Turkish parents' attitudes towards COVID-19 vaccination of their children aged 12-17 years: A cross-sectional study

Parents' attitudes to COVID-19 vaccination

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Abstract

Aim: The study planned to determine the attitudes of parents with children aged 12-17 years towards vaccinating their children against COVID-19 and the relationship between these attitudes and COVID-19 vaccine literacy, perception of control of COVID-19, perception of causes of COVID-19.

Material and Methods: A descriptive and cross-sectional design was implemented. Between April 2022 and September 2022, 259 parents participated in the study. Data were collected using the Attitudes Towards the COVID-19 Vaccine Scale, COVID-19 Vaccine Literacy Scale, Perception of Control of COVID-19 Scale, Perception of Causes of COVID-19 and the Information Form.

Results: It was found that 44.4% of the parents had vaccinated their children against COVID-19, while 55.6% had not. A positive and significant relationship was found between the mean score of the Attitudes Towards the COVID-19 Vaccine Scale and the mean score of the COVID-19 Vaccine Literacy Scale. A positive and significant relationship was found between the mean score of the Attitudes Towards the COVID-19 Vaccine Scale and the mean score of the Perception of Control of COVID-19 Scale and the macro control subdimension. A negative and significant relationship was found between the mean score of the COVID-19 Vaccine Literacy Scale and the mean score of the Perception of Causes of COVID-19 Scale and the faith subdimension.

Discussion: Parental confidence, misconceptions due to lack of knowledge and social measures defined by health authorities were effective in influencing vaccine acceptance. It was noteworthy that as vaccine literacy increased, both the reduction in misconceptions and the positive effect on families' vaccination attitudes.

Keywords

COVID-19 Vaccine, Vaccine Literacy, Vaccine Attitude, Perception Of Control, Adolescent

Introduction

Severe Acute Respiratory Syndrome Coronavirus-2 infection has caused the deaths of approximately 7 million people since day one of the outbreak, and vaccine development studies have been initiated in parallel with many measures since the global pandemic declaration of COVID-19 (available at: https://covid19.who.int). Vaccines build individual and herd immunity to prevent and control infectious diseases such as COVID-19 (available at: https://www.cdc.gov/vaccines/vpd/vpd-vac-basics.html). Following the first approvals, vaccination of adults began and, contrary to expectations, the emergence of cases in children has put vaccination of children on the agenda in many countries especially adolescents. In addition, because children and adolescents constitute about a quarter of the world's population (available at: https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS), the infection is more severe in children, this age group is also an effective mode of transmission, and taking into account herd immunity, vaccination of this group has gained importance to control the infection [1,2]. In October 2021, it was concluded that it was suitable for use in adolescents aged 12 years and over, and vaccination started in many countries, particularly in Western countries (available at: https://www.who.int/news/item/24-11-2021-interim-statement-on-covid-19-vaccination-for-children-and-adolescents). Scientific data have shown that vaccination is highly effective in preventing COVID-19-related hospitalizations in adolescents. Unvaccinated children are ten times more likely to be hospitalized than vaccinated children [2]. Although COVID-19 vaccines have been shown to be safe and effective in adolescents, in a survey of adolescents and their parents, it was shown that only 52% of unvaccinated adolescents aged 13-17 years were willing to vaccinate either fully or partially [3]. Studies have highlighted the importance of increasing pediatric COVID-19 vaccine acceptance [3,4].

It is well known that even before COVID-19, vaccine hesitancy was included in the top 10 global health problems threatening society [5]. Vaccine hesitancy has been defined as total vaccine refusal or undecided about vaccination, even when the vaccine is available. Vaccine hesitancy develops because of a deterioration in the perceived balance of risks and benefits. Vaccine hesitancy should be assessed in terms of the 3C phenomenon (confidence, complacency and convenience) [6, 7]. The attitudes of parents to COVID-19 vaccines are an important factor influencing childhood immunization [3,8]. The COVID-19 vaccine hesitancy has been found to be 28.9% in Turkey [9]. The main concern about the COVID-19 vaccine has been identified as a lack of confidence in the safety and efficacy of the vaccine [9,10].

