



2019

**“This is a Pakhtun disease”: Pakhtun health journalists’ perceptions of the barriers and facilitators to polio vaccine acceptance among the high-risk Pakhtun community in Pakistan**

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**Recommended Citation**

Shah, S.F.A., Ginossar, T. & Weiss, D. (2019) “This is a Pakhtun disease”: Pakhtun health journalists’ perceptions of the barriers and facilitators to polio vaccine acceptance among the high-risk Pakhtun community in Pakistan, *Vaccine*, 37(28), 3694-3703.

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## 1. Introduction

In 1988, the Global Polio Eradication Initiative (GPEI) was initiated by to eradicate polio worldwide by the year 2000 [1]. Due to successful polio vaccination campaigns the region of the Americas was certified polio-free in 1994, followed by the Western Pacific region in 2000, and European region in 2002[2, 3]. Many developing countries achieved polio free status by the year 2011. However, polio still remain endemic in three countries, including Pakistan. The polio eradication initiative launched in Pakistan in 1994, initially recorded remarkable success as the number of recorded polio cases in the country dropped from 1155 in 1997 to 28 in 2005[4]. However, since then resistance to polio vaccination increased. In 2014, 306 polio cases were recorded in the country[5]. Although the oral polio vaccine (OPV) acceptance rate has steadily increased since 2015, there are still pockets of communities, mostly ethnically Pakhtun, that resist OPV [6]. In 2018, eight out of 12 wild poliovirus (WPV) cases were recorded in predominantly Pakhtun populated province Khyber Pakhtunkhwa [7]. After a vaccination drive in May 2018, the health department recorded 26,610 polio vaccine refusal cases in the province[8]. OPV acceptance is only one public health problem facing these communities. Pakistan has the world's highest newborn mortality rate, with one death in every 22 newborns [9]. The highest mortality rate within Pakistan, with one death in every 18.5 newborns, has been recorded in Khyber Pakhtunkhwa (KP), a province where the majority of the residents are ethnic Pakhtun[10]. Besides, the basic health infratructure is also weak in the province [4].

**[Insert figure 1 here]**

The refusal of polio vaccine in the ethnically Pakhtun-populated areas of Pakistan is a complex phenomenon[11]. Factors associated with refusal include parents' lack of knowledge about vaccination, low income and education levels, and number of children per household [5,

12-15]. Similar to Afghanistan and Nigeria, the other two polio-endemic countries, Pakistani barriers to vaccination include conspiracy theories about the content and efficacy of polio vaccine [13, 16], including rumors that the vaccine contains pig fat, which Muslims are forbidden to consume. The involvement of U.S.-funded organizations in the polio eradication efforts, weak governance, and inaccessible areas due to the ongoing war on terror constitute additional barriers to OPV acceptance in these countries [4, 5, 17], as well as local and global politics, mistrust of science, and lack of basic health facilities[18, 19]. Among the Pakhtun population, resistance significantly increased when the U.S. killed Osama bin Laden, the former al-Qaeda chief, in a military operation in Pakistan. CIA reportedly used a fake hepatitis vaccination campaign to trace bin Laden. Since this killing, more than 100 polio vaccination team members and police officials protecting them have been killed[5, 20]. UNICEF and the Pakistani government are carrying out large-scale media campaigns and improving social mobilization efforts in the areas to increase OPV uptake[12].

Media remain at the center of communication strategies in Pakistan[21]with the goal to use media to create awareness about OPV by providing information about polio, associated risks, campaign efforts, vaccine efficacy, and safety[12, 21]. Consistent with this focus, UNICEF in collaboration with the Pakistani government is arranging quarterly briefings for the media, pitching stories, communicating with reporters and editors, and training journalists and public information officers, with a focus on journalists from high-risk districts[6]. UNICEF has also involved celebrity journalists in the media advocacy campaigns. Similarly, the journalist outreach program of UNICEF and government of Pakistan includes creations of WhatsApp groups to provide timely information to the journalists. In order to improve the communication between journalists and health officials, UNICEF and the Pakistani government also trained

doctors working in the high-risk districts to enable them to improve their communication with journalists[22, 23]. UNICEF also recently collaborated with Voice of America's Pashto language service *Deewa* for the coverage of polio related issues. However, these strategies have not been examined by scholars and there is anecdotal evidence that suggests that they may not be effective. The media coverage of polio vaccine remains overwhelmingly neutral but fragile. Journalists also regularly pick propaganda spread against polio vaccination through social media and give validity to that propaganda by publishing that as news stories [12]. In March 2018, for example, both national and local media outlets reported an unsubstantiated news story that three children had died after receiving OPV. As a result, the number of polio vaccine refusal cases doubled in the month of April[24]. It shows that these news stories play a critical role in parents'/caregivers decisions to refuse vaccine.

