# Master of Science in Public Health


# Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

**MSPH Thesis**

**by**

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***Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.***

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# LIST OF ABBREVIATION

| | |
|---|---|
| **DPT** | Diphtheria, Pertussis, Tetanus |
| **EPI** | Expanded Program of Immunization |
| **FDI** | Federal Directorate of Immunization |
| **GAVI** | Global Alliance for Vaccines and Immunization |
| **Hib** | Haemophilus influenzae type b |
| **IMR** | Infant Mortality Rate |
| **MOH** | Ministry of Health |
| **MV** | Measles Vaccine |
| **OPV** | Oral Polio Vaccine |
| **PCV10** | Pneumococcal vaccine |
| **VPDs** | Vaccine-Preventable Diseases |
| **WHO** | World Health Organization |

# ABSTRACT

**Objectives:**

- To measure knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.
- To measure association of Parents' knowledge, attitude, and beliefs with acceptability of the Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

**Methodology:**

A Descriptive Cross-Sectional Study was carried out over a period of six months from March 2023 to August 2023 to assess Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad. Calculated sample size was 269.Using lottery method of simple random probability sampling technique, one zone of Islamabad was selected for the study, Sihala. Sihala is situated in Zone 5. Desired sample from Sihala was collected using non-probability consecutive sampling strategy. Data was collected using a validated and interview-based questionnaire. The Vaccine Attitude Belief Behavior Survey (VABBS) tool was adapted for this study. Data was analyzed using Statistical Package for Social Science (SPSS) version 26. Association between parents' knowledge, attitude and beliefs and acceptability of EPI were calculated using Chi-Square test of association after confirming the assumptions.

**Results:**

The results of the study reported significant association of father`s age (p-value=0.001), father`s education(p-value=0.001),mother`s age(p-value=0.001), mother`s occupation (p-value= 0.044), mother`s education(p-value=0.0001),

household income(p-value=0.0001),family composition (p-value=(0.046),number and gender of children(p-value=0.0001) with knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents.

**Conclusion:**

Sociodemographic factors such as father`s age and education, mother`s age and education, household income, family composition, number and gender of children were significantly associated with their knowledge, attitude and beliefs towards vaccination. Results emphasized the pivotal role of education in influencing parental perspectives. Financial constraints influence access to healthcare services. Ensuring affordability and accessibility of vaccination services could help improve acceptance rates.

**Keywords:**

Expanded Program on Immunization, Vaccine acceptability, Vaccine coverage, Parents knowledge, Parents beliefs, Parents`s attitude, Childhood immunization.

# CHAPTER 1

# INTRODUCTION

# Chapter 1: Introduction

## 1.Introduction:

The Expanded Program of Immunization (EPI) was set up by the World Health Organization (WHO) as a global initiative in 1974, to develop and expand immunization programs. In the year 1977, the program set a goal to provide access to immunization against diphtheria, pertussis, tetanus, poliomyelitis, measles, and tuberculosis to all children worldwide by 1990 (A. S. M. S. B. Shahid et al. 2023). Later, several new vaccines such as hepatitis B, Haemophilus influenzae type b (Hib), and pneumococcal vaccine (PCV10) were introduced in 2002, 2009, and 2012, and inactivated polio vaccine in 2015, respectively (Anon n.d.-a). The expanded program of Immunization (EPI) in Pakistan is responsible for protecting against eight vaccine-preventable diseases in children under the age of 23 months (Masud and Navaratne 2012). Until July 11, 2011, the Expanded Program of Immunization (EPI) in Pakistan was operated by the Ministry of Health (MOH). However, after the devolution of health as a subject to the provinces through Amendment 18 to the constitution, the EPI is currently managed and implemented at the provincial level. An important indicator of a successful Expanded Program on Immunization (EPI) is the percentage of children aged 12-24 months who have received a minimum of three doses of the pentavalent vaccine which offers protection against Haemophilus influenza B, diphtheria, pertussis, tetanus, and hepatitis B. In Pakistan, children receive pentavalent vaccine at 6,10,14 weeks of age which aligns with the routine administration of the oral polio vaccine (OPV). Additionally, the EPI schedule in Pakistan included two doses of measles vaccine (MV) given at 9 and 12 months of age, a practice introduced in the early 1980s (Imran et al. 2018a).The reported

estimated vaccination coverage for the pentavalent vaccine, OPV, and MV in 2011 were 74%, 75%, and 53% respectively (Andersson et al. 2005). It is worth noting that these vaccines, which are part of the Expanded Program on Immunization (EPI), are provided free of charge. In Pakistan, Vaccine coverage in the province of Punjab is 65.6%, 29.1% in Sindh, 52.7% in KPK, and 16.4% in Balochistan (Butt et al. 2020), exhibiting significant variation between the four provinces (*Health department of Sindh*).

Islamabad is the capital city of Pakistan and is known for its well-planned layout and beautiful surroundings. Islamabad also has rural areas surrounding the city consisting of small villages and towns. The city is divided into different zones, each with its own purpose and characteristics. The five major zones are: Zone I, Zone II, Zone III, Zone IV, and Zone V (Figure 1).

Zone I consists mainly of all the developed residential sectors. It is the largest developed residential area. Zone II consists of the under-developed residential sectors. Zone III consists primarily of the Margalla Hills and Rawal lake. Zone IV is the largest in area. All sectors of Ghouri Town are located in this zone. Zone IV and V consist of Islamabad Park, and rural areas of the city. The Soan River flows into the city through Zone V

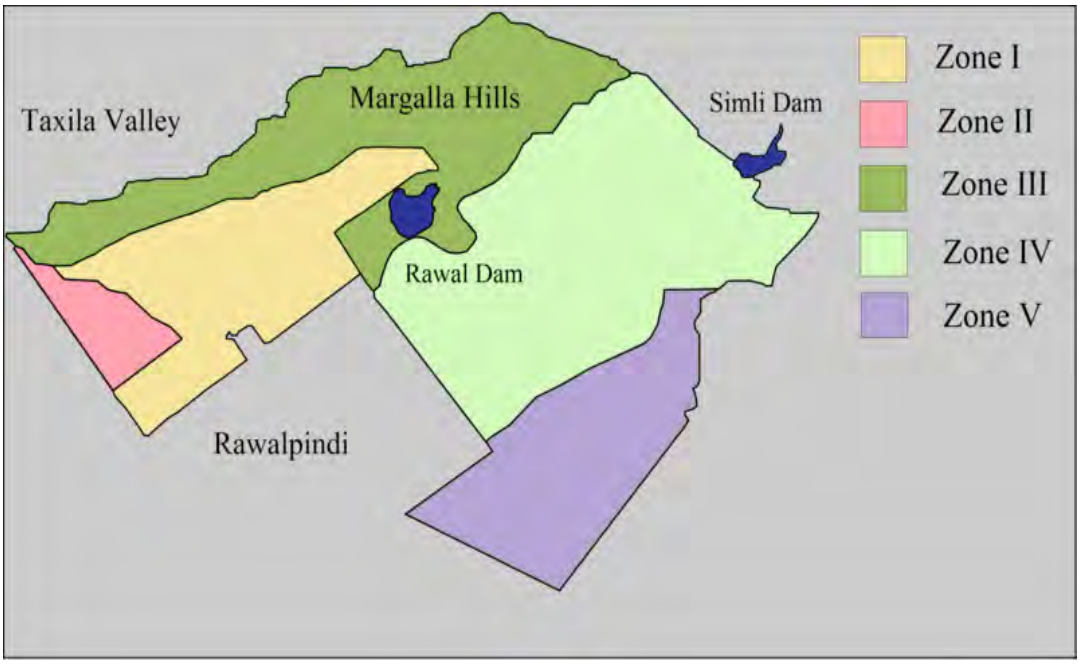


**Figure 1: Zones of Islamabad**

Multiple intricate factors contributed to the lack of progress in immunization rates, including limited access to services, lack of awareness among communities, low socioeconomic status, willingness of caregivers to seek vaccination for their children, and inadequate parental education. Additionally, gaps in the delivery of vaccination services pose challenges to the Expanded Program on Immunization. Furthermore, the program faces issues of inefficiency and sustainability which are attributed to the fragmented financial structure and suboptimal monitoring and evaluation system (Imran et al. 2018b). Challenges such as demographic growth, sociopolitical instability, poverty, financial constraints in procuring and distributing vaccines, and the strain on existing programs, due to budgetary constraints were among the key reasons. Moreover, the bureaucratic and inconsistent nature of international aid also played a role in hindering the improvement in immunization rates in many countered (Zerhouni 2019). Another contributing factors to the rise in vaccine-preventable diseases is the growing trends of parental refusal and hesitancy towards childhood vaccination, particularly among parents with higher levels of education. The rise of vaccine hesitancy poses a considerable public health challenge and has led to the re-emergence of vaccine preventable diseases in various Muslim majority nations. While multiple factors contribute to vaccine hesitancy, religious considerations hold particular importance in shaping individuals' attitudes and decisions regarding vaccination. In Saudi Arabia, over 80% of parents declined to provide consent for their children to receive the influenza vaccine (Otaif M. et al 2009). Similarly, vaccine refusal has emerged as a significant issue in developed countries like the United States, with approximately 70% of measles cases occurring in individuals who were eligible for vaccination, often driven by religious concerns (Phadke et al. 2016). In Malaysia, vaccine misconception among parents has been a major factor, fueled by

viral social media posts claiming that vaccines are a deliberate attempt to weaken the Muslim community(Alsuwaidi et al. 2023). This misconception has further deepened parental suspicion and mistrust towards vaccines(Ahmed et al. 2018). To achieve WHO`s expected target of a 95% vaccination rate, more flexible vaccine delivery platforms are needed targeting less-privileged people, especially in the context of the current economic crisis. The involvement of religious leaders in immunization programs plays a crucial role in increasing vaccine uptake among Muslim populations. Healthcare personnel and healthcare systems should be prepared to address these challenges in the following years.

**1.1 Rationale:**

Pakistan is a developing country having a population of 235 million and an estimated infant mortality rate (IMR) of 56.88/1000 live births. Children under 5 years of age comprise 21.5 million of the population. The EPI coverage is 80% for BCG, 77% for DPT, 65% for Polio, and a mere 54% for measles, which is 90% short of the World Health Organization`s target. During the last decade, EPI performance has been stagnant with only 40-60 percent of children receiving the vaccines age-appropriately and Vaccine-preventable diseases are still a major cause for the high infant and child mortality rates in Pakistan. EPI target diseases that contribute significantly to infant mortality, therefore, enhancing the EPI vaccination coverage can reduce this mortality rate. Literature shows very limited studies regarding this research in twin cities, so this study will focus on knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad**.**

## 1.2 Objectives:

- To measure knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.
- To measure association of Parents knowledge, attitude, and beliefs and acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

# CHAPTER 2

# LITERATURE REVIEW

# 2. Literature Review:

## 2.1 Background:

Vaccination is widely regarded as one of the safest and most reliable approaches to prevent diseases. Immunization serves as a protective measure against infectious diseases(Ayele, Deribew, and Woldie 2009). Childhood immunization continues to be recognized as one of the most impactful interventions, effectively reducing the morbidity and mortality associated with infectious diseases in children, all at a relatively low cost(Obasohan et al. 2018).Despite being proven and cost-effective public health strategy that enhances child survival, a significant number of children in low and middle income countries do not receive the complete set of vaccines as per their national routine immunization schedule, annually (Shaikh et al. 2018). Vaccination remains the most revered and criticized accomplishment in the fields of medicine and public health, not only in the present day but also since the era of Edward Jenner (1798).The concept of introducing a weakened form of a "disease" into a healthy individual faced criticism even before the discovery of vaccines (Parodi and Martini 2023).In 1978,The government of Pakistan launched the Expanded Program on Immunization (EPI), aiming to provide comprehensive immunization coverage. Over the years, the program has gradually introduced all the necessary antigens to protect against various diseases. The most recent addition to the immunization schedule in Pakistan is the inclusion of Rota virus vaccine(Imran et al. 2018c).

## 2.2 Global Achievement of Public Health:

Vaccines have emerged as a remarkable achievement in the field of public health, contributing significantly to the reduction of global child mortality rates. Since 2005,

there has been an average decline of 3.6% in the global child mortality rate (Wang et al. 2014). A study by Wang et al indicates that the implementation of various technological advancements including vaccines has played a pivotal role in driving these reductions in child mortality rates. The advancement of safe and effective vaccines against diseases that cause significant illness and death is a remarkable scientific achievement of the 21st century. Vaccination together with improved sanitation and access to clean drinking water has played a crucial role in enhancing global health outcomes. It is estimated that vaccines annually prevent around 6 million deaths from diseases that are preventable through immunization (Rodrigues and Plotkin 2020).

