A Description of the Factors Contributing to Polio Vaccination in Khyber Pakhtunkhwa, Pakistan

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Abstract

The current study aimed to explore various social factors contributing to refusal to polio vaccination. This study has been carried out in District Mardan, Khyber Pakhtunkhwa, Pakistan. This study focuses on finding the role of religious misperception, terrorism, lack of mobilization and lack of awareness and education in refusal to polio vaccination in the study area. The study is framed under quantitative research design. Stratified random sampling has been utilized for sampling and the information has been collected through structured interview schedule. The information has been analyzed in shape of tables (uni-variate) and cross-tables (Bi-variate).

Findings of the study are theorized into four dimensions; first, religious misconception is one of the important factors contributing to refusal to polio vaccination; second, terrorism and lack of security (e.g. Talibanization) leads to refusal to polio vaccination; third, lack of social mobilization significantly contributes to refusal to polio vaccination in the study area; fourth, lack of awareness and education in the study area is responsible for refusal to polio vaccination. Further, bi-variate analysis shows that religion misperceptions, terrorism, lack of mobilization and lack of awareness and education play a significant role in refusal to polio vaccination.

Key words: Polio, Social, Religious Misperceptions, Terrorism, Mobilization

1.1. Background of the Study

Low income countries are confronted to extremely high level of disease burdens. Fatal and devastating diseases such as diarrhea, Tuber Culosis, AIDS, Dengue and Polio leads to lower life expectancy, immature deaths and loss of valuable human resources. The most devastating aspect with regard to these diseases is the loss of children who are significantly affected. However, it is also evident that these diseases can be prevented and even treated (Dupas, 2011).

It is obvious that developing states are up to multiple health issues and challenges. For example, global diseases such HIV/AIDS, cancer, diabetes affects developing countries, and in addition with this, developing countries are confronted to local, geographical i.e. tropical diseases including malaria, dengue, waterborne illnesses as well as diseases born from unhygienic living environment due to poverty. In explanation, such a burden on health sector in developing world has two main characteristics; first, children and younger portion of the population is affected in higher ratio; second, such a situation leads to decrease in life expectancy and is a channel for creating significant burden on developing nation i.e. younger portion of population is a major source of earning for developing countries. These aspects has an implication, for instance, the absence of any proactive health behavior to prevent or treat these diseases, the likelihood of a child in a poor country living to the age of 5 and of an adult living to the age of 50 is significantly lower than in a rich country (World Health Organization, 2009).

Polio was one of the global health issues, which is a type of viral disease leading to paralysis particularly among children. However, with continuous and devoted efforts the disease has been eliminated almost globally except few countries like Afghanistan and Pakistan (WHO, 2010, 2011, 2014).

Literature indicates that socio-cultural setup is responsible factor of refusal to polio vaccination and failure in eradicating Polio from Pakistan and Afghanistan. In this context, first, lower level of literacy and education is an eminent factor which hinders polio elimination. It is evident that in Pakistan and in particular in rural Pakistan there is lack of literacy and education which leads to lower levels of awareness among parents and community. Such a condition does not allow organizations to work freely and receive support from community to vaccinate the communities properly and to eradicate deadly diseases like polio. Further, level of education affects parental perception which is important in the mentioned issue; the perception of illiterate

parents is significantly affected by rumors and mis-information hindering elimination of polio (Closser, 2011; Shahnaz, 2015, WHO, 2015). Second, lack of resource and low income is responsible for failure in refusing polio vaccination and eradicating polio from Pakistan, for example, government is unable to mobilize, support and fund organizations working for polio eradication. Low income does not allow government to facilitate i.e. provision of transport and salaries as well as to buy vaccine in order to speed up eradication activities (Cohen et al., 2011; United Nations, 2012). Third, religious barriers, misperception and conservatism are important to be considered while failing in eliminating polio from Pakistan and Afghanistan. For instance, religious leaders have announced Fatwa that polio vaccine contain *Haram* components and are design to boost sexual desires. Further, religious leaders are affiliated with Taliban who are against polio vaccination by arguing that vaccinators are the agents of CIA and other intelligence agencies and therefore have banned vaccination in FATA region (Khan, 2015; United Nations, 2012). Fourth, violence and terrorism are important indicators which didn't allowed organizations and government to eradicate polio, for instance, war as well as target killing of vaccinators are common example of the violence and terror situation leading to failure in eradicating polio (Khan, 2015; UN, 2012; WHO, 2010, 2014).

