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POLIO
ERADICATION
PROGRAMME

Assessing community trust of polio vaccination in key reservoir, corridor and high burden districts in Pakistan:

A knowledge, attitudes, practices and experiences study

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Executive Summary

Background –

This study is among the core strategies for the Polio Eradication Initiative (PEI) communication programme to ensure independent scientific evidence which supports the design and continuous improvement of implemented strategies. Building trust is the cornerstone of both the operational and communication strategy of the programme. Better understanding communities where polio circulation is most entrenched – in particular better understanding ‘community trust’ in these locations – is only one of several strategies needed for achieving eradication, but it is a key pillar for evidence-based decision-making. In recognition that ‘trust’ is a multidimensional concept which requires insights into several interconnected areas, this study combined the following key elements of trust with knowledge, attitudes, practices and experiences indicators as part of a holistic framework for building vaccine trust and acceptance: health seeking behaviours and trust in local health systems; knowledge of polio virus; trust in polio vaccine; trust in polio-related information sources, and local social norms regarding vaccination; trust in vaccinators; perception of/trust in polio campaigns; and recommendations for programme improvement (as provided by study participants).

Methods –

Mixed method (quantitative and qualitative) research was conducted in four provinces and eight districts of Pakistan as identified by the National Emergency Operations Centre (NEOC) as locations which contained ‘Super High Risk Union Councils’ (SHRUCs) which contain core ‘reservoir’ areas for the polio virus (Peshawar, Karachi, and ‘Quetta Block’), ‘corridor’ districts in Southern Khyber Pakhtunkhwa (e.g. Bannu District) and specific areas of Punjab Province (e.g. Lahore, Rawalpindi Districts) which persist in contributing to virus circulation and/or positive environmental samples. That is, this study prioritized areas within Pakistan with the (perceived) highest levels of vaccine hesitancy. **Quantitative data collection** relied on a **cluster sampling approach** of self-reported behaviours. A **survey** of total of 1,680 was conducted with caregivers of children under 5 (n=420 per province; n=210 per district/town). The sample included 100 Union Councils characterised as ‘SHRUC, ‘corridor’ and ‘reservoir’ areas. **Qualitative data collection** activities used a **purposive sampling strategy** (confirmed by past campaign data) to speak with an equal representation of caregivers (per province) with a history of ‘always’, ‘sometimes’ and ‘never’ accepting OPV for their children. The sample included 18 Union Councils characterised as ‘SHRUC, ‘corridor’ and ‘reservoir’ areas. **Observations** and **informal interviews** with PEI field staff were conducted during three national campaign cycles (Jan and March NIDs, and June 2021 SNID respectively). Finally, 173 **in-depth interviews** were undertaken with caregivers of children under 5 (n=46, Khyber Pakhtunkhwa; n=49, Sindh; n=33, Baluchistan; and n=45 Punjab). All data collections activities were carried out from Jan to August 2021.

Highlights of Key Findings and Implications –

Results from the 2021 KAP+E study suggest support for and trust in the PEI programme (broadly speaking) is strong with self-reported acceptance of OPV high among most survey respondents in most districts (of note, self-reported acceptance is lowest in Quetta and Killa Abdullah). Further, trends among study participants who accept vaccination and additionally report that their family members, community and religious leaders, and trusted information sources are also supportive, strongly demonstrate the enabling environment created by the PEI program. However, as revealed by qualitative data collection activities, there remains a high deficit of trust among caregivers with a history of refusing OPV with a range of associated behaviours reported to avoid OPV vaccination (e.g.

hiding children, fake finger marking, not opening doors, and providing vaccinators with indirect reasons for the unavailability of their children during campaigns). Data from vaccine hesitant caregivers is strongly suggestive that past bad experiences/perceptions of the PEI program – e.g. too frequent campaigns, inability to meet needs for other health services, and reported coercive practices – continue to influence contemporary behaviours of caregivers who seeks ways to avoid OPV vaccination. The following provides a concise summary of data, per theme, based on mixed-methods findings, with additional reflections added on how current findings relate to previously conducted KAP surveys (quantitative only):

Health Seeking Behaviours and Trust in Local Health Systems

A positive trend was observed regarding self-reported first routine immunization (RI) status of children as well as self-reported OPV during last campaign and past year. Over 91% of caregivers across all four provinces informed that their children had received their first RI dose immediately after birth. Further, nearly 93% of children received OPV during last campaign, including 99% from KP, 94% from both Punjab and Sindh, and 84% from Baluchistan. Overall, more than 90% of caregivers self-reported that their children had ‘always’ received polio drops during the past year, which shows extensive efforts of the PEI program in all provinces. In comparison to the other three provinces, **a more moderate number of caregivers in Baluchistan (72%) self-reported accepting OPV in past year.** Among caregivers with a documented history of vaccine hesitancy for OPV, **reported uptake of RI services was delayed** (likely related to an increase in home births from this cadre of respondents) and lack of timely adherence to the children’s RI schedule (due to a range of family constraints) was frequently reported.

Majority of caregivers self-reported a great deal of trust in the public and private health sector for both routine immunization and general health services – except for Baluchistan – where a significant trust deficit was found in both public and private health systems highlighting low satisfaction with the quality, availability and affordability of services. **A large contrast in caregivers’ perceptions between Sindh and other provinces was observed regarding trust on traditional healers/hakeems and spiritual/religious healers for general health services,** where more than 82% caregivers in Karachi, Sindh province indicated ‘a great deal of trust’ in traditional healers. These findings highlight strong cultural beliefs and practices amongst caregivers, which often lead to consultation with local healers. Qualitative data collection activities **strongly supports this finding** with vaccine hesitant caregivers more likely to first (and potentially only) consult with local healers for childhood-related illnesses. One hypothesis generated by this study is that **local healers are the most utilised and trusted source of child health care for hesitant caregivers** and may be **more likely to disfavor OPV** and counsel their clients into using non-biomedical/religious methods of protecting children.

Knowledge of Polio Virus

An overall high level of knowledge of caregivers was observed regarding polio disease, symptoms and best age for receiving first RI. Provincial variation were witnessed as a high proportion of caregivers in Punjab, KP and Sindh were found ‘very concerned’ and ‘very serious’, if their children would get sick with polio. These results indicate high knowledge of polio virus in these provinces, endorsing PEI focused interventions within the areas, particularly in terms of frequent visits of vaccinators and social mobilization activities. These findings are **in contrast with Baluchistan,** however, where a moderate number of caregivers were either ‘somewhat concerned’ or ‘not at all concerned’ about the possibility of their child contracting polio. The scarcity of knowledge in Baluchistan province was also evident from the fact that more than one-third of caregivers did not know about the best period for receiving first immunization for children under 5, while some, especially in Killa Abdullah, opined that children should never be vaccinated. Qualitative data

collection activities provide additional context to these findings in that **it is not lack of knowledge of polio virus of confirmed vaccine hesitant caregivers which is at issue** – it is lack of caregiver trust in and belief regarding what is being communicated about the virus by health authorities which is disputed.

Trust in Polio Vaccine

A high trust in caregivers was reported regarding effectiveness of polio drops for disease prevention and safety for children, however, moderate to low level of trust was seen in Baluchistan, where a majority of caregivers, especially in Killa Abdullah, perceived polio drops as either only ‘somewhat effective/safe’, ‘not very effective/safe’, or ‘not at all effective/safe.’ The variance in key metrics depict differences in communities, residing across provinces, where positive perceptions about polio highlights a higher trust in information communicated by health authorities, and positive acknowledgement of government and PEI contributions in terms of their efforts to protect children in Pakistan from infection. **Negative previous experiences and perceptions indicate community ‘pockets’ of negative sentiments which the PEI program needs to continue addressing.** Study findings (broadly speaking) highlight that vaccine acceptance is widespread and ‘refusals’ must be addressed locally in the smaller pockets in which they are found. However, Baluchistan may be a key exception to this general finding. Ultimately, trust in OPV is a multi-layered issue which **requires nuanced and localized approaches to address in most locations.** However, **more systemic changes to the PEI programme’s approach to caregivers in Baluchistan** deserves careful consideration.

Trust in Polio-related Information Sources, and Local Social Norms for Vaccination

Majority of caregivers (>90%) from KP and Sindh perceived the idea of giving polio drop to children ‘very good’ as compared to Punjab (66%) and Baluchistan (39%). Amongst all provinces, more negative perceptions were noticed in Baluchistan, where majority of caregivers perceived that most persons they knew within these different groups did *not* think it was a good idea to give drops to children. These results highlight social norms and experiences of caregivers with local health systems and polio vaccinators, which are highly influenced by local communities, neighbors, opinion leaders, influencers and gatekeepers. In the case of Baluchistan, larger pockets of caregivers (in comparison to the other provinces) were found to have trust deficits in health workers and local facilities, polio vaccinators, neighbors and community leaders, indicating poor social ties and social support systems. **In terms of awareness of negative rumors about polio on various means of social media (e.g., Facebook, Twitter, WhatsApp), a significant number of caregivers** did not have access to these platforms. Among those who were more familiar with social media, caregivers in Baluchistan and Sindh provinces were more likely to report having heard, read or seen negative content on WhatsApp and Facebook. **A majority of caregivers’ (>78%) had heard, read or seen positive statements about polio in the past year.** These findings indicate PEI program’ continuous and extensive efforts, as well as regular contribution of outreach and other channels of information in addressing the misinformation and false statements related to polio amongst communities. However, there is a still a gap needed to be bridged, especially in Baluchistan. **Provincial key metrics highlighted that the majority of caregivers (> 67%) in KP, Sindh and Punjab perceived that all of their neighbors accept polio drops.** In Baluchistan, more than 63% of caregivers perceived that ‘some neighbors’ were against polio drops. For those caregivers, who stated that not all of their neighbors accepted OPV, their reasons for avoiding vaccination included children were sick/ill, asleep or not at home. Further, caregivers stated their belief that their neighbours avoided OPV due to belief that their children were not likely to contract polio. These findings suggest maintaining social cohesion to promote more positivity about polio amongst ‘pockets’ of hesitant caregivers, particularly in Baluchistan.

Trust in Vaccinators

A high proportion of caregivers confirmed the visit of vaccinators during the last polio campaign, however, less than one fourth of caregivers in Baluchistan stated they had not witnessed any vaccinator. Similarly, caregivers (except in Baluchistan) acknowledged the importance of vaccinator visits to their homes. A large number of caregivers, (except in Baluchistan) had great deal of trust in polio vaccinators, and found them caring and knowledgeable about their children’s health. Regarding their reasons for accepting drops provided by their vaccinators, the most frequently reported caregiver response were: to protect their children from polio; to end polio for children in their village/neighbourhood and in Pakistan; and the perception of vaccination as a social norm. Per qualitative data collections activities with vaccine hesitant caregivers in particular, mistrust of vaccinators often stemmed from a combination of the following: being against female workers in general, having a past negative experience with the PEI programme (e.g. coercion) which a caregiver understood as caused by a vaccinator ‘reporting on’ them to district administrators, and/or feeling as if vaccinators did not respect their right to make their own decisions to accept (or not) OPV.

Perception of/Trust in Polio Campaigns

Majority of the caregivers in KP (86.9%), followed by Baluchistan (52.5%), Punjab (41.3%) and Sindh (39.3%) affirmed that vaccinators visited their houses ‘all the time’ during the last year. In Sindh and KP, most caregivers were of the opinion that vaccinators visited their homes ‘about the right number of times’ for giving polio drops, unlike in Baluchistan and to a lesser extent in Punjab, where caregivers felt that polio vaccinators visited their homes ‘too many times’ (e.g. highlighting caregivers’ frustration with frequent vaccination campaigns). **More positive behavior of vaccinators with caregivers was reported in KP and Sindh, than in Punjab and Baluchistan, during the last year.** Some caregivers, particularly in Baluchistan, recorded pressures for accepting or refusing polio drops, such as administrators/local government officials threatening to imprison them or their families. Results (at national-level) are very encouraging and reflect long-term efforts of the PEI program, however, the perceptions of coercing families, particularly in Baluchistan (and isolated locations throughout the other provinces) needs to be dealt with through trust and relationship building. **Most caregivers (except in Baluchistan) had awareness about vaccinators being local, mostly from their village/neighborhood and also appreciated the idea of giving polio drops to children at homes and other local places.** In contrast, caregivers in Baluchistan were mostly against giving polio drops to children in locales such as schools, parks, streets, festivals etc., stating this was a ‘very bad idea.’ **Most caregivers in KP, Sindh and Punjab showed trust in national and provincial governments, and local health organizations for polio vaccination activities.** Trust deficits were noticeably higher among caregivers in Baluchistan. Nearly half of caregivers – across all provinces – perceived the programmes efforts to bring polio drops to children in their neighborhood were ‘too much.’ This finding is significantly associated with caregiver belief that other health services should also receive attention. More than three fourths of caregivers – across all provinces – expressed their intention of giving polio drops to children ‘every time’ they were offered before their child reached their 5th birthday. **The majority of caregivers showed preference for vaccination during morning time at homes and/or local health facilities,** except in Baluchistan, where many had no desire to vaccinate children, either at home or at health facilities at any time of day.

Recommendations for Improvement (as provided by study participants)

Both qualitative and quantitative components of this study concluded by asking study participants for their recommendations for PEI programme improvement. When comparing these findings across provinces, we clearly delineate four reoccurring recommendations (in order of frequency): **1) reduce the frequency of campaigns** (this finding was emphasized most by caregivers in Sindh and Punjab), **2)**

meet caregiver demands for other services (this finding was emphasized by caregivers across all study provinces) , **3) eliminate the use of coercive tactics** (this finding was emphasized by caregivers across all study locations and includes both actual (e.g. imprisonment, taking electric meters) and implied (e.g. use of police forces to support campaigns) use of coercive tactics), and **4) increase awareness raising efforts in local languages and/or using visual methods which illiterate populations can understand**. The similarity in these findings across provinces serves to emphasize their importance among the population sampled for this study.

Reflections on Trends from Previously Conducted KAP Surveys –

Status of OPV during Last Campaign

- A slight decline (95% in 2017; 93% in 2021) was observed in self-reported acceptance of OPV in Pakistan, however these may be due to provincial variations and other confounding factors such as disruption of immunization services due to COVID-19 pandemic. Further, reduced rates of reported acceptance in Baluchistan in 2021 (as compared to the other three provinces) also contributes to this lower national average.

Trust in Polio-related Information Sources, and Local Social Norms

- A significant increase (56% in 2017; 85% in 2021) in caregivers' perception of giving polio drops as a very good idea particularly amongst health workers was seen. Similarly, higher trust on health workers and polio vaccinators as the most trusted source of information related to OPV was witnessed in 2021.
- A decrease in negative rumors related to polio drops making boys (24% in 2017; 18% in 2021) or girls (24% in 2017; 16% in 2021) sterile was indicated.

Trust in Vaccinators

- An increase of nearly 10% (73% in 2017; 83% in 2021) in caregivers' perception of having a 'great deal' of trust in vaccinators was observed. However, a slight decrease from 70% in 2017 to 64% in 2021 was witnessed regarding caregivers who said vaccinators were 'very knowledgeable' about their children's health.

Perception of/Trust in Polio Campaigns

- A reduction of around 23% (90% in 2017; 67.8% in 2021) in the perception of caregivers saying that all their neighbors give drops to their children every time drops are offered was witnessed.
- Similar to 2017, caregivers most commonly mentioned local health organizations and national government as responsible for organizing polio drop efforts.
- A decline (85% in 2017; 76% in 2021) in caregivers intention to give their child polio drops 'every time' they are offered until the child is 5 years old was observed.

Research Team

Dr. Ginger A. Johnson (Medical Anthropologist, UNICEF-Pakistan) served as the Primary Investigator for the design, preparation, conduct, administration and execution of the KAP+E study. Dr. Johnson also served as the Qualitative Team Lead and was responsible for data coding and thematic analysis of observational and in-depth interview data. Dr. Luqman Hakeem and Rahat Batool (Qualitative Data Collection Specialists, MicroMerger Ltd.) were responsible for the collection of observational and in-depth interview data, in addition to participating in the validation and preliminary analysis of findings.

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Dr. Johnson, Ms. Malik and Dr. Iqbal drafted this report along with contributions from Dr. Hakeem and Ms. Batool. A summary of key findings were first presented to each of the four provincial communication teams for validation, and a draft report was subsequently circulated to UNICEF and NEOC partners for their input and critical insights prior to report finalization.

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1. Introduction

1.1. Background

Pakistan and Afghanistan are the only two endemic countries in the world still struggling to interrupt wild poliovirus transmission and meet the target of global polio eradication. The last several polio campaign cycles conducted by the Polio Eradication Initiative (PEI) in Pakistan have demonstrated that the situation may be deteriorating (in specific high-risk locations in the country), and programmatic changes are required so as not to endanger key achievements made to date in polio eradication. The COVID-19 pandemic and political instability in Afghanistan has further constrained eradication efforts. In past years, PEI has conducted an annual knowledge, attitudes and practices (KAP) quantitative survey to guide strategic communications for polio eradication efforts. National survey efforts were discontinued from 2018-2020 due to challenges posed by security incidents, COVID-19 and other crises which impacted the programme's ability to conduct fieldwork. In light of key recommendations provided by the Technical Advisory Group (TAG) to "measure 'community trust' and embed it as a core indicator of PEI progress reportable at the most senior levels of the national program,"¹ the PEI programme is moving forward with reinstating national data collection efforts with important adaptations made to include using qualitative methodologies in recognition of the important depth of information that qualitative insights bring to complex issues of 'trust.' Given the extended duration of the eradication programme in Pakistan, the current study also takes a revised approach to prior KAP studies to include key indicators on 'experiences' (i.e. KAP+E), both historical and contemporary, and how these impact perceptions of the oral polio vaccine (OPV), vaccinators and the PEI programme.

1.2. Study Locations (High-Risk Locations)

This study focused upon priority districts as identified by the National Emergency Operations Centre (NEOC) in Pakistan. Within Pakistan, there are designated 'super high risk Union Councils' (SHRUCs) which contain core 'reservoir' areas for the polio virus (Peshawar, Khyber Pakhtunkhwa Province; Karachi, Sindh Province; and 'Quetta Block', Baluchistan Province). 'Tier 1' districts in these provinces have persistent levels of virus circulation. In addition to these reservoir locations, there are 'corridor' districts, for example in Southern Khyber Pakhtunkhwa (e.g. Bannu District) and specific areas of Punjab Province (e.g. Lahore, Rawalpindi Districts) which persist in contributing to virus circulation. These areas also tend to contain majority Pashtun (i.e. 'priority') populations which have experienced 81.2% of wild polio virus (WPV) cases over the past 10 years (and 89% within the last 8 years).² 'Priority' populations, internally understood as persons of Pashtun ethnicity within the PEI programme in Pakistan, are a minority ethnic group (15.4% of the population), yet they represented the majority of polio cases. Almost 90% of polio cases within the last 10 years have occurred among Pashtun-speaking populations.^{3,4} More recently, from 2008 to May 2021, of the 244 WPV1 cases reported, 64% (n=157) have been from priority communities. Pashtun children are also more likely than other segments of the population to be zero dose for routine immunizations. For these reasons, this is a 'priority' population of concern to the PEI programme. See Table 1 and Figure 1 for a detailed listing of all study provinces, districts and UCs, and the type of data collection activity conducted per location.

¹ Global Polio Eradication Initiative (2020). Meeting of the Technical Advisory Group (TAG) on Polio Eradication in Pakistan. Virtual, June 12 & 15, 2020.

² Johnson, Ginger, Luqman Hakeem and Rahat Batool (2020). Socio-cultural profile of polio program in Southern Khyber Pakhtunkhwa, Pakistan. UNICEF/National Emergency Operations Centre for Pakistan.

³ IMB. 2019. *The Art of Survival: The Polio Virus Continues to Exploit Human Frailties*. Independent Monitoring Board of the Global Polio Eradication Initiative, 17th Report.

⁴ Johnson, Ginger A., Luqman Hakeem, & Rahat Batool (2020). *Socio-cultural profile of polio programme in Southern Khyber Pakhtunkhwa, Pakistan*. UNICEF/Pakistan Polio Eradication Programme.

Table 1: Study locations selected for quantitative (survey) and qualitative (interviews, observations) KAP+E data collection activities.

	PESHAWAR			RAWALPINDI	BANNU †		
	UCs	Qual	Quant		UCs	Qual	Quant
	Akhood Abad	--	✓		CTR 1	--	✓
	Bhana Mari	--	✓		CTR 2	--	✓
	Cantt Ward 5	--	✓		CTR 3	--	✓
	Deh Bahadar	--	✓		CTR 4	--	✓
	Deri Baghbanan	--	✓		CTR 5	--	✓
	Hazar Khwani-1	✓	✓		CTR 17	✓	✓
	Hazar Khwani-2	--	✓		3	--	✓
	Kakshal-2	--	✓		4	--	✓
	Landi Arbab	--	✓		5	--	✓
	Nothia Jadeed	--	✓		7	--	✓
	Nothia Qadeem	--	✓		8	✓	✓
	SMT-1	✓	✓		9	--	✓
	SMT-2	--	✓		10	--	✓
	Sheikh Junaid Abad	--	✓		37	--	✓
	Wazir Bagh	--	✓		80	--	✓
	Yakatoot-1	--	✓		Chaklala	--	✓
	Yakatoot-2	--	✓		Girja	--	✓
	Yakatoot-3	--	✓		Jalala	--	✓
	Amandi	--	✓		Saraye Kala	--	✓
	Aral Hathi Khel	--	✓		C4	--	✓
	Bazar Ahmad Khan	--	✓		1	--	✓
	Bharat	--	✓		10	--	✓
	City I	--	✓		16	✓	✓
	City II	--	✓		29	--	✓
	Daud Shah	--	✓		67	--	✓
	Dirma Khel	✓	✓		69	--	✓
	Domel-1	✓	✓		83	--	✓
	Domel-2	--	✓		84	--	✓
	Ghari Sher Ahmad	--	✓		90	--	✓

	KHI EAST, WEST & KIMARI			QUETTA	KILLA ABDULLAH †		
	UCs	Qual	Quant		UCs	Qual	Quant
	Gujro A	--	✓		10B	✓	✓
	Gujro B	--	✓		11A	--	✓
	Gujro C	--	✓		11B	--	✓
	Gujro D	✓	✓		Baleli-A	--	✓
	Gujro E	--	✓		Kharotabad-1	--	✓
	Mangopir-8	✓	✓		Kharotabad-2	✓	✓
	Songal-5	✓	✓		D. Ashazai-1	--	✓
	Ittehad Town-2	✓	✓		D. Ashazai-2	--	✓
					Mabad-1	--	✓
					Mabad-2	--	✓
					Sirki Talari	--	✓

† KILLA ABDULLAH: Four clusters in D. Ashazai were originally included in the sampling strategy but were removed before data collection due to security concerns (i.e. Boldak War). These UCs were replaced with alternate clusters.

	BANNU †			LAHORE	LAHORE		
	UCs	Qual	Quant		UCs	Qual	Quant
	Ghazi Merjan	--	✓		93	--	✓
	Haved Landidak	--	✓		117	--	✓
	Hinjal	--	✓		118	--	✓
	Ismail Khel	--	✓		120 A	--	✓
	Kakk I	--	✓		120 C	--	✓
	Kakk II	--	✓		136	--	✓
	Kala Khel	✓	✓		139	--	✓
	Lalo Zai	--	✓		143	✓	✓
	Mamash Khel	✓	✓		145	--	✓
	Mita Khel	--	✓				
	Narmi Khel (NK)	✓	✓				
	Sikandar Khel Balla	--	✓				
	Sukari	--	✓				
	Takhti Khel (TK)	✓	✓				

† BANNU: UCs Asperka Waziran, Bizen Khel-1, Bizen Khel-2, Ghura Baka Khel, Gurbaz, Jani Khel Colony, and Sain Tanga were originally included in the sampling strategy but were removed before data collection due to security concerns. These UCs were replaced with alternate clusters.

Figure 1: Map of Pakistan illustrating study locations.



2. Methodology

There is an inherent bias within the sampling strategy for this study (as with any data collection activity conducted only in high-risk locations) in that sampled respondents in these locations are more likely to be vaccine hesitant. Data reported here is not meant (and should not be interpreted) as nationally representative of caregiver KAP+E regarding the polio programme in Pakistan. **Data reported here is meant to be interpreted as representative of caregiver KAP+E regarding the polio programme in key locations in Pakistan with the (perceived) highest levels of vaccine hesitancy. Findings are not meant, and should not be interpreted, as representative of all locations in the province (especially non-SHRUCs).** Future, larger-scale studies, may additionally want to include non-SHRUCs for national-level comparative purposes.

Research Team

Dr Ginger A. Johnson (Medical Anthropologist, UNICEF-Pakistan) served as the Primary Investigator for the design, preparation, conduct, administration and execution of the KAP+E. Dr Johnson also served as the Qualitative Team Lead and was responsible for data coding and thematic analysis of observational and in-depth interview data. Dr Luqman Hakeem and Ms Rahat Batool (Qualitative Data Collection Specialists, MicroMerger Ltd.) were responsible for the collection of observational and in-depth interview data, in addition to participating in the validation and preliminary analysis of findings. Mariam Z. Malik (Public Health and Evaluation Expert, Contech) served as the Quantitative Team Lead and was supported by Dr Sarosh Iqbal (Quantitative Research Expert, Contech) who was responsible for data analysis. Mr Abdul Hamid (Senior Bio-Statistician, Contech) and Ms Fareeha Jamil (Assistant Data Manager, Contech) worked on data management and on execution of the data analysis plan. The Quantitative Team was facilitated by three research associates from Contech, Ms Sidra Cheema, Ms Raheela and Ms Ayesha Naeem, who assisted in compiling data. Enumerators were monitored by Ms Aiman Saleemi (Quality Assurance Expert and M&E Expert, Contech) and managed by Ms Asiya Nawaz along with a virtual backstopping team. Dr Johnson, Ms Malik and Dr Iqbal drafted this report along with contributions from Dr Hakeem and Ms Batool. Note: All photo included in the report, were taken by members of the research team during data collection activities.

Qualitative Methodology -

2.1 Study Population (Caregivers of Children Under 5, PEI Staff)

Qualitative data collection activities (observations, in-depth interviews) occurred within a smaller sub-set of the total selected quantitative survey SHRUCs sites, with equal representation of male and female caregivers of children under 5 (per UC) within the following classification categories:

- Caregivers with a history of accepting OPV for children in their household during every campaign (identified within this report as **'always'** accepting caregivers);
- Caregivers with a mixed history of sometimes accepting, while other times refusing, OPV for their children (identified within this report as **'sometimes'** accepting caregivers)⁵; and
- Caregivers with persistently missed children (PMC) and/or who are labelled as 'chronic refusals' of OPV (identified within this report as **'never'** accepting caregivers).

⁵ If a caregiver refused vaccination between one to four times during the five-campaign period analysed for this study, then they were classified as 'sometimes.'

The above listed caregiver groups were identified on the basis of household data collected on children reached/missed during the past five consecutive campaigns conducted prior to beginning qualitative data collection activities in January 2021 (i.e. February, March, August, September and October 2020 campaigns) and in consultation with district and UC-level polio staff to verify national-level campaign data (e.g. DDPOs, DCOs, UCCOs). Further, the sampling strategy of pre-identifying ‘sometimes’ and ‘never’ caregivers could not be followed in Punjab (Lahore, Rawalpindi) due to the lack of CBV/campaign data which collected this level of detail on individual households. Therefore, caregivers in Punjab Province were classified as either ‘always’ or ‘not available’ households and data is reported along these lines in the sections below. More details on differences in the qualitative data collection strategy for Punjab Province are also provided in the relevant section below. Finally, dividing caregivers according to their known past practices, as this sample strategy highlights, serves as an important reference point within our reporting to directly link knowledge and attitudes with practices and experiences.

If needed for triangulation of data obtained during observations and interviews, additional unstructured, informational interviews were additionally conducted with PEI field staff in the same UCs sampled for qualitative data collection.

2.2 Timeline

The qualitative component of the study involved participant observation during three national and sub-national polio campaigns (NIDs/SNIDs) conducted in January, April and June 2021 respectively, and in-depth interviews with caregivers of children under 5 years of age. During the January 2021 NID, the research team focused their observational activities within the UCs in Peshawar where subsequent in-depth interviews occurred. During the April 2021 NID, the team focused their work within the UCs in Quetta and Killa Abdullah where subsequent in-depth interviews occurred. Finally, during the June 2021 SNID, observational activities within the UCs in Lahore and Rawalpindi were conducted where in-depth interviews occurred. Observations focused on the following types of activities: refusal conversion committee interactions with vaccine hesitant and refusing caregivers, jirgas convened to negotiate community priorities (e.g. where demand-based refusals existed), frontline worker (FLW) interactions with caregivers, FLW interactions with their supervisors and police forces providing security during campaigns, and (in general) the overall health status/health seeking behaviours of children and their caregivers. Observation of campaign activities did not occur in Sindh (Karachi) as there were no campaigns scheduled in these areas during the period allotted for fieldwork. As described above, in-depth interviews with ‘always,’ ‘sometimes,’ and ‘never’ and/or ‘not available’ caregivers of children under 5 years of age were subsequently conducted across all four provinces of Pakistan (see Table 1). In total, 173 in-depth interviews were conducted (n=46 in Khyber Pakhtunkhwa, n=49 in Sindh, n=33 in Baluchistan, and n=45 in Punjab).

2.3 Data Analysis and Deliverables

Detailed notes were taken during and after every observation period and interview and, where permission was granted by caregivers, audio recordings were made of interviews. Handwritten notes were fully transcribed and annotated with comments and analysis. Audio recorded interviews were selectively transcribed. It was not deemed appropriate for this research study to audio record all interviews as caregivers, particularly those who lived in areas with security concerns and high rates of non-responsiveness (e.g. Killa Abdullah, Bannu), were more likely to be suspicious about having their voices recorded. The research team documented all observations and conversations via detailed notes inputted on rapid assessment procedure (RAP) sheets, and self-recorded voice memos recorded immediately after an observed activity or interview where caregivers preferred not to have their voices recorded (and where security conditions were not a significant consideration). Analysis of data was conducted throughout the data collection process (Jan – July 2021). All observation and interview notes were regularly reviewed by the qualitative team. Qualitative data was subsequently triangulated with the KAP+E survey findings for inclusive reporting in provincial summary sections and in the Conclusions and Recommendations section at the end of this report.

Key Components of the Qualitative Methodology

- Participants were equally sampled (per UC) from the following classifications as determined by previous campaign data: ‘always’ ‘sometimes’ and ‘never’ and/or ‘not available’ caregivers of children under 5 years of age.
- Observational data was collected during three national/sub-national polio campaigns – Jan, Apr and Jun 2021 S/NIDs respectively.
- In-depth interviews were conducted with 173 caregivers from four provinces, eight districts/town and 18 UCs in Pakistan.
- The qualitative interview guide included a “core” set of questions that parallel KAP+E survey questions.
- Skilled interviewers (male and female) specifically trained in qualitative data collection, were employed for this study. Interviewers were fluent in Pashto, Urdu and English. The majority of caregiver interviews were conducted in Pashto which is reflective of the majority ‘priority’ populations which reside in the high-risk UCs sampled.
- Priority populations comprised 100% of our sample from Khyber Pakthunkhwa, 78% from Karachi, 94% from Quetta Block, and 38% from Punjab.

Quantitative Methodology -

2.4 Study Population (Caregivers of Children Under 5)

At the household level, a modified kish grid was used to select the participant caregiver. Mothers, fathers, grandmothers, grandfathers, maternal/paternal uncle and aunts etc. who were caretakers of children under 5 years were all potential respondents. Both male and female caregivers were interviewed, however data was not disaggregated by gender due to limited sample. Similarly, a modified kish grid was used to select a child for the respondent with reference to specific questions (i.e. “index” child), in case the eligible respondent had more than one child under the age of 5. That is, certain questions on the survey tool required the caregiver respondent to answer a question by reflecting on how it is related to one of their children under 5 years of age (e.g. “Are you concerned or not concerned that [index child] may contract polio this year?”).

2.5 Enumerators, Training & Timeline

Gender balance was achieved within each district level enumerator team which consisted of one male and one female member. A total of eight field teams (16 enumerators total) were formed to work within their selected districts/towns, across the four provinces selected for this study (see Table 1). Enumerator teams were identified, recruited, organized, trained, and supervised by Contech, who was also responsible for supervision, transportation and logistics of team movements. Training sessions for fieldwork and data collection was conducted over the course of four days from 7-10 July 2021 in Lahore (Training Report is available in Annex 5). After the final pilot of the tool in Lahore at the conclusion of enumerator training, the PI in collaboration with Contech, developed a final set of recommendations for revisions to the questionnaire and interview process as needed. The finalized questionnaire was then considered ready for fielding. The number of questions asked, excluding demographic questions, were n=56 with a total duration of (approximately) 25-30 minutes. Data collection took place immediately after the conclusion of enumerator training. Final questionnaire is available in Annex 6.

2.6 Survey Tool, Piloting Process, Data Analysis & Deliverables

Design of KAP+E survey was cross-sectional in nature and involved a rigorous, representative, and randomized sample of caregivers of children under the age of 5 living within the above identified high-risk locations. The PEI programme, led by UNICEF, provided initial survey questions to Contech International who then performed three separate pilot exercises of the translated questionnaire. Questions were refined and adjusted as needed following each pilot. After the tool was finalized, the paper-based questionnaire was converted into an electronic version for inputting into computer assisted personal interviews (CAPI) technology. CSEntry was used to enter data in the field, and clean the collected information. The data-entry protocol was configured to pick-up on questionnaire inconsistencies or skipping issues when data was entered. This tool was also programmed with the knowledge that, in some study locations, the Internet infrastructure would be limited. In such cases, the combined use of online and offline modes, provided by CPro, helped to avoid connectivity issues. This allowed field teams to fill in data offline, and synchronizing the data online at the time of their return to a location with Internet access (either through wifi or phone-network), where completed questionnaires could be quickly and easily uploaded.

After completion of all surveys, data was processed, cleaned and verified using quality control procedures, and appropriate sample weight were applied. Data was analyzed in SPSS. The quantitative team generated SPSS syntax files for data cleaning and analysis purposes. Measures of polio vaccine knowledge, attitudes, practices and experiences were presented in frequency tables and graphs with explanations provided in-text (per province). Considering the nature of assignment, descriptive and cross-tabulation analysis was performed. Descriptive analysis in the form of frequencies and proportions were carried out for categorical and ordinal variables, while mean or median and other measures of central tendency, e.g. Standard Deviation (SD), was also presented for continuous variables. Cross tabulations and tests of significance were applied between outcome variables (i.e., frequency of accepting polio drops), socio-demographic characteristics and other key variables related to trust in health system, trust in polio related sources of information, trust in vaccinators and campaigns. A p-value ($p \leq 0.05$) was considered statistically significant.

2.7 Sampling Considerations

The total sample size established for the target provinces was 1,680 (n=420 per province, n=210 per district) (see Table 2). The following sample size formula for sample calculation was used:⁶

Table 2: Sample size for survey (per province/district).

$$\text{sample size}(n) = \frac{z_{1-\frac{\alpha}{2}}^2 \cdot \alpha p(1-p)}{d^2}$$

Where:

Anticipated Population Prevalence, p= 50% (This prevalence provides the maximum sample size)

Level of confidence, α =95%

Significance Value, $\alpha z_{1-\frac{\alpha}{2}}^2 = (1.96)^2$

Absolute Precision Level = 10%

Design Effect Deff = 2

Adjustment of Non-response, 10%

Sample Size, n = 210

As illustrated above in the sample size formula, the sample size for the survey was calculated using 50% anticipated population proportion (i.e. caregivers of children under 5 years of age) with a 95% level of confidence (α) and 10% absolute precision level. This formula yields a sample of 96. Since the cluster sampling approach was proposed, the sample size was further amplified with a 2-point sampling design (i.e. design effect and adjusted for 10% non- response rate). Normally, a 2-point value of the design effect is considered appropriate to obtain the same precision of simple random sampling, thus doubling the sample size for cluster sampling. The above given assumption yields the sample size of 210 interviews from each district and 420 sample size for each of the four provinces (1,680 surveys total). Since district specific sample sizes were calculated, a district-based weight was calculated.

2.8 Sample Size Strategy

The survey adopted a cluster sampling approach. Cluster distribution was based on the population size of pre-selected Union Councils (UCs). The selection of clusters was done by applying the Probability Proportion to Size (PPS) of the population for each area/UC (i.e. larger areas had a greater probability of being selected). The sample was divided into 30 clusters with 7 interviews conducted per cluster which is the globally accepted standard strategy for immunization coverage surveys (i.e. 30x7 method). The target area of vaccinators was assumed as a cluster to be used for the final selection of households to be surveyed. That is, the catchment area of a vaccinator (as pre-established by the PEI programme) was considered as the Primary Sampling Unit (PSU).

⁶ Cochran, W. G. (1977). Sampling Techniques. 3rd Ed., John Willy & Sons, Inc. New York.

2.9 Ethical Considerations (Qualitative & Quantitative)

All work pertaining to the collection of data was undertaken in line with prevailing ethical guidelines to protect the welfare and confidentiality of participants. UNICEF's Protocol on Ethical Standards in Research and Data Collection were followed and appropriate consent was sought from all potential respondents. Six key areas of the ethical approach to this study should be highlighted:

- **Informed consent** – In order to respect the importance of informed consent and understanding how this is best approached in different settings, prior to their involvement, potential participants were given information about the study's objectives and verbal informed consent was obtained prior to beginning any data collection activity. Several persons approached for interview exercised the option not to participate (as was their right) as indicated in the Rate of Non-Responsiveness section below.
- **Confidentiality** – Ensuring the strict confidentiality of all research data through stringent guidelines on storage, access and protecting participant identity in data presentations is a cornerstone of any ethically conducted research activity. Within all reported findings, personally identifying information has been anonymized, and data on demographic information is (collectively) summarized in tables.
- **Use of data** – All members of the research team ensured that data collected in the course of the study was handled respectfully and used exclusively for the study's intended purpose.
- **Addressing Gender and Child Rights Issues** – Gender equality is a human rights issue and a prerequisite for sustainable development. This survey kept in consideration gender, child rights, equity and social exclusion barriers during all phases of research design and data collection.

Additionally, before the initiation of data collection, the research team obtained No Objection Certificates (NOCs) in collaboration with UNICEF who coordinated with provincial EOCs and district health and administrative authorities for data collection (NOCs are available in Annex 7). Additionally, a detailed introduction to the Research Team and the Theory of Change (ToC) for this study can be found in Annex 1 & 2. A more detailed description of the methodology for this study can be found in Annex 3.

Key Components of the Quantitative Methodology

- Participants were caregivers of children under 5 years of age.
- A total of 1,680 surveys were administered across four provinces (n=420 per province, 210 per district/town).
- Systematic, quantitative interviews consisting of 56 questions were administered. The questionnaire utilized past questionnaires as a starting point for ensuring comparability, with key adaptations made as needed to account for contemporary events (e.g. COVID pandemic) and the qualitative interview guide.
- Survey interviews lasted approximately 25-30 minutes.
- Enumerators were pre-selected and specifically trained for this project by Contech International, a local firm based in Lahore, Pakistan. In addition to being local to their respective study sites, enumerators were gender and language matched to the respondent population.
- Rigorous quality control measures, including technical backstopping, spot checking, and field monitoring was adopted in addition to continuous monitoring/supervision/problem-solving by Virtual Backstopping Team while enumerators were deployed.

3. Rate of Non-Responsiveness

“Refusals (both recorded and still refusals) have been a challenge for PEI. As an example, still refusals in Peshawar are 3 times higher than 3 years ago. Refusals are not big in numbers, but are also not small as a challenge.”

~Monitoring & Evaluation Officer, NEOC (June 2021)

Within any study, failure to obtain information from a designated individual, for any reason, is called a non-response (NR) and the proportion of such individuals is called the rate of non-responsiveness (RNR). The rate of non-responsiveness (for both qualitative and quantitative components of the KAP+E study) requires careful consideration and analysis (see Table 3).

Table 3: Rate of unit non-responsiveness for qualitative and quantitative components of the study.

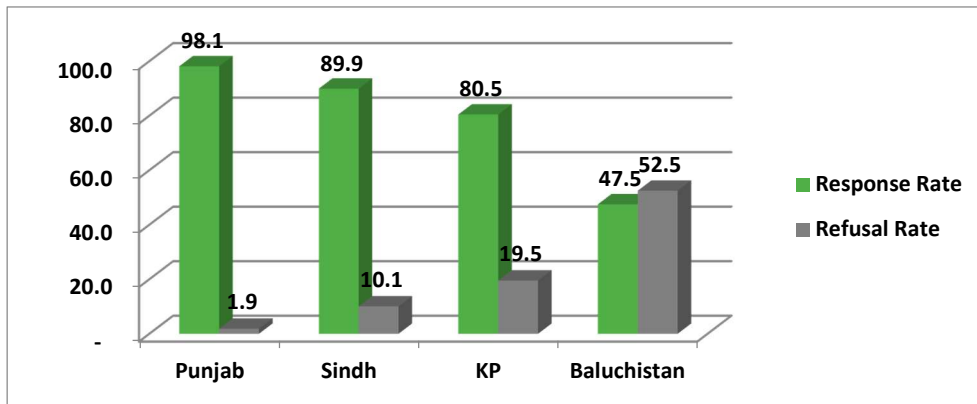
	Province	District	Interviews Attempted	Interviews Completed	Refusals	% Refusals
Qualitative	KP	Peshawar	31	24	7	22.5%
	KP	Bannu	30	22	8	26.6%
	Sindh	KHI Gadap	45	37	8	17.7%
	Sindh	KHI Baldia	16	12	4	25%
	Baluchistan	Quetta	43	33	10	23.2%
	Baluchistan	Killa Abdullah	6	0	6	100%
	Punjab	Lahore	29	23	6	20.6%
	Punjab	Rawalpindi	23	22	1	4.3%
Quantitative	KP	Peshawar	212	210	2	0.9%
	KP	Bannu	310	210	100	32.3%
	Sindh	KHI Gadap (East & West)	219	210	9	4.1%
	Sindh	KHI Kamari	248	210	38	15.3%
	Baluchistan	Quetta	430	210	220	51.2%
	Baluchistan	Killa Abdullah	454	210	244	53.7%
	Punjab	Lahore	214	210	4	1.9%
	Punjab	Rawalpindi	214	210	4	1.9%

Within the qualitative component of the study, 93.2% of interview refusals were classified as ‘sometimes’ or ‘never’ vaccine refusals. Further breaking down this number, 61.4% were ‘never’ caregivers and 31.8% were ‘sometimes’ caregivers (only 6.8% of interview refusals were ‘always’ caregivers). For quantitative KAP+E survey, a 27% refusal rate and 73% response rate was recorded across all provinces. Within Table 3 we can clearly distinguish higher patterns of NR within specific locations, namely Quetta Block and Bannu, for survey (quantitative) respondents. The highest survey refusal rate was seen in Baluchistan (in fact Baluchistan had a higher refusal rate than response rate), followed by KP (most refusals were in Bannu District). The lowest refusal rate was recorded in Punjab (1.9%). District-wise, the majority of refusals were recorded in Killa Abdullah (53.7%), Quetta (51.2%), Bannu (32.3%) and Karachi Kimari (15.3%).

Many survey researchers focus on response rates as an indicator of survey quality. The reason they often do this is because they have limited/no information about non-respondents upon which to base their

conclusions. Due to the design of our qualitative KAP+E study, which utilized a multi-level classification of vaccine hesitancy for participant selection (based on verifiable campaign data), we were able to characterize who our non-respondents most likely are (i.e. ‘sometimes’ and ‘never’ caregivers), and why they hesitated to participate in our survey and/or answer all questions asked. As a reminder, quantitative survey respondents were selected randomly (not purposively), and the distribution of RNR within this sample is more heavily skewed towards the specific locations identified above. As with the qualitative study, what this amounted to in practice, was more time spent in the field by some enumerator teams (especially in Baluchistan) who had a quota of 210 surveys to complete per district. The hypothesis generated by lessons learned from conducting the qualitative component of the KAP+E, is that these locations with high RNR have the highest levels of vaccine hesitancy – and therefore survey respondents/responses may be more likely to be skewed towards more positive or neutral impression of the polio programme. Figure 2 illustrates survey refusal and response rates per province.

Figure 2: Survey refusal and response rates per province.



High rates of NR from certain districts requires careful consideration. All eligible households having caregivers of children under 5 years were included in the sample using the random sample strategy described above. And as stated above, enumerators spent more time in the field than originally planned (in some locations) in order to complete their target sample (30 clusters x 7 interviews/caregivers). This survey documented two type of NR: 1) unit non-response (caregiver refusal to participate in the survey) and, 2) item non-response, (caregiver refusal to answer specific questions posed during the survey). It is our hypothesis, based on qualitative data collection activities, that for the unit non-response, those who refused to participate in our survey were more likely to be vaccine hesitant and/or have previous negative experience with polio drops or the polio programme.

The survey methodology (as described above) was designed in such a way as to randomly select caregivers from the selected clusters. Field teams randomly visited all eligible households and only interviewed those who agreed to participate voluntarily. Given the situation, non-responsiveness is likely to have identified vaccine hesitant groups, residing in certain areas of selected clusters, such as in Baluchistan. While the findings and interpretations presented within this report are valid to the extent that they reflect participating caregiver KAP+E, they may not fully account for the KAP+E of those who refused to participate. A potential way forward for future survey studies to approach known refusal clusters may therefore be to utilize a purposive (non-random) sampling strategy. However, it is important to keep in mind that with any ethically conducted data collection activity, participants – unequivocally - have the right to refuse. A more detailed description of the RNR for this study can be found in Annex 4.



پاکستان
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PAKISTAN
POLIO
ERADICATION
PROGRAMME

Khyber Pakhtunkhwa



CONTECH INTERNATIONAL

4. Khyber Pakhtunkhwa: Peshawar & Bannu

Key Components of the Methodology

- Selected study locations in Peshawar and Bannu are locations with the (perceived) highest levels of vaccine hesitancy towards OPV in the province due to: highest percentage of missed children (i.e. still missed, still refusal and still not available), high concentration of ‘priority’ populations, continuously positive environmental samples, and/or confirmed cases of polio in 2019-2020.

Quantitative –

- Data collection occurred in the following districts and UCs of Khyber Pakhtunkhwa:
 - Peshawar:** Akhoon Abad, Bhana Mari, Cantt Ward-5, Deh Bahadar, Deri Baghbanan, Hazarkhwani 1, Hazarkhwani 2, Kakshal 2, Landi Arbab, Nothia Jadeed, Nothia Qadeem, Shaheen Muslim Town1, Shaheen Muslim Town2, Sheikh Junaid Abad, Wazir Bagh, Yakatoot 1, Yakatoot 2 and Yakatoot 3
 - Bannu:** Amandi, Aral Hathi Khel, Bazar Ahmad Khan, Bharat, City I, City II, Daud Shah, Dirma Khel, Domel-1, Domel-2, Ghari Sher Ahmad, Ghazi Merjan, Haved Landidak, Hinjal, Ismail Khel, Kakk (I), Kakk (II), Kala Khel, Lalo Zai, Mamash Khel, Mita Khel, Sikandar Khel Balla, Sukari, Takhti Khel (TK).
- Within each district, 30 clusters with 7 eligible interviews were conducted, in total **210** interviews were carried out within each district, overall in Khyber Pakhtunkhwa, sample of **420** was completed.
- 102 refusals (2 in Peshawar and 100 in Bannu) were recorded.

Qualitative –

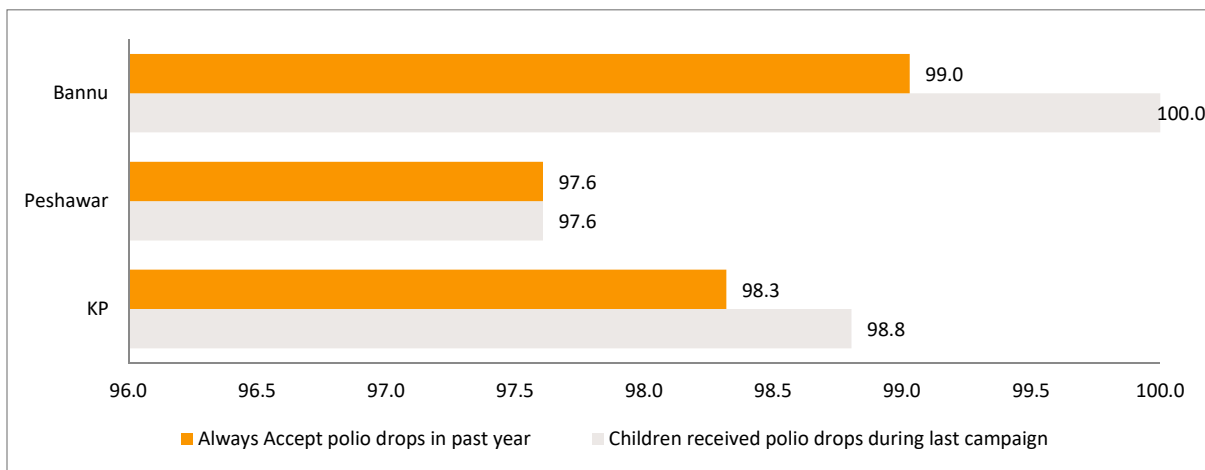
- Data collection occurred in the following districts and UCs:
 - Peshawar:** Shaheen Muslim Town-1, Hazar Khwani-1; and
 - Bannu:** Dirma Khel, Mamash Khel, Kala Khel, Domail, Narmi Khel, Takhti Khel.
- Participants were equally sampled (per district) from the following three ‘classifications’ as determined by campaign data collected from past five consecutive rounds of OPV (i.e. February, March, August, September and October 2020 campaigns), and in consultation with district and UC-level polio staff (e.g. DDPOs, DCOs, UCCOs). Dividing caregivers according to their known past practices, as this sample strategy highlights, serves as an important reference point within our reporting to directly link *knowledge* and *attitudes* with *practices* and *experiences*. The three classification groups included ‘always’, ‘sometimes’ and ‘never’ caregivers of children <5 years of age:
 - Caregivers with a history of accepting OPV for all children in their household during every campaign (identified within this report as ‘**always**’ accepting caregivers);
 - Caregivers with a mixed history of sometimes accepting, while other times refusing, OPV for their children (identified within this report as ‘**sometimes**’ accepting caregivers); and
 - Caregivers with persistently missed children (PMC) and/or who are labelled as ‘chronic refusals’ of OPV (identified within this report as ‘**never**’ accepting caregivers).
- Observational data was collected in Peshawar during the Jan 2021 NID.
- In-depth interviews were conducted with 46 caregivers (n=24 Peshawar; n=22 Bannu) representing 48% female and 52% male respondents.
- Skilled interviewers (male and female) trained in qualitative data collection, were employed for this study. Interviewers were fluent in Pashto, Urdu and English. All caregiver interviews in KP were conducted in Pashto. Priority populations represented 100% of the sample in KP.
- 15 refusals (7 In Peshawar and 8 in Bannu) were recorded.