### 2.2.1 GAVI, The Vaccine Alliance:

GAVI, The Vaccine Alliance, established in 2000, operates as a Global Health Partnership with the primary objective of ensuring equitable access to new and underutilized vaccines for children residing in the most impoverished nations. Over the past few years, GAVI- The Vaccine Alliance has provided support to more than 33 countries in successfully incorporating rotavirus vaccine into their routine immunization program. Additionally GAVI has aided over 50 countries in introducing haemophilus influenza type b (hib) and Pneumococcal Conjugate Vaccine (PCVs) as part of their routine immunization efforts (Riaz et al. 2018).

GAVI focuses on expediting vaccine accessibility, enhancing health and immunization systems in countries, and introducing innovative immunization technologies. Over the years, GAVI`s efforts have led to the immunization of an individual 326 million children and the prevention of approximately 5.5 million potential deaths (Zerhouni 2019). However, A study by Wang et al in 2014 (Wang et

al. 2014) identified nine countries where child mortality rates were declining at a slower rate than expected. There has been a concerning rise in the number of vaccine-preventable diseases in several countries with predominantly Muslim populations. These diseases include polio, diphtheria, measles, tetanus, and pertussis. For instance, Pakistan experienced a significant rise in polio cases, with 91 cases reported in 2013, representing a 57% rise compared to the 58 cases reported in 2012 (Ahmed et al. 2018). Measles outbreaks have been observed in various countries including Pakistan, Malaysia, Nepal, Egypt, and Nigeria, there have been reports of 3,110 measles cases and 206 deaths related to the outbreaks recorded in year 2016. During the second half of the 20th century, vaccinations led to the control or even eradication of several vaccine-preventable diseases (VPDs) in Europe. However, outbreaks of VPDs continue to occur even in countries with well-established vaccination programs. Reasons include the existence of under-vaccinated populations, the increasing anti-vaccination movement, and the increasing movement of populations across borders. Ensuring adequate levels of herd immunity is the only reliable method for preventing epidemics and a re-emergence of VPDs (Wicker and Maltezou 2014).

**2.3 Challenges of Pakistan:**

In Pakistan, with a population of over 235 million people, children under the age of 5 years comprise 15% of the total population. Pakistan is one of the countries that have faced challenges in reducing childhood mortality rates. Between 2000 to 2013, the country reported an average decrease of 1.8% in childhood mortality. In 2013, the average childhood mortality rate was 75.8 deaths per 1000 live births. Additionally, Pakistan is among the three countries that have not yet achieved the eradication of poliovirus transmission (Imran et al. 2018c). Currently, under 5 Child mortality rate in Pakistan is 63.3 per 1000 live births the state (GBD 2019 Pakistan Collaborators

2023).During the last decade, despite efforts EPI performance has been stagnant with only 40- 60 percent of children receiving the vaccines age-appropriately (Butt et al. 2020), 90% short of the World Health Organization`s target (Natu et al. 2020). This lack of coverage has contributed to high rates of infant and child mortality in Pakistan, where vaccine-preventable diseases continue to be a significant cause of death (Qamar et al. 2020). The impact of unsuccessful immunization of the population of Pakistan on child mortality is a critical research area that is vital for the advancement of child healthcare (Ahmad et al. 2011). In Pakistan, this population accounts for 50% of the mortality rate as compared to the 8% overall mortality rate worldwide (Butt et al. 2020).

### 2.3.1 Infant and Under-five mortality Rate:

Pakistan is reported to have one of the highest rates of infant and under-five mortality in South Asia, with approximately 74 deaths per 1000 live births for infants and 89 deaths per 1000 live births for children under the age of five (S. Shahid et al. 2023). Vaccine-preventable communicable diseases play a substantial role in contributing to childhood morbidity and mortality, representing approximately 25% of childhood deaths. These diseases, when left uncontrolled, have significant impact on the health and well-being of children.

### 2.3.2 Unequal distribution of routine vaccination coverage:

A cross-sectional study was conducted using the WHO-recommended rapid coverage assessment method in 2014 by Riaz et al to investigate the reasons for non-vaccination and incomplete vaccinations among children in Pakistan. The study emphasized the unequal distribution of routine vaccination coverage both among and within surveyed districts. Total 18,474 households were included out of which 8400

children were analyzed for vaccination status according to eligibility criteria. The mean age of the children was reported $7.1 \pm 2.3$ months among which 51.6% were male. Households that were located close to the operational EPI center were 42%, located within 2-4 km were 34% and 23% were located more than 4km away from the EPI center. The study showed that the uptake of vaccination services among the surveyed population is influenced by multiple factors. Insufficient awareness regarding the importance of vaccination, concerns about potential side effects or reactions, and inadequate information about the process of delivering Expanded Program on Immunization (EPI) services were identified as contributing factors in the study. The reasons for non-vaccination and incomplete vaccination in Pakistan are multifaceted, encompassing barriers related to both demand for vaccination and the delivery of vaccination services. To achieve a substantial and lasting increase in routine vaccination coverage, it is essential to implement a comprehensive and coordinated strategy that addresses gaps in service delivery and concurrently enhances community demand and awareness (Riaz et al. 2018)

### 2.3.3 Vaccine Coverage and Subdistrict Inequalities:

A cross-sectional survey conducted in 2008 involved the random selection and interviews of parents with children aged 12 to 23 months to gather information about their child`s vaccination history. Utilizing secondary data such as GIS maps and population census, the vaccination coverage was mapped in relation to sociodemographic factors and the presence of lady health workers. The study revealed a significant disparity between the proportion of children who were reported to be fully immunized officially (85%) and the actual proportion observed in research, which was notably lower at 75%. The study identified disparities in vaccination coverage at the subdistrict level, with rates ranging from 58% to 85% in rural to urban

areas, and from 60% to 80% in lower to higher-income groups. These Findings highlight the presence of inequalities in access to immunization services based on geographic location and socioeconomic status. Statistically significant factors associated with immunization failure were distance to the immunization facility, parental unawareness, and misconceptions about immunization. These factors had a notable impact on the likelihood of children not receiving the necessary immunizations (Khowaja et al. 2015).

In Pakistan, over 50% of deaths in children are attributable to pneumonia, diarrhea and meningitis, which can be prevented through vaccination(Shaikh et al. 2018). Since the initiation of Immunization Program in Pakistan, there has been notable progress in the country`s immunization indicators. However, according to recent data, the coverage of full immunization for children aged 12-23 months was only 54%. Starting with a BCG coverage rate of 85%, the vaccine specific coverage in Pakistan experiences a decline, reaching 61% for measles immunization (Rabbani, F., Shaikh, B. T., & Mazhar, M. A. (2015). Furthermore, there is a significant drop observed in Pakistan`s immunization rates as children progress from receiving the first two doses of polio (90.2%) and DPT (76.8%) vaccines to receiving the third doses of the same vaccines (82% for polio and 62.5% for DPT). The coverage of vaccines shows a decline based on birth order in Pakistan. While the coverage for the first child stands at 64%, only 39% of children born in the order of six or more receive full immunization coverage (Kumar, Shaikh, and Ahmed 2012).

Immunization coverage in Pakistan exhibits notable regional disparities. The Islamabad Capital Territory has the highest percentage of coverage at 74%, followed by Punjab with 66% and Khyber Pakhtunkhwa with 53%. In contrast, Sindh province

records the lowest coverage at 29%, while Baluchistan province has the lowest coverage of all at 16%. There are evident disparities in immunization coverage among children based on the educational background of their mothers. Children of women with no education have a coverage rate of 40%, while children of literate mothers have a higher coverage rate of 74%. There is substantial contrast in the likelihood of full immunization among children based on their household`s wealth quintile. Children from households in the highest wealth group have a much higher rate of full immunization, reaching 75%. In comparison, children from households in the lowest wealth group have a significantly lower rate of only 23% for full immunization (Shaikh et al. 2018).According to World Health Organization (WHO), it is recommended to achieve a national immunization coverage rate of 90% and at least 80% for every district (WHO, U. (2020). Immunization coverage).

### 2.3.4 Impact of Parent's decisions about Childhood Vaccination:

The decisions made by parents regarding vaccination play a crucial role in boosting immunization rates, ensuring compliance, and preventing any potential vaccination errors knowledge (Alagsam and Alshehri 2019). The level of awareness and the practices adopted by parents in relation to immunization are the primary factors that significantly influence their decisions regarding vaccination (MacDonald et al. 2018). Evidence suggests that enhancing parent`s knowledge about vaccines has a positive impact on their vaccination status and can greatly influence the effectiveness of vaccination programs (Masika, Atieli, and Were 2016). Parent`s role as the primary and essential health decision-makers for their children means that their knowledge and attitude towards immunization significantly influence their children`s vaccination status (Douville et al. 2010) .In order to enhance parent`s awareness, it is essential

that healthcare providers furnish them with precise and comprehensive information regarding the risks and benefits associated with vaccines. Enhancing communication between parents and immunization providers is the most critical factor that influences parental practices. By providing communication, parent`s knowledge and attitudes regarding the benefits and risks of vaccines can be positively impacted (Salmon et al. 2008). Immunization has played a crucial role in reducing the occurrence of infectious diseases over the past few decades. Vaccination has demonstrated its effectiveness in preventing illness, disability and even death. Implementing the appropriate vaccines can significantly reduce both the financial burden of treatment and the incidence of disease, thereby enhancing the overall quality of life for children. Vaccination has been shown to lead to a substantial annual decrease in the mortality rate from infectious diseases, estimated to be between 2 to 3 million death (Chandir et al. 2018).

**2.4 Acceptability towards Childhood Vaccination:**

The acceptance of vaccines plays a crucial role in predicting the uptake of vaccinations, which holds significant implications for public health. Individuals who do not receive vaccines are at heightened risk of contracting diseases that could have been prevented through vaccination (Dyda et al. 2020).While ensuring access to vaccinations continues to be an ongoing challenge, acceptance of vaccines remains a crucial factor influencing their uptake. Acceptance is influenced by an individual`s emotions, attitudes, and beliefs regarding vaccination. A cross-sectional survey study was conducted in Saudi Arabia over a period of two months. The study involved 500 parents who had at least one child. The questionnaire consisted of four sections. The first section gathered demographic information such as age, education level, employment status and the number of children. The remaining three sections focused

on assessing the knowledge, attitudes, and practices of parents regarding vaccination. Results showed that higher KAP level was related to female gender, people residing in urban areas, and higher education level. There was a significant association observed between parents aged 31 to 40 years old and their level of knowledge ($p = 0.02$). There was a noticeable correlation having more than five children and the level of knowledge ($p = 0.04$). and attitude ($p = 0.03$) (Alagsam and Alshehri 2019).

### 2.4.1 Factors affecting the acceptability of Childhood Vaccination:

In a study conducted in 2010, Bangladesh, a number of predisposing and enabling factors were examined that influenced the acceptance of childhood vaccination coverage and reported inadequate full immunization coverage in Bangladesh. Differences were found in complete immunization coverage between urban and rural areas. One potential factor contributing to this phenomenon could be the unequal distribution of healthcare facilities across the country, with a tendency to concentrate more resources in urban areas. The variation in vaccination rates between rural and urban areas could also be attributed to a disparity in awareness regarding the significance of immunization among mothers residing in rural areas, as compared to their urban counterparts (Rahman and Obaida-Nasrin 2010). Bivariate and multivariate analysis consistently supported the significance of maternal education in relation to the acceptance of complete vaccination, aligning with the findings observed in previous studies (Phukan, Barman, and Mahanta 2009).

