epidemiological and technical aspects but also to some sort of social solidarity. Herd immunity is the highest indicator of social solidarity against the self-centred, individualistic, selfish, and neoliberal approach to health and well-being (2).

Although childhood immunization schedules are essential, the anti-vaccination movement is a serious threat to public health. The anti-vaccination movement is parallel to the history of vaccination. Compulsory vaccination policies introduced for community health care had exerted great efforts to counter the anti-vaccination movement. However, these days, parents are influenced by the growing reach of the anti-vaccination movement on social media and news media platforms, and therefore, doubt the effectiveness and safety of compulsory vaccination. Dr. Andrew Jeremy Wakefield, a gastroenterologist, published a study (1998) in the *Lancet*, postulating a connection between the measles-mumps-rubella vaccine and autism, which sparked controversy all over the world. Although his study had only 12 participants and a problematic methodology, it attracted global attention in the media, resulting in a growing number of

parents refusing to get their children vaccinated. After 12 years, Wakefield was found to use some fabricated data and act unethically. Therefore, his paper was retracted by the Lancet, and his medical license was revoked in 2010 (3).

Fifteen years ago, there were no known and recorded cases of anti-vaccination in Turkey. However, the anti-vaccination movement has gained momentum since 2010. While at first there was no more than a handful of parents refusing to get their children vaccinated, the number went up to 970 in 2015, and 23,000 in 2017, which is a growing health concern (4). Turkey is a migrant-receiving and refugee-hosting country. If the number of anti-vaccination people continues to increase at this rate, immunization rates will drop further, and preventable diseases will cause an outbreak, and there will be a rise in the incidence of diseases that we thought have disappeared, which is unfortunately confirmed by the World Health Organization. While the number of cases of measles reported in Turkey was more than eight thousand in 2013, it was only 9 (nine) in 2016, which, however, increased up to 69 in 2017, 716 in 2018, and 2890 in 2019 (5).

Vaccination is still the most effective and cheapest measure to prevent infectious diseases. Therefore, adhering to the national vaccination schedule is very critical for both personal and community health, especially in Turkey, which is a country of migration (6).

Our aim in this study was to determine numerical data on the views and experiences of parents and healthcare professionals (physicians, nurses, midwives, etc.) and to discuss the ethical dimension of vaccination in light of these data.

Methods

This was a descriptive, cross-sectional study. The study population consisted of all parents referred to the polyclinic and clinic of paediatrics at a university hospital in Ankara between 11 February and 22 March 2019, and all physicians, nurses, and midwives in the department of paediatrics and childhood vaccination. No sampling was performed. Participation in the study was voluntary. Participants were informed about the study and their consent was received. Ethics committee approval was obtained for the study. The study was approved by the Medical and Health Sciences Research Board (project no: KA 19/52) and funded by the Research Fund of Baskent University Ankara.

Data were collected using two questionnaires developed. The questionnaires were created by the authors. All of the questions in the questionnaire are presented in the tables, based on the researchers' experience and literature review (3,6-9). The questionnaire for parents consisted of 12 items on sociodemographic characteristics and anti-vaccination. Item 12 investigates whether parents agree with the portrayal of vaccination in the media. The questionnaire for healthcare

professionals consisted of ten items on sociodemographic characteristics and anti-vaccination.

Statistical Analysis

Number (n) and percentage (%) were used for categorical data on anti-vaccination. Data were analysed using the Statistical Package for Social Sciences (IBM, version 25.0) at a significance level of 0.05.

Results

Evaluation of Parents

Eighty parents agreed to participate in the study. Of parents, 56.3% were women, 89.9% were married, 68.8% had a bachelor's degree, 57.5% had a single child, 28.7% had two children, and 13.8% had three children. Parents were engineers and architects (24.1%), teachers (13.9%), housewives (12.7%), self-employed (11.3%), civil servants (7.6%), lawyers (6.3%), physicians (6.3%), pharmacists (5.2%), nurses (1.3%), and others (11.3%). Seven participants (8.8%) self-identified as "anti-vaccination".