Quantitative Findings –

4.1 Reported Coverage of OPV

In province KP, almost 99% of the caregivers informed that their children received polio drops during the last campaign. In self reported OPV in last campaign, 100% coverage was recorded for district Bannu and 97.6% in Peshawar. Regarding caregivers' frequency of accepting polio drops during past year, more than 98% caregivers at provincial level affirmed that they 'always' accepted polio drops, with the little higher proportion in district Bannu (99%) than Peshawar (97.6%) (Figure KP1). A minor share of caregivers in KP informed that their children have missed OPV during last campaign (1.2%) and 'never' accepted OPV in last year (0.7%).

Figure KP1: Percentage of children who received polio drops during the last campaign and caregivers who 'always' accept polio drops.



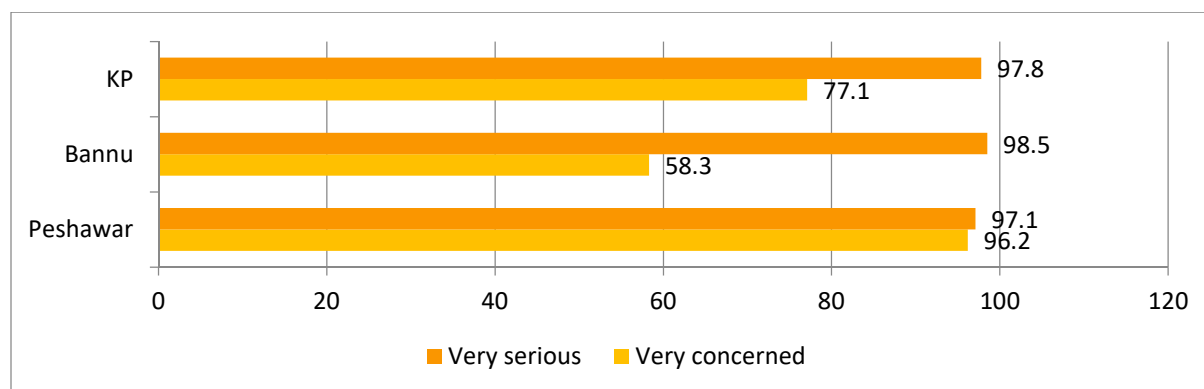
4.2 Trust in Health System

Majority of the caregivers in KP province showed great deal of trust on both public and private sectors for general health services and routine immunization, as exhibited in figure below. More than 92% and 96% caregivers reported 'great deal of trust' on private sector for general health services and routine immunization respectively. Further, somehow slightly less percentage of caregivers at provincial level showed 'great deal of trust' on public sector for both general health services (91%) and routine immunization (94.5%). More trust was observed amongst caregivers of district Bannu than Peshawar. On the other hand, majority of the caregivers informed that they had no trust on local traditional healers or hakeems (46.4%) for general health services, while many (42%) had great deal of trust on spiritual/religious healers for these services in KP province. District level variation was observed in caregivers' perception, where unlike the overall provincial picture, more than 42% caregivers from district Peshawar trusted traditional healers or hakeems for general health services, while more than 51% and around 33% caregivers reported 'a great deal of trust' on spiritual/religious healers from district Peshawar and Bannu respectively.

4.3 Knowledge of Polio Virus and Vaccine

In KP province, more than 98% caregivers had knowledge about polio diseases, with insignificant variation between districts Peshawar (99.5%) and Bannu (97.6%). Out of those caregivers (1.2%), who had no knowledge of polio disease in KP were further probed, where majority (66.5%) clarified that they had not heard of any diseases that can paralyze children, particularly in Peshawar (100%). Those caregivers, who had knowledge of polio disease also expressed high concerns and seriousness regarding their children getting sick with polio at provincial level (Figure KP2). However at district level, this concern saw a reduction in Bannu where 32% expressed no concern at all if child would get sick with polio.

Figure KP2: Concern regarding child contracting polio (risk perception).



Multiple responses were recorded regarding caregivers' knowledge about polio symptoms. Analysis revealed that nearly all caregivers in district Bannu (99%) and more than 96% caregivers in district Peshawar had knowledge about polio symptoms, e.g., paralysis of arms and/or legs. Further, a moderate proportion of caregivers at provincial level also reported fever (44.3%) and diarrhea (27.5%) as polio symptoms. Amongst those who mentioned paralysis as polio symptom, more than two third caregivers in KP province reported that paralysis is not curable, while one fourth caregivers were of the view that paralysis is curable. Nearly 86% of caregivers perceived that children's best age (in general) to receive 1st immunization is immediately after birth. A vast majority of caregivers in Peshawar (93.8%) and Bannu (77.6%) also presumed that best age for immunization is at birth, whereas almost 17% caregivers in Bannu also felt that first three months are the best period for children for receiving 1st immunization.

4.4 Trust in Polio Vaccine

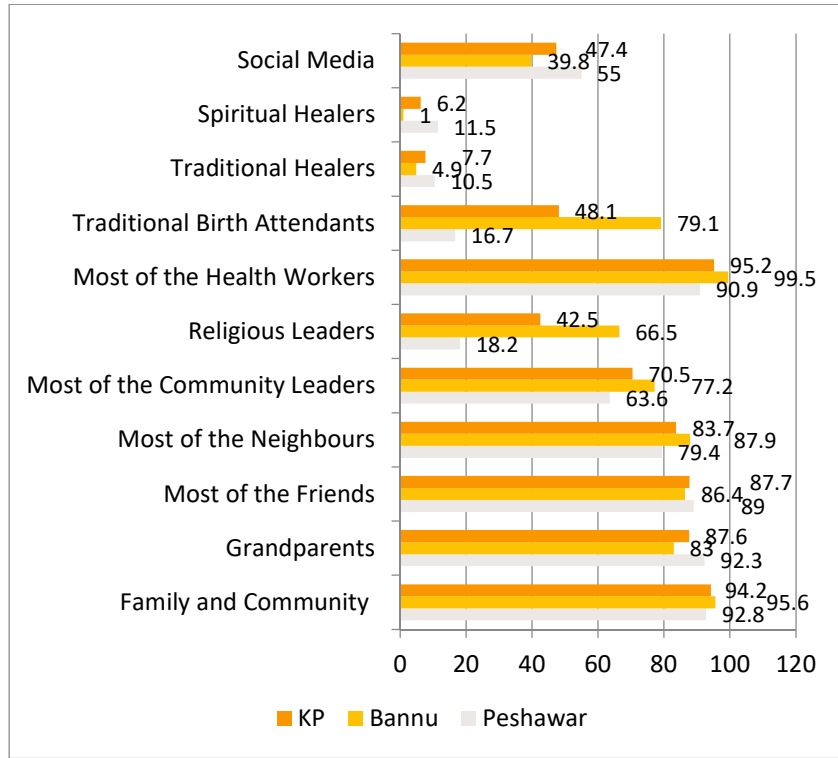
A high proportion of the caregivers in KP province showed trust in polio vaccine. Approximately 98% and more than 96% caregivers informed that they felt polio drops 'very effective' for polio prevention and 'very safe' for children, respectively. All the caregivers in district Bannu (100%) and around 96% in district Peshawar affirmed about effectiveness of polio drops. Further, almost similar percentage of caregivers opined polio drops very safe. On the other hand, a very few number of caregivers reported disagreement to the effectiveness and safety of polio drops in KP province.

4.5 Trust in Polio-related Information Sources, and Local Social Norms

Perception of family and community

According to caregivers, a high proportion of health workers (95.2%), within KP province, including family and community (94.2%), friends (87.7%), neighbors (87.7%), grandparents (87.6%), community leaders (70.5%), traditional birth attendants (48.1%), social media (47.4%) and religious leaders (42.5%) perceived the idea of giving polio drops to children a ‘very good idea’ (Figure KP3). However, caregivers at provincial level felt that very few traditional healers (7.7%) and spiritual healers (6.2%) viewed giving polio drops to children as a good idea. Percentages of caregivers at district level were comparable with provincial data.

Figure KP3: Perception of family and community who perceived giving polio drops as a ‘very good idea’.



Further, when probed regarding safety of polio drops, most of the caregivers at provincial level informed that health workers (95.5%), friends (87.2%), neighbors (84.2%), grandparents (83.8%), community leaders (69%), traditional birth attendants (47.2%), social media (46.2%) and religious leaders (41.8%) perceived polio drops ‘very safe’ for children. However, caregivers felt that very few traditional healers (7.4%) and spiritual healers (6%) found polio drops to be safe for children. District level variation was observed for the perception of TBAs and religious leaders. Regarding caregivers’ experience of witnessing negative things (e.g., heard, seen or read) about polio drops on social media, more than two-third of caregivers in KP province informed that this question is not applicable here as they did not have access to that social media. Nonetheless, a very small number of caregivers at provincial level reported that they had heard, read or saw negative things on Facebook (8.7%), Twitter (5%), and WhatsApp (8.7%) about polio. Same pattern was observed at district level findings.

Trust of family and community about polio-related sources of information

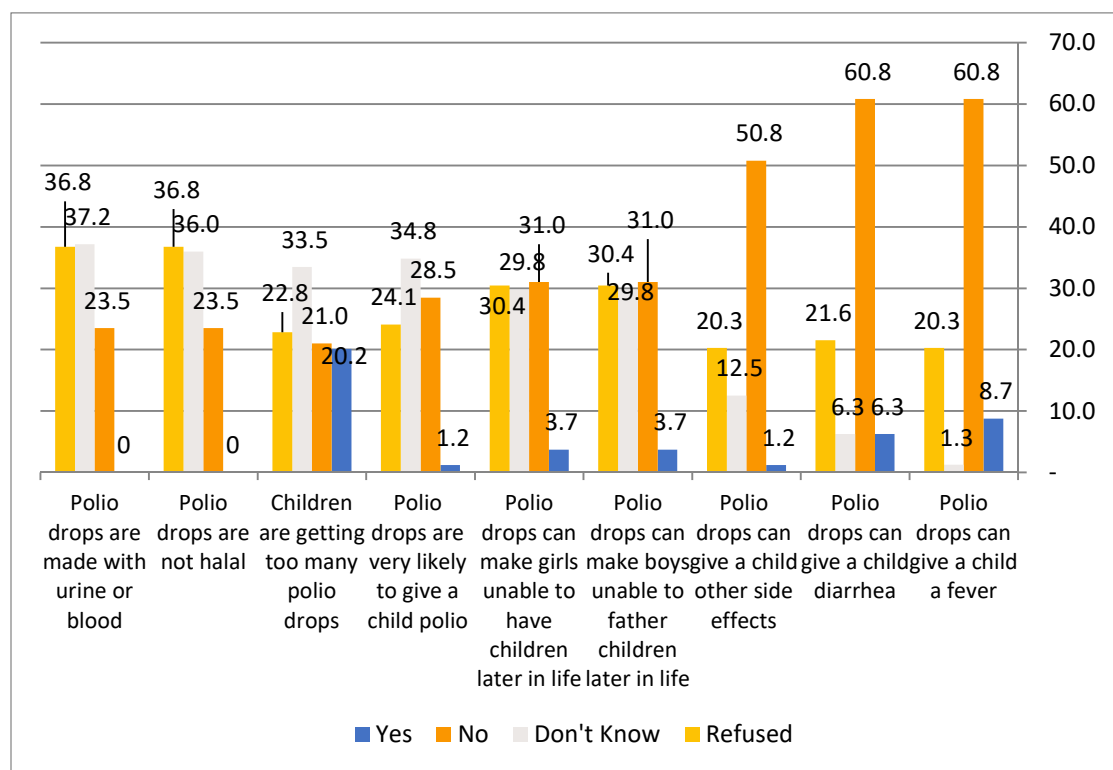
Majority of the caregivers stated that they had great deal of trust on family (97.6%), polio vaccinators (97.1%), Lady Health Workers (LHWs) (93.8%), friends (93%), local facility level health workers (92.4%), neighbors (87.3%) and community leaders (71%) for information about polio drops in province KP.

However, some caregivers reported of having trust on TBAs (46.2%), Molanas (37.8%), Shura/Jirga (37.5%) and Imams (37.5%), and very few caregivers had trust on traditional healers (8.9%). A wide variation in district level findings was observed in terms of trust on Molana, Shura/Jirga, TBAs and traditional healers between district Peshawar and Bannu.

Positive and negative perceptions

In responses to the positive statements heard, read or seen about polio drops in the past year, more than 86% caregivers reported that polio drops can protect a child against polio, however, some also responded that polio drops also protect a child against diseases other than polio (e.g., malaria, cholera). A very small number of caregivers, i.e. around 7% caregivers, also informed that they had not heard anything positive in past year about polio. Regarding negative things heard, read or seen about polio drops, the majority of caregivers (68.1%) informed that they had not heard any such thing. Some of the notable negative statements which participants had heard included polio drops making girls (12.2%) and boys (11.5%) unable to have children later in life. Upon probing about negative information regarding polio, majority of the caregivers in KP province informed that such statements are not valid such as polio drops causing fever, diarrhea or other side effects, however around 20% of the caregivers had a belief that children were getting too many polio drops. A significant number of caregivers also showed either unawareness about such statements or refused to respond especially regarding negative statements including polio drops not being halal or being made with urine or blood and causing infertility issues amongst girls and boys (Figure KP4). This high rate of refusal was especially seen in Bannu, where more than 65% caregivers refused to respond to such statements. This is an indicator of the sensitivity of this topic and the extent to which caregivers are (or are not) willing to discuss their concerns.

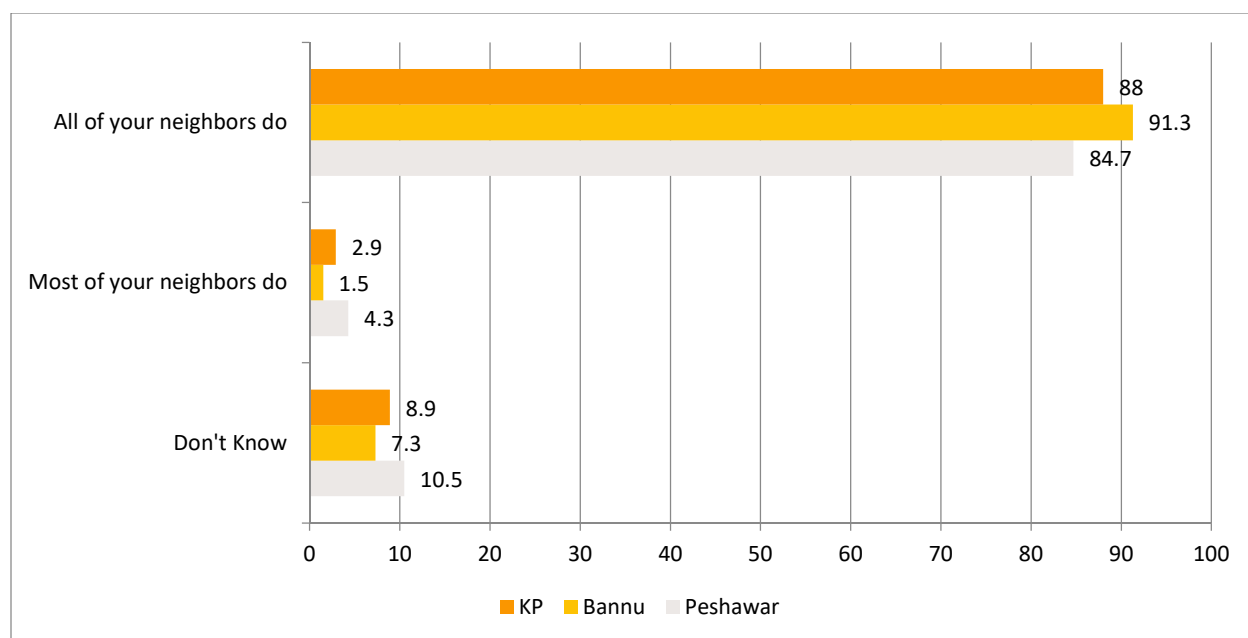
Figure KP4: Caregivers' belief of negative statements about polio drops.



Perception about neighbours/community norms for accepting polio drops

A high proportion of caregivers (88%) in KP province believed that their neighbors usually accept polio drops for their children every single time when polio vaccinators visited their home (Figure KP5). Although majority of the caregivers in KP perceived that their neighbors accept polio drops every time, however, the few who were either not sure recorded few reasons which might hinder their neighbors for accepting polio drops. These included children were not likely to get polio (33.6%), child was sick (16.6%), community or religious leaders advised against children taking polio drops (8.5%), vaccinators are too pushy/disrespect parental authority (8.3%), polio drops are not very valuable/useful/effective (8.3%), religious reasons/vaccine is not halal (8.3%), In-laws does not support giving polio drops (8.3%) and others (24.8%). Regarding awareness about neighbors, who are against polio drops, more than 71% caregivers felt that none of their neighbors are against polio drops, nonetheless very few (10.3%) responded that some neighbors are against polio drops. More specifically, when probed how many of your neighbours are against polio drops, around 31% caregivers were found unaware, 23% said that 'not very many', while the same number of caregivers informed that most (17.9%) and half of the neighbors (18.1%) are against polio drops.

Figure KP5: Caregivers' perception about neighbors acceptance of polio drops.



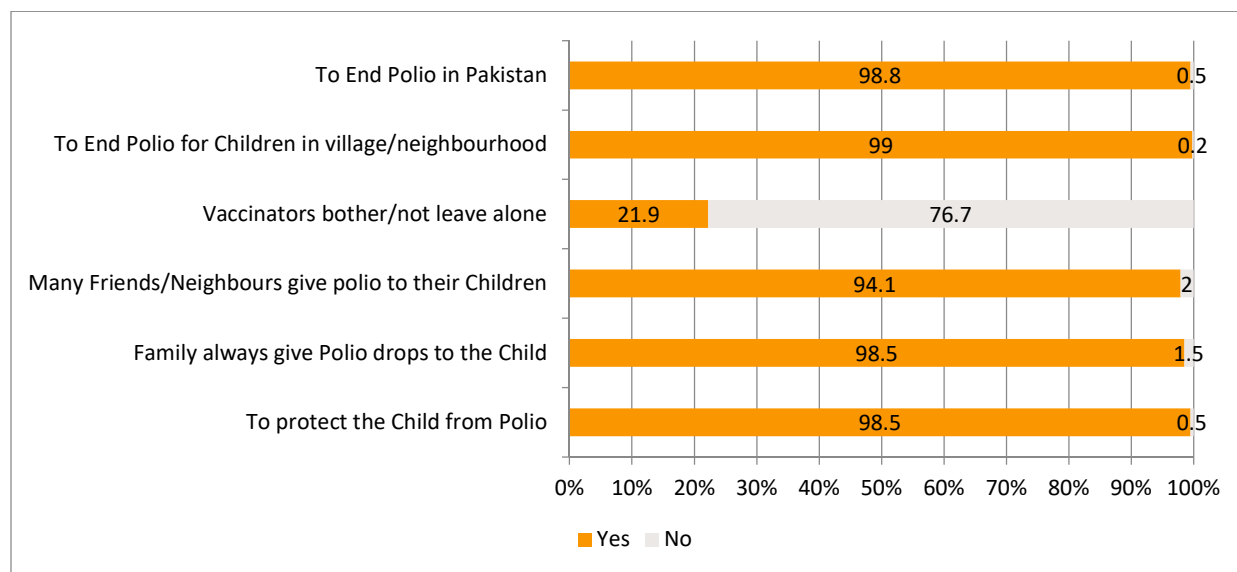
4.6 Trust in Vaccinators

Nearly all caregivers in KP province (99.8%) informed that polio vaccinators visited their house during last campaign. Around 78% of the caregivers also reported that they witnessed/saw or talked to polio vaccinator during last campaign, particularly in Bannu (99%), whereas more than half of the caregivers (56.5%) in district Peshawar affirmed that they witnessed or talked to polio vaccinators. Further, around 88% of caregivers at provincial level, including all caregivers in district Bannu (100%) and 68.6% in Peshawar reported that two vaccinators visited their house last time. The highest proportion of the caregivers (95.7%) acknowledged that it was very important while polio vaccinator visited their house for

polio drops during last campaign. In response to the question regarding reasons of receiving polio drops by vaccinators, mostly caregivers reported common reasons, e.g., to end polio in Pakistan, protect child from polio, family always give drops and many friends/neighbors also give polio drops to their children. More than one fourth of caregivers stated that they usually give polio drops to children as vaccinators would either bother them or would not leave them alone (Figure KP6). At district level, comparable findings with provincial data were also seen.

Regarding visited vaccinators' profile during last campaign, majority caregivers in KP province informed that vaccinator 1 and 2 were adult females (53.7% and 35.7%) with very small percentage reported for elder male (1.6%) and adult male (18.5%). Most of the caregivers at provincial level responded 'not applicable' for vaccinators 3 and 4, which shows that a team of two vaccinators usually visit their houses for polio campaign. More specifically, almost 99% of the caregivers emphasized the preference that female vaccinators should be regular part of polio vaccination team. Caregivers also shared their perception and experience about vaccinators' profile. A high proportion of caregivers in KP province informed that they have great deal of trust on polio vaccinators (99.1%), and found them very knowledgeable about child health (97.3%) and caring towards child wellbeing (98.5%). A high proportion of caregivers in KP province informed that they have great deal of trust on polio vaccinators (99.1%), and found them very knowledgeable about child health (97.3%) and caring towards child wellbeing (98.5%). More than 98% caregivers at provincial level believed that giving polio drops by vaccinators at homes and others places e.g., schools, parks, streets, festivals etc. is a 'very good idea'. Similar findings at the district level.

Figure KP6: Reasons for accepting polio drops.



4.7 Perception of/Trust in Polio Campaigns

Perception of/trust in polio campaign during last year, preceding KAP Survey (July 2020 – June 2021)

A high proportion of caregivers in KP province (86.9%) reported that polio vaccinators visited their houses all the time during last year polio campaign, however, actual number was not known. Here, district level variation was observed in perception of caregivers, with 96.6% from district Bannu and 77% from Peshawar, who reported that vaccinator visited every time, nonetheless their visit frequency in numbers

was not remembered accurately. Similarly, most of the caregivers at provincial level (66.3%), particularly in district Bannu (88.3%) felt that polio vaccinators visited their homes about the right number of time for giving polio drops. However, 51.2% and 30.8% caregivers from Peshawar and KP province respectively believed that vaccinators had visited their homes 'too many times' to offer polio drops. Upon probing regarding caregivers' concerns on vaccinators' visiting homes 'too many times', only few recorded that vaccinators ask personal/intrusive questions (2.4%), disrupt activities (1.6%) and provide low quality drops than hospitals/clinics (1.6%). On the other hand, more than 95% caregivers reported 'no concerns'.

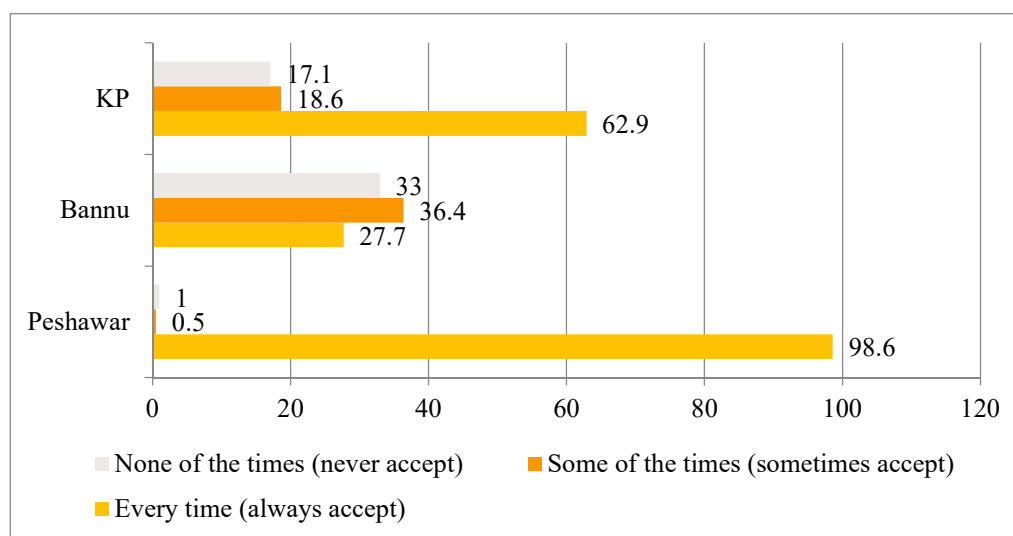
Regarding behavior of polio vaccinators during past year, a higher proportion of caregivers in contrast to the above, stated that they had 'never' interrupted their important activities as well as 'never asked too personal questions' at provincial and district level. Nonetheless, less than half of the caregivers in district Peshawar (47.4%) informed that vaccinators showed respect to their spouse' authority to make decision for children health in comparison to 91.3% in district Bannu. Around 50% caregivers in Peshawar also complained that polio vaccinator 'never' showed respect to their spouse' decision. More than 98% caregivers expressed that they 'always' accept polio drops for their children, whereas only 1% either sometimes or never accepted polio drops. Those 1% caregivers were probed about the reasons for not accepting polio drops. Amongst them, one fourth of the caregivers at provincial level mentioned varied reasons, e.g., child is not likely to get polio, or was sick/ill or asleep, community or religious leaders advised against children taking polio drops, no belief on effectiveness of polio and no support from spouse. A large number of caregivers informed that they had never felt any pressure for either accepting (92.5%) or refusing (90.8%) polio drops during campaigns or visit to local health facility. However, few pressures were reported for accepting or refusing polio drops, mainly pertaining to polio drops being social norm in their village/neighbourhood.

Perception about role and efforts of PEI programme

Majority of caregivers in KP province reported that national government is responsible for polio vaccination (42.9%), followed by local health organization (23.3%), local government/political leaders (22.6%) and international organizations (19.6%). As far as extent of trust on various organizations for polio vaccination is concerned, mostly caregivers at provincial level showed 'great deal of trust' on national government (70.2%), local health organizations (44.4%), provincial governments (37.9%) and international organizations (36.8%). Similar to the provincial findings, a high proportion of caregivers from district Peshawar also showed trust to various organizations in comparison to district Bannu. Lastly, less than three fourth caregivers felt that program' efforts are 'too much' to bring Polio drops to Children in Neighborhood, while 20.5% perceived these efforts 'about right'.

Intent to vaccinate children and preference for vaccinators

Nearly 63% caregivers in KP province, 99% in Peshawar and 27.7% in Bannu, reported intention of giving polio drops to children before reaching their 5th birthday. One third caregivers from Bannu district were not keen on accepting polio drops for their children every time or some of the time before reaching their 5th birthday (Figure KP7). Regarding caregivers' preference to have vaccinators at home or visiting local health facility for polio drops, almost 99% confirmed their preferences to received polio drops at home during campaign. None of the caregivers chose local health facility. Further, caregivers were probed regarding their preferred visiting time for vaccinators at home as well as convenient visiting time at local health facility. In response, majority confirmed morning time for visit of vaccinators at home and visit to local health facility. Comparable findings were also observed at district level.

Figure KP7: Intent/frequency of caregivers to give polio drops to children before they reach their 5th birthday.

4.8 Recommendations for Improvement

Suggestions were sought for improving polio vaccine for children in the province. Caregivers at provincial level recommended giving attention to other health services (22.7%), raising awareness in local languages (21.7%), engaging local female vaccinators (21%), particularly in Bannu, and avoiding forcing or coercing families (20.5%), especially in Peshawar (Table KP1). See Annex 9 for additional case studies, a concise summary of caregiver responses from qualitative research, and additional data tables and figures from KP.

Table KP1: Recommendations for improving the delivery of OPV to children.

Recommendations for improving polio vaccine for children	Peshawar (n=210)	Bannu (n=210)	KP (n=420)
	%	%	%
Do not force or coerce the families	39.7	1.5	20.5
Limit the frequency of campaigns	1.0	1.9	1.5
Properly maintain the cold chain	6.2	8.3	7.2
Give attention to other health services too	34.0	11.7	22.7
Highlight polio on social and mass media	-	5.8	2.9
Awareness raising in local languages	-	43.2	21.7
Engagement of local female vaccinators	-	41.7	21.0
Distribution of IEC material in local languages	-	2.9	1.5
Ensure vaccinators interact respectfully and politely	-	1.5	0.7
Others	0.5	-	0.2
Don't Know	26.3	28.6	27.5
Refused	0.5	0.5	0.5

4.9 'Significant' Findings – Khyber Pakhtunkhwa Province

The cross-tabulations reported here presents the self-reported frequency of survey respondents accepting OPV during the last year (July 2020 – June 2021), against the key characteristics related to

children and caregivers' profile, socio-demographics, trust in health system, trust in polio related sources of information, trust in vaccinators and trust in the PEI programme (see Annex 14 for additional details). Self-reported acceptance (or not) of OPV highlights a three-level classification of caregivers, i.e. 'always', 'sometimes' and 'never' accept polio drops during the past year. Here those caregivers, who either 'sometimes' or 'never' accept polio drops are presumed to be the most vaccine hesitant. The following presents findings from **KP Province** where chi-square was applied to determine significance of findings when compared to the three-level classification system described above. Here, a p-value ($p \leq 0.05$) is considered statistically significant, showing association between self-reported frequency of accepting OPV during last year and other key characteristics, as mentioned below:

Children and caregivers' profile, socio-demographic characteristics and knowledge of polio

In Khyber Pakhtunkhwa province, none of the characteristics related to children and caregivers' profile, socio-demographic and polio related knowledge had statistical significance ($p \leq 0.05$) with the self-reported frequency of accepting OPV.

Trust in health system, polio-related information sources, and local social norms regarding vaccination

Regarding caregivers' perception about the idea of giving polio drops to children, a strong association of self-reported OPV ($p \leq 0.05$) was seen when caregivers believed their family and at least 'some' of their community members (e.g., grandparents/family, friends, neighbors, religious leaders) thought that the idea of giving polio drops to children was 'very good' and/or 'very safe.' These results indicate that caregivers who have a positive perception about family and community with respect to polio vaccine, were more likely to 'always' accept OPV for their children. Further, the frequency of accepting polio drops also showed significant association ($p \leq 0.05$) with trust in the the following sources of information related to polio – family, friends, neighbors **and TBAs**.

Trust in vaccinators

In Khyber Pakhtunkhwa, self-reported acceptance of OPV was found significantly correlated ($p \leq 0.05$) with caregivers' perceptions about the importance of vaccinators' visits and their extent of trust in vaccinators. These results show that those caregivers, who found visits of polio vaccinators 'very' to 'somewhat' important and had 'great deal' to 'somewhat' trust in polio vaccinator(s) were more likely to 'always' accept OPV for their children.

Perception of/trust in polio campaigns

Although, a higher proportion of surveyed caregivers in Khyber Pakhtunkhwa were more likely to report positive perceptions of the behavior of polio vaccinators, there was no significant association ($p \leq 0.05$) found with self-reported acceptance of OPV during the last year and positive perception of vaccinator behaviour. A strong association of self-reported acceptance of OPV ($p \leq 0.05$), however, was found with caregivers' awareness about the locality of polio vaccinators (i.e. those caregivers who confirmed that all polio vaccinators were from their own village/neighborhood, were more likely to 'always' accept OPV).

What these results importantly highlight are the enabling factors which are more likely to lead a caregiver toward OPV acceptance. In so doing, the significant findings reported here highlight those areas of knowledge, attitudes, practices and experiences which the programme may address more specifically in an attempt to move caregivers from the 'sometimes' and 'never' categories, into 'always' accepting OPV.

Qualitative Findings –

4.1 ‘Always’, ‘Sometimes’ and ‘Never’ Caregivers in Bannu & Peshawar

Female caregivers in **Bannu** and **Peshawar** had several strongly associated factors which helped to explain their increased willingness to ‘always’ accept OPV for their children: 1) male members in their family were well-educated, 2) their parents (i.e. maternal grandparents) were more accepting of the vaccine (and lived nearby), and 3) paternal grandparents either were more accepting of the vaccine and/or were not in the household/lived nearby during campaign days. Most female caregivers within this category described their in-laws (i.e. paternal mothers and fathers) as having stronger reservations about OPV and subsequently they would often avoid telling their in-laws (or outright lied to them) about their children being vaccinated during polio campaigns (See case study KP1). Additionally, women who were co-wives reported that if another wife in their household (usually an older woman) did not accept OPV, then they felt pressured not to accept either. In such a scenario, if the refusing wife were present during campaign days, a younger wife may refuse or otherwise avoid/hide children in the household from the vaccinator to avoid household confrontations. Additionally, if a co-wife and her husband were against vaccination, they could often convince other wives in the family system that the OPV vaccine was harmful/to be avoided. Therefore, it is also important to keep in mind family dynamics in multi-family households where co-living mothers may have different levels of hesitancy (and their children different levels of vaccination as a result). A ‘refusal’ household may have many different levels of acceptance and resistance to vaccination.

Case study KP1: Influence of maternal grandparents, “If your husband would see a finger mark, what will you tell him?”

“The team showed me the house of a known refusal family [Family A] and expressed their wish that the child’s father would not be at home. They said it would be easier to vaccinate the child if the father was away as he doesn’t want to vaccinate his children and has previously behaved rudely with the team. Before going to this household, the vaccinator wanted to first visit another house in the neighbourhood [Family B, the parents of the child’s mother from Family A]. The vaccination team deliberately went to this household first because they knew their area well and even though [Family B] did not have any children under five in the house, they entered to ask about ‘guest’ children because they knew of the connection between [Family A & B]. Luckily, they found that mother [from Family A] visiting her parents. The vaccination team took a deep sigh of relief after finding the mother in her parents’ house. [Family B] welcomed us and offered us green tea. The mother told us that she has no problem with the vaccine but her husband warned her not to vaccinate because of the school incident in 2019. The child’s grandmother also told me that she didn’t have a problem with the vaccine but if their father would know then he would be angry. The mother brought her son out for vaccination, he was newborn, about 40 days old. I asked the mother, “If your husband would see a finger mark, what will you tell him?” She told me, “I would tell a lie that the team only marked his finger but didn’t vaccinate him.”

Female caregivers in **Bannu** and **Peshawar** in the ‘sometime’ and ‘never’ categories were more likely to state their anger at the government for not distributing cash during the pandemic (i.e. reference to the Ehsaas programme in Pakistan); express their anger towards vaccinators for “chalking our doors” when they refused vaccination (“There have been many fights and people here were misbehaving with the vaccinators to stop them from door marking”); be indifferent (or outright hostile) towards answering

questions about the polio programme, and were more likely to exhibit (visible) signs of distress such as fear or anger when answer questions related to: family demographic details (e.g. number of children in the household), reasons for refusing vaccination (especially religious-based refusals), how they felt about the polio vaccine, who they trusted as information sources about OPV, who they believed manufactured and/or supported vaccination campaigns, their relationship with vaccinators (polio vaccinators in particular), and differences between vaccinating male versus female children. As stated by one mother from **Peshawar** who has six daughters and one male child, “I always accept vaccination during the campaigns....but I only have one male child and it does worry me that he may get sick after vaccination.” ‘Protecting’ children from vaccination was also a noticeable caregiver strategy in **Peshawar** if a mother felt her child (of any gender) was not strong enough to be vaccinated (“My [girl] child is not properly nourished so I have refused for her to be vaccinated many times”).

Mothers-in-law in ‘sometimes’ and ‘never’ households in both **Bannu** and **Peshawar** were much more likely to have negative perceptions about OPV and to influence maternal decisions made regarding vaccination. In **Peshawar**, women additionally added that most girls and young women in their communities went to madrassas for their education, and this is where they would hear (and come back home with) negative stories about OPV. As stated by the interviewer after speaking with a ‘sometimes’ mother in Peshawar, “The respondent’s daughters are getting a madrasa education so she laughed after I questioned her about her views on the polio vaccine and reasons behind refusal. When I asked her why she was laughing, then she told me in detail about her daughter’s teacher’s negative views about vaccination.” There were several similarities between ‘sometimes’ and never’ male caregiver interviews in **Bannu** and **Peshawar** to include refusing to answer questions about polio and demand the interviewer and/or the government help them with their other issues instead of focusing on polio. One father in Peshawar noted in the middle of an interview, “Please change the topic and don’t ask more questions about these dirty drops. Why should we make our God sad talking about something that He doesn’t recommend for us?”

‘Sometimes’ male caregivers in **Peshawar** were more likely (than men in the ‘never’ category for example) to openly share their concerns about both OPV (e.g. too frequent) and routine ‘injections’ for children (e.g. likely to cause fever or other negative side effects). Most stated that their reasons for refusing vaccination more recently (when in the past they had accepted) was due to either feeling that their children had “had enough drops,” or because their children were “sick” during the campaign and “not strong enough” to take the vaccine. As an aside, due to the trajectory of conversations interviewers had with ‘sometimes’ fathers in particular, it is likely that saying children are “sick” is a *silent* refusal method of “shielding children from the harmful effects of too many doses” of OPV. ‘Never’ caregivers were much more likely to oppose routine immunization or “injections” (especially Pentavalent), as well as OPV, because of the fever it frequently caused in children and the “refusal of vaccinators” to provide free tablets to help assuage children’s post-vaccination symptoms. As stated by one father from Bannu, “Our children might not need these injections. Maybe children who are born in cities need it...if any child needs injections then we go to a local Molana who has experience in injections and he does that.”

4.2 Trust in Health Systems

Female caregivers – across all categories of respondents in KP – had to first receive permission from their husbands and mothers-in-law if they wanted to visit a clinic for a child’s illness or for immunization services (or from other ‘elders’ in their family if husbands were away from home for work-related purposes). This was the case both for: 1) the need to gain permission before leaving the house, and 2) to

acquire the required money (from male “breadwinners”) needed to make the trip and/or purchase medicine (“we need money to take a child to the doctor”). As stated by one mother in Peshawar, “We cannot visit a doctor without the permission of our mother-in-law and husband.” All male caregivers in **Bannu** and **Peshawar**, regardless of their ‘classification’ status, stated that they were in charge of health-related decisions of women and children in their households (in addition to consulting with ‘elders’ in the household).

Children of ‘always’ caregivers in **Bannu** and **Peshawar** were the most likely children (among sampled caregiver categories) to be taken to a BHU or ‘Civil Dispensary’ for routine immunizations by either their fathers or a group of female relatives. Female caregivers in **Bannu** in the ‘sometimes’ and ‘never’ category were more likely to rely on traditional (spiritual) healers and *hakeems* for their and their children’s illnesses, and doctors (at a local private health facility) only if symptoms were interpreted as ‘severe’ and household money was made available. Male caregivers in **both locations** confirmed that women were primarily involved in taking children to a local religious figure for protection amulets if they were crying excessively or were not sleeping well (“The local Molana makes these amulets for that child to be hanged around their neck”). Such activities were for both girls and boys, but tended to be done more frequently for boys to protect them from “the evil eye.” “We use amulets for children’s safety which we believe are more important than healthcare workers.”

Caregivers in **Bannu** were even more forceful in their rejection of “corrupt” and “destroyed” public health facilities. Instead, caregivers preferred private clinics (if they could afford them), traditional healers/*hakeems* (more affordable, more local) or local pharmacies or home remedies (more frequently referenced for Bannu residents). Men and women in **both locations** additionally added that there were not enough female healthcare providers at government-run facilities so their women preferred to give birth at home (no caregiver respondent preferred to give birth in a government-run facility). Location of birth has important implications for potential delays in children receiving their ‘zero’ routine immunization dose, receiving their EPI card, and, in general, beginning them on a positive path with regards to routine immunization. As stated by one mother from Bannu with a 4-month-old child, “My last born child is not vaccinated yet...I don’t want this child to be vaccinated.”

Men and women in **Bannu** and **Peshawar** in the ‘sometimes’ and ‘never’ categories were more likely to have negative impressions of routine immunization services provided to children at local BHUs and dispensaries, frequently referencing their unhappiness that children had a fever or “cried a lot” after receiving an injection. As stated by one ‘never’ father in Peshawar, “All of my children have been born in a private clinic and I have not vaccinated them since more than a year and they are very healthy and fine.” However, it should be noted that across all respondent categories, genders and locations, the age of children deemed ‘safe’ to receive routine immunizations was one-year or older (i.e. *not* newborns). In addition to whatever the normal health practices were for families in **Bannu** and **Peshawar** as described above – and across all caregiver respondent types – both male and female caregivers reported frequently “reciting the Holy Quran” as an additional level of protection against disease and, in general, believing in the spiritual services of local religious figures for protecting their children. However, ‘sometimes’ and ‘never’ caregivers were more likely to rely on this as their primary (or only) method of protection. As stated by one father in Peshawar, “I personally stopped believing in doctors...we mostly recite the Holy Quran and do Sadqa [sacrifice] to be free from any hurdle.” This father’s comments were made in the context of an interview in which he described in detail his disappointment and mistrust in the public health system in Peshawar for having failed to care for his family in the past.

In summary, how a caregiver defines an illness (e.g. something caused by spiritual harm, or something which can be treated by biomedicine?) combined with household decision-making priorities, women's freedom of movement (or lack thereof), and access to financial resources, all factor into how a child's illness is treated and by who. For children of caregivers in the 'sometimes' and 'never' categories, their first contact with a healer is most likely to be a religious figure (e.g. Molvi) with a role in providing spiritual protective services for children, rather than a nurse or doctor ("My grandchild is wearing an amulet given by the Molvi...Amulets are made for saving our children from the evil eye").

4.3 Knowledge of Polio Virus

Perhaps unsurprisingly, both **Bannu** and **Peshawar** male and female caregivers in the 'always' category were more likely to be aware that polio is an illness caused by the polio virus, that vaccination was the only method to prevent infection, and that polio was dangerous and caused lifelong (i.e. unable to be cured) paralysis. Men, more so than women, were additionally likely to state that "cleanliness of the house areas where children play" was also able to help prevent infection and that the virus was most "dangerous for little infants." 'Sometimes' and 'never' male and female caregivers in **both locations** were considerably less likely to believe polio to be a "serious" disease or a significant danger to their children (even among women who had heard that polio causes a paralysis that cannot be cured). These statements were often in direct reflection that they had never "witnessed any patient of polio." As stated by one mother from Bannu, "I've heard that polio virus is a disabling disease and it's not curable, but there are many diseases such as cancer, heart disease that are not curable so why there is so much focus on polio vaccine?" Women in these categories were also more likely to believe that vaccines alone (or at all) could not save a child from illness because their "fate is determined by God." Statements made by male caregivers followed a similar pattern. Male caregivers in **Peshawar** in particular were more likely to think the entire virus was fabricated either because foreign NGOs wanted to harm Muslim children and/or because the government wanted to receive foreign money. As stated by another father in Peshawar, "We haven't heard that anyone has died from polio virus so far. Our children are safe and there is no risk at all to the whole community." Caregivers in these categories were also very likely to equate polio *drops* to polio *virus*, misunderstanding that the preventative nature of vaccines.

4.4 Trust in Polio Vaccine

'Always' female caregivers in **Bannu** were more likely to state they believed OPV was safe and effective and that it "strengthened children's immune system." However, 'always' female caregivers in **Peshawar** were more likely to describe hesitancy due to lingering concerns over 'the Peshawar incident' but reported accepting vaccination for their children because they felt pressured to do so by vaccinators and/or persons in their neighbourhood who didn't want their area to be labelled as a 'refusal' area ("I was a bit afraid after the school incident, but I never refused vaccination because the team visits our house several times and we have to agree for vaccination"). That is, women in 'always' category in **Peshawar** were just as likely to harbour the same levels of hesitancy to OPV as 'sometimes' and 'never' categorized caregivers, but accepted for vaccination due to external social pressures. However, if there was a child in the household that the family felt particularly protective of (e.g. due to gender, illness, or difficulty with conception), then that child may not receive OPV (See case study KP2). As stated by one grandmother in Peshawar: "I didn't allow the vaccinator to administer drops to one of my grandchild because he is the only male child...If something would happen to him, then it would be a great loss."

Case study KP2: A family's refusal in Peshawar, "We cannot risk our child's life"

"Today we visited a PMC household who refused to vaccinate their two children. When I asked the HHSM about the reason, she said that their father vaccinated all of his nephews in this house regularly during the past, but now he is refusing the vaccine for his own son since the last five campaigns. The couple in this home have been married from the past 20 years. Their children did not survive and died at very early age due to some medical problem. Now, after a lot of time has passed, the wife was able to have another child and the couple are now telling me that we cannot risk our child's life with these drops. The ALSM later said that after the incident of April 2019, there is a huge problem in these kinds of houses."

'Always' male caregivers in **Bannu** and **Peshawar** were more likely to state they believed OPV was safe and effective and that "there is no child to my knowledge who had a bad reaction due to any vaccination." These caregivers were also more likely to state trust in the government and local administrators and their belief that they would not do anything to knowingly harm their children ("the government will not want our little children to get sick"). In contrast to women, 'always' male caregivers in **Peshawar** were more likely to reference 'the Peshawar incident' as a "hoax" a "scam" or a "game" ("I know the 2019 incident made the polio program very difficult for the local teams to do their work. But that was a game and nothing else. I didn't believe what happened in that school").

'Sometimes' female caregivers in **Bannu** were much more likely to state that their "neighbours do not believe in these polio drops" and that they were not safe or necessary for children's health (and were potentially harmful to children's health). That is, these caregivers would often reference the thoughts and feelings of others as a way to explain – indirectly – their own hesitations. Women in **both districts** also stated that they had refused vaccination during prior campaigns because they wanted free medicine or other services (e.g. clear water, functional sewer systems). As stated by one mother from Bannu, "They only give attention to polio vaccination while our other problems are ignored." Further, women in **Bannu** in the 'sometimes' category were likely to state that they only allowed their children to be vaccinated when men in their family were not at home due to pressures they felt when FLWs "come knocking." As stated by one mother from Bannu, "In past campaigns, we only allowed the vaccinator to administer drops to our children in the absence of our male members...and when the vaccinator knows they [men] are home, they marked on our door as refusal without even entering our home." 'Sometimes' male caregivers in **Peshawar** stated that while they accepted OPV for their children before 'the Peshawar incident', after this incident they harboured serious concerns about the polio drops and advised their wives not to let their children be vaccinated ("When that 2019 incident of school happened then majority of the community members denied polio vaccines... I was also worried about the safety of vaccines"). 'Never' male and female caregivers used this incident to justify their objections to children receiving OPV, often in addition to religious objections ("From a religious point of view it is totally illegal and haram if you are preventing yourself from future diseases").

In addition, 'never' male caregivers in **Bannu** and **Peshawar** had "nothing good to say about polio drops" and frequently turned the conversation to questioning why the government was so insistent on "these drops" instead of turning their attention to people's other basic needs that were not being met. 'Never' caregivers in particular were also more likely to state that their "elders" and/or their "elder children...never needed these vaccines" and that their "faith is strong so that's why there is no danger to our children." Importantly, caregivers in the 'sometimes' and 'never' categories were more likely to also

express dissatisfaction with routine immunizations stating they cause pain and fever in their children, and that this was distressing to those who needed to care for children who were “suffering” from the side effects of vaccination.

For caregivers in **Peshawar** in particular, they were equally likely to state that *their own children* were some of those involved in the Peshawar incident. Here it is important to note that only one woman interviewed in the ‘sometimes’ and ‘never’ categories referred to this incident as *potentially* being a rumour or a false scandal, all other respondents strongly believed that the events in April were real, and that the polio vaccine was to blame for their children’s illness. Caregivers in **Peshawar** in particular, male and female, often made a point of saying that children didn’t trust in the vaccine either and would spit out the drops either because they thought they were “dirty” and/or because they had been told to do so by family members and classmates (“Children have also heard these stories so they are afraid of the drops too”) (See case study KP3).