**2.5 Conceptual Framework:**

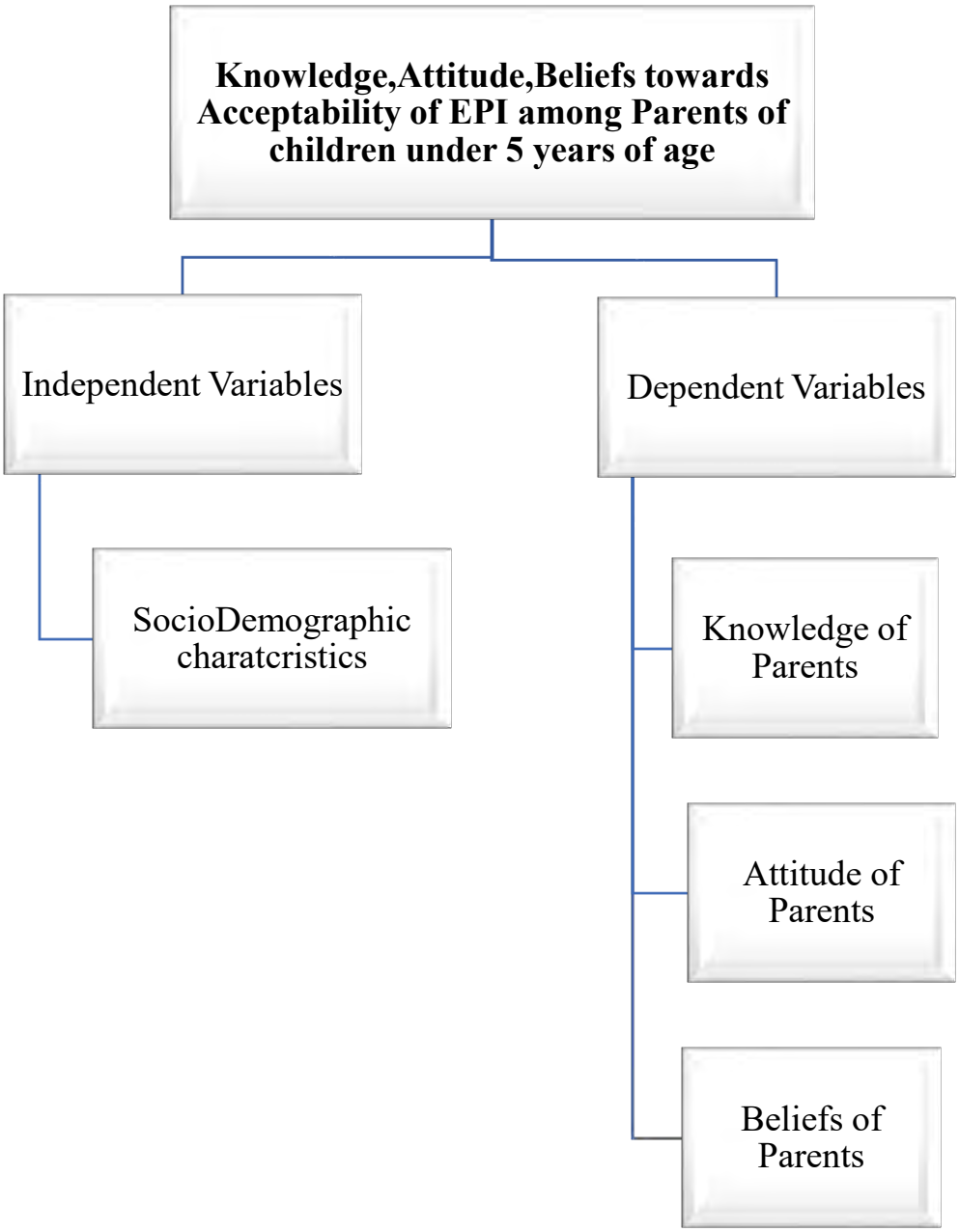


**Figure 2: Conceptual Framework**

## 2.6 Hypothesis:

### 2.6.1 Null hypothesis:

There is no significant difference between Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

### 2.6.2 Alternate hypothesis:

There is a significant difference between Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

## 2.7 Operational definitions:

### 2.7.1 Parent`s Knowledge:

Parental knowledge refers to the information and understanding that parents have about various aspects of child-rearing and child development, such as nutrition, health, safety, education, and emotional wellbeing. In this study, Parents knowledge about acceptability of vaccines is addressed, which can impact parenting practices and decisions.

### 2.7.2 Attitude:

The degree to which parents are willing to have their child receive a vaccination, as reflected in their verbal expressions of approval and disapproval. This may include factorssuch as parent`s willingness to follow vaccination schedules and their concerns about sideeffects.

### 2.7.3 Beliefs:

The cognitive acceptance or rejection of the efficacy, safety, risks and benefits and importance of vaccines in preventing infectious diseases as held by the parents is referredto as belief.

### 2.7.4 Acceptability towards Vaccines:

Acceptability towards vaccines refers to an individual`s willingness or readiness to receive vaccines, based on their beliefs, attitudes and perceptions about the benefits, risks and social norms of vaccination. High acceptability of vaccine is essential for achieving high vaccination coverage rates, which are necessary to control and eliminate vaccine- preventable diseases.

### 2.7.5 Expanded program on Immunization:

The expanded Program on Immunization (EPI) is a global initiative by World Health Organization, aimed at increasing access to routine immunization services and reducing the burden of vaccine preventable diseases, particularly in children of low and middle-income countries. The program includes vaccine of BCG (for tuberculosis), DPT (diphtheria, pertussis, tetanus), polio, measles and hepatitis B.

# CHAPTER 3

# METHODOLOGY

# Methodology:

## 3.1 Study Design:

A Descriptive Cross-Sectional Study was carried to assess Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad. Data will be collected one point in time and it will be primary research.

## 3.2 Study Duration:

This study was carried out during a period of six months after the approval of the Institutional Review Board i.e from March to August 2023.

## 3.3 Study Setting:

Five zones of Islamabad were selected for the study. Using lottery method of probability sampling technique, one zone was selected for the study. Sihala, a town and union council located in Islamabad capital territory, Pakistan, with a population of just over 25,000 is located in zone 5. The study was conducted in this area. It is geographically situated on Kahuta Road and Islamabad Expressway (Figure 3).


**Figure 3: Map of Islamabad**


**Figure 4: Zone 5 Islamabad**

### 3.4 Sample Selection:

#### 3.4.1 Inclusion Criteria:

- All parents residing in Rural Islamabad were included.
- Parents of one or more children less than 5 years of age.
- All parents who give consent to participate in the study.

#### 3.4.2 Exclusion Criteria:

- Parents who have children with congenital disorder, mental disorder and comorbidities were not included in this study.

### 3.5 Sample Size Calculation:

Sample size was calculated using Open Epi software. Hypothetical frequency of outcome variable was taken as 77.4% (Ahmad et al. 2011). Sample size obtained was 269.

### 3.6 Sampling Strategy:

Five zones of Islamabad were selected for the study. Using lottery method of simple random probability sampling technique, one zone was selected for the study, which was Zone 5. Sihala is situated in Zone 5. Desired sample from Sihala was collected using non-probability consecutive sampling strategy (Figure 5).

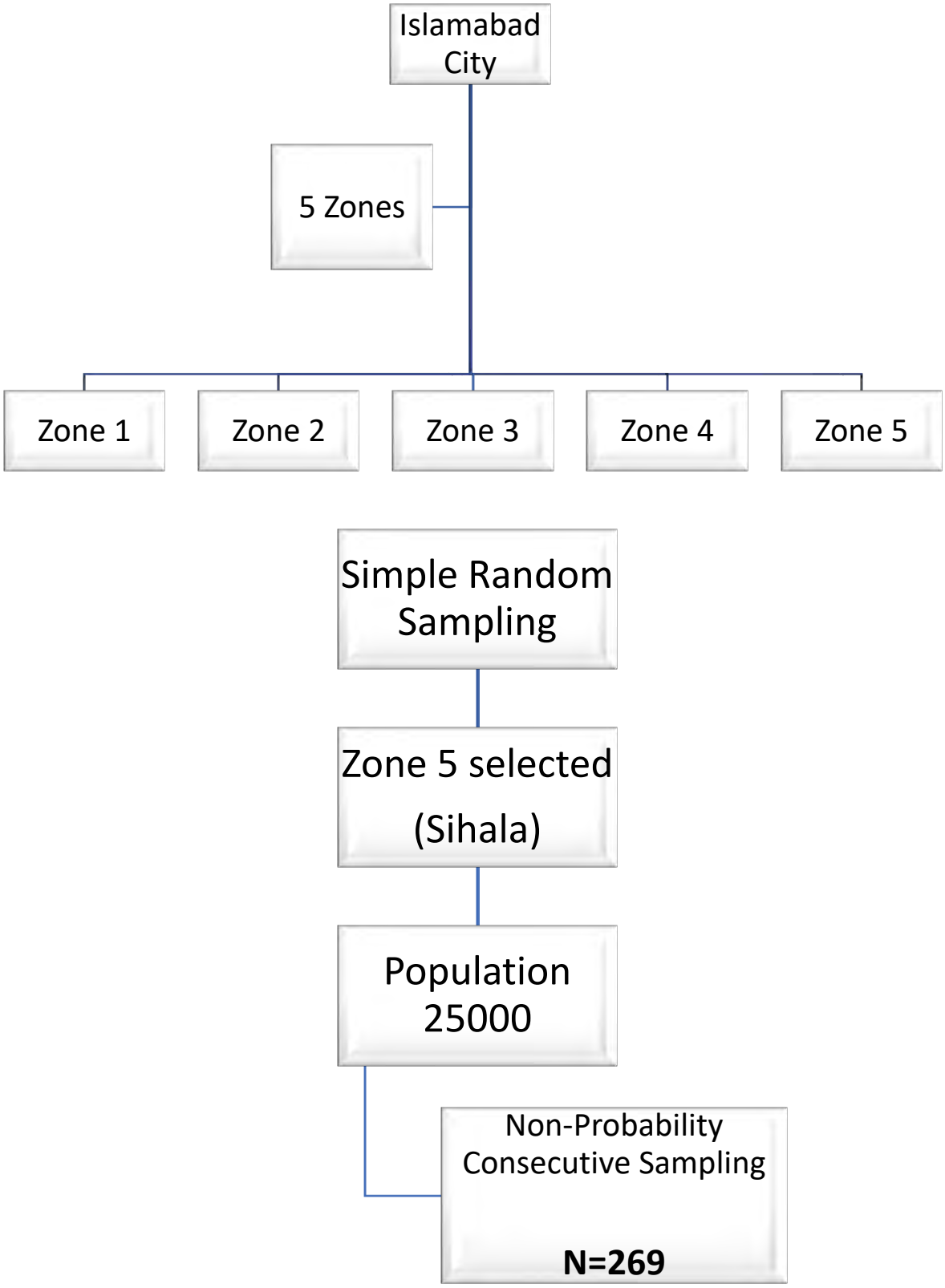


**Figure: 5 Sampling Strategy**

### 3.7 Data Collection Instrument:

Data was collected using a validated and interview-based questionnaire. The Vaccine Attitude Belief Behavior Survey (VABBS) tool was adapted for this study. VABBS is a tool designed to assess people`s attitude, beliefs, and behaviors towards vaccines. It includes questions that ask the importance of vaccines, confidence in vaccine safety and effectiveness, beliefs about vaccines, past experiences with vaccines and vaccine behavior. The scoring was done using 5-point Likert scale, scores of each participant were calculated by adding up the responses. A higher score on the VABBS indicate a more positive, attitude, belief towards vaccine.

| | **Scale** | **Cronbach`s Alpha** | **Number of Items** |
|---|---|---|---|
| **Reliability Statistics** | VABBS | 0.755 | 16 |

#### 3.7.1 Questionnaire Design:

#### 3.7.2 Content of the Questionnaire:

The questionnaire contained two major sections.

1. First part included questions about socio-demographic characteristics.
2. Second part of the questionnaire included questions from parents regarding knowledge, attitude and beliefs towards acceptability of Expanded Program on Immunization.

