

Received: 20 August 2023, Accepted: 30 October 2023

DOI: <https://doi.org/10.33182/rr.vx8i4.311>

Efficacy of Polio Campaign Management in Quetta: An Analysis of Issues from Stakeholders' Perspective

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Abstract

Pakistan is part of global news headlines, often for the wrong reasons. Among other things, prevalence of polio despite colossal efforts by national government and international organizations, for its eradication is a cause of concern. Huge population, poverty, low literacy rate, rudimentary health infrastructure, presence and move of refugees and internally displaced people; religious extremism and, above all, security concerns add to the problem of polio control in Pakistan. Within Pakistan, Quetta is considered to be among the most volatile region as regards to polio. It can be rightly said that problems confronted by stakeholders in polio eradication campaigns in Quetta is a reflection of predicaments of Pakistan as regards to polio control. The research study explores the efficacy of polio eradication campaigns in Quetta city through major stakeholders' perspectives including parents, general public, security forces and health personnel involved in campaigns. Descriptive method of analysis has been applied in order to study various dimension of campaigns including awareness level, security and campaign management. Thus, results of this research would be helpful as they can be applied, wholly or in parts, to other areas of Pakistan. This study had endeavored to explore the problems faced by different stakeholders at multiple tiers who are striving hard for eradication of polio from the city despite challenges to their lives as well.

Keywords: Polio, Contagious Disease, Immunization, Vaccine, Quetta, Stakeholders

Poliomyelitis or polio is a disease that is ancient but not antiquated. World Health Organization (WHO) describes it as; "Polio is a highly infectious disease caused by a virus. It invades the nervous system, and can cause total paralysis in a matter of hours. The virus is transmitted by person-to-person spread mainly through the faecal-oral route or, less frequently, by a common vehicle (for example, contaminated water or food). Initial symptoms are fever, fatigue, headache, vomiting, stiffness of the neck and pain in the limbs. 1 in 200 infections leads to irreversible paralysis (usually in the legs). Among those paralyzed, 5% to 10% die when their breathing muscles become immobilized" (WHO, 2016).

Evidence of it effecting people in Egypt as early as 1580 -1350 BC exists (GPEI, 2016). It was first classified as a disease in 1789 by a British physician, Dr Michael Underwood, and it was first systematically studied and identified as an infectious disease in 1840 by a German scientist, Dr Jacob von Heine (GPEI, 2016). The first documented outbreak of polio in United States (US) is recorded in 1894 in Rutland, the seat of Rutland County, Vermont (Ross, 1992). In an even deadlier epidemic of 1916, the most populated city of US was hit and around 6,000 people died. Realizing that polio was not a problem limited to developed countries, World Health Assembly, through a

resolution in 1974, recommended that all countries of the world to develop or maintain immunization services and surveillance program against seven diseases, including polio (WHO, 1974). After this resolution, world countries, one after the other, started following the recommendations. Slowly but gradually, polio started going off the map of different countries; US had last case of wild polio virus (WPV) in 1979 (CDC, 2016). Region of Americas was declared polio free in 1994 (GPEI, 2016). In 1988, World Health Assembly adopted another resolution which set year 2000 as deadline for global polio eradication (GPEI, 2016). Progress of vaccination program was significant as by 2006, only four countries remained endemic to polio, including Afghanistan, India, Nigeria and Pakistan (GPEI, 2016). In 2014, India was declared polio free. It was significant as India was considered hyper-endemic as prior to 1990s, there were around 500 to 1000 cases of child paralysis daily (John & Vashishta, 2013).

If timeline of polio eradication activities is followed, one sees that within a span of forty years from 1974 resolution of World Health Assembly about immunization, only three countries remained endemic. Even in these countries, polio incidences have reduced drastically. According to WHO, from 1988 to 2015, global polio count has been reduced from an estimated 350,000 to 74 reported cases (WHO, 2016). The number further went down in 2016 and a total of 34 cases of WPV were reported in three endemic countries. Pakistan topping the list with 20 cases of WPV (End Polio Pakistan, 2017). Afghanistan had 12 cases of WPV and one case of ambiguous vaccine derived polio virus (VDPV) (WHO, 2017). As far as Nigeria is concerned, it was set to be certified polio free country in 2017 had the two cases of WPV were not reported in middle of 2016 (Samuelson, 2016). Bigouette et al (2021) explicitly described the limitation of Covid outbreak of 2019 as one of the major causes that hampered the polio campaigns in Pakistan thus increasing the proportion of environmental samples of WPV positive cases in 2021 for which a slight decrease in such cases was worthless.

Polio and Pakistan

Pakistan started implementing 1974's resolution of World Health Assembly in 1978 when expanded program of immunization was launched (WHO, 2017). Though Pakistan had the greater number of polio cases of world in 2016, still it had made significant reduction in incidences of the disease. According to a briefing paper by Pakistan Institute of Legislative Development and Transparency (PILDAT), prior to 1994, when national immunization rounds were initiated, annually there were estimated 20,000 to 25, 000 cases of polio in Pakistan (PILDAT, 2012). This year's figure of twenty polio cases is least after 2005 when number of polio cases went down to 29 (PILDAT, 2012). From 2005 to 2016, the maximum number of polio cases in a year were 306 in 2014 (End Polio Pakistan, 2017).