Case study KP3: Spitting out the vaccine in Peshawar, “The girl closed her eyes and acted as if she had fainted”

“A girl (four years old) spit out the vaccine immediately after the vaccinator administered drops. I asked her mother does she spit out other medicines? She replied that she does not do the same with other medicines...The mother held her daughter in her lap and told us, ‘See my daughter is getting sick after taking these drops.’ The girl closed her eyes and acted as if she had fainted after vaccination like she had seen children do in the video. This mother was teasing us, showing us how smart and talented her daughter is, but you know even from this play acting that both mother and daughter have seen the video of the Peshawar incident. The school incident has an impact on caregivers as well as children’s minds.”

Women in the ‘sometimes’ and ‘never’ categories in **both locations** also reflected many of the same concerns over the safety of the vaccine as described elsewhere in this report (e.g. belief the vaccine “causes sickness”, “causes children to reach early puberty”, “causes children to misbehave”). These concerns were significantly increased if their children were “sick” during campaigns therefore they would refuse to vaccinate due to their children not being “strong enough” to receive the vaccine (“I refused vaccination several times because my grandchild has a weak immune system and had some health issues” ; “I refuse vaccination for my son because he has a chest allergy and it might harm him...maybe I will start to vaccinate after he is a year old). Women also reported (and were observed) hiding their children as a tactic to avoid vaccination if they felt the child was not old enough or strong enough to be vaccinated (i.e. ‘silent refusal).

4.5 Trust in Polio-related Information Sources, and Local Social Norms

All women, regardless of their classification as ‘always’, ‘sometimes’ or ‘never’ accepting OPV, reported relying on male members of their household for polio-related information. This was due to a high level of trust and respect in their opinions, the fact that men “spend more time outside talking to other people so they know better,” women’s inability to read printed media and news sources for themselves (i.e. high rates of female illiteracy), and the authority males had in household decision making. Where alternate sources of information were described, this was most frequently mentioned as other women in their household, television and/or TV news programming, and for women in Peshawar in particular, healthcare workers. All categories of female caregivers in both **Bannu** and **Peshawar** were more likely to state that

not all of their family members or neighbours (or “very few”) always accepted OPV for their children (e.g. due to drops having “haram” ingredients), and that if there were any local religious person who spoke negatively about OPV, refusal rates would increase. As stated by one mother from Bannu, “In our neighbourhood there is a Molana who told people that vaccination is a plot against Muslims and vaccinators are agents of foreign agencies. Most of the families here believed him and refused vaccination.” As stated by another mother from Peshawar, “I’ve heard negative information about polio from my sister-in-law, mother-in-law and other women at the civil dispensary when I brought my children for routine vaccination.” For one female caregiver in Bannu, a recent story of a local woman who was murdered by her husband after having been suspected of committing adultery was proof that OPV caused “immoral” behaviour. That is, the caregiver attributed the adulterous behaviour of the young woman to having received polio drops in childhood.

There were two important ways in which men in **both districts** were likely to differ from female caregivers in terms of their access to information sources (polio or otherwise): 1) they were more likely to be literate (having at least basic reading skills) and therefore able to read printed media sources, 2) they were able to move about their communities without restrictions and freely interact and converse with other men (thereby sharing information), and 3) they had easier access to Internet and social media platforms. All categories of male caregivers were familiar with many of the negative information/rumours circulating about polio (e.g. it is a “Western agenda”, will cause infertility or early puberty). ‘Always’ caregivers, especially men in **Peshawar**, attributed this to “uneducated people” “the Peshawar incident” and “negative social media sources” and clearly stated that they did not believe these rumours. As stated by one father in Bannu, “I don’t care about what they say. I have done my MSc so I know what is good or bad for my children.” Relatedly, here it is important to note that male caregivers in ‘always’ category were much more likely to be better educated than ‘sometimes’ and ‘never’ classified caregivers.

‘Sometimes’ and ‘never’ male caregivers in **Bannu** and **Peshawar** were much more likely to state they “never heard of any child with a case of polio,” “never heard good news about polio drops,” and “never showed any interest in the false propaganda of the polio programme.” Consequently, they were more likely to believe the negative information (or silence) they heard primarily from local religious leaders and close (frequently male) relatives regarding OPV. For example, one father in Bannu stated that he believed it was even more of a condemnation of the polio vaccine if religious leaders wouldn’t say one way or another whether it was good or bad – or if they remained silent on the issue. This ‘silence’ was interpreted as religious leaders having negative thoughts about polio, but they could not say their true feelings out loud otherwise “the government will take action against them.” ‘Sometimes’ male caregivers in **Peshawar** stated that *sometimes* they could be convinced by UC staff to vaccinate their children, but this convincing would only last for one campaign. In the interim between campaigns, fathers would continue to hear negative information about polio drops and they would return to a refusal unless successfully convinced (again) during the next campaign. The events of April 2019 made it considerably more difficult to convince these fathers. ‘Never’ caregivers in **Peshawar** were more likely to state that they were simply “fed up” with hearing about polio and “don’t waste their time listening anymore.” They said the only sources of positive information about polio were people who worked for the polio programme who could not be trusted “because they were getting paid.”

Although this varied by location, caregiver type, and respondent group, the most frequently cited sources of negative information about OPV across all KP respondent groups were: social media, husbands/fathers (for women), wives/mothers (for men), family ‘elders’ (especially mothers-in-law and in-laws in general), religious figures and madrassa teachers, and families who had been coerced/arrested during past campaigns for refusing vaccination. The most frequently cited positive information sources about OPV

were: television and/or TV news programming, and polio workers (e.g. FLWs, UCOs, social mobilisers). Across all respondent groups, family members were the most trusted sources of information – positive or negative. ‘Sometimes’ and ‘never’ caregivers in **Bannu** and **Peshawar**, both male and female, were more likely to have heard negative information about the vaccine from neighbours and from family members discussing, often in reference to negative propaganda circulating regarding the incident in Peshawar in 2019 and other negative stories circulating on social media.

In summary, most categories of women, in all locations, harboured suspicions about the polio vaccine but for women who ‘always’ accepted vaccination for their children, they did so due to (positive) external influences of their husbands or external social pressures from persistent vaccinators or neighbours who vaccinated their children. For ‘always’ accepting men, they were more likely to state that they did so because they were well-read/well-educated and could therefore tell the difference between “real information” and a “hoax.” Women and men who ‘sometimes’ or ‘never’ accepted OPV for their children did not describe these (positive, external) influences and instead were much more likely to be surrounded by persons who harboured the same suspicions as they did (with negative social media sources cited as confirming their misconceptions regarding OPV).

4.6 Trust in Vaccinators

‘Always’ female caregivers in **Bannu** and **Peshawar** were likely to state that they had a good relationship with female social mobilisers and vaccinators. Perhaps unsurprisingly, women in all categories and all locations preferred for vaccinators to be women, however, female caregivers in Peshawar in the ‘never’ category describe recently blocking access to their home/children from even female vaccinators. As stated by one mother in **Peshawar**, “The vaccinator is a woman but we don’t let her enter our home. If they insist with the police then a male member in the house will take the children outside. We are too angry and can’t bear for any vaccinator to enter our home”).

‘Sometimes’ and ‘never’ female caregivers in **Bannu**, in most instances, stated that they *knew but didn’t trust* their vaccinators, didn’t have confidence in their abilities, believed they were only working for money and “not for the betterment of our children”, and don’t listen to what vaccinators may be communicating about OPV because “we are always angry when they come so we don’t listen.” In contrast, female ‘sometimes’ caregivers in **Peshawar** were more likely to state that they *didn’t know their vaccinator* because “they change in every campaign” and didn’t trust her as a result (“We can’t trust an outsider to vaccinate our children”). ‘Sometimes’ and male caregivers in **Bannu** and **Peshawar** in addition to ‘never’ caregivers in **Bannu** stated that vaccinators were local and so were welcomed into their home (even if they did not always accept OPV for their children), but that they did not believe they were health professionals (“these vaccinators are not doctors”) and were only working for their salary and say good things about the vaccine because they want to keep making money.

‘Sometimes’ and ‘never’ male caregivers in **Peshawar** were additionally likely to state that they only accepted vaccinators because they “had to” for fear they would be punished by district administrators. Some male caregivers in Peshawar in particular who had a recent experience of being forced by DC/local police officers to accept vaccination, stated their “hatred” and “bad feelings” toward the female vaccinators who visited their home and whom they blamed for “telling on them to the authorities.” As an aside, female FLWs in these areas were afraid to return to the households and neighbourhoods where police raids had recently occurred – and their fears are well-founded. As stated by one father in Peshawar, “I was so much angry at that time when DC took out my children from our home through force that I thought I should have a gun right now and should have shot all of them.” Women in **Peshawar** in the

‘never’ category most often just outright stated they did not trust their vaccinator (regardless of whether she was familiar to them or not). In many cases, these women had a personal grievance against a vaccinator from a prior campaign experience (See case study KP4).

Case study KP4: Mother’s anger in Peshwar “She hides her newborn babies from the team”

“We visited a refusal family who was annoyed and didn’t open the door for the team. The vaccinator told me that this family had been visited twice already and that there are three children under 5 in the household. For the first visit, they wouldn’t open to door for the vaccinator. For the second visit, the family closed the door in the face of the vaccinator’s supervisor. When we went here [third visit], the supervisor again knocked at the door. I heard a woman shouting, ‘Who is it?’ The supervisor replied, ‘Kindly open the door, we came here to talk to you.’ The mother finally opening the door and allowed us to enter the entryway, but would not allow us farther into the room. The mother was angry and told the supervisor, ‘You vaccinated my children in the street without my permission so I will not allow you to vaccinate my children ever again. If you want to talk to me, first bring that vaccinator to me who grabbed my child.’ The supervisor tried to calm the mother down but she was still very angry...The supervisor later told me that she had convinced this mother during a previous campaign and that she had promised to vaccinate her children during this campaign. But now she is refusing again. ‘This family has been very hard to convince for polio vaccination,’ the supervisor said. ‘She hides her newborn babies from the team.’”

4.7 Perception of/Trust in Polio Campaigns

While ‘always’ caregivers in **Bannu** and **Peshawar**, both men and women, consented to having their children vaccinated with OPV during every campaign, they still expressed concern with the frequency of campaigns, and confusion over why the government was so insistent on vaccinating children for polio more than for other diseases. ‘Sometimes’ caregivers, both men and women, in both **Bannu** and **Peshawar** also expressed concern over the frequency of campaigns and were more likely to refuse vaccination during campaigns if they felt that the time period in-between campaigns was too short. Further, male caregivers in the ‘sometimes’ and ‘never’ category were more likely to indicate that they would request vaccinators just do the “fake finger marking” in future to “get it over with” and “leave their families and neighbours in peace.” The benefit of fake finger marking, as described by men, was that their children didn’t have to be vaccinated, the polio staff could “happily” move on after having visiting their house, and they would not be listed as a refusal household. ‘Sometimes’ and ‘never’ caregivers, both male and female, in both **Bannu** and **Peshawar** frequently stated that forced vaccinations “needed to stop.” Additionally, for women in the ‘sometimes’ and ‘never’ categories, they were more likely to accept vaccination (even if their husbands did not want them to) because they felt pressured by FLWs “refusing to leave their doorstep” until their children were vaccinated (i.e. not because they believed the vaccine was helpful for children). Here, women described various strategies to avoid their husbands finding out that they had allowed their children to be vaccinated (See case study KP5). In general, across all response groups and locations, caregivers felt that if the government (or foreign NGOs) wanted them to trust in polio campaigns and the PEI programme more broadly, then they needed to reduce the frequency of campaigns and demonstrate concern for – and provide services for – other concerns in their lives which they considered more important than OPV.

Case study KP5: Refusal (again) in Peshawar, “The mother was very afraid of our being outside her home, but she was more afraid of her husband”

“One of the households visited today by the refusal committee is having three kids whom the father refuses to vaccinate. The female HHSM in this area informed us that the children’s mother refused during Day 1 of the campaign, saying her husband wouldn’t allow it. The HHSM said that the teams were able to vaccinate the children during the last campaign only because they promised the mother they would not mark the finger of the child. The mother pleaded with the teams not to mark their child’s fingers because her husband ‘would get angry when he came home.’ So, during that last campaign the vaccinator made a short video clip of these children being vaccinated and shared it with the UC chairman to prove she had vaccinated children in the household – but they did not mark the children’s fingers. After the vaccinator made that video, the mother told the teams she would never allow her children to be vaccinated again because her husband becomes very harsh with her when he knows that polio team visited their house. This mother carried through with her promise and she did not allow her children to be vaccinated during this campaign, not even vaccinated without finger marking. The mother was very afraid of our being outside her home, but she was more afraid of her husband.”

4.8 Recommendations for Improvement

For all respondent groups, the most frequently stated recommendations were: 1) give attention to the “core issues” that people in their area had in terms of lack of access to electricity, a clean water supply, and health facilities that had both qualified staff and medicines, 2) stop the frequency of campaigns, 3) respect the decisions of families not to vaccinate and stop “forcing children to swallow” the vaccine (“Many families consider it dishonour if police arrive at their home”). See Annex 8 for an overview of relevant caregiver demographic information (e.g. age, gender, occupation).

In Summary

Caregiver's Profile & Socio-Demographic Characteristics

Quantitative –

- Most caregiver respondents were: aged between 31-40 years; married; and were the parents of the index child.
- The majority of caregivers had attained an education up to the middle/matriculation level. Male caregivers/fathers were the primary economic earners for the family, had autonomy to make decisions, and owned small business or were engaged in the private sector. Almost all female caregivers were housewives.
- The highest proportion of caregivers were Pashto-speaking, belonged to Pashtun communities and more than two-thirds had access to phones which could receive SMS/text messages.
- The majority of caregivers stated that their children had received polio drops during the last campaign.
- More than 98% of caregivers at the provincial level stated that they 'always' accepted polio drops.

Qualitative -

- Most caregiver respondents were: aged between 31-40 years; married; and were the parents of the index child.
- The majority of caregivers were illiterate or had no basic education. Male caregivers/fathers were the primary economic earners for the family, had autonomy to make decisions, and either owned small businesses or worked as a labourer. Almost all female caregivers were housewives.
- All caregivers were Pashto-speaking, belonged to Pashtun communities and more than two-thirds had access to phones which could receive SMS/text messages.
- Per the sampling strategy, n=14 caregivers 'always', n=14 'sometimes' and n=18 'never' accepted polio drops.

Trust in Health System

- Most 'always' caregiver survey respondents in KP had a high level of trust in both public and private sectors for general health services and routine immunization. Nearly half of 'always' caregivers stated they had little to no trust in local traditional healers or hakeems for general health services, while simultaneously indicating higher levels of trust for spiritual/religious healers for these same services. This finding (at the provincial-level) is more nuanced when analysing district-level differences where nearly half of Peshawar survey respondents trusted local healers and hakeems for general health services.
- The majority of 'sometimes' and 'never' qualitative study participants in KP stated a lack trust in public healthcare institutions. These perceptions were often based on prior negative experiences seeking care. This has important implications for health seeking behaviours away from government provided services such as routine immunizations (which may result in delays or avoidance of child vaccination services), and push caregivers towards sole reliance upon spiritual/religious healers or unlicensed health providers (e.g. hakeems) who provide easier to access, cheaper, culturally relevant and "friendlier" services. The fact that mothers require permission from their husbands prior to seeking care for their children outside their immediate local communities, exacerbates this issue (particularly within families of low socio-economic status where the transportation and fees associated with seeking care from public or private health centres is financially burdensome).

Knowledge of Polio Virus and Vaccine

- Most ‘always’ caregiver survey respondents in KP had knowledge about polio disease and symptoms. However, one-fourth of caregivers were of the perception that paralysis due to polio was curable. This was particularly the case in Peshawar where more than half of respondents had this perception. In comparison, the majority of respondents in Bannu perceived that paralysis due to polio was incurable.
- The majority of ‘always’ caregiver survey respondents at the provincial-level showed a high-level of concern regarding polio (i.e. high-risk perception). However, when analysing district-level responses, nearly one-third of Bannu respondents had no concerns at all that their children may contract polio.
- The majority of ‘always’ caregiver respondents at provincial and district-levels stated that the best age for children to receive their 1st immunization dose was at birth and/or within 1-3 months (more commonly reported in Bannu).
- The majority of ‘sometimes’ and ‘never’ qualitative study participants in KP believed that children should be “older” (e.g. 2 years or age or older) prior to receiving their first vaccination given that they needed to be “strong enough” to withstand its side effects.
- There also exists a basic lack of understanding among primarily ‘sometimes’ and ‘never’ caregivers, both men and women, that vaccination is meant *to prevent* disease not to cure disease. A reoccurring comment by these caregivers was: “Why do I need to vaccinate if my children are not sick?” Similarly, this same group of caregivers have very high levels of hesitation in accepting OPV for young children (e.g. under 1 year of age) and for children who are ill (cough, flu, stomach issues). A common perception among this group of caregivers was the belief that OPV could further deteriorate the health of an already ill child – and potentially that the frequency with which they have been vaccinated with OPV in the past is a contributing factor to their current illness.

Trust in Polio Vaccine

- The majority of ‘always’ caregiver survey respondents in KP stated high-levels of trust in the polio vaccine and felt that ‘drops’ were safe and effective.
- For many of the qualitative study participants in KP, the events of April 2019 continue to linger in the minds of caregivers and contribute heavily to their misconceptions regarding OPV safety. Where caregivers feel particularly protective of their children – for example, a mother who has previously lost a child, a wife who has had difficulty conceiving in past, a child who has a significant health issue, a house with only one male child – these fears are much more pronounced and more likely to lead to hiding children, other forms of ‘silently’ refusing or directly refusing vaccination. Relatedly, we have evidence from KP that hesitant caregivers may allow for vaccinating female children, but not sons (especially young sons).
- It is also important to note that within vaccine hesitant households in particular, children have concerns about the safety of the vaccine as well. They have heard many of the same rumors as adults and often have seen the same videos circulating on social media (e.g. the April 2019 incident, which occurred in a school, is a cited cause for concern).
- For the majority of ‘sometimes’ and ‘never’ households, it is not just male heads of household who are against vaccination and demand their wives not let children be vaccinated. Women often self-described themselves as having the strongest levels of vaccine hesitancy and have various methods of hiding their children from vaccinators and/or requesting their relatives hide their children. This finding was also true (to a lesser extent) among ‘always’ accepting female caregivers who participated in the qualitative study.

Trust in Polio-related Information Sources, and Local Social Norms

- The majority of ‘always’ caregiver survey respondents perceived that most health workers, their families, friends and community members considered the idea of giving polio drops to children as a good idea, and that drops were safe and effective; respondents perceived that most traditional healers and spiritual healers believed the opposite (i.e. it was not a good idea to give polio drops to children, drops were not safe or effective). Peshawar residents in particular were more likely to state that TBAs and religious leaders were more likely to have negative views regarding vaccination.
- More than two-third of caregiver survey respondents informed that they did not have access to social media and thus did not know of any positive or negative information regarding polio drops posted on social media sites (e.g. Facebook, Twitter, WhatsApp).
- At the provincial-level, the majority of the caregiver survey respondents stated that they had a great deal of trust in their families, community members (including community leaders, neighbours, friends) for information about polio drops. This finding is also true for qualitative study participants. However, a wide variation in district-level survey findings was observed in terms of trust in molanas, shura/jirgas, TBAs and traditional healers (i.e. caregivers in Bannu had a great deal of trust in these sources for information about polio drops).
- Although the majority of caregiver respondents at the provincial-level had heard, read or seen positive statements about polio drops in the past year (e.g. polio drops can protect a child against polio), nearly one-eighth of caregivers, particularly in Peshawar, reported negative statements (e.g. polio drops causing sterility/infertility in boys and girls).
- One-fifth of the caregivers in KP (and nearly one-third in Bannu) believed that children were getting too many polio drops. Bannu respondents in particular were also much more likely to refuse to respond to probing question regarding the negative statements they had heard about polio drops (e.g. not halal, made with urine or blood, cause of infertility).
- A majority of ‘always’ caregiver survey respondents believed that their neighbours accepted polio drops for their children every single time vaccinators visited their home. Among the minority of respondents who described their neighbours vaccination hesitancy, reasons for avoiding OPV were diverse to include: low risk-perception, ill child, community or religious leaders advised them against children taking polio drops, vaccinators were too pushy/disrespected parental authority, belief that polio drops are not valuable/useful/effective, religious reasons (e.g. vaccine is not halal) , and their in-laws do not support giving polio drops to children.
- In terms of gender differentials, women (and girls who were not receiving a formal education) were much less likely to have access to polio-related information sources outside members of their households and/or girls’ madrassas, whereas men (and boys receiving a formal education) were more likely to be literate and therefore able to read news sources about vaccination in addition to having a wider circle of influencers.

Trust in Vaccinators

- Nearly all caregivers in KP province (from both qualitative and quantitative components of the study) stated that polio vaccinators visited their house during the last campaign. Nearly half of caregiver survey respondents in Peshawar reported not seeing or talking to vaccinators despite their visiting their homes. This finding is indicative of gender differentials in terms of who does (and does not) interact with vaccinators in any given household.
- More than one fourth of caregiver survey respondents at the provincial-level reported giving polio drops to their children because vaccinators would continue to ‘bother’ them or would not leave them alone until they accepted (this finding is most significant for Bannu).

- Regarding vaccinator profiles (who visited their household during the last campaign), the majority caregivers in KP province informed that two female vaccinators visited their home (a small percentage reported males being a part of vaccination teams).
- The majority of ‘always’ caregiver survey respondents reported they had a great deal of trust in polio vaccinators and found them knowledgeable about child health and cared about their child’s well-being.
- Mistrust of vaccinators among primarily ‘sometimes’ and ‘never’ qualitative study participants often stemmed from a combination of the following: being against female workers in general, having a past negative experience with the PEI programme (e.g. coercion) which a caregiver understood as caused by a vaccinator ‘reporting on’ them to district administrators, and/or feeling as if vaccinators did not respect their right to make their own decisions to accept (or not) OPV. This last point may be attributed to caregivers having a negative impression of their vaccinator if that vaccinator did not accede to their demands to falsely record their children as having been vaccinated (e.g. fake finger marking). Fake finger marking is a particularly challenging issues to address in households where mothers (as the person mostly likely to be at home when a vaccinator knocks) have been told by their head of household not to let children be vaccinated. This puts women in particular in the difficult position of having to go against her husband's wishes and/or communicate to those who come knocking on doors during campaigns as to why the family will not accept vaccination. Therefore, negative caregiver impressions of their vaccinator may (in many cases) not be a result of vaccinator failures, but due instead to factors beyond a vaccinator’s ability to control (e.g. their gender, pressures placed upon them by district administrators and the PEI programme to keep ‘knocking on doors’) and their refusal to engage in data falsification.

Perception of/Trust in Polio Campaigns

- The majority of caregiver survey respondents reported that polio vaccinators visited their houses during every campaign in the past year, however, some district-level variations were observed in Peshawar where approximately three-fourths of caregivers could not recall the number of vaccinator visits.
- Survey responses regarding perceptions about the frequency of visits by polio vaccinators revealed wide variation at the district and provincial level. Nearly half of caregivers in Peshawar perceived that vaccinators had visited their homes ‘too many times’ to offer polio drops. Relatedly, less than half of caregivers in Peshawar believed that vaccinators respected their spouses’ authority to make decisions for children’s health. Here, it is also important to note that half of caregivers in Peshawar complained that polio vaccinators ‘never’ respected their spouses’ decision-making authority.
- As noted previously, the majority (more than 98%) of caregiver survey respondents stated they ‘always’ accepted polio drops for their children. A minority of these respondents described the ‘social norm of giving polio drops’ in their village/neighbourhood as a pressure to accept OPV.
- A ‘great deal of trust’ on national government, local health organizations, political leaders and international organizations was expressed by ‘always’ caregiver survey respondents at the provincial-level. However, district-level responses, especially for Bannu residents, indicated a trust deficit for international health organizations and the provincial government.
- Many caregiver survey respondents at the provincial-level felt that the PEI programme’s efforts to bring polio drops to children in their neighbourhood were ‘too much.’ This finding was most prevalent among Bannu residents who believed greater efforts needed to be made to bring other health services.
- The majority of ‘always’ caregiver survey respondents in Peshawar described their intention to give polio drops to their children before they reached their 5th birthday. However, this percentage was

significantly less for Bannu where approximately one-fourth of caregivers described this intent. Similarly, one third of caregivers from Bannu were not comfortable accepting polio drops for their children every time they were offered before their child reached their 5th birthday.

- The majority of 'always' caregivers stated their preference to received polio drops at home during campaigns, and confirmed morning as their preferred time for vaccinator visits.

Recommendations for Improvement

- Recommendations for improving the delivery of OPV to children, as provided by survey respondents, included including giving attention to other health services too, raising awareness about OPV in local languages, and engaging more local female vaccinators (these recommendations was most prominent among Bannu residents). In Peshawar, one-third of caregivers suggested that forcing or coercing families to accept OPV should be stopped.
- Qualitative caregiver study participants noted that, where demand-based refusals exist, there is good reason. Local PEI staff were often in agreement that families have a right to demand for other services which will also benefit their health (e.g. cleaning up open sewer systems). In locations which have a health facility, a common refrain provided by caregivers with low levels of trust in their local health facilities was: "what good is a health facility that has no medicine." In the absence of concretely addressing these demands, PEI staff have very little they can do/offer to convince demanding families to accept vaccination. It should also be anticipated that these demands may increase over time, especially if certain services are promised to get a family to agree to vaccinate during a specific campaign, and then these promises are not kept afterwards (as has been documented in the past). The frequent suggestion made by local PEI staff to increase the numbers of children who are vaccinated (and reduce refusals) was to arrange for more health camps which provide families with basic medications for free.
- Simple, respectful interventions led by persons with local influence can have a big (positive) impact. In contrast, where caregivers feel coerced to accept OPV – either through repeated knocks of vaccinators who "will not leave my family alone", the presence of police forces, feelings of shame/dishonour at having programme staff show up at their doorstep, or more direct forms of coercion (e.g. imprisonment) – their perception of and trust in campaigns is very low and these feelings of mistrust increase as the frequency of campaigns increases. The long-term consequences of coercive practices cannot be understated. For example, the coercive actions of the DC in Peshawar during the January NID campaign in arresting families had (and will very likely continue to have) a negative impact on the program. Coercive actions and policies often have the opposite intended impact in that they create more rather than fewer 'silent' refusals, and contribute to a threatening environment for polio staff who fear going back to areas where coercive practices have recently been used.



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5. Punjab: Lahore & Rawalpindi

Key Components of the Methodology

- Selected study locations Lahore and Rawalpindi are locations with the (perceived) highest levels of vaccine hesitancy towards OPV in the province. That is, these are locations with persistent virus circulation despite the frequency of door-to-door vaccination campaigns. The UCs selected for qualitative data collection activities were those with: highest percentage of missed children (i.e. still missed, still refusal and still not available), high concentration of ‘priority’ populations, continuously positive environmental samples, and/or confirmed cases of polio in 2019-2020.

Quantitative –

- Data collection occurred in the following districts and UCs of Punjab:
 - Rawalpindi:** CTR 1, CTR 2, CTR 3, CTR 4, CTR 5, CTR 17, 3, 4, 5, 7, 8, 9, 10, 37, 80, Chaklala, Girja, Jalala, Saraye Kala
 - Lahore:** C4, 1, 10, 16, 29, 67, 69, 83, 84, 90, 93, 117, 118, 120 A, 120 C, 136, 139, 143, 145
- Within each district, 30 clusters with 7 eligible interviews were conducted for a total of **210** interviews conducted per district. Overall, in Punjab, **420** surveys were completed.
- 8** refusals (**4** in Lahore and **4** in Rawalpindi) were recorded.

Qualitative –

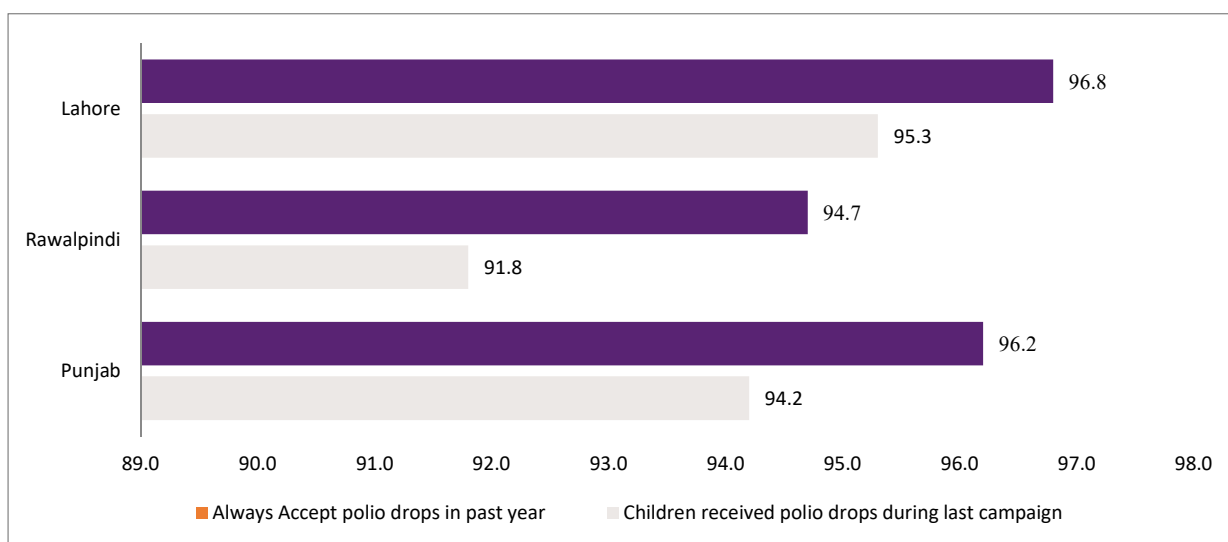
- Data collection occurred in the following districts and UCs:
 - Rawalpindi:** 8, CTR 17; and
 - Lahore:** 16, 143.
- All attempts were made to equally sample participants from the following two ‘classification’ categories – always and not available – as determined by campaign data collected from past five consecutive rounds of OPV and in consultation with district and UC-level polio staff. Dividing caregivers according to their known past practices, as this sample strategy highlights, serves as an important reference point within our reporting to directly link *knowledge* and *attitudes* with *practices* and *experiences*. Within the ‘not available’ category, the study team triangulated information obtained from PEI staff and collected during interviews to do a *post-data collection* classification of ‘not available’ households into either ‘always’, ‘sometimes’ and ‘never’ caregivers of children <5 years of age (as per the reporting procedures from the other three study provinces):
 - Caregivers with a history of accepting OPV for all children in their household during every campaign (identified within this report as ‘**always**’ accepting caregivers);
 - Caregivers with a history of ‘**not available**’ children during every campaign.
- Observational data was collected during the June 2021 SNID in the same UCs as indicated above.
- IDIs were conducted In-depth interviews (IDIs) were conducted with 45 caregivers (n=22 Rawalpindi; n=23 Lahore) representing 51% female and 49% male respondents. Of the total n=23 ‘not available’ caregivers interviewed, our study team sub-classified n=0 as ‘always’, n=19 as ‘sometimes’ and n=4 as ‘never’ vaccine acceptors. All (100%) of ‘never’ caregivers were from priority populations.
- Skilled interviewers (male and female) specifically trained in qualitative data collection, were employed for this study. Interviewers were fluent in Pashto, Urdu and English. The majority of caregiver interviews in Punjab (62%) were conducted in Urdu with a combination of Punjabi, Saraiki and Kashmiri populations. A significant minority of interviews (38%) were conducted in Pashto with priority populations, the majority of which were migrants.
- 7** refusals (**1** in Rawalpindi, **6** in Lahore) were recorded.

Quantitative Findings –

5.1 Reported Coverage of OPV

In the province of Punjab, more than 94% of the caregivers confirmed that their children had received polio drops during last campaign. For self-reports of receiving OPV in last campaign, more than 95% caregivers from district Lahore and approximately 92% from district Rawalpindi acknowledged that their children received polio drops during the last polio drive. Similarly, a high proportion of caregivers from district Lahore (96.8%) and Rawalpindi (94.7%) stated that they ‘always’ accepted polio drops in past year (Figure P1). A very few number of caregivers in Punjab province informed that their children have missed OPV during last campaign (4%) and ‘never’ accepted OPV in last year (0.4%). Particularly, more caregivers reported in district Lahore, i.e. 4.7% children didn’t receive polio drops during last drive and 0.5% ‘never’ accepted drops in past year.

Figure P1: Percentage of children who received polio drops during last campaign and caregivers who 'always' accept polio drops.



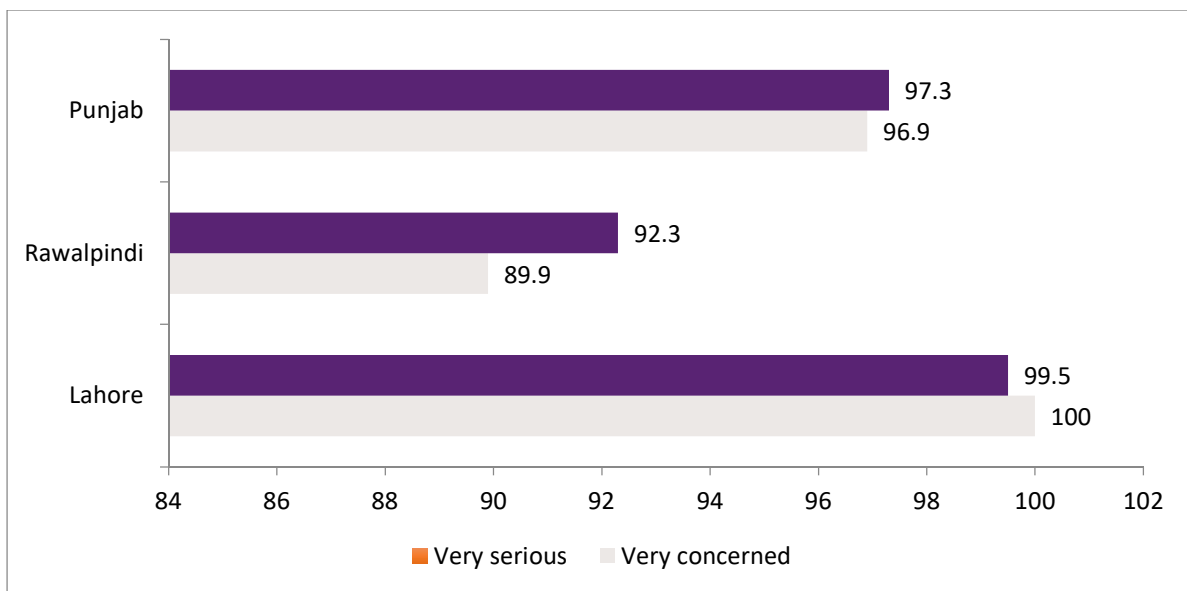
5.2 Trust in Health System

A large number of the caregivers in Punjab province showed a great deal of trust on both public and private sectors for general health services and routine immunization, as exhibited in figure below. A high proportion of caregivers at provincial level reported ‘great deal of trust’ for general health services in public hospitals (66.6%) than private health centers (60.6%). Similarly in case of routine immunization, majority of caregivers showed more trust on public health facilities (83.3%) in contrast to private health centers (81.9%) in the province, and mainly in district Lahore. Regarding caregivers’ trust on local traditional healers/hakeems and spiritual/religious healers to seek general health services, a majority (44.5%) reported that they had not at all trust on local hakeems, particularly in district Lahore (61.9%), nonetheless caregivers from district Rawalpindi showed great deal of trust (55%). Likewise, more than 41% caregivers at provincial level informed that they had great deal of trust on spiritual/religious healers for general health services in Punjab, mainly in district Rawalpindi (51.9%).

5.3 Knowledge of Polio Virus and Vaccine

More than 91% caregivers in Punjab province had knowledge about polio diseases, with higher proportion in district Rawalpindi (96.7%) than Lahore (89%). Out of those caregivers (8%), who had no knowledge of polio disease were further probed, where three-fourth caregivers stated that they had not heard of any diseases that can paralyze children, particularly in district Lahore (82.6%). Those caregivers, who had knowledge of polio disease also showed high concerns and seriousness regarding their children getting sick with polio at both provincial and district levels (Figure P2). Analysis revealed that all (100%) and around 90% caregivers in district Lahore and Rawalpindi respectively were ‘very concerned’. Similarly, more than 99% and 92% caregivers from district Lahore and Rawalpindi respectively reported that it would be ‘very serious’ if a child contracted polio.

Figure P2: Concern regarding child contracting polio (risk perception).



Multiple responses were recorded regarding caregivers’ knowledge about polio symptoms. Nearly 65% of the caregivers in the province had knowledge about polio symptoms, e.g., paralysis of arms and/or legs. Further, more than one third of caregivers at provincial level also reported fever (34.9%) and some showed unawareness (25.3%) with polio symptoms. District level variation was observed with respect to knowledge of polio symptoms, where more awareness about paralysis was seen amongst caregivers of Rawalpindi (84.1%) in contrast to Lahore (56.3%). However, more or less same percentage of caregivers also reported fever in district Rawalpindi (35.3%) and Lahore (34.7%). More than one fourth caregivers at provincial level and 34.2% at district Lahore also reported ‘don’t know’. Amongst those who had knowledge of paralysis as polio symptom, more than 86% of caregivers in the province stated that paralysis is curable, with higher percentages at district Lahore (92.5%) followed by Rawalpindi (78.2%). Nevertheless, overall 7.8% caregivers at provincial level and 19.5% at district Rawalpindi were of the view that paralysis is not curable.

In Punjab province, nearly 85% of caregivers perceived that children’s best age (in general) to receive 1st immunization is immediately after birth. A majority of caregivers in Rawalpindi (88.6%) and Lahore (83.3%) also presumed that best age for immunization is at birth.

5.4 Trust in Polio Vaccine

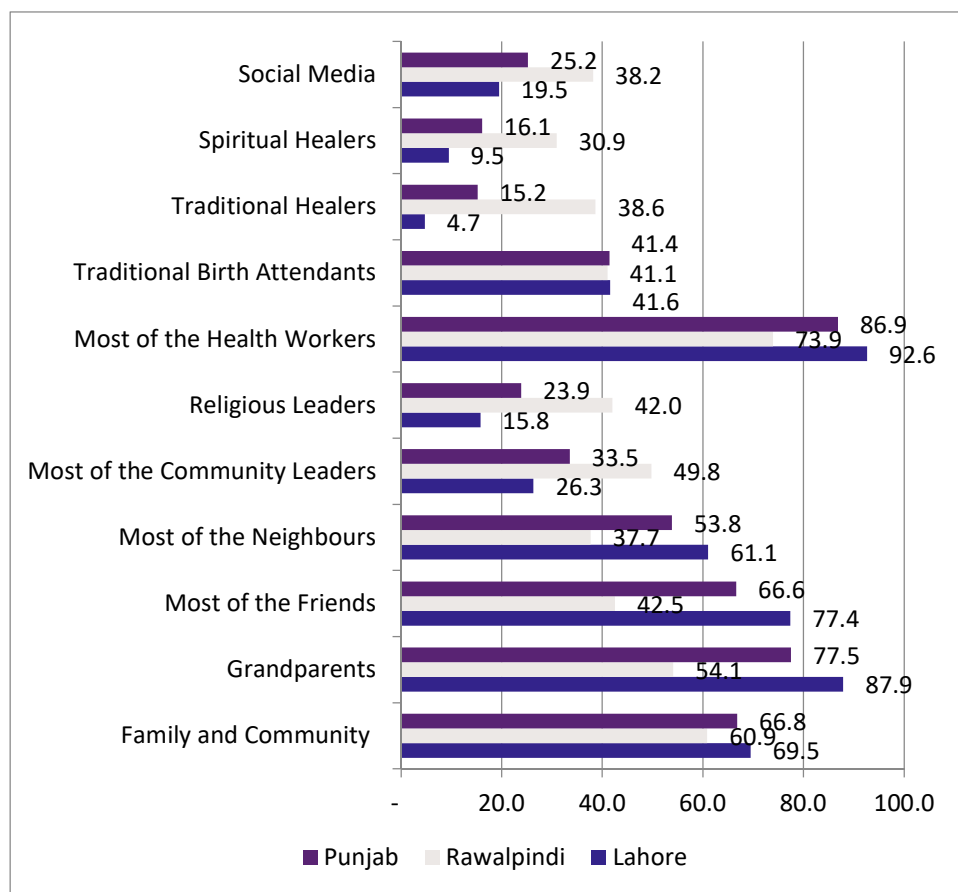
A high proportion of the caregivers in Punjab province showed trust in polio vaccine and felt polio drops ‘very effective’ for polio prevention (92%) and ‘very safe’ (85.2%) for children. Around 98% caregivers in district Lahore and 79% in district Rawalpindi perceived polio drops very effective. Similarly, more caregivers from district Lahore (96.8%) opined that polio drops are very safe in comparison to district Rawalpindi (58.9%). A very minor number of caregivers from district Rawalpindi said that polio drops are not very effective (0.5%) and not very safe (0.5%).

5.5 Trust in Polio-related Information Sources, and Local Social Norms

Perception of family and community

According to caregivers from Punjab province, a high proportion of health workers (86.9%), followed by grandparents (77.5%), family and community (66.8%), friends (66.6%), traditional birth attendants (41.4%), community leaders (33.5%), social media (25.2%) and religious leaders (23.9%) perceived the idea of giving polio drops to children ‘very good’ (Figure P3). However, caregivers at provincial level felt that some of the spiritual healers (16.1%) and traditional healers (15.2%) viewed giving polio drops to children as a good idea. At district level, variation in caregivers’ perception was noticed, such as more than half of the caregivers from district Lahore were found unaware, with respect to the views on social media (61.6%) and perception of traditional healers (62.6%), spiritual healers (61.6%), TBAs (53.7%), religious leaders (53.7%) and community leaders (51.1%) about polio.

Figure P3: Perception of family and community who perceived giving polio drops as a ‘very good idea.’



Further, when probed regarding safety of polio drops, most of the caregivers at provincial level informed that mostly health workers (86.8%), grandparents (74.3%), friends (66.8%), neighbors (53.2%), traditional birth attendants (40.9%), social media (24.6%) and religious leaders (24%) perceived polio drops 'very safe' for children. However, few caregivers felt that spiritual healers (16.7%) and traditional healers (13.8%) found polio drops to be safe for children. District level variation was observed for the perception of traditional and spiritual healers, community leaders and social media, where more than half of the caregivers responded 'don't know'. Regarding caregivers' experience of witnessing negative things (e.g., heard, seen or read) about polio drops on social media, more than half of the caregivers in Punjab province informed that they had not heard, read or seen negative things on various means of social media, including Facebook, Twitter, WhatsApp. Particularly for district Lahore, most of the caregivers refused regarding witnessing any negative thing about polio. Nonetheless, a very small number of caregivers at provincial level reported that they had heard, read or saw negative things on Facebook (13.7%), Twitter (5.2%), and WhatsApp (4.1%) about polio. Further, in case of district Rawalpindi, mostly caregivers reported not applicable.

Trust of family and community about polio-related sources of information

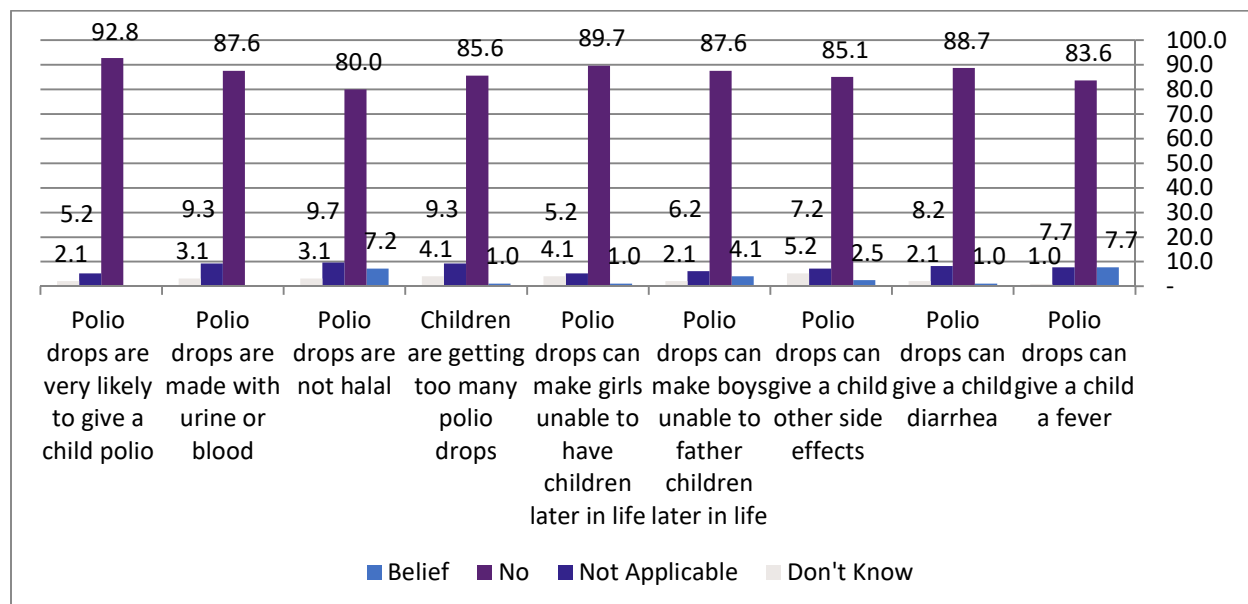
Major to moderate percentages of the caregivers indicated that they had great deal of trust on LHWs (73.5%), polio vaccinators (69.3%), health workers at local facilities (67.3%), family (58.4%), friends (43.7%), TBAs (37.1%), neighbors (34.2%) and community leaders (23.6%) for information about polio drops in Punjab. However, a small number of caregivers reported of having trust on Molanas (16.5%), Shura/Jirga (15.7%), Imams (15.6%) and traditional healers (15.5%). A wide variation in district level findings was observed in terms of trust on Molana, Shura/Jirga, Imams and traditional healers between district Rawalpindi and Lahore, where caregivers from Rawalpindi had more trust than Lahore.

Positive and negative perceptions

In responses to the positive statements heard, read or seen about polio drops in the past year, more than two third of caregivers from Punjab province reported that polio drops can protect a child against polio, however, some also responded that polio drops can make child healthier (21.6%) and protect against diseases other than polio (10.5%). More than one fourth of caregivers informed that they had not heard any positive statement about polio drops, particularly from district Lahore (30.5%). Similarly to the above, more than three fourth of the caregivers affirmed that they had not heard, read or seen anything negative about polio drops, including 85.8% caregivers from district Lahore and 56% from Rawalpindi. Only few caregivers (9.2%) at provincial level have heard that polio drops can give a child other side effects (not fever or diarrhea).

Upon probing about belief on polio related negative statements, majority of the caregivers in Punjab province informed that many such statements are not valid, e.g., polio drops are very likely to give a child polio (92.8%), polio drops can make girls unable to have children later in life (89.7%), polio drops can give a child diarrhea (88.7%), polio drops can make boys unable to father children later in life (87.6%), polio drops are made with urine or blood (87.6%), children are getting too many polio drops (85.6%), polio drops can give a child other side effects (85.1%), polio drops can give a child a fever (83.6%) and polio drops are not halal (80%). However, some of the caregivers believed that polio drops can give a child fever (7.7%) and polio drops are not halal (7.2%) (Figure P4).

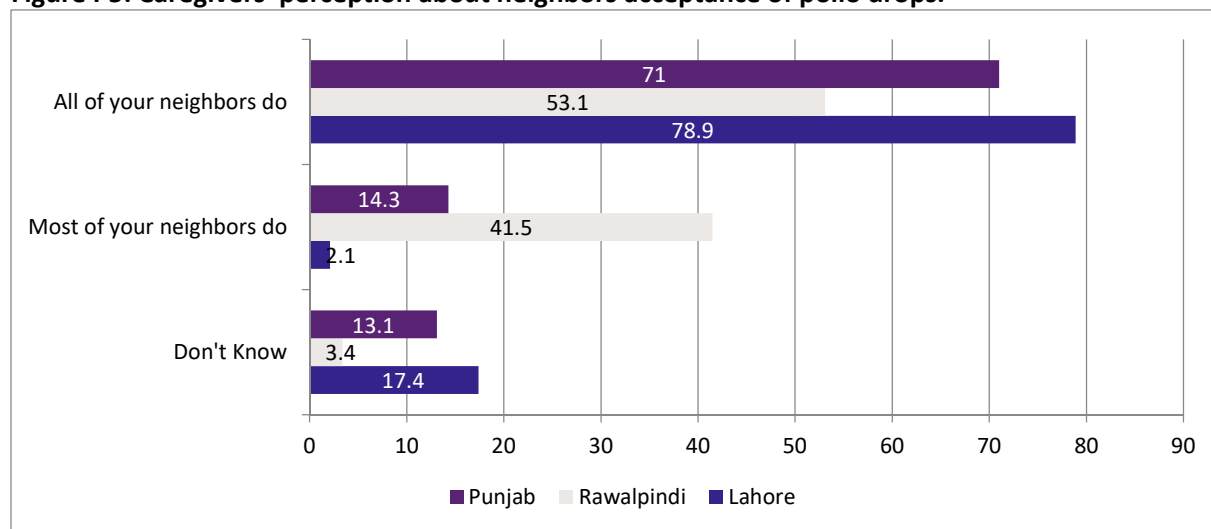
Figure P4: Caregivers' belief of negative statements about polio drops.