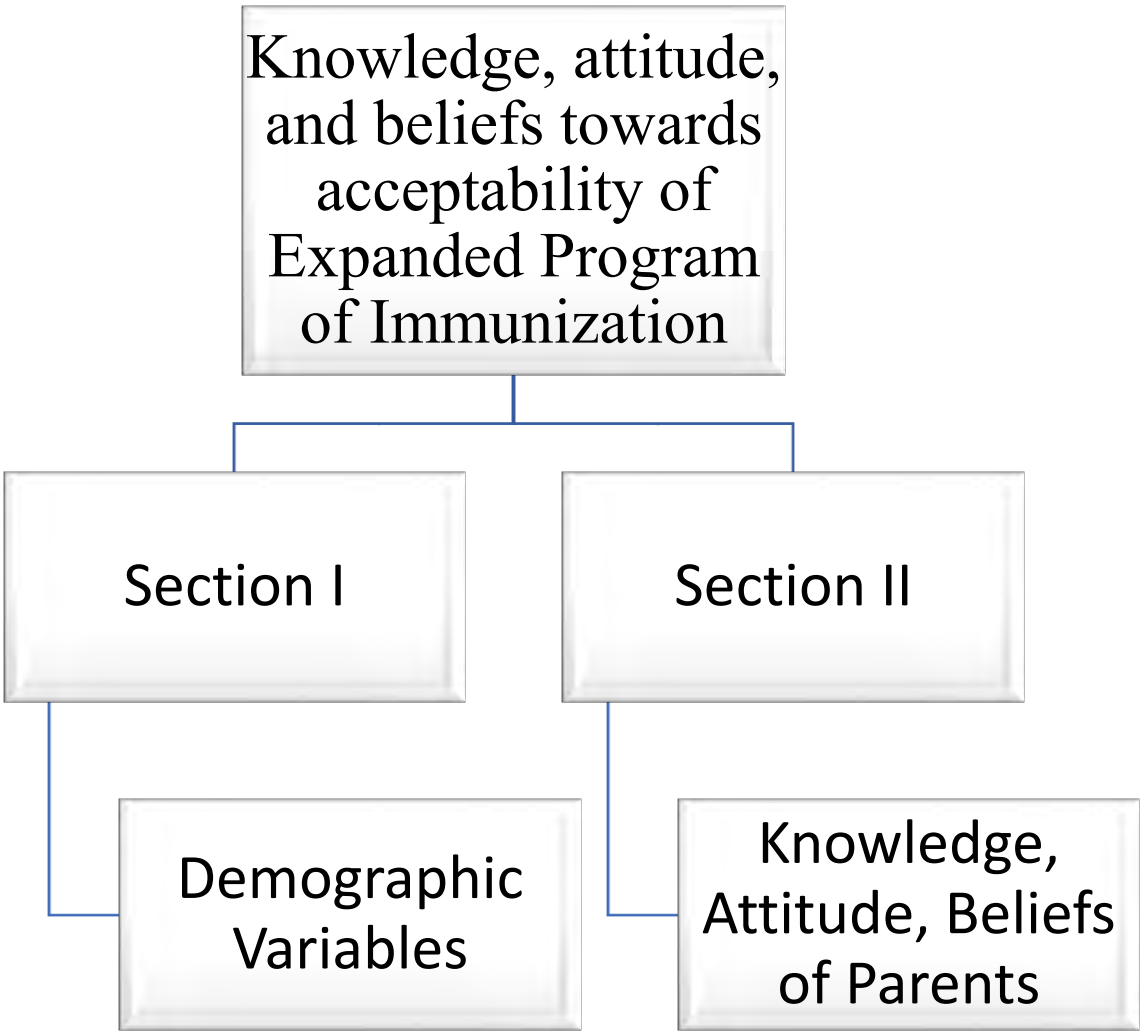


**Figure 6: Components of Questionnaire**

### 3.7.3 Study Variables:

#### 3.7.3.1 Outcome Variable:

The major construct of the questionnaire was to assess Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of children under 5 years of age residing in Rural Islamabad. The Outcome Variable is Parent`s knowledge, attitude and beliefs and includes questions about importance of vaccine, confidence in vaccine safety and effectiveness, beliefs about vaccines, past experiences with vaccines. The scoring is done using 5-point Likert scale, which assigns a value to each response ranging from 0 (Strongly Disagree) to 4 (Strongly Agree). Options for questions are “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly Agree”. These responses will be assigned values of 0,1,2,3,4 respectively. Higher score on scale indicates a more positive attitude, beliefs towards vaccination.

#### 3.7.3.2 Independent Variables:

The Performa included socio-demographic variables such as age of father, education level of father, occupation of father, father`s ethnicity, mother`s age, mother`s education, mother`s occupation, marital status, years since marriage, monthly household income, family composition, living arrangement, number of children, gender of children, primary caregiver of children, vaccination history.

### 3.8 Pilot testing:

Pilot testing was performed before starting the formal data collection procedure by including 10% of the actual sample size. Performa was tested for any future changes; no major changes were done after pilot testing. Data from pilot testing was not included in final analysis. Initially, it consisted of 41 items. However, two questions

were removed and some options were merged after the pilot study. Reliability statistics in terms of Cronbach alpha for 16 items was found to be 0.755. This study was done after interviewing almost 27 parents residing in Rural Islamabad.

### 3.9 Data Collection:

Data was collected using a validated and interview-based questionnaire. The vaccine Attitude Belief Behavior Survey (VABBS) tool was adapted for this study. VABBS is a tool designed to assess people`s attitude, beliefs, and behaviors towards vaccines. It includes questions that ask the importance of vaccines, confidence in vaccine safety and effectiveness, beliefs about vaccines, past experiences with vaccines and vaccine behavior. The scoring is done using 5-point Likert scale, which assigns a value to each response ranging from 0 (Strongly Disagree) to 4 (Strongly Agree). Options for questions are “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly Agree”. These responses will be assigned values of 0,1,2,3,4 respectively. Scores were computed for knowledge, attitudes and beliefs. Higher score on scale indicates a more positive attitude, beliefs towards vaccination. Scores ranging from 47 to 57 shows higher knowledge, scores from 37 to 46 shows moderate knowledge and scores 27 to 36 shows low knowledge towards acceptability of Expanded program of immunization.

Parents residing in Rural Islamabad having one or more children of age less than 5 years old were approached for data collection. Consent was taken orally from all the participants and only those participants were selected who agreed to take part in the research process and fulfill the inclusion criteria. After taking informed consent, the participants were interviewed and their responses were recorded by the researcher on the proforma.

### 3.10 Data Analysis:

Data was analyzed using Statistical Package for Social Science (SPSS) version 26. Data of qualitative demographic variables were entered in SPSS by using codes that were assigned to each category. Data of quantitative variables were entered in numerical form. Association between parents' knowledge, attitude and beliefs were calculated using Chi- Square test of association after confirming the assumptions. After applying the test, results were interpreted and represented using tables and figures. The independent categorical variables were represented in table with frequencies and percentages, while quantitative variables were provided with mean and standard deviation. A P-value of $\leq 0.05$ was considered statistically significant.

### 3.11 Ethical Considerations:

Before starting formal data collection, approval from Institutional Review Board (IRB) of Al-Shifa School of Public Health Rawalpindi, Pakistan was taken (Annexure-I). Permission letter from the Head of Department of Al-Shifa School of Public Health was obtained. Individuals were explained the purpose of the research and oral consent was taken from each participant (Annexure-3). Participants were assured for the confidentiality of their data. Data collected from the respondents was kept anonymous and was not shared with anyone. Data was entered in SPSS anonymously.

# CHAPTER 4

# RESULTS

# Chapter IV: Results

### 4.1.1. Descriptive Results

#### 4.1.1.1. Demographic characteristics

A total of 269 parents were included in this study. Among those, 75(27.9%) of the fathers were government employees and 194(72.1%) were doing private jobs, 8(3.0%) of them were illiterate, 116(43.1%) were graduated and 66(24.5%) had educational level of more than 18 years. Majority were Punjabi (n=162.60.2%) and 51(19.0%) belonged to Pathan families. Most of the mothers were housewives (n=151,56.1%) and majority of the mothers reported an educational level up to graduation (n=127,47.2%). Majority reported a household income of more than 100,000 (n=170, 63.2%). Majority of the families were living in joint families (n=153,56.9%) and (n=183,68.0%) had their own house. Mother of the child was the primary caregiver of the child in 90.3% of the respondents. Most of the parents (75.1%) reported 1 to 2 number of children with 50.2% having both male and female child. Hospital was reported as the main source of information about vaccination (84.0%) and 50.9% reported personal health reasons for the administration of vaccination to their child. Complete vaccination coverage was reported by 162(60.2%) of the respondents.

## Table 1: Demographic characteristics

| Sociodemographic Variables | Categories | Frequency(n) | Percentage (%) |
|---|---|---|---|
| **Occupation of Father** | Government service | 75 | 27.9 |
| | Private Service | 194 | 72.1 |
| **Education of Child`s Father** | Illiterate | 8 | 3.0 |
| | Matric | 10 | 3.7 |
| | Intermediate | 69 | 25.7 |
| | Graduate | 116 | 43.1 |
| | 18 Years or More | 66 | 24.5 |
| **Father`s Ethnicity** | Sindhi | 15 | 5.6 |
| | Urdu Speaking | 19 | 7.1 |
| | Punjabi | 162 | 60.2 |
| | Balochi | 3 | 1.1 |
| | Pathan | 51 | 19.0 |
| | Others | 19 | 7.1 |
| **Mother`s occupation** | Housewife | 151 | 56.1 |
| | Working woman | 118 | 43.9 |
| **Education of Child`s Mother** | Illiterate | 2 | 0.7 |
| | Matric | 29 | 10.8 |
| | Intermediate | 34 | 12.6 |
| | Graduation | 127 | 47.2 |
| | 18 years or more | 77 | 28.6 |

| | | | |
|---|---|---|---|
| Years since Marriage | <5 years | 67 | 24.9 |
| | 5-9 years | 131 | 48.7 |
| | 10-14 years | 40 | 14.9 |
| | 15 years or more | 31 | 11.5 |
| Monthly Household income | Less than 20,000 | 21 | 7.8 |
| | 20,000-50,000 | 35 | 13.0 |
| | 50,000-100,000 | 43 | 16.0 |
| | More than 100,000 | 170 | 63.2 |
| Family composition | Nuclear | 116 | 43.1 |
| | Joint | 153 | 56.9 |
| Living Arrangement | Rented house | 86 | 32.0 |
| | Own house | 183 | 68.0 |
| Primary caregiver of Child | Mother of child | 243 | 90.3 |
| | Grandmother | 26 | 9.7 |
| Number of Children | 1-2 | 202 | 75.1 |
| | 3-4 | 40 | 14.9 |
| | 5-6 | 27 | 10.0 |
| Gender of children | Male child only | 65 | 24.2 |
| | Female child only | 69 | 25.7 |
| | Male & Female | 135 | 50.2 |

| | | | |
|---|---|---|---|
| **From where you got information about vaccines?** | Hospital | 226 | 84.0 |
| | Newspaper | 8 | 3.0 |
| | Social Media | 14 | 5.2 |
| | Television | 6 | 2.2 |
| | Family and Friends | 15 | 5.6 |
| **What motivated you to get your child vaccinated?** | Personal Health reasons | 137 | 50.9 |
| | Professional Requirements | 68 | 25.3 |
| | Family and Friends Recommendation | 24 | 8.9 |
| | Others | 40 | 14.9 |

**Interpretation of Data:**

Out of 269 respondents, 226 (84%) of the respondents got information about vaccines from hospitals and 15(5.6%) of the respondents got the information from family and friends. Only 137(50.9%) got their child vaccinated due to personal health reasons and due to acceptability towards vaccines and 68 (25.3%) got their child vaccinated due professional requirements including travelling and school requirements. Among 269, 4(1.5%) of the parents did not vaccinate their children at all,103(38.3%) partially vaccinated their children and 162(60.2%) got their children fully vaccinated.