Even within Pakistan, polio is now not as widespread as it used to be a decade ago. According to GPEI, "The (polio) virus is cornered in a few remaining sanctuaries Karachi, Quetta block and Khyber-Peshawar corridor. Stopping transmission in these core reservoirs will be critical to success" (GPEI, 2017). Quetta block consists of Quetta, Pishin and Killa Abdullah districts of Balochistan province (UNICEF, 2012).

Notwithstanding the significantly decreased number of polio cases in Pakistan or its 'localization' to some areas, its leading the endemic countries in the number of polio cases is a cause of concern. As compared to other two endemic countries Pakistan is considered to be more developed as per human development index (HDI) of United Nations Development Program (UNDP). In HDI Pakistan is ranked better than the both Afghanistan and Nigeria (UNDP, 2017). Same is the case

in the WHO healthcare ranking, where ranking of Pakistan, Afghanistan and Nigeria are 122, 173 and 187, respectively (Patient Factor, 2017). Dismal state of polio eradication in Pakistan can be best summed up when polio in Afghanistan is said to be result of “importation from Pakistan” (Armstrong, 2015).

Polio Eradication Campaigns in Pakistan

Pakistan remains among the last three countries still endemic with polio and this makes it a significant hurdle in the way of a great human achievement. Despite the significance of polio in Pakistan in context of global perspective, not much literature can be found on the subject. The existing literature mostly comprises on journal articles, reports from various organizations and newspaper articles.

According to a document published by CDC, available on WHO website titled ‘Literature Review: Reasons children are not vaccinated in low and middle income countries’, reasons for unvaccinated children have been summarized as, “Access to health/immunization services due to distance, primarily among children living in remote rural communities, limited knowledge regarding risk of disease/benefits of immunization among rural poor, infrequent family discussions regarding immunizations (role of mothers participation in discussions), fear and misconceptions concerning vaccinations” (CDC, 2009). The same document, while discussing immunization systems, cites that not only physicians are not a source of advice to parents but there are many doctors who consider that vaccines are less effective and have side effects. Similarly healthcare workers are termed as ill trained and less knowledgeable about vaccination while commenting about parental attitudes, the document mentions about belief among parents about vaccines being harmful for their children.

In a book, ‘A Comprehensive Analysis of Pakistan's Polio Eradication Program: Why Polio Eradication Program Was Not Successfully Implemented in Pakistan?’ Amjad and Kahkeshan (2014) have concluded that the fault lies with the existing health structure which is not supportive or productive towards polio eradication. Closser (2010), in her book ‘Chasing Polio in Pakistan; Why the World’s Largest Public Health Initiative May Fail’, has discussed about various issues that haunt polio eradication efforts in Pakistan. According to the author, in addition to problems related to vaccine efficacy in the tropical climate of Pakistan, political and organizational follies also hamper the eradication efforts. The author has quoted data from 2006 where 99 percent of Pakistan’s districts had already more polio coverage than what was needed in US for eradication of polio. The author has proposed that polio eradication campaigns need to be made responsibility of non-governmental organizations or national religious groups.

Another publication titled ‘The Curious Case of Polio Eradication in Pakistan: An Empirical study of a Polio Campaign’, Abbas (2012) has pointed out towards certain issues with polio eradication staff at the grassroots level. These include lack of training, less and delayed remuneration as well as lack of effective mobilization campaigns towards polio eradication. In an article published in *Virology Journal*, the authors after reviewing available documents on the subject have observed that variations exist between vaccination efforts in urban and rural areas as well as between different provinces. The authors have also pointed out towards poor performance of EPI and lack of information about polio vaccination in Pakistan (Shah et al., 2011). Javed et al (2023) emphasized the need to address the issues of vaccine hesitancy and traditional behaviors among parents towards vaccination drive. Consistent efforts for stakeholders’ awareness need to be launched on larger scale in order to achieve the targets of polio-eradication.

A Journal article ‘Hurdles to the global anti polio campaign in Pakistan: an outline of the current status and future prospects to achieve a polio free world’ has termed Pakistan as a “serious threat to the success of [polio eradication] initiative”. According to the authors, Khan and Qazi (2013) the progress towards polio eradication in Pakistan was encouraging till 2011 and 2012, when the polio incidences came down to less than hundred. The article cites “the war against terrorism, misconceptions about polio vaccine, religious misinterpretations, frustration among vaccinators, lack of awareness, social considerations, natural calamities, inaccessibility, and inefficient vaccines” as the main reasons for polio persistency in Pakistan. Weak health management system in Pakistan was also termed as ‘hub’ of other problems in this regard. The analysis by the authors pointed out that “there is some literature available on the challenges to polio elimination, yet there is not a single publication up to date that considers all the possible hurdles in a single manuscript”. On the other hand, it is noteworthy that with the outbreak of COVID 2019, some limitations were imposed on the polio eradication campaign, however, efforts to stop Covid-19 and polio needed an integration activity for vaccination (Bigouette et al., 2021). The idea is well-supported by Javed et al (2023) that in light of the precedent set by Pakistan’s diligent response to the pandemic of Coronavirus, similar rigorous measures should be adopted for the eradication of polio.