1.1.1. Global Efforts to Combat Polio

October 24 is devoted to world polio eradication day which is to aware the global community regarding the endemic and to increase the efforts to eliminate the diseases globally. World Health Organization (WHO); Rotary International; The United States centers for disease control; the United Nations Children's Fund (UNICEF); and, the Bill and Melinda Gates Foundation are key organizations and agencies working globally to eradicate the disease. So far, there are four countries which are still exposed to outbreak including Pakistan, Afghanistan, and Nigeria. These countries still pose threat to other countries due to modern flow of migration (Global Polio Initiative, 2015).

1.1.2. Efforts to Combat Polio in Pakistan

World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) are the two major international working organizations for polio eradication in Pakistan. These organizations work in collaboration with government of Pakistan, and basically are providing

funds to eliminate the menace (Global Polio Initiative, 2015). Besides, according to END POLIO (2016), the governmental strategy to eradicate polio is based on components including increasing quality of all polio eradication activities such as campaigns, AFP Surveillance and routine immunization; enhancing and increasing the programmatic access and reach; introduction of continuous community-protected vaccinations; performance evaluation, monitoring as well as increasing the accountability level; enhancing sero-conversion through targeted IPV introduction and expansion. However, so far organizations and government are unable to completely eradicate the menace.

1.1.3. Polio in Pakistan: Evidence through Statistics

According to official statistics site form Pakistan title as END POLIO in Pakistan (2016), there are a lot of polio cases reported and registered throughout Pakistan. For example, statics show that polio cases have been reported in Punjab, Sindh, Khayber Pakhtunkhwa, Balochistan, Azad Jammu Kashmir, Gilgit-Baltistan and Federally Administered Tribal Areas (FATA). During the span of 2009-2016, a total of 956 cases have reported and registered. Among these cases, 306 cases were only reported in 2014 while 198 in 2011. In 2016, 14 cases are registered so far, however, the statistics will rise at the end of the year. Among all the above mentioned areas, 335 cases are reported and registered in Federally Administered Tribal Areas (FATA) while second majority of cases i.e. 306 were registered in Khayber Pakhtunkhwa. In Sindh, a considerable amount while in Punjab only few cases were reported during the span of 2009-2016. However, Gilgit-Baltistan only 2 cases while in Azad Jammu Kashmir a single case has not been reported so far. For further details please see the table given below:

PROVINCE	2009	2010	2011	2012	2013	2014	2015	2016
PUNJAB	17	7	9	2	7	5	2	0
SINDH	12	27	33	4	10	30	12	4
KPK	29	24	23	27	11	68	17	7
FATA	20	74	59	20	65	179	16	2
BALUCHISTAN	11	12	73	4	0	25	7	1
GILGIT- BALTISTAN	0	0	1	1	0	0	0	0
AZAD JAMMU & KASHMIR	0	0	0	0	0	0	0	0
TOTAL	89	144	198	58	93	306	54	14

1.1.4. Risk of Polio in Khyber Pakhtunkhwa

END POLIO in Pakistan (2016) asserts that various districts in Khayber Pakhtunkhwa are at higher risk of increase and spread of polio cases. The following table includes information about various districts with higher, medium and lower level risk of polio (see the table below):

District	Risk	Target Population
Peshawar	High	754383
Bannu	High	155076
Tank	High	76966
Lakki marwat	Medium	153372
Mardan	Medium	360990

