

ORIGINAL ARTICLE

Highly Educated Mother's Perception of Childhood Vaccination Hesitancy in Kazakhstan: A Thematic Analysis

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ABSTRACT

Background: Vaccine hesitancy among parents directly affects the child's vaccination status since they are the legal decision-makers regarding vaccinating their children. The study aimed to describe the perceptions of highly educated Kazakhstani mothers about childhood vaccination hesitancy.

Methods: The study utilized a thematic analysis to explore the mothers' perceptions. A sample of 95 participants comprehensively answered the free-text questions in an online questionnaire from January to February 2023. The analysis of the free-text responses followed a semantic thematic analysis approach. The data were coded manually.

Results: From the in-depth analysis of the data, 285 initial codes were extracted. The combination of similar meanings and concept codes led to 14 sub-themes and finally yielded four significant themes: misconceptions about childhood vaccination, fear of the effect of vaccine on children, distrust of the healthcare system, and social learning factors.

Conclusion: The perceptions of Kazakh mothers about childhood vaccination hesitancy may lead to behaviors of delaying and refusing some or all childhood vaccines. Therefore, motivational and educational strategies can be used by healthcare providers to instill trust in parents about childhood vaccines and their safety and effectiveness.

Keywords: Mothers, Qualitative research, Vaccination, Vaccine hesitancy, Vaccination refusal

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INTRODUCTION

Poor vaccine adherence may lead to outbreaks of vaccine-preventable diseases. In 2022, the World Health Organization (WHO) reported a 400% increase in measles cases in Africa compared to the same period in 2021 due to a lack of access to vaccines and disruptions caused by the COVID-19 pandemic. Similarly, 145 measles cases were registered in Kazakhstan from the beginning of 2023, most of which were among unvaccinated children or children whose vaccination status was unknown.¹ There are various reasons for vaccine hesitancy. In a large study which identified the barriers to influenza vaccine uptake, more than 70 vaccine hesitancy determinants were recognized.² They were classified into contextual (access to vaccines, frequency of doctor's appointments), psychological (risk perception, attitude, knowledge, experience), sociodemographic (age, gender, social status), and physical (alcohol consumption, smoking, low physical activity) barriers.² In a different study, the factors influencing parental decision-making regarding childhood vaccination included trust in the healthcare workers and healthcare system, social norms (viewing vaccination as a "normal thing to do"), the influence of social networks and the Internet, knowledge about vaccines and primary sources of information, individual perception of risks of vaccines and contraction of vaccine-preventable diseases and beliefs regarding health in general.³ A previous study highlighted three main determinants of vaccine hesitancy among parents: risk perception, trust in healthcare providers, and social norms.⁴

Perception of risk is one of the most reported determinants of vaccine hesitancy among parents. Risk perception can be explained in terms of parental concerns about developing adverse effects from receiving the vaccines versus the negative consequences of being infected with the vaccine-preventable disease and the likelihood of the child contracting it.⁵ Vaccine hesitancy is associated with low-risk perception, indicating that parents delay or refuse vaccination due to beliefs of low

susceptibility to the infection and concerns that the child will have a severe adverse reaction to the vaccine.^{6,7}

Sources of information shape an individual's perception of vaccines. Trusting the healthcare system and healthcare providers has a significant influence on an individual's vaccination behavior. Vaccine hesitancy is associated with distrust or low trust in the medical system and healthcare providers.^{8,9} Therefore, individuals and parents who treat governmental healthcare agencies and medical professionals as trustworthy sources of information are more likely to vaccinate themselves and their children. Moreover, parental trust in friends' and family's opinions regarding vaccination predicted vaccine hesitancy.⁹ The mistrust in healthcare providers and systems can be explained by the person's belief that medical staff have negative motives and are not acting in the patient's best interest.¹⁰ Additionally, an overwhelming amount of correct and incorrect information on childhood vaccination makes the decision-making process more difficult. Therefore, the accurate or inaccurate beliefs that an individual had before reading new information on vaccination or refutation of common misconceptions significantly influence whether this person will agree or disagree with the information.¹¹ These common misconceptions include the disappearance of diseases that require vaccination, giving the child several vaccines overloading their immune system, diphtheria-tetanus-pertussis vaccine leading to sudden infant death syndrome and many others.¹²

The studies are inconsistent when it comes to the correlation between vaccine hesitancy and educational levels. In some countries such as Italy, Canada, and India, people with higher education levels were less likely to be vaccine-hesitant, while studies from Saudi Arabia, Norway, and Kazakhstan show that higher education levels are predictive of vaccine hesitancy.¹³⁻¹⁸ Thus, this study aimed to explore the perceptions of highly educated Kazakhstani mothers about childhood vaccination hesitancy.