Perception about neighbors/community norms for accepting polio drops

Less than three fourth of the caregivers (71%) in Punjab province perceived that all of their neighbors usually accept polio drops, while 14.3% considered that most of their neighbors accept polio drops for their children every single time when polio vaccinators visited their home. Here district level variation was observed, where nearly 79% caregivers from district Lahore and more than half (53.1%) of the caregivers from district Rawalpindi believed that all of their neighbors give polio drops, where as only 2.1% from district Lahore and majority (41.5%) from district Rawalpindi felt that most of their neighbors generally give polio drops to their children. A minor number of caregivers at district level reported that ‘none of the neighbors’ accept polio drops (0.5%) from district Lahore and vaccinators have never visited village/neighborhood (0.5%) from district Rawalpindi (Figure P5).

Figure P5: Caregivers' perception about neighbors acceptance of polio drops.



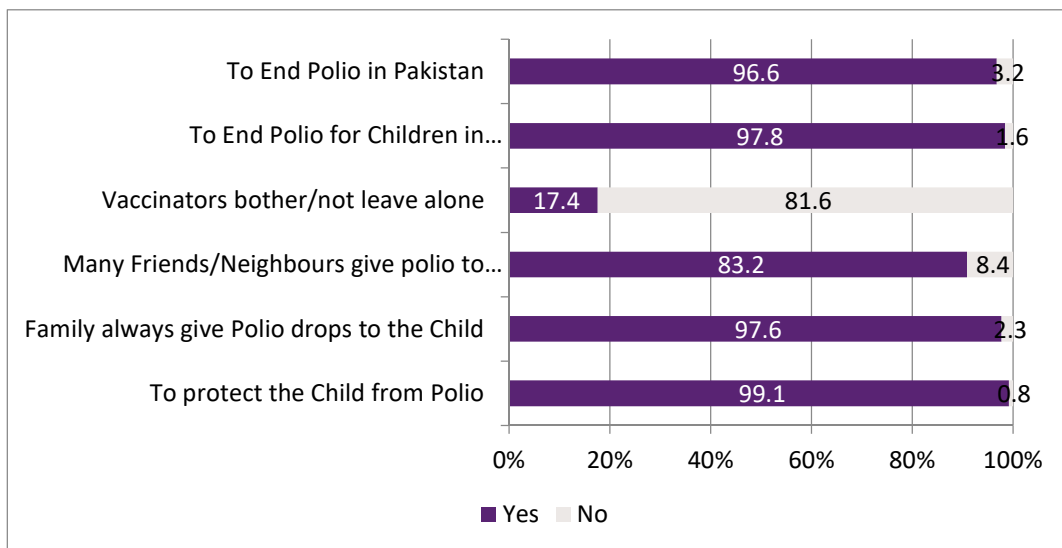
Although mostly caregivers in Punjab perceived that their neighbors accept polio drops every time, however, few who were either not sure recorded reasons which might hinder their neighbors for accepting polio drops. These included children were not likely to get polio (4.9%), child was sick (3%) or was not born at time of last visit (2.4%), polio drops can give child other side effects (not fever)/harm child (2.4%), in-laws (father-in-law, mother-in-law) does not support giving child polio drops (2.4%) and community or religious leaders advised against giving drops to children (2.4%). A high proportion of the caregivers, i.e. 72.6% at provincial level, 79.8% from district Rawalpindi and 20% from district Lahore showed unawareness about any reason and responded 'don't know'. Further, 8.9% caregivers in Punjab province and 10.1% from Rawalpindi district refused to answer this question.

Regarding awareness about neighbors, who are against polio drops, more than half of the caregivers (56.8%) felt that none of their neighbors are against polio drops, nonetheless more than one fourth (26.4%) responded that some neighbors are against polio drops. Here district level variation was observed, where a high proportion of the caregivers from district Lahore (84.5%) reported that none of their neighbors are against polio drops and 58.3% from Rawalpindi reported that some are against polio drops. More specifically, when probed how many of your neighbours are against polio drops, around 72% caregivers, particularly from Rawalpindi said that most of the neighbors and 17.1% mentioned that 'not very many', especially from Lahore district.

5.6 Trust in Vaccinators

Nearly all caregivers in Punjab province (99.7%), with 100% from Lahore and 99% from Rawalpindi informed that polio vaccinators visited their house during last campaign. More than 93% of the caregivers also reported that they had witnessed/saw or talked to polio vaccinators during last campaign, particularly in Rawalpindi (97.6%) and Lahore (91.6%). Very few caregivers (6.3%) mentioned that they didn't witnessed any vaccinator during last polio drive. In response to the question regarding reasons of receiving polio drops by vaccinators, mostly caregivers reported common reasons, e.g., to protect children from polio (99.1%), end polio for children in village/neighbourhood (97.8%) and Pakistan (96.6%), family always give polio drops to the child (97.6%) and many friends/neighbours give polio to their children (83.2%). Less than one fifth caregivers stated that they usually give polio drops to children as vaccinators would either bother them or would not leave them alone until they did so (Figure P6). A high proportion of caregivers in Punjab province informed that they have great deal of trust on polio vaccinators (87.5%), and found them caring (61.6%) and knowledgeable about child health (46.3%).

Figure P6: Reasons for accepting polio drops.



5.7 Perception of/Trust in Polio Campaigns

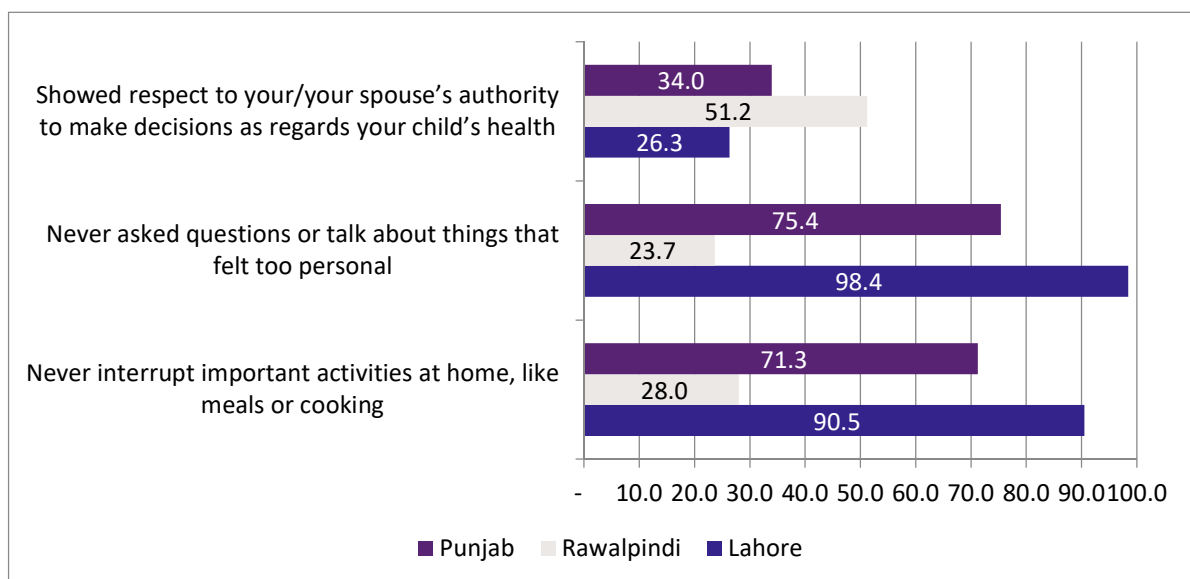
Perception of/trust in polio campaign during last year, preceding survey (July 2020 – June 2021)

Regarding visit frequency of polio vaccinators during last year, mixed opinions were reported by caregivers. More than 41% caregivers at provincial level and 59.5% at district Lahore informed that polio vaccinators visited their houses all the time during last year polio campaign, however, actual number was not known. A few caregivers in Punjab province, particularly in Rawalpindi district expressed that polio vaccinators visited their homes four times (10.8%), one time (7.3%), five times (7.1%), two times (6.2%), three times (5.9%), six (5.4%) and seven times (5.2%). Similarly, most of the caregivers at provincial level (48.7%), particularly in district Lahore (68.9%) felt that polio vaccinators visited their homes about the right number of time for giving polio drops. However, 23.5% and 17.3% caregivers indicated that vaccinators had visited their homes ‘too many times’ and ‘too few times’ respectively to offer polio drops. More specifically, more caregivers in district Rawalpindi (53.6%) than Lahore (10%) felt that polio vaccinators visited caregivers’ homes ‘too many times’.

Upon probing regarding caregivers’ concerns on vaccinators’ visiting homes ‘too many times’, some responded that tired of the visits (13.1%), disrupt activities (11.7%), just ‘too much’ – no explicit (10.9%) and child has had enough drops already (9.9%). Here it is pertinent to mention that more caregivers from district Lahore recorded reasons, such as tired of the visits (42.1%), just ‘too much’ – no explicit (36.8%), child has had enough drops already (31.6), receiving so many drops can harm children/make them ill (15.8%), and disrupt activities (5.3%).

Regarding behavior of polio vaccinators during past year, a higher proportion of caregivers in contrast to the above, stated that they had ‘never’ interrupted their important activities (71.3%) as well as ‘never asked too personal questions’ (75.4%) at provincial level. A wide difference was noticed between district Lahore and Rawalpindi. More than half of the caregivers in Rawalpindi district shared that vaccinators interrupted their important activities, asked too personal questions, but nonetheless showed respect every time when they visited their homes. In Lahore, the majority reported positive views and said that they had ‘never’ interrupted their important activities or ‘never’ asked too personal questions (Figure P7).

Figure P7: Behavior of polio vaccinator during past year.



More than 96% caregivers informed that they ‘always’ accept polio drops for their children, whereas only 2.4% either sometimes or never accepted polio drops. Further, the caregivers were probed about the reasons for not accepting polio drops, most of the caregivers in Punjab province and district Lahore perceived varied reasons, e.g., child was sick/ill, asleep, not at home or wasn’t born at time of last campaign, or child has already had enough drops. Nevertheless, all caregivers from district Rawalpindi and few at provincial level had not belief regarding effectiveness of polio drops.

A large number of caregivers in Punjab province and Lahore informed that they had never felt any pressure for either accepting (66.3% and 98.7%) or refusing (70.6% and 99.5%) polio drops during campaigns or visit to local health facility. However, caregivers at Rawalpindi district recorded some pressures for accepting or refusing polio drops. The pressure for accepting polio drops included due to social norm in their village/neighborhood (42.7%), in laws (26.1%), administrators/local government officials threaten to imprison (10.6%), or take away electricity (10.1%). On the other hand, the most common pressure at district Rawalpindi for refusing polio drops during campaign or visit to local health facility were also found more or less the same as above. These included polio drops are not a social norm in village/neighbourhood (34.8%), in-laws (42%), spouse (15%) and community leaders or religious leaders (9.7%) have advised me not to vaccinate, and the vaccinators/PEI staff have told me that polio drops are not good for children (9.2%). A high proportion of caregivers in Punjab province informed that they had great deal of trust on polio vaccinators (73%), and found them very knowledgeable about child health (46.3%) and caring towards child wellbeing (61.6%). Less than three fourth of caregivers (73%) at provincial level believed that giving polio drops by vaccinators at homes and others places e.g., schools, parks, streets, festivals etc. is a ‘very good idea’. Some caregivers (16.2%) at provincial level also mentioned that it’s somewhat good idea. Same pattern of data was observed at district level.

Perception about role and efforts of PEI programme

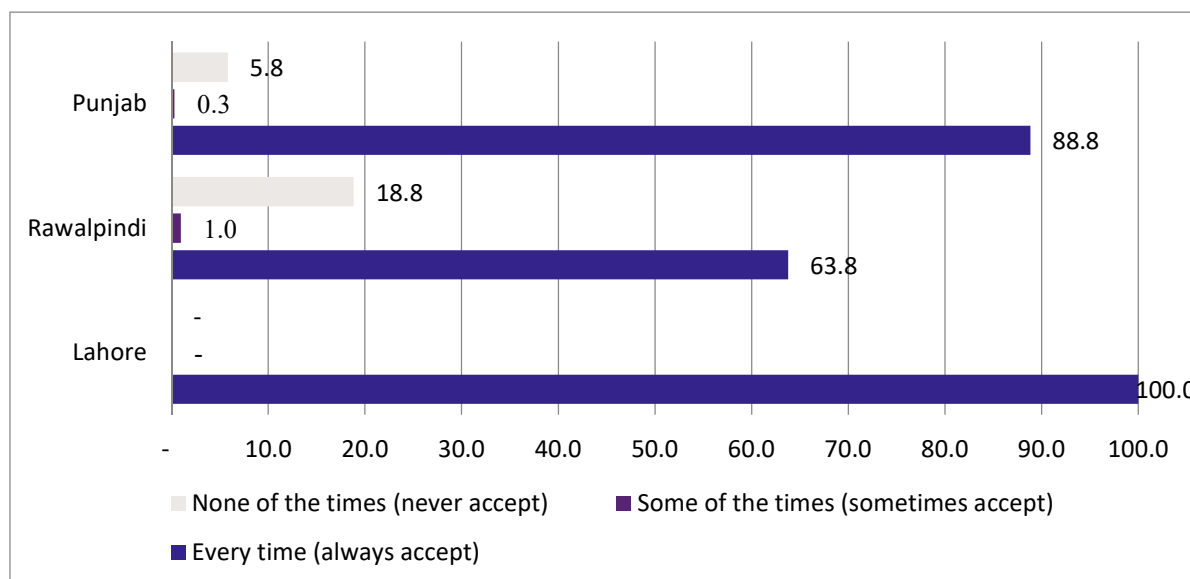
As far as extent of trust on various organizations for polio vaccination is concerned, mostly caregivers at provincial level showed ‘great deal of trust’ on local health organizations (60.6%), national government (51%), international organizations (36.8%), local provincial governments (35.4%) and government of other countries (25.8%). In contrast to the provincial findings, some variation was observed between district Lahore and Rawalpindi. A vast majority of caregivers at district Lahore had great deal of trust on national and provincial governments and local health organizations. More than one third of caregivers felt that the programme’s efforts to bring polio drops to children in their neighborhood were ‘too much’, while nearly same (36%) also believed that programs efforts are ‘about right’ in the province, particularly in district Lahore. Nevertheless, 18.7% caregivers at provincial level and 57% at district Rawalpindi communicated that these efforts are ‘too little’. Nearly 9% caregivers responded ‘don’t know’ at provincial level.

Intent to vaccinate children and preference for vaccinators

Nearly 89% caregivers in Punjab province, including 100% in Lahore and 63.8% in Rawalpindi had intention of giving polio drops to children every time, before reaching their 5th birthday. However, some caregivers at district Rawalpindi refused to offer drops to children (18.8%), some responded ‘don’t know’ (15.5%) and 1% had intention to accept polio drops sometimes, before reaching 5th birthday of their children (Figure P8). In district Rawalpindi, a minor percentage of caregivers (1%) refused it. Regarding caregivers’ preference to have vaccinators at home or visiting local health facility for polio drops, almost 99% confirmed their preferences to receive polio drops at home during campaign in Punjab province. None of the caregivers at district Rawalpindi, nonetheless only few (1.6%) at Lahore chose local health facility for provision of polio drops. More than 84% and 87% caregivers at provincial level confirmed morning time

for visit of vaccinators at home and visit to local health facility respectively. Very few also mentioned afternoon as visiting time for vaccinators at home (13.4%) and at health facility (12.1%).

Figure P8: Intent/frequency of caregivers to give polio drops to children before they reach their 5th birthday.



5.8 Recommendations for Improvement

Suggestions were sought for improving polio vaccine for children in the Punjab province. Some of the caregivers at provincial level recommended avoiding forcing or coercing families for polio (29.7%), particularly in Rawalpindi district (78.7%). More than one fourth caregivers emphasized to raise awareness in local language, giving attention to other health services too (18.8%), limiting the campaigns' frequency (15.3%), engaging local female vaccinators (14.1%), particularly in Lahore (Table P1). See Annex 10 for additional case studies, a concise summary of caregiver responses from qualitative research, and additional data tables and figures from Punjab.

Table P1: Recommendations for improving the delivery of OPV to children.

Recommendations for improving polio vaccine for children	Lahore (n=210)	Rawalpindi (n=210)	Punjab (n=420)
	%	%	%
Do not force or coerce the families	7.9	78.7	29.7
Limit the frequency of campaigns	16.3	13.0	15.3
Properly maintain the cold chain	8.9	11.1	9.6
Give attention to other health services too	14.7	28.0	18.8
Highlight polio on social and mass media	11.1	7.2	9.9
Awareness raising in local languages	35.3	6.3	26.3
Engagement of local female vaccinators	18.9	3.4	14.1
Distribution of IEC material in local languages	1.6	1.4	1.5
Ensure vaccinators interact respectfully and politely	0.5	1.0	0.7
Don't Know	33.7	3.4	24.3

5.9 ‘Significant’ Findings – Punjab Province

The cross-tabulations reported here presents the self-reported frequency of survey respondents accepting OPV during the last year (July 2020 – June 2021), against the key characteristics related to children and caregivers’ profile, socio-demographics, trust in health system, trust in polio related sources of information, trust in vaccinators and trust in the PEI programme (see Annex 14 for additional details).. Self-reported acceptance (or not) of OPV highlights a three-level classification of caregivers, i.e. ‘always’, ‘sometimes’ and ‘never’ accept polio drops during the past year. Here those caregivers, who either ‘sometimes’ or ‘never’ accept polio drops are presumed to be the most vaccine hesitant. The following presents findings from **Punjab Province** where chi-square was applied to determine significance of findings when compared to the three-level classification system described above. Here, a p-value ($p \leq 0.05$) is considered statistically significant, showing association between self-reported frequency of accepting OPV during last year and other key characteristics, as mentioned below:

Children and caregivers’ profile, socio-demographic characteristics and knowledge of polio

In Punjab, none of the characteristics related to children and caregivers’ profile, socio-demographic and polio related knowledge had statistical significance ($p \leq 0.05$) with the self-reported frequency of accepting OPV.

Trust in health system, polio-related information sources, and local social norms regarding vaccination

Regarding trust in health system, the self-reported frequency of accepting OPV showed significant relationship ($p \leq 0.05$) with trust in public health centers for immunization, i.e. those caregivers who had ‘great deal’ of trust in public health, were found more in favor of polio vaccine in past year. Caregivers who perceived their grandparents, religious leaders and spiritual healers considered the idea of giving polio drops to children ‘very safe’, had a strong association ($p \leq 0.05$) with self-reported OPV and were more likely to ‘always’ accept drops in past year.

Perception about neighbors/community norms for accepting polio drops for their children

Strong association of frequency of self-reported OPV ($p \leq 0.05$) was seen with caregivers’ perceived awareness about their neighbours whom they believed to be against polio drops. That is, caregivers who had more awareness about their neighbors’ opposition against polio drops were more likely to ‘always’ accept OPV in past year. This finding is strongly suggestive of a scenario in which non-homogeneous neighbours live in densely populated locations (such as Lahore and Rawalpindi) and supports qualitative findings in which many accepting caregivers often pointed towards their priority population neighbours as hiding children/avoid vaccination.

Trust in vaccinators

In Punjab, cross-tabulation of self-reported OPV showed no significant correlation with caregivers’ perceptions about last visit of vaccinator(s), its importance, preferences for female vaccinator(s) and profile of vaccinators. In contrast to the above, a significant association ($p \leq 0.05$) of self-reported OPV was seen with caregivers’ perceived *behaviour* of polio vaccinator(s) during last year in Punjab Province. Those caregivers who were more likely to ‘always’ accept OPV perceived their vaccinator(s) behavior as positive (e.g. vaccinators ‘never’ interrupted important activities, ‘most of the times’ showed respect to spousal authority). However, in some cases, the group of caregivers who ‘always’ accepted vaccination also informed that polio vaccinators ‘every time’ interrupted their important activities and ‘just a few of times’ paid respect to their spouse’ authority. These latter findings are suggestive of caregivers who accept vaccination because they feel they have to (pressured to accept). A strong association of self-reported OPV ($p \leq 0.05$) was also found with caregivers’ awareness about the locality of polio vaccinators. That is,

those caregivers who confirmed that all polio vaccinators were from their own village/neighborhood were more likely to 'always' accept polio drops during past year.

What these results importantly highlight are the enabling factors which are more likely to lead a caregiver toward OPV acceptance. In so doing, the significant findings reported here highlight those areas of knowledge, attitudes, practices and experiences which the programme may address more specifically in an attempt to move caregivers from the 'sometimes' and 'never' categories, into 'always' accepting OPV. And perhaps more importantly for Punjab, *to keep* those 'always' caregivers within the category of acceptance.

Qualitative Findings –

5.1 ‘Always’ and ‘Not available’ Caregivers in Rawalpindi & Lahore

As stated above, the sample strategy utilized for selecting caregivers for interviews in **Rawalpindi** and **Lahore** differed from that utilized for other provinces in that we were unable to pre-select caregivers for the ‘sometimes’ and ‘never’ categories due to important differences in ‘how’ and ‘who’ collects campaign-related data in the province. The number of recorded ‘refusals’ in all of Punjab Province (who were still remaining as refusals by the 5th day of the campaign) are incredibly low figures in comparison to other provinces.⁷ Within the selected research districts of Rawalpindi and Lahore, these total numbers of refusals (as such) comprise the majority of those recorded on Day 1 of the campaigns analysed (n=4,852 Rawalpindi, n=3,392 Lahore), and the lowest numbers by the Day 5 conclusion of the campaigns (n=44 Rawalpindi; n=0, Lahore). These numbers are based on the average of reported numbers from February – November 2020 campaigns. The strongest pockets of vaccine hesitancy in Punjab province are recorded among priority populations (many of which are concentrated in Rawalpindi and certain areas of Lahore).⁸ Perhaps two of the most contemporary causes for concern with regards to reporting inconsistencies for the province are: 1) district administrators demanding that there be “0 recorded refusals” in their respective districts, and 2) irrational workload/coverage requirements for covering missed ‘not available’ children. As stated by one Area-In-Charge in Rawalpindi, “Our supervisors give us a target of covering more than 50% of NAs during campaign days. Now, let’s suppose there are 20 NA households in my area and 15 of them are out of town – then how would we be able to achieve the said target? This scenario where we have to go into meetings and defend why we could not achieve the target, makes us more worried to accurately present ourselves and explain our true NA coverage” (See case study P1).

Case study P1: Coverage of missed children, “But the team said they had to visit again today”

“Before we reached the house on Day 2 of the campaign, the team informed me that on Day 1 the mother didn’t accept vaccination because her husband forbid her from doing so. She told the team to visit again on Friday when the father would be at home and the team could talk to him. But the team said they had to visit again today to see if they could convince the mother, and the police were with them. This is a Pashtun family originally from Bajaur District in KP. There are at least two children in the household under five who need to be vaccinated, one of them is a newborn. When we entered the home, the aunt said, ‘They have brought the police along with them in order to vaccinate the children.’ The mother again told the team that her husband strictly forbade her from allowing the team to vaccinate their children. The grandmother in the house said that her son ‘sits with the Tablighi Jamat therefore he has reservations against vaccination.’ The women in the family did not behave aggressively, but they did start to ask questions which demonstrated mistrust...Nowadays, children are weak and don’t have strength because they take too many polio drops, right? Aren’t polio drops part of a plan to control the population?...At the end of our discussion, the mother repeated that she could not vaccinate her children without her husband’s permission so the team had to come back on Friday after prayers if they wanted to speak to him. The house was again recorded as having missed children. Tomorrow is Wednesday, I wonder if in the meeting tonight the team will be told they have to come back and try again tomorrow?”

⁷ Total number of refusals remaining by the Day 5 conclusion of the campaign in Punjab province (by campaign date): February 2020 (n=5), August 2020 (n=105), September 2020 (n=39), October 2020 (n=2) and November 2020 (n=1).

⁸ Brief on missed children in Punjab, 2015-2021. Internal document. UNICEF/Polio Eradication Initiative.

In addition, the PEI programme does not have the same type and level of vaccinator human resources in Punjab as they have in the other provinces which are classified as SHRUCs. All SHRUCs have a Community Based Vaccinator (CBV) workforce which is employed full-time and which keeps detailed registration books. These books, which are only present in CBV areas, contain a micro-census of every child in their target areas, and every recorded missed child for every campaign is entered into the Missed Children Database (MCTDB). However, this level of data and analysis of missed children is not available in Rawalpindi and Lahore (non-CBV areas). Therefore, the reflections above that these two districts have 'non-local' or 'volunteer team members' or overburdened 'mobile teams' are in direct reference to the type of vaccinator staff which are hired in these locations only for campaign-related purposes, and are therefore not based full-time in these communities and have the same comprehensive, household-level details as does the CBV workforce.

In general, interviewers felt that caregivers in **Rawalpindi** and **Lahore**, across all categories of respondents, were considerably more 'careful' and 'controlled' in their responses than respondents from other provinces ("The father is a Mosque Imam. He was very careful in answering questions. Polio staff told me that this family's behaviour completely changes during campaign days and he never allows staff to enter their home. His children are frequently listed as 'not available'). Whereas many respondents in other provinces had a clearer history of refusing vaccination and therefore were more likely to voice their concerns about OPV and the PEI programme more broadly due to this recorded history, caregivers in Punjab did not have a similar reporting history. As described above, it was often not clear to the interviewer at the outset of an interview how a family had reacted during past campaigns and this lack of a documented history of vaccine acceptance/hesitancy very likely contributed to some respondents not providing accurate information and/or providing incomplete information regarding the breadth and depth of their concerns about vaccination. Relatedly, many of the Pashto speaking populations in Punjab Province that participated in our research were migrants from other provinces in the country (KP, Baluchistan) and Afghanistan and as such often have a more difficult time speaking with non-Pashto speaking vaccinators in Punjab. Pashto caregivers who were migrants were also more fearful of government reprisals if they refused vaccination.

The majority of 'not available' male caregivers in **Lahore** whom the research team sub-classified as 'never' accepting OPV, did not provide detailed answers to questions asked about polio drops and the polio programme. Their anger at the programme was noticeable by the statement they did make denouncing OPV vaccination efforts and these statements were further supplemented by discussions with the vaccinators and polio staff assigned to the houses of these caregivers. These staff, in addition to confirming that children within these household were never vaccinated during campaigns, characterized 'never' male caregivers as "uncooperative" "rude" "misbehaving" and "abusive."

The structure of homes in urban cities in Punjab (i.e. multi-story buildings) also complicates this process. As stated a member of a vaccination team in Rawalpindi, "Those who live in the upper portion of a building, they don't want to come down after noticing the polio teams outside. So, we have to disturb them again and again just to get them to let us in." This makes it less likely for FLWs to be aware of newborns and guest children and easier for families to hide children if that is what they desire to do.

5.2 Trust in Health Systems

Both male and female caregiver respondents in **Rawalpindi and Lahore** – who often noted that they had several options available for seeking health services in their areas – preferred private health institutions but described frequently visiting public health centres. Holy Family Hospital and PIMS was cited by

multiple women in **Rawalpindi**, while Khwaja Hospital and Nawaz Sharif Hospital were cited by women in **Lahore** as their preferred treatment source – if they could afford treatment. However, use of biomedical health services did not preclude additionally seeking the services of traditional healers if a family felt there was a need to do so. For example, seeking treatment for the same condition from both biomedical and traditional forms of healthcare was reported. As stated by one mother from Rawalpindi, “When my daughter was diagnosed with Hepatitis A, I took her to a doctor as well as a traditional healer, a Hafiz Quran⁹, for treating her illness. He recited Quranic verses to cure her. I rely on both doctors and traditional healers.” Statements such as these reflect not only individual families’ health seeking behaviours, but also inter-generational differences in seeking care in that more traditional methods are still relied upon, while acceptance of biomedical interventions – in areas with access to qualified, low-cost health professionals – are becoming more common. Similar intergenerational differences in attitudes and practices are also present in the findings below in terms of vaccine hesitancy for OPV.

Most (not all) mothers in the ‘always’ category had their children vaccinated at local clinics although it was often difficult to discern if women placed importance upon their children receiving routine immunization services, or if this was something they passively accepted (rather than actively sought out) due to seeking care for children for other illnesses. Whenever a child experienced a ‘bad reaction’ to the injection (as interpreted by the mother) then they were much less likely to take that child (or their subsequent born children) to health centres specifically for receiving routine immunization services.

The majority of ‘always’ caregivers in **Rawalpindi** and **Lahore** stated that their children, especially their last-born children, were delivered in a hospital setting with their child’s first RI dose given after birth. Among caregivers from **Rawalpindi** and **Lahore** in the ‘not available’ category, and among those whom we further sub-divided into ‘sometimes’ and ‘never’ accepting OPV vaccination for their children categories, respondents trust in health systems were quite similar to ‘always’ female caregivers with one important exception – lack of financial resources to pay for private health services. That is, women similarly preferred private health care for treating children’s illness, but stated that the fees were often too high for them to afford and so they often relied on less expensive government health centres, home remedies, pharmacies and local healers instead. Again, similar to ‘always’ female caregivers, ‘not available’ female caregivers primarily had no issue with children receiving routine immunizations, and of the minority who did express concerns, this was directly related to a recent or bad past experience (“I vaccinated my other children but my last born had a bad reaction on my so I will avoid to vaccinate him again”). Families within the ‘not available’ category, while frequently utilizing RI services, still often believed ‘Allah’, ‘Qur’anic verses’ and ‘amulets’ (in general) provided equal if not greater protection to children.

Amulets of protection for children, as described elsewhere in this report, were discussed by caregivers in Punjab (across multiple ethnicities). However, Pashtun families did place greater importance upon use of amulets to protection children in particular from ‘the evil eye.’ All sub-classified ‘never’ caregivers believed strongly in this method of spiritual protection for children. One father in Rawalpindi described his family as traditionally being involved in providing such methods of child protection to other families in the area (“It is our job to provide amulets to others for protecting their children”). Women, especially in the ‘not available’ category, were also more likely to visit a traditional healer with their children than were men.

⁹ ‘Hafiz Quran’ is a person who has memorised certain passages of the Quran and has the ability to bring relief from pain by reciting these verses from memory.

Men and women in the ‘not available’ category were more likely to have *most* of their children delivered in a home setting with the assistance of a traditional birth attendant (*dais*).¹⁰ That is, caregivers within this category often stated that their older children were born at home, but their younger/youngest child was born in a health facility (“the trend has been changed for the younger children”). All children born to caregivers sub-classified as ‘never’ accepting vaccination were delivered at home. This, paired with inability to afford preferred private health services, has a significant impact on families’ connections to local health services, with important implications on the vaccination status of newborns and young children. Case study P2 is illustrative of delayed vaccinations for children born at home,

Case study P2: Newborn vaccine hesitancy, “I haven’t vaccinated my other children at this age”

“The team was comprised of a vaccinator and a team member who helped to maintain the record book. We entered the house of an Afghan family where a baby girl was born 24 days ago. This family recently shifted to this street and rented out a room on an upper floor of a multi-story building. The information about the existence of the new baby was provided to the polio team by a family living on the ground floor, otherwise they would not have known there was a newborn in that family. After climbing the stairs and knocking on the door, the Afghani mother greeted us and the vaccinator asked her to bring her children for vaccination. All of her other children were brought forward for vaccination except for the newborn. The vaccinator was new to her role, this was only her second campaign, and she was a bit hesitant to ask the mother about the newborn. But the record keeper was experienced and asked the mother to bring her new child for vaccination as well. The mother replied, “I haven’t vaccinated my other children at this age. Is it safe to vaccinate a child at this age?” The record keeper was able to convince her to allow the vaccination after assuring her about the safety of the vaccine. The mother then asked where was the nearest center for routine vaccination and the specific days for injection because her child had not yet received any injections. I asked the mother where she delivered her children and she replied, “I’ve never visited a hospital for delivery. All my [seven] children were born at home.”

As reported for other provinces, a common refrain you will initially hear from both male and female ‘not available’ caregivers is “I treat both boys and girls the same” or “similar decisions are taken for boys and girls.” That being said, preferential treatment for male children is a real issue, and has been witnessed in both the actions and words of caregivers represented within our findings. Therefore, when a mother is probed on whether she or her husband feels the same level of confidence for accepting OPV (and often other vaccination services as well) for her daughters as she does for her sons, we can clearly document that levels of anxiety and vaccine hesitancy for sons is often revealed (this is directly related to rumours of OPV causing sterility or otherwise causing harm to children, and belief that male children are more susceptible to ‘evil eye’). As stated by one mother from **Rawalpindi** who has several daughters but only one son – her last born child, “My husband is more careful with his son as compared to our daughters. We have only one male child after a long time so...he cares more for his son and is more willing to spend money on his treatments.” ‘Protecting’ children from vaccination was also a noticeable caregiver strategy if a mother felt her child (of any gender) was not strong enough to be vaccinated (“my youngest is not yet strong enough to be vaccinated”).

What we can say with certainty is that caregivers in **Rawalpindi** and **Lahore** did express greater ease of access, and a higher degree of utilization of, health services and clinics than most all respondents from the other three research provinces. Correspondingly, their utilization of routine immunization services

¹⁰ A traditional birth attendant, most often an older female, who is a well-known and trusted figure among local communities, is easily available and is not very expensive. Most *dais* in Pakistan have no formal training.

was higher. However, in terms of their acceptance of OPV, this normally positive trend may lead to higher rates of vaccine hesitancy for OPV in particular when caregivers have heard their relatives *and* doctors tell them, for example, that “vaccines in the carrier boxes are not safe”, “polio vaccines are not pure”, and that “it is only safe for children to be vaccinated in the hospital.” That is, among all caregivers who expressed concerns that OPV was not safe or effective, as communicated to them by their doctors, other healthcare providers and family members, additional vaccine safety concerns related to rumours and misinformation – as received from family members and social media – were reported by both men and women who we classify as ‘sometimes’ and ‘never’ accepting vaccination. This finding was most prominent among priority populations.

5.3 Knowledge of Polio Virus

Similar to other provinces reported here, ‘always’ female and male caregivers in both **Rawalpindi** and **Lahore** illustrated greater awareness (not necessarily belief) that ‘drops’ were meant to prevent children from contracting polio virus, that the virus was said to cause incurable paralysis, and that contracting polio was dangerous for children. ‘Not available’ caregivers, while aware of messaging that stated polio drop were meant to prevent an incurable disease which caused paralysis, were likely to follow-up their knowledge statements with additional comments such as: “but I have also heard that children get sick after polio drops”, “but there is medicine which can cure paralysis”, “but I saw a video on my husband’s mobile that showed children in Peshawar got sick after vaccination”, and “people say it’s not for good for children, but no one knows.” Statements such as these indicate, not a lower level of knowledge about polio virus and OPV as such, but a higher likelihood that statements about the dangers of the virus will be believed. Meaning that while these caregivers are aware of the virus and that OPV is meant to address this problem, they are less likely to believe the virus is a threat to their children. This is a similar trend as found in other provinces among vaccine hesitant caregivers. Notably, older/elder caregivers of any category and in both districts, were less likely to have correct information about polio virus or OPV and were more likely to be confused over the preventative nature of vaccines in general.

5.4 Trust in Polio Vaccine

Within both ‘always’ and ‘not available’ categories of caregivers in **Rawalpindi** and **Lahore**, suspicions about the safety and efficacy of OPV were discussed. For example, all categories of caregivers, in **both districts**, described specific stories in which their neighbours had refused vaccination (“Our neighbours have reservations and have had several fights with polio teams.” Pashtun caregivers within our sample, a minority, were the most vocal in believing the vaccine to be harmful or had been told by a family member that the vaccine was harmful. Many Pashtun mothers in particular described continuing to accept OPV during campaigns “because teams bring the police if someone refuses.” Non-Pashtun ‘always’ respondents were also more likely to point out their Pashtun neighbours as being the strongest refusals of OPV in their neighbourhoods (“I have never seen anyone who refused any type of vaccination among this community. Only Pashtun families refuse and have concerns over the safety of the vaccine”). However, it should also be noted that while the most outspoken caregivers against vaccination were often Pashtun families (or were identified by others as Pashtun families), vaccine safety concerns were described by men and women of other ethnic backgrounds, particularly with regards to concerns children were receiving ‘too many drops.’

Caregivers in **Rawalpindi** and **Lahore** with relatives living in KP Province were most likely to state concerns over children becoming ill after vaccination if they had seen ‘the Peshawar incident’ on social media and

believed this video to be true (“There was an incident in Peshawar when children got sick from vaccination”) (See case study P3). As stated by a campaign observer based in Rawalpindi, “The frontline workers FLWs here say that most of the Pashtun families mention the Peshawar school incident that happened back in 2019...they still talk about vaccine safety and other Islamic-related concerns about the vaccine.” As stated by another observer from Lahore, “The social mobiliser told me that of the refusal houses recorded on Day 1 of the campaign, the reason families gave for refusing was the ‘Peshawar incident’ and some families also referenced social media they had seen where two children died in Karachi due to vaccination.” As stated by one mother from Rawalpindi, “In a previous campaign, I refused to vaccinate and a UCCO visited our home and ensured us about the safety of vaccine and then vaccinated my son. But he got a fever after receiving those drops. I sent my other children to go find that person who convinced us the vaccine was safe but we couldn’t find him...I will never allow anyone to vaccinate my child again.”

Case study P3: Hiding children in Lahore, “I still think the vaccine is harmful”

“For many months, our family was hiding children from polio staff during campaigns because we saw a lot of videos about the bad impact of the vaccine on children. There was a video from Peshawar and then one about the harmful intentions of vaccine producers and foreign laboratories and then videos about polio drops being used for population control. So many negative videos discouraged us from vaccinating our children. But then, during one campaign about six months ago, polio staff entered our home with police and found our children. And now we vaccinate because we don’t have any other choice...I still think the vaccine is harmful and our children get sick after receiving these drops.”

There are multiple well-known cases of older children (e.g. 7 years or older) becoming infected with polio within the last few years.¹¹ The unusualness of these cases in having affected children over the age of five, have given rise to multiple rumours with regards to the safety and efficacy of OPV because it is presumed by these caregivers that children of such advanced age must have received many doses of the vaccine in their lifetime (“I heard from a friend that a child, 12-years-old, died after being paralysed. I then got suspicious that why are children who have been vaccinated so much, still getting affected from polio virus?”). Several vaccine safety and efficacy concerns are drawn from these seemingly ‘outlier’ events – Is there a problem with the vaccine that is causing children to be ill? Or is there a problem with the vaccine in that, no matter how many drops children receive, they are still not protected? Both of these lingering questions in the minds of hesitant caregivers leads to mistrust in the safety of the vaccine and/or believe campaigns were too frequent. Finally, belief the vaccine causes infertility/sterility was most prominent among male caregivers. As stated by one father from Rawalpindi, “I don’t want to vaccinate my children because these drops will make them weak in future and they might not be able to have children after marriage.” Case study P4 is illustrative of many of the concerns caregivers described. As reported for other provinces in this report, where caregivers felt particularly protective of their children – for example, a newborn, a mother who has previously lost a child, a wife who has had difficulty conceiving in past, a child who has a significant health issue, a house with only one male child, a house with only one – these fears are much more pronounced and more likely to lead to hiding children and other forms of ‘silent’ refusals.

¹¹ Confirmed case of polio in April 2019 in a male child from Lahore, Punjab (120 months old; 10-years-old); Confirmed case of polio in December 2019 in a female child from Okara, Punjab (168 months old; 14-years-old); Confirmed case of polio in July 2020 in a male child from Lahore, Punjab (166 months old; 13-years-old); Confirmed case of polio in August 2020 in a male child from Bahawalpur, Punjab (156 months old; 13-years-old); Confirmed case of polio in September 2020 in a male child from Vehari, Punjab (89 months old; 7-years-old).

Case study P4: Mother vaccinating child in husband's absence, "she would continue to refuse"

"The mother was a LHV [Lady Health Volunteer], but even though she was a healthcare worker whose job, at least in part, was to promote vaccination, she said she could not accept for her son to be vaccinated. She had her child after a long time being married so her husband considered the polio vaccine as the reason behind her delay in getting pregnant – he thought that since she was vaccinated with OPV in her childhood, it had made it more difficult for her to conceive. She said her husband strictly forbade her from allowing their son to be vaccinated. At least, this was the reason she gave for refusing vaccination but after discussions, you could see that the mother herself had reservations against vaccination. She described incidents of children of family and neighbours becoming ill after being vaccinated, and of witnessing neighbours refusing vaccination and getting into fights with polio teams. She described hiding her son from polio teams and said that she would continue to refuse vaccination in future campaigns because of her husband's concerns."

Finally, across all categories and locations of caregivers, it was elders in their families (e.g. fathers-in-law, mothers-in-law) who were the most likely family member to strongly oppose vaccination, and to impose this belief on their sons and daughters-in-law (i.e. to forbid that their grandchildren be vaccinated). This finding was most prominent among Pashtun migrant families who had strong family connections in Pashtun-majority districts of Pakistan and Afghanistan. As elaborated by one mother from Rawalpindi, "None of my children have been vaccinated against any disease, routine immunization injections or the polio vaccine, except for my last-born daughter...My mother-in-law was against vaccination. She asked me to hide the children from vaccination teams, but she passed away a few years ago and I've vaccinated my last-born child when they [polio teams] requested I do so." It is important to note generational shifts, such as reflected above, in caregivers thinking regarding OPV. This is a significant finding among our sample population in Punjab with mothers and fathers less likely to have the same forceful negative reactions of their parents to OPV. Therefore, when these strongly opposing elders are not at home when the vaccinator visits, vaccinators with good IPC skills are more likely to convince the 'soft' refusals of parents and are able to vaccinate their children. Given all of these concerns – from both 'always' and 'not available' caregivers – why would they sometimes describe accepting OPV for their children? "Because we have to" was the most frequently reported answer

5.5 Trust in Polio-related Information Sources, and Local Social Norms

'Always' female caregivers in **Rawalpindi** and **Lahore** had primarily heard positive information about polio drops and the polio programme from polio staff and television. The most commonly reported source of negative information were neighbours (e.g. "people in our locality"), social media (e.g. Facebook), (non-polio staff) healthcare workers, and for Pashtun mothers in particular, other members of their family. As stated by one mother from Rawalpindi, "Less number of people in our community have good views about polio vaccine. We heard bad things from neighbours." Female caregivers also characterized their vaccine refusal neighbours most often as migrants who lived in their areas for a short period of time prior to moving on. Male caregivers in Lahore in particular stated that negative information about the polio programme only came from 'illiterate communities', 'Pashtun families' and 'a few negative-minded religious people.' 'Not available' female caregivers in **both districts** communicated similar information as 'always' caregivers with two important exceptions: 1) mass media (e.g. television), and 2) polio staff were less likely to be mentioned as a source of positive information. That is, sources of information about OPV/the polio programme were more likely to only be their spouses, other members of their family

(including extended family members living in other districts or Afghanistan), neighbours and (non-polio staff) HCWs. The reason for these women's lack of citing mass media and polio staff as sources of information are likely the same – lack of access and/or interaction with these sources. The following case study P5 from a family in Rawalpindi is illustrative,

Case study P5: Gendered informational sources, “My wife doesn’t have much information”

“During an interview with a female caregiver in Rawalpindi, the participant’s husband entered the room and shared his concerns about OPV with me. He said, ‘My wife doesn’t have much information about this vaccine because she stays at home most of the time. I am the one who interacts with the polio staff and other people in our community so you should be asking me these questions.’ The husband then went on to share his concerns about the vaccine. This family is not listed in the records as a ‘refusal’ family for OPV. But they do not want children in their family to be vaccinated and says they do not accept vaccination. The husband listed several reasons why he didn’t trust the vaccine: he mentioned a video circulating on social media about recovery of expired vaccine from warehouse in Lahore, he said that the vaccine caused children to become lazy, he said the frequency of campaigns were too many (“too many drops are not good for children”), and he said children in Punjab become infected from polio virus even after being vaccinated – “How can a child get infected from polio virus after receiving a polio vaccine?”¹² The father said that his family members living in DI Khan also strongly disfavour vaccination and never allow polio staff to vaccinate their children. He ended our conversation by saying that he will not vaccinate his child in the coming campaign....His wife sat silently for most of the discussion and didn’t provide many additional details; she was nodding along with what he was saying as he was speaking.”

Males in the ‘not available’ category – of any ethnicity – were more likely to state that polio staff were often their *only* source of positive information. However, it is questionable as to what extent these fathers trusted the information provided by polio staff, especially if they were their only source of positive information. Pashtun males in this category were more likely to state that their family members, persons in their home villages, and religious leaders were a constant source of negative information. Correspondingly, these fathers placed higher regard on the (negative) opinions of their relatives as opposed to other more positive sources of information such as received from polio staff. As stated by one Pashtun father from Rawalpindi, “Our relatives in the village also think that these vaccines are not safe. They don’t vaccinate their children...My father is very much against polio drops and doesn’t allow polio staff to vaccinate his grandchildren.” As stated by another Pashtun father, “Everyone in our family thinks that these drops are un-Islamic and its use is *haram* in our religion.”

For all women, their husbands, other members of their family, and they themselves were the most trusted sources of information. Women also reported that the frequent mixed messages they received about the polio vaccine were confusing to understand, but when in doubt, they believe their family members above all other sources of information. As stated by one mother from Lahore, “I hear from polio staff that the vaccine is safe while from family members, I hear completely opposite stories.” When more than one of the above cited trusted sources of information supported OPV, male and female caregivers were much more likely to be accepting of vaccination and positive about its benefits for children. The same level of influence was true if more than one of these trusted sources of information did not support OPV.

¹² See footnote #7 above for details on well-known cases of polio in the province among older (and therefore presumed to be fully vaccinated) children.

5.6 Trust in Vaccinators

'Always' female caregivers in **Rawalpindi** were not always familiar with members of the vaccination team ("the vaccinators keep on changing every campaign"), but they were appreciative of women being a part of the teams, and (in general) believed vaccinators to be working for their children's health. Women in **Lahore** similar stated that their vaccinators changed frequently from one campaign to the next so they did not recognize them ("Vaccinators keep on changing in every campaign"), and added that they were often too busy with their work to answer questions ("They don't have much time to speak with families because they have to vaccinate other children in our area"; "They stay at our door and leave soon after vaccinating children"). As a result of how busy vaccinators were and that they were sometimes an unknown face to female caregivers, women reported that they had little interaction/communication with polio staff ("I don't interact with polio staff because they don't talk with us"; "I've never had a discussion with the vaccinator").

Caregivers also often felt like they were pressured to accept OPV by vaccinators who would not leave them alone until they relented. And as stated by a campaign observer in Rawalpindi, "On Day 1 of the campaign the child was marked as NA due to sleeping. Today when the team visited the house again, the family refused to open the door. The team waited for almost an hour and continued knocking until the family finally opened the door in an angry mood and said come and vaccinate the child." Similar comments regarding not knowing their vaccinator were made by women in the 'not available' category in **Lahore** ("I have never spoken with the polio vaccinator") with Pashtun mothers being the most likely group of women to say that they were unfamiliar with their vaccinator ("I don't interact with polio staff; they are mostly Punjabi so we don't know them"). Further, Pashtun mothers were considerably less likely to trust their vaccinator if they did not identify them as belonging to the same ethnic group. In describing her lack of communication with polio vaccinators, one mother in Lahore said she preferred it this way because she feared that greater interaction with polio staff would lead to use of police force ("I'm afraid of asking them any questions because they might bring the police to our home").

The most frequently reported strategies women in this category reported using to avoid vaccination included not responding to too frequent vaccinator 'knocks' and/or not allowing vaccinators to enter their home, telling vaccinators that no child under 5 was at home ("I didn't allow her [vaccinator] to enter our home and told her that we have no child under five"), hiding children either within or outside the home (depending on if the size of their apartment was big enough to hide a child in another room), or telling vaccinators that children were "away at their villages" or "with grandparents" ("The woman who came to the door said don't come again because they [children] are not coming back for several weeks...The vaccinator looked at me and said many in this neighbourhood either don't open the door or they always say their children are away at their villages in KP"). Local PEI staff confirmed these vaccine avoidance strategies (see Case studies P6). We can therefore summarize that any criticisms most caregivers had of vaccinators (aside from language-related communication challenges) was due to the ways in which they were required to operate – namely repeated visits with teams accompanied by police. As stated by one male caregiver from Lahore, "Vaccinators are good people, but they knock on the doors every month and disturb our lives. They should visit once a year. If they visit after some gap then people might forget or don't doubt about any type of vaccination. Now people doubt that why they are giving so much importance to the polio vaccination?" The frequency of campaigns and "aggressive behaviour of vaccinators in knocking all the time" was a cause of confusion and mistrust among caregivers who didn't understand why the government didn't devote similar attention to other health services.

Case study P6: Multiple ways to refuse, “The grandmother doesn’t want the children vaccinated”

“After visiting a house that was marked as a refusal on the first day of the campaign and knocking on the door, the mother answered that her children are away in Peshawar. This household has at least two children under five. But when the female vaccinator went inside, she found out that the children were at home. The mother then said that they were already vaccinated so the vaccinator asked about the finger mark and the mother replied that, yes, it’s done. But I guess the mother didn’t understand that written on the outside wall of her house from the first day of the campaign was “0/2” [zero out of 2 children vaccinated]. When the female vaccinator checked the mark on the children’s fingers, she immediately recognized that it was a fake finger marking so she told the mother that we have to vaccinate your children. But the mother refused again and said that the grandmother of the children does not accept OPV. Two male members of the household then came out and confirmed the mother’s story saying that the grandmother doesn’t want the children vaccinated because she thinks it harmful to their health: “We cannot refuse [grandmother’s] wishes so kindly don’t come again for vaccination.” The household continued to refused vaccination, but told the vaccinator as an aside that they could not accept now because all of their family members were at home and it would create trouble for the mother if she accepted. But if the vaccinator could come again after some time, when the house was empty, then they may be able to vaccinate the children...The vaccinator later discussed with me that people in this neighbourhood mostly hide their children, and if there is only one child or the household’s first child, then it’s very difficult to vaccinate that child.”

