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Factors driving the attitudes and hesitancy of Albanian parents toward COVID-19 vaccination of children.

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Abstract: On June 2022, the Food and Drug Administration (FDA) authorized the use of Moderna and Pfizer-BioNTech COVID-19 mRNA vaccines for children aged 6 months-4 years in the United States.Vaccine hesitancy is context-, time-, place- and vaccine-specific. This study aims to analyze different factors influencing the perceptions and attitudes of Albanian parents toward the COVID-19 vaccination of children. The Anti-Covid-19 vaccine remains unapproved for children younger than 12 in Albania. A validated questionnaire composed of 33 elements was used for the purpose of this study. A total of 600 parents/caregivers responded to the questionnaire. The negative perceptions toward vaccination of their child were linked to mild forms of the disease passed by their children and fear of adverse events.

Keywords: COVID-19; vaccination; children

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1. Introduction

Data reported to the World Health Organization (WHO) from 30 December 2019 to 25 October 2021 show that children under five years old represent 2% (1 890 756) of reported global cases and 0.1% (1 797) of reported global deaths. (1) The number of COVID-19 cases in children increased dramatically in 2022 during the Omicron variant spread. In the United States, during the Omicron wave, COVID–19–associated hospitalization rates in children aged 5–11 years were 2.1 times as high among unvaccinated children (19.1 per 100,000 population) as among vaccinated children (9.2) [1].

More than 3 million cases of COVID-19 have been reported among infants and children aged <5 years (children) and more than 500 associated deaths have been reported as of December 2, 2022, in the United States [2]. In a European study, conducted in 10 EU countries, there were approximately 117 hospitalizations for every 10,000 reported symptomatic pediatric cases during the two-month period (3 August 2020 to 3 October 2021) [3]. In Albania, an upper middle-income country of 2.88 million inhabitants there are no published data about children infected with COVID-19. However, since the beginning of the pandemic until May 20th, 2023, a total of 334,090(11,61% of the total population) infected people and 3,604 deaths have been reported [4]. Over 1 million COVID-19 vaccine doses (either Pfizer-BioNTech or Moderna vaccines) have been administered to children aged 6 months to 5 years in the United States of America (US) since June 2022 [5] . Moderna and Pfizer-BioNTech are mRNA vaccines.

Vaccination is recommended in 12–17-year-olds in all EU/EEA countries, with some now also recommending booster doses for this age group [4]. The European Medicines Agency (EMA) has approved vaccination for 6-11-year-olds (Spikevax, Comirnaty) which are also mRNA vaccines.[6]

While in Albania, there are no suggested vaccines for children under 12 years of age. Vaccination is of particular importance for children at higher risk of severe disease. The World Health Organization's Strategic Advisory Group of Experts on Immunization

(SAGE) has adopted the new concept of vaccine hesitancy which is defined as "a motivational state of being conflicted about, or opposed to, getting vaccinated; including intentions and willingness [7] As vaccine hesitancy is context-, time-, place- and vaccine-specific, this study aims to analyze different factors influencing perceptions and attitudes of Albanian parents living in Albania, in Kosovo and Diaspora, toward COVID-19 vaccination of children.

2. Methods

2.1. Subjects of the study

The subjects of this study were parents of children aged 0-18 years old. Inclusion criteria were: Albanian parents who understood and spoke well Albanian, parents of children aged 0-18 years old. Exclusion criteria were: parents aged less than 18 years old, Albanian parents who didn't understand well Albanian language, and parents of children aged more than 18 years old. Parents and caregivers were informed about the aims and goals of the study. Confidentiality and anonymity of the data were guaranteed to them. The participants were reassured about the privacy of the interview and informed that no negative consequences would apply if they declined the participation.

2.2. Study instrument

A validated questionnaire composed of 33 elements was used for the purpose of this study. There first section of the questionnaire is composed of demographic questions. The other sections aimed to collect data about the economic level, political status of the country where they live, policies toward vaccination, parents' perceptions and beliefs about COVID-19 vaccines in children, and access to immunization settings. The survey tool was composed of questions aimed to measure the complacency, convenience, and confidence of the respondents toward COVID-19 vaccines in children.