MATERIALS AND METHODS

This thematic analysis study reports the results of a survey distributed online in Kazakhstan (KZ) from January to February 2023. A purposive sampling strategy was used to recruit the participants. A total of 95 participants comprehensively answered the free-text questions. The target population consisted of Kazakhstani mothers with a university level of education who were identified as vaccine-hesitant, and presently with at least one child. Consent to participate was also included as a criterion for participation. The researchers identified the samples to be vaccine hesitant based on their responses on the survey quantitative question “Overall, how hesitant about childhood vaccination would you consider yourself to be?” (from a zero to 10 scale). Accordingly, the participants who rated their hesitancy level seven to 10 were considered vaccine-hesitant. Women who cannot write, are married without a child, have not finished a university level, and don't know how to use computers were excluded from the study. In addition, the participants who were identified as vaccine-hesitant but did not provide answers to the open-ended questions were not included.

The researchers implemented online recruitment by sending a message through Nazarbayev University group email and social media. The recruitment message contained information about the study and the link to the informed consent. The contact information of the main investigator (PI) was indicated in the recruitment email, and participants were encouraged to send a message to the PI if they had any questions or clarifications about the study. Those who clicked “I agree to participate” in the informed consent were brought to the online survey. In contrast, those who clicked “I do not agree to participate” were directed to the disqualification page of the survey.

An online self-administered questionnaire in Kazakh and Russian languages was developed for data collection. The online questionnaire collected quantitative and

qualitative data on vaccine hesitancy. Only the qualitative data, which was gathered using open-ended questions (“How important is childhood vaccination? Please explain your answer.”) and a comment section (“Please provide any comments that you have about childhood vaccination”) in the survey, were reported in this article. The participants' responses to these questions elicited rich data on the perception of the participants on childhood vaccination hesitancy. The instruction to provide detailed responses to these questions was added to the survey. Experts in medicine, nursing, and vaccines evaluated the questionnaire. The questionnaire was piloted before it was distributed electronically through an online portal. Online surveys in qualitative studies are unique compared to other qualitative research methods because they allow for gathering data from a geographically diverse sample and ensure high anonymity.^{19, 20} This approach makes them an excellent method for investigating a phenomenon that is not well understood and is sensitive, such as the perception of parents on childhood vaccines. By using online surveys, researchers maintained the depth of qualitative methods while giving a voice to a more significant number of individuals, including participants who might be incapable of participating due to distance or personal obligations related to work and family.²¹ This broad perspective also includes individuals' perspectives on social issues or are concerned about being publicly exposed, which is typical of those people with a visible difference.²²

The analysis of the free-text responses followed a semantic thematic analysis approach.²³ Getting acquainted with the data was the focus of the first step of the analysis. The researchers reviewed the data several times to obtain a feel of the content. The researchers manually coded the data. The codes were then produced when the researcher became acquainted with the data. Codes are designations applied to data segments with a common meaning. The next step was to

apply the codes to the data that had been generated. The researchers reviewed the data and assigned the correct code to each segment corresponding to that code. Initial themes were produced when all the codes were applied to the data. The researchers reviewed the data to ensure that all relevant segments were included in the suitable themes; then, they grouped similar themes into more significant categories. Finally, the themes were defined and named.

Strategies for ensuring trustworthiness in qualitative research were considered.²⁴ Credibility was ensured by using a consistent qualitative analysis method; the researchers built confidence by communicating regularly and organizing analytical notes into a codebook throughout the analysis process. Confirmability was ensured by acknowledging the limits inherent in the analysis of the online open-ended survey questions, as well as the biases and backgrounds of the researchers. The increase in transferability and reliability was accomplished by providing a detailed description of the data analysis methods used, and a large sample size of participants.

The study received approval from the Nazarbayev University School of Medicine Institutional Research Ethics Committee (NUSOM-IREC2022NOV#16), and the

participants provided informed consent to partake in the study after receiving a comprehensive explanation of the study objectives and methodology. Their participation was entirely voluntary. Participants' anonymity was preserved.