## Vaccination History:

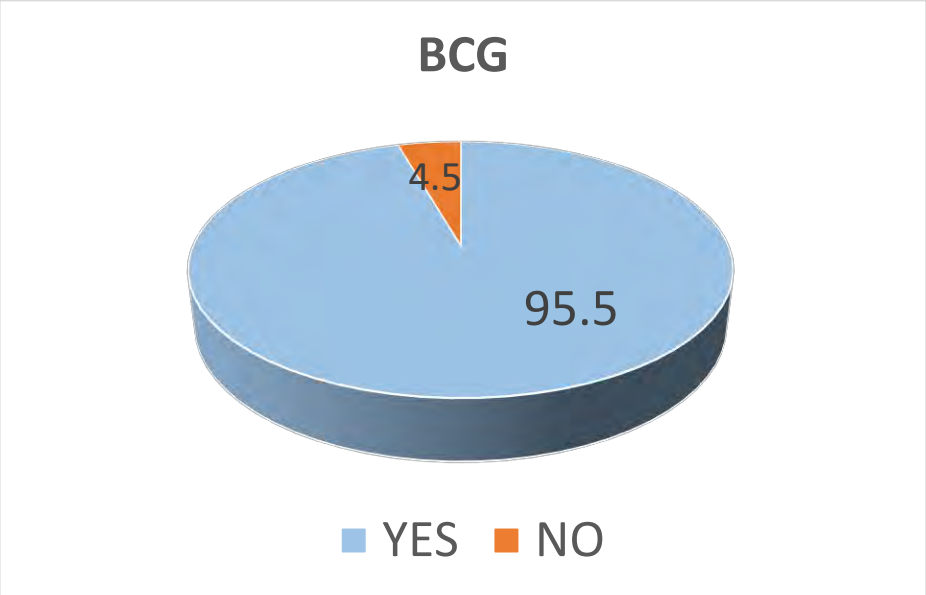


**Figure 7: History of BCG vaccine**

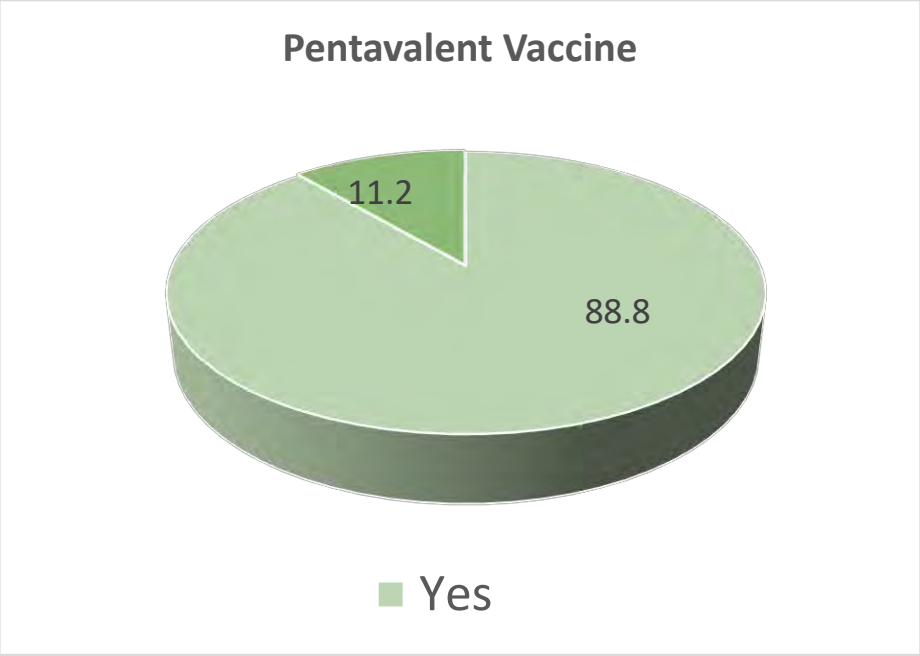


**Figure 8: History of Pentavalent Vaccine**

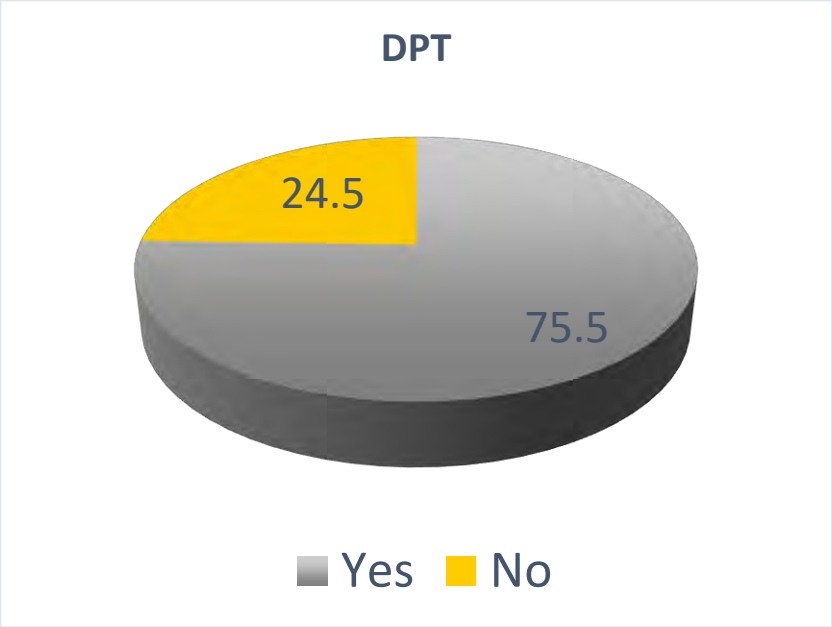


**Figure 9: History of DPT vaccine**

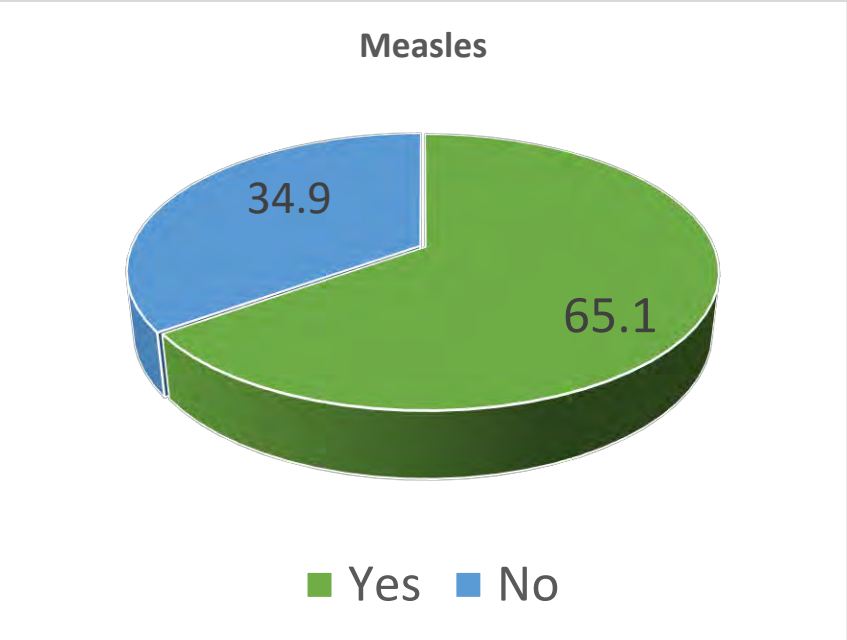


**Figure 10: History of Measles vaccine**

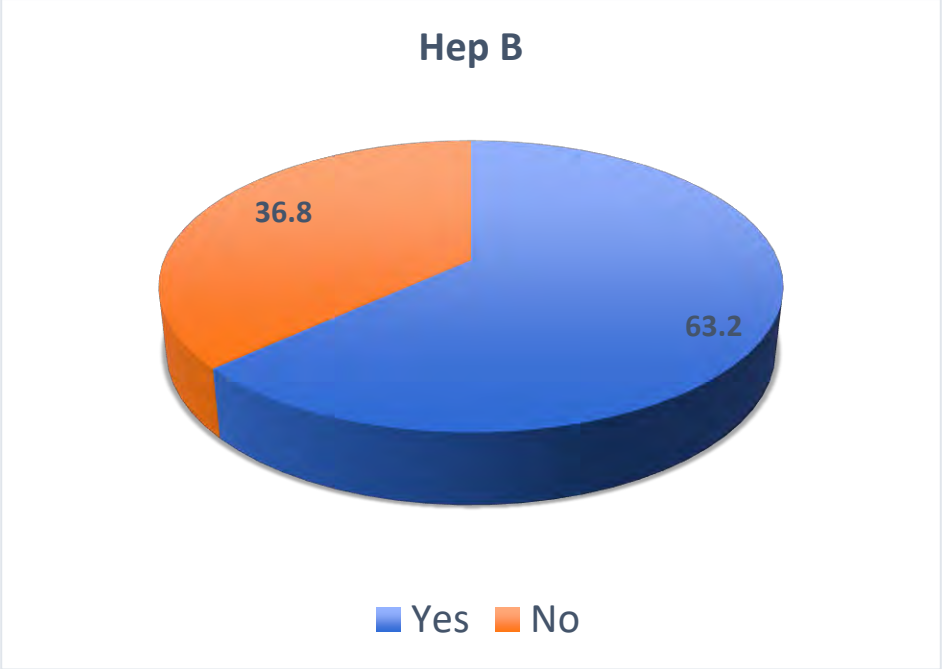


**Figure 11: History of Hep B vaccine**

**Table 2: Descriptive Results for vaccination coverage**

| **Vaccination Coverage History** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| Non-vaccinated | 4 | 1.5 |
| Partially vaccinated | 103 | 38.3 |
| Completely vaccinated | 162 | 60.2 |

## Table 3: Descriptive Results of Parent`s knowledge, Attitude and Beliefs

| | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Knowledge of Parents** | | | |
| **Vaccines are tested rigorously for safety before they are approved for use?** | Strongly Disagree | 19 | 7.1 |
| | Disagree | 44 | 16.4 |
| | Neutral | 24 | 8.9 |
| | Agree | 105 | 39.0 |
| | Strongly Agree | 77 | 28.6 |
| **Vaccines are cost-effective.** | Strongly Disagree | 10 | 3.7 |
| | Disagree | 53 | 19.7 |
| | Neutral | 62 | 23.0 |
| | Agree | 88 | 32.7 |
| | Strongly Agree | 56 | 20.8 |
| **Vaccines are important to protect the health of individuals and communities.** | Strongly Disagree | 5 | 1.9 |
| | Disagree | 6 | 2.2 |
| | Neutral | 9 | 3.3 |
| | Agree | 150 | 55.8 |
| | Strongly Agree | 99 | 36.8 |
| **Vaccines are safe to administer?** | Strongly Disagree | 5 | 1.9 |
| | Disagree | 33 | 12.3 |
| | Neutral | 16 | 5.9 |
| | Agree | 111 | 41.3 |
| | Strongly Agree | 104 | 38.7 |

| | | | |
|---|---|---|---|
| **I believe vaccines are necessary to protect the health of my child.** | Strongly Disagree | 5 | 1.9 |
| | Disagree | 14 | 5.2 |
| | Neutral | 7 | 2.6 |
| | Agree | 120 | 44.6 |
| | Strongly Agree | 123 | 45.7 |
| **If I get my child vaccinated, he will never get the disease.** | Strongly Disagree | 5 | 1.9 |
| | Disagree | 96 | 35.7 |
| | Neutral | 52 | 19.3 |
| | Agree | 82 | 30.5 |
| | Strongly Agree | 34 | 12.6 |

| | | **Frequency (n)** | **Percentage (%)** |
|---|---|---|---|
| **Attitude Of Parents** | | | |
| **I am confident in the safety of vaccines.** | Strongly Disagree | 26 | 9.7 |
| | Disagree | 12 | 4.5 |
| | Neutral | 22 | 8.2 |
| | Agree | 109 | 40.5 |
| | Strongly Agree | 100 | 37.2 |
| **It is important to get your child vaccinated?** | Strongly Disagree | 10 | 3.7 |
| | Disagree | 15 | 5.6 |
| | Neutral | 54 | 20.1 |
| | Agree | 92 | 34.3 |
| | Strongly Agree | 98 | 36.4 |

| | | | |
|---|---|---|---|
| **Vaccines are effective in preventing the disease?** | Strongly Disagree | 19 | 7.1 |
| | Disagree | 30 | 11.2 |
| | Neutral | 70 | 26.0 |
| | Agree | 82 | 30.5 |
| | Strongly Agree | 68 | 25.3 |
| **Vaccines are effective than other methods of disease prevention** | Strongly Disagree | 46 | 17.1 |
| | Disagree | 128 | 47.6 |
| | Neutral | 71 | 26.4 |
| | Agree | 24 | 8.9 |
| | Strongly Agree | 0 | 0 |

| | | **Frequency (n)** | **Percentage (%)** |
|---|---|---|---|
| **Beliefs of Parents** | | | |
| **Has your child ever received a vaccine?** | Yes | 254 | 94.4 |
| | No | 15 | 5.6 |
| **Have you heard negative information about vaccines** | Yes | 194 | 72.1 |
| | No | 75 | 27.9 |
| **Do you Believe negative information you hear about vaccines** | Yes | 51 | 19.0 |
| | No | 218 | 81.0 |
| **Have you ever had a negative experience with a vaccine** | Yes | 50 | 18.6 |
| | No | 219 | 81.4 |

| | | | |
|---|---|---|---|
| **I trust the advice of healthcare providers about vaccines** | Yes | 237 | 88.1 |
| | No | 32 | 11.9 |
| **Have you ever refused a vaccine that was recommended for your child** | Yes | 61 | 22.7 |
| | No | 208 | 77.3 |

**Transformation of Data:**

The data was computed using SPSS and divided into categories. Three variables were reverse coded during that. First category was low knowledge, attitude and behaviour towards acceptability of EPI ranging from 27 to 36. Second category was moderate knowledge ranging from 37 to 46 and third category was high knowledge, attitude and behaviour towards acceptability of EPI. Higher score on scale indicates a more positive attitude, beliefs towards vaccination.