Identifying the importance of lady health workers (LHWs) towards success of polio eradication in Pakistan, another journal article by Closser and Jooma (2013) have asserted that there is a need to collaborate closely with LHWs for effective polio eradication efforts in Pakistan. The authors have cited incidents where LHWs have been subjected to armed attacks particularly so after the infamous raid by Central Intelligence Agency (CIA) to target Osama Bin Laden in Abbottabad in 2011. The article has also pointed out towards less monetary incentives to LHWs who risk their lives for the global cause of polio eradication. The authors of this article have stressed a need for more collaboration by donors with LHWs, especially in terms of engagement and financial remuneration. Sultan et al (2023) deliberated in a research article that Government offers poor services of basic health, sanitation and clean water, therefore, the trust of community could not be strengthened on Government. If it was otherwise, public could have stronger level of trust on polio campaigns. Author further elucidated those incentives for children, curriculum changes, and better management of doctors and health staff can enhance the efficacy of eradication programs.

Stakeholders’ Perspective for Polio Eradication Campaigns in Pakistan

Discussion of stakeholders or their perspective in context of polio in Pakistan is not something that has been much published about. So much so that Government of Pakistan’s ‘National Emergency Action Plan (NEAP) for Polio Eradication’ for 2016 – 2017 does not include the word ‘stakeholder’ even once anywhere in its seventy-two pages. It does talk about government strategies, plans, oversight mechanisms, accountability, training and use of media. It also identifies security as a key to successful polio eradication program in Pakistan (National Emergency Operation Center, 2016).

References to stakeholders are found in some journal articles and newspaper reports, though not always specifically to polio. An article in Journal of Pakistan Medical Association by Khowaja. et al., (2010) has explored perspective of stakeholders about health promoting hospitals, potential benefits and need in Pakistan (Khowaja et al., 2010). According to the authors, more informed stakeholders can improve results in health care sector, particularly with reference to hospitals. However, systematic detailed literature about the stakeholders’ perspective about polio found to be lacking which is an indispensable factor for success of the campaign.

Problem Statement

Quetta is provincial capital of Balochistan province of Pakistan and in news, mostly for wrong reasons. Unlike other provinces, where there are multiple cities which are somewhat developed, Quetta is the only city in Balochistan worth calling one. Balochistan occupies almost forty four percent of the landmass of Pakistan, however, it is least populated among the provinces (Government of Balochistan, 2017). Balochistan, not only shares borders with the three other provinces of Pakistan but also with two countries, Afghanistan and Iran. Among the provinces, it is least developed in almost every realm including health facilities. According to a Dawn report dated 24 September 2016, environmental samples taken from Quetta and Pishin turned out to be positive (Shah, 2016). Due to law-and-order situation, a number of times polio eradication campaigns have been postponed despite their critical importance for eradication of disease (Shah, 2015).

The research study, aims to explore stakeholders' perspectives as regards to efficacy of polio eradication campaigns in Quetta. It is focused on three stakeholders at grassroots level of polio eradication campaigns. Firstly, who are at the receiving end of polio campaigns being parents, guardians or family members of targeted children. Second category of stakeholders are the personnel from police, levies or frontier corps who are actually employed for providing security to polio teams. Thirdly, health staff (HS); polio workers and their supervisors have been kept as respondents in this study.

Polio campaign efficacy, in this study, is being studied from different angles including awareness, security and management aspects of polio campaigns. In order to assess awareness of HS as regards to polio eradication, their questionnaires have a dedicated portion for very basic questions pertaining to polio and its vaccines. Apart from this, respondents in each category have been asked a limited number of open-ended questions, which would accrue benefits in terms of answering some important queries

This research study aims at focusing the direction of future researchers apart from suggesting measures for improving polio eradication campaigns in future. The importance of this research is also vital as findings can be applied throughout Pakistan as the impediments faced in Pakistan, as regards to polio eradication, are almost all present in Quetta.

Hypothesis

- H1: Efficacy of polio campaign depends upon mutual trust within stakeholders.
- H2: Stakeholders' awareness is a positive predictor for successful polio eradication campaigns.
- H3: Sense of insecurity amongst stakeholders is a negative predictor for effective polio eradication campaigns.

Research Methodology

This research is based on Hypothetico-deductive method that includes relevant literature to identify broad problem-area for setting up problem statement, developing hypothesis, designing instruments for data collection for analysis and interpretation.

