

ASSESSMENT OF PARENTAL KNOWLEDGE AND ATTITUDE TOWARDS CHILD IMMUNIZATION COVERAGE AT BIRTH IN KASUR

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Abstract

The knowledge and attitudes of parents are important factors for better immunization coverage. Previous studies showed misconceptions about parental knowledge of childhood immunization. This study aimed to promote childhood immunization by educating mothers regarding immunization. To assess the parents' knowledge, attitude, and perception towards child immunization coverage. Descriptive cross-sectional study design at Kasur on parental knowledge, attitude, and perception towards child immunization coverage at birth. A semi-structured questionnaire was used for the data collection on convenience samples of parents. Descriptive statistics were used for data analysis via SPSS version 25. A total of 330 parents were included in the data analysis. The study used descriptive statistics for findings and a chi-square test to assess demographic association. Out of 330 parents, regarding childhood immunization. Fathers were often older, with 45.8% in the 36–40 age range, whereas mothers were primarily between the ages of 26–30 (32.1%) and 31–35 (30.9%). Mothers' level of education was like fathers. 63.9% had only completed basic school, 16.1% were illiterate, and 9.4% obtained a college education. Over time, parents' knowledge of vaccines decreased; 96.1% acknowledged the value of the birth vaccine, whereas only 82.1% and 83.0% acknowledged the 9-month and 12-month vaccines, respectively. Immunization status is influenced by sociodemographic factors. To improve vaccine uptake and public health, efforts should focus on raising parental awareness, enhancing mobile service, involving communities, and reducing communication barriers.



Keywords

Parents, knowledge, attitude, perception of children, immunization status.

1. Introduction

Public health interventions through immunization stand as the most efficient and economical disease prevention strategy that significantly lowers the mortality and illness rates from vaccine-preventable diseases among children (Abbas, Mangrio, & Kumar, 2021). Millions of lives have been rescued by vaccines, while diseases like polio, along with measles, diphtheria, pertussis, and tetanus, have experienced major control after their introduction (Adnan, Sattar, Kafait, & Faiz, 2022). Immunization activates an immune response toward pathogens, which enables protection against infections before their occurrence. According to the World Health Organization (WHO) constantly stresses the critical role of immunization in worldwide health objectives, especially regarding infant and child death reduction. Worldwide vaccine coverage has achieved significant progress, but Pakistan, along with similar developing countries, lags due to exceptionally low rates of childhood immunizations (Ahmad, Rasool, & Hamid, 2022). The country of Pakistan must overcome major obstacles to reach elevated immunization coverage levels. Every fifth newborn child exists without basic immunizations, which renders them exposed to dangerous diseases (Al-Regaiey *et al.*, 2022). The nation experiences high levels of infant mortality, while vaccine-preventable diseases represent substantial health risks to the population. Vaccination programs run by the national government have increased vaccine coverage, but insufficient medical care and wrong information

spread by parents, along with their doubts, maintain vaccination schedule compliance rates from reaching desired levels. (Bin Alamir, 2024). Research indicates that parental attitudes, combined with their vaccine-related learning, shape their children's vaccination receipt. The awareness of these causes proves essential for solving vaccination coverage deficits and increasing vaccine acceptance. (Aldekhyyel *et al.*, 2022). The knowledge level and mindsets of parents about vaccinations determine how well their children get standard and timely vaccination services. Vaccine hesitancy in various parts of Pakistan obstructs medical professionals from obtaining optimum vaccination coverage rates (Ali, Sadique, & Ali, 2021). The refusal or delay of vaccines stems from parental misconceptions about vaccine safety, religious beliefs, and insufficient awareness of vaccination advantages, along with negative service evaluations toward healthcare providers. Parental concerns about vaccine-related side effects merge with conflicting beliefs between unnecessary vaccination and harm (Allan, Adetifa, & Abbas, 2021). Vaccine accessibility and compliance among the population depend on several socio-economic elements that combine with maternal educational status, budget-related problems, and geographic location difficulties (Alshammari, AlFayyad, Altannir, & Al-Tannir, 2021). The region of Malaysia and Saudi Arabia faces identical vaccination hesitancy patterns because parents hold misbeliefs about vaccine contents, combined with autism concerns and doubts about state healthcare policies. The population of Saudi Arabia remains hesitant to vaccines, although