Most of the studies investigating vaccine acceptance during the COVID-19 pandemic have been conducted in adults, and it was emphasized that more regional studies are needed, especially in the child and adolescent age group. Existing studies have highlighted the need to research issues such as how individuals perceive the pandemic, their attitudes towards vaccines that are used to control the pandemic, and vaccine literacy for managing the pandemic [11,12,13]. At the time of the planning this study, the only pediatric age group in which the COVID-19 vaccine was approved in Turkey was adolescents aged 12-17 years. In this context, this study aimed to determine the attitudes of parents with children aged 12-17 years to have their children vaccinated against COVID-19 and the relationship between these attitudes and COVID-19 vaccine literacy, perception of control of COVID-19, and perception of causes of COVID-19.

Material and Methods

Design and Participants

The study is designed as a descriptive, cross-sectional study, conducted between 01 April and 30 September 2022. Parents whose children aged between 12-17 years, living in Turkey were enrolled in the study. Parents who volunteered for the study and had a child aged between 12-17 years were included in the study, and healthcare worker parents were excluded. The 259 parents were included in the study and twenty-one of the data were not evaluated due to incomplete variables.

Data collection process

The secured online survey was used to collect the data from the parents of children. The survey link was delivered to the participants via social networking sites (WhatsApp, Facebook, Instagram). The following surveys were used to collect the data: Information form: This form consists of questions about the socio-demographic characteristics of the participants and whether or not they have been vaccinated.

Attitudes Towards the COVID-19 Vaccine Scale (ATV-COVID-19): This validated and reliable scale was used to measure parents' attitudes toward COVID-19 vaccines with 9 questions and 2 subscales. Answers were scored with 1 to 5 Likert type as 1 for "Strongly disagree ", to 5 for "Strongly agree". The questions about the negative attitude were reverse-coded. The scores of the subscales are calculated by the average of the total scores obtained from the items, and the higher scores obtained from the negative and positive subscales determine the attitudes of the families [13].

COVID-19 Vaccine Literacy Scale (COVID-19 VLS): It was developed by Ishikawa et al. (2008) to assess health literacy in chronic diseases. Biasio et al. (2021) adapted the scale as a Covid-19 vaccine literacy scale [14,15]. It was shown by Durmus et al. that the Turkish version was valid and reliable [16]. The scale consisted of 12 items, which was coded 1 to 4 Likert type (Never to Often). Higher average scores of items about functional vaccine literacy (reverse scored) and the communicative/critical vaccine literacy subscales were associated with higher health literacy [16].

Perception of Control of COVID-19 Scale (PCo-COVID-19): This scale was developed to measure the perception of personal control, macro control and controllability of the pandemic with 12 items by Geniş et al [13]. From 1 to 5 Likert-type scoring was used (1 "Strongly disagree", to 5 "Strongly agree") and the items about controllability were reverse-coded. Higher average scores of items about subscales reflect the higher belief in personal, macro and controllability [13].

Perception of Causes of COVID-19 (PCa-COVID-19): This scale was developed by Geniş et al. to asses COVID-19's perceived causes [13]. Fourteen items were subscaled as the Conspiracy, Faith and Environment topic. From 1 to 5 Likert-type scoring was used (1 "Strongly disagree", to 5 "Strongly agree"). Higher average scores of questions about subscales indicated a higher belief in Conspiracy, Faith and Environmental causes of the

pandemic [13].

Data analysis

The data analysis was executed utilizing IBM SPSS Statistics 28.0 software. Descriptive statistics (percentages, means, and standard deviations) were used in the analysis of study data. The compatibility of variables with normal distribution was evaluated with the Kolmogorov-Smirnov test. For pairwise comparisons of quantitative data, the Student's t-test was utilized. Pearson's correlation analysis was used to obtain the correlation between scale scores. Significance was evaluated at the level of $p < 0.05$.

