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THE ASSESSMENT OF PARENTS KNOWLEDGE, ATTITUDE AND BARRIERS TOWARDS IMMUNIZATION

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Abstract

Background: *One of the best public health initiatives to lower morbidity and mortality from preventable diseases worldwide is childhood vaccination. Pakistan still struggles to achieve adequate vaccine coverage despite massive international efforts, particularly in rural and underserved regions.*

Aim of the study: *The aim of the study was to assess level of knowledge, attitude and perceived barriers regarding immunization among parents visited to outpatient department of a public/private sector hospital, Bahawalpur.*

Methodology: *This is descriptive, cross-sectional, quantitative study and held over a period of four months. Participants were recruited through convenience sampling technique. Structured questionnaire were used to collect data from study respondents. Statistical Package for Social Sciences was used for data analysis and level of significance was set as p-value<0.05.*

Result: *Total 150 parents (mother/father) of under-five children included in the study. As per level of knowledge regarding immunization among the parents of under-five children, 18% demonstrated good knowledge; 22.67% showed average and 59.33% having poor knowledge. On the contrary, regarding attitude of immunization 74.67% reported positive attitude; 19.33% average and only 6% negative. While prime barriers of immunization included physical barriers, personal barriers, psychological barriers, transportation barriers and cultural barriers. Multivariate analysis performed to check association between knowledge and attitude of parents of under-five children related to immunization, job status of study respondents showed direct association with sufficient knowledge with (95%CI= −1.41– − 0.31, p-value=0.02) whereas income status having direct relationship with level of attitude as (95%CI= −0.96– − 0.13, p-value=0.009).*

Conclusion: *The study demonstrated poor knowledge regarding immunization found among parents of under-five children whereas they reported positive attitude. The most common perceived barriers in the coverage of immunization programs included card lost, confusion of initiation of vaccination, long queues at clinics, irresponsible behavior of family, low importance of vaccination, distance from centre and religious beliefs.*

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INTRODUCTION

Vaccine-preventable diseases (VPD) were one of the main causes of death and disability for children globally before to the development of vaccinations. Vaccines use live attenuated or deceased microorganisms to boost the body's immune system. They can be given orally or by intramuscular injection. Antibodies are produced as a result of this process, providing active immunity that aids in preventing and combating infections brought on by a variety of bacteria, fungi, and viruses (Alabadi&Aldawood, 2020). A large number of children are either under vaccinated or unvaccinated, which exposes them to preventable diseases (VPD) and impedes the achievement of global immunization goals (Shenton et al., 2018). The prevalence of diseases like measles, polio, and diphtheria that can be prevented by vaccination draws attention to persistent issues with maternal education, healthcare access, and societal perceptions about vaccination (Zarzeczny and Kahar, 2024).

Moreover, the underutilization of the Expanded Program on Immunization (EPI), especially during the first five years of a child's life, which are crucial for immunity development, is caused by certain problems like false information, mistrust, religious misunderstandings, and inconsistent healthcare services (Khaliq et al., 2024). As vaccination is essential for stopping the spread of infectious diseases. Vaccines are thought to save two to three million children's deaths each year from infectious illnesses. (Nassar et al., 2023).

Therefore, immunization is an essential public health strategy that aims to improve life expectancy by eliminating, preventing, and controlling pediatric communicable illnesses. It is regarded as one of the most economical medical techniques for lowering childhood morbidity and death (Voo et al., 2021). Only 66% of children in Pakistan have received all recommended vaccinations, which is below the global target (Valladolid et al., 2024). Pakistan is still not doing well. In 2020, there were still 84 cases of polio in Pakistan (Butt et al., 2020). By following vaccination schedules, millions of children are protected from severe illnesses and death. However, in developing countries, over one million deaths occur each year (Ikilezi et al., 2019).

There are significant regional differences in Pakistan's vaccination rates, which primarily affect children living in rural areas (Shahid et al., 2023). Measles and polio still affect about 90,000 children, and 20,000 children die each year. Negative attitudes on vaccinations are the cause of this death rate. Vaccination and giving patients priority in the healthcare system are two ways to treat this. Even if the immunization rate has increased from 5% to 84% in some parts of Pakistan, 58% of youngsters are currently unvaccinated (Cousoulis, 2021).