vaccination rates remain high because the healthcare system implements mandatory vaccination policies instead of allowing parents to make their own choices (Aslam, Ali, Babar, & Yang, 2022). The population of Malaysia faces two main obstacles due to religious apprehensions and socially shared misinformation that spreads online (Baidya, Willens, Wonodi, & Moss, 2025). The worldwide examples show that it is essential to study the attitudes of parents about vaccinations in Pakistan, especially within the city of Lahore, because healthcare accessibility remains high despite persistent vaccine refusal among its residents (Bhattacharya & Campani, 2020). Multiple reports demonstrate that various parental concerns lead parents to delay or reject their child's vaccinations, despite government officials' efforts to strengthen immunization plans (Bocquier, Ward, Raude, Peretti-Watel, & Verger, 2017). Knowledge about what influences parents to decide about childhood immunizations at birth enables the development of effective health programs and awareness initiatives (Bullen, Heriot, & Jamrozik, 2023). This study yields significant findings that help improve vaccine programs and reduce preventable diseases in Pakistan. The evaluation of parental attitudes and knowledge regarding infant vaccinations serves as the main goal of this scientific research in Lahore, Pakistan. The research study will generate a complete understanding of factors that affect vaccination rates through its assessment of parental knowledge about vaccines and their attitudes and vaccination-related challenges. The study aims to

measure what parents know about child vaccinations, followed by barrier analysis and investigation into societal factors with evidence-based solutions for vaccine protection.

2. Methodology

A cross-sectional study design was used to assess the level of knowledge and attitudes of parents towards child immunization at birth. The data is collected from the UC #04 Basti Barat Shah Kasur. The duration of study was nine months (December 2024 to August 2025). The total sample size of my study was 330. Epitools was used to collect the sample size. The convenience sampling technique was used to collect the data from the target population. Parents of children aged 1 to 2 years and Parents residing in the study area for at least one year before the study were included in the study. The study excluded parents who were mentally/critically ill, unwilling to give informed consent, or migrants. Additionally, parents of 4-year-old children were also excluded from the study. A Likert scale was used as a tool for the questionnaire. To investigate the knowledge and attitudes regarding standard precautions for parental knowledge towards child immunization at birth in Kasur. Ethical approval was sought from the selected UC to ensure the ethical conduct of the research. This procedure involved the distribution of structured questions to parents within the UC. The questionnaire was designed to collect data from parents. The selection of UC was based on a convenient sampling approach to gather comprehensive data on parental knowledge and attitudes towards child immunization at birth. Data collection was carried out through face-to-face interaction with

the participants, allowing for clarification and immediate response. This data collection procedure enabled the assessment of knowledge and attitudes towards child immunization coverage at birth in Kasur. Several important components are included in the outcome measures for evaluating parents' attitudes and knowledge on childhood vaccination coverage at birth in Kasur. Parents' awareness and comprehension of the immunization schedule and its advantages were assessed by knowledge assessments. To provide a full understanding of the variables influencing vaccination coverage, the study examined the barriers and facilitators that either prevent or encourage parents to conduct good vaccination practices. Independent Variables were Age, Gender, Education, and Employment status. The dependent variables were Knowledge and Attitude. SPSS version 25.0 was used to analyze the data. Descriptive statistics were used to perform descriptive analysis. The chi-square test was used to assess

the association between two categorical variables.

3. Results

Data collected from 330 participants in a union council of Basti Barat Shah indicated predominantly positive parental attitudes toward childhood vaccinations. The gender distribution was nearly balanced, with 51.2% females and 48.8% males. Fathers were generally older, with 45.8% falling within the 36–40 age group, while most mothers were aged 26–30 (32.1%) or 31–35 (30.9%). Educational levels among mothers were like those of fathers: 63.9% had completed only primary education, 16.1% were illiterate, and 9.4% had attained a college-level qualification. Regarding vaccination practices, 71.5% of parents emphasized the importance of adhering to the recommended immunization schedule, whereas 28.5% did not consider it a high priority. Additionally, 95.2% of respondents believed that all children should receive vaccinations.