Journalists play a critical role in the dissemination of health information[25, 26]. However, research done in Western contexts reported that health journalists are not adequately trained to report on complex health issues and therefore their stories lack comprehensive information and are hard for average readers to understand [27, 28]. However, past research did not examine the role of local KP journalists in coverage of OPV, despite the potentially critical part they might play in polio eradication campaigns in resistant communities. These local journalists have a dual status as members of both the media and their local communities. Despite local journalists' importance as opinion leaders in their communities [29], past research has not explored their perceptions of the resistance to OPV in high-risk areas. To address this gap, the present study aims to understand Pakhtun journalists' perceptions of the barriers to and facilitators for OPV in their communities, including their own beliefs regarding polio and OPV. To advance this understanding, the Social Ecological Model served as a theoretical framework.

### *1.1. Social Ecological Model*

The Social Ecological Model (SEM) is a framework with proven effectiveness in health promotion, including vaccination. The model is composed of five levels, or concentric rings of influence, for health-related behaviors and conditions: intrapersonal/individual characteristics such as knowledge, attitudes, behavior, self-concept and skills; interpersonal processes relate to social networks; organizational factors related to organizational characteristics such as rules and regulations; community factors consisting of relationships among organizations, institutions and networks; and public policy factors including local, state, and national laws and policies [30, 31]. The model assumes that people both influence and are influenced by those around them.

## **2. Methods**

### *2.1. Data collection*

Following approval by the University of New Mexico Institutional Review Board, the first author, a former Pakhtun journalist, recruited 33 journalists (news reporters and editors) working for Urdu and Pashto language newspapers and radio stations in KP. Recruitment followed purposive, snowball sampling techniques [32] and included contacting journalists using press clubs and requests of participants to recommend others. The purpose of the study was explained to the recruited journalists, and their verbal consent was sought. Full demographics of participants are presented in table 1 below.

**[Insert Table 1 here]**

A semi-structured interview protocol was written by the authors. The first author conducted interviews in respondents' preferred language.

### *2.2. Data analysis*

The first author transcribed the interviews from Urdu and Pashto to English, and checked the transcriptions for errors and accuracy. He kept notes taken during the interviews in a separate file. Transcripts and notes were thematically analyzed using NVIVO 10, a qualitative analysis data software program (QSR International 2010).

### **3. Findings**

Our analysis indicated that participants were supportive of OPV and advocated for it. At the same time, they listed barriers that ranged from individual/intrapersonal factors, to interpersonal, organizational, and community/policy factors. These levels were largely consistent with the SEM, and are reported in the following section.

**[Insert figure 2 here]**

#### *3.1. Individual level: Participants' knowledge, beliefs, attitudes and literacy skills*

At the individual level, participants shared health-related knowledge, attitudes, beliefs, perceptions of risks and benefits, values, and their perceived health literacy skills.

##### *3.1.1. Polio-related Knowledge as facilitator of pro-vaccination attitudes and behaviors*

Participants shared knowledge about polio that was embedded in an overall belief system consistent with the biomedical model. Specifically, all the participants knew that polio was a contagious disease that could cripple children for life and could be prevented only through vaccine. A respondent noted, "Polio is a contagious disease. It can only be prevented through vaccine. It cannot be treated." Another participant reported: "I personally believe that vaccines are really effective. Their effectiveness is a universal reality." Participants expressed this support by having their children vaccinated and by advocating in their personal networks. A respondent stated: "Whenever I return home I inquire about that. If polio teams do not pay a follow-up visit, I take my children to the nearby Basic Health Unit." All 33 respondents stated that they

vaccinated their children.

### *3.1.2. Participants experiences with polio and polio eradication efforts in their communities*

The participants stated that they were supportive of the OPV because they have seen the risks associated with contracting poliovirus and the benefits of its prevention through vaccine. The participants said that their interactions with people crippled by poliovirus made them aware of its associated risks and of OPV's benefits. One journalist said: "Now we see people affected by the virus in the villages." Another participant stated that "I saw that in Khyber Agency and FATA vaccines work. No cases have been reported from the areas where vaccine has been administered." In addition to witnessing the risks of poliovirus and the effectiveness of vaccination, participants framed polio as a health issue that disproportionately affected their communities.

### *3.1.3. Polio as a Pakhtun-specific health concern*

Some participants noted that poliovirus has disproportionately affected Pakhtun children. A participant relayed: "most [polio] cases were recorded among Pakhtun population. The government vaccinates them at the airports whenever they want to go abroad. We are getting isolated from rest of the world due to this disease. Why not vaccinate our children?" This participant was referring to the fact that the Pakistani government mandated presenting polio vaccination certificates to immigration officers at airports before flying abroad. He emphasized that prevention through vaccine was the only available option in his community: "We do not have medical facilities for disabled children... Therefore, the only good option is to vaccinate our children. Polio destroyed children's dreams. This is called a Pakhtun virus." Another participant echoed that opinion, "it is so unfortunate that polio cases are emerging among Pakhtun, be that in Afghanistan or Pakistan. See FATA, Peshawar, Karachi, Baluchistan -- everywhere this disease

affected Pakhtuns. This is a Pakhtun disease.” This quote indicates how participants’ support of polio vaccine was based not only on their belief in the bio-medical model, but also on specific knowledge of their communities.