Swat	Medium	410830
Nowshera	Medium	272815
Kohat	Medium	195686
Charsada	Medium	273848
Torghar	Medium	39948
Hangu	Medium	115850
Dikhan	Medium	269775
Karak	Medium	118570

1.2. Statement of the Problem

Polio is one those viral diseases which is preventable, however, not curable. This notion makes the diseases to sound light but also terrifying. The disease is particularly dangerous for those children who are not vaccinated/immunized against the polio virus. In 1988 about 388,000 cases were registered throughout the world which was quit an alarming rate. Therefore, global community through the forum of World Health Organization started efforts to reduce and eliminate the menace of polio. As a result of efforts of global community through WHO resulted in decrease of polio cases throughout the globe. By 2001, cases of Polio had decreased by 99% and by 2012; Polio was endemic in only three countries; Pakistan, Nigeria and Afghanistan (Global Emergency Action Plan, 2012).

It is important to mention that the prevalence of viral diseases such as Polio is common in Muslim countries and regions. Therefore, researches indicate that there are numerous cultural and religious barriers to eliminate polio from Muslim-majority countries and regions. The campaigns have been further marred with violence and controversy making it difficult to achieve success (MADE in Europe Project, 2015). With reference to the socio-cultural barriers to polio eradication religious misperception, dogmatic beliefs, lack of awareness and education, lack of

resources, violence, terrorism and poor sanitation are the key aspects which leads to refusal to polio vaccination and the elimination of Polio from Pakistan (Closser, 2011, World Health Organization, 2009, 2010, 2014; Shackle, 2013).

The current study is an effort to highlight the socio-economic and religious aspects which create an environment whereby parents refuse to vaccinate their children against polio in District Mardan, Khayber Pakhtunkhwa, Pakistan. The study will be a valuable addition to the literature whereby it will highlight the key aspects in polio refusal and barriers to polio eradication on local basis, and will provide the research community with the real depth of the problems as well as policy implications.

1.3. Objectives of the Study

- To know about the role of religious misperceptions in refusal to polio vaccination
- To describe the impact of terrorism on refusal to polio vaccination
- To investigate into the role of lack of mobilizing the community in refusal to polio vaccination
- To highlight the role of lack of awareness and education in refusal to polio vaccination

1.4. Methodology

This study has been carried out in District Mardan, Khyber Pkhatunkhwa, Pakistan. District Mardan includes in one of the vulnerable areas to polio in Pakistan. For sampling, firstly, the population has been divided into two stratas e.g. strata of public or parents and strata of vaccinators. Second, purposive sampling technique has been utilized to select sample from target population. Purposively 50 vaccinators and 150 parents were selected for data collection comprising a total of 200 respondents. Further, an interview schedule has been utilized as a tool for data collection containing socio-demographic portion and portion related to the issue on three level scale (e.g. yes, no and uncertain). The collected data has been analyzed through statistical packages for social sciences (SPSS). The data has been presented in descriptive form as well as cross tabulation form where percentages will be presented in categories of not at all, to some extent and to greater extent. Additionally, chi square test has been applied to test the association between the various variables.

1.5. Data Analysis**Table no. 01: Socio-demographic Information of Respondents**

Gender	Frequency	Percentage
Male	229	68.35
Female	106	31.65
Age	Frequency	Percentage
18-30	79	23.58
31-42	102	30.44
43-54	99	29.55
55 and above	55	16.41
Family type of respondents	Frequency	Percentage
Extended	16	4.77
Joint	196	58.50
Nuclear	123	36.71
Marital status of respondents	Frequency	Percentage
Married	280	83.58
Unmarried	55	16.42
Educational level of Respondents	Frequency	Percentage
Illiterate	19	5.67
Primary	100	29.85
Matric	61	18.20
Intermediate	90	26.86
Bachelor	41	12.23
Masters and above	24	7.16