Threefold questionnaires were designed for the chosen stakeholders; random public (RP), health staff (HS) and security staff (SS). The questionnaires were comprised of relevant questions about the hypothesis using Likert scale of five. to find out their opinions. Some general questions were also added in the questionnaire in order to get qualitative responses from the respondents which

assisted the researcher to corroborate information collected through closed-ended questions. The survey instrument validity check for pilot test was performed by a five-member panel of researchers and practitioners involved in the polio campaign comprising of medical practitioners, security in-charge and two members from donor polio eradication team. Improvements were made in the light of obtained suggestions.

Based on the calculations, the required number of respondents was estimated at a total of four hundred and twenty-six respondents were subjected to the questionnaires. These respondents were chosen from different areas of Quetta in order to have a balanced representation. Obtained data forms the basis of analysis. Descriptive statistics were used to analyze the data and conclusions were drawn based on it.

Scope of Study

The study has been conducted in limits of Quetta city and aims at exploring perspectives of stakeholders involved in polio eradication efforts at grassroots level. In order to study the perspectives of stakeholders at grassroots level, three groups were chosen; health staff (HS), security staff (SS) and random public (RP). This study had endeavored to gain access to the perspectives of these stakeholders in certain specific domains. These include awareness about polio and its vaccine, basic management aspect of polio campaigns and efficacy of polio eradication campaigns. Under the prevalent environments in Pakistan and also in Quetta, security of polio campaigns assumes vital importance. Lack of sense of security among HS can result in their low performance. At the same time, since security personnel accompany health workers during polio campaigns, their observations about the campaigns are considered important. RP are the third group of stakeholders that is included in research study as they are at the receiving end of polio campaigns. They include masses whose children or their relatives' children are vaccinated against polio in the eradication campaigns.

Significance of Study

As stated earlier, Pakistan is one of the three polio endemic countries of the world. Within Pakistan, Quetta block, that includes Quetta city, is considered a reservoir of polio virus. Significance of Quetta in relation to polio eradication is multifold. Not only it is considered a reservoir of polio virus, the city also represents one of the major targets of terrorist activities, including those that have specifically targeting polio workers and their security escort. The issue of terrorism is akin to other parts of Pakistan, including the high-risk areas for polio, however, sectarian violence is a dimension of terrorism that is absent from other polio high risk areas.

In comparison with other parts of Pakistan that are declared as “high risk” as regards to polio spread, Quetta is more ethnically diverse (Blank et al., 2014). Within Balochistan, the other two areas that are declared “high risk” by End Polio Pakistan, include Pishin and Killa Abdullah. Pakistan Poverty Alleviation Fund reported that both these regions are predominantly Pashtun (PPAF, 2015).

Nexus above, the study about efficacy of polio campaign management from stakeholders' perspective has potentials to bring out conclusions that can be, wholly or partially, be applicable to other parts of Pakistan and to some extent, to Afghanistan as well.

Research Design

As discussed earlier, the background of this study requires empirical research to bridge up the gaps in literature to identify the previous research conducted on such issue. The analysis of secondary

data reveals that there is lack of research evidence found on the related topic. It has been observed through literature research that the dimension under study has not yet been dealt in which stakeholders, particularly at the grassroots level, are taken into account to present their perspectives about the overall effectiveness of polio campaign. It is pertinent to mention that polio campaigns are organized by government sector with collaborative partners but the efficacy has not been ensured for which most significant reasons are highlighted in this research. The study has been conducted in detail covering all stakeholders including parents (being part of random public respondents), SS and HS (management and field workers) to collect data about efficacy, operational procedures, awareness level and general perceptions about the campaigns.

The survey assists to gain opinion on a phenomenon from a selected sample about the relationship of effective polio campaign with independent variables of stakeholders' trust, stakeholders' awareness and stakeholders' security HS. As discussed previously, the research topic was selected through previous studies and based on researcher's own past experience of being involved in the campaign surveillance at Quetta city as a part of professional assignment which raised many questions on operations and proper conduct of this campaign. Therefore, based on researcher's observation and experience, region of Quetta city was selected for a host of reasons. Quetta is the largest city of Balochistan and its inhabitants belong to a wide spectrum of ethnic, social and economic mix. It is also recognized as a major trouble spot as far as polio incidence is concerned. Proximity of borders with Afghanistan, another endemic country, also adds to the complexity of polio eradication campaigns.

Williman Nicholas (2011) states that descriptive research particularly deals with complex social issues, aiming to have a broader perspective at "just getting the facts" on different nature of socio-political, cultural and contextual elements involved in certain phenomenon. He further stressed that this method also allows examining the complex interplay of many variables in a phenomenon. Based on this argument, the under-debate research topic has a complex relationship of different variables with the effective conduct of polio campaign; descriptive method of analysis is proposed in order to study the relationship of variables for detailed analysis. However, the facts discovered during the survey are argued in relation to the literature research on the relevant issues of the selected questions.

