



Original Article



Knowledge of Primiparous Mothers on Immunization of Children under three Years in Rawalakot, Azad Kashmir

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ABSTRACT

Immunization was crucial aspect of preventing infectious diseases in early childhood. However, lack of knowledge among parents especially primiparous mothers, can hinder optimal immunization coverage. **Objective:** To assess and evaluate the knowledge level of primiparous mother regarding immunization and the factor influencing immunization status in children under three years. **Methods:** A cross-sectional study was conducted with a sample of 210 mothers at Combined Military Hospital, Rawalakot, Azad Kashmir, from April 2023 to February 2024, using consecutive sampling. Data were collected using an adapted questionnaire, which included a demographic section and 37 knowledge items. Analysis was done by using SPSS version 26.0, using descriptive statistics (frequency and percentage) and inferential statistics (Chi-Square test). **Results:** There was gap in literature about primiparous mothers' knowledge and this study results showed that 27.6% had low, 50% had moderate, and 22.4% had high knowledge. Complete immunization was achieved for 60.5% of children, highlighting the need for improved awareness, especially among primiparous mothers. Higher education and employment were significantly linked to better knowledge ($P < 0.001$), with healthcare professionals being the main source (56.6%). The study provided crucial insights for the Ministry of Health and policymakers, demonstrating the need to enhance immunization campaigns by improving primiparous mothers' knowledge for better vaccine coverage. **Conclusions:** A significant portion of primiparous mothers had moderate to low knowledge about child immunization, contributing to incomplete vaccination rates. Enhanced education and awareness programs, particularly for less informed mothers, were essential to improve immunization coverage in Azad Kashmir.

INTRODUCTION

Immunization, the process of receiving vaccines to increase immunity against infectious diseases, has been crucial in global public health, preventing millions of deaths each year. According to the CDC, immunization programs are expected to prevent around 4 million deaths between 2021 and 2030, highlighting their critical role in saving lives worldwide [1]. Vaccination is one of the most effective interventions to protect children, preventing nearly one-third of deaths in children under three from vaccine-preventable diseases. Despite this, a child dies every 20second from a preventable disease. Mothers' knowledge plays a critical role in prevention from vaccine preventable diseases [2]. Previous studies have highlighted significant

gaps in maternal knowledge. Research has shown that mothers' knowledge about immunizations are significantly lacking. For instance, research conducted on 100 mothers selected from the pediatric department of Nishtar Hospital Multan to assess their knowledge and perception regarding child immunization, found that there was a lack in complete vaccination and its usefulness. Misconceptions or misinformation regarding vaccination have been proven to be highly influenced by educational background and information sources, such as institutional websites and general practitioners. The study stressed that raising mothers trust in trustworthy sources for healthcare information is necessary to increase immunization rates



[3]. In a similar vein, discovered that first-time mothers in Australia's New South Wales are three times more likely to voice concerns about their children's vaccinations. Concerns regarding safety, effectiveness and side effects lingered despite universal support for vaccination, according to a study mothers are reluctant to get vaccinated their children [4]. The study emphasized the significance of having vaccination conversations with primiparous mothers in order to remove misconceptions and encourage well-informed choices. Primiparous mothers are those Women who have given birth once, having a singleton birth, and or experiencing motherhood for the first time, characterized by a parity of 1 and gravida of 1. It also highlighted the vital role those medical professionals have in reducing vaccine reluctance. Vaccine-Preventable Diseases (VPDs) such as polio and measles remain a pressing concern. One of the two nations in the world where poliomyelitis is still epidemic is Pakistan. Pakistan had the second-highest incidence of both diphtheria and polio in 2020 when compared to other South Asian nations. Regarding the measles, Pakistan had the fourth-highest incidence. In 2020, the incidence of diseases that can be prevented through vaccine in south Asia, especially in Afghanistan, the Maldives, India, Nepal, Bangladesh, Bhutan, and Pakistan, is still present in these countries. Measles and diphtheria are still present. Pakistan and Afghanistan are both still not polio-free. In south Asia, only Sri Lanka is free from VPDs till 2022 [5]. Primiparous women knew less about childhood immunization, indicating that these mothers may also be lacking in information regarding immunization [6]. The status of vaccination among the children is directly related to the knowledge of mothers about the preventive role of vaccination. Therefore, mothers play a crucial role in immunization of children to protect them from infectious diseases. Enhancing education and support for primiparous mothers, therefore, becomes imperative to ensure higher immunization coverage and protection of children's health at a community level [5].