The third-highest rate of child mortality is found in Pakistan. By changing people's attitudes and behaviors that particularly affect children's health, the death rate can be decreased. In this manner, the country's health can be enhanced (Owais et al., 2013). People are immunized against a variety of ailments, strengthening their bodies to fend against infectious infections. The human body is stimulated by vaccines to produce antibodies against infectious illnesses (Ike et al., 2020). The same pathogen that causes the illness is present in the vaccine. However, the vaccine contains destroyed or weekend germs to prevent illness. Your body produces antibodies against the antigen when it is immunized because it believes it has been infected with a disease. These antibodies are long-lasting in your body, and memory cells aid in the defense against the antigen of numerous illnesses (Debie&Lakew, 2020). Your body already has antibodies against the pathogen, which will lessen the symptoms of illness before it manifests. Therefore, immunization is far safer than illness (Baloch et al., 2015).

On the contrary, vaccine hesitancy, which the WHO listed as one of the top ten dangers to world health in 2019, is a major obstacle to reaching high immunization coverage (Kiener et al., 2022). For these programs to be successful, parents' attitudes and knowledge about vaccinations are essential. However, erroneous

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information and cultural beliefs are often the root reason of divergent views on vaccination. (Lindstrand et al., 2021). Vaccine hesitancy, which is frequently caused by uncertainties, false information, and unfavorable attitudes toward vaccination, is the term used to describe the delay in accepting or outright refusal of vaccines despite their availability. Parental perspectives and knowledge are important; research from a number of nations has demonstrated that lack of understanding, safety concerns, and unfavorable attitudes are the main causes of insufficient or nonexistent immunization (Ansari et al., 2020).

According to an Iranian study, vaccine reluctance was prevalent among participating families, with 34.3% declining vaccination and 65.7% postponing it. The child's illness at the time of vaccination, misunderstandings regarding the necessity of specific vaccines, worries about side effects, and socio-demographic factors including maternal education level and proximity to health centers all had an impact on these decisions (Farajzadeh et al., 2023). Numerous studies have found a variety of factors that contribute to vaccination refusal. These include insufficient parental awareness of the vaccination schedule, unfavorable attitudes or false beliefs about the safety of vaccines, practical difficulties like lengthy wait times or travel time to medical facilities, and sociocultural factors that discourage prompt vaccination (Kumar & Kavinprasad, 2018).

Additionally, families with lower socioeconomic position and education levels have been reported to have greater vaccine refusal rates, suggesting a substantial correlation between health literacy and healthcare consumption (Jayaraj&Geminiganesan, 2023). Maternal education has a major impact on child health outcomes because educated mothers are more likely to recognize the value of immunizations, increasing immunization rates and lowering U5MR. (Balaj et al., 2021). Enough coverage is necessary for immunization programs to be successful in maintaining herd immunity (Ashby&Best, 2021).

However, vaccination coverage may be impacted by a number of socioeconomic conditions. Low socioeconomic position, for instance, results in opposing practical circumstances, such as a lack of transportation, which makes it more difficult to complete vaccinations. A program's acceptability is also influenced by parents' vaccination-related information and attitudes (Alghamdi et al., 2023). The family's socioeconomic status and level of education of parents are important factors in influencing vaccination decisions, which in turn affects the rate at which vaccinations are administered (Balgovind&Mohammadnezhad, 2022).

Adherence to vaccination regimens has also been demonstrated to be significantly predicted by mothers' self-efficacy and confidence in their ability to make vaccine decisions (Hobani&Alhalal, 2022). In fact, women who are knowledgeable about vaccinations and supportive of them are more likely to make sure their children get them on time, which lowers the risk of vaccine-preventable diseases (VPDs) (Aksoku&Güven, 2024).