#### *3.1.4. Low-self efficacy due to limited health literacy as a barrier to pro-OPV coverage*

Participants believed that they did not have sufficient knowledge or skill to cover complex health stories generally and polio-related stories specifically. Thirty-one respondents noted that their health literacy was low and consequently believed that they were unable to provide comprehensive and accurate coverage on health stories. A journalist said: “I am relying on information from the internet to understand different medical terms. I fear that there is information on the internet that is incorrect but I do not have the capacity to differentiate” between it and correct information.

Similarly, the journalists felt that they lacked the professional capacity to write their news stories in easy-to-understand language. One participant noted that only a few reporters “can understand and explain abbreviations.” He explained that while “some reporters consult their seniors” in order to produce a clear story, this lack of health literacy results in others writing unclear stories: “Some of them write the story in a very difficult language that is very hard to understand.” Consequently, their stories are not informative to readers. They noted that UNICEF is arranging trainings for these journalists. However, a majority of our respondents believed that those trainings were not effective. They noted that a majority of the journalists were left out of those trainings. One of our participants noted, “yes, I got one training. However, only few journalists got that training. The trainers focus on few media outlets. As I said out of the 60 regular members of the Swat press club, only two got training in polio reporting from UNICEF.” Not only a majority of journalists from small towns were left out of those trainings but those who

participated in the training regarded it as a “bribe” to influence his reporting. He said, “Those trainings are more like perks and bribing techniques. What can someone learn in a days training? There should be a comprehensive training program. Those are just enjoyment days for us. No attractive content. The organizers also just fill forms.” Another participant resonated this opinion, “The government of Pakistan arrange one day or three-day trainings for journalists, however, those trainings are useless. They are just a way to win the hearts of journalists by giving them perks and the journalists also understand that. For example, in one of the trainings I attended the trainers were doctors. They provided numbers about the epidemiology. The slides were in English. Basically, those were the information that any good find from a simple google search. They did not give any additional information. Some of our journalist friends do not understand English slides. Why do not they just deliver these training in local language and improve the content and quality.” One of our participant from Peshawar, the capital city of KP, who had attended several trainings noted that the only training he found effective was from Communication experts of John Hopkins University facilitated by UNICEF. He said, “the trainers are usually doctors who discuss technical information which most of the journalists find very hard to comprehend. The most productive training I got was from the communication school of the John Hopkins University. Their training was very fruitful. That training changed my thoughts in so many ways.”

### *3.2. Interpersonal level: Journalists as pro-OPV advocates*

Participants indicated that they were sought after as sources of information for people in their personal social networks and in the communities they covered, and that they used the opportunity to advocate for OPV. For instance, one participant noted that he had to overcome his wife’s hesitancy to get their children vaccinated after his wife had heard rumors, spread through

media, that polio vaccine had caused deaths of children: “My wife was so worried. She did not want to vaccinate our children. She believed the news reports published in the newspapers . . . I told her that the deaths were not caused by vaccination.”

Nine respondents noted that when they go out to the field to do stories on polio vaccination campaigns or related issues, community members ask them questions about the efficacy or side-effects of polio vaccine. One participant said:

When I visit local communities for reporting purposes, people usually ask questions about polio vaccines. They are curious to know why government runs polio vaccination campaigns every month. I usually tell them that polio is a disease which is not curable. Other diseases like fever are curable through medicine. Even a broken limb is treatable but not polio. Polio is really dangerous. This is why the vaccine is so important.

Another reporter shared how he was traveling in a taxi to a community affected by polio after hearing a rumor “that some children had died from vaccination.” As he described his interaction with the taxi driver,

The driver said he used to vaccinate his children in the past but did not want to anymore since the vaccine killed children in his area. I told him that his information was incorrect; however, the driver wanted written guarantee from the polio health worker and me that his children would not die after vaccination.

Therefore, participants indicated that they served as important health information sources about the importance of OPV in their personal and social networks.

However, Six journalists noted that even though they advocated for polio vaccination in their communities, they were not prepared to answer the questions raised by community members. Despite having basic knowledge of polio such as it is incurable, it is contagious, and it

can be prevented through vaccination, these journalists due to low self-efficacy and literacy levels could not answer the community members questions. In turn, they contended that the questions raised by community members also created doubts about polio vaccination in their minds. A respondent noted, “several community members raise questions about polio vaccination that we are unable to answer and create doubts in our minds too. For example, people ask if there are diseases that kill more people than polio, for example, cancer and other diseases, then why the government and international organizations spend so much money on polio vaccination and campaigns.”

This opinion was also echoed by another respondent:

I know that polio is contagious but so are other diseases; why doesn't the world invest in the eradication of other diseases? People always ask tough questions that I am unable to answer. See their questions are genuine. The government is running these campaigns since 1994, but so far it has not been able to answer these questions.

Even though the reporters had basic knowledge of polio vaccine, including the fact that it was a virus that was contagious, they were still unable to answer the community members' questions. Their inability to answer the community's questions show that they themselves were not able to understand the complexity of the polio vaccination campaigns. This points to the lack of training of these journalists in the coverage of polio vaccine.