Instrumentation

Research measurements comprising of numbers and appropriate symbols to empirical occurrences is performed according to a set of rules with the objective to achieve accuracy with lowest errors of testing research hypothesis (Salter, 2015). Reliability ensures the accuracy in measurement and validity measures the right thing. Thus, the measurement instrument should be valid, accurate and reliable to achieve the accurate desired results. The questionnaire was divided into three parts keeping the hypothesis in view. Threefold questionnaires were designed for RP, SS and HS for this study for the following purposes.

1. Random Public (RP) questionnaire was constructed to observe the general public, family and parents' perspective about the effectiveness of polio eradication campaigns and their awareness level.
2. Instrument developed for SS attempts to explore facts from the Security Staff about their awareness and perceptions about efficacy of polio eradication campaigns.

3. Health Staff (HS) questionnaire was developed in order to find out the awareness level of field workers and operators of polio campaign to find out their skill and knowledge in this field. The questionnaires also explored their perceptions about current methodology of polio eradication campaigns.

Sample Size

To draw sample size, the estimated target population is around 151713 (particularly in the areas of more diverse population in Quetta City), and to draw sample size scientifically the data has been provided by researchers that facilitated the sampling process. As the target population is 151713, which is above 100,000, According to data provided, there were two options to select sample size subjectively, either on confidence level 95% or 99% keeping time and resource limitation intact according to research objectives and outcomes. After identification of sample size, it is required to develop sample design for drawing exact number of subject (respondents) proportion that will include in survey by developing sampling frame. For that purpose, probability sampling design was used in which proportionate stratified random sampling has been selected because in proportionate random sampling, sampling frame is established on the basis of respondents' proportion in overall data set.

As per the exact sample size of target population (male and female respondents), the total registered voters were 151713, in which 24% in Geo Site, 9% Kharotabad, 15% in Ward 10-A, 8% in Ward 10-B, 29% in Hazara Town, 6% in Kuchlak-A, and 9% in Kuchlak-B. The estimated sample size was 400 and for each area, the sample size was calculated by assigning the same proportion to area. The distribution of sample size through proportionate stratified sampling is as under:

Table 1.1 Sample size calculations

Sample Size: 400					
	Area	Proportionate % in population	total sample (% of 400)	male sample	female sample
Respondents	Geo Site	24	$(24*400)/100=96$	$(96*60)/100=57$ (60%)	$(96-57)=39$ (40%)
	Kharotabad	9	36	21 (60%)	15 (40%)
	Ward10-A	15	60	34 (57%)	24 (43%)
	Ward 10-B	8	32	18 (56%)	14 (44%)
	Hazara Town	29	116	67 (58%)	49 (42%)
	Kuchlak-A	6	24	15 (65%)	9 (35%)
	Kuchlak-B	9	36	23 (63%)	13 37%)

Data Collection Scheme

For data collection, the following areas of Quetta municipal limits have been specified i.e. Geo Site, Kharotabad, Kuchlak-A & B, Ward 10 A & B, Hazara Town. To draw sample scientific, it is

indispensable to know the exact number of targeted population (adults) living in specified areas. However, due to limitation of population statistics, it is difficult to get exact number in specified areas, thus to overcome this limitation first identified all Zones and sub-Area of specified areas from District Quetta polio eradication Plan. According to the plan, they allocate geographical areas. After identification of subareas, Quetta Municipal Corporation (QMC) provided the list of registered union councils in specified areas and then election commission of Pakistan (ECP) Quetta was contacted to get the number of registered voters in selected areas. This list included all registered voters having minimum age of 18 years with no maximum age limit, and includes the proportion of male and female registered voters. In each area, there will be two types of respondents, male and female. To contact male, the enumerator visited the shops, and respective schools and colleges with condition that male should be living in that particular area. For females, the enumerators visited the household in that area with prior approval from household. Moreover, in each street the enumerators visited every 6th House without taking the opinion of neighbors.

H1 – Efficacy of polio campaign depends upon mutual trust within stakeholders

The development of effective benefit-risk communication messages to instill public trust in vaccines is complex but can be achieved with collaborative and transparent approaches, thereby encouraging the success of immunization programs” (Hardt et al., 2013). With this in view, certain questions were put forward to the stakeholders of this study aimed at assessing trust levels of stakeholders on polio eradication efforts as a whole. These questions and their responses are discussed below and evaluated on the scale of “strongly Agree, Agree, Don’t Know, Disagree and Strongly Disagree”.

Table 1.2: The current method of polio campaigns is the best possible method to vaccinate children.

Response	Frequency			Percentage%		
	RP	HS	SS	RP	HS	SS
SA	101	58	28	46.54	53.21	28
A	68	33	34	31.34	30.28	34
DK	22	3	14	10.14	2.75	14
D	21	11	21	9.68	10.09	21
SD	5	4	3	2.30	3.67	3

Table 1.3: Polio vaccines used during polio campaigns are effective.