Only 12.8% of children in Lebanon were vaccinated against the human papillomavirus (HPV), according to a more recent study. Parental awareness, prior HPV vaccination, and insurance coverage all had a significant impact on vaccination willingness, but cost and misinformation continued to be significant barriers (Elissa et al., 2024). On the other side, there are still cases of polio in Pakistan. Vaccination is currently one of the most effective methods of treating polio. Thus, it is necessary to understand the significance of immunization in Pakistan (Loiacono et al., 2020). According to earlier research on immunization barriers inadequate immunization may be caused by a number of factors, including poverty, language use, education, nativity, race/ethnicity, and access to healthcare (Bue low&Van, 2008).

Recent research in South Punjab has shown that immunization completion rates remain low despite reasonable levels of maternal awareness because of logistical difficulties and societal impediments (Duong, 2025). In addition,

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maternal level, household income, and availability to reliable information, which may cause discrepancies in immunization practices even among mothers with partial awareness (Sahitia et al., 2025).

There is a glaring knowledge-practice gap among caregivers, particularly mothers, who are frequently the main decision-makers in child healthcare, despite the existence of national and provincial immunization programs. Studies reveal that while many mothers are aware of the necessity of immunizations, they may lack a comprehensive awareness of the entire schedule, probable adverse effects, or the repercussions of missing doses (Hakim et al., 2025). Therefore, this study aims to assess level of knowledge, attitude of parents regarding immunization and explore prime barriers causing low coverage of immunization among under-five children in a private sector hospital of Bahawalpur. Furthermore, this study will explore association between demographic variables with level of knowledge and attitude of parents of under-five children so that these gaps can overcome and vaccination coverage may improve in all regions of Pakistan.

METHODOLOGY

Study design: This study employed descriptive, cross-sectional, quantitative study design.

Study setting: This study conducted at outpatient department of Nawab Sir Sadiq Muhammad Khan Abbasi Hospital, Bahawalpur.

Population: Total 240 parents (Father/Mother) under age five visited outpatient department of understudy hospital for immunization of their children.

Sample size: Solvin's formulae used to calculate sample size of the study as under:

$$n = \frac{N}{1 + Ne^2}$$

N= Population = 240; n= Sample Size; E= Margin error = 0.05

$$n = \frac{N}{1 + N(E)^2}$$

$$n = \frac{240}{1 + 240(0.05)^2}$$

$$n = \frac{240}{1 + 240(0.0025)}$$

$$n = \frac{240}{1 + 0.6}$$

$$n = \frac{240}{1.6}$$

$$n = 150.00$$

Hence, required sample size is 150 study participants.

Sampling technique: Non-probability, convenience sampling technique used in the study.

Sample selection criteria: Participants recruited on behalf of under below inclusion/exclusion study criteria:

Inclusion criteria: a) Parents (father or mother) of under-five child attending the paediatric or immunization outpatient departments; b) participants having at least one child aged between zero to five; c) participants having ability to read/write English; d) participants who were willing to participate in the study.

Exclusion criteria: a) Parents (father or mother) whose child was more than five years and already completed their children's vaccination course; b) participants who were unable to participate due to physical/intellectual disability; c) participants lacked ability to read/write English; d) participants who were unwilling to participate or didn't sign written informed consent.

Instrument: Structured questionnaire were used to collect data from study participants comprised of section IV; section I encompasses socio-demographic/personal characteristics/child related information of study respondents (age of parents, educational status, religion, occupational status of parents (father/mother), monthly household income, decision maker, place of delivery, type of family, gender of child, age of child and number of siblings). Section II: it was contained of 12 items regarding assessment of knowledge of immunization. Scoring was done as "1" was assigned to "Know" whereas "0" for Don't Know" responses. Final scoring done by calculating the scores of all questionnaires. Score (0-4) taken as poor knowledge while (5-8)

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considered as average knowledge and score (9-12) as good knowledge regarding immunization. Moreover, section III: it was consisted of 10-item Likert scale to assess attitude of study respondents related to immunization and scoring was considered as "Strongly disagree" to "Strongly Agree" as score 1-5. Then final scoring done by summing up score of all questionnaires and repondents who gave answer less than 50% of questionnaire considered as negative attitude whereas participants who attempted ≥50% of questionnaire determined as average attitude and respondents who answered ≥75% of questionnaire taken as positive attitude. On the other hand section IV comprised of barriers questionnaire having five sub-sections as physical barriers, personal barriers, psychological barriers, transportation barriers and cultural barriers of immunization.

