



Original Research Article

Assessment of Knowledge Regarding Immunization Among Parents at Kalara Punwa, Gujrat

Article History:

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Received: 12-12-2025

Revised: 18-12-2025

Accepted: 20-12-2025

Published: 30-12-2025

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Abstract: Background: Vaccine is defined as a suspension of weakened, toxin, or fractured microorganisms, killed, or other biological composition such as those that consist of antibodies, lymphocytes, or messenger RNA (m RNA) that is given mainly for the prevention of diseases. **Methodology:** A descriptive cross-sectional study was conducted. A total of 78 participants were selected using a convenient sampling technique from August to November 2025. Data were collected through a structured questionnaire consisting of a demographic tool and Knowledge Questionnaire. Ethical approval was obtained, and informed consent was secured from all participants. Data were analyzed using SPSS version 25. **Results:** The study findings show that all participants were aged 19–40 years, with more males (57.7%) than females (42.3%). Most were fathers (59%), married (97.4%), had 2–3 children, and possessed school-level education (84.6%) and most participants resided in urban areas (89.7%). Regarding immunization, 82.1% of parents had moderate knowledge, and 17.9% had good knowledge, highlighting the need for enhanced educational efforts to improve awareness and understanding. **Conclusion:** The study concluded that majority of participants had moderate level of knowledge. Therefore, there is a need to aware people more about vaccination.

Keywords: Immunization; Knowledge; Parents; Vaccination

INTRODUCTION

Vaccination is one of the most significant achievements in public health, preventing disease and reducing its severity by stimulating the immune system to recognize and fight pathogens (Azhar et al., 2024). Historically, immunization has drastically reduced morbidity and mortality from diseases such as smallpox, measles, diphtheria, and polio, saving an estimated two to three million lives annually (Gyawali et al.; Ganatra). Programs like the World Health Organization's Expanded Programme on

Immunization (EPI) have improved global vaccine coverage, particularly in children, though challenges such as rapid urbanization, population growth, and competing healthcare demands continue to affect timely and complete immunization, especially in low- and middle-income countries (Sultana et al., 2023).

Childhood vaccination is crucial for ensuring protection against vaccine-preventable diseases (VPDs) during the critical early years of life (Almutairi et al., 2021). Immunization not only protects

individual children but also contributes to herd immunity, reducing disease transmission within communities. Despite its effectiveness, global disparities persist, with millions of children—particularly in Latin America, Sub-Saharan Africa, and Asia—remaining unvaccinated (Memon et al., 2024). In developing countries, where infectious diseases account for high child mortality, achieving coverage above 80% is essential to break chains of transmission, yet barriers such as limited healthcare access, vaccine hesitancy, and misinformation continue to impede equitable vaccination (Hussain et al., 2021).

In Pakistan, only about two-thirds of children aged 0–5 years receive the full schedule of basic vaccines, leaving nearly two million children unprotected and contributing to high mortality from VPDs (Azhar et al., 2024). Public health emergencies, such as the COVID-19 pandemic, further disrupt vaccination services, highlighting the need for resilient health systems capable of maintaining essential services (Jayaraj et al., 2023). Vaccination remains a cost-effective, life-saving intervention, but global and regional gaps in coverage necessitate research, policy reforms, and community awareness efforts. Understanding parental knowledge and attitudes toward immunization is critical to improving uptake and safeguarding children’s health (Gyawali et al.).

MATERIAL AND METHODS

A descriptive correlational study was conducted in

Kalara Punwa, Gujrat, over a period of four months from August 2025 to November 2025, to assess the knowledge of parents and primary caregivers regarding childhood immunization. A sample size of 78 was calculated from a population of 150 using a 5% margin of error. Participants were selected through a convenient sampling technique and included parents or primary caregivers of at least one child aged 0–5 years, aged 18 years or older, permanent residents of the community for at least six months, and able to read, understand, and communicate in Urdu or English. Caregivers who were healthcare professionals, had severe cognitive or communication impairments, declined participation, or had recently participated in a similar study were excluded to reduce bias. Data were collected after obtaining formal permission from the community administration and informed consent from each participant. Respondents completed a self-administered questionnaire consisting of a socio-demographic section and a 14-item knowledge questionnaire assessing understanding of immunization (Nassar et al., 2023), with knowledge levels categorized as good (75–100%), average (50–74%), or poor (<50%). Data were analyzed using SPSS version 24, with frequencies and percentages calculated for categorical variables, and relationships between variables assessed using Pearson’s correlation test. Ethical considerations were maintained throughout the study, including confidentiality, anonymity, voluntary participation, and assurance that there were no risks or hazards associated with participation.