This study, the first of its kind in Rawalakot, AJK, addresses the knowledge gap regarding immunization among primiparous mothers emphasizing the pressing need for targeted education. It aims to assess and enhance maternal awareness to improve child health outcomes in this underserved region.

METHODS

A quantitative cross-sectional study was conducted at the Combined Military Hospital (CMH) Rawalakot, Azad Kashmir, from April 2023 to June 2024, involving 210 primiparous mothers of reproductive age, willing to participate, and having only one child, while exclusion criteria included mothers over the age of 39 and multiparous mothers. The sample size was determined using the G Power calculator, and data were collected through a non-probability consecutive sampling technique. This method was chosen for its practicality in

capturing a broad range of cases over a specific time frame, providing a comprehensive snapshot of the study population. The tool used for data collection in this study was relevant to current study objectives and adopted from two open access studies. Some of the research questions were adopted from GebreEyesus [7] who reported a Cronbach's alpha of 0.703 for their tool, while other were sourced from Alhomayani's work [8]. The questionnaire consisted of two sections, demographic information and knowledge assessment using 37 dichotomous items (Yes/No), scoring was done by giving '1' point for 'Yes' and '0' for 'No'. Based on 37 knowledge items, the researcher created three quartiles, with the categorization rules defined as follows: Low knowledge level score ≤ 17 (Q1, 25th percentile =17), Moderate knowledge score 18 to 29 (Q2, 50th Percentile =25), High knowledge score >29 (Q3, 75th percentile =29). A pilot study with 20 participants yielded a Cronbach's alpha of 0.797, indicating high reliability. No further revisions were done in study tool. The tool's validity was confirmed by social science experts from the National University of Modern Languages. Data collection was conducted by the researcher, who filled out the structured questionnaire based on participants' responses, with approximately 20 minutes allocated per participant. Ethical approval was obtained (413-AAA-ERC-AFPGMI), and informed consent was secured from all participants, ensuring confidentiality and voluntary participation. Data analysis was conducted using SPSS version 26.0. Descriptive statistics, including frequencies and percentages, were used to summarize the demographic characteristics and knowledge data. The Chi-square test was applied to assess associations between demographic factors and knowledge levels, as both variables were categorical in nature. Confounding factors, such as socio-demographic variables and education levels, were controlled by treating them as independent variables.

RESULTS

According to the findings shown in table 1, the study enrolled 210 mothers. The largest group of respondents, 35.5%, were age grouped 25 to 29 years. Regarding their children, 56.2% were aged two to three years. Most of the mothers, 75.5% were housewives. The majority of the respondents, 64.3%, resided in the rural area of Azad Kashmir. Additionally, 58.6% mothers lived in the nuclear families whereas 41.4% were part of joint family system. Regarding education, 42.4% of the respondents were graduates or higher, and 21.9% had secondary or intermediate education. Out of total 60.5% considered their children as completely vaccinated. While 39.5% children were not completely vaccinated. Most mothers, 56.6% received information about immunization from health care workers, while 32.9% received it from social

media. Only a few 10.5% respondents received information from relatives and friends.