Data collection procedure:

As data were collected over a period of four months (From 1st May, 2026 to Aug, 2026). After approval a meeting was held with hospital administration and with the concerned head of outpatient department and study objectives were fully defined to them then a meeting was also arranged with parents of under five children regarding the research work. Then questionnaire were distributed to them and a time of 20-30mints were given to them to fill the questionnaires. After collecting questionnaires, it was entered into computer on daily basis for compilation of data as earliest possible. At the end, barriers of immunization was also described to study participants and by thanking to all parents for their kind participation data was completed.

Ethical consideration:

A letter of approval was received from Institutional Review Board letter dated 1st April, 2026 vide letter no. (IEC/17/122) regarding permission to conduct the study as well as permission was also granted from understudy hospital administration and objectives was also disclosed to them. This study was conducted as per Declaration of Helsinki and before initiation of the research work participants were fully aware about the aim of the study. Moreover, written informed consent was also obtained from each study respondents and confidentiality of data were assured throughout the study period. Similarly, it was make sure to study participants that their participation was considered as voluntary and they have right to withdraw their consent at any stage of the study period.

Data analysis:

Statistical Package for Social Sciences (SPSS) version 20 and Microsoft spreadsheet used for data analysis. Data were presented in descriptive statistics in frequencies and percentages as well as chi-square test and multivariate analysis performed to check association between study variables whereas level of significance considered as p-value <0.05.

RESULT

Table 1 presenting socio-demographic and personal information of parents of under-five children visited to the outpatient department of the hospital. As there were total 150 study participants selected for the study out of which 26% belonged to age group (18-22) years; 14% respondents had age group (23-27) years; 30% having age between (28-32) years; 20% aged between (33-37) years; 8% participants were included in age group of (38-42) years and rest of 2% having age more than 42 years. Now, as per occupational status of study participants, 58.67% were house maker; 19.33% working in government and private sectors; 18% were self-employed whereas only 4% respondents were unemployed. Moreover, regarding monthly household income of study respondents, 58.67% earning less than Rs. 10,000/-; 18% study participants having salary between Rs. 10,001/- to 15,000/-; 4% respondents earned between Rs. 15001/- to 20.000/- and remaining 19.33% having monthly income more than Rs. 20,000/-.

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Table 1: Socio-demographic/personal information of under-five children visited to outpatient department of hospital for immunization (n=150)

Variables	Frequency (f)	Percentage (%)
Age (Years)		
18-22 years	39	26.00
23-27 years	21	14.00
28-32 years	45	30.00
33-37 years	30	20.00
38-42 years	12	8.00
More than 42 years	3	2.00
Total	**150**	**100.00**
Educational status		
Primary School	88	58.67
Secondary School	22	14.67
High school	11	7.33
Bachelors	19	12.67
Masters	10	6.67
Total	**150**	**100.00**
Religion		
Muslim	144	96.00
Non-Muslim	6	4.00
Total	**150**	**100.00**
Occupational status		
House maker	88	58.67
Job: Govt./private	29	19.33
Self-employed	27	18.00
Unemployed	6	4.00
Total	**150**	**100.00**
Monthly household income (PKR)		
Less than 10,000	88	58.67
10,001-15000/-	27	18.00

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15001-20,000/-	6	4.00
More than 20,000	29	19.33
Total	**150**	**100.00**
Decision maker		
Father	10	6.67
Mother	23	15.33
Father and mother (Both)	110	73.33
Grandparents	7	4.67
Total	**150**	**100.00**
Place of delivery		
Home	0	0.00
Govt. hospital	140	93.33
Private hospital	10	6.67
Total	**150**	**100.00**
Type of family		
Nuclear	16	10.67
Joint	134	89.33
Total	**150**	**100.00**
Gender of child		
Male	90	60.00
Female	60	40.00
Total	**150**	**100.00**
Age of child		
Infant (0-1 year)	37	24.67
Toddler (1-3 years)	88	58.67
Pre-school (3-5 years)	25	16.67
Total	**150**	**100.00**
Number of sibling		
1	56	37.33
2	77	51.33
≥ 3	17	11.33