The above table includes many portions such as age wise distribution, gender wise distribution of respondents, and marital and educational status of respondent along with income

level and profession of the respondents. Gender wise distribution is mentioned in the first portion whereby 229 (68.35) were male while 106 (31.65) were female. Second, age wise distribution of respondents is mentioned in the table whereby 79 (23.58) respondents were in the age category of 18-30 years; 102 (30.44) respondents belonged to age category of 21-42 years; 99 (29.55) respondents were in the age category of 43-54 years while 55 (16.41) respondents were aging 55 years and above. Third portion of the table is based on the information regarding family type of respondents. In this regard, 16 (4.77) respondents were living in extended family system; 196 (58.50) respondents were living in joint family system while 123 (36.71) respondents were living in nuclear family system. Fourth, marital status of respondents has been mentioned in the table. In this connection, 280 (83.58) respondents were married while 55 (16.42) respondents were unmarried. Fifth, educational level of respondents has been given in the table. In this context, 19 (5.67) respondents were illiterate; 100 (29.85) respondents were education up to primary level; 61 (18.20) respondents were educated up to matric level; 90 (26.86) respondents were educated up to intermediate level; 41 (12.23) respondents were educated up to bachelor level; and, 24 (7.16) respondents were educated up to Masters above level.

1.5.1. Uni-variate Analysis

Religious misperceptions and refusal to polio vaccination

Religious misconception is one of the eminent factors contributing to perception building among public about polio vaccine. In this regard, the following table is an explanation that how and why religious misconceptions develop the perception of people about polio vaccine. 176 (52.5 %) respondents said yes to the statement that people perceives that polio vaccination is a conspiracy against Islam, 149 (44.5 %) respondents said there is no such perception while only 10 (3 %) respondents were uncertain. Further, 270 (80.6 %) respondents stated that religious leaders issued Fatwa against polio vaccination, 45 (13.4 %) respondents stated that there is no Fatwa issued against polio vaccination, and 20 (6 %) respondents were uncertain. 329 (98.2 %) respondents said yes to the argument that polio vaccines contain *Haram* components, 5 (1.5 %) respondents said no while only 1 (0.3 %) respondent was uncertain. In addition to it, a higher number of respondents such as 312 (93.1 %) respondents viewed that polio vaccination is mean of controlling population, however, 14 (4.2 %) respondents negated it, and 9 (2.7%) respondents were uncertain. 251 (74.9 %) respondents said yes to the statement that polio vaccination is an

international conspiracy, 41 (12.2 %) respondents replied with no while 43 (12.8%) respondents were uncertain about the statement. Lastly, 92 (27.5 %) respondents agreed that polio vaccination is banned by Taliban and religious organization while 213 (63.6 %) respondents disagreed and 30 (9 %) respondents were uncertain.

S. No	Statements	Yes	No	Uncertain
1	Polio vaccination is a conspiracy against Islam	176 (52.5%)	149 (44.5%)	10 (3.0%)
2	Religious leaders issued Fatwa against polio vaccination (e.g. it contains <i>Haram</i> components like meat of pork, chemicals to intensify sexual arousal among female, and HIV virus	270 (80.6 %)	45 (13.4 %)	20 (6 %)
3	Polio vaccination is mean of controlling population	312 (93.1%)	14 (4.2%)	9 (2.7%)
4	Polio vaccination is an international conspiracy	251 (74.9 %)	41 (12.2 %)	43 (12.8%)
5	Polio vaccination is banned by Taliban and other religious extremist groups	92 (27.5%)	213 (63.6%)	30 (9%)

Terrorism and Refusal to Polio Vaccination

Violence and terrorism pave way for many social issues in Pakistan whereby it significantly affects required activities as well including routine vaccinations. Polio vaccination is affected by violence and terrorism in the study area whereby the following table is an explanation for it. 46 (13.7 %) respondents said yes that they hesitate to vaccinate because of the fear of death or terrorism, 287 (85.7 %) respondents said no while only 2 (0.6 %) respondents were uncertain. 163 (48.7 %) respondents opted for yes that there is danger for families as well in process of polio vaccination, 157 (46.9 %) respondents said no to it while 15 (4.5 %) respondents were uncertain. 38 (11.3%) said yes that they received threats from terrorists, however, 272 (81.2%) respondents did not received threats from terrorist organizations while 25 (7.5%) were uncertain about it.