Five anti-vaccination parents (71.4%) stated that they made the decision as a couple not to get their children vaccinated. Consuming organic foods (41.7%) was stated to be the most common alternative to vaccination. Anti-vaccination parents (54.5%) mostly believed that vaccinated children were more likely to contract diseases than vaccinated ones. Five of the anti-vaccination parents (83.3%) stated that they had no reaction from others about their anti-vaccination (Table 1).

Thirty parents (37.5%) stated that they knew enough about vaccines. Forty-nine parents (37.7%) stated that they were informed by healthcare professionals. Fifty-four parents (67.4%) stated that they would like to know more about vaccines (Table 2).

Parents specified that they believed that vaccination was the most effective method for preventing infectious diseases (91.2%), that their decision not to vaccinate their own children could put other children at risk for infectious diseases (87.5%), and that refusing childhood vaccination was a threat to public health (85.0%) (Table 3).

Evaluation of Healthcare Professionals

Thirty-six healthcare professionals agreed to participate in the study. The mean age of healthcare professionals was 44 years. Of healthcare professionals, 72.2% were women, 47.2% were nurses, 25% were specialist physicians, 16.7% were assistant physicians, and 11.1% were midwives, 22.9% had 21-25 years of experience, 20% had 1-5 years of experience, 5.7% had 6-10 years of experience, 11.4% had 11-15 years of experience, 20% had 16-20 years of experience, and 20% had ≥ 25 years of experience.

Table 1. Information on parental anti-vaccination (n=7)

	n	%
Decision to not vaccinate		
Decision as a couple	5	71.4
My decision	1	14.3
My spouse's decision	1	14.3
Alternative measures to prevent infectious diseases*		
Organic foods	5	41.7
Keeping children away from crowds and public spaces that might have lots of germs	4	33.3
Trusting in God	2	16.7
Keeping children away from vaccinated children	1	8.3
Reasons for anti-vaccination*		
Vaccinated children are more likely to contract diseases than unvaccinated ones	6	54.5
I believe that people are always forced to get vaccinated.	2	18.2
All vaccines cause autism.	1	9.1
All vaccines cause cancer.	1	9.1
Not all vaccines are halal.	1	9.1
Others' reaction to anti-vaccination (n=6)		
None	5	83.3
Negative	1	16.7
Positive	0	0.0
Healthcare professionals' reaction to anti-vaccination		
Negative	4	57.1
Positive	2	28.6
None	1	14.3

*More than one option marked

Table 2. Parents' knowledge of childhood vaccines (n=80)

	n	%
Parents' level of knowledge of vaccines		
Yes, I know enough about them.	30	37.5
No, I do not know enough about them.	23	28.7
I know a little about them.	27	33.8
Sources of information about vaccines*		
Healthcare professionals	49	37.7
Internet/social media	40	30.8
Friends/relatives	40	30.8
Other	1	0.7
Willingness to know more about vaccines		
Yes	54	67.4
No	13	16.3
Not sure	13	16.3

*More than one option marked

According to the findings from healthcare professionals, in the institution where the study was conducted, information

about vaccination was provided to families by physicians at a frequency of 88.9%. Only two healthcare professionals (5.6%) stated that they encountered anti-vaccination once or twice a month. According to healthcare professionals, the main reason for parental anti-vaccination was the belief that "vaccines contain mercury, aluminium, ether, antibiotics, and many other chemicals, which cause autism and similar diseases" (15.9%). Thirteen healthcare professionals (nurses and midwives) stated that they referred anti-vaccination parents to physicians while nine stated that they found out why and tried to correct their misconceptions (Table 4).

Discussion

In this study, seven parents (8.8%) refused to get their children vaccinated. Türkay et al. (7) reported that 6.2% of parents self-identified as "anti-vaxxers." This finding is similar to our study.

Most parents (71.4%) stated that they and their spouses agreed not to get their children vaccinated, which has been reported by Çapanoğlu (3) as well. Erdem et al. (8) conducted a study on oral polio anti-vaccination and reported that it was mostly mothers (55.3%) who chose not to have their children vaccinated.