RESULTS

All participants had a university level of education. Nearly half of the participants were 30 to 39 years of age (49.5%). Most of them were residing in the central region of the country (Astana city, Akmola oblast', Karagandy; 71.6%). Over half of the participants had at least two children (57.9%) (Table 1).

Childhood vaccine hesitancy is the parent's refusal to vaccinate their children against vaccine-preventable diseases despite the availability of vaccines. This study included perceptions from 95 Kazakh mothers with higher education in the analysis. From the in-depth analysis of the data, 285 initial codes were extracted. The combination of similar meanings and concept codes leads to 14 sub-themes, finally yielding four significant themes: misconceptions about childhood vaccination, fear of the effect of the vaccine on children, distrust of the healthcare system and social learning factors (Table 2).

Table 1: Demographic characteristics of the participants

Characteristics	N (%)
Age	
18–29 years	33 (34.7)
30–39 years	47 (49.5)
40–49 years	13 (13.7)
50–59 years	2 (2.1)
Region in Kazakhstan	
Central (Astana city, Akmola oblast', Karagandy)	68 (71.6)
North Kazakhstan (Pavlodar, Kostanay)	8 (8.4)
West Kazakhstan (Aktobe, Atyrau, Mangystau)	1 (1.1)
East Kazakhstan	5 (5.3)
South Kazakhstan (Almaty, Zhambyl, Kyzylorda, Turkestan)	13 (13.7)
Number of Children	
1	40 (42.1)
2	33 (34.7)
3	16 (16.8)
4	4 (4.2)
5	1 (1.1)
6	1 (1.1)

Table 2: Sub-themes and themes generated from the data

Sub-Themes	Themes
Interference of vaccine with the development of natural immunity in children Development of vaccines solely for the profit of pharmaceutical companies Babies' acquired immunity from parents who acquired a disease	Misconceptions about Childhood Vaccination
Not rigorously tested vaccines Probability of children's disability after vaccination Lack of evidence-based effect of the vaccine	Fear of the Effect of Vaccines on Children
Problems in vaccine procurement Vaccine quality based on the country of origin Approach of the medical practitioner Failure of healthcare providers to fulfill their duties Incompetent medical practitioners	Distrust to the Healthcare System
Spread of misinformation about vaccines Misinformation from healthcare providers Family and peer influence	Social Learning Factors

1. Misconceptions about Childhood Vaccination

Kazakh mothers do not want their children vaccinated because of their misconceptions about childhood vaccination. Their misconceptions about the effects of childhood vaccination on children are a critical factor in vaccine hesitancy.

1.a. Interference of Vaccine with the Development of Natural Immunity in Children

Some mothers believe that vaccines can interfere with the development of natural immunity in children. They may believe that vaccines provide only temporary immunity and that natural immunity is better for their child's long-term health.

"The body itself should produce immunity, and until one year of age, the child's immunity develops naturally, and vaccines hinder that process." (Mother belongs to the age group 40-49, from Central KZ with three children)

1.b. Development of Vaccines Solely for the Profit of Pharmaceutical Companies

Another misconception of the mothers is that vaccines are developed solely for the profit of pharmaceutical companies. Thus, the parent sees that the vaccine is given to weaken the children's immune system. Also, parents believe that there is a dearth of studies by companies on the effect of childhood vaccination on children, and the results are

not transparent.

"Vaccination is a remnant of pre-Soviet and Soviet times and Western commercial medicine. The purpose of vaccinating people is not to take care of people but to take care of corporate interests or other "good" intentions." (Mother belongs to the age group 30-39, from Central KZ with two children)

1.c. Babies' Acquired Immunity from Parents who Acquired a Disease

The parents believe babies have acquired immunity from parents who acquired a disease, such as COVID-19, during pregnancy.

"From birth, pediatricians did not offer such a thing, and there was no need since we had Covid again 2-3 times." (Mother belongs to the age group 40-49, from Central KZ with a child)

2. Fear of the Effect of Vaccines on Children

One factor contributing to vaccine hesitancy is the perception that vaccines may negatively affect children's immunity and health as they perceive that the vaccine is not safe or effective for their children. The participants fear the effects of vaccines on their children due to several reasons.

2.a. Not Rigorously Tested Vaccines

The participants perceived that childhood vaccines are not rigorously tested and

monitored in medicine, making them unsafe and ineffective before being approved.

