

# POLIO IMMUNIZATION AND AWARENESS: A CROSS SECTIONAL STUDY IN SHANGLA AND SWAT DISTRICTS, PAKISTAN

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## ABSTRACT

**Objective:** To assess polio immunization coverage, awareness about polio & its vaccination and to find reasons of polio vaccination refusals in districts Swat and Shangla (the two conflict affected areas in recent past).

**Methodology:** This Cross-sectional descriptive study was carried out in Swat and Shangla districts, KPK, from January to July 2014. It was a door to door survey of 800 families selected by random sampling from four different localities of these two districts. Information gathered included educational status of both parents, number of children less than 5 years, polio vaccination history (both routine immunization and house to house approach) complete polio vaccination history, polio awareness level of parents and reasons of refusals to polio vaccination. Data collected was analyzed with SPSS version 21. Chi-square test was used to ascertain the association between various categorical variables and p value less than 0.05 was considered significant.

**Results:** There were total 1775 children in age group 0-5 years in the 800 households under study. The children, who got vaccinated against polio, were 1392 (78 %). Out of rest, 294 (16.5 %) had not been vaccinated against polio and the parents of remaining 89 (5%) children did not remember whether vaccination against polio was done or not. There was a significant association between educational status (minimum matriculate) of parents and polio vaccination ( $p=0.000$ ).

**Conclusion:** The present day situation of polio vaccination is encouraging in areas under research. Law and order situation, illiteracy and misperceptions about the vaccine should be addressed along with the capacity building of the health care staff as soon as possible through sincere coordinated efforts for complete eradication of polio by all concerned institutions.

**Key Words:** Polio, Vaccination, Education, Immunization, Low coverage

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## INTRODUCTION

Occurrence of vaccine preventable diseases has been reduced to a great extent around the globe over the past two to three decades. The credit goes to the global health initiatives in making its efforts towards the improvement in access to vaccines and bringing improvements in associated health systems<sup>1</sup>.

However, it is tragic to note that inspite of the availability of low cost vaccines, almost two million children still die each year from vaccine preventable diseases<sup>2</sup>. Coverage of childhood vaccination remains low in many developing countries despite all the efforts, including Pakistan<sup>2,3</sup>. Immunization coverage in South Asia has increased from approximately 5% in the 1970s to nearly 50% at present but still half of the children fail to get

immunized<sup>4</sup>. The Expanded Program on Immunization (EPI) was initiated by the World Health Organization (WHO) in 1974 to save the children from life threatening and disabling diseases<sup>5</sup>. This program was introduced in Pakistan in 1978.

In Pakistan, children under 2 years receiving all vaccines are only 54% of the total population, which is considerably lower in rural areas (48%) than in urban areas (66%) and around 6% of the children don't even get any EPI vaccine<sup>6,7</sup>. Expanded program on Immunization (EPI) coverage rates vary a lot in different provinces whereas FATA & Baluchistan being the worst with 38 % & 16 % coverage respectively<sup>7</sup>.

Forty-First World Health Assembly passed a resolution in May 1988, to eradicate polio, a vaccine prevent-

able disease, by the year 2000<sup>8</sup>. Polio was eradicated from all over the world except three countries including Pakistan<sup>6,7,9</sup>. In Pakistan, 220 cases of polio were reported till start of November 2014 and Pakistan has broken all previous records of polio cases<sup>10</sup>. In 2013, 85 cases of polio were reported (FATA: 60, KPK: 10, Sindh: 08 and Punjab: 07). Unfortunately, the prevalent pockets of polio in Pakistan happen to be in areas besieged with insurgency and conflict— “the war zones.” Despite all the efforts by the Government, Federally Administered Tribal Areas (FATA) have a serious law and order situation because of ongoing war on terror which has greatly hindered the polio vaccination, owing to lack of access for the polio vaccination teams<sup>7,9</sup>.

In order to improve the polio vaccination rates, the factors related to low vaccination coverage and acceptance should be recognized. The common factors which determine vaccine coverage in developing countries like Pakistan include parental awareness, education, religious beliefs/misconceptions, access to health services including vaccination, service provision issues such as poor relationship between staff and clients, lack of trust that whether the vaccine is safe, lack of motivation of EPI staff, corruption, absence of vaccinators, socio-economic position and law & order situation are important factors<sup>9,11,12</sup>. Unfortunately, law and order situation in Pakistan has been poor and many polio campaign team workers have been killed or being harassed<sup>13,14,15</sup>.

