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ASSESSMENT OF MOTHER'S KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING CHILDHOOD VACCINATION DURING THE FIRST FIVE YEARS OF LIFE

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ABSTRACT

Introduction

Vaccination is one of the most effective public health interventions for preventing childhood diseases. Despite the availability of vaccines in Pakistan through the Expanded Programme on Immunization (EPI), gaps in knowledge, attitudes, and practices (KAP) among mothers continue to hinder full immunization coverage. Understanding maternal perspectives is essential to improving vaccination uptake and reducing preventable morbidity.

Study Purpose

This study aimed to assess mothers' knowledge, attitudes, and practices regarding childhood vaccination during the first five years of life at Sugra Shafi Medical Complex, Narowal. It also sought to identify barriers to vaccination and sources of information that influence maternal decisions.

Research Methodology

A descriptive cross-sectional study was conducted among 80 mothers of children under five visiting the outpatient and immunization clinics of Sugra Shafi Medical Complex. Participants were selected through convenience sampling. Data were collected using a structured, pre-validated questionnaire, and analyzed using SPSS Version 27 to determine frequencies and percentages across knowledge, attitude, and practice domains.

Results

Most mothers (95%) demonstrated strong knowledge that vaccines prevent serious illnesses and begin at birth, with 90% reporting regular adherence to the EPI schedule. However, 17.5% held misconceptions about vaccine-related infertility, and 13.8% expressed doubt over the safety of polio drops. Attitudes were mostly positive, with 63.7% strongly agreeing that vaccines are essential, yet 27.5% feared side effects and 16.2% felt religion may discourage vaccination. Practically, 97.5% had vaccinated their child at birth, but common reasons for missed vaccines included forgetfulness (18.8%) and lack of access (16.2%). Information was mostly obtained through family and friends (48.8%) and healthcare workers (33.8%).

Conclusion

While overall knowledge and practices were satisfactory, persistent myths and barriers remain. To improve vaccination coverage in Narowal, targeted education, stronger health communication, and

expanded access to services are needed. Culturally relevant, trust-based interventions will play a critical role in closing remaining gaps.

Keywords: *Childhood Vaccination, Immunization Coverage, Parental Attitudes, Vaccine Hesitancy, Maternal Knowledge, Preventive Health, Expanded Program on Immunization, Rural Healthcare, Pakistan, Public Health Awareness*

INTRODUCTION

Childhood vaccination is one of the most effective public health strategies to reduce morbidity and mortality from preventable diseases globally. Despite extensive global efforts, Pakistan continues to struggle with achieving optimal vaccination coverage, especially in rural and underserved communities. According to (Shahid et al., 2023), substantial disparities exist in vaccine uptake across regions in Pakistan, particularly affecting children in rural areas. Immunization coverage in Pakistan remains below the global target, with only 66% of children receiving all basic vaccines (Valladolid et al., 2024). The persistence of vaccine-preventable diseases like measles, polio, and diphtheria highlights ongoing challenges in maternal knowledge, access to healthcare, and social attitudes toward immunization (Zarzeczny and Kahar, 2024) Specific issues such as misinformation, lack of trust, religious misconceptions, and inconsistent healthcare services contribute to the underutilization of the Expanded Programme on Immunization (EPI), particularly during the first five years of a child's life, which are most critical for immunity development (Khaliq et al., 2024). Although national and provincial immunization programs are operational, a clear knowledge–practice gap exists among caregivers, especially mothers, who are often the primary decision-makers in child healthcare. Studies show that while many mothers are aware of the importance of vaccines, they may lack a comprehensive understanding of the full schedule, possible side effects, or the consequences of missed doses (Gellin et al., 2000);(Hakim et al., 2025). In South Punjab, recent findings have indicated that despite moderate levels of maternal awareness, immunization completion rates are still low due to socio-cultural barriers and logistical challenges (Duong, 2025). Furthermore, maternal attitudes are often influenced by education level, household income, and access to reliable information, which may cause inconsistencies in immunization practices even among mothers with partial knowledge (Luvinga and Kessy, 2024); (Sahitia et al., 2025). These gaps in current understanding point to a need for focused, community-specific investigations that assess both knowledge and behavior.