Table 1: Demographic Information of Study Participants

Variables	Categories	N (%)
Age Groups of Mothers	15 – 19 Years	11 (5.2%)
	20 –24 Years	45 (21.4%)
	25-29 Years	75 (35.7%)
	30–34 Years	63 (30.0%)
	35–39 Years	16 (7.0%)
Working Status of Mothers	Working Women	51 (24.3%)
	Housewife	159 (75.5%)
Gender of Children	Male	79 (37.6%)
	Female	131 (62.4%)
Residential Status of Mothers	Rural	135 (64.3%)
	Urban	75 (35.7%)
Family Type	Nuclear	123 (58.6%)
	Joint	87 (41.4%)
Education Level of Respondents	Primary	75 (35.5%)
	Secondary / Intermediate	19 (21.9%)
	Graduation and Above	89 (42.4%)
Immunization Status of Children	Complete	127 (60.5%)
	Incomplete	83 (39.5%)
Sources of Immunization Information	Friends and Relatives	22 (10.5%)
	Television, FM Radio, and Social Media	69 (32.9%)
	Health Care Workers,	119 (56.6%)

According to figure 1, the knowledge of primiparous mothers regarding the immunization of children exhibited that 27.6% of the mothers had low knowledge, 50.0% had moderate knowledge and 22.4% had high knowledge.

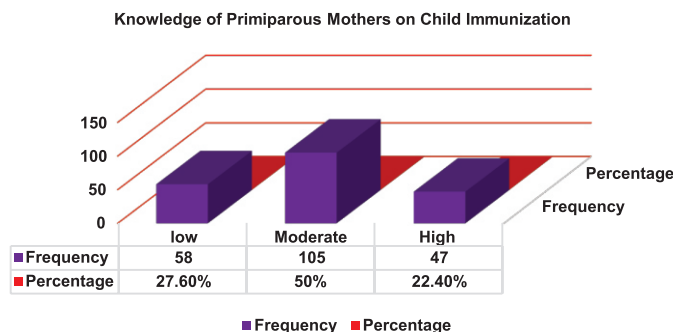


Figure 1: Knowledge of Primiparous Mothers on Child Immunization

The table 2 illustrated significant associations between demographic variables and the knowledge levels of primiparous mothers regarding child immunization ($p < 0.001$). Working mothers, urban residents, and those from nuclear families exhibited higher knowledge compared to housewives, rural residents, and those in joint families. Education level showed a strong link to knowledge, with mothers holding a graduation degree or higher demonstrating the most knowledge, while those with only primary education had the lowest. Additionally, mothers

whose children had complete immunization had significantly higher knowledge levels compared to those with incomplete immunization. Lower knowledge scores among rural mothers were likely due to limited healthcare access, fewer educational opportunities, and cultural barriers, which can result in reduced immunization rates and increased susceptibility to preventable diseases. Housewives, with less exposure to health information, may rely on traditional practices, while mothers in joint families could be influenced by outdated family beliefs. These gaps highlight the need for targeted health education initiatives, particularly in rural areas, involving community health workers and outreach programs to improve maternal knowledge and child health outcomes.

Table 2: Chi-square Analysis of Demographics and Primiparous Mothers' Immunization Knowledge

Demographic Variables	Category	Knowledge N (%)			p-Value
		Low Knowledge	Moderate Knowledge	High Knowledge	
Working Status of Mothers	Working Women	6 (10.3%)	21 (20%)	24 (51.1%)	<0.001
	House wife	52 (89.7%)	84 (80%)	23 (48.9%)	
	Total	58 (100%)	105 (100%)	47 (100%)	
Residential Status of Mothers	Rural	51 (87.9%)	65 (61.9%)	19 (40.4%)	<0.001
	Urban	7 (12.1%)	40 (38.1%)	28 (59.1%)	
	Total	58 (100%)	105 (100%)	47 (100%)	
Type of Family	Nuclear	19 (32.8%)	67 (63.8%)	37 (78.8%)	<0.001
	Joint	39 (67.2%)	38 (36.2%)	21 (10.3%)	
	Total	58 (100%)	105 (100%)	47 (100%)	
Education Level of Mothers	Primary	47 (77.6%)	30 (28.6%)	0 (0%)	<0.001
	Secondary / Intermediate	11 (18.9%)	31 (29.5%)	4 (8.5%)	
	Graduation and Above	2 (3.4%)	44 (41.9%)	43 (91.5%)	
Immunization Status of Children	Complete	4 (6.9%)	80 (76.2%)	43 (91.5%)	<0.001
	Incomplete	54 (93.1%)	25 (23.8%)	4 (8.5%)	
	Total	58 (100%)	105 (100%)	47 (100%)	