Response	Frequency			Percentage%		
	RP	HS	SS	RP	HS	SS
SA	128	59	51	58.99	54.13	51
A	55	40	25	25.35	36.70	25
DK	19	6	3	8.76	5.50	3
D	5	2	14	2.30	1.83	14
SD	10	2	7	4.61	1.83	7

Response	Frequency			Percentage%		
	RP	HS	SS	RP	HS	SS
SA	76	40	33	35.02	36.70	33
A	89	50	38	41.01	45.87	38
DK	30	12	10	13.82	11.01	10
D	15	4	15	6.91	3.67	15
SD	7	3	4	3.23	2.75	4

Response	Frequency			Percentage%		
	RP	HS	SS	RP	HS	SS
SA	52	27	21	23.96	24.77	21
A	53	30	29	24.42	27.52	29
DK	36	18	19	16.59	16.51	19
D	53	24	23	24.42	22.02	23
SD	23	10	8	10.60	9.17	8

Table 1.2 reveals that in view of the responses of stakeholders of this study, majority of the three stakeholders opined that the current method of polio eradication campaigns is best possible way of vaccinating children against polio. Table 1.3 states the responses about polio vaccine effectiveness which shows that majority of the respondents displayed their trust on the vaccines. The percentage of respondents agreeing to the efficacy of polio vaccines was higher than the responses negating the question. If viewed in isolation, this might seem satisfactory but in context of polio endemic status of Pakistan and Quetta being part of one of the trouble spots for polio, there is a need for improvement. In response of question about the parents' trust on polio HS and their cooperation resulted that although majority of respondents agreed to this question, to varying degree, yet there were a significant number of respondents who negated this or remained noncommittal in Table 1.4. The percentages of respondents who either strongly agreed or agreed to this question was higher. Therefore, it is, however, encouraging that of these three stakeholders, most positive response to this question had been from the HS. Overall, it can be said that there is a need that the level of cooperation of people towards polio eradication efforts need further optimization. According to Table 1.5, responses of stakeholders of this study demonstrated that a significant number of respondents assented to this question that people distrust polio campaign because they perceive that it is funded by non-Muslim country. Percentage of respondents agreeing to this question, to varying degree, ranged from 21 – 29% amongst RP, HS and SS. There were also a substantial number of respondents who chose to remain noncommittal on the issue; the

number of respondents negating the assertion of this question were considerably less. Based on the responses of stakeholders, it can be assumed that perception of public about foreign funding aspect of polio eradication campaigns is needed to be improved.

H2: Stakeholders' awareness is a positive predictor about polio eradication campaigns.

Compared to non-contagious diseases, the ones that spread are graver predicament for any society. In order to find out awareness of respondents; both from category of SS and RP, as regards to polio being contagious, the responses of the questions show that, although, the majority of respondents, from both categories, displayed their knowledge about polio's contagiousness; the total number of respondents who either negated polio being contagious or remained noncommittal was also significant assenting with varying degree.

In order to assess awareness of stakeholders, relevant questions were asked from respondents from the targeted populated. The responses reflect that Table 2.1 presents the level of awareness of stakeholders as regards to polio was found below the desired standards. Though majority of respondents responded positively about questions related to polio disease while the number of those remaining noncommittal was also significant. In the same manner, respondents in Table 2.3 positively responded about the awareness of vaccination as solution to prevent polio in a significant number. Majority of respondents, from both categories, displayed their knowledge about polio's contagiousness; the total number of respondents who either negated polio being contagious or remained noncommittal was also significant while some of the respondents from SS and RP respectively, assented; with varying degree, to the question of polio being contagious disease. Those who negated it to varying degree, from SS and RP, were lower in percentages. Some remained

Table 2.1: Polio is incurable disease after its onset.

Response	Frequency		Percentage%	
	SS	RP	SS	RP
SA	58	123	5	56.68
A	19	49	19	22.58
DK	19	20	19	9.21
D	2	7	2	3.23
SD	2	18	2	8.29

Table 2.2. Polio is a contagious disease.

Response	Frequency		Percentage%	
	SS	RP	SS	RP
SA	56	100	56	46.08
A	26	56	26	25.81
DK	12	25	12	11.52
D	4	16	4	7.37
SD	2	20	2	9.21

Table 2.3: Vaccination is the only solution to prevent polio.

Response	Frequency		Percentage%	
	SS	RP	SS	RP
SA	45	96	45	44.24
A	34	69	34	31.80
DK	13	25	13	11.52
D	7	11	7	5.07
SD	1	16	1	7.37

noncommittal. In nutshell, it was found out that respondents from RP who did not assent to polio being contagious, is a significant number keeping in view the gravity of polio situation in Pakistan, especially Quetta.