“In our case, vaccinations only worsened the health of the child. It was after vaccination that the child’s illnesses worsened.” (Mother belongs to the age group 28-29, from South KZ with a child)

“Strongly against vaccination of children against the disease because my health deteriorated after being vaccinated against the vaccine. Forced to be vaccinated under the threat of being fired.” (Mother belongs to the age group 30-39, from Central KZ with two children)

2.b. Probability of Children’s Disability After Vaccination

There is a common fear among some parents that their children may become disabled after vaccination. Some parents may also hesitate to vaccinate their children due to the fear of death or other serious adverse events.

“After the vaccine, many children become autistic, and autistic symptoms appear. I heard it happened with some of my friends’ children. No thanks.” (Mother belongs to the age group 30-39, from East KZ with a child)

“Now, there are many diseases, for example Autism, and everyone associates this with vaccinations. For this reason, I did not vaccinate my third child.” (Mother belongs to the age group 30-39, from Central KZ with a child)

2.c. Lack of Evidence-based Effect of the Vaccine

Another fear of the participants is the lack of evidence-based effect of the vaccine on children. This concern about the effectiveness of vaccines affects the participant’s perception since they do not see the direct impact of the vaccine on their child’s health. They are concerned about the severity or frequency of side effects of the vaccine. This notion of the participant leads to mistrust in the safety and effectiveness of the vaccine.

“Vaccines are not fully researched; I can’t

trust them about provision of child’s health.” (Mother belongs to the age group 30-39, from Central KZ with three children)

3. Distrust to the Healthcare System

One identified reason for the mothers’ childhood vaccination hesitancy is their distrust of the healthcare system. The participants identified several reasons for their distrust of their healthcare about childhood vaccination.

3.a. Problems in Vaccine Procurement

The lack of trust in governmental health agencies is due to problems in the procurement of vaccines, such as delays or concerns about the quality of vaccines. The concerns of the parents result in lower confidence in the vaccines, as well as the medical practitioners who are administering them.

“Unfortunately, our vaccines are not very good products, and the schedule for getting the vaccines is unclear! For example, I still wonder when and what my children should receive, what and when they should do them, and where to find out which ones they received and should receive ... everything is chaotic! ...” (Mother belongs to the age group 18-29, from Central KZ with two children)

“...The main thing is they did not procure high-quality, proven, and certified vaccines from developed countries, but they buy vaccines from developing countries with a low level of healthcare.” (Mother belongs to the age group 18-29, from West KZ with a child)

3.b. Vaccine Quality Based on the Country of Origin

The parents also question the vaccine quality based on the country of origin. Some parents perceive that vaccine effectiveness varies depending on the country where the vaccine was produced. Parents’ concerns about the origin of the vaccine led to mistrust in the efficacy and safety of the vaccine.

“I am more concerned about the quality of the vaccines. I remember that from 2011 to

2013 many children acquired serious diseases due to poor-quality vaccines imported from Indonesia. Later, a journalistic investigation showed that these vaccines were made with handicrafts and did not meet the standards. This is what I am really afraid of. It is very unfortunate if a woman, following all the recommendations, tries to bear a healthy child, provides him with decent care after birth, and some poor-quality vaccine can end the child's health or life." (Mother belongs to the age group 18-29, from West KZ with four children)

"I also do not trust the country of manufacture (for example, India) and I have the right to do so." (Mother belongs to the age group 30-39, from Central KZ with a child)

3.c. Approach of the Medical Practitioner

During vaccine administration, mothers have concerns about the approach of the medical practitioner. Before vaccine administration, the mother observed no proper assessment of the child's medical history, current health status, and potential risk factors. Failure to conduct a thorough assessment can lead to adverse reactions or complications, eroding trust in medical practitioners. Also, medical practitioners are considered incompetent due to their failure to perform assessments, approaches, and attitudes.

"Our doctors only vaccinate the child according to the schedule and protocol for a show, without examining, without determining the child's general condition. I believe that before giving this or that vaccine, medical staff is obliged to check the general health of the child with the help of tests and only then vaccinate! not just to close the case and hand over these pieces of paper." (Mother belongs to the age group 18-29, from East KZ with a child)

"My position is very ambiguous; I do not trust doctors after I experienced obstetric aggression against myself during childbirth. I do not trust GPs who cannot articulate their thoughts correctly, let alone cure someone." (Mother belongs to the age group 30-39, from

East KZ with a child)

Also, the mothers mistrust medical practitioners due to vaccine trauma.