2.3. Data analysis

The data collected from the questionnaire were first coded and then studied using statistical software STATA13 and SPSS21. The parents/caregivers that responded to the questionnaire were categorized into 3 groups: Albanian parents living in Albania, Albanian parents living in Diaspore, and Albanian parents living in Kosovo. Descriptive statistics (frequencies and percentages) were performed. The association of socio-demographic variables with the basic variable was analyzed using Pearson's chi-square test. Further, using the multinomial regression method, the factors that influence the concrete administration of vaccination among children were analyzed.

3. Results

A total of 600 parents/caregivers responded to the questionnaire. The mother represented 94.5% of the respondents. 52% of the respondents had a university degree and 33.1% had a post-graduate degree such as Doctoral studies, Master or Specialization diploma. 58% of the respondents declared to have a middle income level . The age of the children in 39% of the cases was 0-2 years old, while 16% of the respondents were parents of children aged 12-18 years old. 43% of the respondents have 1 child, while 42% have 2 children. Socio-demographic data related to the respondents can be found in Table A1(Appendix A)

3.1. Correlation between demographic variables and parent's perceptions about the safety of Covid-19 vaccines

About 61% of the respondents disagreed with the statement that the Covid-19 vaccines are safe. The two variables that were statistically related to the parent's perception of COVID-19 vaccine safety were the age of the children and the parent's living country. Parents having at least one child aged 0-5 years were more skeptical than other categories

regarding the safety of the vaccine. Parents living in Kosovo (52%) were less skeptical about the safety of anti-COVID vaccines compared to parents living in Albania(64%) and Diaspora (65%). 12% of parents who were skeptical about the safety of the COVID-19 vaccine declared having postponed the children's administration of childhood mandatory vaccines. 65% of parents having low trust in the pediatrician were skeptical about the COVID-19 vaccine safety compared to 35% of those having an increased trust in the pediatrician. Moreover, 76% of the parents declaring to be against all vaccines in general, resulted in being skeptical about covid-19 vaccine too, compared to 28% of those declaring in favor of vaccination. Correlation Analysis related to this section can be found in Table A2 (Appendix A)

3.2. Correlation between demographic variables and parent's perceptions about the efficacy of the COVID-19 vaccine

48% of the respondents disagreed with the statement "The COVID-19 vaccine can protect the child from getting seriously ill with COVID-19". Only 5.5% of the respondents believed that the COVID-19 vaccine could protect the child from getting seriously ill. The age of the child and education level were statistically correlated with parent's perceptions about the efficacy of the COVID-19 vaccine in children. Parents having at least one child aged less than 5 years old (60%) and parents of children aged 6-12 years old (65%) were more skeptical about the efficacy of the COVID-19 vaccine compared to parents of children aged >12 years old (53%). As the education level increases, the perception about the efficacy of COVID-19 vaccines becomes more positive. Only 39% of the parents having a post-university degree were skeptical about the efficacy of COVID-19 vaccines compared to 50% of those having a university degree and 68% of those having a 9th-grade education. Correlation Analysis related to this section can be found in Table A3 (Appendix A)

3.3. Correlation between demographic variables and parent's perceptions of disease risk

41% of the parents believed that the possibility for their children to get infected with SARS-Cov-2 is very high or high. A statistically significant correlation was found between the parents' risk perception of the disease and the following variables; country where they live, education level, income level, and profession. 34% of the parents living in Albania perceived a high possibility of their children getting infected with SARS-Cov-2 compared to 34% of them living in the Diaspora and 53% of those living in Kosovo. 42% of parents having a 9th grade or less education level perceived low risk compared to 23% of parents having a university degree. 50% of unemployed parents perceived low risk compared to 17% of parents working in the health sciences field such as medical doctors, pharmacists, etc. Correlation Analysis related to this section can be found in Table A4 (Appendix A)