### *3.3. Organizational level*

Whereas participants felt comfortable advocating for OPV informally at the interpersonal level, they listed different organizational barriers to positive, accurate coverage of poliovirus in the community and OPV campaigns.

### *3.3.1. Lack of journalistic checks and balances*

Twenty-two respondents believed that a major reason for the inaccurate or incomplete polio vaccination coverage by media was the lack of in-house checks and balances in their organizations. They described their editors as feeling under pressure, and even encouraged, to publish critical news stories before their competitors “scoop” them. As they noted, this often leads to negative consequences.. A reporter shared his experience in this regard:

Recently, there was a rumor that a child got killed due to polio vaccine in Peshawar.

Some local television channels broadcast the story. Now, my editor wanted me to file the story in two hours. I told him that the government officials are denying the claims of the parents that vaccine caused the casualty. However, my assignment editor said “let us first run the parents’ claim as a story and then later on air the official version”.

Eleven participants told stories in which they or their friends were forced or encouraged to file factually incorrect information so that they could compete with their rivals in the market. This practice of sharing unverified stories was overall result, in part, of the financial constraints that the journalists and their organizations were experiencing.

### *3.3.2. Financially-related organizational constraints*

Half of the respondents described tight deadlines, lack of funding, lack of incentives, and lack of support for accurate, in-depth coverage of polio vaccination as barriers to its acceptance. Lack of funding prevented participants from investigating the stories. A respondent noted, “I get

a meager salary. I cannot travel and spend all that money to attend events. I do not get any incentives to do detailed stories.”

Notably, the journalists from smaller, more peripheral districts did not even get a monthly salary. One of them explained: “I just cannot go and hire a taxi from my own money to attend events.” Another respondent also echoed this opinion, “I told you we do not get salaries but are required to file five to eight stories a day. How is it possible.”

Consequently, journalists from smaller communities were more likely to report organizational barriers to accurate pro-OPV reporting. The financial restrictions were not just limited to the salaries of the journalists. One of our participants noted that his organization discouraged detailed stories on polio vaccination to get more advertisements from the organizations supporting the polio eradication initiative. He contended, “In 2010, when people came back to Swat, I met the parents of a polio affected child. I recorded a television package on that child. I invited the child, his parents, a physician, a religious scholar, and the local community members to talk about polio and why vaccination are mandatory. However, when I sent the recording to the head office, my managers called me saying that there is an organization called EPI that pays money to do such programs. Initially, they suspected that I had taken money from EPI to do the package, however, when I convinced them that I did not take any money to this story, they asked me to demand money from EPI and transfer the money to the head office and only then they will run the package. They called an explanation from me. I told them that this was a public issue. However, they wanted money.” This shows that some local media organizations treat polio vaccination as a commodity and want to use it for commercial purposes.

### *3.3.3. Press releases as facilitators of reporting on polio*

More than 22 of the respondents noted that press releases on immunization issued by

UNICEF and government organizations facilitated reporting and made it easier for them to share the latest information about OPV with their communities—thus helping to overcome barriers stemming from their own low health literacy and from organizational factors. A respondent noted, “I find it hard to find good stories about health or polio. So, whenever the government launches an OPV campaign, I write a story about that based on the press release.” Another reporter contended: *“The journalists are not properly trained on how to report. So, it gets easier for them to publish the press release as it is.”*

Whereas the press releases have facilitated the process of writing about polio, eight respondents felt that there was room for improvement in the health literacy level of these releases. One reporter noted that “most of the time they use jargon in those press releases and write them in English. So, most of the reporters, especially those working in the tribal areas and smaller districts, do not understand what these press releases say.” Another journalist underscored the opportunity to design more-sophisticated health messages that would address parental OPV concerns: “The press releases themselves just consist of [official] statements.” He suggested that public relations officers should “provide detailed information about polio in simple words and answer parents’ concerns.”

#### *3.4. Community level*

This theme related to participants’ perceptions regarding the barriers and facilitators to polio vaccination in their communities. The participants felt that the government had failed to frame polio as a public health issue for the local communities, due to prioritizing OPV over more- pressing health issues. Religious beliefs exacerbated by governmental neglect contributed to anti-vaccination beliefs, and finally, lack of overall personal safety and political/military conflicts, including the “war on terrorism” impeded public health officials’ efforts to vaccinate

children.