Given these gaps and the regional variability in maternal knowledge and vaccination uptake, this study aims to explore the current state of mothers' knowledge, attitudes, and practices (KAP) regarding childhood vaccination during the first five years of life. Particularly in Southern Punjab, where health literacy and outreach remain limited, it is important to identify whether mothers are not only aware of vaccination schedules but also positively inclined to follow them and equipped to do so. By identifying deficiencies in awareness and behavior, this study can provide local evidence to guide targeted health education, intervention strategies, and policy reforms. The rationale for this research is to verify whether improved maternal understanding correlates with timely vaccination compliance and to examine the influence of socio-demographic factors on immunization behavior in this critical age group.

Problem Statement:

Despite ongoing efforts through Pakistan's Expanded Programme on Immunization (EPI), childhood vaccination rates in many parts of the country especially in rural and semi-urban regions remain below WHO-recommended targets. In areas like Narowal and broader Southern Punjab, barriers such as limited maternal awareness, misinformation, cultural beliefs, and poor access to healthcare facilities contribute to low vaccination uptake. Mothers, as primary caregivers, play a vital role in ensuring timely immunization, yet their

knowledge and practices often fall short due to lack of education and inadequate public health outreach. While national-level data exists, there is limited localized evidence on maternal knowledge, attitude, and practices (KAP) regarding childhood vaccination in these underserved regions. This study addresses that gap by assessing the KAP of mothers visiting Sugra Shafi Medical Complex, Narowal, with a focus on children under five the most vulnerable age group for vaccine-preventable diseases.

Significance of the Study:

This research is important because it aims to generate community-specific evidence about maternal understanding and behavior related to childhood immunization. By evaluating the KAP of mothers in Narowal, the study will provide insights into the barriers that hinder vaccine coverage and reveal areas where health education efforts need to be strengthened. The findings will support healthcare professionals, Lady Health Workers, and policymakers in designing targeted, culturally appropriate strategies to improve immunization rates. Moreover, the research can guide awareness campaigns and maternal health programs that emphasize the critical role of mothers in preventing childhood illnesses. Ultimately, this study seeks to contribute to better child health outcomes and stronger public health systems in underserved regions of Southern Punjab

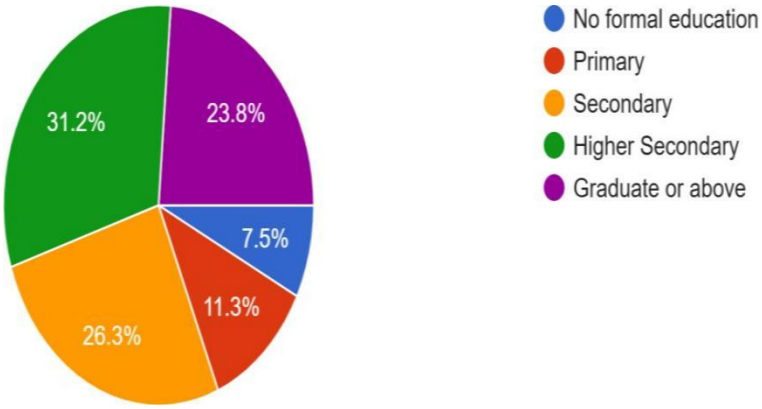
METHODOLOGY

This study employed a descriptive, cross-sectional quantitative design to evaluate maternal KAP regarding childhood immunization. Conducted over three months at sugra shafi medical complex, narowal, including maternal outpatient departments and immunization clinics, the study targeted mothers aged 18 years and above with at least one child under five, residing in the narowal region, and willing to provide informed consent, while excluding mothers with older children, healthcare professionals with prior immunization training, or those unwilling to participate. A total of 80 mothers were recruited using non-probability convenience sampling, with sample size calculated via cochrane's formula ($z = 1.81$, $p = 0.5$, $e = 0.10$). Independent variables included age, education, employment status, number of children, and access to healthcare, while dependent variables comprised knowledge, attitude, and vaccination practices, with knowledge categorized as excellent (>80%), good (65–80%), average (50–64%), or poor (<50%). Data were collected using a structured, close-ended KAP questionnaire covering immunization schedules, vaccine-preventable diseases, attitudes toward vaccines, and actual vaccination practices, with written informed consent obtained from all participants and assurances of confidentiality, anonymity, voluntary participation, and transparency. Data were analyzed using spss version 27, employing descriptive statistics to summarize demographic characteristics and kap responses. The study aimed to answer the research question: "what is the level of knowledge, attitude, and practices of mothers regarding childhood vaccination during the first five years of life?