"I am not an anti-vaxxer, but I do not trust our doctors. There were many cases when people suffered from the mistakes of doctors. Take, for example, the case of HIV infection of children in the south of the country in the 2000s. How many children have suffered, and how many families have broken up? These children depend on drugs for the rest of their lives. And what happened to those bad guys? If they and their children were also infected, it would be at least somehow fair ... I am for vaccination, but only with European vaccines because there is no trust in others." (Mother belongs to the age group 18-29, from Central KZ with a child)

3.d. Failure of Healthcare Providers to Fulfill Their Duties

In addition, reluctance towards childhood vaccination can be attributed to the failure of healthcare providers to fulfill their duties. According to participants, healthcare providers are forcing the parents to vaccinate their children without proper assessment and explanation. As a result, the participants feel their right to make informed decisions about their child's vaccination is being disregarded. They feel that healthcare providers are not respecting their rights or providing sufficient information about the advantages and drawbacks of vaccines, which can undermine trust and contribute to vaccine hesitancy.

"My doctor often insists on vaccinations. Due to bad experiences in the family, the consequences after vaccination caused a strong setback in the child's development." (Mother belongs to the age group 30-39, from South KZ with three children)

3.e. Incompetent Medical Practitioners

Another reason for the mothers' childhood vaccine hesitancy is the incompetent medical practitioners. Most parents observe that medical practitioners are not communicating effectively about vaccines. This notion

resulted in a lack of confidence in the safety and effectiveness of the vaccine for the participants.

“Incompetent doctors. Now in our time, there are many birth injuries, and the consequences of childbirth are very deplorable. When you start asking questions, for example, about the expiration date of the vaccine, they roll their eye. It is unnecessary, and there are no exact and detailed answers.” (Mother belongs to the age group 30-39, from Central KZ with five children)

4. Social Learning Factors

Social learning factors can play a significant role in shaping the attitudes and behaviors of mothers toward childhood vaccines. Parents are more likely to trust and follow the advice of individuals they perceive as credible or influential in society and social media.

4.a. Spread of Misinformation about Vaccines

Social media platforms and other online forums can facilitate the spread of misinformation about vaccines. The participants sought information and advice from online communities sharing their views on vaccines.

“Now there are open spaces like Instagram / TikTok, where the issue of vaccination is raised and more than 1000 real commentators who write more negative reviews about vaccination than positive ones.” (Mother belongs to the age group 30-39, from Central KZ with two children)

4.b. Misinformation from Healthcare Providers

Some healthcare providers or alternative medicine practitioners may spread misinformation or promote anti-vaccine beliefs, influencing vaccine hesitancy.

“... different doctors express different opinions; naturally, I cannot decide to vaccinate my child...” (Mother belongs to the age group 30-39, from East KZ with four children)

4.c. Family and Peer Influence

Family and peer influence can be a factor

in shaping vaccine hesitancy among parents. Childhood vaccine-hesitant parents were influenced by other parents, family, and peers in their social circles who share their concerns about vaccines.

“We do not go for the vaccine because one of my family members has a case of cerebral palsy after being vaccinated in the age of three years. He is now in his 40s and is disabled. Since 1983, no one in our family has been vaccinated or sick with anything, not even chickenpox.” (Mother belongs to the age group 18-29, from North KZ with a child)

DISCUSSION

The findings revealed four main themes that describe their perception of childhood vaccination: misconceptions about the vaccines, concerns about the effect of the vaccination, distrust in the healthcare system, and social learning factors.

The first extracted theme was misconceptions related to childhood vaccines. This finding is supported by that of a systematic review on parental childhood vaccine hesitancy in a previous study.²⁵ Accordingly, many studies have reported that parents' misconceptions, such as myths, rumors, and conspiracy theories, hinder childhood vaccination.²⁵ In general, there is much incorrect information surrounding the topic of vaccines, and some of them that were included in this study were the negative motives of the vaccine-producing companies and the fact that the natural immunity of children protects them from diseases without interference with vaccines. Other parental misconceptions may include vaccines leading to the development of Autism or autoimmune diseases in children, vaccines containing fragments of human DNA, aluminium or mercury, and vaccines having life-threatening side effects.²⁶ Letting the child's natural immunity develop rather than vaccinating children can be a dangerous assumption since children's immune system is considered susceptible to vaccine-preventable infections and their

devastating consequences.²⁶ A previous study compared innate and adaptive immune responses of vaccinated and non-vaccinated children and no significant difference was found, indicating that vaccines do not alter or weaken the child's immune system.²⁷ Another misconception about childhood vaccination highlighted in this study is that vaccines are developed to generate more profit for pharmaceutical companies. This idea can be considered conspiratorial thinking as mothers thought that certain decisions relevant to vaccine development are backed up by suspicious motives made by influential figures, in this case, pharmaceutical companies that manufacture vaccines. A study argued that conspiratorial thinking positively correlates with delayed vaccination of children.²⁸