As long as a single child remains infected, children all over the world are at risk of contracting polio and we will not achieve the global goal of eradicating a disease. It is therefore important to understand the determinants and dynamics of low polio vaccination coverage affecting disease eradication initiatives. Therefore, the aim of this research is to elucidate the main factors of low polio coverage in KPK (Swat and Shangla) which hinder to achieve the full immunization coverage in the country. In this study, we also have tried to explore the knowledge, beliefs and practices of people about polio vaccination in population of Swat and Shangla (KPK). These two areas have been subject to the effects of terrorism in recent past but successful operation was carried out by military.

## METHODOLOGY

Swat and Shangla are two sister valleys with rugged topography, located in Khyber Pakhtunkhwa (KPK). The majority of people of these areas live in scattered houses over the hills with poor road access. The study was carried out in Swat and Shangla districts, from January to July 2014 through random multistage sampling. Two small towns of Shangla district (Shakowlai and Kuzpao) and two towns of district Swat (Matta and Khwazakhela) were selected.

A cross-sectional study design was used. A pre-tested structured questionnaire performa was used to collect the data.

A multistage random sampling method was used. To obtain a sample of households, a random sample of neighborhood blocks was taken from these towns. Within each of these blocks, random households were chosen. Families having children 0-5 years were selected and questionnaires were filled. The target population included parents/guardians of the children. Total number of 800 eligible household respondents' (families) participated in the study (400 houses from Swat and 400 from Shangla). The sample population involved all children in this age group in the selected households. The data was analyzed in SPSS 21, descriptive statistics were drawn for majority of the variables and for inferential statistics. Chi-square test was used to ascertain the association between various categorical variables. 95% confidence intervals (95% CI) and p value less than 0.05 was considered significant.

The houses having children between 0-5 years of age were included.

The selected families were enquired about number and age of children, and polio vaccination of each child. Knowledge/awareness of the selected population about polio was assessed through structured questionnaires. These questionnaires were in the native and national language for better understanding. The questions had different options as answers for the respondents to choose one. Data gathered through this procedure included demography of the study population, and the data/information about polio awareness and its vaccination in the population of Swat and Shangla.

## RESULTS

There were total 1775 children in the 800 families under study. Their age range was from 0-5 years. The age group distribution of children is shown in Table 1. The educational status of the parents also plays a vital role in polio awareness (p=0.000). Uneducated parents have little knowledge of prevention, treatment and its spread (p=0.001). Table 2 shows the percentage of respondents who correctly answered the polio awareness assessment performa questions.

Children under 5 years of age, who got vaccinated against polio, were 1392 (78%). Out of rest, 294 (16.5%) children had not been vaccinated against polio and the parents of remaining 89 (5%) children did not remember whether vaccination was done or not.

There was a significant association between the educational status of families and polio vaccination (p=0.000) as shown in Table 3. All those who were minimum matriculate were considered educated. Among

**Table 1: Age distribution of children**

Age	N	%age children	Vaccination status
0-11 months	587	33.1%	587 (100 %)
12-24months	403	22.7%	248 (61.5 %)
25-35 months	426	24%	289 (67.8 %)
36-59 months	359	20.23%	268 (74.6 %)
Total	1775	100%	1392 (78.4 %)

**Table 2: Knowledge assessment of population about polio**

Questions asked	Who answered correct(n)	%age
What is polio?	617	77.1%
What are symptoms of polio?	559	69.8%
Is there any cure for polio?	374	46.7%
How does polio spread from one to another?	68	8.5%
How can polio be prevented?	633	79.1%
Till what age, children are vaccinated against polio?	707	88.3%
How many times in a year, should a child take polio drops?	426	53.2%

**Table 3: Relation between Educational status and polio vaccination of families**

Education status of families	Polio vaccination of families			Total
	Who got all children polio vaccinated	Who did not get all children vaccinated	Who did not remember	
Only father educated	228	40	6	274
Both parents educated	118	0	0	118
Only mother educated	34	0	0	34
Uneducated families	226	116	32	374
Total	606	156	38	800
p value	p=0.000			