#### *3.4.1. Different priorities between the community and the government leads to mistrust*

All the participants regarded the lack of basic health facilities as the primary cause of mistrust, and consequently of the resistance to OPV in some Pakhtun communities. Thirty participants noted that there are more-pressing health issues than the polio vaccination. For example, a participant said: “In winter, children die of pneumonia and in the summer, they die of different diseases spread by mosquitos.” Another explained: “Polio is not on the priority list of health issues of the community. People want access to clean water, pediatricians, etc. It infuriates them when the government invests money in OPV but not in their basic needs”. The respondents noted that the government did not take any serious steps to improve the basic health facilities in the rural areas, which resulted in the communities’ lack of trust in the government. Specifically, the war on terror left many health care facilities in ruins and basic services were not available to rural community dwellers. Participants also reported that the resistant parents in their community were unable to comprehend why the government was focusing so much on a disease that was less pressing than other health issues. A reporter noted: “they [community members] say that there are other diseases that are killing people and government is ignoring those issues, so why so much focus on polio vaccine?” A participant described his interactions with OPV-skeptical parents as follows: “People ask if there are diseases that kill more people than polio, for example, cancer and other diseases, then why do the government and international organizations spend so much money on polio vaccination campaigns? There is no outbreak of polio.” Another respondent echoed the “invisibility” of polio in the opinions expressed by community members: “people do not see examples of polio in their everyday lives. However, they see children dying of diarrhea and women dying from pregnancy or delivery complications.”

#### *3.4.2. Communities' refusal to OPV as a leverage to mobilize resources*

The gaps between the international and national resources that were mobilized to eradicate polio and the more-pressing local needs made parents see polio as a government/global health problem rather than a local one. Therefore, some parents refused to vaccinate their children as a form of political leverage to get the government to address their political/economic problems. A respondent said:

Some families are demanding that the government build roads in their areas and only then they will vaccinate their children. Recently, around 280 families in the suburbs of Peshawar demanded that the government close the factories in their neighborhood that produces pollution and then they will vaccinate their children.

Hence, the lack of basic health services in Pakhtun communities created mistrust and motivated parents to use OPV campaigns as leverage.

#### *3.4.3. Religious and politically motivated OPV skepticism and resistance*

The participants described a complex relationship between religious beliefs and OPV skepticism and resistance as barriers and facilitators to OPV. Specifically, they described an environment in which religion and politics were inseparable, and parents were often pawns in a larger political game. Twenty-three participants stated that different rumors were strategically spread about OPV as part of larger political efforts related to the security situation in the country due to the ongoing war on terror. Participants shared that rumors that described OPV as a conspiracy against Muslims were initially floated by Nigerian doctors in support of a religious Pakistani party:

In 2004-05 a team of African doctors visited Pakistan ... and held a press conference in which they claimed that ... the vaccines make the girls attain puberty before the natural

time frame and decrease immunity in the body. A lawyer then filed a case in the Peshawar High Court [against administration of OPV].

These rumors were strategically propagated by local religious scholars who claimed that the U.S. and other Western countries were using OPV to control the Muslim population and as a tool of espionage. The respondents believed the ongoing war on terror in the region was a significant reason behind the opposition of religious people. The opposition, according to them, was mostly from Deobandi religious scholars, a religious faction of Muslims closely associated with the Taliban and al-Qaeda, who were proponents of the cause of the Taliban.

For example, a participant noted: “Initially, Mullah Fazlullah [a leader of an Islamist, Taliban-related militia] banned vaccination. Now there is no more forced boycott of vaccination after the Taliban were defeated in the region. However, still there are religious extremists who oppose vaccination.” He continued: “Poor people cannot decide on their own. They hear about vaccination from extremists that the vaccination is *haram* [forbidden in Islam] and it’s a Western conspiracy, or it is used for family planning.” He explained that a combination of low literacy among these communities and mistrust in international and governmental organizations creates reliance on religious leaders who oppose OPV.

#### *3.4.4. The Fall of the Taliban as a facilitator of OPV campaigns*

Along with barriers, the participants described a decrease in religious resistance to OPV. They attributed this decrease to the defeat of militants and to the involvement of religious scholars in polio vaccination campaigns since 2014. They noted that when the Pakistan military launched a military operation in FATA, the residents of the areas moved to major cities where the government vaccinated their children. Once these families moved back to their towns after the successful completion of the military operation, the polio vaccination teams could visit their

houses without facing any threats. A participant described how in 2012, a militant commander banned OPV in North Waziristan:

When the ban was imposed the number of polio-affected children reached 195 in just North Waziristan . . . When people were shifted to the camps, they were properly vaccinated and the number of polio cases dropped to 0 in Waziristan in 2016.

#### *3.4.5. Involvement of religious leaders in OPV campaigns*

Participants noted that the involvement of religious scholars in the OPV campaigns also helped the cause of polio eradication. As one participant noted, “now the government has involved religious scholars like Maulana Samiul Haq [a Deobandi religious leader who had close contacts with militants]. The involvement of the religious scholars has decreased the number of non-compliant parents.” Another participant echoed that opinion, emphasizing that this strategy was effective among OPV-hesitant parents:

The involvement of religious scholars has decreased resistance to polio vaccination.

Notably, the participation of religious scholars in the polio vaccination has worked with the parents who were confused about whether to vaccinate their children based on religious concerns. However, the staunch opponents of polio vaccine still resist vaccination.

The above quote reflects the effectiveness of the strategy of involving religious leaders as pro-OPV advocates, but also its limitation in breaking down resistance among parents who are strong opponents. Moreover, participants noted that involving religious leaders on a small scale often backfired, as their opponents rejected the same pro-OPV messages they endorsed. A participant explained:

The government did not involve the religious scholars on a large scale . . . If you hire and

compensate one scholar from a particular faith or school of thought [to endorse OPV], others start campaigning against OPV just because their enemy was the representative of the campaign.