Ethical consideration

It received approval from the University's Ethics Committee (Date: 2022-03-24, No:2022.115.IRB3.059) and obtained permission from the Ministry of Health before commencing. The digital informed consent form underlined the study's objectives and stressed the voluntary nature of participation. The investigation was conducted following the principles outlined in the Declaration of Helsinki.

Results

The mean age of the parents was 41.93±5.68 years and 14.44±1.7 years for children. It was found that 44.4% of the parents were high school graduates, 42.9% were in elementary education, and 60.6% had an income equal to their expenses. It was determined that 51.4% of the parents, and 27% of their children had experienced COVID-19 disease, and 86.5% were vaccinated for COVID-19. It was found that 44.4% of the parents had vaccinated their children against COVID-19, while 55.6% had not. The mean total scores of the scales are demonstrated in Table 1.

A positive and significant relationship was found between the mean total score of the Attitudes Towards COVID-19 Vaccine Scale and the mean total score of the COVID-19 Vaccine Literacy Scale. A positive and significant relationship was found between the mean total score of the Attitudes Towards COVID-19 Vaccine Scale and the mean total score of the Perception of Control of COVID-19 Scale and the macro control subdimension. A negative and significant relationship was found between the mean total score of the COVID-19 Vaccine Literacy Scale and the mean total score of the Perception of the Causes of COVID-19 Scale and the faith subdimension (Table 2).

The COVID-19 vaccination status of their children and the total mean scores of the scales are compared in Table 3. A significant difference was found between the COVID-19 vaccination status of their children and their attitudes towards COVID-19 vaccination and vaccine literacy. The total scores of the Attitudes Towards COVID-19 Vaccine Scale and COVID-19 Vaccine Literacy Scale of parents whose children received COVID-19 vaccination were significantly higher than those who did not receive vaccination. A significant difference was found between the COVID-19 vaccination status of their children and their Perception of the Causes of COVID-19. The Perception of Causes of COVID-19 total scores of parents who did not vaccinate their children against COVID-19 were significantly higher than those who did (Table 3).

Table 1. Parents' answers to the questions related to socio-demographic and COVID-19 vaccine and mean scores of the scales.

Characteristic		Mean±SD	Min-Max
Age of parents		41,93±5,68	32-61
Age of children		14,44±1,7	12-17
Number of children		2,74±1,12	1-6

Characteristics		n	%
Parents who filled out the questionnaire	Mother	212	81,9
Education level	Elementary education	111	42,9
	High school	115	44,4
	University	31	12
	Master/PhD	2	0,7
Family income level	Income is less than expenses	60	23,2
	Income and expenses are equal	157	60,6
	Income exceeds expenses	42	16,2
Parent's COVID-19 positivity history	Yes	133	51,4
Children's COVID-19 positivity history	Yes	70	27
Your child does not have any childhood vaccines	Yes	31	12
	No	228	88
Parent's COVID-19 vaccine status	Vaccinated	224	86,5
Children's COVID-19 vaccine status	Vaccinated	115	44,4

Scales	Mean ± SD
Attitudes Towards the COVID-19 Vaccine Scale	3,40±0,73
Positive attitudes	3,37± 1,02
Negative attitudes	3,43± 0,83
COVID-19 Vaccine Literacy Scale	2,61±0,55
Functional vaccine literacy	2,64±0,83
Communicative/Critical vaccine literacy	2,60±0,71
Perception of Control of COVID-19 Scale	3,03±0,55
Macro control	3,12±0,90
Personal control	3,12±0,88
Controllability	2,86±0,92
Perception of Causes of COVID-19	2,90±0,63
Conspiracy	3,02±0,86
Environment	2,88±0,78
Faith	2,72± 1,08

Max: Maximum; Min: Minimum; SD: Standard Deviation

Table 2. Correlation of the scales.