According to Türkay et al. (7), self-identified anti-vaxxers do not trust vaccine companies (2 people, 6.4%) and believe that vaccines are useless (6 people 19.4%), have side effects (20 people, 65%), contain harmful substances (8 people, 25.8%), and cause infertility (1 person, 3.2%). Our result is similar because the participating parents stated that they believed that vaccinated children were more likely to contract diseases than unvaccinated ones and that vaccines caused autism and cancer, hinting that the reason for their anti-vaccination is mostly related to the possible side effects of vaccines.

The participating anti-vaccination parents stated that they fed their children with organic foods, kept them away from crowds and dirty public spaces and other vaccinated children, and trusted in God. Studies in Australia show that anti-vaccination people use complementary and alternative medicine therapies more because they believe that they are natural, non-chemical, and reliable methods with no side effects (10). Hazır (9) reported that anti-vaccination parents believed in fate (8.7%), kept their children away from crowds and patients (8.7%), and fed them with organic and healthy food (25%) or did nothing (57.6%) to protect their children.

Thirty parents (37.5%) stated that they knew enough about vaccination while 54 parents (67.4%) stated that they would like to learn more about it. In another study, 78.3% of parents stated that they knew enough about vaccination; however, 48.7% stated that they would like to learn more about it (9). The sources of information on vaccines are healthcare professionals

Table 3. Parents' agreement with the portrayal of vaccination in the media (n=80)

Positive and negative discourses in the media concerning vaccination	Agree	Disagree
	n (%)	n (%)
I think that vaccination is the most effective method of preventing infectious diseases	73 (91.2)	7 (8.8)
I think that my decision not to vaccinate my own kid can also put other children at risk for infectious diseases.	70 (87.5)	10 (12.5)
I think that refusing childhood vaccination is a threat to public health.	68 (85.0)	12 (15.0)
Vaccine-preventable diseases are no longer a public health issue in Turkey, and therefore, I think that vaccines are unnecessary.	10 (12.5)	70 (87.5)
I think that natural infection causes better immunity than vaccines.	16 (20.0)	64 (80.0)
Good hygiene can help eliminate diseases, and therefore, I think that vaccines are unnecessary.	18 (22.5)	62 (77.5)
I think that children are vaccinated too young.	17 (21.3)	63 (78.7)
I think that babies should be breastfed rather than being vaccinated until two years of age.	18 (22.5)	62 (77.5)
Giving a baby too many vaccines (numerous and different types of antigens) disrupts its immune system and causes diseases.	20 (25.0)	60 (75.0)
I think that the primary goal of childhood vaccination companies is to make money.	16 (20.0)	64 (80.0)
I think that vaccines have many side-effects that are covered up by companies.	17 (21.3)	63 (78.7)
I think that most of the infected during an outbreak are those who have been vaccinated.	8 (10.0)	72 (90.0)
I think that vaccines have some damaging and long-term side effects that are not yet known.	19 (23.8)	61 (76.2)
I think that vaccines are unsafe and may have dangerous side effects.	16 (20.0)	64 (80.0)
I think that the preservatives in vaccines may harm children.	13 (16.3)	67 (83.7)
I think that vaccines may cause autism.	11 (13.8)	69 (86.3)
I think that vaccines may be to some extent responsible for the rise in cancer cases around the world.	7 (8.8)	73 (91.2)
I think that multiple vaccines increase the risk of side effects in children and overload their immune system.	24 (30.0)	56 (70.0)
I think that repeating vaccination more than once is unnecessary, and therefore, rapel doses are unnecessary.	15 (18.8)	65 (81.3)
Vaccine-preventable childhood diseases are an unfortunate reality of life, and therefore, I do not think that it is possible to escape this reality with vaccination.	10 (12.5)	70 (87.5)
Many unvaccinated people led long and healthy lives. Therefore, I do not think that vaccination is necessary.	8 (10.0)	72 (90.0)
I think that vaccine administrators' attitudes and approaches have a negative effect on people's willingness to get vaccinated.	13 (16.3)	67 (83.7)

(37.7%), Internet/social media (30.8%), and friends/relatives (30.8%). İncili (11) also reported that the sources of information about vaccines were doctors (82.6%), television, radio, and newspaper (11.6%), the Internet (1.9%), and neighbors (3.9%). The fact that most parents receive information from healthcare professionals about vaccination is a positive outcome. More than half (55%) of adults in the United States learn about health online. In a study on seven Internet search engines, more than 43% of the top 10 sites were revealed to contain antivaccine information (12). According to Türkay et al. (7), parents get information about vaccinations from TV (49.3%), the Internet (44.2%), and physicians (41%).