These participants believed that the failure of the government to involve more religious scholars from local communities was a significant gap in the polio eradication effort.

#### *3.4.6. Lack of integration of journalists in OPV campaigns*

Nine respondents stated that the government of Pakistan and its international partners should involve journalists in community mobilization efforts. A respondent noted: “Journalists can play a major role in community mobilization because people trust them and the information they provide. Regardless of what information they get from other sources, people turn to us for the confirmation of that information.” However, another participant while agreeing to the suggestion that journalists should be integrated into the social mobilization effort, recommended that they be trained before the integration. The participant believed that the journalists as community leaders are also a part of the problem, he said: “whenever, the journalists hear a rumor that polio caused death, they report that as a fact because they themselves start believing in those rumors as part of the community.” Our participants expected that the campaigns would use them to augment media messages with interpersonal messages in their social networks, as community members would turn to them to seek information and to corroborate what they heard in the media.

## **4. Discussion**

This study is the first to explore perceptions of Pakhtun journalists in KP regarding OPV. Specifically, we examined their personal views as well as their insights about the barriers and facilitators that influence vaccine acceptance in their communities. Our findings show that,

overwhelmingly, journalists who cover health topics in KP see the poliovirus as a danger to children and believe that the vaccine is efficacious. These beliefs are consistent with the biomedical model [33] and motivated them to vaccinate their children. Moreover, our participants voiced perceptions consistent with public health models that do not view individuals' health in isolation, but instead as part of a community's health. Consistent with the SEM, they described different levels, from intrapersonal to political levels, as mutually influential in facilitating or hindering polio vaccination. While they advocated for the vaccine in their social networks, they also identified with other community members and viewed other public health issues, including child mortality, as more pressing than polio. They articulated different community priorities and needs in ways that are consistent with public health models, emphasizing the overall health of the public and considering social factors that contribute to health and disease prevention [34].

As experts on local media, participants described media organizations publishing inaccurate or false information about OPV. Research by Obregón and Waisbord [29] similarly found that Nigerian and Indian media spread rumors about OPV that resulted in increased resistance to OPV in their own countries. In addition to extending this phenomenon to the Pakhtun context, our analysis underscored the interpersonal and organizational processes that lead to the creation of such “fake news.” Furthermore, participants highlighted the low health literacy rate of journalists as a major barrier to accurate and comprehensive polio-related coverage. Moreover, consistent with our participants' reports, we identified press releases as potentially important factors in polio-related coverage. This importance was previously noted in Western contexts only [26, 35].

As a unique contribution, our findings have implications for the applicability of the SEM in capturing perceptions of journalists in non-Western countries. Whereas the SEM categorizes community and policy as two separate levels [30], our participants described community-level factors that were inseparable from the policy level. For instance, they described different stages in the “war on terror” that influenced polio vaccine uptake. Similarly, while our participants supported OPV, they also related to community members’ concerns and identified with their goals.

One of the most notable findings of this study relates to participants’ attributing much of the OPV resistance and hesitancy to a difference in priorities between local communities and the government that leads to mistrust in the OPV. These findings were consistent with previous studies [19, 36-39] that regarded structural problems like lack or non-existence of basic health services as a major reason for the resistance to OPV.

Consistent with those in previous studies [40-44] the participants in our study found religious beliefs, lack of knowledge, and lack of trust in the government and its international partners as the reasons for resistance to OPV. However, as these factors were articulated by journalists from the community, they provided more nuanced perspectives on their interrelationships. According to our participants, religious beliefs are not independent of the overall political situation or from the lack of resources that drive resistance to OPV. Moreover, involvement of religious scholars from the Deobandi school of thought in the OPV campaigns showed promise in increasing acceptance, according to our participants. This finding was consistent with previous studies that showed that involvement of religious scholars helps decrease resistance to OPV [45, 46]. However, there is room for improvement in that strategy.

The involvement of nationally reputable scholars caused resentment among local scholars, who felt left out and therefore started opposing OPV.

#### *4.1. Recommendations*

Our findings suggest some ways that local governments and UNICEF may be able to improve advocacy, including media coverage of polio vaccination, to increase its acceptance. First, these organizations could involve local journalists in the advocacy efforts and arrange tailored culture-centered trainings for them. These trainings could include increasing their health literacy levels, including different issues related to OPV. As our findings suggested language and literacy level of journalists from small towns was a major barrier in the effectiveness of trainings arranged by UNICEF. The trainings should be arranged in local languages and should keep the education and health literacy levels of these journalists in mind. Our findings also suggest that the journalists as community leaders advocate for polio vaccine but due to limited health literacy they are unable to answer the communities' questions and concerns. Therefore, these trainings should be detailed enough to improve their literacy so that they could address communities' concerns properly.