DISCUSSION

This study provides new knowledge of primiparous mothers about immunization of children. The aim of the study was to add to the body of literature with respect to improving mothers' knowledge regarding immunization. In present study, 35.5% of participants were aged 25-29 years, similar study conducted on the population of Georgia revealed that 48.4% of them were 26-30 years old [9]. The majority of mothers were housewives only 23.3% were employed. A study done in Indonesia found a similar trend 52.9% mothers were housewives [10]. In the current study, 42.4% of respondents had a graduation-level education or higher, while 35.5% had only primary education. This aligns with findings from previous studies in northwest Ethiopia 54.8% with graduation and Saudia Arabia showed 61% had a bachelor degree [7, 11]. These results emphasize the

crucial role of education in enhancing health awareness, particularly regarding child immunization. In present study 33% of children were not fully vaccinated because mothers did not know and were afraid of the side effects. This finding aligns with the study conducted in Gargia 36% children were not fully immunized [9]. Another possible explanation for these outcomes was the insufficient information, awareness and sensitization of mothers on the vaccine benefits. Lately, the limited efforts in raising awareness in community about immunization may also contributed to these results. In the current study, the main source of information about immunization were health care workers that was 56.6 %. This finding was consistent with the study conducted in Nigeria 36.9%, where health care workers was the primary source of information [12]. As the healthcare workers play a key role in educating parents about vaccination. Their role in educating mothers was crucial for improving knowledge and promoting immunization. An increase in mass media was suggested for immunization awareness. In present study, 50% of respondents demonstrated moderate knowledge, while (27.6%) had low knowledge. These findings indicate a lower level of awareness as evidenced by other studies conducted in Saudi Arabia (87.2%), Nepal (72.2%), Nigeria (72%) and India (72.2%) [13, 14, 12, 22]. However, the results of present study were higher than the studies conducted in Egypt (31.2%) and Lithuania (36.3%) the variation could be due to differences in sociodemographic factors, simple size and geographical location, occupational and educational background of the study respondents [15]. These outcomes maybe due to fact that the significant portion of participants were resided in rural areas, where lower levels of education, limited health care facilities limit their understanding of vaccine benefits and side effects [16]. In the current study a significant positive relationship was observed between the knowledge and demographics of primiparous mothers regarding immunization of children. Carrying out the chi-square test, there were significant relationships between some demographic characteristics and the level of primiparous mothers' knowledge about immunization of children under three years. Employed women and those in the urban area had better knowledge as compared to non-employed women and those in the rural areas ($p < 0.001$). This might be due to employment as well as dwelling in urban centres could increase access to information and resources on vaccination of children. A study which was conducted in Saudia Arabia was showed similar results [13]. Likewise, another study in Pakistan revealed that urban mothers had significantly greater knowledge about child immunization

compared to rural mothers. [17, 18]. Another cross-sectional research was conducted in Pakistan to assess the knowledge about child vaccination also revealed that the mothers in the urban areas had significantly higher knowledge about child immunization than their counterparts in rural settings [19]. Furthermore, family structure type and education level of the mothers also had a significant correlation with the knowledge level (< 0.001). The knowledge level of mothers from nuclear families as well as mothers with graduation and above was statistically significantly higher than the mothers of joint families and mothers with education up to the primary level. The immunization status of children was also found to be highly related to the mothers' knowledge scores it was established that higher knowledge leads to fully immunized children ($p < 0.001$). As evidenced by the studies conducted in Ethiopia and Pakistan, where educated mothers and those from nuclear families had significantly better knowledge regarding child immunization as compared to other groups [20-22]. This study has a several limitations that should be considered when interpreting the results. This study was conducted in specific geographical area that may limiting its generalizability to other regions. The findings of this study, which solely focus on primiparous mothers may not generalize to multiparous mothers who may have varied experiences and levels of knowledge. Cross-sectional study design bounds the capability to create causal relationships between the variables and track changes in knowledge over time. Based on the current study findings, the following recommendations can be proposed to improve mothers' knowledge regarding immunization of children. The Ministry of Health should enhance and expand its national immunization programs. Community-based initiatives should be developed to promote immunization awareness in primiparous mothers. Conduct future researchers to explore the impact of other variables such as income and father education. For generalizability of the findings, further longitudinal studies should be considered by using a larger sample size from different tertiary care hospitals. Expanding access to resources in rural areas, combined with continuous training for healthcare workers, was essential for improving immunization coverage. This approach will ensure that accurate information reaches underserved communities, helping to close the knowledge gap and increase vaccination rates.