The statements "giving a baby too many vaccines (numerous and different types of antigens) disrupts its immune system and causes diseases," "I think that vaccines have some damaging and long-term side effects that are not yet known," and "I think

that vaccines have some damaging and long-term side effects that are not yet known" are a sign of parents' anti-vaccination and fear about vaccinations. Despite these statements, the rate of anti-vaccination (8.8%) was low among our participants, suggesting that parents are mostly aware of their responsibility for herd immunization and solidarity, despite anti-vaccination and fear.

In the institution where this study was conducted, parents are mostly informed about vaccines by physicians (88.9%) in detail (35.4%). However, fifteen healthcare professionals (31.2%) stated that they did not do any explaining about vaccines unless parents asked for it and on the assumption that parents already knew about them (6.3%), which is not very good, because anti-vaccination is often discussed in the media and the public arena. This is supported by Çapanoğlu (3), who reported that healthcare professionals indulged in some self-criticism and

Table 4. Frequency distributions of healthcare professionals' results (n=36)		
	n	%
Getting their own children vaccinated		
I have a child, and she has all her vaccinations.	25	69.4
No, I don't have a child.	11	30.6
I have a child but I have not had her vaccinated.	-	-
I had to have my child vaccinated, even though I didn't want to.	-	-
By whom are parents informed about vaccination in the institution?		
Physicians	32	88.9
Nurses	4	11.1
Midwives	-	-
Other	-	-
How are parents informed about vaccination in the institution?*		
We explain to them in detail the vaccines and what diseases they prevent in children.	17	35.4
We do not do any explaining unless parents ask for it.	15	31.2
We hand out leaflets with answers to possible questions about vaccination.	7	14.6
We do not provide any detailed explanation but inform parents about the immunization schedule to hint that they should vaccinate their children.	6	12.5
Parents usually know about vaccination and so we don't provide much explanation.	3	6.3
Prevalence of anti-vaccination		
1-2 times a month	2	5.6
No answer	34	94.4
Is it wise to leave vaccination decisions up to parents?		
No, it is not.	33	91.7
Yes, it is.	3	8.3
Factors affecting parents' vaccine acceptance positively or negatively, according to healthcare professionals*		
Communication and media	22	11.1
Parents' sociodemographic characteristics (age, education, etc.)	21	10.6
The belief that breastfeeding and conventional methods are more useful than vaccination	20	10.1
Lack of knowledge	20	10.1
Concern about the side effects of vaccines	20	10.1
Influential people and pro-vaccination/anti-vaccination lobbies	15	7.5
The belief that vaccines have been developed by the pharmaceutical industry to make a fortune	15	7.5
Trust/lack of trust in the health system	13	6.5
Concern about the possible long-term damages of chemicals in vaccines	13	6.5
The belief that natural infection causes better immunity than vaccines	12	6.0
Experience with vaccines (side effects etc.)	10	5.0
Policies/laws	9	4.5
Complexity and incomprehensibility of the national immunization schedule	3	1.5
The belief that new vaccines are under-tested	3	1.5
The role of health professionals (missing or inaccurate information concerning vaccines)	3	1.5
Reasons for anti-vaccination stated by parents to healthcare professionals*		
Vaccines contain mercury, aluminum, ether, antibiotics, and many other chemicals, which cause autism and similar diseases.	23	15.9
Vaccines cause infertility.	19	13.1
Vaccines contain pork gelatin and are therefore not halal.	17	11.7
Some "prominent religious figures", "thinkers", and "doctors" claim that vaccines are harmful and do not have their children vaccinated.	16	11.1