**Table 4: Reasons of polio refusals (in past)**

Reasons of not vaccinating	%age
Misbelief that polio drops are used for family planning	35.9%
Lack of knowledge about vaccination and its benefit	27.2%
Misconception that polio drops are harmful for growth or have side effects like diarrhea etc	13.6%
Lack of access (due to law and order, distance etc)	13.6%
Polio drops are against religion (religious taboos)	9.7%
Total	100%

the 800 families under study, only fathers were educated in 274 families, both parents were educated in 118 families, only mothers were educated in 34 families and rest 374 were uneducated families. Polio vaccination was cent percent in the families where both parents were educated and mothers were educated. In the families where only fathers were educated, 83.2% families (228 out of 274) got all children vaccinated, 14.6% didn't administer polio vaccination to children and the rest of 2.1% couldn't remember the vaccination history of their children. In the families of uneducated parents, 60.4% (226 out of 374) had got their children vaccinated, 31% (116 out of 374) did not administer polio vaccination to all children and 8.5% (32 out of 374) did not remember about the vaccination history of their children.

The main reasons for not vaccinating children against polio as shown in Table 4.

## DISCUSSION

This is the first study which has been conducted in Shangla and Swat to assess polio coverage, to explore knowledge of population about polio and to find the reasons of refusals to polio vaccination. Immunization coverage came out to be 78.4%. It is better than the coverage rate (68.4%) as shown in study carried out by Sheikh et al<sup>12</sup>. It is also more than the vaccination rates shown by studies done previously in our country i.e 44.8% and 48%<sup>4,16</sup>.

According to this study, the polio vaccination of children under five years age is very encouraging in Swat and Shangla districts as compared to some other parts of country (FATA and Baluchistan). This can be because of the better law and order situation after the recent operations which paved way for effective polio campaigns and their influence and abolishing/clearing any inaccessible areas for polio vaccination teams. Thus improvement in law and order situation has primary importance for the success of the national polio vaccination campaigns. Secondly the commitment and dedication of the health department in polio eradication can rightly be judged by increase in the number of vaccinated cases in the under study areas.

It was seen that there is a significant association between polio vaccination and educational status of parents ( $p=0.000$ ) as shown in Table 3. The vaccination of polio was cent percent in the families where both parents and mothers alone were educated. Similarly, association between education and polio awareness was also significant ( $p=0.001$ ). The educated families had better polio awareness and knowledge than uneducated families<sup>12</sup>.

Upon enquiring, the respondents/families gave different reasons of non-vaccination against polio. Among the important reasons were disbeliefs that polio drops

are involved in family planning, lack of knowledge, misconception of polio drops being harmful for growth or having side effects like diarrhoea, and accessibility issues caused by law and order situation and distances from vaccination centers etc. There were also religious refusals to polio vaccination in 9.7% cases.

## LIMITATIONS

Further research is required to fully judge the effectiveness of coverage in these areas and to evaluate the sustainability of this present setup/arrangement within the existing health service delivery system. We cannot generalize our results to those areas where we have more religious refusals and war on terror going on.

## CONCLUSION

The critical need for immunization against polio in Pakistan cannot be over-emphasized. The present day situation of polio vaccination is encouraging in areas under research except FATA and surroundings. Law and order situation, illiteracy and misperceptions about the vaccine should be addressed along with the capacity building of the health care staff as soon as possible through sincere coordinated efforts for complete eradication of polio by all concerned institutions.

Moreover, the support and supervision of the immunization service providers should be improved to ensure adequate and efficient service provisions at the health centers and hospitals. Additionally, logistics such as transport, equipment and materials should be enhanced to ensure adequate and quality provision of immunization services.

## RECOMMENDATIONS

Media (electronic and press) plays a vital role in enhancing awareness of the general population. Effective media campaigns can help a lot in achieving polio eradication by enhancing polio awareness and encouraging polio vaccination. Although the under-five polio coverage is good in these areas but a lot needs to be done to enhance knowledge, to address the misconceptions/religious beliefs about vaccine's contents and related risks. The efforts and involvement of nontraditional stakeholders (such as Muslim religious leaders) to overcome resistance to vaccination also has a vital role. Factors such as lack of security can be biggest challenge for implementing high-intensity communication and social mobilization programs for polio elimination in Pakistan.

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### CONTRIBUTORS

MAK conceived the idea, planned the study, and drafted the manuscript. SA helped acquisition of data and in manuscript writing. HBU did statistical analysis. All authors contributed significantly to the submitted manuscript.