Table 1: Descriptive analysis of socio-demographic characteristics

Variables	Categories	Frequency	Percentage
Gender	Male	161	48.8
	Female	169	51.2
Age	1-6 months	154	46.7
	7-12 months	97	29.4
	1-2 years	79	23.9
Education	Primary	211	63.9
	Secondary	34	10.3
	Diploma & above	31	9.4
	Illiterate	53	16.1
Occupation	Doctor	18	5.5
	Worker	35	10.6
	Teacher	10	3.0
	Housewife	266	80.6

According to this table, gender distribution seems to be equal (51.2% female and 48.8% male). Children aged 1-6 months represent the majority (46.7%), followed by those aged 7-12 months

(29.5%) and 1-2 years (23.9%). Most people (63.9%) have only completed primary school, 16.1% are illiterate, and only 9.4% hold a diploma or higher. Housewives represent an

important 80.6% of the total population then followed by workers (10.6%), doctors (5.5%), and teachers (3.0%). These findings suggest potential areas for social and economic steps

because they indicate a population with a young age distribution, a lack of education, and limited job opportunities, particularly among women.

Table 2: Knowledge and attitude of parents towards immunization

Variables	Categories	Frequency	Percentage
Compliance immunization schedule important?	Yes	236	71.5
	No	94	28.5
Should children be vaccinated?	Yes	314	95.2
	No	16	4.8
OPV campaigns even though the child is fully vaccinated	Yes	276	83.6
	No	54	16.4
The next vaccination date is for your child	Yes	226	68.5
	No	104	31.5
Maintaining the documents for vaccination	Yes	283	85.8
	No	47	14.2
Vaccinated immediately after birth, BCG	Yes	286	86.7
	No	44	13.3

According to the above table, parental knowledge and response to child vaccinations are shown by the data collected. 95.2% of respondents believe that children should receive vaccinations, and the majority (71.5%) recognizes the importance of implementing the immunization schedule. Also, 83.6% of the participants prefer to take part in oral polio vaccine (OPV) campaigns even if their child received all recommended vaccinations, showing their trust in extra immunization programs. But there are some awareness gaps or

vaccine delay, as shown by the 4.8% that reject vaccination and the 28.5% who don't see compliance as necessary. Appropriate health practices can also be seen by the observation that 85.8% of mothers keep vaccination records and 68.5% of parents maintain records of their child's next vaccination date. In the end, 86.7% of parents make sure their child received the BCG vaccine as soon as possible after delivery, showing a high level of overall compliance with vaccination instructions.

Table 3: Parents' perception about the children's immunization

Variables	Category	Frequency	Percentage
1. Childhood immunization is important	Strongly agree	217	65.8
	Agree	71	21.5
	Neutral	39	11.8
	Strongly disagree	3	0.9
Childhood immunization is beneficial	Strongly agree	212	64.2
	Agree	69	20.9
	Neutral	45	13.6
	Strongly disagree	4	1.2
immunization is safe for children	Strongly agree	207	62.7
	Agree	73	22.1
	Neutral	46	13.9
	Strongly disagree	4	1.2
Timing of vaccination matters	Strongly agree	148	44.8
	Agree	110	33.3
	Neutral	67	20.3

An awareness campaign about childhood immunization is effective	Strongly disagree	4	1.2
	Disagree	1	.3
	Strongly agree	273	71.8
	Agree	39	11.8
	Neutral	4	13.9
Temporary side effects are a hurdle to the adaptation of vaccination	Strongly disagree	8	2.4
	Disagree	6	2.0
	Strongly agree	58	17.6
	Agree	33	10.0
	Neutral	86	26.1
	Strongly disagree	144	43.6
	Disagree	9	2.7

The results show that respondents had positive feedback on childhood vaccinations. A significant number of people agree that vaccinations are safe for children (62.7%), beneficial (64.2%), and important (65.8%). Also, 33.3% agree and 44.8% strongly believe that vaccine timing is important. For 71.8% of participants, awareness programs are believed to

be helpful. Temporary side effects, however, are considered similarly; 26.1% are moderate, and 43.6% strongly disagree. Despite some concerns about side effects, the results generally point toward strong support for vaccination, particularly its benefits, protection, and the importance of awareness campaigns.