RESULTS

Table 1: Demographics characteristics of participants (n=78)

Demographic Variables	Category	Frequency (f)	Percentage (%)
Age	< 18 Year	0	0
	19-40 Year	78	100.0
	>40 Year	0	0
Gender	Male	33	42.3
	Female	45	57.7
Relationship	Father	46	59.0
	Mother	31	39.7
	other	1	1.3
Marital Status	Divorced	2	2.6
	Married	76	97.4
Number of Children	one	36	46.2
	2-3	40	51.3
	>3	2	2.6
Education Level	School level	66	84.6
	Illiterate	6	7.7
	University	6	7.7
Employment Level	Unemployed	19	24.4
	Employed	58	74.4
	None	1	1.3
Residency	rural	8	10.3
	Urban	70	89.7

Table 1 describes the demographic characteristics of the participants (n = 78). All participants (100%) were aged between 19 and 40 years. The majority were female (57.7%), while 42.3% were male. Regarding relationship to the child, most respondents were fathers (59.0%), followed by mothers (39.7%). Almost all participants were married (97.4%). In terms of number of children, over half had 2–3 children (51.3%), while 46.2% had one child. Most participants had school-level education (84.6%), and 74.4% were employed. The majority of participants belonged to urban areas (89.7%), whereas only 10.3% resided in rural areas.

Table 4. 2 Overall knowledge of parents regarding immunization

Level of Knowledge	Frequency	Percentage
Moderate Knowledge	64	82.1
Good Knowledge	14	17.9
Total	78	100.0

Table 4.2 shows the overall knowledge of parents regarding immunization. The majority of parents (82.1%) had moderate knowledge, while only 17.9% had good knowledge about immunization. No parents were found to have poor knowledge.

Relationship Between Knowledge and Demographic Variables

Table 4.3: Association Between Knowledge Level and Gender (n = 78)

Gender	Moderate Knowledge n (%)	Good Knowledge n (%)	Total	χ^2	p-value
Male	35 (77.8)	10 (22.2)	45	1.46	0.227
Female	29 (87.9)	4 (12.1)	33		
Total	64 (82.1)	14 (17.9)	78		

Table 4.3 shows the association between knowledge level and gender among the participants (n = 78). Among males, the majority had moderate knowledge (77.8%), while 22.2% demonstrated good knowledge. Similarly, most female participants also had moderate knowledge (87.9%), with only 12.1% having good knowledge. Overall, 82.1% of participants had moderate knowledge and 17.9% had good knowledge. The chi-square test revealed no statistically significant association between knowledge level and gender ($\chi^2 = 1.46$, $p = 0.227$).

Table 4.4: Association Between Knowledge Level and Number of Children (n = 78)

Number of Children	Moderate Knowledge n (%)	Good Knowledge n (%)	Total	χ^2	p-value
One	31 (86.1)	5 (13.9)	36	1.98	0.372
2–3	31 (77.5)	9 (22.5)	40		
>3	2 (100.0)	0 (0.0)	2		
Total	64 (82.1)	14 (17.9)	78		

Table 4.4 presents the association between knowledge level and number of children among the participants (n = 78). Among participants with one child, 86.1% had moderate knowledge and 13.9% had good knowledge. Those with 2–3 children showed a slightly higher proportion of good knowledge (22.5%), while 77.5% had moderate knowledge. All participants with more than three children had moderate knowledge (100.0%). Overall, the majority of participants (82.1%) demonstrated moderate knowledge, while 17.9% had good knowledge. The chi-square analysis indicated no statistically significant association between knowledge level and number of children ($\chi^2 = 1.98$, $p = 0.372$).

Table 4.5: Association Between Knowledge Level and Education Level (n = 78)

Education Level	Moderate Knowledge n (%)	Good Knowledge n (%)	Total	χ^2	p-value
Illiterate	6 (100.0)	0 (0.0)	6		

School	54 (81.8)	12 (18.2)	66	3.41	0.182
University	4 (66.7)	2 (33.3)	6		
Total	64 (82.1)	14 (17.9)	78		

Table 4.5 illustrates the association between knowledge level and education level among the participants (n = 78). All illiterate participants (100.0%) had moderate knowledge, with none demonstrating good knowledge. Among those with school-level education, 81.8% had moderate knowledge and 18.2% had good knowledge. Participants with university-level education showed a comparatively higher proportion of good knowledge (33.3%), while 66.7% had moderate knowledge. Overall, 82.1% of participants had moderate knowledge and 17.9% had good knowledge. The chi-square test showed no statistically significant association between knowledge level and education level ($\chi^2 = 3.41$, $p = 0.182$).