5.7 Perception of/Trust in Polio Campaigns

Women would often respond quite carefully in saying that children should be vaccinated during every campaign, but mothers in **Rawalpindi** frequently followed-up such statements with “but the number of these visits should be reduced” or “there is too much focus on polio.” ‘Always’ mothers in **Lahore** were more likely to state that the government should focus more attention on other health services (“Efforts for the polio vaccine are too much as compared to the attention given to other health services”), and that they felt the polio vaccine should be produced locally in Pakistan (“The vaccine is produced in foreign countries; it should be produced in Pakistan”). Despite their stated support, ‘always’ male caregivers did express two concerns with campaigns – their frequency (e.g. campaigns should only be held twice per year), and the provision of drops to young children (e.g. children under 2-years-old should not be required to receive drops).

Intense focus on polio (and COVID), in the absence of addressing their other needs, was one of the most prominent themes among the ‘not available’ category of caregivers, especially in terms of their level of trust in campaigns and the ‘government’ responsible for “pushing too many campaigns on people here.” ‘Not available’ caregivers were much more likely than ‘always’ caregivers to state that it was not important for their children to receive ‘drops’ during every campaign (or at all) and some described specific strategies they would use to avoid vaccinator visits – “I never allow polio staff to climb upstairs.” ‘Not available’ caregivers also often characterized their experience of polio campaigns as feeling “forced” to vaccinate their children. Notably, *all* caregivers within the ‘not available’ category who the research team identified as refusing vaccination at least once within the last few campaigns, described a past negative experiences with polio staff during campaigns to explain why they currently refused vaccination. ‘Locked doors’, not answering vaccinator knocks, telling vaccinators that children were away from home/staying in their home villages, and hiding children from vaccinators during campaigns were the most frequently described forms of refusing vaccination (“My neighbours don’t accept polio drops and

hide their child during campaign days”). As elaborated by one neighbour of a refusal family in Rawalpindi, “There is a family over there [pointing to a nearby household] who told us that their child went to their village, but they are hiding the child inside the home because the family doesn’t want them vaccinated. The polio teams can’t reach that child because the family keeps their door locked all the time while [head of household] works in a nearby market.” Case study P7 provides a detailed description of how neighbours, living in densely populated urban centres such as Rawalpindi, are able to easily discern how vaccine hesitant members of their community hide children during campaigns. The general conclusion of caregivers reporting on the behaviour of their neighbours (or themselves) who hid children was that “in cities it is easy to hide children, but it is difficult to do so in the villages.” Our data indicates that the majority of ‘not available’ caregivers interviewed are vaccine hesitant and when and where possible, will take steps to “shield” their children from the “dangers” caused by OPV.

Case study P7: Hiding children in the city, “I hid my nephew when I saw the polio staff coming”

After hearing the doorbell, I went outside and saw the polio team standing at our door. One member inquired if we have children under five. I told them that we don’t have any children. So, they rang the doorbell of our neighbour’s house, the house right in front of ours. A family originally from Kurram District lives there, they moved here about two years ago. I went to my balcony to observe the activities...A woman in the house came out to her balcony and asked me secretly who is knocking at our door? I saw that she was trying to hide herself from the polio staff. I told her that it is polio staff knocking, but I suspect that she already knew it. When they kept knocking she did answer the door but told polio staff that she didn’t have any children under five in the house. I was surprised because I saw her nephew playing on their balcony and in the street with other children earlier that day. I remember because those children disturbed us a lot with their noises. The polio team moved on to another street without vaccinating the child. Afterwards, I decided to talk to that family. In the evening I met her in a street and asked her what was the reason behind not vaccinating her nephew? She told me, ‘I heard that the polio vaccine is harmful for children so I hid my nephew when I saw the polio staff coming to our street [laughing].’ She added that that the vaccine was harmful if you vaccinated your child more than three times and that she had three brothers but only one brother had children and her other siblings are infertile because they took polio vaccines when they were younger. She said no one in her family wanted to vaccinate their children and that it was easier to hide children from the teams in the city.”

5.8 Recommendations for Improvement

It was challenging to encourage female participants in **both districts** to provide recommendations to the PEI programme for how to improve campaigns. ‘Always’ male caregivers offered one consistent recommendation: 1) give attention (and skilled healthcare staff) to other health issues. ‘Not available’ caregivers were considerably more likely to voice their suggestions for programme improvement which included (in order): 1) a bigger ‘gap’ was needed in between campaigns/the frequency of campaigns should be reduced (e.g. once per year), 2) the government should “give greater attention” to other needs, 3) polio staff should not coerce or otherwise force caregivers to vaccinate (“FIRs and other threats must be stopped”), 4) greater care needed to be taken to ensure the vaccine was ‘handled properly’ (i.e. concerns related to cold chain), and 5) doctors should be involved in campaigns. See Annex 8 for an overview of relevant caregiver demographic information (e.g. age, gender, occupation).

In Summary

Caregiver's Profile & Socio-Demographic Characteristics

Quantitative –

- The majority of index children were: male; between 1-3 years of age; and delivered at a mixture of public and private health centers/hospitals. The minority of caregivers who delivered at home, stated that mostly TBAs provided birth assistance, particularly in district Lahore. A small number of caregivers also mentioned that paternal and maternal grandmothers additionally provided delivery assistance.
- Nearly all caregivers survey respondents in Punjab informed that their children had received their first RI dose immediately after birth, and also received additional doses later in life.
- The majority of caregiver respondents in Punjab were: female; aged between 21-30 years or 31-40 years; married; illiterate; and were the mothers of the index child. Most respondents indicated that children's fathers were the primary economic earners in the family and were engaged in a range of different earning activities (e.g. private jobs, daily wage labour, and small businesses). Decision-making authority regarding children's health was distributed between mothers and fathers.
- The majority of caregivers were living in the same province, districts and UC, where index child was born (this finding was particularly true for Lahore respondents).
- The highest proportion of caregivers belonged to Punjabi ethnic group (73.3%) with Punjabi as their primary language. A significant minority of respondents were Pashto-speaking and belonged to Pashtun communities. The majority of caregivers were Sunni Muslims.
- The majority of caregivers had access to phones which could receive SMS/text messages.
- More than 95% of caregivers at the provincial level stated that they 'always' accepted polio drops. This figure was slightly higher for Lahore (96.8%) than for Rawalpindi (94.7%). A minority of caregivers self-reported that their children have missed OPV during the last campaign (4%) or that they 'never' accepted OPV in past year (0.4%).

Qualitative –

- Most caregiver respondents were: aged between 21-30 years or 31-40 years; married; and were the parents of the index child.
- Education level of caregivers was quite mixed but the majority of both male and female respondents could read and write. Male caregivers/fathers were the primary economic earners for the family and had autonomy to make decisions. All female caregivers, with the exception of two, were housewives.
- A significant minority of caregivers (38%) were Pashto-speaking and belonged to Pashtun communities. All caregivers were Sunni Muslims.
- All caregivers had frequent access to phones which could receive SMS/text messages.
- All children in a household were not viewed equally when it comes to a family's hesitations to vaccinate. Where caregivers felt particularly protective of their children – for example, a newborn, a mother who has previously lost a child, a wife who has had difficulty conceiving in past, a child who has a significant health issue, a house with only one male child, a house with only one child period (i.e. the household's first birth) – these fears are much more pronounced and more likely to lead to a vaccine hesitant caregiver hiding children and other forms of 'silently' refusing vaccination.
- Per the sampling strategy, n=22 caregivers 'always' accepted polio drops and n=23 were classified as having children who were 'not available' during recent polio campaigns. The interview team further classified the 'not available' caregivers as n=19 'sometimes' and n=4 'never' accepting vaccination (on the basis of their responses to specific questions and informal interviews with PEI staff).

Trust in Health System

- The majority of ‘always’ caregiver survey respondents in Punjab had a ‘great deal of trust’ in both public and private health sectors for general health services and routine immunization.
- Regarding general health services, some of the Caregivers at the provincial-level had a ‘great deal of trust’ in spiritual/religious healers, however, the majority did not trust ‘at all’ traditional healers and hakeems (this finding was particularly evident in Lahore).
- Among qualitative study participants, greater access to and trust in local healthcare institutions and qualified healthcare professionals (than documented in the other three study provinces), were notable among our sampled population. That being said, placing greater importance in their ‘doctor’s advice’ may not be beneficial to the PEI programme if/when HCWs voice their concerns to parents that the vaccines carried by polio workers are not safe and/or do not have a properly maintained cold chain. The implication of these statements (as communicated by caregivers) was HCWs who were encouraging caregivers to vaccinate their children in a health facility and not ‘at the doorstep.’ If caregivers also heard negative information about the polio programme (e.g. from trusted family members), the combined negative sentiments regarding OPV expressed by both trusted HCWs and family members were more likely to lead to vaccine hesitancy (and altogether avoidance) of OPV.
- Private sources of healthcare were slightly preferred over public for caregivers who participated in the qualitative study, but this preference did not preclude caregivers taking their children to public sources of healthcare if they were accessible and if private care was too expensive. This finding is most apparent among non-Pashtun households. However, greater access to biomedical healthcare did not preclude families also taking children to religious healers for additional assistance and/or for issues which parents believed methods of spiritual healing were better suited (e.g. protecting children from ‘evil eye’). Use of amulets of protection, while present across multiple ethnicities within our sample, were more prominent (i.e. trusted, used more frequently) among Pashtun households.
- Among qualitative study participants, there is a clear trend within the sampled families from Punjab Province in changing inter-generational priorities and perceptions of biomedical sources of healthcare. This finding relates to children’s vaccination status in two important ways. Firstly, mothers living in Rawalpindi or Lahore during their most recent pregnancy were more likely to have given birth in a health facility, rather than at home as was often the case for their earlier born children. This finding was most apparent among non-Pashtun households and is a positive indicator of important changes in health-seeking behaviour among a population who have access to multiple sources of skilled care in the province (e.g. PIMS, Nawaz Sharif Hospital). This also meant children were more likely to receive their first round of immunizations, including OPV, immediately after birth. Secondly, those most opposed to children being vaccinated with OPV – within a household – were family elders (grandmothers, grandfathers). PEI staff, mothers and fathers confirmed that if a vaccine opposed grandparent were at home during a campaign visit, children were less likely to be vaccinated. However, if the vaccinator were able to visit the household when the opposing elder was absent (sometimes at the specific request of caregivers that vaccinators return at a day/time when their in-laws were not at home), then it was often “much easier” to vaccinate children.

Knowledge of Polio Virus and Vaccine

- More than 90% of caregivers in the province had knowledge about polio disease (this figure was slightly higher in Rawalpindi). Those caregivers who had knowledge of polio disease also expressed concerns regarding their children becoming ill with polio (high risk-perception).
- Further, the majority of ‘always’ caregiver respondents at the provincial level had knowledge about polio symptoms, particularly regarding paralysis (awareness of symptoms was slightly higher in Rawalpindi). However, here it is important to note that among those caregivers who were aware that

paralysis was a symptom of polio, the majority of caregivers in both Lahore (92.5%) and Rawalpindi (78.2%) believed paralysis could be cured.

- A high proportion of ‘always’ caregivers perceived that children’s best age (in general) to receive their first immunization, was immediately after birth.
- For qualitative study participants, there was greater understanding among caregivers of the preventative nature of vaccines (i.e. greater than documented in the other three provinces). This is likely a result of greater access to healthcare workers and routine immunization services. However, as noted above, greater interaction with healthcare workers does not preclude utilization of spiritual/religious forms of care, nor of hearing (and potentially believing) the negative attitudes of others in their families and communities with regards to OPV. For example, there is a clear trend among ‘not available’ caregivers who, while understanding the intended purpose of OPV, questioned the safety (i.e. cold chain) and frequency of giving the vaccine to children, in addition to questioning the overall danger posed by the polio virus. Of note, Pashtun mothers and fathers in Punjab were more likely to make statements which questioned the very existence of the virus itself.

Trust in Polio Vaccine

- The majority of ‘always’ caregiver survey respondents in Punjab showed a ‘great deal of trust’ in the polio vaccine, and believed that polio drops are ‘very effective’ and ‘very safe’ for children to receive.
- For qualitative study participants, increased access to biomedical healthcare and utilization of routine immunization services for children, did not always translate into trust in the oral polio vaccine. Within our sampled population, ‘always’ and ‘not available’ caregivers often displayed the same level of vaccine hesitancy for OPV. So why would caregivers (sometimes) allow their children to be vaccinated? The key difference between these groups (i.e. the key determinant in whether an eligible child in the household would be vaccinated or not), was that ‘always’ caregivers were more fearful of gaining the negative attention of police and local administrators and so were more likely to accept vaccination without protest. ‘Not available’ caregivers – especially those whom the research team sub-classified as ‘sometimes’ – were more likely to engage in subversive behaviours to ‘silently’ refuse vaccination in ways in which they were less likely to be discovered and punished for (e.g. hiding children, saying their children were “away at their village”). ‘Sometimes’ caregivers were more likely to agree to vaccination if they felt that sufficient time had lapsed since the last campaign. ‘Never’ caregivers were more likely to not answer their doors when vaccinators knocked, to lock their doors, to prevent vaccinators from entering their homes, or when direct communication with vaccinators occurred, to also give the response that their children were “away at their village.” This latter response was very likely an accurate response for many families (especially migrant families) and so should not be blanketly understood as a refusal strategy for all households who give this reason for why their children cannot be vaccinated. That being said, there is a clear trend within our sample that stating children are “away” during campaigns was a strategy used repetitively by the same households to avoid vaccination. This suggested finding requires further analysis and probing of the ‘never’ category of caregivers in particular as our sample size was too small to draw actionable conclusions.
- Among both male and female caregivers who participated in the qualitative study, OPV safety concerns centred upon the following: a) belief that OPV caused “sickness” in children and/or weakening a child’s immune system so that illness was more likely (this finding was strongly linked to the ‘Peshawar incident’, campaign frequency, and well-known cases of older children in the province becoming infected with polio), b) concerns over the frequency of campaigns/frequency in which ‘drops’ were given, and c) belief that the cold chain for OPV was not properly maintained (this finding is strongly linked to local news stories circulating during the period of data collection, and concerns shared by HCWs).

Trust in Polio-related Information Sources, and Local Social Norms

- The majority of ‘always’ caregiver survey respondents perceived that most members of their family and community considered it a ‘very good idea’ to give polio drops to children. However, district-level variations did emerge with more than half of caregivers from Lahore believing that social media, traditional healers, spiritual healers, TBAs, and some religious leaders and community leaders held more negative perceptions of OPV.
- More than half of caregiver survey respondents in Punjab stated that they had not heard, read or seen negative information about polio drops on social media, including Facebook, Twitter and WhatsApp. Most caregivers in Rawalpindi responded ‘not applicable’ to these questions given that they did not have access to social media.
- At the provincial level, caregiver respondents indicate a ‘great deal of trust’ in LHWs, polio vaccinators, and health workers at local facilities for information about polio drops in Punjab. A wide variation in district-level findings was observed in terms of trust in Molanas, Shura/Jirgas, Imams and traditional healers for polio-related information sources with Rawalpindi caregivers having more trust (as compared to Lahore) in these sources of information.
- Regarding positive statements heard, read or seen about polio drops in the past year, a majority of respondents indicated they had heard that polio drops protect children from polio, make child healthier, and protect against diseases other than polio. More than one fourth of caregivers stated that they had not heard any positive statement about polio drops in the past year (this finding was more prominent in Lahore). Reported negative sentiments about polio included drops can: give children polio, have side effects (fever, diarrhea), cause children to become sterile/infertile, are made with urine or blood, are given to children too frequently, and are not halal.
- Upon probing caregiver respondents about their belief in negative information heard about polio drops, the majority of survey respondents indicated that most statements were not valid.
- Less than three fourth of the caregivers in the province perceived that all of their neighbors accepted polio drops every time they were offered, while 14.3% believed that most of their neighbors accept polio drops for their children every single time polio vaccinators visited their home. At the district level, more caregivers from Lahore than Rawalpindi believed that all of their neighbors have polio drops all of the time they were offered.
- Of the caregiver survey respondents who did respond that some neighbours may hesitate to vaccinate all of their children during every campaign (more prominent for Rawalpindi), stated reasons why included: belief that children were not likely to contract polio, children were ill, belief that giving drops would cause side effects, and family members (in-laws) were against vaccination.
- For qualitative study participants, ‘always’ caregivers were more likely to have heard positive information about polio drops and the polio programme from polio staff, television and (for men) “posters in the street.” ‘Not available’ caregivers were more likely to only cite their family members, neighbours and (non-polio) HCWs as their sources for information, and these sources tended to be negative in nature. That is, the most commonly reported source of negative information were neighbours (e.g. “people in our locality”), social media (e.g. Facebook), non-polio staff healthcare workers (e.g. doctors), and for Pashtun caregivers in particular, other members of their family. ‘Not available’ caregivers were less likely to indicate mass media and polio staff as a significant information source.
- Among qualitative study participants, when both a family member and (non-polio staff) healthcare worker denounced or rejected OPV vaccination during campaigns (for whatever reason, e.g. misinformation, cold chain concerns), this increased caregivers’ hesitancy to vaccinate. As previously indicated, it was often elder members of families (e.g. fathers-in-law, mothers-in-law) who were the most likely person within a household to strongly oppose vaccination, and to impose this belief on

their sons and daughters-in-law (i.e. to forbid that their grandchildren be vaccinated). If these persons were at home during campaign days, children were much less likely to be vaccinated even if the primary caregiver had no personal objections to OPV.

Trust in Vaccinators

- Nearly all caregivers in Punjab province (100% from Lahore, and 99% from Rawalpindi) informed that polio vaccinators visited their house during the last campaign. More than 93% of the caregivers also reported that they witnessed/saw or talked to their polio vaccinator during the last campaign (6.3% stated that they did not witness or interact with a vaccinator during the last campaign). Qualitative study data support these findings.
- The majority of the caregivers reported that two vaccinators visited their house during the last campaign. Regarding their vaccinators' profile, the majority of survey respondents indicated that Vaccinator 1 and Vaccinator 2 were adult/elder females with a minority also reporting that Vaccinator 2 was an adult male.
- Survey respondents in Punjab reported accepting drops provided by vaccinators because they wanted to: protect their children from polio, end polio for children in their village/neighbourhood and in Pakistan, and because vaccination was a social norm within their household and/or community ('our family always give drops', 'my neighbours always give drops').
- A high proportion of caregiver respondents expressed that they had a 'great deal of trust' in polio vaccinators, found them knowledgeable about children's health and cared about their children's wellbeing. However, district level differences were observed, with more caregivers from Lahore trusting their vaccinators and finding them 'caring' towards children, and caregivers from Rawalpindi more likely to report their caregivers as 'knowledgeable.'
- Among qualitative study participants, mistrust of their vaccinator, where present, was related to the frequency in which vaccination team members would change from one campaign to the next, lack of interaction with vaccinators (this finding is most significant for women), feeling as if vaccinators pressured them to accept OPV (e.g. repeated visits, police presence), and for Pashtun-families in particular, lack of ability to communicate with vaccinators. That is, any criticisms caregivers had of vaccinators (aside from language-related communication challenges) were due to the ways in which they were required to operate. The frequency of campaigns and "aggressive knocking" was a particular cause of confusion and mistrust among caregivers who didn't understand why the government didn't devote similar attention to other health services. Lack of recognition of their vaccinations also led to mistrust in urban locations with high rates of theft/robbery. This is a similar finding as in Karachi.

Perception of/Trust in Polio Campaigns

- Caregivers survey respondents in Rawalpindi (more so than Lahore) felt that polio vaccinators visited caregivers' homes 'too many times.'
- Regarding the behavior of polio vaccinators during the past year, more than half of caregivers in Rawalpindi believed that vaccinators interrupted important activities or asked too personal of questions (but otherwise were respectful when visiting their homes).
- As stated above, the majority of the caregivers in Punjab (over 95%) stated that they 'always' accept polio drops for their children. For the minority of 'sometimes' and 'never' accept caregivers, their reasons for refusing vaccination during campaigns included: their child was ill, their child was sleeping, their child was not at home, and they didn't like the frequency of campaigns (e.g. their child had 'enough' drops).

- Province-wise, the majority of survey respondents indicated that they had never felt any pressure for either accepting or refusing polio drops during campaigns. However, caregivers in Rawalpindi did describe some pressures they felt for either accepting or refusing polio drops during campaigns.
- The majority of survey respondents believed that giving polio drops to children either at homes or in other places in their community (e.g., schools, parks, streets, festivals) was a 'very good idea'.
- Most caregivers, particularly in Lahore, had a 'great deal of trust' in national and provincial governments and local health organizations.
- More than one third of caregivers felt that the PEI programme's efforts to bring polio drops to children in their neighbourhood were 'too much', while nearly same percentage (36%) believed the programme's efforts are 'about right' (this finding was more prominent in Lahore).
- Nearly 89% of caregiver survey respondents in Punjab (100% in Lahore, 63.8% in Rawalpindi) had the intention of giving polio drops to their children every time offered before they reached their 5th birthday. The finding for Rawalpindi in particular is indicative that a significant minority of respondents did not intend to give their children drops every time they are offered.
- The majority of survey participants preferred to receive polio drops at home and confirmed morning was the best time for vaccinators to visit.
- Among qualitative study participants, the most frequently reported 'silent refusal' strategies vaccine hesitant caregivers – 'not available' caregivers – reported using to avoid vaccination included: not responding to too frequent vaccinator 'knocks', locking their doors and/or not allowing vaccinators to enter their home, telling vaccinators that no child under 5 was at home, and telling vaccinators that children were "away in the village" or "outside" or "with grandparents." In general, hiding children and avoiding interactions with vaccinators appears to be the most frequently used strategy by vaccine hesitant caregivers in Punjab. This is a strategy which is more feasible in non-CBV areas of Rawalpindi and Lahore where polio teams don't have the same in-depth and up-to-date information on individual households. And this is also a more feasible avoidance strategy due to the structure of building themselves in these urban locations (i.e. multi-story buildings).
- The practice of fake finger marking, while present among a minority of caregivers sampled, was always initiated by the caregivers themselves without the involvement of PEI vaccinators. Further, this practice does not appear to be widespread in the locations and households sampled for this study. Vaccine hesitant caregivers in Punjab are much more likely to find alternative methods for avoiding vaccination (e.g. hiding children). This is distinct from other provinces in which this method of avoiding vaccination was more prominent (e.g. KP, Baluchistan) and is likely (partially) attributable to the decreased likelihood that caregivers in Punjab know their vaccinators well enough to try and engage in colluding practices.

Recommendations for Improvement

- Recommendations for improving the delivery of OPV to children, as provided by survey respondents, included avoiding forcing or coercing families to vaccinate their children (this recommendation was most prominent in Rawalpindi), raise awareness in local languages, engage local female vaccinators, limiting the frequency of campaigns, and giving attention to other health services.
- Among qualitative study participants, it was challenging to encourage female participants in particular to provide recommendations to the PEI programme for how to improve campaigns. 'Always' male caregivers offered one consistent recommendation: 1) give greater attention to other health issues. 'Not available' caregivers were more likely to recommend (in order): 1) a bigger 'gap' between campaigns/reduce the frequency of campaigns, 2) give attention to other health issues (as with 'always' caregivers), 3) do not force caregivers to vaccinate their children, 4) properly maintain vaccine cold chain, and 5) involve doctors in campaigns.

Sindh



6. Sindh: Karachi East & West and Karachi Kimari

Key Components of the Methodology –

- Selected study locations in Baldia and Gadap Towns are locations with the (perceived) highest levels of vaccine hesitancy towards OPV in the province. That is, these are locations with persistent virus circulation despite the frequency of door-to-door vaccination campaigns. The UCs selected for qualitative data collection activities were those with: highest percentage of missed children (i.e. still missed, still refusal and still not available), high concentration of ‘priority’ populations, continuously positive environmental samples, and/or confirmed cases of polio in 2019-2020.

Quantitative –

- Data collection occurred in the following districts and UCs in Karachi:
 - Karachi East & West (Gadap):** Gujro A, Gujro B, Gujro C, Gujro D, Gujro E, Mangopir-8, Songal-5; and
 - Karachi Kamari (Baldia):** Ittehad Town-2.
- Within each district, 30 clusters with 7 eligible interviews were conducted, in total **210** interviews were carried out within each district, overall in Sindh, sample of **420** was completed.
- 47** refusals (**9** in Karachi East & West (Gadap) and **38** in Karachi Kamari (Baldia) were recorded.

Qualitative –

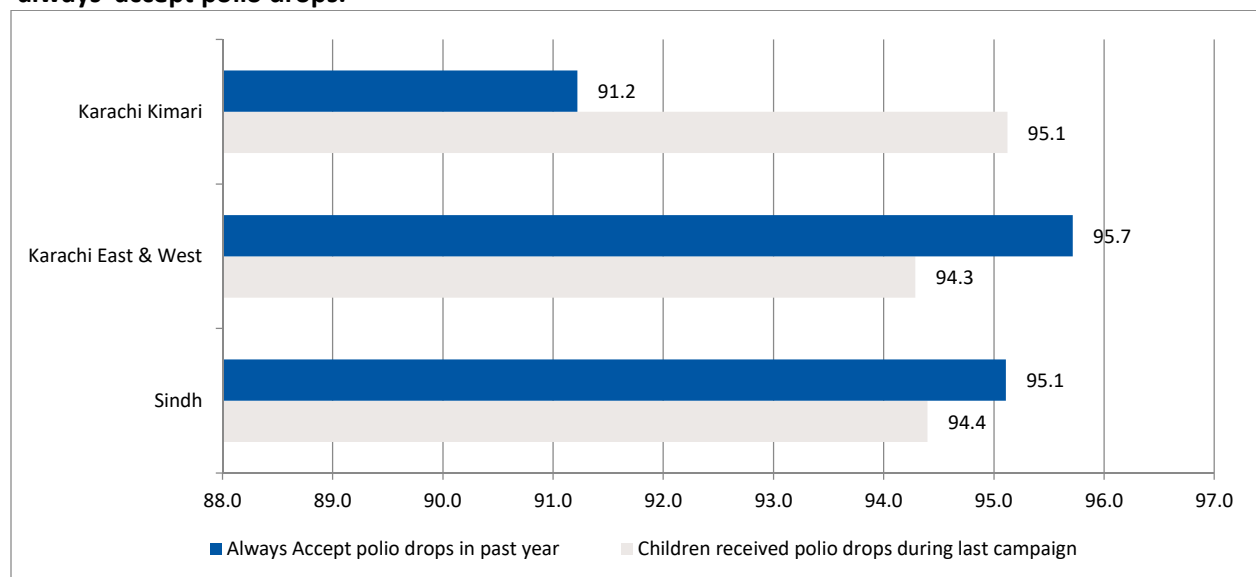
- Data collection occurred in the following towns and UCs in Karachi:
 - Karachi East & West (Gadap):** Mangopir-8, Songal-5, Gujro D; and
 - Karachi Kimari (Baldia):** Ittehad Town-2.
- Participants were equally sampled from the following three ‘classifications’ as determined by campaign data collected from past five consecutive rounds of OPV (i.e. February, March, August, September and October 2020 campaigns), and in consultation with district and UC-level polio staff (e.g. DDPOs, DCOs, UCCOs). Dividing caregivers according to their known past practices, as this sample strategy highlights, serves as an important reference point within our reporting to directly link *knowledge* and *attitudes* with *practices* and *experiences*. The three classification groups included ‘always’, ‘sometimes’ and ‘never’ caregivers of children <5 years of age:
 - Caregivers with a history of accepting OPV for all children in their household during every campaign (identified within this report as ‘**always**’ accepting caregivers);
 - Caregivers with a mixed history of sometimes accepting, while other times refusing, OPV for their children (identified within this report as ‘**sometimes**’ accepting caregivers); and
 - Caregivers with persistently missed children (PMC) and/or who are labelled as ‘chronic refusals’ of OPV (identified within this report as ‘**never**’ accepting caregivers).
- In-depth interviews were conducted with 49 caregivers (n=12 Baldia; n=24 Gadap (West); n=13 Gadap (East) representing 51% female and 49% male respondents.
- Skilled interviewers (male and female) specifically trained in qualitative data collection, were employed for this study. Interviewers were fluent in Pashto, Urdu and English. The majority of caregiver interviews in Karachi were conducted in Pashto (n=39) with a minority conducted in Urdu (n=10). This is reflective of the primarily priority (i.e. Pashtun) populations sampled which represented 75% of respondents in Baldia, and 81% in Gadap.
- 12** refusals (**8** in Karachi East & West (Gadap) and **4** in Karachi Kamari (Baldia) were recorded.

Quantitative Findings –

6.1 Reported Coverage of OPV

In Sindh province, 94.4% and 95.1% of the caregivers informed that their children received polio drops during the last campaign and past year respectively. In self reported OPV in last campaign, majority of the caregivers confirmed giving polio drops from Karachi East & West (95.7%) and Karachi Kimari (91.2%). Regarding caregivers' frequency of accepting polio drops during past year, a high proportion of caregivers affirmed that they 'always' accepted polio drops in Karachi Kimari (91.2%) and East & West (95.7%) (Figure S1). A very few caregivers in Sindh province acknowledged that their children have missed OPV during last campaign (5.6%) and 'never' accepted OPV in last year (2.6%).

Figure S1: Percentage of children who received polio drops during last campaign and caregivers who 'always' accept polio drops.



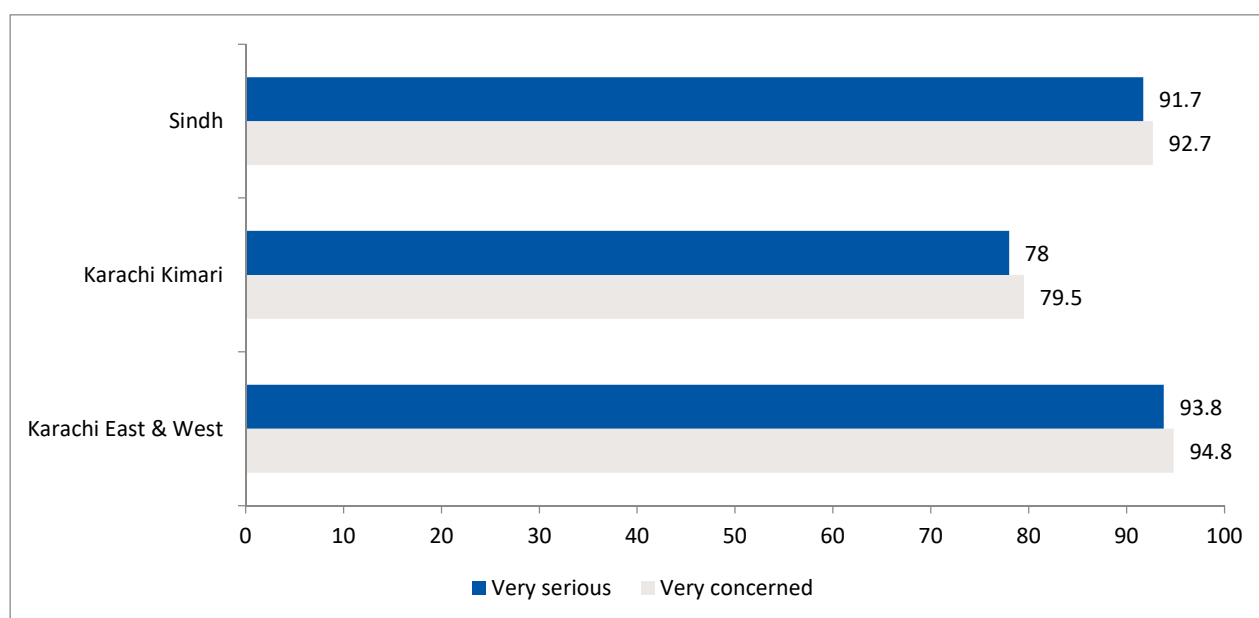
6.2 Trust in Health System

Majority of the caregivers in Sindh province showed great deal of trust on both public and private sectors for general health services and routine immunization, as exhibited in figure below. More than 94% caregivers reported 'great deal of trust' on public sector for general health services and routine immunization. Further, somehow slightly less percentage of caregivers at provincial level showed 'great deal of trust' on private sector for both general health services (90.7%) and routine immunization (88.1%). More trust was observed amongst caregivers of district Karachi (East & west) than Karachi Kimari. Similar to the above, majority of the caregivers informed that they had trust on local traditional healers or hakeems (82.5%) and spiritual healers (90.1%) for general health services in the province, particularly in Karachi (East & West). In case of Karachi Kimari, more than one fourth caregivers reported 'not at all' and somewhat trust on local hakeems and spiritual/religious leaders for general health services.

6.3 Knowledge of Polio Virus and Vaccine

In Sindh province, nearly 100% caregivers had knowledge about polio diseases, including 100% knowledge in Karachi East & West and 97.6% in Karachi Kimari. Out of those few caregivers in Sindh (0.3%) and Karachi Kimari (2.4%), who had no knowledge of polio disease were further probed, where mostly at provincial level (40% and 60%) clarified that they had not heard of any disease that can paralyze children, or don't know respectively. Those caregivers, who had knowledge of polio disease also expressed high concerns and seriousness regarding their children getting sick with polio at provincial level (Figure S2). However at district level, caregivers from Karachi Kimari showed somehow less concern and seriousness than Karachi East & West, if child would get sick with polio. More caregivers at Karachi Kimari and less at provincial level also found somewhat concerned (19.5% and 5.1%) and somewhat serious (20.5% and 5.6%).

Figure S2: Concern regarding child contracting polio (risk perception).



Multiple responses were recorded regarding caregivers' knowledge about polio symptoms. Analysis revealed that more than 96% caregivers at provincial level had knowledge about polio symptoms, e.g., paralysis of arms and/or legs, with similar percentages at district level. Further, less than one third caregivers at provincial level also reported fever as polio symptoms, followed by diarrhea (5.8%). Amongst those who mentioned paralysis as polio symptom, more than 78% caregivers in Sindh province reported that paralysis is not curable, while around 11% caregivers were of the view that paralysis is curable, particularly in Karachi Kimari (30.5%). Further, approximately 10% responded 'don't know'. Further, a high proportion of caregivers (92%) perceived that children's best age (in general) to receive 1st immunization is immediately after birth. More than 94% caregivers in Karachi East & West and 77.6% in Karachi Kimari also presumed that best age for immunization is at birth, whereas almost 19.5% caregivers in Karachi Kimari felt that first three months are the best period for children for receiving 1st immunization.

6.4 Trust in Polio Vaccine

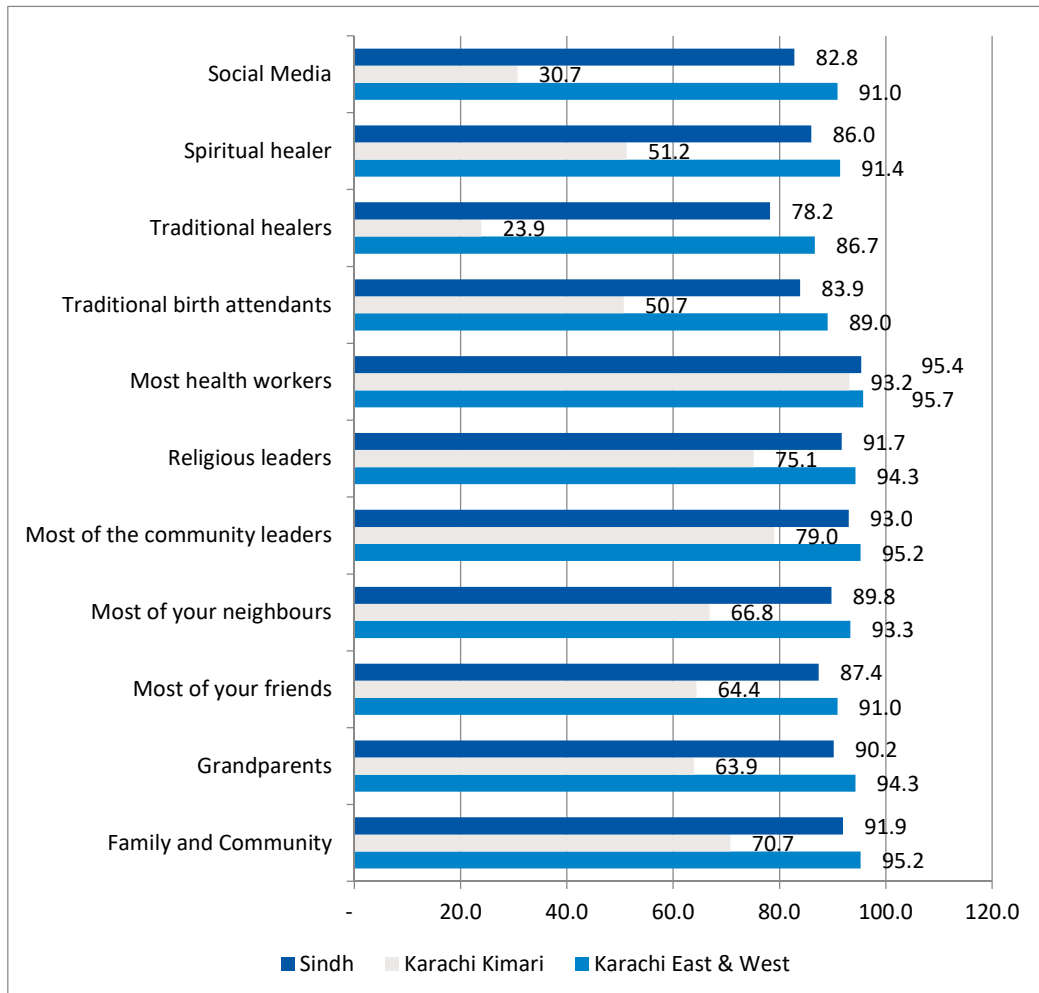
A high proportion of the caregivers in Sindh province showed trust in polio vaccine, i.e. 91% and 93.5% caregivers informed that they perceived polio drops ‘very effective’ for polio prevention and ‘very safe’ for children, respectively. Nearly 93% caregivers in district Karachi East & West and 79% in Karachi Kimari affirmed about effectiveness of polio drops. Further, almost similar percentage of caregivers opined polio drops very safe, i.e. 95.7% and 79% from Karachi East & West and Kimari accordingly. Contrary, a very minor number of caregivers in the province reported that polio drops are somewhat or not very effective and safe.

6.5 Trust in Polio-related Information Sources, and Local Social Norms

Perception of family and community

In Sindh province, nearly 92% caregivers perceived that their family and community considered very good idea of giving polio drops to children, majorly in Karachi East & West with 95.2 percentage. According to caregivers within Sindh province, a high proportion of most of the health workers (95.4%), community leaders (93%), religious leaders (91.7%), grandparents (90.2%), neighbours (89.8%), spiritual healer (86%), friends (87.4%), traditional birth attendants (83.9%), social media (82.8%) and traditional healers (78.2%) perceived the idea of giving polio drops to children ‘very good’ (Figure S3). However, few caregivers at provincial level responded ‘don’t know’ for traditional healers (10.8%), spiritual healers (8.2%) and social media (9.7%), particularly in Karachi Kimari.

Figure S3: Perception of family and community who perceived giving polio drops as a ‘very good idea’.



Further, when probed regarding safety of polio drops, similarly to the above, most of the caregivers at provincial level informed that mostly health workers (95.5%), community leaders (93.3%), religious leaders (92.7%), neighbors (89.5%), grandparents (88.7%), friends (88%), spiritual healers (84.6%), social media (83%), TBAs (82.2%) and traditional healers (78.1%) perceived polio drops 'very safe' for children. However, district variation was seen where caregivers from Karachi East & West had more positive perceptions than Karachi Kimari. Regarding caregivers' experience of witnessing negative things (e.g., heard, seen or read) about polio drops on social media, majority of caregivers in Sindh province informed that they had not heard, read or seen any negative thing about polio. Nonetheless, some caregivers (29.5%) informed that this question is not applicable here as they did not have access to the social media. Only few caregivers reported that they had heard, read or seen negative things about polio on Facebook (14%) and Twitter (1.5%), whereas majority mentioned about WhatsApp (35.3%) at provincial level. Same pattern was observed at district level findings, particularly for Facebook and Twitter, however, in case of WhatsApp, more than 36% caregivers affirmed about witnessing negative things regarding polio.

Trust of family and community about polio-related sources of information

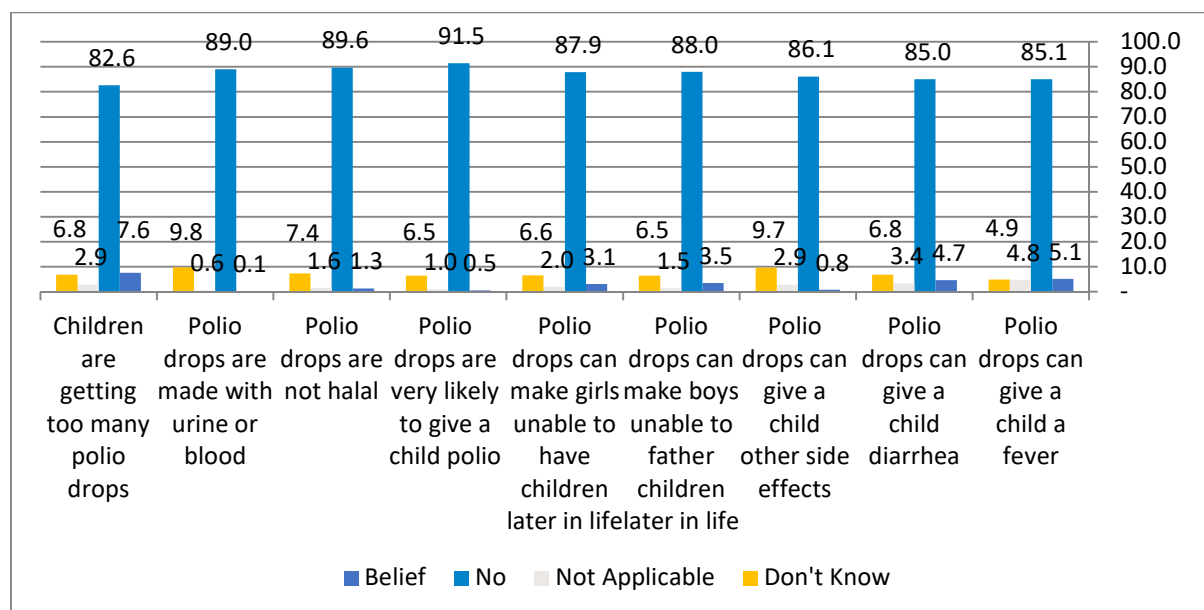
Majority of the caregivers in the province stated that they had great deal of trust on family (93.9%), LHWs (93.5%), neighbours (93.2%), local facilities (93.2%), polio vaccinator (92.7%), friends (92.4%), community leaders (92.1%), maulanas (88.5%), imams (88.4%), Shura/Jirga (82.5%), TBAs (82.1%) and traditional healers (81%) for information about polio. Here district level variation was observed between districts, where more caregivers at Karachi Kimari reported somewhat trust on maulanas (32.7%), while some also responded 'not applicable' for Shura/Jirga (42.4%) and 'don't know' for traditional healers (22.4%) and TBAs (21.5%).

Positive and negative perceptions

In responses to the positive statements heard, read or seen about polio drops in the past year, more than 95% caregivers reported that polio drops can protect a child against polio, however, few also responded that polio drops also protect a child against diseases other than polio (10.3%) (e.g., malaria, cholera) and make a child healthier (8.9%). A very small number of caregivers, i.e. more than 1% of the caregivers also informed that they had not heard, read or seen anything positive in past year about polio. Regarding negative things heard, about polio drops, a very small number of caregivers (11.3%) informed that they had not heard, read or seen any such thing. Some of the notable negative statements included polio drops can give child a fever (74.6%) or diarrhea (30.4%), or polio drops can make boys (7%) and girls (3.4%) unable to have children later in life. Few caregivers at provincial level also mentioned that children are getting too many Beliefs regarding negative perceptions about polio drops

Upon probing about belief on polio related negative statements', majority of the caregivers in Sindh province informed that such statements are false, e.g., polio drops can give child a fever, diarrhea, or other side effects, as well polio drop can cause infertility amongst boys and girls. Further, majority at provincial also mentioned that such statements are not valid, like polio drops are not halal, or made with urine or blood, and children are getting too many polio drops. Same pattern was seen at district level findings (Figure S4).

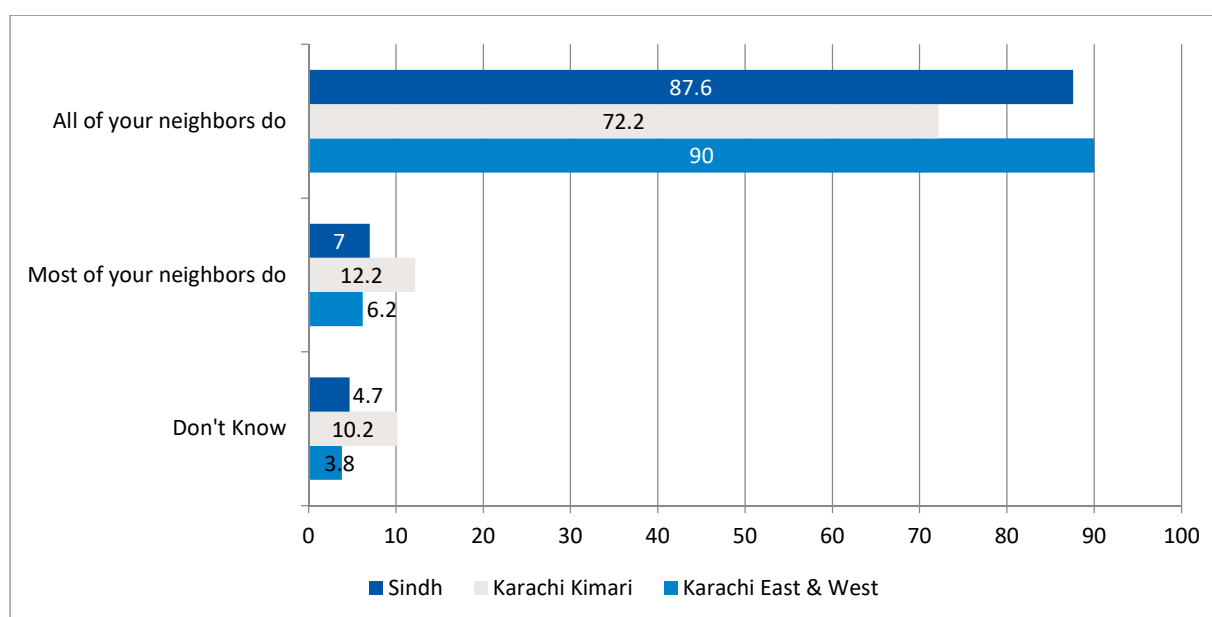
Figure S4: Caregivers' belief of negative statements about polio drops.



Perception about neighbors/community norms for accepting polio drops

A high proportion of caregivers (87.6%) in Sindh province believed that their neighbors usually accept polio drops for their children every single time when polio vaccinators visited their home, however, very few (7%) caregivers perceived that most of their neighbors accept polio drops for children, and 4.7% caregivers responded 'don't know'. Comparable findings at district level were seen (Figure S5).

Figure S5: Caregivers' perception about neighbors acceptance of polio drops.