CONCLUSIONS

This study highlights that the knowledge of primiparous mothers regarding immunization was not sufficient. The finding underscores the need for enhanced educational

programs, particularly for less informed mothers, to improve immunization coverage. Community-based initiatives should be developed to promote immunization awareness in primiparous mothers of Azad Kashmir.

Authors Contribution

Conceptualization: SI

Methodology: SI, SP

Formal analysis: NS

Writing, review and editing: RK, SP

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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REFERENCES

- [1] Centers for Disease Control and Prevention. Fast facts on global immunization. Centers for Disease Control and Prevention. Retrieved November. 2022; 9: 2022.
- [2] Mallick BL, Pati SS, Murmu MC, Singh M, Soren NN. Study of knowledge, attitude and practice of mothers of children under 5 years on immunization status attending a tertiary care hospital: A cross-sectional study. *Panacea Journal of Medical Sciences*. 2023 Jul 31;13(2): 455-63. doi.org/10.18231/j.pjms.2023.086
- [3] S YASMEEN, NAWAZ R, BASHIR S. Knowledge and perception of mothers regarding child immunization in a tertiary care hospital Punjab, Pakistan. *Biological and Clinical Sciences Research Journal*. 2023 Aug 14;2023(1):389-9. <https://doi.org/10.54112/bcsrj.v2023i1.389>
- [4] Corben P and Leask J. Vaccination hesitancy in the antenatal period: a cross-sectional survey. *BioMed Central Public Health*. 2018 Dec; 18: 1-3. doi: 10.1186/s12889-018-5389-6.
- [5] Ahmed M, Sharif M, Sufyan A, Bhatti MS, Asghar RM. Immunization Status of Children and Its Association with Maternal Education. *Journal of Rawalpindi Medical College*. 2018; 22(S-2): 57-60.
- [6] Otsuka-Ono H, Hori N, Ohta H, Uemura Y, Kamibeppu K. A childhood immunization education program for parents delivered during late pregnancy and one-month postpartum: a randomized controlled trial. *BioMed Central Health Services Research*. 2019 Dec; 19: 1-0. doi: 10.1186/s12913-019-4622-z.
- [7] GebreEyesus FA, Tarekegn TT, Amlak BT, Shiferaw BZ, Emeria MS, Geleta OT et al. Knowledge, attitude, and practices of parents about immunization of infants and its associated factors in Wadla Woreda, North East Ethiopia, 2019. *Pediatric Health, Medicine and Therapeutics*. 2021 May; 22338. doi:10.2147/PHM.T.S295378.
- [8] Alhomayani F, Alwuthaynani MT, Alshehri HA, Mohammed N, Alghamdi DI, Mohammed R et al. Mother's awareness about immunization. 2022 Nov.
- [9] Verulava T, Jaiani M, Lordkipanidze A, Jorbenadze R, Dangadze B. Mothers' knowledge and attitudes towards child immunization in Georgia. *The Open Public Health Journal*. 2019 May; 12(1). doi: 10.2174/1874944501912010232.
- [10] Lestiani L, Hilda H, Putri RA. The Relationship Between Mother's Attitude and Giving Complete Basic Immunization to Infants Aged 12-24 Months. *KESANS: International Journal of Health and Science*. 2023 Oct 20;3(1):5562.://doi.org/10.54543/k esans.v3i1.238
- [11] Almutairi WM, Alsharif F, Khamis F, Sallam LA, Sharif L, Alsufyani A et al. Assessment of mothers' knowledge, attitudes, and practices regarding childhood vaccination during the first five years of life in Saudi Arabia. *Nursing Reports*. 2021 Jul; 11(3): 506-16. doi: 10.3390/nursrep11030047.
- [12] Adedire EB, Ajumobi O, Bolu O, Nguku P, Ajayi I. Maternal knowledge, attitude, and perception about childhood routine immunization program in Atakumosa-west Local Government Area, Osun State, Southwestern Nigeria. *The Pan African Medical Journal*. 2021 Nov; 40(1):8. doi:10.11604/pamj .supp.2021.40.1.30876.
- [13] Saleh A, Alrashidi AA, Bukhari MA, Habib RF, Alsubhi RA, Saadawi DW et al. Assessment of knowledge, attitude and practice of parents towards immunization of children in Saudi Arabia, 2018. *The Egyptian Journal of Hospital Medicine*. 2018 Apr; 71(2): 2585-9. doi: 10.12816/0045660.
- [14] Adefolalu OA, Kanma-Okafor OJ, Balogun MR. Maternal knowledge, attitude and compliance regarding immunization of under five children in Primary Health Care centres in Ikorodu Local Government Area, Lagos State. *Journal of Clinical Sciences*. 2019 Jan; 16(1): 7-14. doi:10.4103/jcls.jcls_5_5_18.
- [15] Šeškutė M, Tamulevičienė E, Levinienė G. Knowledge and attitudes of postpartum mothers towards immunization of their children in a Lithuanian tertiary teaching hospital. *Medicina*. 2018 Mar; 54(1): 2. doi: 10.3390/medicina54010002.
- [16] Šeškutė M, Tamulevičienė E, Levinienė G. Knowledge and attitudes of postpartum mothers towards immunization of their children in a Lithuanian tertiary teaching hospital. *Medicina*. 2018 Mar 12;54(1):2.