Scales	ATV-COVID-19	COVID-19 VLS	PCo-COVID-19	PCa-COVID-19
Attitudes Towards the COVID-19 Vaccine Scale	1	r=0,223 p <0,001	r=0,165 p=0,008	r=-0,111 p=0,076
COVID-19 Vaccine Literacy Scale	r=0,223 p <0,001	1	r=-0,046 p=0,461	r=-0,171 p=0,006
Perception of Control of COVID-19 Scale	r=0,165 p=0,008	r=-0,046 p=0,461	1	r=0,071 p=0,258

r: Pearson's correlation analysis, ATV-COVID-19: Attitudes Towards the COVID-19 Vaccine Scale, COVID-19 VLS: COVID-19 Vaccine Literacy Scale, PCo-COVID-19: Perception of Control of COVID-19 Scale, PCa-COVID-19: Perception of Causes of COVID-19

Table 3. Comparison of scale scores according to children's vaccination status.

Characteristics Mean±SD	ATV-COVID-19	COVID-19 VLS	PCo-COVID-19	PCa-COVID-19
Children's vaccination status				
Yes	3,65±0,65	2,73±0,52	3,01±0,50	2,81±2,98
No	3,21±0,74	2,52±0,55	3,06±0,59	2,98±0,66
	t=5,028	t=3,203	t=-,696	t=-2,082
	p<0,001	p=0,001	p=0,479	p=0,035

t: Student t-test; p: significance level, ATV-COVID-19: Attitudes Towards COVID-19 Vaccine Scale, COVID-19 VLS: COVID-19 Vaccine Literacy Scale, PCo-COVID-19: Perception of Control of COVID-19 Scale, PCa-COVID-19: Perception of Causes of COVID-19

Discussion

The cross-sectional study planned to determine the attitudes of parents with children aged 12-17 years towards vaccinating their children against COVID-19 and the relationship between these attitudes and COVID-19 vaccine literacy, perception of control of COVID-19, perception of causes of COVID-19. This study found that only 44% of the parents had their children vaccinated against COVID-19, and about 56% were not vaccinated. Yılmaz et al. showed that only 36.3% of parents were willing to have the COVID-19 vaccine in Turkey [10]. Studies carried out in different parts of the world have shown that hesitancy to COVID-19 vaccines varies between 24-58% in adolescents [17]. For the vaccine to be effective, it has been necessary to work on increasing the acceptance of the vaccine among adolescents and children, and especially among adults, to increase the coverage rate of the COVID-19 vaccine to over 70%, as stated by the World Health Organization (available at: https://www.who.int/news/item/23-12-2021-achieving-70-covid-19-immunizationcoverage by-mid-2022).

In this study, 86.5% of parents stated that they were vaccinated to protect against COVID-19. While the majority of parents were vaccinated, they did not show similar attitudes towards vaccinating their children. A survey of rural communities found that parents were "very" or "somewhat" concerned about serious side effects of the vaccine (available at: https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-rural-america) and 50% of rural American parents said they would "definitely not" vaccinate their children aged 5-17 years (available at: https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-vaccine-attitudes-rural-suburban-urban). Some parents still expressed mistrust about the efficacy or safety of the COVID-19 vaccine. The efficacy and safety of vaccines is one of the most important issues for the acceptance of vaccines in children and adolescents by their families [18]. A recent review of COVID-19 vaccines in the paediatric population concluded that most adverse events were mild to moderate and that COVID-19 vaccines have a good safety profile [3]. In this context, health professionals should inform parents about the safety of the vaccine.

In this study it was shown that, parents' positive attitudes towards COVID-19 vaccination increased as their level of vaccine literacy increased. In this context, assessing parents' attitudes and perceptions towards the COVID-19 vaccine is critical to ensure that parents agree to vaccinate their children [10,11].