Table 4. Continued		
Diphtheria, pertussis, tetanus, and polio vaccines cause sudden infant death syndrome.	14	9.7
Natural infection causes better immunity than vaccines.	9	6.2
Vaccines may have severe side effects that are yet unknown but will appear in the future.	8	5.5
Delivering a child more than one antigen at a time may damage her immune system and increases the risk of immune disorders.	8	5.5
Complementary and alternative medicine is more effective and has less side effects.	8	5.5
It is unwise to vaccinate children to protect them from pathogens that are not currently in Turkey.	7	4.8
Vaccinated patients are at greater risk of contracting an infection.	6	4.1
Vaccination is forced because of the greed of pharmaceutical companies.	6	4.1
In childhood, the immune system is not yet fully developed, and vaccines harm it.	4	2.8
How do healthcare professionals react to anti-vaccination?*		
I refer them to physicians (a valid option for nurses and midwives)	13	32.5
I find out why and I correct their misconceptions, if any.	9	22.5
I try to persuade them to have their children vaccinated.	8	20.0
It is their decision, and I respect that	5	12.5
I refer them to the department of infection.	4	10.0
There can be no explanation for that. I would react to them because they put both their children and others at risk.	1	2.5
*More than one option marked		

took responsibility for anti-vaccination as partly their failure to provide information to parents.

According to the participating healthcare professionals, the factors affecting parents' vaccine acceptance are communication and media tools, sociodemographic characteristics, use of conventional methods instead of vaccination, ignorance, and concern about vaccine-related side effects. Çapanoğlu (3) has also reported that according to healthcare professionals' experience and observation, parental anti-vaccination depends on sociodemographic characteristics (being a young inexperienced mother, etc.), concern about vaccines (the belief that vaccines cause infertility and autism), religion, and social media.

The participating physicians stated that they corrected the misconceptions held by anti-vaccination parents about vaccinations and tried to persuade them to have their children vaccinated, whereas nurses and midwives stated that they referred those parents to physicians. Five healthcare professionals (12.5%) stated that they respected parents' decision not to vaccinate their children. Healthcare professionals (65.2%) stated that they would advise anti-vaccination parents while 14.8% stated that they would not (13).

The great majority of our participating healthcare professionals (91.7%) were against leaving childhood vaccination decisions to parents. Arıcan (13) also reported that 93.6% of healthcare professionals were for compulsory vaccination according to the national immunization schedule. This indicates that healthcare professionals are aware that vaccination is an important and effective way for infectious disease prevention.

The study has some limitations. First, it was conducted in only one university hospital, and state-run hospitals and other university hospitals were not included. Second, the results are sample-specific and not generalizable to the whole population.

Ethical Assessment and Conclusion

Based on certain unfounded doubts and beliefs (vaccines cause autism and cancer; breastfeeding is better than vaccination, etc.), the anti-vaccination movement argues that vaccine regulations infringe upon individual autonomy and liberty. It is, of course, an important ethical value that we should respect the right of people to make choices of their own free will. However, what is generally overlooked is that limiting one's actions that harm other individuals is not the same as curtailing one's freedom (2). It should always be kept in mind that a person who causes harm, whether by acting or failing to act, is held responsible for that harm either for acting or for failing to act (14).

Given all of the above, the basic arguments of vaccination in terms of ethical values are

- Both individual autonomy and social utility should be protected,

- We should always keep in mind that vaccination is vital for the protection of children's right to life (15).

Instead of telling anti-vaccination about what they already know, we should raise their awareness of the behaviors they already exhibit for public health and get across to them that childhood vaccination is a vital public intervention that plays a

key role in controlling and eliminating infectious diseases and in protecting public health (16).

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Ethics

Ethics Committee Approval: The study was approved by the Medical and Health Sciences Research Board (project no: KA 19/52) and funded by the Research Fund of Baskent University Ankara.

Informed Consent: Participants were informed about the study and their consent was received.

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Authorship Contributions

Concept: S.D.K., Design: S.D.K., H.Y.Z., Data Collection or Processing: S.D.K., H.Y.Z., Analysis or Interpretation: S.D.K., H.Y.Z., Literature Search: S.D.K., Writing: S.D.K., H.Y.Z.

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