- <http://dx.doi.org/10.3390/medicina54010002>
- [17] Asif AM, Akbar M, Tahir MR, Arshad IA. Role of maternal education and vaccination coverage: evidence from Pakistan demographic and health survey. *Asia Pacific Journal of Public Health*. 2019 Nov; 31(8): 679-88. doi: 10.1177/1010539519889765.
- [18] Hussain A, Zahid A, Malik M, Ansari M, Vaismoradi M, Aslam A, Hayat K, Gajdács M, Jamshed S. Assessment of parents' perceptions of childhood immunization: a cross-sectional study from Pakistan. *Children*. 2021 Nov 4;8(11):1007. . <https://doi.org/10.3390/children811100719>.
- [19] Ali A, Zar A, Wadood A. Factors associated with incomplete child immunization in Pakistan: findings from Demographic and Health Survey 2017-18. *Public Health*. 2022 Mar; 204: 43-8. doi:10.1016/j.puhe.2022.01.003.
- [20] ALAmri ES, Horaib YF, Al-anazi WR. Knowledge and Attitudes of Parents on Childhood Immunization in Riyadh, Saudi Arabia. *The Egyptian Journal of Hospital Medicine*. 2018 Jan; 70(2): 251-6. doi: 10.12816/0043085.
- [21] Gelagay AA, Worku AG, Bashah DT, Tebeje NB, Gebrie MH, Yeshita HY *et al*. Complete childhood vaccination and associated factors among children aged 12-23 months in Dabat demographic and health survey site, Ethiopia, 2022. *BioMed Central Public Health*. 2023 May; 23(1): 802. doi: 10.1186/s12889-023-15681-0.
- [22] Sunny A, Ramesh S, Shankar BK. A study to assess and correlate the knowledge, attitude and practices of vaccination among mothers with educational status in a teaching hospital in South India. *Primary Health Care*. 2018 Jan; 8(1): 1-6. doi: 10.4172/2167-1079.1000290.