RESULTS

1. Demographic Profile of Respondents

Among the 80 respondents, all were mothers of children under five years of age residing in the Narowal region. The majority of participants were housewives (67.5%), followed by employed mothers (22.5%), and students (7.5%) . In terms of educational background, 31.2% had attained higher secondary education, 26.3% had secondary-level education, and 23.8% were graduates or above, while 6 mothers (7.5%) had no formal education(Graph 01). The respondents' ages ranged from early 20s to mid-40s, with the highest concentrations in the 24-30 year age range. This diversity in education and occupational roles reflects varying levels of health literacy and access to immunization knowledge in the region.



❖ **Graph 01: Education Level Of Responders.**

2. Maternal Knowledge on Childhood Vaccination

A significant number of mothers demonstrated a strong factual understanding of childhood vaccination. Specifically, 95% of respondents agreed that vaccines help prevent serious childhood diseases, and 96% correctly recognized that vaccination begins immediately after birth. Furthermore, 95% believed that completing the immunization schedule protects children until the age of five. Despite this encouraging level of awareness, certain misconceptions persisted. Notably, 17.5% of mothers were either unsure or believed that vaccines could cause infertility, and 13.8% expressed uncertainty regarding the safety of oral polio drops. Although overall knowledge levels were satisfactory, these gaps underscore the need for targeted educational efforts focused on myth-busting and reinforcing accurate vaccine information.(Table 01)

Table 01: Knowledge about Childhood Vaccination (N = 80)

Statement	True (n)	False (n)	Don't Know (n)
1. Vaccines help to prevent serious childhood diseases.	76	2	2
2. BCG vaccine is given to prevent tuberculosis.	72	6	2
3. Vaccination starts immediately after birth.	77	2	1
4. A complete immunization schedule protects a child until 5 years old.	76	2	2
5. Vaccines can cause infertility in children. (Myth)	8	58	14
6. Fever is a common mild side effect after vaccination.	73	5	2
7. Measles vaccine is given after 9 months of age.	70	6	4
8. Oral polio drops are not harmful if given multiple times.	60	9	11

Note: Statements 5 and 8 assess awareness of common myths and misconceptions.

***3.* Maternal Attitudes Toward Vaccination**

The overall attitudes of mothers toward childhood vaccination were found to be largely positive and supportive. A significant 63.7% of participants strongly agreed that vaccines are essential for protecting their child's health, and 55% expressed strong confidence in bringing their child for immunization. Additionally, 61% of mothers firmly believed that vaccines are both safe and effective. Despite this overall positivity, 27.5%

of mothers admitted to fearing vaccine side effects, and 16.2% strongly agreed that religious beliefs discouraged them from vaccinating their children. These findings underscore the importance of culturally sensitive, trust-building communication strategies from healthcare providers to address lingering fears and misconceptions, particularly those related to vaccine safety and religious concerns. (Table 02).

Table 02: Attitudes Toward Childhood Vaccination (N = 80)

Statement	Strongly Agree (n)	Agree (n)	Neutral (n)	Disagree (n)	Strongly Disagree (n)
1. Vaccines are essential to protect my child from disease.	51	19	6	2	2
2. I feel confident in taking my child for routine immunization.	44	22	8	4	2
3. I fear side effects from vaccines.	15	7	21	20	17
4. I trust the information provided by healthcare workers about vaccines.	37	24	10	5	4
5. Religious beliefs discourage me from vaccinating my child. (Reverse scored)	13	10	25	18	14
6. My family supports childhood immunization.	48	19	7	4	2
7. I think vaccines are safe and effective.	49	18	8	3	2
8. Vaccination should be mandatory for all children.	52	16	5	4	3

Note: Higher agreement scores indicate a positive attitude. Statement 5 is interpreted inversely as it reflects cultural/religious concerns.