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Total	**150**	**100.00**

Table 2 shown knowledge of parents regarding immunization, when participants were asked that immunization prevents infectious disease among under-five children, 50% said yes and 50% didn't know. On the other hand, when they were asked that immunization decreases the rates of mortality and disabilities if they complete their immunization course only 22% gave correct answer whereas 78% didn't know. As well as only 18.67% parents knew that Hepatitis B virus could be prevented by Immunization while 81.33% didn't know. Meanwhile, when participants were asked that malnutrition, low fever and diarrhea were not contraindications for Immunization 11.33% agreed and 88.67% didn't know about it.

Table 3 depicting attitude of parents related to immunization, 6.67% respondents strongly disagreed that vaccination was compulsory for their children; 6% disagreed; 2.67% gave neutral answer; 66% participants were agreed and 18.67% strongly agreed. Similarly, in the sample of 150 study participants, 16% were strongly disagreed that vaccination was more beneficial than harmful; 20.67% disagreed; 0.67% were not agree nor disagree; 59.33% participants were agreed and 3.33% strongly agreed with this statement. Likewise, when respondents were asked that vaccination should be given as per schedule to under-five children, 0.67% respondents were strongly disagreed; 1.33% disagreed; 2% participants were uncertain; 88% were agreed and 8% strongly agreed.

Table 2: Assessment of knowledge of under-five children parents regarding immunization (n=150)

Sr. NO.	Items	Responses	
		Know (f) %	Don't know (f) %
1	Have you given your children the obligatory vaccines?	150 (100%)	0 (0%)
2	Immunization is very important for children from the first day of birth.	121 (80.67%)	29 (19.33%)
3	Immunization prevent infectious disease.	75 (50%)	75 (50%)
4	Immunization decreases the rates of mortality and disabilities.	33 (22%)	117 (78%)
5	Immunization could maintain child health.	69 (46%)	81 (54%)
6	Diphtheria, Tetanus and pertussis could be controlled by Immunization.	24 (16%)	126 (84%)
7	Hepatitis B virus could be prevented by Immunization.	28 (18.67%)	122 (81.33%)
8	The childhood vaccines could control Measles.	11 (7.33%)	139 (92.67%)

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9	Malnutrition, low fever and diarrhea are not contraindications for Immunization.	17 (11.33%)	133 (88.67%)
10	Some vaccines are associated with fever and pain.	15 (10%)	135 (90%)
11	Immunization could result in convulsions and skin rash.	19 (12.67%)	131 (87.33%)
12	Even healthy child need Immunization.	21 (14%)	129 (86%)

Table 3: Assessment of attitude of under-five children parents regarding immunization (n=150)

Sr. No.	Items	Responses				
		Strongly disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)
1	Vaccination of the child is compulsory.	10 (6.67%)	9 (6%)	4 (2.67%)	99 (66%)	28 (18.67%)
2	Vaccination should be initiated soon after birth.	4 (2.67%)	11 (7.33%)	2 (1.33%)	11 (7.33%)	122 (81.33%)
3	Vaccination is more beneficial than harmful.	24 (16%)	31 (20.67%)	1 (0.67%)	89 (59.33%)	5 (3.33%)
4	Vaccination is associated with severe side effects.	134 (89.33%)	12 (8%)	1 (0.67%)	2 (1.33%)	1 (0.67%)
5	Vaccination of children is prohibited in certain religions.	10 (6.67%)	5 (3.33%)	3 (2%)	91 (60.67%)	41 (27.33%)
6	Only the first baby needs vaccinations.	150 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
7	Male child should get all vaccine than female child.	30 (20%)	19 (12.67%)	6 (4%)	34 (22.67%)	61 (40.67%)
8	Child may get infection from the vaccination, instead prevention.	141 (94%)	3 (2%)	1 (0.67%)	2 (1.33%)	3 (2%)
9	Vaccines should be given as per schedule.	1 (0.67%)	2 (1.33%)	3 (2%)	132 (88%)	12 (8%)
10	It is important to give all the vaccines.	24 (16%)	31 (20.67%)	1 (0.67%)	66 (44%)	28 (18.67%)