Our findings also highlighted structural barriers such as pressure from news rooms, lack of financial resources, and at times pressure from the media managers to not cover polio vaccination related stories in details, which in their opinion may negatively affect advertisements they get from organizations supporting polio eradication initiative. UNICEF's collaboration with Voice of America could be a roadmap for resolving some of these issues. Voice of America in collaboration with UNICEF has hired a team of reporters dedicated for the coverage of polio vaccination in Pakhtun dominant areas. UNICEF can offer one or two years long fellowships to reporters from the high-risk districts of KP to report on polio vaccination. In this regard, they can

sign agreements with the managers of these media outlets that the reporters would be given enough time every month to report a number of stories on polio. The fellowship can cover training, expenses incurred on coverage of polio related stories.

Organizations working for polio eradication should understand the importance of the involvement of local journalists in policymaking regarding OPV campaigns, especially regarding media coverage of the vaccine. There is a need to alert media managers from the major cities about their policies towards less-privileged or peripheral areas and how those policies impact the health of people living there. Organizations working for polio eradication should arrange workshops for the media managers, owners, and reporters from KP and FATA. A conversation among media owners, editors, and reporters from Pakhtunkhwa can help reduce disparities in the coverage of health between major cities and the peripheries. In addition, the government of Pakistan and its international partners need to improve the messages they send out through news reports, advertisements, and community mobilization.

The communication experts working for polio eradication need to involve religious scholars from every mosque in localities where resistance is high. However, involving renowned scholars may not work in some communities due to sectarian rifts and international lobbying within different sects.

#### *4.2. Limitations*

Our study is not without limitations. As it is a qualitative study, our sample may not be representative of all Pakhtun journalists. For instance, all the participants in this study were college-educated, and therefore may have higher levels of education than the average health journalist in KP. Moreover, methods other than interviews, such as ethnographic methods, can capture the experiences of the journalists in more depth.

#### *4.3. Conclusion*

Our findings highlight the complexity of resistance to polio vaccination among Pakhtun communities and the media coverage of OPV. Future interventions should attempt to use different facilitators--most notably journalists' support for OPV and their prominence as health information sources in their communities--to advance OPV campaigns. Moreover, these interventions should utilize multilevel strategies to address the different levels of barriers, most notably lack of trust due to neglect of more-pressing community health concerns.

**Funding:** This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Conflict of interest statement**

The authors have no conflicts of interest.

**Acknowledgements**

None.

## References

- [1] GPEI. History of polio. 2016.
- [2] Oshinsky DM. Polio: an American story: Oxford University Press; 2005.
- [3] WHO. Poliomyelitis. 2016.
- [4] Nishtar S. Pakistan, politics and polio. *Bulletin of the World Health Organization*. 2010;88:159-60.
- [5] Abraham T. Polio: The Odyssey of Eradication: Oxford University Press; 2018.
- [6] Pakistan Go. National Emergency Action Plan For Polio Eradication 2015-16. Islamabad: National Task Force for Polio Eradication; 2015. p. 29.
- [7] Endpoliopakistan. Polio Today. In: EOC, editor. Islamabad: Government of Pakistan; 2019.
- [8] Sirajuddin. May 2018 sees over 6,500 more vaccine refusals in KP anti-polio drive than last month: data. Dawn. Islamabad ed. Islamabad: Dawn Group; 2018.
- [9] UNIGME. Levels & Trends in Child Mortality Estimates Report 2018. U.S.: U.S. Interagency Group for Child Mortality Estimation; 2018. p. 44.
- [10] Yusufzai A. Minor diseases cause death of newborns in Fata. Dawn. Peshawar: Dawn Group; 2018.
- [11] Closser S. Chasing polio in Pakistan: why the world's largest public health initiative may fail: Vanderbilt University Press; 2010.
- [12] NationalEmergencyOperationCenter. National Emergency Action Plan. Islamabad: Government of Pakistan; 2018. p. 80.
- [13] Khan T, Qazi J. Hurdles to the global antipolio campaign in Pakistan: an outline of the current status and future prospects to achieve a polio free world. *Journal of epidemiology and community health*. 2013;67:696-702.
- [14] Khan TM, Sahibzada MUK. Challenges to health workers and their opinions about parents' refusal of oral polio vaccination in the Khyber Pakhtoon Khawa (KPK) province, Pakistan. *Vaccine*. 2016;34:2074-81.
- [15] Naeem M, Adil M, Abbas SH, Khan A, Khan MU, Naz SM. Coverage and causes of non immunization in national immunization days for polio; A consumer and provider perspective study in Peshawar. *Journal of Postgraduate Medical Institute (Peshawar-Pakistan)*. 2011;26.
- [16] Closser S, Rosenthal A, Maes K, Justice J, Cox K, Omidian PA, et al. The global context of vaccine refusal: Insights from a systematic comparative ethnography of the global polio eradication initiative. *Medical anthropology quarterly*. 2015.
- [17] Closser S, Jooma R. why we must provide better support for Pakistan's female frontline health workers. *PLoS Med*. 2013;10:e1001528.
- [18] Shah M, Khan MK, Shakeel S, Mahmood F, Sher Z, Sarwar MB, et al. Resistance of polio to its eradication in Pakistan. *Virology journal*. 2011;8:1.
- [19] Closser S, Jooma R, Varley E, Qayyum N, Rodrigues S, Sarwar A, et al. Polio Eradication and Health Systems in Karachi: Vaccine Refusals in Context. *Global Health Communication*. 2015;1:1-9.
- [20] Riaz H, Rehman A. Polio vaccination workers gunned down in Pakistan. *The Lancet Infectious Diseases*. 2013;13:120.