**Table 4: Scores of Knowledge, Attitude, Belief towards acceptability of EPI**

| **Knowledge, Attitude, Belief towards acceptability of EPI** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| Score 27-36 | 15 | 5.6 |
| Score 37-46 | 138 | 51.3 |
| Score 47-57 | 116 | 43.1 |

### 4.2 Inferential Results:

The chi-square test of independence was applied to examine the association between sociodemographic variables and the Knowledge, Attitude, Belief towards acceptability of EPI among parents of children under 5 years of age. Results for each variable are shown in the following table:

**Table 5: Association of Sociodemographic Variables with Acceptability of EPI**

| **Sociodemographic Factors** | **Acceptability of EPI** | | | |
|---|---|---|---|---|
| | **27-36** (Low acceptability | **37-46** (Moderate acceptability) | **47-57** (High acceptability) | **Value(*df*)** ***p*-Value** |
| **Father`s Age** | | | | |
| 20-34 years | 15(16.1%) | 54(58.1%) | 24(25.8%) | 57.834(4) |
| 35-50 years | 0(0.0%) | 84(52.8%) | 75(47.2%) | |
| 51-65 years | 0(0.0%) | 0(0.0%) | 17(100%) | **(0.001)** |
| **Father`s occupation** | | | | |
| Government Service | 5(6.7%) | 30(40.0%) | 40(53.3%) | 5.325(2) |
| Private Service | 10(5.2%) | 108(55.7%) | 76(39.2%) | (0.07) |
| **Father`s Education** | | | | |
| Illiterate | 0(0.0%) | 8(100.0%) | 0(0.0%) | 60.564(8) |
| Matric | 0(0.0%) | 10(100.0%) | 0(0.0%) | |
| Intermediate | 0(0.0%) | 43(62.3%) | 26(37.7%) | **(0.0001)** |
| Graduate | 13(11.2%) | 63(54.3%) | 40(34.5%) | |
| 18 years or more | 2(3.0%) | 14(21.2%) | 50(75.8%) | |

| **Sociodemographic Factors** | **Acceptability of EPI** | | | |
|---|---|---|---|---|
| | **27-36**<br><br>Low acceptability | **37-46**<br><br>Moderate acceptability | **47-57**<br><br>High acceptability | **Value(*df*)**<br><br>***p*-Value** |
| **Father`s Ethnicity** | | | | |
| Sindhi | 5(33.3%) | 10(66.7%) | 0(0.0%) | 107.2(10)<br><br>**(0.0001)** |
| Urdu Speaking | 0(0.0%) | 14(73.7%) | 5(26.3%) | |
| Punjabi | 4(2.5%) | 108(66.7%) | 50(30.9%) | |
| Balochi | 0(0.0%) | 0(0.0%) | 3(100.0%) | |
| Pathan | 6(11.8%) | 4(7.8%) | 41(80.4%) | |
| Others | 0(0.0%) | 2(10.5%) | 17(89.5%) | |
| **Mother`s Age** | | | | |
| 20-34 years | 15(7.5%) | 103(51.2%) | 83(41.3%) | 31.3(4)<br><br>**(0.0001)** |
| 35-50 years | 0(0.0%) | 35(68.6%) | 16(31.4%) | |
| 51-65 years | 0(0.0%) | 0(0.0%) | 17(100.0%) | |
| **Mother`s Education** | | | | |
| Illiterate | 0(0.0%) | 2(100.0%) | 0(0.0%) | 44.9(8)<br><br>**(0.0001)** |
| Matric | 0(0.0%) | 21(74.20%) | 8(27.6%) | |
| Intermediate | 6(17.6%) | 3(8.8%) | 25(73.5%) | |
| Graduate | 9(7.1%) | 74(58.3%) | 44(34.6%) | |
| 18 years or more | 0(0.0%) | 38(49.4%) | 39(50.6%) | |
| **Mother`s occupation** | | | | |
| Housewife | 13(8.6%) | 73(48.3%) | 65(43.0%) | 6.2(2)<br><br>**(0.044)** |
| Working Woman | 2(1.7%) | 65(55.1%) | 51(43.2%) | |

| **Sociodemographic Factors** | **Acceptability of EPI** | | | |
|---|---|---|---|---|
| | **27-36** (Low acceptability | **37-46** (Moderate acceptability) | **47-57** (High acceptability) | **Value(*df*)** ***p*-Value** |
| **Years since Marriage** | | | | |
| <5 years | 6(9.0%) | 25(37.3%) | 36(53.7%) | 29.6(6) **(0.0001)** |
| 5-9 years | 4(3.1%) | 87(66.4%) | 40(30.5%) | |
| 10-14 years | 5(12.5%) | 12(30.0%) | 23(57.5%) | |
| 15 years or more | 0(0.0%) | 14(45.2%) | 17(54.8%) | |
| **Monthly Household Income** | | | | |
| Less than 20,000 | 5(23.8%) | 10(47.6%) | 6(28.6%) | 45.8(6) **(0.0001)** |
| 20,000-50,000 | 0(0.0%) | 27(71.1%) | 8(22.9%) | |
| 50,000-100,000 | 8(18.6%) | 15(34.9%) | 20(46.5%) | |
| More than 100,000 | 2(1.2%) | 86(50.6%) | 82(48.2%) | |
| **Family Composition** | | | | |
| Nuclear | 11(9.5%) | 59(50.9%) | 46(39.7%) | 6.1(2) **(0.046)** |
| Joint | 4(2.6%) | 79(51.6%) | 70(45.8%) | |
| **Living Arrangement** | | | | |
| Rented House | 8(9.3%) | 39(45.3%) | 39(45.3%) | 4.16(2) (0.125) |
| Own House | 7(3.8%) | 99(54.1%) | 77(42.1%) | |
| **Primary Caregiver of Child** | | | | |
| Mother | 13(5.3%) | 119(49.0%) | 111(45.7%) | 6.70(2) **(0.035)** |
| Grandmother | 2(7.7%) | 19(73.1%) | 5(19.2%) | |

| **Sociodemographic Factors** | **Acceptability of EPI** | | | |
|---|---|---|---|---|
| | **27-36** (Low) | **37-46** (Moderate ) | **47-57** (High) | **Value(*df*) *p*-Value** |
| **Number of Children** | | | | |
| 1-2 | 8(4.0%) | 120(59.4%) | 74(36.6%) | 35.2(4) **(0.0001)** |
| 3-4 | 7(17.5%) | 13(32.5%) | 20(50.0%) | |
| 5-6 | 0(0.0%) | 5(18.5%) | 22(81.5%) | |
| **Gender of Children** | | | | |
| Male child only | 6(9.2%) | 25(38.5%) | 34(52.3%) | 34.6(4) **(0.0001)** |
| female child only | 2(2.9%) | 56(81.2%) | 11(15.9%) | |
| Male and female | 7(5.2%) | 57(42.2%) | 71(52.6%) | |
| **From where you got information about Vaccine** | | | | |
| Hospital | 13(5.8%) | 110(48.7%) | 103(45.6%) | 11.9(8) (0.155) |
| Newspaper | 0(0.0%) | 4(50.0%) | 4(50.0%) | |
| Social media | 0(0.0%) | 8(57.1%) | 6(42.9%) | |
| Television | 0(0.0%) | 6(100.0%) | 0(0.0%) | |
| Family and Friends | 2(13.3%) | 10(66.7%) | 3(20.0%) | |
| **What motivated you to get your child vaccinated** | | | | 72.4(6) **(0.0001)** |
| Personal Health Reasons | 0(0.0%) | 67(48.9%) | 70(51.1%) | |
| Professional Requirement | 10(14.7%) | 44(64.7%) | 14(20.6%) | |
| Family or Friends | 0(0.0%) | 0(0.0%) | 24(100.0%) | |
| others | 5(12.5%) | 27(67.5%) | 8(20.0%) | |

**Table 6: Association of Vaccination Coverage with Acceptability of EPI**

| **Vaccine History** | **Acceptability of EPI** | | | |
|---|---|---|---|---|
| | **27-36** (Low) | **37-46** (Moderate) | **47-57** (High) | **Value(*df*)** ***p*-Value** |
| | | | | |
| Non-vaccinated | 0(0%) | 4(100.0%) | 0(0%) | 64.02(4) **(0.0001)** |
| Partially vaccinated | 11(10.7%) | 77(74.8%) | 15(14.6%) | |
| Completely vaccinated | 4(2.5%) | 57(25.2%) | 101(62.3%) | |

## Interpretation of Results:

The results of this study showed statistically significant association between sociodemographic variables and the knowledge, attitude, and behaviour towards acceptability of Expanded Program of Immunization among parents of children under 5 years of age. As age of father increase, acceptability towards vaccination increases (p-value=0.0001). Father`s of age group 35-50 years reported moderate (n=84,52.8%) to High (n=75,47.2%) knowledge, attitude, and behaviour towards acceptability of EPI. Educational level of father (p-value=0.000) was also significantly associated with acceptability of EPI. Father`s having education up to graduation showed moderate (n=63,54%) to high (n=40(34.5%) knowledge, attitude, and behaviour towards acceptability of EPI. Father`s having education of 18 years or more reported high (n=50,75.8%) knowledge, attitude, and behaviour towards acceptability of EPI.

Age of mother was also significantly associated (p-Value=0.0001) with knowledge, attitude, and behaviour towards acceptability of EPI. As age of mother increase, acceptability towards vaccination increases from moderate to high. Similarly, education of mother was also significantly associated (p-Value=0.0001) with knowledge, attitude, and behaviour towards acceptability of EPI. As education of mother increase, acceptability towards vaccination increases from moderate to high (n=39,50.6%). Mother`s occupation was also reported statistically significant(p-value=0.044). Only 2(1.7%) of the working woman reported low knowledge, attitude, and behaviour towards acceptability of EPI. Monthly household income was also reported statistically significant(p-value=0.0001). All people having income of more than 100,000 reported good (n=86,50.6%) to high acceptability (n=82,48.2%).

Results for association between Number of children and knowledge, attitude, and behaviour towards acceptability of EPI was statistically significant (p-value=0.0001). Parents with more number of children reported high scores of knowledge, attitude, behaviour towards acceptability of EPI while Parents with one or two children reported moderate scores in more number. Similarly, Parents with male and female child both reported high (n=71,52.6%) scores.

Occupation of father (p-value=0.07), living arrangement (p-value=0.125) and source of vaccination information (p-value=0.155) had statistically insignificant association with knowledge, attitude, and behaviour towards acceptability of Expanded Program of Immunization among parents of children under 5 years of age as shown in Table 5.

# CHAPTER V

# DISCUSSION

# Chapter V: Discussion

## Discussion:

This cross-sectional study assessed knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad. The results of the study reported significant association of father`s age (p-value=0.0001), father`s education(p-value=0.0001),mother`s age(p-value=0.0001), mother`s occupation (p-value= 0.044), mother`s education(p-value=0.0001), household income(p-value=0.0001),family composition (p-value=(0.046),number and gender of children(p-value=0.0001) with knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents.

In a study by Patel et al in 2017, it was observed that parental knowledge, attitude and practices regarding child vaccination have been recognized as among the most significant determinants for enhancing the immunization rate (Patel Trushitkumar et al. 2017). It was reported that majority of the respondents (71.7%) received information about vaccination from healthcare centers and healthcare providers. The prevalence of parents receiving immunization services from primary and secondary healthcare centers in rural areas may explain this trend. These areas are more easily accessible to the local population, making them a primary choice for healthcare services. As a result, health personnel working at the primary level play a crucial role in enhancing knowledge ad positively influencing attitudes of people towards immunization. Similarly in present study, maximum respondents received information about vaccine from hospitals 226(84.0%) and reported high acceptability towards EPI.