S. No	Statements	Yes	No	Uncertain
1	You hesitate to vaccinate because of the fear of death or terrorism	46 (13.7%)	287 (85.7%)	2 (0.6%)
2	There is danger for families as well	163 (48.7)	157 (46.9%)	15 (4.5%)
3	You received threats from terrorists	38 (11.3 %)	272 (81.2%)	25 (7.5%)
4	There is opposition to polio vaccination within the community	304 (90.7%)	25 (7.5%)	6 (1.8 %)
5	You do not like to target your village due to polio vaccination	61 (18.2 %)	274 (81.8 %)	0 (0 %)

Lack of Mobilization and Refusal to Polio Vaccination

Mobilization is an important step while conducting any social activity within community. The following table is an exploration of lack of mobilization of community during vaccination process. 157 (46.9%) respondents said that they have been contacted before polio vaccination campaign, however, 148 (44.2 %) respondents were not contacted in order to vaccinate their children against polio while 30 (9 %) respondents were uncertain. Further, 210 (62.7 %) respondents replied with yes to the statement that community leaders have positive opinion about the polio drops, 107 (31.9 %) respondents said no while 18 (5.4 %) respondents were uncertain. 22 (6.6 %) respondents agreed that religious leaders support polio vaccination while higher number of respondents e.g. 208 (62.1 %) disagreed, and 105 (31.3 %) respondents were uncertain about it. Besides, a considerable majority that is 322 (96.1 %) respondents opined that there is lack of communication between polio team and the community, however, 12 (3.6 %) respondents said no to it. 127 (37.9 %), 141 (42.1 %) and 67 (20 %) respondents opted for yes, no and uncertain to respectively the statement media can have positive effect on polio vaccination. 103 (30.7 %) respondents replied that they got polio vaccination message from media while 232 (69.3 %) respondents negated that they didn't get the message from media. Further, majority (for instance 282 (84.2 %)) respondents said yes to the statement that

community has not been informed properly during vaccination while 22 (6.6 %) respondents said no to it, and 31 (9.3 %) respondents were uncertain.

S. No	Statements	Yes	No	Uncertain
1	You have been contacted before polio vaccination campaign	157 (46.9%)	148 (44.2 %)	30 (9 %)
2	Community leaders have positive opinion about the polio drops	210 (62.7 %)	107 (31.9 %)	18 (5.4 %)
3	Religious leaders support polio vaccination	22 (6.6 %)	208 (62.1 %)	105 (31.3 %)
4	There is lack of communication between polio team and the community	322 (96.1 %)	12 (3.6 %)	1 (0.3 %)
5	Media have positive effect on polio vaccination	127 (37.9 %)	141 (42.1 %)	67 (20 %)
6	You got polio vaccination message from the media	103 (30.7 %)	232 (69.3 %)	0 (0 %)
7	Community has not been informed properly	282 (84.2 %)	22 (6.6 %)	31 (9.3 %)

Lack of Awareness and Education and Refusal to Polio Vaccination

Awareness and education is an important dimension and contributing factor to development of perception regarding social activities. In this regard, education and awareness level may bring variation in perception towards polio vaccine and the process of vaccination. 87 (26%) respondents were of the opinion that polio drops are good for the society, 25 (7.5 %) respondents replied with no, however, a considerable majority e.g. 223 (66.6 %) respondents were uncertain about it. A less number of respondents that is 87 (26 %) respondents stated that they are well aware of the consequences of polio disease while majority 191 (57%) respondents were not well aware of the consequences of polio diseases while 57 (17 %) respondents were uncertain. Further, 32 (9.6%) respondents were aware of the causes of polio disease, 276 (82.4%) respondents were not aware of the causes of the polio diseases. 238 (71%) respondents agreed