As shown in the studies on this topic, healthcare professionals, teachers and peers should be empowered as advocates for the COVID-19 vaccines and provide individual recommendations to increase the health literacy of families by providing accurate information about vaccines [6,16,18,19]. In particular, doctors and nurses working in pediatric units and family health centres should provide continuous training to parents on the safety and side effects of vaccines developed against COVID-19 and recommend vaccination at every encounter.

In this study, it was found that there was a negative relationship between the mean score of the COVID-19 Vaccine Literacy Scale and the mean scores of the Perception of Causes of COVID-19 Scale and the faith subdimension. Although parents have misconceptions about the vaccine, it was observed that this attitude changed positively with increasing health literacy. This result is similar to the literature [20,21]. This study shows that beliefs such as 'the epidemic is our destiny' or 'the epidemic is the wrath of God against social degradation' are barriers to vaccine acceptance, but as vaccine literacy increases, these misconceptions also decrease among parents. There are conflicting data in the literature on the impact of religious beliefs on vaccines and the perception and acceptance of the COVID-19 vaccine. In a study investigating the attitudes and behavior of religious leaders towards vaccination in the Netherlands, three different approaches were observed: those who fully accept the vaccine, those who have reservations about the vaccine and do not express an opinion, those who are totally against the vaccine, and those who advise in this direction [22]. In a qualitative study conducted by Aygun et al. in Turkey, 64% of parents reported that vaccines were religiously objectionable [23]. In this context, efforts are needed to use religious leaders as vaccine advocates and to increase awareness and knowledge of the issue to encourage adolescents and their parents to receive the COVID-19 vaccine.

In this study, it was found that there was a positive relationship between the total score of the Attitudes Towards COVID-19 Vaccination Scale and the total score of the Perception of Control of COVID-19 Scale and the macro control subdimension. Similar results were found in the study by Elmaoğlu et al. (2021) [12]. These results support that parents who think that the COVID-19 pandemic can be controlled by vaccination have a high perception of control. High scores in the macro control subscale reflect that the measures taken at the institutional, national or global level are adequate.

As parents became more confident that the measures being taken by countries to prevent the spread of the disease were sufficient, their attitudes towards the COVID-19 vaccine became more positive. This finding highlights the critical role of community health authorities in vaccine uptake. In this context, regulators and researchers need to ensure transparency and publish data on diseases and vaccines [24]. Other evidence-based strategies suggested by UNICEF include inviting adolescents and young people to participate as stakeholders in vaccine discussions and strengthening partnerships to strengthen the views and opinions of young people in the community (available at: https://www.unicef.org/documents/practical-tips-engaging-adolescents-youth-coronavirus-disease-covid-19-response).

This study revealed that parents who vaccinated their children had higher levels of vaccine literacy, more positive attitudes towards vaccination, and fewer misconceptions about vaccination. In this context, health professionals should ensure that families have accurate information about the COVID-19 vaccine. In order to increase vaccination coverage, it is important to identify the factors that positively/negatively influence parents' attitudes towards vaccinating their children against COVID-19 and to determine the relationship between these factors. It is thought that these findings will be guiding in vaccination.

Limitation

The limitation of this study was the lack of qualitative features necessary for an in-depth understanding of people's perceptions. However, these limitations were attempted to be overcome by calculating the sample size to be representative of society and by assessing parents' attitudes towards the COVID-19 vaccine from different perspectives using several validated and reliable questionnaires.

Conclusions

The results showed that parental confidence, misconceptions due to lack of knowledge and social measures defined by health authorities were effective in influencing vaccine acceptance. It was noteworthy that as vaccine literacy increased, both the reduction in misconceptions and the negative impact on families' vaccination attitudes decreased. The positive effects of institutional, national or global policies on vaccine uptake, rather than individual restrictions, emphasize the need for comprehensive information and regulation by health authorities. It was concluded that educational programmes by health professionals, teachers and religious leaders at the individual level and by health authorities at the societal level could have a positive effect on vaccine uptake.

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