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Table 4 indicating prime barriers of immunization included physical barriers, personal barriers, psychological barriers, transportation barriers and cultural barriers. As per physical barriers, 7.33% said card lost; 4% said limited working hours and 3.33% replied lack of resources. On the other side, as per personal barriers, most common included 8% said confusion of initiation of vaccination; 7.33% said long queues at clinics whereas 6.67% responded lack of accompanying person. Whereas regarding psychological barriers, prime barriers comprised of 8% said low importance of vaccination; 5.33% replied unpleasant experiences at clinics.

Table 4: Assessment of most common perceived barriers regarding immunization (n=150)

Sr. No.	Items	Frequency (f)	Percentage (%)
1	**Physical barriers**		
	Child illness	4	2.67
	Card lost	11	7.33
	Fear pricks	3	2.00
	Reminder cards not sent by workers	1	0.67
	Seasonal migrants	3	2.00
	Fear of side effects	4	2.67
	Lack of resources	5	3.33
	Limited working hours	6	4.00
	Total	**37**	**24.67**
2	**Personal barriers**		
	Confusion of initiation of vaccination	12	8.00
	Lack of accompanying person	10	6.67
	Cost of vaccinations	8	5.33
	Long queues at clinics	11	7.33
	Irresponsible behavior of family	8	5.33
	Working parents	7	4.67

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	Total	**56**	**37.33**
3	**Psychological barriers**		
	Low importance of vaccination	12	8.00
	Unpleasant experience at clinics	8	5.33
	Mistrust on staff	9	6.00
	Immunization not done in elderly siblings	2	1.33
	Total	**31**	**20.67**
4	**Transportation barriers**		
	Distance from centers	9	6.00
	Lack of transportation	10	6.67
	Total	**19**	**12.67**
5	**Cultural barriers**		
	Religious beliefs	7	4.67
	Overall	**150**	**100**

As per level of knowledge regarding immunization among the parents of under-five children, 18% demonstrated good knowledge; 22.67% showed average and 59.33% having poor knowledge. On the contrary, regarding attitude of immunization 74.67% reported positive attitude; 19.33% average and only 6% negative as mentioned in table 5.

Table 5: Level of knowledge and attitude among parents of under-five children regarding immunization (n=150)

Variables	Level	Frequency (f) %
Knowledge	Good (9-12)	27 (18%)
	Average (5-8)	34 (22.67%)
	Poor (0-4)	89 (59.33%)
Attitude	Positive (≥75%)	112 (74.67%)

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	Average (≥50%)	29 (19.33%)
	Negative (<50%)	9 (6%)

Multivariate analysis performed to check association between knowledge and attitude of parents of under-five children related to immunization, job status of study respondents showed direct association with sufficient knowledge with (95%CI= −1.41– − 0.31, p-value=0.02) whereas income status having direct relationship with level of attitude as (95%CI= −0.96– − 0.13, p-value=0.009) as shown in table 6.

Table 6: Multivariate analysis of knowledge and attitude of parents related to immunization

Variables	Standardized Coefficient Beta	p-value	95% CI
Associations with knowledge scores			
Parents age	−0.11	0.086	−0.54–0.04
Job status	−0.20	0.002*	−1.41– − 0.31
Income status	−0.02	0.693	−0.48-0.033
Associations with attitude scores			
Parents age	−0.05	0.362	−0.44–0.16
Job status	0.10	0.165	−0.16–0.95
Income status	−0.17	0.009*	−0.96– − 0.13

Table 7 presented association between demographic characteristics with level of knowledge and attitude of parents under-five children related to immunization and there was direct association of age of study participants with level of knowledge and attitude as participants with higher age having adequate knowledge and positive attitude as compared to younger participants as chi-square test showed (X^2= 23.18; df=3; p=0.000036). Likewise, educational status of study respondents had direct relationship with level of knowledge and attitude as chi-square test indicated as (X^2= 28.11; df=2; p=0.002) indicating parents with higher degrees reported sufficient knowledge and attitude regarding immunization as compared to lower degree holders.