4. Vaccination Practices

The reported vaccination practices among mothers were largely encouraging. A substantial 97.5% of participants confirmed that their child had received birth vaccinations such as BCG and OPV, while 85% possessed and maintained a vaccination card. Moreover, 90% reported regularly following the Expanded Program on Immunization (EPI) schedule, indicating strong compliance with recommended vaccination timelines. However, notable barriers still existed. The leading reasons for missed vaccinations were classified as other or unspecified causes (56.2%), followed by forgetfulness (18.8%) and lack of access to healthcare facilities (16.2%). When asked about the location of immunization, 50% of mothers preferred government hospitals, 26.3% used EPI centers, and 18.8% opted for private clinics. Regarding sources of information, 48.8% of the respondents cited friends or family, while 33.8% relied on healthcare providers, and 8.8% each mentioned social media and school campaigns. These results suggest that while immunization practices are generally positive, there is a continued need to improve accessibility and strengthen communication through trusted healthcare channels (Table 03).

Table 03: Vaccination Practices Among Respondents (N = 80)

Practice/Question	Response Options	Frequency (n)	Percentage (%)
1. Did you get your child vaccinated at birth (e.g., BCG, OPV)?	Yes	78	97.5%
	No	2	2.5%
2. Do you have your child's vaccination card?	Yes	68	85.0%
	No	12	15.0%
3. Do you follow the EPI schedule regularly?	Yes	72	90.0%
	No	8	10.0%
4. If you missed any vaccination, what was the reason?	Forgot	15	18.8%
	No access to healthcare	13	16.2%
	Fear of side effects	5	6.3%
	Religious/cultural reason	2	2.5%
	Other	45	56.2%
5. Where do you take your child for vaccination?	Government Hospital	40	50.0%
	EPI Center	21	26.3%
	Private Clinic	15	18.8%
	Home-based immunization	4	5.0%
6. What is your main source of information about vaccination?	Friends/Family	39	48.8%
	Healthcare Provider	27	33.8%
	Social Media	7	8.8%
	School Campaigns	7	8.8%

DISCUSSION

This study, conducted at Sugra Shafi Medical Complex, Narowal, explored the knowledge, attitudes, and practices (KAP) of mothers regarding childhood vaccination during the first five years of life. The findings revealed a generally positive outlook among mothers, supported by satisfactory knowledge and high immunization compliance. However, gaps in understanding and lingering myths highlight critical areas where educational outreach and trust-building measures are needed.

A large proportion of mothers demonstrated strong foundational knowledge. For instance, 95% recognized that vaccines prevent serious illnesses, and 96% were aware that immunization begins immediately after birth. These results are consistent with studies from similar contexts, such as (Azhar et al., 2024)&(Odia et al., 2015), which reported high baseline knowledge among parents. Furthermore, 95% of respondents understood that full adherence to the immunization schedule protects children up to five years, reflecting alignment with EPI program goals. Despite this encouraging awareness, certain misconceptions remain prevalent. Notably, 17.5% of participants either believed or were unsure whether vaccines could cause infertility an unfounded myth documented in previous

research from Pakistan (Hakim et al., 2025);(Khaliq et al., 2024) and globally (Larson et al., 2014). Additionally, 13.8% expressed uncertainty regarding the safety of repeated oral polio vaccinations. These findings highlight the persistence of misinformation, even in clinical settings, as also noted by (Gellin et al., 2000).

Attitudinally, the majority of mothers expressed trust and acceptance. About 63.7% strongly agreed that vaccines are essential, and 61% believed they are safe and effective. This positive perception is in line with the literature, including (Sahitia et al., 2025), which found maternal confidence to be a key driver of vaccine uptake in rural Pakistan. However, nearly 28% of participants still feared side effects, and 16.2% admitted religious hesitations, echoing concerns raised by (Duong, 2025) and (Valladolid et al., 2024), who noted that cultural and spiritual beliefs often influence vaccine decision-making, especially in under served regions.