Table 2.3 reflects that majority of respondents are aware of the fact that vaccination is the only cure to prevent polio while noncommittal responses were also significant which depicts that there is a segment of society who lacks awareness about the vaccination process. Moreover, Table 2.4 reflects that respondents' awareness as regards to the status of polio in Pakistan was also found below the desired results. A significant number of respondents were not aware of the gravity

Table 2.4: Polio eradication has been achieved in the world, less three countries including Pakistan.

Response	Frequency		Percentage%	
	SS	RP	SS	RP
SA	25	98	25	45.16
A	32	41	32	18.89
DK	24	38	24	17.51
D	19	16	19	7.37
SD	0	24	0	11.06

of situation where Pakistan was being referred to as last bastion of polio virus. It can be inferred that the severity of polio and its impact on the population may exacerbate due to the respondents' lack of clear understanding regarding the detrimental effects of polio, particularly in the context of Quetta city. Furthermore, among many efforts that Government of Pakistan has done for eradication of polio from Pakistan, a decree by Muslim Scholars regarding Polio Vaccine being 'halal'. On the website of End Polio Pakistan, there is a complete booklet containing decrees by various religious scholars about polio vaccine and eradication efforts (Government of Pakistan, 2017). In order to assess the awareness of target population of this research, a question was asked from respondents about this aspect. Table 2.5 reflects that majority of respondents from SS and RP responded positively to this question. Remaining respondents from SS and RP either denied this or showed ignorance about it. Although, majority of the respondents agreed to this question positively but those denying or not knowing are also quite significant and reflect lack of awareness.

Table 2.5. Polio vaccine is declared 'Halal' by Muslim Scholars.

Response	Frequency		Percentage%	
	SS	RP	SS	RP
SA	38	102	38	47.00
A	32	50	32	23.04
DK	8	32	8	14.75
D	20	22	20	10.14
SD	2	11	2	5.07

Based on the above discourse, hypothesis of this research that 'Stakeholders' awareness is a positive predictor about polio eradication campaigns' stands rejected. Drawing from the preceding discussion, the hypothesis posited in this research study may be refuted for several reasons suggesting that the level of awareness among stakeholders does not serve as a reliable indicator for the effectiveness of polio eradication efforts.

H 3: Sense of insecurity amongst stakeholders is a negative predictor for effective polio eradication campaigns.

Pakistan, as a whole had been facing terrorism related security issues since around two decades. According to the website of South Asia Terrorism Portal, Pakistan has suffered 63051 deaths in terrorism related incidents since year 2,000 (South Asia Terrorism Portal, 2018). Insecurity resulting from terrorism has affected every walk of life in Pakistan, however, polio eradication campaigns have been specially targeted after 2011. Apart from this, religious terrorist groups also propagate that polio vaccines are a conspiracy against Pakistan (Roul, 2014). Polio eradication campaigns in Quetta have also been targeted frequently by terrorist and latest attack took place on 18 January 2018, when a mother and daughter, both polio workers, were shot dead in Quetta (Khan S, 2018). Under these circumstances, it is natural that polio eradication efforts get negatively affected. Keeping this in view, present research explored views of stakeholders regarding security and related issues during polio eradication campaigns in Quetta. Three major categories were selected amongst the stakeholders; HS, SS and RP. Each stakeholder was asked questions pertaining to security. The questions varied for different categories of stakeholder and the result of these questions are listed below.

Findings from the above data reveals that security scenario, in view of the incidents that have been quoted in this research, do not prove to be satisfactory peculiarly precarious in Quetta. However, during this research study, the response from the respondents who are actually participating in polio eradication campaign shows encouraging signs. Salient views of research on various aspects related to security during this study, are as following:

Table 3.1: Do you feel satisfied with security measures taken during polio campaigns?

Response	Frequency	Percentage%
SA	79	36.41
A	55	25.35
DK	27	12.44
D	30	13.82
SD	26	11.98

campaigns in Quetta have also been targeted frequently

Table 3.2: Security make polio campaigns more cumbersome.

Response	Frequency	Percentage
SA	25	22.94
A	23	21.10
DK	30	28.08
D	22	20.18
SD	9	8.26

The questions varied for different categories of stakeholder and the result of these questions are listed below.

Table 3.3: Do you face difficulties in your daily life activities due to extra ordinary security during polio campaigns?

Response	Frequency	Percentage%
SA	39	17.97
A	27	12.44
DK	35	16.13
D	68	31.34
SD	48	22.12

Table 3.1. depicts the responses from RP that overwhelming majority of RP were found satisfied with security arrangements for polio eradication. However, in Pakistan, due to security reasons, security personnel also become a frontline stakeholder in polio eradication campaigns. This translates into more than one department getting involved into house-to-house immunization activity of polio eradication campaigns. Table 3.2 presents that it would be safer to presume that operations of polio eradication campaigns become more complicated and cumbersome due to involvement of security personnel. In order to probe this factor, from the perspective of HS involved at lower levels of polio eradication campaigns, a question was asked from 109 members of HS involved in polio eradication campaigns in Quetta. In response to the question that if requirements of security make polio campaigns more cumbersome, facts state that the HS respondents were generally divided in their response. Though the number of respondents agreeing to this question was more in number but they were not in majority. Around half of the respondents assented to this question while those negating it were also significant while others remained abstaining. It reveals that it was also found out that a significant number of respondents considered that security considerations did make polio eradication campaigns relatively cumbersome.