The next theme was the perception of the effects of vaccination. The study found that mothers were concerned about the safety and effectiveness of vaccines and the possibility of the child having adverse effects such as Autism, disabilities, and death. Moreover, these perceptions were justified by the experiences of other people the respondents knew or heard of, such as family members or friends. One study reported how individual and social groups influence childhood vaccination, including the critical role of parents' beliefs about the effectiveness and safety of the vaccine.²⁵ The public concerns over the safety and effectiveness of childhood vaccines are especially relevant since UNICEF has reported that the perceptions of the significance and confidence in vaccines have declined during the recent COVID-19 pandemic.²⁹ Worrying about the adverse side effects of vaccinations is closely linked to the topic of misconceptions about vaccines. As mentioned previously, ideas that childhood vaccines cause autism, autoimmune or neurodegenerative diseases, and death are incorrect and have been proven so by many studies.³⁰⁻³² However, as shown in the current study, some mothers also claimed that there were few studies on the adverse effects of vaccines.

Distrust in the healthcare system and providers is the third theme influencing the mothers' perception of childhood vaccination. Several previous studies have shown that healthcare providers are considered the primary and more influential source of vaccination information, and people who trust local healthcare agencies and staff are more likely to be vaccine-confident.^{18,33,34} Our study has identified that mothers questioned the skills and knowledge of the medical workers and the quality of the vaccines purchased by the government. Specifically, the absence of thorough physical examinations and blood tests before vaccination, poor quality, and concerns over the country of the origin of vaccines were mentioned. According to the Centers for Disease Control and Prevention asking the parent several questions regarding the physical state and health of the child or teen is sufficient to decide to administer the vaccine without additional tests.³⁵ Therefore, as information providers, medical workers can educate the parents about the required procedures before child immunization. Regarding the concerns about the manufacturing country of vaccines, a study conducted in Kazakhstan found that individuals are more likely to trust vaccines from Germany, the US, and France, while vaccines produced in India and China were the least trusted ones.³⁶

Finally, social learning factors were the fourth theme that emerged from the analysis. This theme included determinants such as misinformation or reported negative experiences of vaccination learned through social media or friend and family relations. The experiential knowledge or advice other parents give can be more influential in deciding on vaccination than scientific evidence.³ Moreover, a previous study found that parents who treat social media and the Internet as the primary source of information regarding childhood vaccinations are more likely to have negative views towards immunization; one possible reason is that the content found on social media about vaccination is predominantly harmful.³⁷ Regarding friend

and family relations, it was found that individuals whose family members were not vaccinated were more likely to be vaccine-hesitant, which suggests that opinions of the individual's surroundings play an essential role in their decision-making process.³⁸

We acknowledge some limitations that require attention when interpreting and using the findings of this study. Through open-ended survey questions, the data collection method may have limited a deeper exploration of the participants' experiences, as follow-up questions were impossible to perform. This prompted us to focus on describing the participants' perceptions rather than exploring their experiences. The participants were limited to mothers who attained university-level education; thus, the findings can only be used in this population group. Future studies should focus on mothers with lower levels of education, as well as on fathers. This study provides valuable insights into the decision-making process of highly educated women on childhood vaccination. Another strength of the study is the inclusion of the opinions of many participants from different parts of the country, which enriches the data collected about the phenomenon being studied.

CONCLUSION

Highly educated Kazakhstani mothers' perceptions including misconceptions about vaccines, concerns about the effects the vaccines have on the child's health, distrust in the healthcare system and providers, and social learning factors may lead to behaviors of delaying and refusing some or all childhood vaccines. Identifying and understanding the factors that affect the mothers' perception of childhood vaccination will help improve vaccine uptake in the country by creating effective strategies to increase trust in vaccines.

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