Table 4: Knowledge of parents regarding immunization schedule

Variables	Category	Frequency	Percentage
1. Vaccine given at birth	Yes	317	96.1
	No	13	3.1
2. Vaccine given at 6 weeks	Yes	285	86.4
	No	45	13.6
3. The vaccine was given at 10 weeks	Yes	278	84.2
	No	52	15.8
4. The vaccine was given at 14 weeks	Yes	275	83.3
	No	55	16.4
5. Vaccine given at 9 months	Yes	271	82.1
	No	59	17.9
6. The vaccine was given at 12 months	Yes	274	83.0
	No	56	17.0

The data indicated that 96.1% of participants had received vaccinations at birth, reflecting strong adherence to early immunization schedules. Coverage remained high during subsequent stages, with 86.4% vaccinated at 6 weeks, 84.2% at 10 weeks, 83.3% at 14 weeks, 82.1% at 9 months, and 83.0% at 12 months. Although overall compliance was substantial, a gradual

decline was observed as the child grew older. This pattern suggested potential challenges related to accessibility, caregiver awareness, or concerns following previous vaccinations. These findings highlighted the importance of sustained efforts to ensure consistent vaccination coverage throughout infancy and early childhood.

Table 5: Association of education with the knowledge and attitude of parents

Questions	Response option	Frequency	Chi square (p-value)
Is the compliance immunization schedule important?	Yes	236	.008
	No	94	
Should children be vaccinated?	Yes	314	<0.0001
	No	16	
OPV campaigns even though the child is fully vaccinated	Yes	276	0.010
	No	54	
The next vaccination date is for your child	Yes	226	.005
	No	104	
Maintaining the documents for vaccination	Yes	283	.054
	No	47	
Vaccinated immediately after birth, BCG	Yes	286	.002
	No	44	

The association of education with knowledge and attitude of parents. Most respondents accepted the importance of following to the vaccination schedule (236 Yes vs. 94 No, $p = 0.008$), suggesting that there is general agreement on the importance of childhood immunization. A significant number of parents (276 Yes vs. 54 No, $p = 0.010$) still supports far more oral polio vaccine (OPV) campaigns even though some children received every suggested vaccination,

indicating that they realize the importance of extra immunization in protecting the immune system and avoiding infections. To ensure timely immunizations, an important number of parents or guardians also know that their child's next vaccination is scheduled (226 Yes vs. 104 No, $p = 0.005$). The results show that, but there could still be minor differences in recording methods, public health initiatives to encourage vaccination compliance are generally successful.

Table 6: Association of education with Parents' perception about the immunization of children

Questions	Response option	Frequency	Chi square (p-value)
Childhood immunization is important	Strongly agree	217	<0.001
	Agree	71	
	Neutral	39	
	Strongly disagree	3	
Childhood immunization is beneficial	Strongly agree	212	<0.001
	Agree	69	
	Neutral	45	
	Strongly disagree	4	
Immunization is safe for children	Strongly agree	207	0.005
	Agree	73	
	Neutral	46	
	Strongly disagree	4	
The timing of vaccination matters	Strongly agree	148	<0.001
	Agree	110	
	Neutral	67	
	Strongly disagree	4	
An awareness campaign about childhood immunization is effective	Disagree	1	0.112
	Strongly agree	273	
	Agree	39	
	Neutral	4	

Temporary side effects are a hurdle to the adaptation of vaccination	Strongly disagree	8	0.002
	Disagree	6	
	Strongly agree	58	
	Agree	33	
	Neutral	86	
	Strongly disagree	144	
	Disagree	9	

According to the findings, respondents generally held a highly positive perception of childhood vaccinations. A small proportion remained neutral (39) or strongly disagreed (3) with the view that childhood immunization was essential, whereas a substantial majority either strongly agreed (217) or agreed (71). Similarly, 212 respondents strongly agreed that vaccinations

were beneficial, while 69 agreed, and only a few considered them unimportant or disagreed (45 and 4, respectively). The figure indicated that the largest proportion of children was within the 1–6-month age group, followed by those aged 7–12 months, while the smallest group comprised children between 1 and 2 years, as shown in Figure 1.