Table 7: Association of between demographic characteristics with level of knowledge and attitude of parents related to immunization (n=150)

Variables	Level of knowledge			Level of attitude		
	Good	Average	Poor	Positive	Average	Negative

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Age						
18-22 years	4	10	25	24	10	5
23-27 years	5	13	3	15	5	1
28-32 years	15	20	10	35	5	5
33-37 years	16	8	6	24	3	3
38-42 years	8	2	2	10	1	1
More than 42 years	1	1	1	1	1	0
X^2= 23.18; df=3; p=0.000036*						
Educational status						
Primary School	10	10	68	58	14	16
Secondary School	6	11	5	16	5	1
High School	6	1	4	9	1	1
Bachelors	10	5	4	14	2	3
Master	8	1	1	7	2	1
X^2= 28.11; df=2; p=0.002*						
Occupational status						
House maker	5	5	78	48	26	14
Job: Govt./private	17	8	4	21	4	4
Self-employed	10	3	14	15	7	5
Unemployed	1	1	4	3	2	1
X^2= 56.32.11; df=2; p=0.001*						
Monthly household income (PKR)						
Less than 10,000	38	10	40	62	15	11
10,001-15000/-	6	4	17	20	4	3
15001-20,000/-	1	1	4	4	1	1
More than 20,000	6	4	19	21	4	4
X^2= 3.75.11; df=1; p=0.440						

Discussion

This study revealed that parents on under-five children having unsatisfactory knowledge regarding immunization whereas their attitude towards immunization was quite positive. This study findings are contradicted with the findings of (Asghar et al., 2025) who conducted a study in Padhana village and found that parents had moderate level of knowledge and attitude towards immunization.

Moreover, based on this study findings multiple barriers were common in least coverage of immunization included physical barriers, personal barriers, psychological barriers, transportation barriers and cultural barriers which is in accordance with the findings of (Ashfaq et al., 2026) who administered a study in Pakistan and revealed that poor healthcare access, cultural norms, religious misconceptions and

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migration disruptions were common perceived barriers regarding immunization.

Similarly, (Yazdani et al., 2021) carried out a study in Karachi, Pakistan and found that parents of under-five children lacked knowledge regarding immunization which is comparable with this study result as well as common barriers in insufficient coverage of immunization programs determined household barriers, misconceptions and fears regarding vaccines and social and religious barriers.

Likewise, this study findings are in align with the findings of (Jelly et al., 2023) who carried out as study in India and showed that parents of under-five children having positive attitude towards immunization whereas another finding is opposed to this study result as participants had basic knowledge where in this study parents didn't have even basic knowledge of immunization.

Additionally, this study result are inconsistent with the findings of (Hamid et al., 2012) who held a study in Kashmir and reported that all the parents included in the study were fully aware about immunization while this study showed participants had inadequate knowledge related to immunization of their children.

Hence, a study by (Shahzadi et al., 2022) in Lahore, Pakistan and revealed that most of the parents having good knowledge regarding immunization which is quite inconsistent with this result as only few parents having sufficient knowledge of immunization whereas another finding of this study is in accordance with this result as participants showed positive attitude as well as most common barrier was religious beliefs among respondents. Similarly, current study result are consistent with the findings of (Amanzai et al., 2026) who carried out a study in Afghanistan and revealed that parents knowledge regarding immunization was relatively low, however, they showed positive attitude and prime barriers included lack of awareness, immunization Centre access.

Conclusion

In conclusion, most of parents of under-five children showed insufficient knowledge regarding immunization, however, they reported positive attitude and most common barrier related to insufficient coverage of immunization programs included personal barriers (confusion of initiation of vaccination, lack of accompanying person, long queues at clinics, irresponsible behavior of family). As per association between demographic variables with knowledge and attitude of respondents as age, educational status and occupation of parents were directly proportional to level of knowledge and attitude. This study recommends to disseminate immunization awareness among general public of Pakistan with the mutual cooperation of PAK Telecommunication Authorities through texts as well as use print media (pamphlets/brochures) on the importance of early childhood vaccination among under-five children to reduce morbidity and mortality rate on infants.

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