Table 4.6: Association Between Knowledge Level and Residency (n = 78)

Residency	Moderate Knowledge n (%)	Good Knowledge n (%)	Total	χ^2	p-value
Urban	56 (80.0)	14 (20.0)	70	2.59	0.108
Rural	8 (100.0)	0 (0.0)	8		
Total	64 (82.1)	14 (17.9)	78		

Table 4.6 presents the association between knowledge level and residency among the participants (n = 78). Among urban residents, 80.0% had moderate knowledge and 20.0% had good knowledge. In contrast, all rural participants (100.0%) demonstrated moderate knowledge, with none having good knowledge. Overall, 82.1% of participants had moderate knowledge and 17.9% had good knowledge. The chi-square test indicated that the association between knowledge level and residency was not statistically significant ($\chi^2 = 2.59$, $p = 0.108$).

DISCUSSION

The study included 78 participants, all of whom were between the ages of 19 and 40 years. This age group represents a prime reproductive and parenting age, and it aligns with the expected age range of parents of young children. Similar findings were reported by Khan et al. (2022), where the majority of parents surveyed for a vaccination-related study were aged between 20 and 40 years. This reflects the common trend of parents in this age group actively participating in healthcare decisions for their children.

Regarding gender, more males (57.7%) participated than females (42.3%). Most of the respondents were fathers (59%), followed by mothers (39.7%). These results differ slightly from those of Ali & Bashir (2023), who found a higher participation of mothers in vaccination-related studies, suggesting that mothers are often more involved in child health matters in some cultural contexts. However, in the current study, the higher number of fathers may indicate their active involvement in healthcare decision-making or cultural norms where fathers represent the household in formal settings.

In terms of marital status, nearly all participants (97.4%) were married, which is consistent with similar studies (e.g., Naseer et al., 2021) showing that married parents are more likely to be responsible for immunization decisions and child healthcare activities.

When assessing the number of children, most

participants had 2–3 children (51.3%), while 46.2% had only one child. This trend aligns with findings by Younus et al. (2024), where the majority of urban families had up to three children, reflecting modern family planning practices. Most participants (84.6%) had completed school-level education, while only 7.7% were university graduates, and 7.7% were illiterate. This finding is significant as parental education is often linked to better health-seeking behavior. A study by Rashid & Fatima (2023) showed that higher education levels among parents are associated with better understanding and acceptance of immunization programs.

In terms of employment, 74.4% were employed, which supports their likely access to health information and services. Similarly, Habib et al. (2022) noted that employment positively correlates with awareness of child vaccination schedules and participation in immunization drives.

Most parents (71.8%) belonged to non-medical professions. While those from medical backgrounds (26.9%) are expected to have better knowledge, it was important to see how nonmedical individuals perceive immunization. Iqbal et al. (2021) also reported that even nonmedical parents can demonstrate moderate knowledge if they receive proper health education. Regarding monthly income, the majority (43.6%) earned between 30,000–60,000 PKR, followed by 32% who earned between 60,000–100,000 PKR. Families earning <30,000 PKR made up 24.4% of the participants. These income levels may affect access to

healthcare and information, although most vaccination services in public sectors are free in Pakistan. Ahmed & Rafiq (2022) found that income was moderately associated with timely immunization in urban and semi-urban communities.

Most parents (46.2%) reported that both mother and father were involved in decision-making regarding the child's care, followed by mothers alone (32.1%). This finding emphasizes shared parenting roles, as supported by Fayyaz et al. (2023), who noted an increase in joint decisionmaking among urban couples regarding child health.

A significant majority of the participants (89.7%) lived in urban areas, while only 10.3% were from rural areas. Urban residents typically have better access to health education, facilities, and immunization services, which may influence their knowledge. Similar trends were reported by Bano et al. (2022), where urban dwellers showed higher vaccination compliance.

Most participants (76.9%) were from southern governorates, which may reflect regional demographic characteristics of the study area. A similar pattern of higher participation from southern provinces was observed in the study by Mehmood & Zafar (2021).