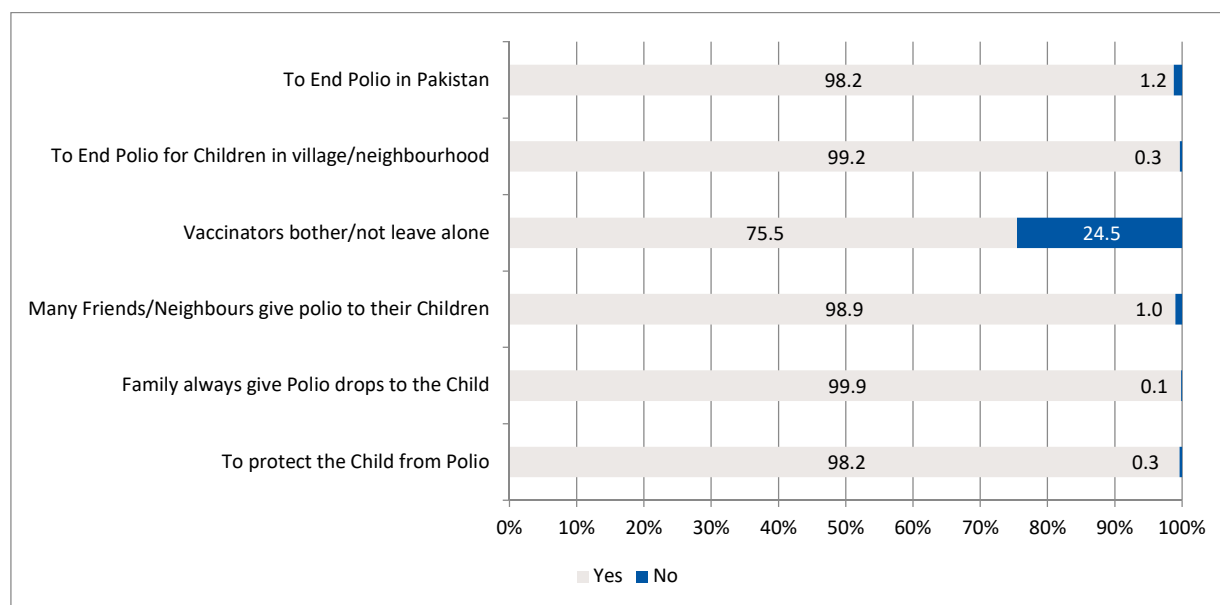


In Sindh province, although majority of the caregivers perceived that their neighbors accept polio drops every time, however, the few who were either not sure or responded 'not very many neighbors' were probed further and recorded few reasons which might hinder their neighbors for accepting polio drops. These included children were asleep (63.7%), sick/ill (62.3%), or not at home (56.9%) and children were not likely to get polio (21.1%). A few percentage of caregivers also stated more reasons, such as, polio drops can give child a fever (8.7%), child has already had enough drops (7.9%), too young for drops (7%), polio drops are not very valuable/useful/effective (7%), receiving so many drops can harm children (2.6%) and polio drops can give other side effects or may harm children (2.6%). Regarding awareness about neighbors, who are against polio drops, more than 66% caregivers in Sindh felt that none of their neighbors are against polio drops, nonetheless some (22.7%) responded that some neighbors are against polio drops, and 11.1% responded 'don't know'. Upon probing regarding number of neighbours against polio drops, more than 60% said that most of them, while nearly same percentage (above 16%) mentioned that 'about half of them' and 'not very many neighbors'. Particularly in case of Karachi Kimari, more than 28% expressed that 'not very many of the neighbors' are against polio drops.

6.6 Trust in Vaccinators

More than 98% of the caregivers in Sindh province informed that polio vaccinators visited their homes during last campaign and a little higher percentage, i.e. 99.1% of caregivers also reported that they had witnessed/saw or talked to polio vaccinator during last campaign. A very small number of caregivers in Sindh, particularly in Karachi Kimari affirmed that neither any polio vaccinator visited them, nor they had seen or talked to any vaccinator during past campaign. Further, majority of caregivers (55.4%) at provincial level, including 73.7% in Karachi Kimari and 52.6% in Karachi (East & West) reported that two vaccinators visited their homes during last polio drive. Some of the caregivers in Sindh (39.9%) and Karachi East & West (43.1%) also indicated that only one vaccinator visited them last time. Further, the highest proportion of the caregivers (94.1%) acknowledged that it was very important while polio vaccinators visited their house for polio drops during last campaign. Same pattern was observed for district level findings.

In response to the question regarding reasons of receiving polio drops by vaccinators, mostly caregivers in Sindh reported common reasons, e.g., to end polio in Pakistan and neighborhood/village, protect child from polio, family always give drops and many friends/neighbors also give polio drops to their children. More than three fourth of caregivers at provincial, especially in Karachi East & West stated that they usually give polio drops to children due to vaccinators' behaviors, who would either bother them or would not leave alone (Figure S6). At district level, comparable findings with provincial data were also seen, except of one reason, where in comparison to the above, more than 84% caregivers from Karachi Kimari refused that polio vaccinators would bothered them, in case if drops would not be given to the children. More than 97% of the caregivers emphasized the preference for female vaccinators as regular part of polio vaccination team. A high proportion of caregivers in Sindh province expressed that they had great deal of trust on polio vaccinators (93%), and found them very knowledgeable about child health (81.5%) and caring towards child wellbeing (92.6%). More caregivers in Karachi East & West than Kimari showed trust in vaccinators.

Figure S6: Reasons for accepting polio drops.

6.7 Perception of/Trust in Polio Campaigns

Perception of/trust in polio campaign during last year, preceding survey (July 2020 – June 2021)

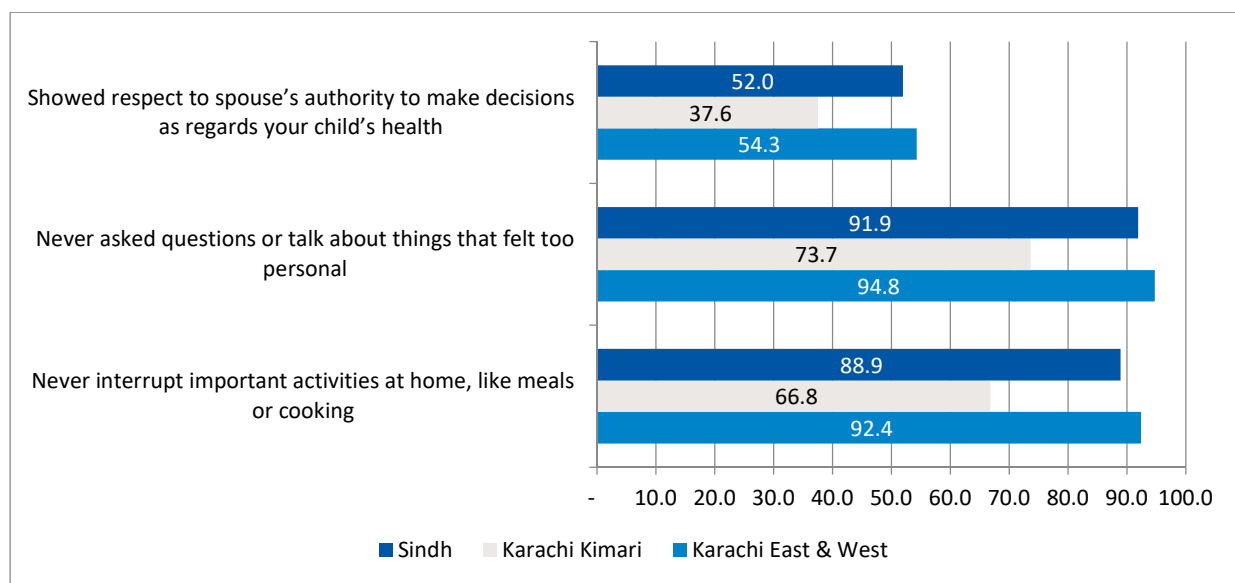
Some of the caregivers in Sindh province (39.3%), including 42.9% from Karachi East & West and 16.6% from Karachi Kimari reported that polio vaccinators visited their homes all the time during last year polio campaign, however, actual number was not known. Most caregivers at provincial level (70%), particularly in Karachi Kimari (79.5%) and Karachi East & West (68.6%) felt that polio vaccinators visited their homes about the right number of time for giving polio drops. Only 6.7% caregivers in the province said that vaccinators' visit frequency is 'too many times'. Upon probing regarding caregivers' concerns on vaccinators' visiting homes 'too many times', mostly responded that vaccinators disrupt activities (68.4%), too pushy/disrespect parental authority (38.8%), tired of visits (27.7%), polio drops are not very valuable/useful/effective (22.5%) and vaccinators ask personal/intrusive questions (14.1%).

Regarding behavior of polio vaccinators during past year, a higher proportion of caregivers in contrast to the above, stated that vaccinators had 'never' interrupted their important activities as well as 'never asked too personal questions' at provincial and district level. Additionally, more than half of the caregivers in Sindh (52%) and Karachi East & West informed that vaccinators showed respect to their spouse' authority to make decision for children health in comparison to Karachi Kimari (37.6%). Some caregivers in Karachi Kimari (38%) complained that polio vaccinators 'never' showed respect to their spouse (Figure S7). More than 95% of the caregivers expressed that they 'always' accept polio drops for their children, whereas only few had either sometimes (2.2%) or never accepted polio drops (2.6%). Those caregivers were further probed about the reasons for not accepting polio drops. Amongst them, majority of the caregivers mentioned varied reasons, e.g., child was sick/ill or asleep or not at home, don't like frequent visits of the vaccinators, drops are of low quality and receiving so many drops can harm children.

In terms of pressure for accepting polio drops, around 12% caregivers reported that they accepted polio drops as community leaders or religious leaders have asked them to do so, particularly in Karachi East &

West. A high proportion of caregivers in Sindh province expressed that they had great deal of trust on polio vaccinators (93%), and found them very knowledgeable about child health (81.5%) and caring towards child wellbeing (92.6%). More than 86% caregivers at provincial level believed that giving polio drops by vaccinators at homes and others places e.g., schools, parks, streets, festivals etc. is a ‘very good idea’. District level variation was seen in Sindh province, where more caregivers (36.6%) from Karachi Kimari found it’s a very bad idea to offer polio drops to children at homes and other places.

Figure S7: Behavior of polio vaccinator during past year.

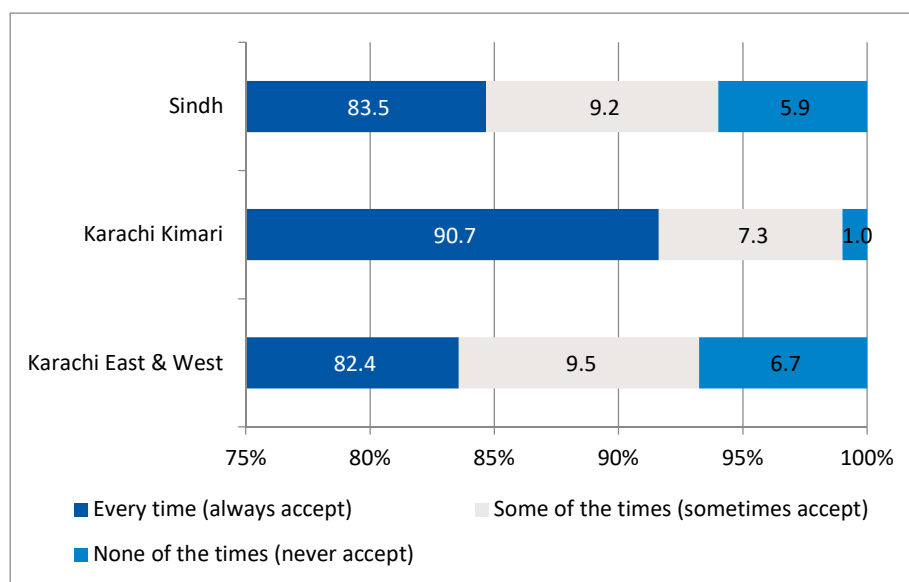


Perception about role and efforts of PEI programme

As far as extent of trust on various organizations for polio vaccination was concerned, mostly caregivers at provincial level showed ‘great deal of trust’ on local health organizations (78%), national government (75.1%), provincial governments (69.8%), international organizations (66.6%), local government/political leaders (65.6%), and governments of other countries (57%). Similar to the provincial findings, a high proportion of caregivers from Karachi East & West also showed trust on various organizations in comparison to Karachi Kimari. More than 15.5% caregivers from Karachi Kimari informed that they had ‘not at all trust’ on governments of other countries involved in the PEI programme. Lastly, more than half of caregivers in Sindh felt that program’ efforts are ‘too much’ to bring polio drops to children in neighborhood, particularly in Karachi East & West.

Intent to vaccinate children and preference for vaccinators

More than 83% of the caregivers in Sindh province, including 90.7% and 82.4% from Karachi Kimari and East & West respectively reported their positive intention of giving polio drops to children every time before reaching their 5th birthday. A small number of caregivers (9.2% and 5.9%) at provincial level were either some of the time or none of the times keen to accept polio drops for their children before reaching their 5th birthday (Figure S8). Regarding caregivers’ preference to have vaccinators at home or visiting local health facility for polio drops, 96% confirmed their preferences to receive polio drops at home during campaign.

Figure S8: Intent/frequency of caregivers to give polio drops to children before they reach their 5th birthday.

6.8 Recommendations for Improvement

Suggestions were sought for improving polio vaccine for children in the province. Some of the caregivers at provincial level recommended for giving more attention to other health services too (55.2%), avoiding forcing or coercing the families (43.7%), raising awareness in local languages (27.8%), limiting the frequency of campaigns (27%) and highlighting polio on social and mass media (20.7%) (Table S1). See Annex 11 for additional case studies, a concise summary of caregiver responses from qualitative research, and additional data tables and figures from Sindh.

Table S1: Recommendations for improving the delivery of OPV to children.

Recommendations for improving polio vaccine for children	Karachi East & West (n=210)	Karachi Kimari (n=210)	Sindh (n=420)
	%	%	%
Recommendations for improving polio vaccine for children			
Do not force or coerce the families	36.7	88.8	43.7
Limit the frequency of campaigns	27.6	22.9	27.0
Properly maintain the cold chain	1.0	45.9	7.0
Give attention to other health services too	58.6	33.7	55.2
Highlight polio on social and mass media	19.0	31.2	20.7
Awareness raising in local languages	23.3	56.1	27.8
Engagement of local female vaccinators	15.7	39.0	18.9
Distribution of IEC material in local languages	2.4	11.2	3.6
Ensure vaccinators interact respectfully and politely	1.4	2.9	1.6
Don't Know	0.5	1.5	0.6

6.9 ‘Significant’ Findings – Sindh Province

The cross-tabulations reported here presents the self-reported frequency of survey respondents accepting OPV during the last year (July 2020 – June 2021), against the key characteristics related to children and caregivers’ profile, socio-demographics, trust in health system, trust in polio related sources of information, trust in vaccinators and trust in the PEI programme (see Annex 14 for additional details). Self-reported acceptance (or not) of OPV highlights a three-level classification of caregivers, i.e. ‘always’, ‘sometimes’ and ‘never’ accept polio drops during the past year. Here those caregivers, who either ‘sometimes’ or ‘never’ accept polio drops are presumed to be the most vaccine hesitant. The following presents findings from **Sindh Province** where chi-square was applied to determine significance of findings when compared to the three-level classification system described above. Here, a p-value ($p \leq 0.05$) is considered statistically significant, showing association between self-reported frequency of accepting OPV during last year and other key characteristics, as mentioned below:

Children and caregivers’ profile, socio-demographic characteristics and knowledge of polio

In Sindh province, the self-reported frequency of accepting OPV had significant associations ($p \leq 0.05$) with birth assistance (at a public health facility) and household level decision makers (grandmothers). That is, the results of cross-tabulation show that a higher proportion of caregivers whose index child was born at a public health facilities and whose paternal and maternal grandmothers were the key decision makers in the family (and were in favour of vaccination), then caregivers were more likely to ‘always’ accept OPV.

Trust in health system, polio-related information sources, and local social norms regarding vaccination

Regarding trust in the health system, the self-reported frequency of accepting OPV showed significant relationship ($p \leq 0.05$) with trust in both public and private health centers for immunization, **as well as in traditional and religious healers** for general health services. These findings indicate that those caregivers who had ‘great deal’ of trust in both biomedicine (public/private health center) and more traditional forms of healing were more likely to ‘always’ accept OPV. A strong association of self-reported acceptance of OPV ($p \leq 0.05$) was seen when caregivers believed their family (including grandparents), community (including friends, neighbors, health workers, community leaders, religious leaders, spiritual healers) and social media thought the idea of giving polio drops to children was ‘very good’ and ‘very safe.’ The results showed that those caregivers who have a positive perception about family, community and social media with respect to polio vaccine, were more likely to ‘always’ accept OPV for their children. Further, the frequency of accepting polio drops also had significant association ($p \leq 0.05$) with trust in social media (**specifically Facebook and WhatsApp**), as well as ‘word of mouth’ polio-related sources of information as indicated above (i.e. when family and community members were perceived as in favour of vaccination, caregiver were more likely to accept). Finally, among those caregivers who had more awareness (in general) about their neighbors’ perceptions of OPV (acceptance or hesitancy), were more likely to ‘always’ accept OPV in past year. This is indicative of a general trend of caregivers who were more connected/knowledgeable about what was happening in their community, having a more positive perception of vaccination. This has important implications for the more likely negative perceptions of OPV as arising from caregivers who has less awareness of their neighbours and community settings (e.g. migrants) and/or those who feel marginalized or otherwise disconnected from their local health system.

Trust in vaccinators

Findings of the cross-tabulation indicate that those caregivers, who confirmed that a polio vaccinator had visited (and witnessed their visit), were more likely to rate their visit as ‘very important.’ Also, among caregivers who indicated a preference for female vaccinator(s), were more likely to fall in the ‘always’ accepting OPV category. Further, those caregivers who were more likely to ‘always’ accept polio drops

during the past year, were more likely to indicate a 'great deal of trust' in polio vaccinator(s), and found them 'very knowledgeable' and 'caring' about children. Very few caregivers in the accepting category reported polio vaccinators as 'not at all' knowledgeable and caring. In contrast, vaccine hesitant caregivers (i.e. 'sometime' and 'never' categories) were much more likely to perceive polio vaccinators as 'not very' trustworthy, knowledgeable or caring about children.

Perception of/trust in polio campaigns

Similar to the above, a highly significant association ($p \leq 0.05$) of self-reported OPV was seen with caregivers' perception about the visit frequency and behavior of polio vaccinator(s) during the last year. That is, those caregivers who perceived vaccinator(s) visits as 'too few times' and reported positive behaviours of vaccinators, were more likely to 'always' accept OPV. Key reported behaviours of polio vaccinators included: 'never' interrupting caregivers' important activities, 'never' asking too personal questions, and 'most of the times' showing respect to their spouses' authority. Caregivers who 'always' accepted polio drops in past year, also had a 'great deal of trust' in PEI affiliated organizations and governmental authorities, and considered the programme's efforts 'about right' for delivering OPV to children in their neighbourhood. Further, a significant relationship ($p \leq 0.05$) of self-reported acceptance of OPV was also observed with caregivers' intention of giving polio drops to children before reaching their 5th birthday.

What these results importantly highlight are the enabling factors which are more likely to lead a caregiver toward OPV acceptance. In so doing, the significant findings reported here highlight those areas of knowledge, attitudes, practices and experiences which the programme may address more specifically in an attempt to move caregivers from the 'sometimes' and 'never' categories, into 'always' accepting OPV.

Qualitative Findings –

6.1 ‘Always’, ‘Sometimes’ and ‘Never’ Caregivers in Karachi

The majority of ‘always’ female caregivers in **Gadap** and **Baldia** described most of their elder male family members (and often their female relatives) as against vaccination and therefore the only way that their children could be vaccinated was to actively try to be at home (without objecting family members present) during campaign days. Similarly, proactive vaccinators would need to be aware of, and accommodating towards, their family dynamics such that they timed their visits when they knew these objectors were least likely to be at home. One ‘always’ mother in **Gadap** described that she had to make sure her child was away from his father-in-law during campaign days because he was against vaccination and if he were in the house when the vaccinators visited he would refuse to have his grandson vaccinated. Another ‘always’ mother in **Gadap** similarly described that her child’s grandfather (her father-in-law) refused vaccination “because of a video circulated on social media” and during the last campaign he would not allow his grandchildren to be vaccinated and “threatened the polio staff in the street and made them leave.” Although this mother was classified as ‘always’ accepting, she said that after this event her father-in-law was unlikely to ever let his grandchildren be vaccinated again. In summary, and in contrast to how an ‘always’ accepting caregiver of OPV might be perceived, women displayed a very fragile acceptance of OPV and their responses to most questions asked more closely resembled those of ‘sometimes’ and ‘never’ caregivers.

Most caregivers in **Gadap** and **Baldia**, in the ‘sometimes’ and ‘never’ categories, displayed either fear or anger when describing past experiences with the polio programme (especially in relation to past events in which children’s illness post-vaccination were well-known) (See case study S1). Women were more likely to state that they themselves, in addition to male relatives, had concerns about the safety of OPV. Women in all categories in **both towns** were also: less likely to speak in detail regarding their responses and were more likely to defer to their mother-in-law (if she was present) for first answering questions. Although the research team tried to ensure that all interviews were conducted in private, this was not always possible with female caregivers, especially for relatives who were at home during the time of the interview and who either demanded to be a part of the interview (e.g. mothers-in-law, husbands).

Case study S1: Past events as predictor of current refusal, “The family considered polio vaccination the cause for their daughter’s death”

“The mother interviewed today, the wife of a Mosque Imam, had a daughter who died two years ago about a week after being vaccinated. The polio staff told me that the child was sick with a high fever and the family initially refused vaccination but they were eventually somehow convinced. After she died, the family considered polio vaccination the cause for their daughter’s death. Staff told me to avoid discussion about cause of daughter’s death because there was a huge jirga after the child died and many families refused vaccination after this incident. This family has never accepted for other children since this event. The mother avoided to answer most of my questions and didn’t mention the death of her daughter so neither did I...after I left I visited another house in this neighbourhood. A man came out of his house and I requested him for interviewing female caregivers in his home. He asked me to wait and came out after five minutes and refused for interview. The polio teams later told me that his family refused vaccination since the child’s death in the previous household...after the death of that child, many families continue to refuse vaccination.”

The details provided by ‘never’ male caregivers in **both towns** are less detailed than those provided by other respondents and, in general, respondents did not answer the questions they were asked, instead preferring to use most of the time they would allow for the interview to discuss their anger towards the polio program for forcing vaccination (See case study S2).

Case study S2: Difficulties involved in speaking with chronic refusals, “I couldn’t do anything more”

“The polio staff informed me that this grandfather was very much against vaccination. He has two grandchildren that he will never allow to be vaccinated. They said he would not speak to me but I wanted to try anyway. The grandfather was not interested, he didn’t want to talk and straightaway refused. He had seen me standing with a polio staff member outside of his shop and told me to go somewhere else and ‘don’t enter my shop.’ I told him politely that I am a guest and have just come here for a survey. I told him that Pashtun people like us don’t treat guests like this. He replied that I can offer you tea and lunch, but I will not answer any questions or talk to you about polio. I couldn’t do anything more, thanked him for his time, and left.”

For women who lived in a household with multiple wives (all Pashtun families within our study sample), they additionally described being strongly influenced by the perceptions of their co-wives (“My husband’s first wife didn’t use to have any reservation against vaccination but she started refusing after I refused”). Therefore, is important to keep in mind family dynamics in multi-family households where co-living mothers may have different levels of hesitancy (and their children different levels of vaccination as a result). As in other provinces, if there was a child in the household that the family felt particularly protective of (e.g. due to gender, illness, or difficulty with conception), then that child may not receive OPV (or RI) while other children in the household would (“I had two children after a long time with no children and I was scared that the vaccine may have a bad impact on them”; “My daughter has a chest problem and that’s why I refuse vaccination”; “The father doesn’t want his male child to receive the vaccine because he has only one boy”).

6.2 Trust in Health Systems

Local healers and *hakeems* were not the preferred health source for ‘always’ mothers while ‘sometimes’ and ‘never’ caregivers more frequently described relying on local healers and/or pharmacies and local home remedies (to self-medicate) if they could not afford private health facilities and did not prefer/trust public health facilities. The majority of female caregivers in our sample fell into the latter category (i.e. could not afford private health facilities/did not trust public health facilities). All male caregivers in **both towns**, as with female caregivers, had a very low opinion of government health facilities to include (for most) EPI services provided to children. The majority of caregivers in **Gadap** and **Baldia** described children in their family being born at home “due to no proper health services in the government healthcare facility.” Of those minority who were not born at home – across all respondent categories – they were birthed at a private health facility. As in KP, for children in Karachi who are not born at a health facility and for those who have a delayed (or absent) routine immunization history, their first contact with a healer is most likely to be a religious figure (e.g. Molvi) with a role in providing spiritual protective services for children (“We take amulets for children from Molvi to save them from the evil eye”). One caregiver in the ‘sometimes’ category spoken with was himself a *hakeem* and described that he provided needed health services to people in his community in addition to protection amulets for children if requested.

‘Always’ mothers in **both towns** were more likely to be ‘satisfied’ with the routine immunization services provided to their children. ‘Never’ female caregivers in **Gadap** however were much more likely to indicate a mixed history of taking their children for routine immunization services and/or to state that they did not trust or did not think (government) vaccinators were well-trained, and they preferred to take their children to private clinics to be vaccinated (if they could afford to do so) or they avoid routine immunization altogether. Caregivers in **both towns** also described, that if their children were vaccinated they were “older” because they “did not prefer” to vaccinate their youngest children (e.g. under 2).

Reasons for this alarming change in behaviour *away from vaccination* were varied to include: a recent bad experience with BHU staff in which (Pashtun) families in particular were made to feel like they “were second class citizens.” Here, it is important to note that this finding is most significant for migrant Pashtun families who, when located in their home village/district may have felt comfortable with taking their children for routine immunization services, however, once located in an ethnically diverse location such as Karachi where they were a minority population, feelings of discrimination (or lack of a common language in which to communicate) when visiting local health facilities strongly impacted caregiver decisions not to vaccinate their children. Further, many caregivers, especially in the ‘never’ category, expressed confusion regarding the need for vaccination, frequently citing their children were healthy “so why would we vaccinate for disease?”

All female caregivers in **Gadap** and **Baldia**, regardless of classification type, stated that they needed permission from their husbands/elder males in their families and/or from their mothers-in-law before they could seek external health services for themselves or their children (this includes visiting a local health facility for routine immunizations). Women reported that they were unable to keep to their child’s vaccination schedule (if their child had an EPI card) because of restrictions on their movement, needing to make arrangements to be accompanied by a family member to the vaccination centre, and/or their husbands needing to take off work to take children to the health facility (if they were not given permission to travel). And as discussed above, Pashtun mothers additionally described avoiding most public health facilities for EPI services because of the difficulties in finding someone who spoke their language.

6.3 Knowledge of Polio Virus

‘Always’ caregivers in **Gadap** and **Baldia** were more likely to know that polio was caused by a virus, caused permanent paralysis (primarily to young children), and could only be prevented through vaccination. This is in contrast to ‘sometimes’ and ‘never’ caregivers who often refused to answer this question (“I have heard about this, but will not share it with you”), believed there to be no difference between polio virus and the ‘drops’, believed paralysis could be cured, stated that illness was in God’s hands (“only Allah can save us from diseases”), or believed that the virus either didn’t exist or there was no virus in their area (“I haven’t witnessed any child suffering from polio”) What this latter finding in particular illustrates is skepticism that the virus even exists.

6.4 Trust in Polio Vaccine

In terms of their trust in the polio vaccine itself, most female caregivers in **both towns** – including ‘always’ mothers – had reservations about the safety and efficacy of OPV. All female caregivers regardless of location and respondent classification type, described social media videos which showed children being harmed by OPV as a serious cause for concern. That is, women referenced adverse events following vaccination which had occurred in their area (or that they heard had occurred in their area) and social

media videos as the basis for their concerns/belief OPV was harmful (“After watching that video from Peshawar, how can we accept vaccination?”). Women in the ‘never’ category in **Gadap** and **Baldia**, were also likely to state that their own children (or a neighbour’s children) had experienced an illness (e.g. vomiting and diarrhoea) after being vaccinated with OPV “just like the children in the video.” For women who may have stated their belief that OPV was safe, they were also very likely to acknowledge that they did not want their children to be vaccinated if they were ill (“When my child has a chest problem, I ask the vaccinator to visit again after a few days”). The underlying assumption with these requests is that already ill children are not “strong enough” to withstand the potentially harmful impact of vaccination. As asked by one father in Baldia to the interviewer, “Tell me honestly, if your child were to get sick after having taken these drops and then after some time the teams come again and put stress on you to accept more drops for her, what would you do? Would you want her to take even more?” ‘Always’ fathers in **both towns** were more likely to state that they believed the government would not want to give something to children that was harmful for their health. One ‘always’ father in Gadap described that a year prior, his entire family was against vaccination, and in order to avoid their children receiving OPV, they would hide the children in their family during campaigns (See case study S3).

Case study S3: Hiding children with parents, “I’m saving my children from too frequent vaccination”

“During my conversation with a young Pashto mother in Karachi (Manghopir Road), she said that she didn’t trust vaccinators because her child got sick several times after receiving drops. She said, ‘When I took him to the doctor, he told me that he got sick because vaccinators don’t keep the vaccine cold enough and sometimes vaccines are expired. After those experiences, I don’t allow the polio staff to vaccinate my children. I spend campaign days at my parents’ house and hide in a room along with my two children when the polio teams come. If in case I’m not at my parents’ house, I tell the polio team that my child is taken to a doctor because he is not feeling well and that I will vaccinate after his recovery in a hospital...My husband doesn’t have any objection but he spends most of his time outside home for his work so he doesn’t interfere in this matter. I’m saving my children from too frequent vaccination...I don’t understand why there are polio campaigns so frequently? I mean people have no other problems, just this polio virus?”

Of those ‘always’ and ‘sometimes’ mothers and fathers who did not believe in the safety or efficacy of the vaccine, when asked why then they accepted OPV, most frequently responded “because we have to”, “because we are afraid of the police,” “because we have no other choice” or “because the vaccinator won’t leave our house until they vaccinate our children.” Due to their mixed feelings towards OPV, most stated that they preferred not to vaccinate their children and *only accepted* when they were pressured to do so by PEI staff. ‘Sometimes’ and ‘never’ caregivers in **Baldia** stated outright that they did not trust OPV, did not think it was safe for their children to ingest, and (frequently) didn’t believe the virus existed.

Women’s concerns about the safety of the vaccine were primarily related to **three** overlapping (and compounding) factors: 1) concerns over social media videos they had seen which showed children being harmed by OPV post-vaccination (the ‘Peshawar incident’ video was mentioned as in KP but, distinct from KP, several other videos were equally likely to have been referenced by Karachi caregivers, e.g. “that video which showed tiny pieces of glass inside the vaccine,” 2) discussions and debates within their own families regarding the harmful impact of vaccination on children’s health, and 3) living in a community in which a child had been believed to be suffering (or had died) post-OPV vaccination. Men in **Gadap** and **Baldia** were more likely to state their concerns more specifically that OPV: 1) “weakened children’s fertility system”/caused sterility, 2) caused children to reach puberty early/mature too quickly, and 3) finally, especially among ‘never’ caregivers, state that vaccination was an “illegal” or “immoral” activity for Muslims to engage in “because sickness is in Allah’s hands.”

6.5 Trust in Polio-related Information Sources, and Local Social Norms

Most female caregivers in Gadap and Baldia, regardless of classification type, stated that their primary information sources were male relatives in their household (“I mostly stay at home and have no interaction with neighbours”). If they had heard positive information about the polio programme, it was from vaccinators or other staff of the polio programme. Negative information was more likely to come from their relatives (to include extended family members living in other provinces), social media and (less frequently) local religious leaders (See case study S4). Information from their family members about polio was mostly likely to be negative in nature, and women reported trusting in these sources of information not only because they trust their relatives “who care more about our children,” but also because they had to obey their husband’s and family elders – “if something bad happens [after vaccination] then I don’t want to be blamed for it.” Information from social media was always reported as being negative in nature and women in Karachi referenced both videos they had seen which were more local in nature (i.e. events which occurred in Karachi) and from other provinces such as KP (“My sister in Peshawar never accepted the vaccine for children after watching about that school incident”). The following words of one mother in Ittehad Town-2 is representative of many caregivers, “I am confused who to trust.”

For male caregivers in **Gadap** and **Baldia**, the majority of negative information about polio (similar to women) arose from local contacts and family members (i.e. word-of-mouth). Positive information about the program was again described as coming from polio staff, but also more frequently reported as coming from television and newspaper articles (the latter finding highlighting that men were more likely to be literate than women). ‘Never’ male caregivers in **Gadap** and ‘sometimes’ and ‘never’ caregivers in **Baldia** often avoided providing specific answers to this question, instead saying they “had heard enough” about the polio vaccine and they didn’t “want to hear any more about it.” What information they did communicate, was that no one within their circle of family or friends “had anything positive to say about these drops...ask anyone in the street and they will tell you that they don’t want it.”

Case study S4: Diverse family opinions in Gadap, “Women don’t want to open the door for anyone”

“One of the ‘sometimes’ families we visited today in Songal-5 was very mixed in their opinions on vaccination. The young mother I came to speak with is a chronic refusal as is her husband. But her brother-in-law (older brother) and his wife are acceptors of OPV so children in this household are able to be vaccinated if the teams visit when the brother-in-law is at home, others in the family will refuse...So when I asked to speak to the mother who is a refusal she didn’t want to talk to me. Not looking at me, she asked, ‘What is the purpose of your interview? Where will you share information?’ I ensured her of anonymity and that I only wanted to learn more about her perceptions of vaccination. She started to sit down to speak with me, but when I asked her about age (one of the demographic details we ask everyone) she left the room and asked me to wait. She didn’t come back, but sent a message with a child of about 8-years-old that she was not willing to speak with me. Her brother-in-law then entered the room and told me about concerns she and other women in their household have about the drops after a video spread about a child dying after vaccination in the Laiqatabad area of Karachi a few months ago. And because of robbery incidents in their neighbourhood, women don’t want to open the door for anyone. The brother-in-law said he heard me speaking in Pashto, therefore, he allowed me to enter his home ‘otherwise we don’t open our door for strangers.’ I asked the man if his wife was at home – she was the person who allowed the vaccinator to vaccinate children in the home during the last campaign. He said she was home and went to go get her. She agreed for an interview and we had a good conversation. The polio staff later told me that they had only managed to vaccinate children in this house when the refusing brother was not present.”

The strongest determinant of a household in **both towns** who both accepted vaccination *and* did so because they believed in its importance (not, for example, because they felt forced to accept) was a husband or family elder who believed in the positive impact of OPV on children's health. However, this was a minority opinion among the caregivers in Karachi sampled for this study. The majority of negative information on OPV centred upon (in general) its harmful impact to children's health, its causing sterility in children (especially boys), its haram ingredients, its ability to cause children to misbehave/enter early puberty, and its going against nature/God.

6.6 Trust in Vaccinators

'Always' male and female caregivers in **Gadap** and **Baldia** were overwhelmingly appreciative that women were part of the vaccination team "because women are easier to speak with" and "because women have the responsibility to take care of children," however, their level of trust in their vaccinators was mixed. Some women reported that while they trusted their vaccinator, they always checked to make sure the vaccine wasn't expired before they would allow her to vaccinate their children. Women in **both towns** also mentioned that their vaccinators changed so frequently that often did not know who they were. A few women in the 'sometimes' category were glad that women were part of the polio teams, while others stated that it didn't matter "because only our men interact with the vaccinators" or "because there are so many incidents of robbery in our neighbourhood that we never open the door to strangers...my husband takes the children outside the home so they are vaccinated in the street." The latter finding was especially salient for residents in **Gadap** and is not an idle or general statement from caregivers. For example, during fieldwork, a UCCO in Gadap who was helping to facilitate the work of the research team, was robbed at gunpoint – his wallet, mobile and motorbike all stolen.

Female caregivers in **Gadap** and **Baldia** in the 'sometimes' and 'never' respondent categories, and 'never' male caregivers in **Gadap** and 'sometimes' and 'never' caregivers in **Baldia** were consistently negative in their descriptions of vaccinators. Caregivers often stated that they did not trust vaccinators because no matter how they (personally) felt about OPV, the vaccinator would force them to accept ("When the polio team visits our home they don't leave until we vaccinate. I am not satisfied with their answers but we don't have any other choice."). This led to hiding children from vaccinators (See case study S5). As stated candidly by one mother in Gadap, "During the five days of the campaign, I became tired of lying in order to save my children from vaccination. Male staff were visiting our house after the female vaccination team was unsuccessful in convincing us. They make our life difficult during every campaign." Low levels of trust in their vaccinator was linked to feeling pressured/coerced to accept OPV and belief that vaccinators themselves were "pressured to push these vaccines" and not convinced of the benefits of OPV.

Case study S5: Hiding children in Gadap, "This family has been hiding children for several months"

"I visited another refusal family in the locality but the mother didn't open the door and her son (from the roof of the house) told me that his mother is sick and sleeping. I could clearly hear her speaking strongly from inside the house. I told them that I would come back at a better time...On my second visit, I saw her through a small hole of the entrance gate, but I could not convince her for an interview because she saw me with a member of the polio team. The vaccinator told me that this family had been hiding children for several months. Polio staff only came to know about the children after seeing them with their father one day outside the home. The polio team was not hopeful that they would be able to vaccinate children in this house."

Children, especially in **Gadap**, were also reported and observed to have high levels of mistrust of vaccinators. For example, children were observed throwing stones at polio workers which PEI staff frequently explained as relating to negative information that children heard while attending madrassa.

Reasons for caregiver (and child) negativity towards vaccinators often centred upon: belief that polio teams did not care if their children were ill post-vaccination, feelings of being harassed by polio teams “who will not leave us alone” and therefore often associating persistence with “rude behaviour”, belief that vaccinators were only working for their “salary”, and lack of confidence in the skills of vaccinators “who are not qualified doctors.” These findings, as with any findings related to caregiver impressions of their vaccinators, are related to: past experiences with staff, how that staff may have handled a caregiver who demonstrated hesitation or reluctance to vaccinate their children (i.e. if they felt like their concerns were addressed, or if they felt like the caregiver was “reporting on” them to the authorities), and if that caregiver had a child whose illness they interpreted as having been caused by OPV.

6.7 Perception of/Trust in Polio Campaigns

‘Always’ female caregivers in both **Gadap** and **Baldia** had a mixed opinion on the frequency of campaigns, some stated the number of campaigns was fine, while others stated that that did not see the importance of (or did not believe that children should) receive “two drops, every time” during every campaign. There was no consensus on this point. There was considerably more consensus among ‘sometimes’ and ‘never’ caregivers in **both towns** who frequently described that campaigns were too frequent (“they disturb us all the time, they stand at our doors for house until and unless we get angry and start fighting with them”), it was not important for children to receive two drop during every campaign, and that it should be the “parent’s decision to either vaccinate their children or not.” The majority of male caregivers in **Gadap** and **Baldia**, across all respondent categories, stated that they thought campaigns were too frequent. ‘Always’ male caregivers noted that they would continue to accept vaccination for their children, but that the frequency of campaigns was a cause for concern and resistance in their areas, especially among families who felt children were being “overdosed on drops” and with poor families who wanted other services and did not understand why “the government gives so much importance to the polio campaigns?” Too frequent campaigns were a cause for concern for most male caregivers who felt they had no choice but to accept drops for their children (“It is a big headache for the whole family these constant door knocks”). ‘Sometimes’ and ‘never’ male caregivers in **both towns** were also more likely to state “illness” as the reason why they refused vaccination during campaigns – often linking this illness to the frequency of campaigns and the subsequent “overdose” of OPV they caused.

‘Sometimes’ and ‘never’ caregivers in both **Gadap** and **Baldia** were much more likely to state that foreign “non-Muslim” countries and NGOs were responsible for polio campaigns (either by providing vaccines or for paying “the government” to conduct the campaigns). Caregivers had a very negative opinion of the motives of these countries/organizations, suspecting they had an ulterior motive for their support of the polio programme other than children’s health (“Too much help from NGOs is not good because they always help you for their own benefits” ; “Everyone here is afraid of the consequences of the activities of these international organizations and question that why are they pressurizing us so much for free vaccines?” ; “I am so much surprised to think that these NGOs with a Western agenda will think about my child and her health when they cannot think about any of our other problems”). Upon the latter comment, many caregivers had grievances against the government who “did not support us during the [COVID] outbreak” who “does not provide us with free medicines” and who “say they are working for the betterment of children but ignore our other health problems.” These sentiments were often compounded by suspicions about why ‘foreigners’ were spending so much money in Pakistan on polio.

6.8 Recommendations for Improvement

Female caregivers in both towns, in general, offered fewer recommendations than men in terms of programmatic improvements, especially women in the ‘sometimes’ and ‘never’ categories. Those recommendations offered – across all respondent types – centred upon the following points (listed in order of frequency: 1) caregivers should not be forced to vaccinate their children (several caregivers additionally added “especially if our children are sick”), 2) campaigns should not be held so frequently (most caregivers made the suggestions of once or twice a year maximum), 3) campaigns should be stopped altogether “because these drops are making our children sick”, 4) polio workers should provide “small medicines” to families along with polio drops, especially for children who have a fever “because if the government is spending so much money, then why not provide a little free medicine which would be helpful to encourage vaccination during campaigns?”, and relatedly 5) programme should provide for other basic needs of poor communities in order to encourage vaccination. In summary, both male and female caregivers were decisive in reaching a consensus around their number one (i.e. caregivers should not be forced to vaccinate) and number two (i.e. campaigns should not be held so frequently, maximum once or twice a year) recommendations for the program.

Most caregivers in Gadap and Baldia with negative sentiments towards the programme, were likely to have a personal experience of *feeling as if they were being forced* to vaccinate their children. Caregivers interpreted the presence of police forces who accompanied polio teams as a direct threat that they must accept vaccination. The frequency of vaccinator visits was also interpreted as a form of coercion by “not stopping until we accept.” Pashtun families interpreted these actions as being directed at themselves and/or poor families in particular and “not our posh neighbours.” As noted by another caregiver, an Afghan father in Gadap, “Is it good to vaccinate our children instead of ending up in prison? It’s better than having to bribe the security officer with extra money for release or being beaten up by them at night.” Family dynamics, gender dynamics and cultural impressions of ‘shame’ – that is, persistent visits and behaviours by polio programme staff which might be interpreted by caregivers as ‘bringing shame’ upon the family – also played heavily into caregivers interpretations of how they felt ‘coerced’ to accept OPV for their children. See Annex 8 for an overview of relevant caregiver demographic information (e.g. age, gender, occupation).

In Summary

Caregivers' & Children's Profile (Index Child) & Socio-Demographic Characteristics

Quantitative –

- The majority of index children were: female; between the ages of 1 to 2 years; and born at a public health facility. However, a significant minority of births of index children in Karachi Kimari were born either at a private health centre or at home. For home deliveries, TBAs provided birth assistance.
- A significant majority of caregivers stated that their children had received their first routine immunization dose immediately after birth, and also received additional doses later in life. A minority of caregivers, whose children didn't receive their first routine immunization dose at birth, were probed further on their children's vaccination status. One fourth of the children from Karachi Kimari received their first RI dose by 6 months of age, however, all caregivers from Karachi (East & West) and three-fourths from Karachi (Kimari) refused to respond to this question.
- Most caregiver respondents in Karachi were: female; aged between 31-40 years; married; and were mothers of the index child. Some had attained a religious education only (mainly in Karachi Kimari), while a few also completed their education up to the middle/matriculation level. Nearly all female caregivers were housewives. Most male caregivers interviewed were the primary economic earner for the family and engaged in small business. Decision-making authority regarding children's health was fairly equally divided between both mother and father survey respondents. This finding differs from the qualitative component of the study in that the majority of female qualitative study participants faced barriers in seeking care in that they needed both permission and financial resources to travel to local health facilities (when seeking care for themselves and their children).
- Nearly all the caregivers were living in the same province and districts where index child was born.
- Almost half of survey caregiver respondents were Pashto-speaking and belonged to Pashtun communities. The majority of caregivers were Sunni Muslims.
- The majority of caregivers confirmed they had access to phones everyday and could receive SMS/text messages. Slightly less than one fourth of caregivers in Karachi, particularly those from Karachi East & West, reported that they had no access to phones.
- More than 90% of caregivers at the provincial level stated that they 'always' accepted polio drops. This figure was slightly lower for Karachi Kimari (91.2%) than for Karachi East & West (95.7%).

Qualitative –

- Most caregiver respondents were: aged between 21-30 years or 31-40 years; married; and were the parents of the index child.
- The majority of caregivers were illiterate and had no ability to either read or write. Male caregivers/fathers were the primary economic earners for the family and had autonomy to make decisions. The majority of female caregivers interviewed were housewives.
- The highest proportion of caregivers were Pashto-speaking and belonged to Pashtun communities. All caregivers, excepting two participants who identified as Shia, were Sunni Muslims.
- The majority of caregivers had access to phones which could receive SMS/text messages.
- If there was a child in the household that the family felt particularly protective towards, e.g. due to gender, illness or young age, then that child would be much less likely to be vaccinated. In Karachi, this most often manifested in caregivers reporting a child's illnesses (such as breathing problems, fevers, coughing and diarrhoea) as the reasons for their refusal of OPV during campaigns.
- Per the sampling strategy, n=17 caregivers 'always', n=14 'sometimes' and n=18 'never' accepted drops.

Trust in Health System

- The majority of ‘always’ caregiver survey respondents in Karachi had a ‘great deal of trust’ in the health sector for general health services and routine immunization.
- In, most caregiver survey respondents stated that they trusted local traditional healers or hakeems and spiritual healers for general health services (this finding was particularly true in KHI East & West).
- The majority of ‘sometimes’ and ‘never’ qualitative study participants did not trust public health facilities, often could not afford private health facilities, and therefore were more likely to rely only upon cheaper and more local unlicensed health and/or spiritual healers.

Knowledge of Polio Virus and Vaccine

- Nearly all caregivers, 100% in Karachi East & West and 97.6% in Karachi Kimari, had knowledge about polio disease. A very small number of caregivers, most of which were located in Karachi Kimari, stated they had no knowledge of polio disease or any disease that could paralyze children.
- Subsequently, the majority of caregivers had knowledge about polio symptoms (e.g. paralysis of arms and/or legs) with most reporting that paralysis was not curable.
- The majority of ‘always’ caregiver survey respondents who had knowledge of polio disease, also expressed concerns regarding their children becoming ill with polio (high risk-perception). However, town-level variations were evident with caregivers from Karachi Kimari showing somehow less concern for the seriousness of polio disease than caregivers from Karachi East & West.
- A high proportion of ‘always’ caregivers perceived that children’s best age (in general) to receive their first immunization, was immediately after birth.
- Among qualitative study participants, there was a frequent misunderstanding among most caregivers, even among those who ‘always’ accepted vaccination, that vaccines are meant to *prevent* illness, not cure a disease. Many caregivers, especially women and those (of both genders) with a history of refusing vaccination, frequently confused polio *virus* with oral polio *vaccine* in their discussions, making it sometimes difficult to truly discern what they actually knew.

Trust in Polio Vaccine

- A high proportion of ‘always’ survey respondents showed trust in polio vaccine, and believed that polio drops are ‘very effective’ for polio prevention and ‘very safe’ for children to receive.
- This contrasts with the perception of ‘sometimes’ and ‘never’ caregivers, both male and female, who expressed high-levels of OPV safety concerns. These concerns centred upon the following: a) belief that OPV caused “sickness” in children and/or weakened a child’s immune system so that illness was more likely, b) belief that OPV “weakened children’s fertility system” and/or caused sterility, especially for boys, c) belief that OPV caused children to reach puberty early and/or mature too quickly, and, among religiously conservative communities in particular, d) belief that vaccination was an “immoral” activity because “death and disease are in God’s hands.”
- Qualitative study participants also discussed the ongoing impact of negatively publicized adverse events following immunization (AEFI) which lingered in their minds and continued to contribute to their misconceptions regarding vaccine safety. This finding is true for both OPV and routine immunization. Further, even if such an event happened in the past, it continued to be a reference point for vaccine safety concerns – the more localized the event, the higher a caregiver’s anxiety.
- Children themselves also displayed opposition to vaccination (e.g. serving as ‘informants’ to let their parents know when vaccinators were in their neighbourhood, throwing rocks at vaccinators). Vaccinators (not caregivers) most frequently reported this as occurring, primarily among children who attended local madrassas. That is, children were reported as much more likely to receive negative

information about OPV (and polio vaccinators) while attending madrassas, especially in the absence of any other form of formal education. Madrassa teachers and caregivers had a different interpretation of children's opposition to OPV – they were more likely to state that children's opposition resulted from the opposition of specific members of their family who were opposed to OPV (e.g. a grandparent who openly discussed their mistrust of OPV in front of children in their household). Regardless of who is 'blamed' for influencing the negative attitudes of children towards OPV, it is clear that many children from the sampled locations and families are growing up in an environment where multiple and contradictory messages are heard regarding the safety and efficacy of vaccination.

Trust in Polio-related Information Sources, and Local Social Norms

- The majority of 'always' caregiver survey respondents perceived that their family and community considered it a 'very good idea' to give polio drops to children (this finding is slightly more pronounced in Karachi East & West).
- A significant majority of 'always' caregivers in Karachi described that most health workers, community leaders, religious leaders, grandparents, neighbours and friends also perceived the idea of giving polio drops to children as 'very good' and 'very safe.'
- Regarding caregivers' experience of negative information about polio drops, the majority of 'always' survey respondents stated that they had not heard, read or seen any negative information about polio. In addition, more than one fourth of caregivers stated that questions regarding negative information posted to social media sites was not applicable as they did not have access to these sites.
- Those who used social media and reported that they had heard, read or seen negative information about polio posted there, primarily mentioned WhatsApp (35.3%) and Facebook (14%) as the location of negative content (very few mentioned Twitter).
- The majority of 'always' accepting caregiver respondents stated that they had a 'great deal of trust' in their family, friends, neighbours, LHWs, local health facilities, polio vaccinators, community leaders, maulanas, and imams for information about polio drops. More respondents were unsure or more likely to state a lower level of trust in TBAs and traditional healers.
- Regarding positive or negative statements heard, read or seen about polio drops within the past year, more than 95% of caregiver survey respondents reported hearing positive statements that polio drops protect children against polio. Of the minority of survey respondents who reporting hearing, reading or seeing negative information about polio drops, the most frequent statements made were that polio drops could give a child a fever or diarrhea, or could cause sterility/infertility. Upon probing, most survey respondents in Karachi believed these rumours false (however town-level differences existed).
- Nearly one fourth of survey respondents (22.7%) stated their belief that some of their neighbours were against OPV. Sixty-six percent of caregivers felt that none of their neighbors were against drops.
- Although the majority of caregivers in Karachi perceived their neighbours as accepting polio drops every time they were offered, those who did respond that some neighbours may hesitate to vaccinate all of their children during every campaign, stated that the most likely reasons for this were: children were asleep, children were ill, children were not at home during campaign visits, or belief that children were not likely to contract polio.
- Qualitative study respondents, across all respondent categories, reported members of their own family as being most against OPV – most likely elder family members such as mothers-in-law and grandfathers. If these persons were at home during campaign days, children were much less likely to be vaccinated even if the primary caregiver had no personal objections to OPV. Women in particular reported deferring to their mother-in-law (if she was in the household when the vaccinator visited) for vaccine-related decisions.