A study was conducted in 2009, with the aim to evaluate parental knowledge of childhood vaccination in Catalonia. A statistically significant association was found between maternal age>30 years and vaccination coverage. It was also found that the knowledge scores increased with increased maternal education (Borràs et al. 2009).A study was conducted in Hong Kong, 2023, to assess the factors associated with vaccination uptake among young children. Children who were the first child in the family ($p< 0.001$) , with higher household income($p = 0.016$),and children with mothers in older age groups were associated with a higher chance of taking an complete vaccination (Huang et al. 2023). Another study conducted in Saudi Arabia assessed knowledge, attitude and practice of vaccination among parents. Most of the parents (81.7%) were aged between 31-50years old. Maximum number of parents reported that childhood vaccination protects their children from serious disease (94.4%) and 67.4% reported that they were in favour of vaccination while others were hesitant about vaccinating their children and believed that other methods of prevention of disease were more effective. About 25% of the parents did not vaccinate their children which could be due to religious, cultural or ideological reasons. A positive association between knowledge, attitude and practice of vaccination among parents was seen with gender(p=0.042), educational status(p-value=0.017)and first child (p-value=0.013) (Alghamdi and Alghamdi 2023). A study conducted in Iraq also suggested that there is a positive association between acceptance of immunization and knowledge among parents about child vaccination (Qutaiba B Al-lela et al. 2014).Approximately 56.3% of the examined children(n=286) received all vaccination doses, indicating complete immunization. Moreover, 66.1% of the parents had adequate knowledge-practice (KP) scores. A statistically significant association was observed between the completeness of immunization and the total KP groups (p

<0.005). These findings were similar to the present study where parent`s age, educational status and income influences their attitude towards childhood vaccination. Out of 269 respondents, 41.3% agreed that vaccines are safe to administer while 38.7% strongly agreed to it, 82(30.5%) agreed that vaccines are effective in preventing the disease while 68(25.3%) strongly agreed to it. Only 24(8.9%) responded that vaccines are effective than other methods of preventing the disease, while 174 respondents reported that others methods are more effective. Among 162 respondents whose children were fully vaccinated, 101(62.3 %) reported high knowledge scores and 57(35.2%) reported moderate knowledge, attitude and behaviour scores. A study conducted in South Punjab region of Pakistan for the determination of knowledge, attitude and perceptions of mothers towards childhood immunization. It was reported that 50.80% of the parents had good knowledge, 42.40% of the parents had moderate knowledge and 6.80% of the parents had poor knowledge regarding childhood routine immunization. Also 86.40% had a positive attitude, 8.70% reported neutral attitude and 4.90% reported negative attitude. Immunization history showed that 67.40% of the children had complete immunization, 35.80% were partially vaccinated and 6.80% were non-vaccinated (Abbas et al. 2023).

A study conducted in Healthcare Center Gulu District, Uganda, reported that 73.7% of the respondents had insufficient knowledge of immunization. Majority of the mothers reported negative attitudes towards vaccination (53.4%) and 77.6% had poor practices towards vaccination. Mothers with educational level of secondary of higher were 4.28 times more likely to have knowledge as compared to illiterate mothers and male children were 3.67 times more likely to get vaccinated. Results of the study reported statistically significant association between knowledge attitude and practice

and educational status (p-value=0.003), marital status (p-value=0.008) and gender of the child (p-value=0.003) (Oloya 2023).Another study was conducted in Ghaziabad to assess the knowledge attitude and practice of mother`s towards childhood vaccination. Results showed statistically significant association between the age of the mothers (p-value=0.011), educational status of mother (p-value=0.001), occupation of mother (p-value=0.019) and knowledge regarding vaccination. Results were insignificant between socioeconomic status and knowledge regarding vaccination(p-value=0.065) (Singh et al. n.d.).The results of another cross-sectional study reported that majority of the mothers agreed to administer vaccination to their children (89.3%), were confident in safety of vaccines (53.1%), believed that vaccines protect their child from disease(90.1%),vaccines provide protection to children (56.1%), agreed that benefits of vaccines are more than the risks (86.6%).Nearly half of the mothers reported a neutral stance on the safety of vaccines (47.7%) and some reported that vaccines are made for commercial interests (46.3%).It was reported that there was a significant association between income and employment status with the knowledge and practices towards vaccination. Statistically significant association was also found between age of the mother (p-value=0.002) and knowledge about vaccination (Kyprianidou et al. 2023).Similarly, another study reported gender of child(p-value=0.001)and educational status of parents (p-value=0.03) were statistically significantly associated with parent` knowledge scores (Man Fung et al. 2023).

A cross sectional study in urban slums of Bangladesh was conducted to assess parent`s knowledge, attitude and practice regarding vaccination schedules and reasons for administering invalid vaccine dose. Out of the 456 respondents, 99.34% reported positive experience with vaccination services, indicating a high level of satisfaction.

Moreover, 95.83% reported that vaccinations significantly contributed to enhancing their children`s immunity. However, only 31.36% respondents reported accurate awareness about number of vaccinations offered by expanded program on immunization EPI. Merely 41.7% of the participants had knowledge about invalid vaccine doses, indicating a significant lack of understanding on this crucial aspect of vaccination (Sultana, Moniruzzaman, and Dey 2023).In present study, 218( 81.0%) of the respondents did not believe any negative information they heard about vaccines and 219(81.4%) never had a negative experience with vaccination dose indicating a high level of satisfaction towards acceptability of vaccination program.

In present study, 194(72.1%) of the respondents reported that they heard negative information about vaccines but only 51(19.0%) of the respondents believed the negative information. Maximum number of participants 219(81.4%) reported that they never had a negative experience with a vaccine. A study was conducted in 2008 about the effect of parent`s knowledge and attitude on childhood vaccination. The results showed that there was no association between parent`s knowledge and vaccination coverage rates. The public continues to accept vaccination even when their knowledge about it is limited (jeeta et al 2008).One evident factor is that parents who resist vaccination do so out of the desire to safeguard their children from potential harm. An example illustrating this occurred in 2003 when political and religious leaders in three Nigerian states refused to support a WHO polio vaccination campaign ,alleging that the vaccine led to sterility and AIDS (Streefland 2001).In Pakistan, followers of the Aga Khan were found to be open to ‘biomedical’ or ‘western’ medicines and principles, despite the fact that majority of this group had low levels of literacy and limited understanding of vaccination. Likewise, certain

Hindu and Muslim groups in India have maintained the belief that vaccination is a concealed strategy for family planning, with a particular focus on Muslims (jeeta et al 2008). These findings are in contrast to present study in which parent`s education, occupation and income had an effect on acceptability of vaccination.

# Chapter VI: Conclusion, Strengths and Limitations

**Conclusion:**

Sociodemographic factors such as father`s age and education, mother`s age and education, household income, family composition, number and gender of children were significantly associated with their knowledge, attitude and beliefs towards vaccination. Results emphasized the pivotal role of education in influencing parental perspectives. Improving health literacy and providing accurate information about vaccinations may lead to better acceptance and participation in immunization programs. Financial constraints influence access to healthcare services. Ensuring affordability and accessibility of vaccination services could help improve acceptance rates.

The study reveals that a significant majority of parents (60.2%) have ensured complete vaccination for their children. This is a positive finding as complete vaccination is essential for providing maximum protection against vaccine-preventable diseases. However, a substantial proportion of parents (38.3%) have only partially vaccinated their children, indicating a room for improvement in increasing the vaccine coverage and acceptance. A small percentage of parents 1.5% have not vaccinated their children at all which is a cause of concern as it indicated a potential risk of outbreaks of vaccine-preventable diseases among this vulnerable group.

## Strengths:

- Limited research is present in Islamabad, Pakistan regarding knowledge, attitude and beliefs towards acceptability of Expanded Program on immunization among parents of children under 5 years of age.
- This study may contribute to filling gaps in existing literature about knowledge, attitude and beliefs towards acceptability of EPI.
- A validated tool was used for this study and the study was conducted using well-structured questionnaire. This minimizes potential bias and ensures that the responses are reliable indicators of the participant`s perspectives.
- Thes study explored a range of variables to help the researcher identify potential correlations between socio-demographic characteristics and acceptability towards EPI.

## Limitations:

- It is a study of cross-sectional design, so it can provide only a snapshot of the relationship between parental knowledge, attitude and beliefs and acceptability of Expanded Program on immunization.
- The findings may not be representative of the broader population as it was conducted in one of the zones of rural Islamabad, so it may be challenging to generalize the results to individuals from different social, economic and educational backgrounds.
- Due to significant regional and contextual variations in factors, findings from one population cannot always be generalized or extrapolated to another.

# Chapter VI: Recommendations

Vaccination protects the children from vaccine-preventable diseases and contributes to community immunity safeguarding the vulnerable populations. Taking proactive steps to enhance your knowledge and acceptance of EPI can have a significant positive impact on the health and well-being of your child and the wider community. Based on the findings of this study, following recommendations seem relevant and important:

## 6. 1 For the Parents:

- Take the initiative to gather information about the Expanded Program on Immunization from credible sources such as reputable health organizations, government health departments, and healthcare providers. Educate yourself about the benefits of vaccination, potential risks, and the diseases vaccines can prevent.
- Discuss your concerns, questions, and doubts about vaccination with healthcare professionals. Be open to understanding their perspectives and evidence-based explanations to address any misconceptions or fears.
- Participate in workshops or seminars organized by health institutions or community-based organizations to learn more about vaccines and their importance. These events can provide valuable insights and facilitate discussions with experts and other parents.
- Connect with other parents who have got their children vaccinated and discuss their experiences. Peer support groups can provide reassurance and valuable

information that can positively influence your attitudes and beliefs about vaccination.

- Stay informed about the recommended vaccination schedule for your child. Take proactive steps to ensure your child receives all the necessary vaccines on time, as per the guidance of healthcare providers.
- If you have concerns or doubts about specific vaccines, openly discuss them with healthcare providers. Seek evidence-based information to help make informed decisions for your child's health.
- If you encounter resistance or doubts about vaccination from other family members, take the time to educate them about the importance of immunization and how it benefits both individual and community health.
- Understand and respect cultural and religious beliefs related to vaccination while also seeking ways to align them with evidence-based health practices. Engage with traditional and religious leaders who support immunization to gain a broader perspective.
- Share your positive experiences with vaccination and the importance of immunization with friends, neighbors, and community members. Advocacy can have a positive ripple effect and contribute to increasing acceptability of vaccines within the community.
- Continuously stay updated with the latest information about vaccines and any changes in the Expanded Program on Immunization. This will help you make informed decisions and maintain confidence in the vaccination process.

## 6.2 For the community:

- Organize community-wide public health awareness campaigns focused on vaccination. Utilize various channels to disseminate accurate and culturally sensitive information about the benefits of immunization.
- Collaborate with respected community leaders, including traditional and religious figures, to endorse and promote vaccination. Their influence and credibility can positively impact parental attitudes and beliefs towards immunization.
- Conduct workshops and informational events on vaccination within the community. Involve healthcare professionals to address concerns, answer questions, and provide evidence-based information to dispel myths and misconceptions.
- Encourage the formation of peer support networks where parents who have vaccinated their children can share their experiences and address concerns raised by other parents. This can create a supportive environment for vaccination discussions.
- Organize mobile vaccination clinics in underserved areas within the community to improve access to immunization services. These clinics can be especially beneficial for parents who face transportation or logistical challenges.
- Implement community-based incentive programs to recognize and reward parents who adhere to the vaccination schedule. These initiatives can motivate others to prioritize and value immunization.

- Conduct periodic surveys to assess parental knowledge, attitudes, and beliefs towards vaccination.

## 6.4 Way Forward:

Sustained efforts to educate communities about vaccination, using culturally sensitive messaging and evidence-based information, will help combat misinformation and build trust. Engage multiple stakeholders, including healthcare providers, community leaders, policymakers, educators, and parents, in a coordinated effort to support vaccination initiatives. Regularly monitor vaccination coverage rates and gather data on factors influencing acceptability. Develop targeted interventions to address vaccine hesitancy. Ensure equitable access to vaccines and vaccination services for all communities, including those in remote or underserved areas, by implementing mobile clinics and outreach programs. Utilize technology and social media to disseminate accurate information about vaccines and engage with the public proactively. Invest in research to understand the evolving factors influencing vaccine acceptability and identify innovative solutions to overcome barriers. By implementing these steps and committing to long-term efforts, communities and countries can make significant progress in increasing vaccine acceptance, protecting public health, and preventing vaccine-preventable diseases. The way forward involves collective action and a commitment to ensuring a healthy and protected population for the future.