3.4. From the multivariable ordinal logistic regression analysis, the following results were obtained

76% of the respondents declared that they would not vaccinate their child with the COVID-19 vaccine. In order to understand what factors, affect the vaccination of children with the COVID-19 vaccine, the question "Will you vaccinate the child?" has been analyzed in relation to other variables. Statistical analysis related to this section can be found in Table A5 (Appendix A)

From the statistical analysis, the following results were obtained;

- The country where they live and their education level do not influence parent's perceptions of vaccinating their children.

- Younger ages of parents (19 – 30 years old) are twice less prone to administer COVID-19 vaccine to their children compared to older parents (31-40 years old)

- The possibility of getting the children vaccinated vs not getting the vaccination increases by 2.3 times if the vaccination is mandatory

- The hesitancy of administering the vaccination to children compared to the total refusal increases by 3 times if the vaccination is perceived as safe and by 3.6 times if the COVID-19 vaccine is perceived as partially safe.

- The most important regression results show that the perceived safety of the Anti-COVID-19 vaccine has a concrete impact on the administration of the COVID-19 vaccine in children: the better safety of the Anti- COVID-19 vaccine is related to lower hesitancy to administer COVID-19 vaccine to children.

4. Discussion

In this study, most parents were skeptical about the safety and efficacy of the COVID-19 vaccine administration in children, although the majority of them perceived a high risk of children being infected with COVID-19. The factors that influence parent's perceptions about the safety and efficacy of Covid-19 administration are the age of the parent, educational level, and the country where they live. While factors influencing the parent's perception of risk were the country where they live, education level, income level, and profession. Factors such as living in urban or rural areas were not determinants of their beliefs, which implies that the access to vaccination locations is not a concerning issue. Income level resulted not an influencing factor on the decision of parents to vaccinate their children with the COVID-19 vaccine. Parents of younger children were more concerned about vaccine safety and efficacy issues compared to parents of older children. As they are in contact with healthcare professionals more than other parents, strategies to improve communication between healthcare professionals and parents should be implemented. This result is the same obtained by a study developed by Kaiser Family Foundation COVID-19 Vaccine Monitor, which reported that one-half of the parents of children aged 2–4 years declared that they will "not vaccinate immediately" their children [8]. The most important factor influencing parent's decision to vaccinate children with the COVID-19 vaccine is their perception of the safety and efficacy of the vaccine. The same concerns were reported by other studies evaluating the vaccination timeliness and confidence among Albanian parents related to childhood immunization [9,10].

Studies developed in other countries also report side effects from the COVID-19 vaccine being the most common concern expressed for both children under 5 years and 5–12 years [11,12]. Another study evaluating COVID-19 vaccine uptake among healthcare workers in Albania observed that staff living in households with ≥4 members who were supposed to have dependent children in the house, were less likely to receive a third COVID-19 vaccine dose compared with two-person households. [13] Although children have less possibility of developing severe COVID-19 disease, they are affected by COVID-19 control measures such as school closures which might result in emotional distress, mental health issues, and poor quality of education. Moreover, children and adolescents can experience prolonged clinical symptoms known as "long COVID-19" [14]. Finally, children can transmit the virus to others favoring the transmission and spread of the infection. It is important to develop communication plans and dialog-based interventions to increase population knowledge and awareness of COVID-19 vaccines. These public health communications addressing the health risks and public health consequences of not vaccinating against COVID-19 improved vaccination intentions among adults [15]

5. Conclusions

Considering that the main driver of COVID-19 vaccine hesitancy administration in children of Albanian parents is fear of adverse events, scientific evidence-based communication integrated with campaigns to increase awareness should be developed.

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: title; Table S1: title; Video S1: title.

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Appendix A

Tables A1, A2, A3, A4, and A5 explaining the statistical analysis developed for this study can be found in Appendix A.

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