- The most negative information heard, read or seen about OPV by ‘sometimes’ and ‘never’ qualitative study participants, was reported as coming from social media sources. Positive information about the program was primarily described as coming from polio staff, and (for men) television and newspaper articles. Women (in general) described much less interaction with mass media sources of information. ‘Never’ caregivers often avoided providing specific answers to questions regarding polio-related information sources, instead saying they “had heard enough” about the polio vaccine and they didn’t “want to hear any more about it.” Hesitant caregivers in Karachi also reported using children in their families as ‘informants’ to let them know when vaccinators were in their neighbourhoods so that children could be hidden or otherwise ‘not available’ when the vaccinator visited.
- Qualitative study participants indicated that the strongest determinant of a family which both accepted vaccination *and* did so because they believed in its importance (not, for example, because they felt forced to accept) was a husband or family elder who believed in the positive impact of OPV on children’s health and who self-described themselves as “educated.” However, this was a minority opinion among our study population in Karachi. Most caregivers, male and female, described feeling “forced” “pressured” or “coerced” into accepting OPV. This finding is most prominent among ‘sometimes’ and ‘never’ accepting caregivers.

Trust in Vaccinators

- More than 98% of survey respondents and all qualitative study participants in Karachi stated that polio vaccinators visited their house during the last campaign. The majority of caregiver respondents also affirmed that they had witnessed or talked to their polio vaccinators during the last campaign. This finding is in contrast to the qualitative component of the study in which female caregivers in particular reported having less interaction with vaccinators because of lack of a common language (e.g. many Pashtun mothers were unable to communicate in Urdu), and due to male members in their household “taking children outside for vaccination.” Regarding the latter point, this was frequently referenced as occurring due to women being afraid of answering the door to strangers given high levels of crime/robbery in their areas and fear that polio workers will “share our information with the government.” Therefore, vaccinators were frequently described by qualitative study participants as not being able to gain access to some homes and/or only interacting with men in the household. This also has important implications for the ease with which a family can ‘hide’ specific children from vaccination teams (if they choose to do so).
- The majority of caregivers, 73.7% in Karachi Kimari and 52.6% in Karachi East & West, reported that two vaccinators visited their homes during the last polio drive. Regarding their vaccinators’ profile, the majority of survey respondents indicated that Vaccinator 1 and Vaccinator 2 were adult/elder females. No caregivers in Karachi, who reported being visited by a vaccination team during the last campaign, reported a male polio vaccination team member. The majority of survey respondents (over 98%) indicated their preference for female vaccinators.
- Survey respondents in Karachi reported accepting drops provided by vaccinators because: they wanted to end polio in their neighbourhood/village and in Pakistan, they wanted to protect their children from polio, and because vaccination was a social norm within their household and/or community (‘our family always give drops’, ‘my neighbours always give drops’).
- A high proportion of caregiver respondents expressed that they had a ‘great deal of trust’ in polio vaccinators, found them knowledgeable about children’s health and cared about their children’s wellbeing (this finding was more significant in Karachi East & West).
- Among qualitative study participants, most especially among ‘sometimes’ and ‘never’ caregivers, mistrust of their vaccinator most often stemmed from a combination of being against female workers in general, having a past negative experience with the PEI programme, and/or feeling as if vaccinators

pressured them and/or did not respect their right to make their own decisions to accept (or not) OPV for their children. Caregivers in Karachi also reported mistrust in vaccinators due to suspecting that they were using expired vaccines and/or did not have the required cold chain capacity to keep vaccines safe.

Perception of/Trust in Polio Campaigns

- As stated above, the majority of the caregivers in Karachi (over 90%) stated that they ‘always’ accept polio drops for their children. For the minority of ‘sometimes’ and ‘never’ accept caregivers, their reasons for refusing vaccination during campaigns included: their child was ill, their child was sleeping, their child was not at home, they didn’t like the frequency of campaigns (e.g. their child had ‘enough’ drops, they believed ‘too many’ drops would harm children), and they believed the vaccine to be of low quality/contained harmful ingredients.
- The majority of ‘always’ accepting survey respondents in Karachi stated that they had never felt any pressure for either accepting (75%) or refusing (90.4%) polio drops.
- The majority of survey respondents believed that giving polio drops to children either at homes or in other others places in their community (e.g., schools, parks, streets, festivals, etc.) was a ‘very good idea’. However, some town-level variations existed with a minority of Karachi Kimari respondents not agreeing with the statement that it was a ‘very good idea’ to give drops to children at homes or in other community locales.
- Most caregiver respondents in Karachi stated a ‘great deal of trust’ in local organizations, national/provincial governments, and the governments of other countries who were partners in the PEI programme. Town-level variations did exist with caregivers from Karachi East & West displaying higher levels of trust in certain organisations in comparison to Karachi Kimari caregivers (e.g. 15.5% of caregivers from Karachi Kimari informed that they had not trust ‘at all’ in the governments of other countries).
- The majority of ‘always’ caregiver survey respondents in Karachi described their intention to give polio drops to their children before they reached their 5th birthday. A minority of respondents indicated that they only intended to sometimes or never given polio drops to their children before their 5th birthday.
- The majority of survey participants preferred to receive polio drops at home and confirmed morning was the best time for vaccinators to visit. Some caregivers, particularly those residing in Kimari, also mentioned afternoon time as their preferred and convenient visiting time receiving vaccinator visits.

Recommendations for Improvement

- Recommendations for improving the delivery of OPV to children, as provided by survey respondents included raising awareness in local languages, giving attention to other health services, avoiding forcing or coercing families to accept vaccination, and limiting the frequency of campaigns.
- The most frequent recommendations for programme improvement offered by qualitative study participants, across all respondent categories and genders, were: a) families’ should not be pressured/forced to vaccinate their children “especially if our children are sick”, b) campaigns should not be held so frequently (several suggestions made were one, or a maximum of two, campaigns per year), and c) campaigns should not be conducted door-to-door and/or “stopped altogether.” Additional recommendations offered, though not as frequent, were that: d) polio workers should provide “small medicines” to families along with polio drops, especially for children who experiencing an illness, e) the PEI programme should provide for other basic needs of poor communities (e.g. water, sanitation), f) vaccinators should “take responsibility” for ensuring vaccine safety (e.g. not using expired vaccines) and needed “to do a better job” of maintaining the cold chain.

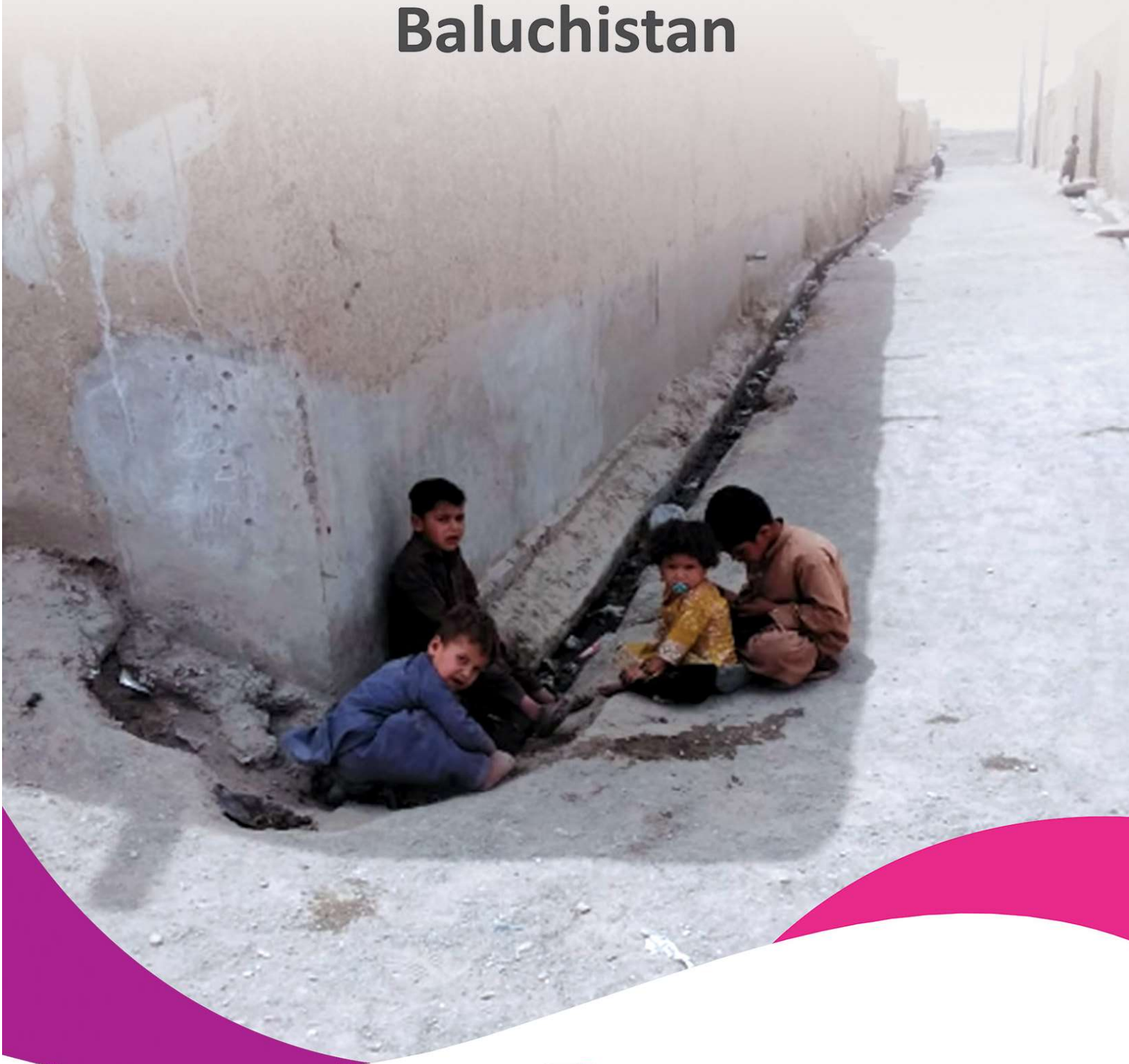


پاکستان
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PAKISTAN
POLIO
ERADICATION
PROGRAMME

Baluchistan



7. Baluchistan: Quetta & Killa Abdullah

Key Components of the Methodology

- Selected study locations Quetta Block are locations with the (perceived) highest levels of vaccine hesitancy towards OPV in the province. That is, these are locations with persistent virus circulation despite the frequency of door-to-door vaccination campaigns. The UCs selected for qualitative data collection activities were those with: highest percentage of missed children (i.e. still missed, still refusal and still not available), high concentration of 'priority' populations, continuously positive environmental samples, and/or confirmed cases of polio in 2019-2020.

Quantitative –

- Data collection occurred in the following districts and UCs of Baluchistan:
 - Quetta:** 10B, 11A, 11B, Baleli-A, Kharotabad-1, Kharotabad-2
 - Killa Abdullah:** D. Ashazai-1, D. Ashazai-2, Mabad-1, Mabad-2, Sirki Talari
- Within each district, 30 clusters with 7 eligible interviews were conducted, in total **210** interviews were carried out within each district, overall in Baluchistan, sample of **420** was completed.
- 464 refusals (220 in Quetta and 244 in Killa Abdullah) were recorded.

Qualitative –

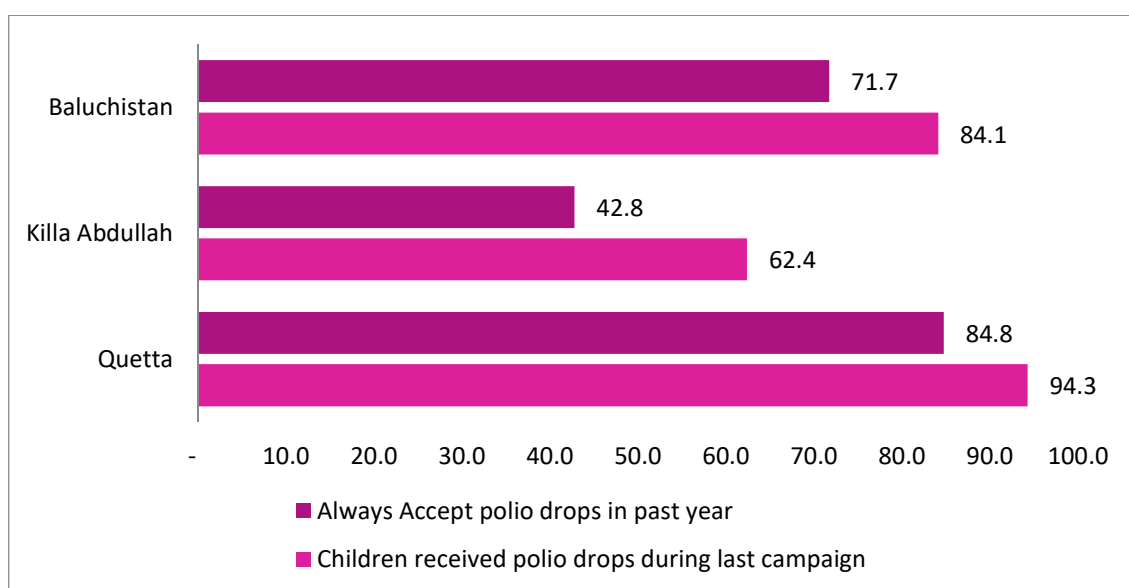
- Data collection occurred in the following districts and UCs:
 - Quetta:** Kharatabad-2, 10B; and
 - Killa Abdullah:** Sirki Talari (Chaman)
- Participants in Quetta were equally sampled from the following three 'classifications' as determined by campaign data collected from past five consecutive rounds of OPV (i.e. February, March, August, September and October 2020 campaigns), and in consultation with district and UC-level polio staff (e.g. DDPOs, DCOs, UCCOs). Dividing caregivers according to their known past practices, as this sample strategy highlights, serves as an important reference point within our reporting to directly link *knowledge* and *attitudes* with *practices* and *experiences*. The three classification groups included 'always', 'sometimes' and 'never' caregivers of children <5 years of age:
 - Caregivers with a history of accepting OPV for all children in their household during every campaign (identified within this report as '**always**' accepting caregivers);
 - Caregivers with a mixed history of sometimes accepting, while other times refusing, OPV for their children (identified within this report as '**sometimes**' accepting caregivers); and
 - Caregivers with persistently missed children (PMC) and/or who are labelled as 'chronic refusals' of OPV (identified within this report as '**never**' accepting caregivers).
- Observational data was collected in Quetta and Killa Abdullah during the Apr 2021 NID.
- In-depth interviews were conducted with 33 caregivers (n=13 Kharatabad-2; n=20 10B) representing 45% female and 55% male respondents. All interviewed caregivers were physically located in Quetta at the time of data collection, however two were from Killa Abdullah (visiting relatives in Kharatabad-2).
- Skilled interviewers (male and female) specifically trained in qualitative data collection, were employed for this study. Interviewers were fluent in Pashto, Urdu and English. The majority of caregiver interviews in Baluchistan (94%) were conducted with priority (i.e. Pashtun) populations.
- 16 refusals (10 in Quetta and 6 in Killa Abdullah) were recorded.

Quantitative Findings –

7.1 Reported coverage of OPV

In province of Baluchistan, 84.1% of the caregivers informed that their children received polio drops during the last campaign. In self-reported OPV in last campaign, 62.4% coverage was recorded for district Killa Abdullah and 94.3% in Quetta. Regarding caregivers' frequency of accepting polio drops during past year, more than 71.7% caregivers at provincial level affirmed that they 'always' accepted polio drops, with the almost double proportion in district Quetta (84.8%) than Killa Abdullah (42.8%) (Figure B1). Nearly 36.4% of caregivers in Killa Abdullah informed that they sometimes accepted polio drops while 13.9% expressed that they 'never' accepted OPV in last year.

Figure B1: Percentage of children who received polio drops during last campaign and caregivers who 'always' accept polio drops.



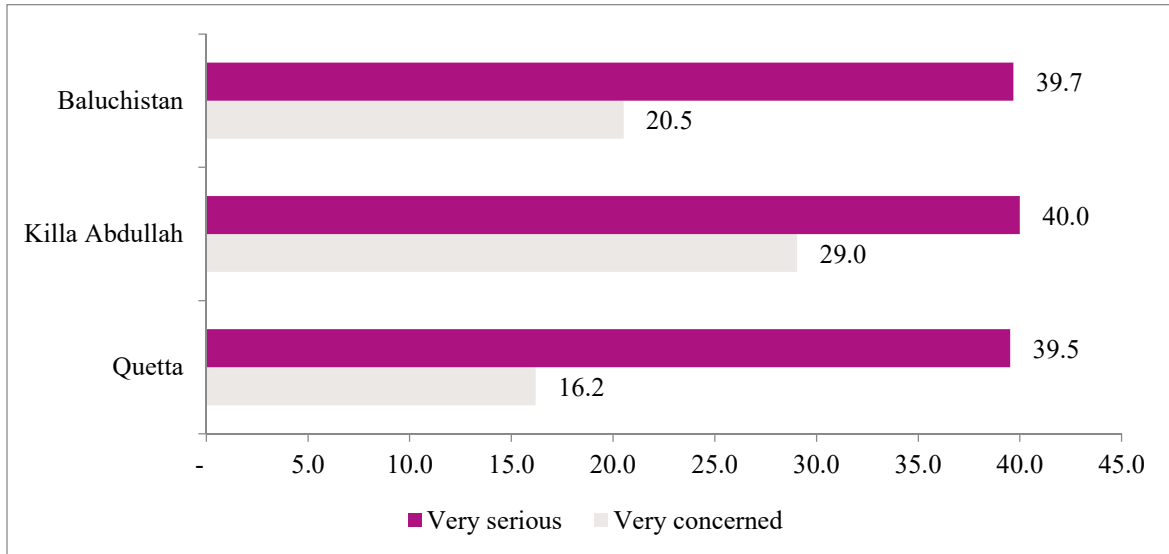
7.2 Trust in Health System

Nearly half of the caregivers in Baluchistan province showed great deal of trust on both public and private sectors for general health services and routine immunization, as exhibited in figure below. Around 50.4% and 48.6% caregivers reported 'great deal of trust' on private sector for general health services and routine immunization respectively. Further, somehow slightly less percentage of caregivers at provincial level showed 'great deal of trust' on public sector for both general health services (42.1%) and routine immunization (41%). More trust was observed amongst caregivers of district Quetta than Killa Abdullah, where significant trust deficit was witnessed particularly with regards to private health centers for both general health services (29.4%) and routine immunization services (28.1%). Nearly half of the caregivers informed that they had great deal (24.7%) or somewhat (24.1%) trust on local traditional healers or hakeems for general health services, whereas this was more evident in Killa Abdullah, where 42.4% caregivers had great deal of trust on them in contrast to those in Quetta (15.7%). Similarly about half of caregivers (43.4%) at provincial level had great deal of trust in spiritual/religious healers.

7.3 Knowledge of Polio Virus and Vaccine

In Baluchistan province, 100% caregivers had knowledge about polio diseases. Amongst those caregivers who had knowledge of polio disease, only 20.5% expressed high concerns and 39.7% seriousness regarding their children getting sick with polio at provincial level (Figure B2). The percentage of those not at all concerned (23.5%) and not at all serious (14.9%) was evident in both districts as well. A significant number (18.6%) of caregivers in Quetta did not express their concerns or showed unawareness.

Figure B2: Concern regarding child contracting polio (risk perception).



Multiple responses were recorded regarding caregivers' knowledge about polio symptoms. Analysis at provincial level revealed that around two-third (61.6%) caregivers had knowledge about polio symptoms, e.g., paralysis of arms and/or legs, whereas more than 36.5% did not have knowledge about any polio symptoms, the data was similar in districts as well. In Killa Abdullah nearly 2.4% caregivers refused to answer this question. Amongst those who mentioned paralysis as polio symptom, more than 93.8% caregivers in Baluchistan province reported that paralysis is not curable, while around 14.9% in Killa Abdullah did not know. One-third (33.9%) of caregivers perceived that children's best age (in general) to receive 1st immunization is immediately after birth. District variation was seen with 41% caregivers in Quetta and 20% of caregivers in Killa Abdullah having this perception. A significant number of caregivers in Killa Abdullah (27.6%) stated that children should never be vaccinated. More than one-third of respondents at provincial and district levels did not know about the best period for children to receive RI.

7.4 Trust in Polio Vaccine

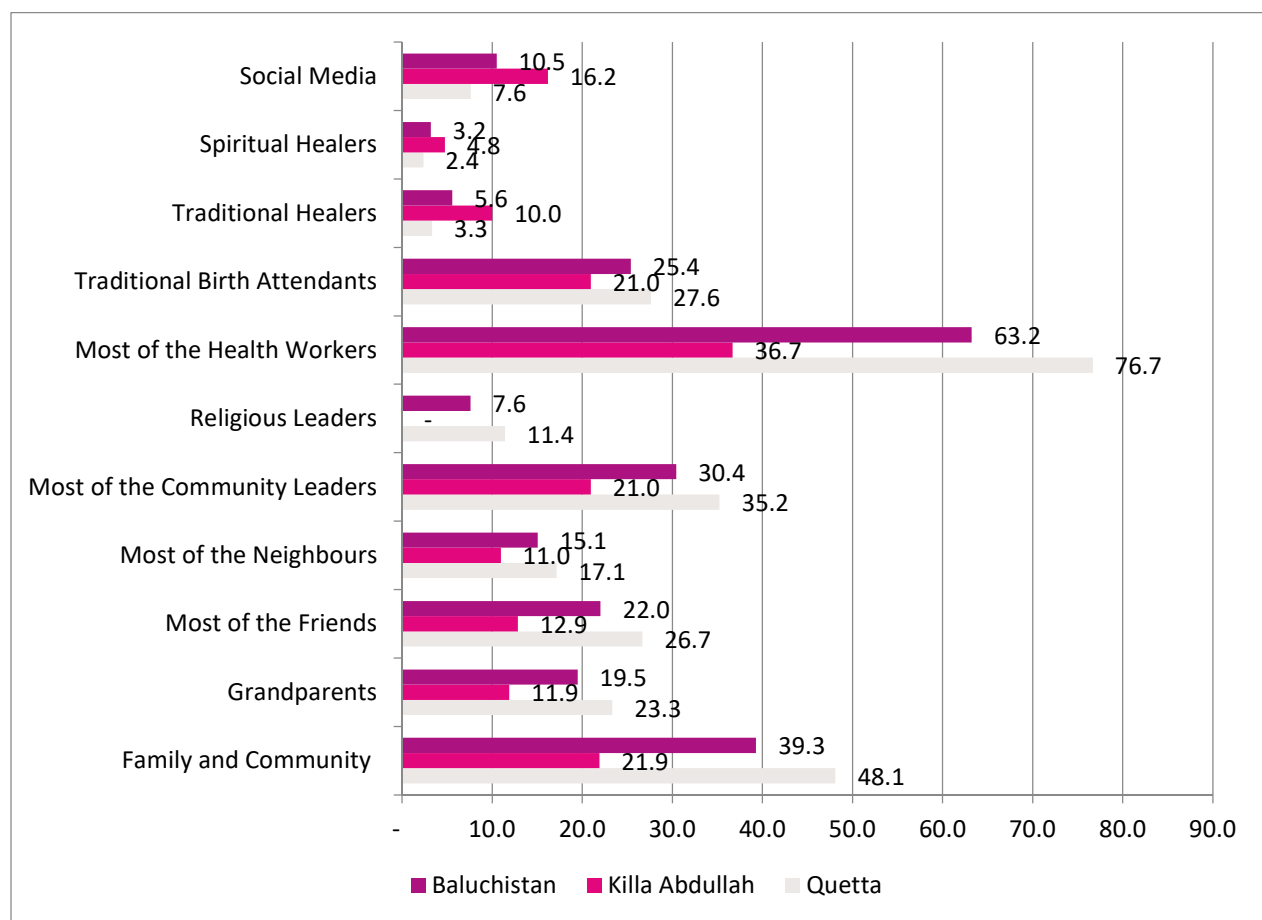
Only around one-third of the caregivers in Baluchistan province showed trust in polio vaccine. Approximately only 36.3% and 37.2% of caregivers informed that they felt polio drops were 'very effective' for polio prevention and 'very safe' for children, respectively. Significant variation was seen amongst districts, where only 20.5% of caregivers in district Killa Abdullah in comparison with 44.3% in district Quetta affirmed about high effectiveness of polio drops. Further, almost similar percentage of caregivers opined polio drops very safe. Nearly one-third of caregivers in Killa Abdulla reported disagreement to the effectiveness and safety of polio drops and believed that the drops were neither safe or effective.

7.5 Trust in Polio-related Information Sources, and Local Social Norms

Perception of family and community

According to caregivers, a good proportion of health workers (63.2%) within Baluchistan province, and family and community (39.3%), community leaders (30.4%), traditional birth attendants (25.4%), friends (22%), grandparents (19.5%), neighbors (15.1%) and social media (10.5%) perceived the idea of giving polio drops to children ‘very good’ (Figure B3). However, caregivers at provincial level felt that very few religious leaders (7.6%), traditional healers (5.6%) and spiritual healers (3.2%) viewed giving polio drops to children as a good idea. Perception of caregivers at district level were significantly varied with the provincial data, where unlike Quetta which correlated with provincial data, Killa Abdullah showed opposing findings. It was witnessed that caregivers in Killa Abdullah perceived that religious leaders (51%), neighbors (43.3%), family and community (42.9%), friends (38.1%), grandparents (34.3%) and spiritual healers (25.7%) perceived the idea of giving polio drops to children ‘very bad’. Nearly half of caregivers in Killa Abdullah did not know about the perception of social media, TBAs, traditional and spiritual healers, health workers regarding the idea of giving polio drops to children. In Quetta, around one-third of caregivers showed unawareness of these perceptions regarding religious leaders, traditional and spiritual healers.

Figure B3: Perception of family and community who perceived giving polio drops as a ‘very good idea’.



Further, when probed regarding safety of polio drops, most of the caregivers at provincial level informed that health workers (64.2%), community leaders (30.4%), traditional birth attendants (24.7%), friends (22.8%), grandparents (18.2%), neighbors (14.7%) and social media (11.6%) perceived polio drops 'very safe' for children. However, caregivers felt that very few religious leaders (7.6%) traditional healers (5.6%) and spiritual healers (3.3%) found polio drops to be safe for children. District level variation was observed, especially at Killa Abdullah, where nearly half of the caregivers showed unawareness of these perceptions regarding community leaders, TBAs, health workers, traditional and spiritual healers as well as social media. In Quetta, around one-third of caregivers showed unawareness of these perceptions regarding community leaders, religious leaders, traditional and spiritual healers. It was witnessed that caregivers in Killa Abdullah perceived that religious leaders (55.7%), neighbors (41.4%), grandparents (39%), friends (35.7%) and spiritual healers (23.8%) perceived polio drops 'not at all safe'.

Regarding caregivers' experience of witnessing negative things (e.g., heard, seen or read) about polio drops on social media, most of caregivers in Baluchistan province informed that this question is not applicable here as they did not have access to that social media. Majority didn't have access to Twitter (78.2%, followed by WhatsApp (55.3%) and Facebook (42.3%). Nonetheless, around 37.8% of caregivers at provincial level reported that they had heard, read or saw negative things on Facebook, Twitter (2.6%), and WhatsApp (15.1%) about polio. Same pattern was observed at district level findings. District variation in hearing negative things on Facebook was seen, especially in Quetta, where 53.2% agreed to hear, read or see such things.

Trust of family and community about polio-related sources of information

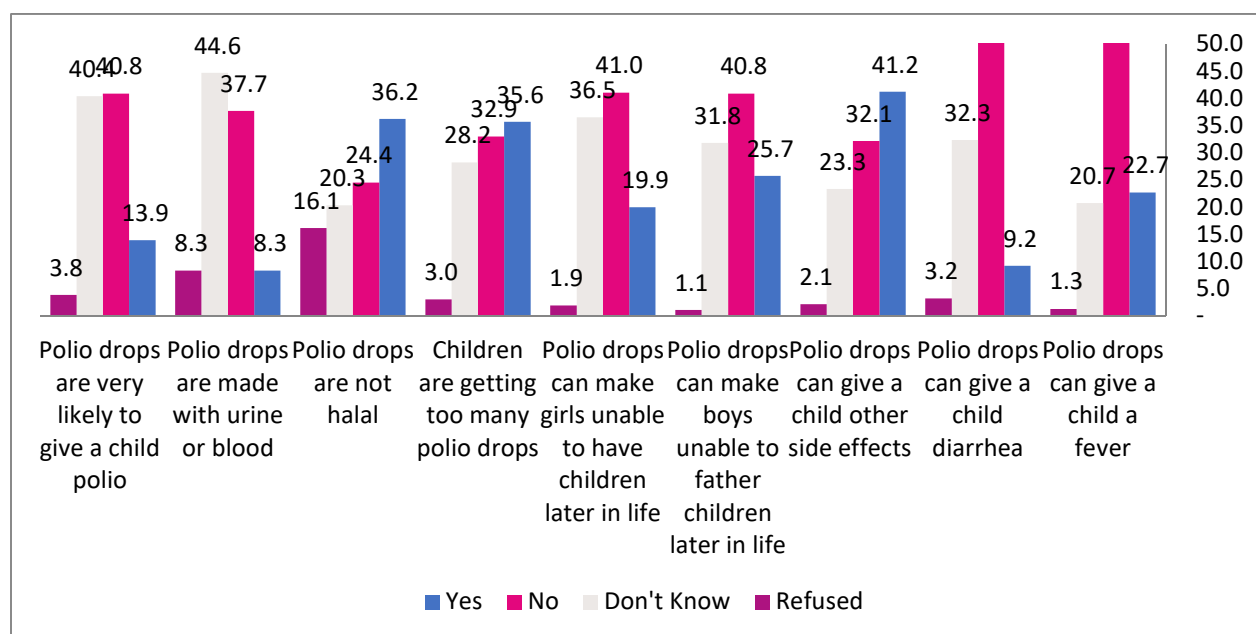
Majority of the caregivers stated that they had great deal of trust on family (68%), friends (50.8%), polio vaccinators (31.4%), Imams (30.5%), Lady Health Workers (LHWs) (26%), Molanas (24.9%), local facility level health workers (24.3%), community leaders (23.6%), TBAs and neighbors (23%) for information about polio drops in province Baluchistan. However, some caregivers reported of having trust on Shura/Jirga (9.4%) and on traditional healers (12.6%). It was seen that nearly one-fourth of caregivers had no trust at all for such information on traditional healers (28.4%), community leaders (21.8%), polio vaccinators (21.1%) and TBAs (19.4%). A wide variation in district level findings was observed in terms of trust on varied sources between district Quetta and Killa Abdullah. It is important to note that many caregivers in Killa Abdullah did not trust polio vaccinators (45.7%), LHWs (41.9%), Community leader (41.4%), local health facility (38.6%) as well as traditional healers, TBAs, maulanas, neighbors, friends and family for the information regarding polio.

Positive and negative perceptions

In responses to the positive statements heard, read or seen about polio drops in the past year, more than 66.1% caregivers reported that polio drops can protect a child against polio, however, some (22.4%) also responded that polio can make a child healthier. Around one-fourth of caregivers at provincial level, i.e. around 20.8% caregivers informed that they had not heard anything positive in past year about polio, whereas in Killa Abdullah this percentage was nearly 52.4%. Regarding negative things heard, read or seen about polio drops, majority of caregivers (57.4%) informed that they heard, read or seen that polio drops are not halal, polio drops can make girls (46.8%) and boys (52.1%) unable to have children later in life. Some of the other notable negative aspects included Polio drops are made with urine or blood (27.7%), and that they are likely give a child polio (23.1%), particularly in Quetta (40% and 32.9%, respectively). Only (14.6%) informed that they had not heard any such thing.

Upon probing about belief on polio related negative statements’, nearly half of the caregivers in Baluchistan province informed that such statements are not valid, however around some notable percentages of caregivers thought that Polio drops can give a child other side effects (41.2%), Polio drops are not halal (36.2%), Children are getting too many polio drops (35.6%), Polio drops can make boys unable to father children later in life (25.7%), polio drops can give fever (22.7%) and Polio drops can make girls unable to have children later in life (19.9%). In Killa Abdullah, majority caregivers perceived that polio drops are not halal (66.9%), Polio drops can make boys unable to father children later in life (59.9%), children are getting too many polio drops (45.2%), Polio drops can make girls unable to have children later in life (42.7%) and polio drops can give fever (36.9%). Nearly one-fourth of the caregivers in Quetta and 12.1% in Killa Abdullah refused to respond to query regarding polio drops being haram and Polio drops being made with urine or blood, respectively. Many caregivers in Killa Abdullah also showed unawareness about such statements (Figure B4).

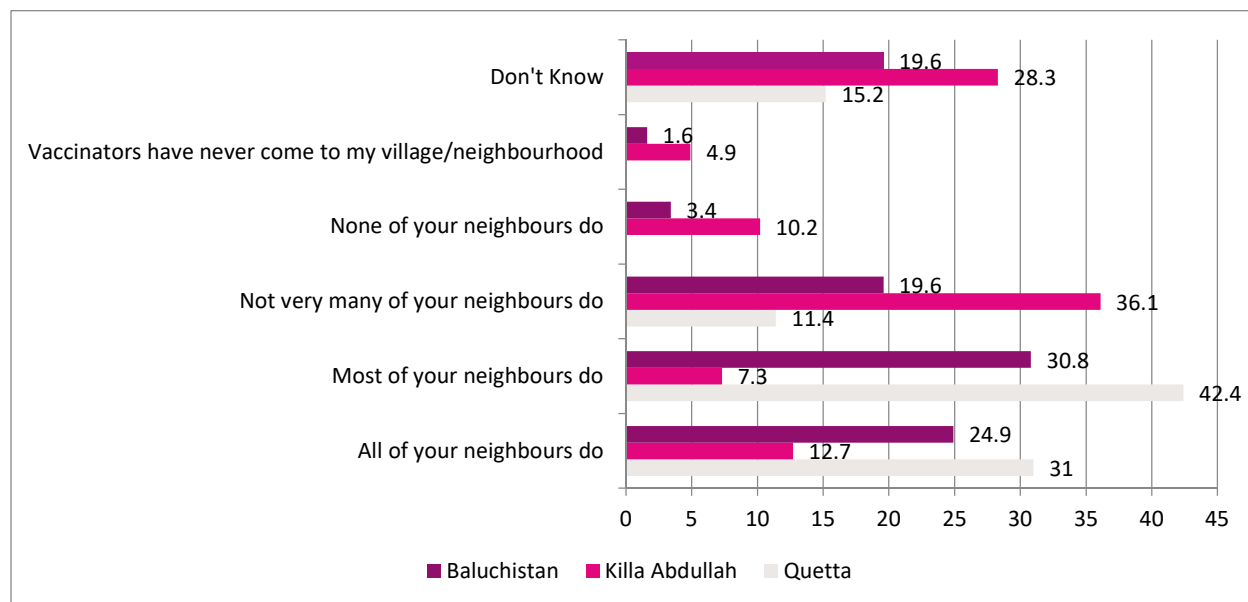
Figure B4: Caregivers’ belief of negative statements about polio drops.



Perception about neighbours/community norms for accepting polio drops

Around one-third proportion of caregivers (30.8%) in Baluchistan province believed that most of their neighbors usually accept polio drops for their children every single time when polio vaccinators visited their home, while around 19.6% showed unawareness (Figure B5). District variation showed that in Killa Abdullah, nearly 36.1% perceived that not very many of their neighbors accept polio drops for their children every single time when polio vaccinators visited their home.

Regarding the reasons of their neighbors not accepting polio drops every time, half of them were either not sure, while few recorded reasons which might hinder their neighbors for accepting polio drops including religious reasons/vaccine is not halal (21.4%), Polio drops can give Child other side effects (not fever) / harm child (20.5%) and polio drops are not very valuable/useful/effective (17.3%), particularly in Killa Abdullah (32.7%). Also nearly 14.5% caregivers perceived that receiving so many drops can harm children may be one of the reasons hindering their neighbors to accept polio drops.

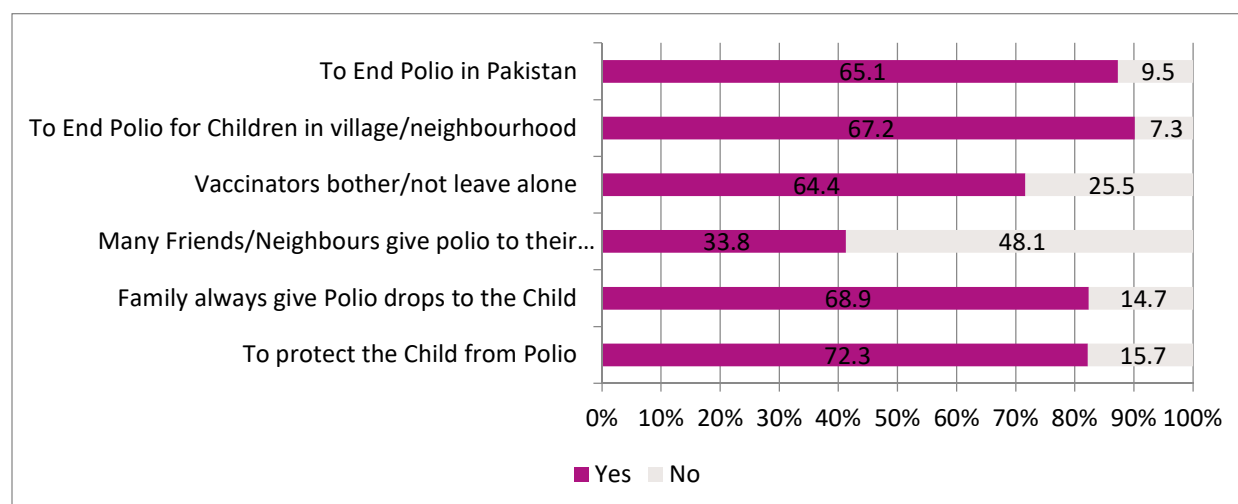
Figure B5: Caregivers' perception about neighbors acceptance of polio drops.

Regarding awareness about neighbors, who are against polio drops, more than 63.7% caregivers felt that some of their neighbors are against polio drops, nonetheless few (15%) responded that none neighbors are against polio drops, this was especially true for Killa Abdullah, where 83.1% believed that some of their neighbors are against polio drops. More specifically, when probed how many of your neighbors are against polio drops, around 33.6% caregivers thought most their neighbors, half of the neighbors (30.1%) and 'not very many' (26.8%) of their neighbors are against polio drops.

7.6 Trust in Vaccinators

Around 88.2% of caregivers in Baluchistan province informed that polio vaccinators visited their house during last campaign, this percentage was two-third (68.6%) within caregivers in Killa Abdullah. Majority of the caregivers (68.3%) reported that they did not witness/see or talk to polio vaccinator during last campaign, particularly in Quetta (75.7%), while around 41.8% in Killa Abdullah affirmed that they witnessed or talked to polio vaccinators. Further, around 65.5% of caregivers at provincial level, reported that two vaccinators visited their house last time. However in district Killa Abdullah, around 28.4% caregivers reported only one vaccinator visiting them, whereas nearly 16.7% of caregivers in Quetta reported visit by three vaccinators as well. Although many of the caregivers (39%) acknowledged that it was very important while polio vaccinators visited their house for polio drops during last campaign, however a high percentage (34.5%) in Killa Abdullah believed that the visit of polio vaccinators in their opinion was not at all important.

In response to the question regarding reasons of receiving polio drops by vaccinators, mostly caregivers reported common reasons, e.g., to protect child from polio, family always give drops, to end polio in their village/neighborhood and in Pakistan and that they usually give polio drops to children as vaccinators would either bother them or would not leave them alone. The least reported reason was that many friends/neighbors also give polio drops to their children (Figure B6). At district level, comparable findings with provincial data were also seen, however in case of reasons like 'you or your family always give the child polio drops', caregivers in Killa Abdullah frequently did not agree.

Figure B6: Reasons for accepting polio drops.

Almost 86.9% of the caregivers emphasized the preference that female vaccinators should be regular part of polio vaccination team, however this percentage was slightly lower (76.5%) in Killa Abdullah where 10% were against the notion of women as part of vaccination team. Nearly 2.1% and 3.7% of caregivers in Quetta and Killa Abdullah, respectively refused to respond to this question. Caregivers also shared their perception and experience about vaccinators' profile. Nearly half of caregivers in Baluchistan province informed that they have great deal of trust and somewhat trust on polio vaccinators (52% and 15.2%, respectively), and found them very and somewhat knowledgeable about child health (31.1% and 28.2%, respectively) and caring towards child wellbeing (48.6% and 20.8%, respectively). Nearly one-fourth of caregivers in district Killa Abdullah showed their mistrust on vaccinators, their knowledge and care towards their children.

7.7 Perception of/Trust in Polio Campaigns

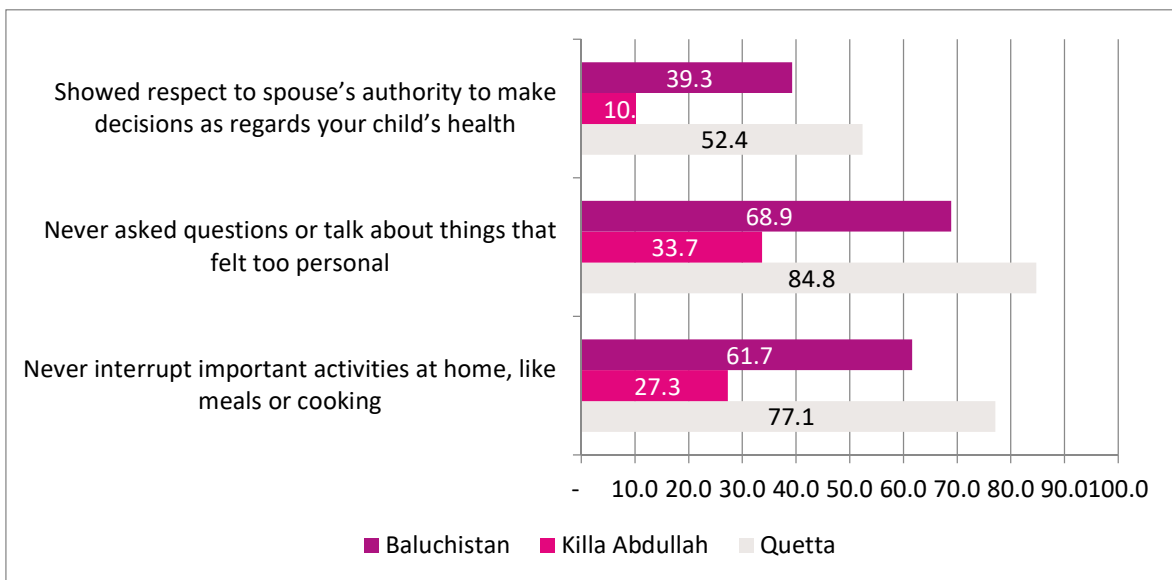
Perception of/trust in polio campaign during last year, preceding survey (July 2020 – June 2021)

About half proportion of caregivers in Baluchistan province (52.5%) reported that polio vaccinators visited their houses all the time during last year polio campaign, however, actual number was not known. Here, district level variation was observed in perception of caregivers, with 31.4% from district Killa Abdullah and 62.4% from Quetta, who reported that vaccinator visited every time, nonetheless their visit frequency in numbers was not remembered accurately. A large percentage of 28.6% in Quetta and 53.6% in Killa Abdullah showed their unawareness and did not know. Similarly, half of caregivers at provincial level (52.7%) believed that vaccinators had visited their homes 'too many times' to offer polio drops. However, 33.3% from Quetta and 14.4% caregivers in district Killa Abdullah felt that polio vaccinators visited their homes about the right number of time for giving polio drops, while 31.6% there showed unawareness. Upon probing regarding caregivers' concerns on vaccinators' visiting homes 'too many times', most recorded concern were that we are tired of the visits (33.5%), particularly in Quetta (42.7%). Other mentioned concerns were that polio drops are not very valuable/useful/effective, which came out in both the districts equally (26%), receiving so many drops can harm children/make them ill (12%), child has had enough drops already (8.4%), vaccinators ask questions that are too personal/intrusive (6.3%) or its just

too much (6.6%). Some of these concerns were particularly evident in Killa Abdullah especially in relation to receiving so many drops can harm children/make them ill (28.3%), disruption of activities (13.1%), vaccinators being too pushy/disrespect my parental authority and asking questions that are too personal/intrusive. On the other hand, more than 38.5% caregivers reported ‘no concerns’, with higher percentage in Quetta (48.2%).

Regarding behavior of polio vaccinators during past year, a higher proportion of caregivers in contrast to the above, stated that they had ‘never’ interrupted their important activities as well as ‘never asked too personal questions’ at provincial and district level. Nonetheless, around half of the caregivers (52.4%) in Quetta informed that vaccinators showed respect to their spouse’ authority to make decision for children health in comparison to 10.2% in district Killa Abdullah, where 30.5% of them opined that vaccinators never showed respect to their authority to make decisions. A significant number of caregivers in Killa Abdullah showed unawareness or refused to respond when asked about vaccinators behavior (Figure B7).

Figure B7: Behavior of polio vaccinator during past year.



When caregivers who responded either sometimes or never accepted polio drops were probed about the reasons for not accepting polio drops. Amongst them, nearly one-third (31.7%) of the caregivers at provincial level mentioned they did not believe polio drops are effective (‘polio drops are not very valuable/useful/effective), polio drops can give child other side effects/harm child (29.7%), receiving so many drops can harm children (21.6%) and that children has already had enough drops. These were most evident in Quetta in addition to religious reasons/vaccine is not halal (29.6%), children can get fever (25.9%) and wanting other services instead e.g. electricity, borehole.

Nearly 78.3% caregivers in Baluchistan province were found aware about visited vaccinators’ locality and affirmed that probably they all were not from their villages/neighborhood (60.3%), while nearly one-third (32.8%) in Killa Abdullah did not know. More than 32.7% caregivers at provincial level, particularly in Killa Abdullah (41.9%) believed that giving polio drops by vaccinators at homes and others places e.g., schools, parks, streets, festivals etc. is a ‘very bad idea’. Same pattern of data was observed at district level, while around 26.8% thought this was a very good idea.

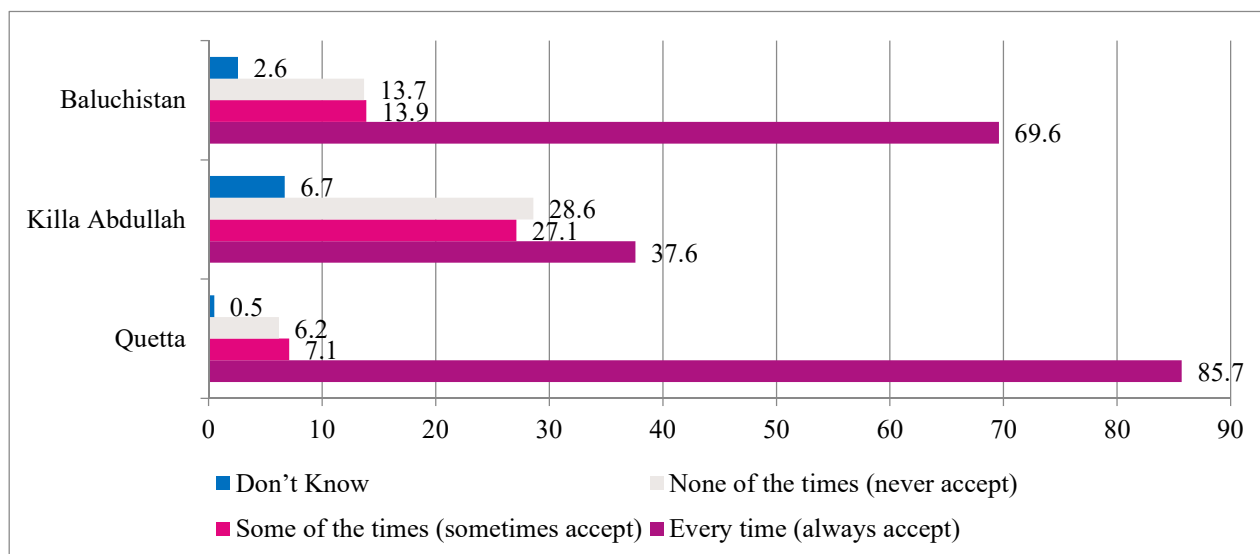
Perception about role and efforts of PEI programme

Majority of caregivers in Baluchistan province reported that international organizations (41.4%), national government (22.5%) and local health organizations (16.3%) are responsible for polio vaccination, this was more evident in Quetta however nearly 61.9% in Killa Abdullah did not know about the type of organizations responsible for polio drops. As far as extent of trust on various organizations for polio vaccination is concerned, nearly 20-30% of caregivers at provincial level showed ‘great deal of trust’ on international organizations (33.7%), national government (26.4%) and local health organizations (28.8%). District variations were seen where similar proportion of caregivers (20-35%) from both districts either showed mistrust to various organizations or not very much trust on organizations including local health organizations, national, provincial and local governments. Lastly, less than one-third (31.1%) caregivers felt that program’ efforts are ‘too much’ to bring Polio drops to Children in Neighborhood, while 22.8% perceived these efforts ‘about right’, particularly in Quetta (26.2%), however nearly 54.8% caregivers did not know or 3.3% refused to respond to this question.