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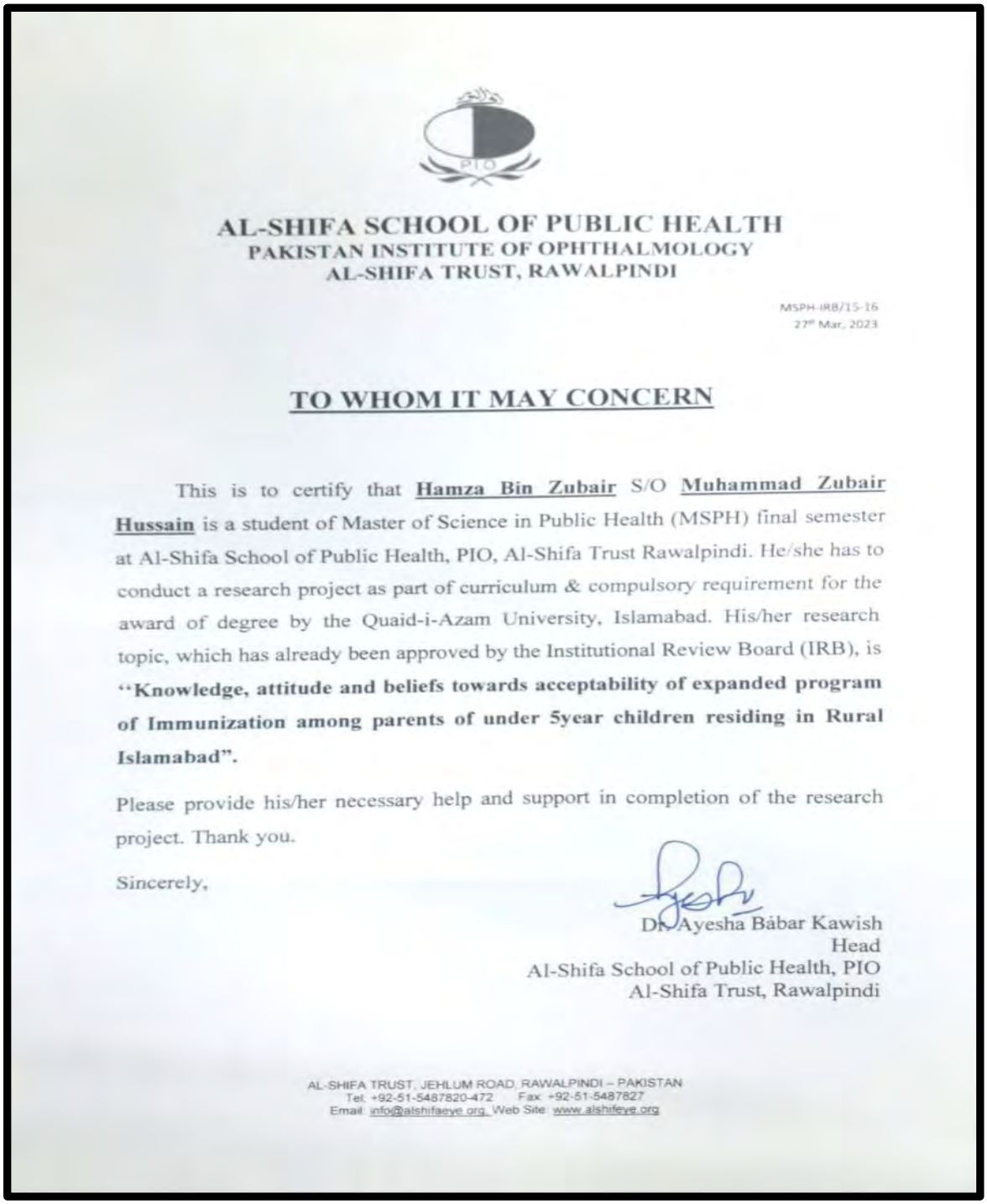
## ANNEURE I

## IRB letter



AL-SHIFA SCHOOL OF PUBLIC HEALTH
PAKISTAN INSTITUTE OF OPHTHALMOLOGY
AL-SHIFA TRUST, RAWALPINDI

MSPH-IRB/15-16
27th Mar, 2023

**TO WHOM IT MAY CONCERN**

This is to certify that **Hamza Bin Zubair** S/O **Muhammad Zubair Hussain** is a student of Master of Science in Public Health (MSPH) final semester at Al-Shifa School of Public Health, PIO, Al-Shifa Trust Rawalpindi. He/she has to conduct a research project as part of curriculum & compulsory requirement for the award of degree by the Quaid-i-Azam University, Islamabad. His/her research topic, which has already been approved by the Institutional Review Board (IRB), is **"Knowledge, attitude and beliefs towards acceptability of expanded program of Immunization among parents of under 5year children residing in Rural Islamabad".**

Please provide his/her necessary help and support in completion of the research project. Thank you.

Sincerely,

Dr. Ayesha Babar Kawish
Head
Al-Shifa School of Public Health, PIO
Al-Shifa Trust, Rawalpindi

AL-SHIFA TRUST, JEHLUM ROAD, RAWALPINDI – PAKISTAN
Tel: +92-51-5487820-472 Fax: +92-51-5487827
Email: info@alshifaeye.org, Web Site: www.alshifeye.org

## ANNEXURE II:

### Gantt Chart

| ACTIVITIES | March 2023 | April 2023 | May 2023 | June 2023 | July 2023 | August 2023 |
|---|---|---|---|---|---|---|
| **Topic Selection Literature Search** | | | | | | |
| **Synopsis and IRB approval** | | | | | | |
| **Pilot Testing** | | | | | | |
| **Data Collection** | | | | | | |
| **Data Analysis** | | | | | | |
| **Thesis Writeup** | | | | | | |
| **Thesis submission and Thesis Defense** | | | | | | |

# ANNEXURE III

## Proposed Budget

| Budget item | Transport | Stationery and Internet | Printing |
|---|---|---|---|
| Pilot Testing | 10000 Rs/- | 5000 Rs/- | 5000 Rs/- |
| Data Collection | 8,000 Rs/- | 5,000 Rs/- | - |
| Thesis write- up | 5,000 Rs/- | 5,000 Rs/- | 10,000 Rs/- |
| Total Expenditure<br><br>Grand Total | 23,000 Rs/-<br><br>53,000 Rs/- | 15,000 Rs/- | 15,000 Rs/- |

## ANNEXURE IV

## Informed Consent Form

**Title of study:**

Knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

**Principal investigator:**

Hamza Bin Zubair

MSPH student, Al-Shifa School of public health Rawalpindi.

**Purpose of this study:**

Pakistan is a developing country, having multiple challenges with estimated infant mortality rate (IMR) of 56.88/1000 live births. The vaccine coverage is 90% short of World Health Organization`s target. Vaccine preventable diseases are still a major cause for the high infant and child mortality rates in Pakistan. So, this study will focus on Parents knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization among parents of under 5 children residing in Rural Islamabad.

**Subject participation:**

Your participation will help the researcher to assess the knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization against Vaccine preventablediseases.

**Procedure:**

Data will be collected from parents using a questionnaire to collect demographic information, knowledge, attitude, and beliefs towards acceptability of Expanded Program of Immunization.

**Time required:**

It is anticipated that it will take approximately 15 to 20 minutes to complete the questionnaires.

**Voluntary participation:**

Your participation in this study is voluntary.

**Right to Withdraw:**

After you sign the consent form, you are still free to withdraw at any time and without giving a reason.

**Confidentiality:**

Data will be completely anonymous and reported in aggregate form.

**Risks:**

There are no significant risks associated with this study.

**Benefits:**

There are no direct benefits associated with participation in this study

**Payment:**

You will receive no payment for participating in the study.

**Contact information:**

If you have questions about the study, please contact the following individual:

Hamza Bin Zubair
xyz@gmail.com
0324-123456

Consent:

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw atany time, without giving a reason and without cost. I understand that I will be given a copyof this consent form. I voluntarily agree to take part in this study.

Name of Participant_____

Signature of Participant _____

Date_____(DD/MM/YY)

## Statement by the researcher/person taking consent:

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this Informed Consent Form (ICF) has been provided tothe participant.

Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date_____(DD/MM/YY)

## Annexure V:

## Questionnaire

1.Father`s age _____

2.Father`s occupation

- Government service
- Private service
- Unemployed

3.Father`s Education

- Illiterate
- Matric
- Intermediate
- Graduation
- 18 years or more education

4.Fathers' ethnicity

- Sindhi
- Urdu speakers
- Balochi
- Punjabi
- Pathan
- Afghan
- Others

5.Mother`s age_____

6.Mother`s occupation

- housewife
- working woman

7.Mother`s Education

- Illiterate
- Matric
- Intermediate
- Graduation
- 18 years or more education

8. Years since marriage

- < 5 years
- 5 - 9 years
- 10 - 14 years
- 15 - 19 years
- More than 20 years

9.Monthly Household income

- Less than 20,000
- 20,000-50,000
- 50,000-100,000
- More than 100,000

10.Family composition

- Nuclear Family
- Joint Family

11.LivinArrangement

- Rented house.
- Own house.

12.Number of children

- 1-2
- 3-4
- 5-6

13.Gender of children

- Male child only
- Female child only
- Male and female child

14.Primary care giver of child

- Mother of child
- Grand Mother of child
- Nanny
- Daycare center

15.History of death of children or sibling from infectious diseases.

- Yes
- No

16.BCG vaccine

- Yes
- No

17.Pentavalent vaccine

- Yes
- No

18.DPT vaccine

- Yes
- No

19.Measles vaccine

- Yes
- No

20.Hepatitis B

- Yes
- No

21.From where you got information about vaccines.

1. Hospital
2. Newspaper
3. Social media
4. Television
5. Family and Friends

22. what motivated you to get vaccinated?

- Personal health reasons
- Professional requirements
- Family or friend recommendation
- other

**SECTION II:**

| **Parent`s knowledge, Attitude and Beliefs towards acceptability of vaccines** | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly Agree** |
|---|---|---|---|---|---|
| 1.It is important to get your child vaccinated? | | | | | |
| 2.Vaccines are safe to administer? | | | | | |
| 3. Vaccines are effective in preventing the disease? | | | | | |
| 4. Vaccines are effective than other methods of disease prevention | | | | | |
| 5. I am confident in the safety of vaccines. | | | | | |
| 6. Vaccines are tested rigorously for safety before they are approved for use? | | | | | |
| 7-Vaccines are cost-effective | | | | | |
| 8. I believe vaccines are necessary to protect the health of my child. | | | | | |
| 9. Vaccines are important to protect the health of individuals and communities. | | | | | |
| 10. If I get my child vaccinated, he will never get the disease. | | | | | |

| | YES | NO |
|---|---|---|
| 11.Has your child ever received a vaccine? | | |
| 12. Have you heard negative information about vaccines. | | |
| 13. Do you Believe negative information you hear about vaccines ® | | |
| 14.Have you ever had a negative experience with a vaccine ® | | |
| 15. I trust the advice of healthcare providers about vaccines | | |
| 16. Have you ever refused a vaccine that was recommended for your child® | | |

# Annexure VI

## Expanded Program of Immunization

توسیعی پروگرام برائے حفاظتی ٹیکہ جات

# بچوں کے حفاظتی ٹیکہ جات کا شیڈول

بچوں کو پندرہ ماہ کی عمر تک چھ دفعہ
ویکسین دینے سے آپ انہیں
بارہ جان لیوا
بیماریوں سے محفوظ رکھ سکتے ہیں

| دورانیہ | عمر | ویکسین | | |
|---|---|---|---|---|
| پہلی دفعہ | پیدائش کے وقت | بی سی جی | او پی وی-0 | ہیپاٹائٹس-بی |
| دوسری دفعہ | چھ ہفتے | او پی وی-1<br>نیوموکوکل-1 | روٹاوائرس-1<br>پینٹاویلنٹ-1 | |
| تیسری دفعہ | دس ہفتے | او پی وی-2<br>نیوموکوکل-2 | روٹاوائرس-2<br>پینٹاویلنٹ-2 | |
| چوتھی دفعہ | چودہ ہفتے | او پی وی-3<br>نیوموکوکل-3 | آئی پی وی-1<br>پینٹاویلنٹ-3 | |
| پانچویں دفعہ | نو ماہ | *ایم آر-1<br>ٹائیفائیڈ | آئی پی وی-2 | |
| چھٹی دفعہ | پندرہ ماہ | *ایم آر-2 | | |


اپنے قریبی مرکز برائے حفاظتی ٹیکہ جات
سے **مفت ویکسین** لگوائیں

* نومبر 2021 میں خسرہ وبا سے بچاؤ کی قومی مہم چلائی جائیگی، جس کے بعد خسرہ
روبلا ویکسین کو بچوں کے حفاظتی ٹیکہ جات کے شیڈول میں شامل کیا جائے گا۔

# Annexure VII