- [21] UNICEF. Polio Communication Global Guide: A how-to manual for the art and science of maximizing immunization rates through communication. Global Polio Eradication Initiative; 2016. p. 195.
- [22] Center EO. EOC Communication Update. Islamabad: Government of Pakistan; 2018. p. 4.
- [23] Center EO. EOC Communication Update. Islamabad: Government of Pakistan; 2018. p. 5.
- [24] Reporter A. False report blamed for rise in polio refusal cases. Dawn. Islamabad ed. Islamabad: Dawn.com; 2018.
- [25] Hinnant A, Len-Ríos ME, Oh HJ. Are health journalists' practices tied to their perceptions of audience? An attribution and expectancy-value approach. *Health communication*. 2012;27:234-43.
- [26] Lariscy RW, Avery EJ, Sohn Y. Health journalists and three levels of public information: Issue and agenda disparities? *Journal of Public Relations Research*. 2010;22:113-35.
- [27] Forsyth R, Morrell B, Lipworth W, Kerridge I, Jordens CF, Chapman S. Health Journalists' perceptions of their professional roles and responsibilities for ensuring the veracity of reports of health research. *Journal of Mass Media Ethics*. 2012;27:130-41.
- [28] Voss M. Checking the pulse: Midwestern reporters' opinions on their ability to report health care news. *American Journal of Public Health*. 2002;92:1158-60.
- [29] Obregón R, Waisbord S. The complexity of social mobilization in health communication: top-down and bottom-up experiences in polio eradication. *Journal of health Communication*. 2010;15:25-47.
- [30] McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health education quarterly*. 1988;15:351-77.
- [31] Nyambe A, Van Hal G, Kampen JK. Screening and vaccination as determined by the Social Ecological Model and the Theory of Triadic Influence: a systematic review. *BMC public health*. 2016;16:1166.
- [32] Privitera GJ. *Research methods for the behavioral sciences*: Sage Publications; 2013.
- [33] Mishler EG. Viewpoint: Critical perspectives on the biomedical model. *Social contexts of health, illness, and patient care*. 1981:1-23.
- [34] Nutbeam D, Harris E, Wise W. *Theory in a nutshell: a practical guide to health promotion theories*: McGraw-Hill; 2010.
- [35] Hinnant A, Oh HJ, Caburnay CA, Kreuter MW. What makes African American health disparities newsworthy? An experiment among journalists about story framing. *Health education research*. 2011;26:937-47.
- [36] Yahya M. Polio vaccines—"no thank you!" barriers to polio eradication in Northern Nigeria. *African Affairs*. 2007;106:185-204.
- [37] Renne E. Perspectives on polio and immunization in Northern Nigeria. *Social science & medicine*. 2006;63:1857-69.
- [38] Renne EP. *The politics of polio in northern Nigeria*: Indiana University Press; 2010.
- [39] Abimbola S, Malik AU, Mansoor GF. The final push for polio eradication: addressing the challenge of violence in Afghanistan, Pakistan, and Nigeria. *PLoS Med*. 2013;10:e1001529.
- [40] Adoghe A. *Linking policy with technology: role of mobile communications technology in polio eradication initiative in Northern Nigeria*: Royal tropical institute (KIT); 2011.
- [41] Ghinai I, Willott C, Dadari I, Larson HJ. Listening to the rumours: What the northern Nigeria polio vaccine boycott can tell us ten years on. *Global public health*. 2013;8:1138-50.

- [42] Jegede AS. What led to the Nigerian boycott of the polio vaccination campaign? PLoS Med. 2007;4:e73.
- [43] Kaufmann JR, Feldbaum H. Diplomacy and the polio immunization boycott in Northern Nigeria. Health affairs. 2009;28:1091-101.
- [44] Khowaja AR, Khan SA, Nizam N, Omer SB, Zaidi A. Parental perceptions surrounding polio and self-reported non-participation in polio supplementary immunization activities in Karachi, Pakistan: a mixed methods study. Bulletin of the World Health Organization. 2012;90:822-30.
- [45] Warigon C, Mkanda P, Banda R, Zakari F, Damisa E, Idowu A, et al. The Journalists Initiatives on Immunisation Against Polio and Improved Acceptance of the Polio Vaccine in Northern Nigeria 2007–2015. Journal of Infectious Diseases. 2016;213:S86-S90.
- [46] Nasir S-G, Aliyu G, Ya'u I, Gadanya M, Mohammad M, Zubair M, et al. From intense rejection to advocacy: How Muslim clerics were engaged in a polio eradication initiative in Northern Nigeria. PLoS Med. 2014;11:e1001687.