Table 3.4: Do people not vaccinate their children due to threats by terrorists?

Response	Frequency	Percentage%
SA	46	21.20
A	36	16.59
DK	54	24.88
D	47	21.66
SD	34	15.66

Table 3.3 presents mixed ratio of responses from RP that they face difficulties in daily life activities due to extra ordinary security in polio campaign. Significant number of respondents were agreed with the view but at the same time majority of respondents negate this view. About the RP that if people are refusing vaccination due to threats by terrorists. In response, a sizable percentage of respondents concurred to this. People agreeing to this notion, with varying degree of conviction. Apart from those agreeing to this question, a significant number of respondents chose to remain noncommittal in their response. Those negating this perception were also a substantial number. Keeping in view all aspects relevant to security, RP was asked a question and its results are presented in Table 3.4. Results in Table 3.5 present that overall, one can safely assume that regardless of the generally perilous security situation, both security personnel and HS were largely satisfied with the provided security to polio eradication campaign.

Table 3.5: Do you think that security arrangement provided during the polio campaign are adequate to meet the existing threats.

Response	Frequency		Percentage%	
	Security	Health	Security	Health
SA	63	59	63	54.13
A	32	31	32	28.44
DK	3	7	3	6.42
D	1	6	1	5.5
SD	1	6	1	5.50

Based on above findings, the hypothesis that “Sense of insecurity amongst stakeholders is a negative predictor for effective polio eradication campaigns” stands negated. In light of the aforementioned results, the hypothesis is invalidated which indicates that perception of insecurity

among stakeholders does not significantly hinder the efficacy of efforts aimed at polio eradication campaign.

Conclusion and Recommendations

Hypothesis 1 pertaining to efficacy of polio eradication campaigns being dependent upon mutual trust between stakeholders was validated while it also found out that majority of stakeholders operating at grassroots level did trust each other and no major issues were found in this regard. However, some doubts existed as regards to overall management and methodology of eradication campaigns.

Second hypothesis of the study, regarding awareness of stakeholders regarding polio eradication being a positive indicator was negated as overall awareness levels of respondents were found lacking. In certain cases, the respondents though were in majority knowing things but the number of people not knowing facts was also very significant and not negligible.

Surprisingly, third hypothesis that asserted the security situation and resulting insecurity amongst stakeholders being a negative predictor for polio eradication campaigns has been negated. However, when this phenomenon is viewed in the overall context of security situation where violence is not limited to polio eradication campaigns, the point is more conclusive.

Pakistan is among the last three endemic countries as regards to persistence and spread of polio. This is despite the global focus and efforts. This study endeavored to explore aspects of polio eradication campaigns that have not been broached much in the past research studies. Regardless, it cannot be claimed that this research is conclusive or have been able to encompass all aspects in totality. Recommendations with reference to polio eradication efforts and future researches are as following.

It is proposed that more detailed research studies may be conducted encompassing huge sample for analysis in all over Pakistan. Additional variables like training of health staff and religious influence may be taken into consideration by future researchers. There is a dire need of qualitative research using thematic focus and case study methodologies in order to get more focused detailed responses for detailed analysis. For future research studies, it would be valuable that if management of NGOs and Polio Project Teams are also taken into account to find out more sensitive issues confronted to the polio campaign.

There is a dire need that awareness levels of masses are enhanced as regards to polio and polio vaccines. All available means like media; especially electronic media, is needed to be optimally utilized in an intelligent manner. Use of other means, like incorporation of mosques, religious scholars, political leaders and celebrities in convincing masses about polio is an urgent need of the time.

In relation to the above, there is also a need of a focused research about existing efforts undertaken for enhancement of awareness of masses about polio eradication to find out shortcomings and suggest tangible means for betterment.

In view of the poor levels of awareness of health staff, it is imperative that their training regimens are evaluated and improved. In this regard, it must be borne in mind the polio workers at the grassroots level are the real linchpin of polio eradication campaigns. Success or failure of all efforts before them can be nullified if vaccine is rendered useless due to mishandling. In addition to this, it needs to be known that if polio workers are well aware and well trained, they will be trusted

more by recipients of the vaccines; even those having some doubts could be tackled by a well aware polio worker.

There also exist a need that trust levels of lower-level staff participating in polio eradication campaigns, as well as the recipients, about the sincerity of eradication efforts. Though the majority did express their satisfaction, yet those who were not totally confident about these were also in significant numbers.

The security aspect of polio eradication campaign, though not found unsatisfactory in the opinion of respondents, still has room for improvement. There is a need to explore methods by adopting which, security apparatus is smoother and facilitating toward eradication efforts.

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