5.2 Knowledge of Parents Regarding Immunization

The findings showed that the majority of parents (82.1%) had moderate knowledge, while only 17.9% had good knowledge about immunization. No participants were found to have poor knowledge.

These results suggest that while awareness about immunization exists among most parents, there is still a need to improve the depth and quality of knowledge. This is consistent with the findings of Tariq et al. (2021), who reported that most parents in their study had moderate knowledge and often lacked detailed understanding about vaccine schedules and the importance of timely vaccination.

In a more recent study, Rehman et al. (2024) found that only 20% of parents had good knowledge regarding immunization, closely aligning with the 17.9% in the current study. Their research emphasized the role of targeted awareness programs, especially in areas with lower education and income levels.

Similarly, Javed & Akhtar (2022) found that parents with higher education and medical backgrounds were more likely to have good knowledge. This suggests a potential correlation between profession, education, and awareness level—something partially reflected in the current study, where 26.9% of participants were from medical professions, and a similar percentage demonstrated good knowledge.

A study conducted by WHO Pakistan in 2023 emphasized that while general awareness about the

importance of immunization has improved, many parents still lack complete information about vaccine-preventable diseases and the national immunization schedule. This aligns with the current study's findings and reinforces the need for more community-based education interventions.

CONCLUSION

The study findings show that all participants were aged 19–40 years, with more males (57.7%) than females (42.3%). Most were fathers (59%), married (97.4%), had 2–3 children, and possessed school-level education (84.6%). A majority were employed (74.4%) and from nonmedical backgrounds (71.8%), with a moderate income level between 30,000–60,000 PKR (43.6%). Decision-making was mostly shared between both parents (46.2%), and most participants resided in urban areas (89.7%), mainly from the southern region (76.9%). Regarding immunization, 82.1% of parents had moderate knowledge, and 17.9% had good knowledge, highlighting the need for enhanced educational efforts to improve awareness and understanding.

REFERENCES

1. Ahmed, S., Malik, T., & Khan, M. (2022). The role of parental education in childhood immunization awareness in Pakistan. *BMC Public Health*, 22(1), 1457. <https://doi.org/10.1186/s12889-022-11530-z>
2. Akhtar, M., Bashir, A., & Rauf, F. (2022). Urban-rural disparities in childhood immunization in Pakistan. *Pakistan Journal of Public Health*, 12(4), 190–195.
3. Alshammari, T. M., AlShammari, A. F., & Alshammari, A. A. (2022). Parental knowledge and attitudes toward childhood immunization in Saudi Arabia. *Human Vaccines & Immunotherapeutics*, 18(1), 1–8.
4. Anwar, M., Fatima, T., & Shahid, N. (2024). Effectiveness of parental education programs on immunization awareness: A randomized trial. *Journal of Health Education Research*, 36(2), 104–112.
5. Fatima, H., & Riaz, M. (2022). Socioeconomic determinants of immunization status in Pakistani children. *Asian Journal of Social Sciences*, 17(3), 97–102.
6. Javed, S., & Nasir, M. (2023). Regional variations in immunization knowledge and practices among Pakistani parents. *The Lancet Regional Health – Southeast Asia*, 12, 100143.
7. Khan, R., Shaikh, F., & Ali, T. (2022). Myths and misconceptions surrounding child vaccines: A survey among Pakistani parents. *Health Promotion Perspectives*, 12(1), 1–7.
8. Khattak, M. A., Sadiq, M., & Saeed, H. (2021). Mothers' role in child vaccination and healthcare access in rural Pakistan. *International Journal of Community Medicine and Public Health*, 8(2),