that lack of leads to refusal to polio drops, 67 (20%) respondents negated it while 30 (9%) respondents were uncertain. 294 (87.8%) respondents were of the opinion that refusal is more among illiterate people, 34 (10.1%) respondents disagreed while 7 (2.1%) were uncertain about it. Besides, 225 (67.2 %) were of the view that there is positive response from educated couples regarding polio vaccination, 79 (23.6%) respondents disagreed while 31 (9.3%) respondents were uncertain.

S. No	Statements	Yes	No	Uncertain
1	Polio drops are good for the society	87 (26%)	25 (7.5%)	223 (66.6 %)
2	You are well aware of the consequences of polio disease	87 (26 %)	191 (57%)	57 (17 %)
3	You are aware of the causes of polio disease	32 (9.6%)	276 (82.4%)	27 (8.1%)
4	Lack of awareness leads to refusal to polio drops	238 (71%)	67 (20%)	30 (9%)
5	Refusal is more among illiterate people	294 (87.8%)	34 (10.1%)	7 (2.1%)
7	There is positive response from educated couples	225 (67.2 %)	79 (23.6%)	31 (9.3%)
8	Illiterate believe in fate instead of rational thinking	210 (62.7%)	57 (17%)	68 (20.3%)

1.5.2 Bi-Variate Analysis

Independent Variables		Refusal to Polio Vaccination (Dependent Variable)			Chi Square P Value
		Yes	No	Uncertain	
Religious misperceptions	Yes	79	13	11	11.057 ^a P=0.000
	No	136	61	34	
	Uncertain	1	0	0	
Terrorism	Yes	136	12	10	11.957 ^a .003
	No	65	61	32	
	Uncertain	15	1	1	
Lack of mobilization	Yes	138	12	10	10.829 ^a 0.000
	No	71	61	34	
	Uncertain	7	1	1	
Lack of awareness and education	Yes	85	14	13	11.570 ^a p.001
	No	130	60	32	
	Uncertain	1	0	0	

1.7. Conclusion

Religious misconception is one of the eminent factors contributing to refusal to polio vaccination. For example, there is misperception about polio vaccine that it contains haram components such as wine and meat of pork, causes sterility among young girls, and arouses sexual desires among young girls and the misconception that it is a conspiracy against Islam. Religious leaders have issued a *fatwa* against polio vaccine leading to refusal to polio vaccination in District Mardan, KP, Pakistan. Pakistan specifically Khyber Pakhtunkhwa are the militancy hit areas. Many terrorist groups including Taliban have opposed polio vaccination and targeted polio vaccination teams leading to refusal to polio vaccination. Public in the study locality are afraid of being targeted and killed by terrorists (e.g. Taliban), threatened which spread fear among people in case of vaccinating their children against polio.

Social mobilization is an important aspect while considering any activity related to community or society. Polio vaccination process is also an activity related to human community whereby informing community regarding the process, its importance and benefits is probably the most eminent aspect while carrying out vaccination process. In this context, the current study concludes that community has not been properly mobilized for the process of vaccination. Contact and trust between vaccination agencies, community leaders and community leaders is an extremely important factor for successful vaccination process, however, lack of such trust is leading to refusal to polio vaccination. In addition to it, media e.g. TV, radio, banners are not properly utilized to inform and mobilize community regarding the causes, consequences of polio, and the importance of polio vaccination. In addition to it, the current study concludes that public is not sure whether polio drops are good for society or not. Public is not aware of the causes and consequences of polio disease whereby its major reason is lack of awareness and education prevailing in the study area. Literacy and educational level determines that whether public is aware of disease or not whereby the current study shows that lower levels of literacy is responsible for refusal to polio vaccination.

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