Practice-related data also painted a promising picture: 97.5% of mothers vaccinated their children at birth, 85% maintained vaccination cards, and 90% followed the EPI schedule. However, reasons for missed vaccinations included forgetfulness (18.8%), lack of access to healthcare (16.2%), and other unspecified barriers (56.2%). These findings mirror the conclusions of (Abdulraheem et al., 2011)&(Organization and Fund, 2023) recovery plan, which emphasize how logistical and behavioral challenges can hinder full coverage despite general awareness.

Interestingly, friends and family (48.8%) were cited more often than healthcare providers (33.8%) as the main source of vaccine information. This reliance on informal networks reflects the communication dynamics seen (Luvinga and Kessy, 2024)), and suggests the need for stronger, community-embedded health messaging. Without proper reinforcement from credible medical professionals, informal sources may perpetuate myths and confusion.

In the context of Sugra Shafi Medical Complex, where the study was carried out, the outpatient and immunization clinics serve a wide maternal population, making them key access points for health promotion. The results of this study underscore the importance of reinforcing these channels through culturally sensitive, evidence-based messaging particularly around safety, fertility myths, and religious permissibility. Trust in healthcare workers and systems must be enhanced, as trust is often the deciding factor in vaccine acceptance (Zarzeczny and Kahar, 2024).

In conclusion, the mothers surveyed in Narowal exhibit high levels of knowledge and compliance regarding childhood immunization. Nonetheless, targeted interventions are required to dispel persistent myths and overcome attitudinal and practical barriers. These findings should inform public health strategies that emphasize accurate communication, access to services, and community engagement all of which are vital to achieving universal immunization coverage in rural and semi-urban Pakistan.

CONCLUSION

This study assessed the knowledge, attitudes, and practices (KAP) of mothers regarding childhood vaccination during the first five years of life in the setting of Sugra Shafi Medical Complex, Narowal. The results indicate a generally high level of awareness and a strong willingness among mothers to follow the Expanded Program on Immunization (EPI) schedule. The majority of participants had vaccinated their children at birth, maintained vaccination cards, and adhered to scheduled doses.

However, despite this encouraging compliance, certain misconceptions and attitudinal barriers persist. Some mothers expressed fears about vaccine side effects, doubts about the safety of oral polio drops, and concerns influenced by religious or cultural beliefs. A small but notable percentage of respondents still believed or were uncertain that vaccines might cause infertility. These misconceptions underscore the ongoing need for reliable, culturally appropriate health education and myth-busting interventions.

Additionally, the reliance on informal sources such as family and friends for vaccine-related information highlights a gap in direct communication between healthcare providers

and the community. Strengthening this channel through proactive counseling at immunization clinics can play a vital role in improving maternal confidence and understanding.

In conclusion, while the study population shows encouraging levels of knowledge and practice, the presence of lingering fears and misinformation highlights the need for continuous community engagement, improved provider-patient communication, and accessible vaccination services. Addressing these gaps will be essential in achieving full immunization coverage and protecting children in Narowal and similar communities from vaccine-preventable diseases.

Limitations:

This study has several limitations. It was conducted solely at Sugra Shafi Medical Complex, Narowal, and may not reflect KAP trends among mothers in other hospitals or rural areas of Punjab. The relatively small sample size of 80 participants and the use of a self-administered questionnaire may have limited the representativeness of responses and introduced social desirability bias. Language and literacy challenges could have affected comprehension, and time and resource constraints restricted opportunities for in-depth follow-up or qualitative exploration. Finally, the cross-sectional design provides only a snapshot in time, without capturing changes in knowledge or practices over time.

Recommendations:

To enhance maternal knowledge and practices regarding childhood vaccination, education should be brief and clear, using short videos or posters to explain benefits and dispel common myths. Whatsapp and sms reminders can provide timely notifications for upcoming vaccinations, while colorful, easy-to-understand urdu guides can outline the full immunization schedule. Trusted local figures, including teachers, health workers, and religious leaders, can reinforce positive messages through community channels and social media. Flexible services, such as weekend clinics or mobile vaccine vans, can improve access for mothers in remote or busy areas. Nurses should engage in respectful, two-way conversations to address concerns and build trust. Finally, progress should be monitored regularly through surveys or feedback tools to evaluate awareness and adjust strategies as needed.

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