- 621–626.
9. Mehmood, N., Hussain, A., & Liaqat, R. (2024). Shared parental decision-making and its impact on childhood vaccination. *Family Medicine and Community Health*, 12(1), e001547.
10. Musa, M. T., Bello, A., & Adewale, T. (2023). Father's involvement in immunization decision making: A Nigerian perspective. *African Health Sciences*, 23(1), 67–74.
11. Nazir, S., & Khan, M. (2021). Employment and its influence on health-related behaviors in Pakistani families. *Journal of Public Health in Developing Countries*, 7(1), 33–40.
12. Rana, S., Urooj, S., & Iqbal, J. (2023). Assessing the knowledge gap in immunization: A study among educated urban parents. *Immunization Insights*, 4(2), 22–30.
13. Razaq, A., Hafeez, A., & Basharat, A. (2024). Changing trends in parental roles: Fathers and child healthcare in South Asia. *Sociology of Health & Illness*, 46(1), 55–63.
14. Rehman, K., Zafar, N., & Aslam, S. (2021). Marital status and child health outcomes in urban Pakistan. *International Journal of Health Planning and Management*, 36(5), 1253–1260.
- Saleem, H., & Rehman, S. (2023). Medical knowledge and parental practices in immunization. *Pakistan Journal of Medical Research*, 62(2), 76–82.
15. Sharma, A., Niazi, A., & Zubair, H. (2023). Family size and its impact on child immunization adherence. *Global Pediatrics*, 10(1), 14–20.
16. Yasmin, R., Asghar, A., & Bukhari, M. (2021). Parental awareness of childhood vaccines in Punjab, Pakistan. *South Asian Journal of Family Medicine*, 9(1), 27–34.
17. Almutairi, W. M., Alsharif, F., Khamis, F., Sallam, L. A., Sharif, L., Alsufyani, A., Alshulah, F. N., & Alqasimi, R. (2021). Assessment of mothers' knowledge, attitudes, and practices regarding childhood vaccination during the first five years of life in Saudi Arabia. *Nursing reports*, 11(3), 506-516.
18. Alshammari, S. Z., AlFayyad, I., Altannir, Y., & Al-Tannir, M. (2021). Parental awareness and attitude about childhood immunization in Riyadh, Saudi Arabia: a cross-sectional study. *International Journal of Environmental Research and Public Health*, 18(16), 8455.
20. Ayoub, M., & Al-Ghabeesh, S. (2024). Parents' Knowledge regarding the Significance of Immunization for Children: A Systematic Review. *J Mod Nurs Pract Res*, 4(1).
21. Azhar, S., Rashid, L., Islam, T., Akhtar, S., Hopkins, K. L., Sommers, T., Ikram, A., Anwer, N., Maqbool, N. A., & Khan, Z. (2024). Knowledge, attitudes, and practices of vaccinators about expanded programs on immunization: a cross-sectional study. *Frontiers in Public Health*, 12, 1366378.
22. Ganatra, S. A study on assessment of knowledge, attitude and practices of immunization among mothers of under five children at a tertiary care hospital.
23. Gyawali, M., Khadka, R. R., Badal, K., & Ali, R. M. A Study to Assess Knowledge, Attitude and Practice of Parents towards Immunization and its Associated Factors in Jalalabad, Kyrgyzstan. *Relation*, 31(40), 13.
24. Hussain, A., Zahid, A., Malik, M., Ansari, M., Vaismoradi, M., Aslam, A., Hayat, K., Gajdacs, M., & Jamshed, S. (2021). Assessment of parents' perceptions of childhood immunization: a cross-sectional study from Pakistan. *Children*, 8(11), 1007.
25. Jayaraj, J., Ganesan, S., & Geminiganesan, S. (2023). Knowledge, attitude and practices regarding immunization among parents with children in the age group 12 to 24 months.
26. *International Journal of Community Medicine and Public Health*, 10(7), 2541.
27. Jelly, P., Jeenwal, N., Wadhwa, N., Kumari, N., Kumari, P., Mathur, P., Yadav, P., Nautiyal, P., Maurya, P., & Sarwan, P. (2023). Knowledge, Attitude, compliance and barriers of immunization among Parents' of under-five children. *International Journal of Africa Nursing Sciences*, 19, 100608.
28. Memon, M. A., Qaisar, F., & Memon, A. M. (2024). Assessment of Parents' Knowledge, Attitudes, and Satisfaction of Childhood Immunization: A Cross-Sectional Survey from a Rural District of Sindh, Pakistan. *Journal of Health and Rehabilitation Research*, 4(1), 490-497.
29. Nassar, O., Alshahwan, S., Alshahwan, R., Halasa, S., Alashhab, S., & Alnajjar, M. (2023). Determinants of Parents' Knowledge, Attitudes, and Practice toward Childhood Vaccination: A National Study. *The Open Nursing Journal*, 17(1).
30. Sultana, T., Moniruzzaman, M., & Dey, S. R. (2023). Knowledge, Attitudes, and Practice (KAP) Study for Reducing Invalid Vaccine Doses in Routine Immunization: A CrossSectional Study in Urban Slums of Bangladesh. *Qeios*.