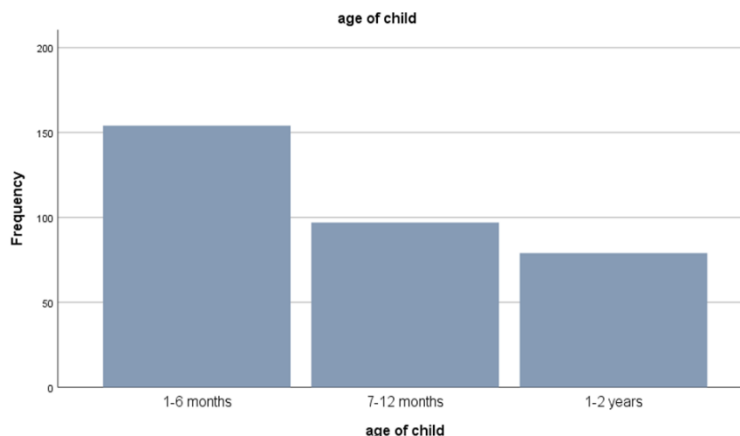


Figure 1: Age Distribution of Children Receiving Immunization

4. Discussion

The findings from the study conducted in Basti Barat Shah provide a comprehensive understanding of parental attitudes and behaviours toward childhood vaccinations within the local socioeconomic context. The gender distribution of respondents was relatively balanced, with females representing 51.2% and males 48.8%, indicating active engagement of both parents in vaccination-related decision making, a crucial factor given the differing

maternal and paternal influences on child health choices (Rafi, Khan, Ahmad, & Khan, 2021). The predominance of children aged 1 to 6 months (46.7%) underscores the importance of this critical window for successful immunization strategies. Educational disparities were evident, as 63.9% of participants had only completed primary education, 16.1% were illiterate, and just 9.4% of mothers had attained a college-level qualification, suggesting potential barriers to understanding and interpreting health

information. While fathers generally exhibited higher educational attainment, a considerable proportion still fell within the lower educational categories. Despite these educational challenges, overall parental perceptions of vaccination were positive. An overwhelming majority (95.2%) agreed that all children should be immunized, aligning with findings from Faisalabad, where 85% of respondents viewed vaccines as beneficial and 90% rejected religious objections (Asim, Malik, Yousaf, Gillani, & Habib, 2012). Furthermore, 71.5% recognized the importance of adhering to the immunization schedule, and 83.6% expressed willingness to participate in supplementary oral polio vaccine (OPV) campaigns, regardless of their child's vaccination status. These attitudes reflect strong trust in public health initiatives. However, a significant minority (28.5%) demonstrated a lack of understanding regarding the necessity of adhering to precise vaccination timelines, highlighting a knowledge gap that warrants targeted educational interventions (Asim *et al.*, 2012). The association between education and vaccine-related knowledge remains notable, as previous research indicates that higher educational attainment correlates with better awareness of vaccine safety and benefits (Lehdonvirta, Oksanen, Räsänen, & Blank, 2021). Although fathers' education level did not show a statistically significant relationship with vaccine awareness in some domains, vaccination acceptance was consistently high, suggesting that while knowledge varies, general acceptance of immunization as a public health measure is widespread. Nevertheless, concerns about

adverse effects persist among a minority (27.6%), while 46.3% disagreed and 26.1% remained neutral, indicating the need for sustained communication to dispel misconceptions and address vaccine hesitancy (Bhandari, Jha, Cooper, & Slawski, 2021). These findings underscore the importance of strengthening health education initiatives, improving accessibility to accurate information, and implementing culturally appropriate interventions to address misconceptions and reinforce adherence to vaccination schedules. Continued investment in community-based awareness programs and quality healthcare services will be essential to sustaining and improving immunization coverage in Basti Barat Shah.

5. Conclusion

The study conducted in Basti Barat Shah revealed that parents generally hold positive attitudes toward childhood vaccination, recognizing its importance and ensuring the timely administration of vaccines at birth. Many demonstrated a sense of responsibility by maintaining immunization records and engaging in supplementary vaccination programs. However, notable gaps in knowledge and compliance were identified, as some parents declined vaccines or disregarded recommended schedules, often influenced by socioeconomic challenges and limited education. Awareness was strongest for vaccinations at birth but declined for subsequent doses, posing a risk to complete immunization coverage.

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