Intent to vaccinate children and preference for vaccinators

Nearly 69.6% caregivers in Baluchistan province, 85.7% in Quetta and 37.6% in Killa Abdullah reported intention of giving polio drops to children every time they are offered before reaching their 5th birthday. About one third caregivers from Killa Abdullah district were either not keen on accepting polio drops for their children every time (28.6%) or some of the time before reaching their 5th birthday (27.1%) (Figure B8). Regarding caregivers’ preference to have vaccinators at home or visiting local health facility for polio drops, almost 71.8% confirmed their preferences to received polio drops at home during campaign. Nearly none of caregivers chose local health facility, however around one-third of caregivers in Killa Abdullah either didn’t know or they refused to respond to place preference question. Further, caregivers were probed regarding their preferred visiting time for vaccinators at home as well as convenient visiting time at local health facility. In response, majority confirmed morning time for visit of vaccinators at home (64.8%). Around 23.9% of caregivers never wanted vaccinators to visit their home, particularly in Killa Abdullah where more than 50.5% of caregivers didn’t want the vaccinator to visit.

Figure B8: Intent/frequency of caregivers to give polio drops to children before they reach their 5th birthday.



7.8 Recommendations for Improvement

Suggestions were sought for improving polio vaccine for children in the province. Half of the caregivers at provincial level recommended avoiding forcing or coercing families (48.5%), raising awareness in local languages (33.1%), giving attention to other health services too (27.8%), ensuring vaccinators interact respectfully and politely (14.9%) and engaging local female vaccinators (12%). District variation was seen where 35.7% caregivers responded ‘don’t know’ and 10% refused to respond for suggestions, particularly in Killa Abdullah (Table B1). See Annex 12 for additional case studies, a concise summary of caregiver responses from qualitative research, and additional data tables and figures from Baluchistan.

Table B1: Recommendations for improving the delivery of OPV to children.

Recommendations for improving polio vaccine for children	Quetta n=210	Killa Abdullah n=210	Baluchistan n=420
	%	%	%
Do not force or coerce the families	58.1	29.5	48.5
Limit the frequency of campaigns	0.5	4.3	1.8
Properly maintain the cold chain	2.4	0.5	1.7
Give attention to other health services too	28.1	27.1	27.8
Highlight polio on social and mass media	14.3	8.6	12.4
Awareness raising in local languages	46.7	6.2	33.1
Engagement of local female vaccinators	13.8	8.6	12.0
Distribution of IEC material in local languages	4.3	1.0	3.2
Ensure vaccinators interact respectfully and politely	16.7	11.4	14.9
DK	2.4	35.7	13.6
Refused	--	10.0	3.4

7.9 ‘Significant’ Findings – Baluchistan Province

The cross-tabulations reported here presents the self-reported frequency of survey respondents accepting OPV during the last year (July 2020 – June 2021), against the key characteristics related to children and caregivers’ profile, socio-demographics, trust in health system, trust in polio related sources of information, trust in vaccinators and trust in the PEI programme (see Annex 14 for additional details). Self-reported acceptance (or not) of OPV highlights a three-level classification of caregivers, i.e. ‘always’, ‘sometimes’ and ‘never’ accept polio drops during the past year. Here those caregivers, who either ‘sometimes’ or ‘never’ accept polio drops are presumed to be the most vaccine hesitant. The following presents findings from **Baluchistan Province** where chi-square was applied to determine significance of findings when compared to the three-level classification system described above. Here, a p-value ($p \leq 0.05$) is considered statistically significant, showing association between self-reported frequency of accepting OPV during last year and other key characteristics, as mentioned below:

Children and caregivers’ profile, socio-demographic characteristics and knowledge of polio

In Baluchistan, the self-reported frequency of accepting OPV showed strong association ($p \leq 0.05$) with birth assistance, caregivers’ level of education, their access to a phone and household level decision

makers. Similarly, significant relationship of OPV was found with caregivers' knowledge regarding if paralysis caused by polio was curable. More specifically, findings highlight that those caregivers, who had delivered children at private health facilities, had attained higher or professional education (e.g., MA/M.Sc/MBA/M.Com), had access to phones every day, and had knowledge that paralysis caused by polio was *incurable*, were more likely to 'always' accept OPV. Further, within households where mostly fathers were the key decision-makers regarding children's health (e.g. as opposed to family elders such as grandparents), they were more likely to be classified as 'always' accepting OPV.

Trust in health system, polio-related information sources, and local social norms regarding vaccination

Regarding trust in health system, the self-reported frequency of accepting OPV showed significant relationship ($p \leq 0.05$) with trust in both public health centers and private health centers for immunization. These findings indicate that those caregivers, who had a 'great deal' of trust in public and private health centers for immunization *and* 'not very much' trust in traditional and religious healers for general health services, were found more in favor of polio vaccine in past year within the province.

Perception about neighbors/community norms for accepting polio drops for their children

There was a strong association of frequency of self-reported OPV ($p \leq 0.05$) for caregivers who had more awareness about their neighbors' perceptions of OPV. More specifically, those caregivers who were more likely to 'always' accept OPV, felt that most of their neighbors accepted polio drops as well.

Trust in vaccinators

In Baluchistan, cross-tabulation of self-reported OPV was found statistically significant ($p \leq 0.05$) with caregivers' perceptions about the last visit of vaccinator(s), its importance, and preferences for female vaccinator(s), as well as with vaccinators' profile. That is, those caregivers who confirmed a vaccinator had visited them during last campaign, considered this visit 'very important' and showed a preference for female members of vaccination teams, were more likely to 'always' accept OPV. Further, those 'always' caregivers who showed a 'great deal' to 'somewhat' trust in polio vaccinator(s), were more likely to believe them 'very' to 'somewhat' knowledgeable and caring about their children.

Perception of/trust in polio campaigns

A significant association ($p \leq 0.05$) of self-reported acceptance of OPV was seen with caregivers' perception about the behavior of the polio vaccinator(s) as 'never' interrupting the caregivers' important activities, 'never' asking too personal questions, and 'every time' showed respect to the spouse' authority. Those caregivers who perceived the idea of giving polio drops 'very good', both at homes *and* other places (e.g., schools, parks, streets, festivals), were more likely to 'always' accept OPV. Caregivers who 'always' accepted polio drops in the past year who had a 'great deal' of trust in the organization believed responsible for polio vaccination, were more likely to believe the program' efforts 'about right' (e.g. as opposed to 'too much') for their communities in Baluchistan. However, it is important to note that for some caregivers, who were in favor OPV, also reported that the efforts of PEI program were 'too much' in Baluchistan.

What these results importantly highlight are the enabling factors which are more likely to lead a caregiver toward OPV acceptance. In so doing, the significant findings reported here highlight those areas of knowledge, attitudes, practices and experiences which the programme may address more specifically in an attempt to move caregivers from the 'sometimes' and 'never' categories, into 'always' accepting OPV.

Qualitative Findings –

7.1 ‘Always’, ‘Sometimes’ and ‘Never’ Caregivers in Quetta & Killa Abdullah

‘Always’ caregivers in **Quetta Block** displayed interest in answering interviewer’s questions but were still wary when speaking about their attitudes towards vaccination. ‘Sometimes’ caregivers, while more willing to talk than ‘never’ caregivers, tended to not answer specific questions directly, instead using portions of the time allotted for interview to discuss their anger at the government for not addressing their other basic needs, their family’s hesitations with vaccinating male children (often in regards to fears of OPV causing sterility), and the objections of most of their neighbours to vaccination (thereby influencing their own behaviours). In general, what we can say about ‘sometimes’ caregivers is that they are more likely to be against OPV, but during past campaigns have periodically been ‘convinced’ to vaccinate either due to the engagement of a local influencer or because they felt pressured to do so by PEI staff and felt they “had no other choice.” The majority of ‘never’ male caregivers’ approached for interview refused to participate in data collection. Most were angered over past practices of the PEI programme and feared further engagement in any activity with persons connected to the polio programme (See case study B1).

Case study B1: Anger over past coercive practices, “We are not terrorists or criminals”

“I initially sat down with two mothers in the house but one of the participant’s relatives, a sister-in-law who had one male child, was a chronic refusal and refused to provide demographic information (e.g. age, tribe, number of children). She told me to leave this job because Muslim woman shouldn’t work outside the home. She told me that women working outside the home are ‘na mahram’¹³ for them. I told her that if she did not want to answer a question then she did not have to and gave assurance that I will not create any problem for them. Still the participant lied about the number of children under five in the household...When I began to start the interview again, the mother called one of her male relatives in the house to come. Two men entered the room and asked me what was the reason for my interview? One of them told me, ‘Tell the one who sent you that we refused to talk. We didn’t allow our women to share information with anyone. Someone like you visited our home before and gathered all the information about our family. She took a picture of our home. An hour later, polio staff came along with the police and took our electricity. We are not terrorists or criminals so why would you want to have a jirga with us?’”

Caregivers in **Quetta Block** in the ‘never’ category, male and female, frequently indicated that vaccinators would have a hard time finding their children during campaigns because they would be in another location (e.g. their parents’ home, a home of a neighbour, outside the UC) when ‘the door knock’ came. Children themselves were also often involved in the process of hiding/moving their younger siblings during campaign visits so that they would be ‘safe’ from the vaccinator. Local PEI staff confirmed these responses.

7.2 Trust in Health Systems

‘Always’ female caregivers had mixed interpretations of trust in their local public health systems. Most referenced that they preferred private clinics and mentioned that most (not all) of their children had received their routine vaccinations at a local BHU. However, for most children’s illnesses they preferred

¹³ Whereby *pardah*, or concealment of the body through either physical separation or by mode of dressing (e.g. *hijab*), is obligatory for Muslim women.

to treat with home remedies. 'Always' and 'sometimes' male caregivers in **Quetta Block** were also mixed in terms of their trust, and use, of local public health systems with half reporting that their children were born at home ("our mother is a very well-trained lady in the delivery of babies at home") and half stating their children were born in a private hospital with routine immunizations given directly after birth. This being said, for those children born in a health facility who received their first routine immunization doses after birth, many caregivers indicated that their children had not received any vaccinations since their birth. Caregiver statements regarding why subsequent rounds of 'injections' were not received indicate a lack of importance placed on vaccination or a lack of understanding that follow-up visits were needed at regular intervals to ensure 'fully' vaccinated children (or both). As stated by one father from Quetta, "After birth at the hospital, all of my children were given immunization shots, but after that no routine immunization is done." While most fathers within either the 'always' or 'sometimes' category did not frequently express dissatisfaction with or rejection of their children receiving routine immunizations, several did state that routine immunization was not something which they considered important "because our children are healthy and don't need injections."

'Sometimes' and 'never' female caregivers were more vocal in their mistrust of public healthcare (including routine immunization services) and preferred private clinics (if they could afford them) and home remedies/local healers for treating child illnesses. Women's mistrust in routine immunization services were related to what they perceived to be an adverse reaction to the injection (e.g. fever and swelling at the injection site was mentioned on several occasions). Therefore, female caregivers frequently stated that they "will avoid vaccinating children in future." It is noticeable that among households with multiple children, it was most common for mothers to avoid vaccinating their last-born children indicating a potential worrying trend in decreasing immunization rates among multi-child households in high-risk locations (and among high-risk populations). This trend was also evident in both KP and Karachi and in all cases was related to caregivers referencing a prior adverse reaction of their children to vaccination as the reason why they did not want their later born children to be vaccinated. 'Never' male caregivers stated that all of their children were born at home, they most often relied on Quranic verses and amulets of protection for any issues affecting their children (health or spiritual), did not believe routine immunization were needed or important, and only in case of 'severe' illness would they approach a private health facility for services. The use of protection amulets for children among most study caregivers was very common, as was taking children to a locally known and respected *Molana* for reciting verses from the Holy Quran as a method of protection from harm, and treatment for illness.

In general, government health facilities were not preferred by any category of caregiver, male or female, because they were perceived as having poor quality facilities, and not having enough medicine or enough healthcare workers to receive patients in a timely manner ("public doctors are just wasting your time"). As noted above, most respondents within the 'sometimes' and 'never' categories mentioned placing importance on citing verses from the Quran, protection amulets and "local healing remedies" as a form of healing, especially for what was perceived as 'minor' childhood illnesses. Interestingly, the majority of men stated that it was their wives and mothers who believed more strongly in these methods of healing and protection ("Our females strongly believe on holy verses from Quran to heal our children"). The majority of caregivers, of both genders, in the 'sometimes' and 'never' categories, placed a high level of trust in local/traditional healers and birth attendants. Further, elder women in the family (e.g. grandmothers) would be the most likely member of the family to take a child to a traditional healer.

All mothers in **Quetta Block** said that 'male members' of their families (e.g. husbands, grandfathers), and sometimes elder women (e.g. grandmothers), would make decisions regarding where (if anywhere) children would be taken when ill and/or before children could be vaccinated.

7.3 Knowledge of Polio Virus

The majority of ‘always’ female caregivers in **Quetta Block** understood that infection with polio virus would lead to paralysis, could only be prevented through vaccination and primarily affected children under five years of age. ‘Always’ male caregivers were also likely to know that polio drops were meant to protect against polio virus which could cause lifelong paralysis in children. However, despite this knowledge, caregivers were quite mixed in their statements regarding whether they perceived OPV as the best method to prevent polio, and whether or not polio disease was really dangerous for children. ‘Sometimes’ and ‘never’ mothers and fathers would reference having heard the above noted information about polio, but that they did not necessarily believe these statements. For example, many caregivers would follow statements about their knowledge of polio with comments such as “but we have never witnessed a case of polio in our area” or “people in our community are saying something else” indicating that while caregivers had heard positive information about OPV as preventing illness, they did not necessarily believe this information to be true. Additionally, caregivers in the ‘sometimes’ and ‘never’ categories frequently confused polio virus with polio vaccine and were more likely to believe that children’s paralysis could be cured (“there are some well-known spiritual healers who can cure such diseases”). ‘Never’ caregivers of both genders often went further in their statements, stating that they did not even believe the virus itself was real (“What virus? There is no virus for us”).

7.4 Trust in Polio Vaccine

Distrust in OPV is common, especially among ‘sometimes’ and ‘never’ caregivers. What must be better understood – and addressed – is that high levels of distrust in the vaccine often leads to situations of specific groups of intra-household children being un- or under-immunized. Knowing which children fall into these groups will help to pinpoint which children within a large joint family household are most likely to have received fewer (or no) doses of both RI and OPV. In general, caregivers of both genders in **Quetta Block** were much more likely to be hesitant to vaccinate male children, children who had or recently experienced an illness, children who were perceived as ‘weaker’ than their siblings (for various reasons), and children who were younger than three years of age (See case study B2). As stated by one father in Quetta, “My mother asks the vaccinators all the time about why they come so frequently. She says her grandson is very weak and too little to be vaccinated.” The strongest determinant of whether mothers and fathers accepted OPV during any one campaign was the influence of an elder family member.

Case study B2: Hiding male children in Quetta, “they searched the rooms, but couldn’t find the boys”

“The family was a chronic refusal but they were open and welcoming to have a discussion with us – they just didn’t want that discussion to be about the polio programme. Several times when I asked the mother about her thoughts on OPV and the programme, she would tell me stories of her family and relatives that were not relevant to the discussion. And given the length of time I spent in her home and company, she was likely not providing me with accurate information about the number of children currently in her household. She told me she only had two daughters in the home, but there were several other male children that came in and out during our discussion. The mother said they belonged to her sister and did not live in the house...The polio staff later told me that they had reported this family for hiding male children in the house, only telling vaccinators about the girls being at home during campaign days. Staff, including the UCCO, visited their home several times and they searched the rooms, but couldn’t find the boys. The polio staff well know that there are more than just two small girls living in this family, but the family are very good at hiding the boys during campaign days.”

Similar to their descriptions of trust in health systems, ‘always’ female caregivers in **Quetta Block** had mixed interpretations of their trust in the polio vaccine – approximately half stating they thought OPV was safe and effective, while the other half did not believe the vaccine was safe but that they had to accept otherwise vaccinators would not leave them alone. Importantly, all women reported that they had members of their families who had strong reservations about the safety of the vaccine, primarily elder family members. ‘Always’ male caregivers were more likely than ‘always’ women – and every other category of caregivers of both genders – to state they thought OPV was safe and effective for children. Perhaps most importantly they self-described themselves as convincing their vaccine hesitant wives and family members to allow their children to be vaccinated. As stated by one father from Quetta, “Sometimes my wife and other females in our house talk against polio drops, but I say that if the government allowed it, then it will be good for our children.”

‘Sometimes’ and ‘never’ female and male caregivers in **Quetta Block** were unequivocal in their belief that OPV was neither safe nor effective – was, in fact, dangerous for children to receive – and that they only accepted (sometimes) because they were forced to (“if we refuse then it would create tensions for the whole family and surrounding houses as well”; “I only vaccinated my children because they force us”) or when someone in their home allowed the vaccinator to give drops to their children in their absence. Feeling forced to vaccinate their children was either indirect (e.g. police forces accompanying polio teams, vaccinators not leaving them alone until they accepted), or more direct forms of coercion (e.g. having their electric meters taken until they relented in their rejections). As stated by one mother from Quetta, “Our neighbours accept vaccination only because they are afraid of the police.” As stated by another female caregiver, “Once, a senior polio staff member visited our home and inquired about our concerns and took information about the number of children we have in the house. She sent polio staff along with the police and forced us for vaccination. After this incident, we never trust anyone.”

Caregiver objections to OPV centred around multiple beliefs and misconceptions to include: general belief that the vaccine caused children to become ill, to be infertile (later in life), to ‘enter early puberty’, ‘behave improperly’ and ‘act shameless’; belief that the vaccine was made with *haram* ingredients (e.g. pig urine); belief the vaccine was not kept properly cold (concerns with maintaining cold chain more likely to come from ‘always’ caregivers); and, in general, belief the vaccine is not to be trusted because it is a free commodity supplied by foreign governments/institutions who have an agenda against Muslims. As stated by one father from Quetta, “There are so many bad stories about polio and all of them are true. I haven’t seen any good come from these vaccinations so far.” Also, men frequently reported older women in their families (e.g. their mother, child’s grandmother) to be the most vocal opponent to vaccination. This opposition increased for male children.

The majority of ‘never’ male caregivers approached for interview refused to answer any questions regarding their trust in the polio vaccine, visibly displaying anger when asked. Local PEI staff also report that most ‘never’ caregivers have ‘sworn an oath’ to never let their children be vaccinated with OPV (See case study B3). It is also important to note that ‘never’ caregiver mistrust of OPV tends to extend to routine immunization services as well. The root of mistrust of vaccination – OPV or otherwise – among chronic religious refusals in this category of caregivers is the belief that trying to protect yourself from disease or illness is “un-Islamic” and a sign of a person who is “weak of faith” in not believing that “Allah will protect us.” This belief, paired with a person who has “sworn an oath to never allow vaccination” is an incredibly high barrier for local PEI staff to overcome in trying to vaccinate children living within such households.

Case study B3: Swearing an oath to never vaccinate in Quetta, “They believe it’s against their religion to break an oath”

“The ALSM and UCCO know this household very well. Before the pandemic started, there were four children under the age of five living together in the house. And it was a huge struggle for the communication staff and community level influencers to get these children vaccinated during a campaign. And then after they were successful during the last campaign before the pandemic started, the father in the house was really unhappy and he swore an oath that he would never let his children be vaccinated again. And polio staff said that this father went to great lengths to keep this oath. You see, the staff knew that in February 2020 he had a pregnant wife, but the father reported to UC staff that his child had died during delivery. The birth happened when the pandemic started and the campaigns stopped and staff were not as aware of what was happening in the communities at that time. But the child, a daughter, did not die. The father was just hiding the little girl from the polio staff. The existence of this child only came to be known eight months later when the father took her to the hospital because she was having paralysis in her legs. The little girl was diagnosed with polio...The UCCO told me that people here always deny vaccination due to the oath. He said refusal caregivers say that they have sworn to never vaccinate their children. They strongly believe that if they break their oath, then they will be in danger from Allah. They believe it’s against their religion to break an oath. This issue has created a lot of hurdles for the staff here.”

7.5 Trust in Polio-related Information Sources, and Local Social Norms

‘Always’ female caregivers in **Quetta Block** most frequently reported hearing positive information about polio from vaccinators and other healthcare workers, from TV and radio, and from their husbands. The most likely sources of negative information were fathers-in-law (and elder family members in general) and their neighbours and members of their general community. Female caregivers in the ‘sometimes’ and ‘never’ categories were more likely to state PEI staff and vaccinators as being their *only* source of positive information about vaccination, and in general, described a larger pool of influencers around them who held negative perceptions about OPV (e.g. family members, madrassa teachers, religious leaders, general female members of their community who they interacted with in small group settings, and social media). Fathers in **Quetta Block**, across all categories of respondents, stated that vaccinators and PEI staff members were the most vocal proponents of vaccination in their areas. Television was also mentioned as a positive source of information regarding polio-related information.

Women across all categories of respondents reported their husbands (and, in general, other members of their family) as being their *most trusted* sources of information. That is, where they had heard conflicting or contradictory messages regarding OPV and the polio programme, women reported that their family members, especially husbands, were their definitive source of ‘correct’ information. As stated by one mother in Quetta, “It is difficult to decide between truth and lies...I trust my family members for information.” In addition to being trusted sources of information, men were also reported by women as being the most knowledgeable “about these things because they spend most of the time outside.”

General members of their communities, their neighbours, family members (especially elders) and in particular political and religious leaders were described as those who were most opposed to vaccination (See case study B4). As stated by one male caregiver discussing the confusing mixed-messages people receive about OPV from PEI staff and local religious figures, “Mostly, people in Quetta believe what our local Masjid Imam or Molana say. Which have created a mess in the society among educated people.” Another father elaborated on these comments, stating, “Mostly people in our communities believe on

their religious leaders and if they say its *haram* then they believe it. And if they say its' a Western agenda then community people will spread that message very fast." Still another father stated that even if religious figures were not as openly vocal in their opposition to vaccination as they were in the past, residents still knew they were against children receiving OPV due to their one-on-one communications with community members ("Due to the DCs warnings, now those religious people don't refuse openly, but they still talk to individuals that polio drops are *haram* and not accepted in our religion"). Referencing the important influence of local religious leaders, especially for influencing elderly community members, one father stated, "Our local Masjid Imam always denied these polio vaccines and openly discussed during campaigns that they are destroying our youth. Even if we don't believe him, our parents surely do." Anti-polio videos spread on social media were additionally mentioned by a minority of caregivers (mostly women) as cause for their vaccine hesitancy/refusal ("We saw a video that two children died after vaccination. People here are very afraid of these vaccines").

Case study B4: Powerful negative influence of refusing community members, "this father...sometimes refuses vaccination because he does not want to cause problems with his neighbours"

"When we started our interview, the respondent was at first responsive but a little hesitant as to what to say about polio. Later in the interview, a neighbour came over and was very angry. The neighbour said to the respondent, 'Why are you talking to these people and sharing your information?' The respondent was distracted by his neighbour and so he stopped the interview and excused himself. The neighbour was then very rude and disgraced the ALSM who was waiting outside for me...The ALSM later told me that the respondent vaccinated his children sometimes, but due to these neighbours and other chronic refusals, this father also sometimes refuses vaccination because he does not want to cause problems with his neighbours. The influence of chronic religious refusals with strong misconceptions against OPV is very strong in this area, which sometimes causes the whole neighbourhood to refuse. A few of the families on this street vaccinate, but the majority deny polio drops by considering it to be un-Islamic."

7.6 Trust in Vaccinators

In terms of their trust in PEI vaccinators, 'always' and 'sometimes' caregivers in **Quetta Block** were very mixed in their opinions. There was no consensus from this category of women with regards to trust. Specifically, opinions were mixed in terms of: familiarity with their vaccinator who was a 'local' and not knowing who their vaccinator was 'because they change during every campaign'; trusting the information provided by vaccinators vs. being suspicious of their motives since police forces needed to accompany them; belief that vaccinators were working for their communities vs. working to 'report' on families who refused vaccination; and belief vaccinators were working for children's health or just working to earn money. This being said, all women referenced that they were glad other women were a part of vaccination teams as this meant that they could speak and interact with one another.

'Sometimes' male caregivers were mixed in their opinions of vaccinators with approximately half stating that they were local and did their jobs well (even if they could not convince a family to vaccinate), while the other half expressed extreme distrust of vaccinators whom they believed were only "working for their salary" and had "reported on" them to the authorities in order to force them to vaccinate their children. Men in the 'sometimes' category of respondents, like women, were unlikely to declare any issues with women being employed as vaccinators for the PEI programme ("Female vaccinators are very important because males have to stay outside the home").

Women and men in the ‘never’ category were more openly negative in their opinions of vaccinators, stating that they did not know them, did not believe they were working for children’s health (only for their salaries), were not knowledgeable about the polio vaccine (e.g. what its ingredients were), and, in general, only trusted members of their own families when it came to making decisions regarding vaccination. One mother from Quetta stated her unhappiness with her vaccinator because she refused to make a false report that children in the house had been vaccinated. As stated by another female caregiver from Quetta, “We don’t have problems with the current vaccinator, but the one working before her bothered us a lot. She was stubborn and reported our family as a refusal” (See case study B5).

Case study B5: Vaccination is for who?, “They do not see it as a parent doing something for their child”

“After leaving a refusal house that we were not able to convince, the ALSM received a phone call from a caregiver that yesterday he was able to successfully convince to vaccinate. The caregiver was very angry with the ALSM, saying that after being vaccinated, his children were ‘very sick’ and the father was now taking them to the health centre. The ALSM took such a long time on the phone talking with that caregiver. After he was done talking, the ALSM laughed in a sarcastic kind of way and shook his head sadly. He said the caregiver wanted him to bear the cost of his children’s treatment because their illness was his fault because he had convinced the father to accept the polio drops – and because he had told the father that nothing bad will happen to your children if they are vaccinated. The ALSM said, ‘We live in such a world here where these people won’t let you be in peace or ease. If Killa Abdullah residents do somehow let you vaccinate their children, then they treat you as if they have somehow granted you a favour so that you can get your salary. They do not see it as a parent doing something for their child so that they will be safe.”

All ‘never’ caregivers described feeling forced or otherwise coerced to accept OPV and they blamed vaccinators (and PEI staff in general) for informing local authorities of their refusal (“I don’t allow vaccinators in my street and if I get the chance then I will force them to leave this whole village and never knock on another door. They have disgraced my family twice by bringing police her and vaccinating my grandchildren by force”). Various methods of rejecting polio staff (some of them violent) were described by caregivers and these sentiments were further corroborated by the DC of Killa Abdullah during an evening meeting conducted during the April 2021 NID (See case study B6).

Case study B6: An ALSM out of options, “they blame us for bringing them this vaccine”

“The ALSM knocked on a small door of a house in Chaman, Killa Abdullah where an older woman came behind the door and started talking. The ALSM told her that I am your neighbour and am like your son so please kindly take out your grandchildren for vaccination. She replied that all of her grandchildren had gone to their other grandfather’s house in another village and she didn’t know when they would come back home. There were three children under the age of five recorded as living in this house. We left the house and asked a little boy in the street if he had seen the children in the house? The little boy said the children were available in the home, and if the lady in the house said that they were not there, then she was lying. The ALSM went back and again requested the grandmother to bring her children out for vaccination, but he could not enter her house and he could not convince her to bring the children out. So, we had to leave...The ALSM looked at me and said, ‘Now what should we do with this family? I know there are children in that house that need to be vaccinated, but what can I do? You cannot fight these people, nor force them. If you use force then they will notice you and will later harm you because they blame us for bringing them this vaccine and it’s very easy to take revenge on someone here and then cross the border and get away from the police.”

Given such sentiments as these – and has been reported elsewhere in this report from KP and Karachi – many caregivers mistrust, or are angered by vaccinators, who refuse to engage in subversive behaviour or report false information. In essence, many caregivers are angered just through the course of PEI staff doing the jobs which are required of them. And above all, it was mistrust of the oral polio vaccine itself that was the largest cause of concern and suspicion among caregivers in **Quetta Block**. Vaccinators were primarily mistrusted either because they were the delivery mechanism for a mistrusted product and/or because of a prior past incident in which families felt vaccinators had ‘informed’ on them to the authorities thereby resulting in, for example, the loss of their electric meter. As stated by one female caregiver from Quetta, “I trust the vaccinator because she lives in our area, but I cannot trust the vaccine...I cannot have any discussions with the vaccinator about the vaccine because she only talks in its favour.”

7.7 Perception of/Trust in Polio Campaigns

‘Always’ caregivers in **Quetta Block**, while accepting of OPV for their children, still believed that campaigns were too frequent and stated that the government needed to show the same kind of support and dedication to other health problems, as they do for polio eradication. A common refrain from fathers, of all categories, was that the operation of the campaigns “in coming again and again for just these two drops” instead of also investing in other basic health needs created “doubt in people’s minds about why is the government only focusing on polio?” (See case study B7).

Case study B7: Demand-based refusal in Killa Abdullah, “Please don’t knock on the door again”

“One of the houses we visited today is a demand-based refusal caregiver. Polio staff said that he did not misbehave with the teams, but will not vaccinate his children until he gets his electricity back. But still the refusal team has to try. When we knocked on his door he came out and immediately said, ‘I am sorry but please don’t knock on the door again until WAPDA starts our electricity.’ This family is living in a joint family system and they have at least eight young children in the household who should be vaccinated...Polio staff know well what the problem is, it’s just they don’t know what they can do about it. The main problem with this household is that neighbouring houses are using electricity illegally through hidden wires and so are not paying their electricity bills. Now this demanding caregiver has objected, saying that he was regularly submitting his electricity bills, but due to the problem from the other houses, WADPA cut-off the whole transformer connection to the neighbourhood instead of going after the offenders directly by cutting off individual electricity meters. So, this caregiver refused to vaccinate any children in his family until they get their electricity back...The refusal team could do nothing to convince this father and we left.”

Women and men in the ‘sometimes’ and ‘never’ categories in **Quetta Block** were much more likely to reference their unhappiness with the frequency of campaigns, to state their belief that ‘two drops, every time’ was not important, and to express feelings of frustration that they were continually being forced to accept something that they did not want. As stated by one mother from Quetta, “The visits are too many. Even if I don’t want to vaccinate my child, they keep on insisting us. I’m fed up from all these visits during campaigns.” ‘As stated by another father from Quetta, “To be honest, I hate when these polio teams come again and again. We are fed up from their multiple visits...everyone in the community sees them with a very suspicious and doubtful mind.” Caregivers in these two categories also believed that while the government was behind the door-to-door vaccination programme, they did not trust them because they were only focused on polio rather than on their other health needs. The latter comment was most often made in reference to confusion over why polio drops were free and easily available whereas their public

health centres frequently ran out of medicine and “never provide us anything for free.” As stated by one father from Quetta, “Aren’t our local issues more important than polio drops? You can try to remove the virus from children bodies, but the roots of polio virus are still here in our communities. How then will this virus be fully eradicated?” In general, and as noted in previous sections above, caregivers who wanted to avoid vaccinating their children during campaigns deployed various strategies to include: hiding children, moving children out of their household and into another location (if they were aware vaccinators were coming), outright refusing to answer the door when vaccinators knocked, and fake finger marking (See case study B8).

Case study B8: Fake finger marking in Chaman, “the family had marked the finger so badly”

“We visited a house today – Day 2 of the campaign – where a younger uncle of children in the household came out of the house saying that our children have already received vaccination and to leave them alone. But there was “R-3” [3 refusals, ‘i.e. three children in household recorded as unvaccinated on the first day of the campaign’] written in chalk on their door so the ALSM insisted that the uncle should take the children out so that he could have a look at their fingers. A little male child, who was barely old enough to walk, was taken out of the house. The ALSM checked his finger and could clearly see that this was a fake finger mark because after rubbing the finger, the mark went off easily. The family had marked the finger so badly that anyone who was trained could easily identify that it was a fake marking. Another young male caregiver, the father, then came out of the house and started talking in a rude manner to the polio staff. The ALSM finally managed to convince the father that the young boy should be vaccinated and he did so on the spot. But the family was not happy about allowing vaccination, and they refused to take the other two children in the house out to be vaccinated. Both men then went inside and would not come out again.”



Fake finger marking of young male child (Chaman, Killa Abdullah). Photo by Luqman Hakeem.

7.8 Recommendations for Improvement

‘Always’ female caregivers in **Quetta Block** offered no recommendations to the PEI programme for improvement. ‘Sometimes’ and ‘never’ female caregivers, if answering this question, stated simply that

the “government should give attention to other health services” and “no one should be forced for vaccination.” Most women, across all categories of respondents, either did not know how to answer this question, or refused to answer this question. Male caregivers in **Quetta Block** were considerably more likely than women to give recommendations for the improvement of the polio programme. ‘Always’ and ‘sometimes’ male caregiver recommendations centred upon three common themes: 1) the government should give attention to other health services (“Local poor communities should be properly facilitated with basic health needs and other necessities in order to get the poor people’s attention for accepting polio drops”), 2) caregivers should not be forced/coerced into accepting vaccines, and 3) the frequency of campaigns should be reduced. Requests from Quetta residents to focus on ‘other basic needs’ most often centred upon access to clean, piped water and other WASH-related concerns. ‘Sometimes’ males additionally stated that the frequency of campaigns should be reduced (“Vaccinating children under five each month have created a lot of doubts in people minds”). The most frequent recommendation given regarding campaign frequency was to have a maximum of two per year (“If these campaigns were only happening once, maybe twice a year, then no one would have so much concerns about its safety”).

‘Never’ male caregivers in Quetta Block had few recommendations to offer the programme other than to stop all campaigns, provide for their other basic needs, and ‘leave families alone’ and stop coercing them to accept vaccination (“All of the funds that are allocated to polio should be transferred to meet our basic needs which are more important than two drops”; “If we live or die it’s our own life, but so far we are safe without these dirty drops and other dirty vaccines”) (See case study B9). In light of these negative attitudes, as evidenced by the majority of recommendations offered, caregivers used many strategies to avoid vaccination to include: hiding children, making sure children would be elsewhere (i.e. ‘not available’) when vaccinators would visit, fake finger marking, refusing to open their doors to vaccinators, etc (as described above). See Annex 8 for an overview of relevant caregiver demographic information (e.g. age, gender, occupation).

Case study B9: An unconvincing argument, “we are always forced to accept”

“We were having a conversation with two brothers, both were chronic refusals with PMCs. One brother was a Molana. The ALSM organized to have a jirga between the brothers and their family, an influential person in the area who supported vaccination, and polio staff. The brothers had many questions – Are these vaccines safe or not? Are these vaccines halal or haram? Are these vaccines effective or not? Are these vaccines produced by countries that want to harm Muslims? The influential person responded, ‘Don’t you drink Pepsi, Coke, use Lux soap, take Nestle juices? All of these are products of the Western world and some of them are Jewish products and will you not happily pay for and use these products?’ The Molana replied that it was his choice whether or not to use those products, but the vaccines are forced on people. ‘That’s what I don’t like’ he said, ‘we are always forced to accept.’

In Summary

Caregivers' & Children's Profile (Index Child) & Socio-Demographic Characteristics

Quantitative –

- More than half of the index children were: male; between the ages of 1 to 3 years; and born at a public health facility. One-fourth of index children were born either at home or a private health centre.
- More than two-third of caregivers responded that their children received their first routine immunization immediately after birth. Amongst these immunized children, the majority had received additional dosages after their first immunization.
- More than one-fifth of caregivers in both districts revealed that their children did not receive routine immunization immediately after birth. In Quetta, 37.5% of these caregivers stated that their child received this first dose within 7-12 months, whereas in Killa Abdullah, 50% of these caregivers stated that their child either did not receive immunization at all.
- More than one-third of caregivers were between the age group of 21-30 years while more than one-fourth of caregivers were between 31-40 years. The majority of the caregivers in were also married and were the parents of the index child.
- Nearly all the caregivers were living in the same province, district and UC, where index child was born.
- Around 40% of caregivers were illiterate with a higher percentage of illiteracy amongst caregivers in Killa Abdullah. Nearly three-fourths of interviewed caregivers in Quetta had attained at least some form of education. Less than 10% had received an education at the master's level or above.
- The highest proportion of caregivers were Pashto-speaking and belonged to Pashtun community. Further, nearly all caregivers were Sunni Muslims.
- Nearly 18% of caregivers at the provincial-level did not have access to phones. District-level variations exist with double the number of respondents in Quetta having access to a phone (87.6%) than in Killa Abdullah (43.8%).
- Nearly all female caregivers were housewives, whereas male caregivers were running small businesses or were students/apprentices, daily wagers or labourers. In Killa Abdullah, more than 30% of caregivers were not working outside the home. Male caregivers/fathers were the primary economic earners for the family and had autonomy to make decisions. In Killa Abdullah, paternal grandmothers were also a frequently mentioned decision-maker for child health related issues.
- Province-wise for Baluchistan, 71.7% of caregivers stated that they 'always' accepted polio drops. District-wise analysis of this figure reveals an almost double percentage of 'always' accept caregivers in Quetta (84.8%) than in Killa Abdullah (42.8%).
- Nearly 14% of caregivers in Killa Abdullah expressed that they 'never' accepted OPV in the last year.

Qualitative -

- Most caregiver respondents were: aged between 21-30 years or 31-40 years; married; and were the parents of the index child.
- The majority of caregivers were illiterate and had no ability to either read or write. Male caregivers/fathers were the primary economic earners for the family (primarily as unskilled labourers) and had autonomy to make decisions. All female caregivers interviewed (except 1) were housewives.
- The highest proportion of caregivers were Pashto-speaking and belonged to Pashtun community. All caregivers were Sunni Muslims.
- All children were not viewed equally when it comes to a family's hesitations to vaccinate. Families in Quetta Block who are vaccine hesitant (in general) had demonstrably higher levels of vaccine

hesitancy when it comes to male children, children who are younger (e.g. under 2-3 years of age), and children who are ill during campaigns and/or have a history of illness (and are therefore perceived by their parents as 'weaker' than their siblings). This can lead to specific situations where some children, within the same household, are un- or under-immunized in comparison to their siblings. It is therefore important to understand which children fall into these intra-household groups (and why).

- N=9 caregivers 'always', n=12 'sometimes' and n=12 'never' accepted polio drops.

Trust in Health System

- Caregiver survey respondents in Quetta indicated a higher level of trust in public and private health centres than in Killa Abdullah. Trust deficits were more pronounced for public health facilities, both for general health services and routine immunization services.
- Approximately half of caregivers at the provincial-level had a 'great deal of trust' in spiritual/religious healers for general health services. Caregivers in Killa Abdullah were more likely to have a 'great deal of trust' in local traditional healers and hakeems for these services in contrast to Quetta.
- More home births and less utilization of private health facilities were found in Killa Abdullah in comparison to Quetta. Births at home were mostly assisted by TBAs and paternal grandmothers.
- As indicated by the qualitative component of the study, high levels of mistrust in public healthcare institutions among Quetta Block residents results (among other things) in more children being born at home thus missing their first RI doses, and lack of positive connections to local healthcare structures such as EPI. In general, public health facilities were not preferred by any category of caregiver included in the qualitative study, male or female. Public health facilities were perceived as having poor quality facilities, and not having enough medicine or enough (properly trained) healthcare workers to receive patients in a timely manner. Most respondents within the 'sometimes' and 'never' categories instead mentioned placing importance on citing holy verses from the Quran, protection amulets and "local healing remedies" for addressing childhood illnesses.
- A key finding of the qualitative study was that among households with multiple children, mothers tended to avoid routine immunization services for their last-born children more so than their older children – a potential worrying trend in decreasing immunization rates among primarily Pashtun multi-child households. This finding is closely related to high levels of mistrust of public health services, with caregivers specifically referencing a prior adverse reaction of their children to vaccination (e.g. fever) as the reason why they did not want their later born children to be vaccinated. Caregivers often associated these reactions with poorly trained EPI technicians and/or health facilities that would not prescribe them basic medicines to treat their child's problems arising due to vaccination (e.g. providing free fever reducing medication).
- The majority of female qualitative study participants faced barriers in seeking care in that they needed both permission and financial resources to travel to local health facilities. Many 'sometimes' and 'never' female caregivers gave birth at home and their children's first RI dose was delayed as a result. This, paired with the belief by many interviewed caregivers in Quetta Block that children should be "older" to receive vaccination when they were "strong enough" to withstand its side effects, often led to significant delays (or avoidance altogether) of routine immunization.

Knowledge of Polio Virus and Vaccine

- All caregivers were aware of polio disease. However, the percentage of survey respondents 'not at all concerned' about their children contracting polio was approximately one-fourth. Nearly 15% of caregiver survey respondents, in both districts, believed polio to be 'not at all serious'.

- Around two-thirds of caregivers had knowledge about polio symptoms. Amongst those caregivers who mentioned paralysis as a symptom of polio, the majority reported that paralysis was not curable. (15% of respondents in Killa Abdullah stated they 'did not know' if paralysis was curable).
- More than one-third of respondents, both at provincial and district-levels, did not know when children should receive their first routine immunization dose. One-fourth of caregivers in Killa Abdullah opined that children should never be vaccinated.
- The majority of 'sometimes' and 'never' qualitative study participants, while having heard positive information from PEI staff that OPV was meant to prevent polio, frequently did not believe this to be true. For example, many caregivers would follow statements about their awareness of polio with comments such as "but we have never witnessed a case of polio in our area" or "people in our community are saying something else." Caregivers within these categories often questioned whether the virus even existed and were less likely to believe paralysis – *if* it occurred – was for a lifetime.

Trust in Polio Vaccine

- Only around one-third of caregiver survey respondents in Quetta Block showed trust in polio vaccine and informed that they felt drops were 'very effective' for polio prevention and 'very safe' for children to receive. Significant variation was seen amongst districts, where only 20.5% of caregivers in Killa Abdullah (in comparison with 44.3% in Quetta) affirmed their belief in the effectiveness of polio drops.
- Nearly one-third of caregivers in Killa Abdulla believed that polio drops were neither safe nor effective.
- The qualitative component of the study indicates that family elders (male and female) and religious leaders are among the most hesitant to vaccinate populations in Quetta Block. As stated by one father in Quetta, "We always argue with the polio teams that convince our Imams and Molanas first because even if we agree, and they don't and they have already convinced our grandparents that it is bad, then we cannot accept." Further, due to high-levels of religious resistance to OPV in Quetta Block, many caregivers have indicated that they have 'swore an oath' before God to never vaccinate their children. This oath is considered binding and is an incredibly high barrier for local PEI staff to overcome in trying to vaccinate children living within such households. Within our study findings, we note that caregivers often reference swearing this oath *after* PEI staff have managed to convince a member of their household to allow children to be vaccinated. That is, caregiver anger over having bowed 'to the pressure' to vaccinate, can lead to oath swearing with the intended impact being that all members of the family are aware of the oath and understand that children in the household should never be vaccinated again under any circumstances. Finally, the root of mistrust of vaccination – polio or otherwise – among many chronic religious refusals in the region relates to the belief that trying to protect yourself from disease or illness is "un-Islamic" and a sign of a person who is "weak of faith."
- 'Sometimes' and 'never' caregiver mistrust and objections to OPV centred around multiple beliefs and misconceptions which have previously been well-documented by the programme to include: general belief that the vaccine causes children to become ill, to be infertile (later in life), and/or to 'enter early puberty', 'behave improperly' and 'act shameless'; belief that the vaccine was made with *haram* ingredients (e.g. pig urine); belief the vaccine was not kept cold properly (i.e. cold chain concerns); and, in general, belief the vaccine is not to be trusted because it is a free commodity supplied by foreign governments/institutions who are against Muslims. These concerns indicate both internal (ingredients) and external (cold chain) caregiver concerns with regards to the safety and efficacy of OPV.

Trust in Polio-related Information Sources, and Local Social Norms

- Regarding caregivers' experience of negative information about polio drops on social media (e.g., heard, seen or read), most of caregivers in Quetta Block informed that they did not have access to

social media. Nonetheless, those who used social media reported that they had heard, read or seen negative information about polio posted primarily on Facebook, followed by WhatsApp (very few mentioned Twitter).

- The majority of the caregivers at the provincial-level stated that they had a 'great deal of trust' in family, friends, Imams, Lady Health Workers, Molanas, local facility level health workers, community leaders, TBAs and neighbors for information about polio drops in Quetta Block. Here, it is important to note that a significant minority of caregivers in Killa Abdullah stated that they did not trust polio vaccinators, LHWs, community leaders, local health facilities or traditional healers, TBAs, and maulanas for information regarding polio. Qualitative study findings are strongly indicative that among 'chronic' vaccine refusers, any person who is seen to promote polio drops is viewed negatively and with suspicion (e.g. 'polio Imam').
- Although more than two-third of caregiver survey respondents at the provincial-level reported that polio drops can protect a child against polio, more than half of caregivers in Killa Abdullah informed that they had not heard anything positive about polio in past year.
- Similarly, regarding access to negative information about polio, more than half of caregivers informed they had heard, read or seen that polio drops were not halal, and could make girls and boys sterile/infertile. Other notable negative information heard included that polio drops are made with urine or blood, and that they are likely to *give* a child polio (rumours were more prominent in Quetta).
- Upon probing about belief of negative information about polio, a significant minority of caregivers (more so in Killa Abdullah) believed that polio drops could give a child side effects (e.g. fever), were not halal, were given too frequently, and caused sterility/infertility.
- Nearly one-fourth of the caregivers in Quetta and 12% in Killa Abdullah refused to respond to further queries regarding polio drops being haram and/or made with haram ingredients.
- Around one-third of caregivers in Quetta Block believed that most of their neighbours accepted polio drops for their children every single time polio vaccinators visited their home. Around one-fifth of survey respondents stated they were unaware, did not know or would not say what the actions of their neighbours were. Some of the recorded reasons caregivers stated which might hinder their neighbours accepting polio drops every time they were offered included: religious misconceptions (e.g. vaccine is not halal), fear of side effects, and belief that polio drops are not valuable/useful/effective. These findings were more prominent among communities in Killa Abdullah.
- Nearly two-third of caregivers in Quetta Block felt that some of their neighbours were against giving children polio drops. One-third believed that most their neighbours were against polio drops.

Trust in Vaccinators

- Nearly all caregivers in Quetta Block (from both qualitative and quantitative components of the study) stated that polio vaccinators visited their house during the last campaign. However more than two-third of them reported that they did not witness/see or talk to the vaccinator. This finding is indicative both of gender differentials in terms of who does (and does not) interact with vaccinators in any given household, and of some households' refusal to answer the door (or acknowledge that they are at home) when a vaccinator 'knocks.'
- Around 65.5% of caregiver survey respondents at the provincial-level, reported that two vaccinators (mainly adult females with less percentage reported for adult males) visited their house during the last campaign. A significant minority of caregivers (more than one-third of respondents in Killa Abdullah) believed that the visit of polio vaccinators was 'not at all' important.
- More than 85% of caregivers at the provincial-level stated their preference that female vaccinators be included in polio vaccination teams. However, 10% of Killa Abdullah caregivers were against the notion of women belonging to vaccination teams.

- Regarding their reasons for accepting polio drops from vaccinators (if they accepted), most caregivers reported they did so: to protect their child from polio, because vaccination was a social norm (i.e. ‘our family always gives drops’, to end polio in their village/neighbourhood and in Pakistan, and because if they did not accept the vaccinator would not leave them alone until they consented).
- Nearly half of caregivers in Baluchistan province informed that they have great deal or somewhat trust on polio vaccinators and that they found them very and somewhat knowledgeable about child health and caring towards children. Nearly one-fourth of caregivers in Killa Abdullah showed their mistrust.
- Among qualitative study participants, there was no consensus from caregivers with regards to trust in their vaccinator, however ‘sometimes’ and ‘never’ caregivers tended to have higher levels of mistrust. Opinions were most mixed in terms of trusting the information provided by their vaccinators vs. being suspicious of their motives (e.g. since police forces needed to accompany them), and belief that vaccinators were working for their communities vs. belief they were working to ‘report’ on families (e.g. those families who refused vaccination during past campaigns). Within these divergent opinions we can clearly see that trust is cumulative, and past negative experiences directly related to contemporary caregiver grievances and mistrust in their vaccinators (and the polio programme more broadly). And above all, it was mistrust of the oral polio vaccine itself that was the largest cause of concern and suspicion among caregivers. If vaccinators were viewed with suspicion it was either because they were the delivery mechanism for a mistrusted product and/or because of a prior past incident in which families felt vaccinators had informed on them to the authorities.

Perception of/Trust in Polio Campaigns

- Approximately half of caregivers in Quetta Block believed that vaccinators had visited their homes ‘too many times’ to offer polio drops. Thirty-eight percent of caregivers reported ‘no concerns’ with the frequency of campaigns.
- Upon probing regarding caregivers’ concerns on vaccinators’ visiting their homes ‘too many times’, caregivers stated they: were tired of the visits (this finding was particularly true in Quetta), believed that polio drops were not valuable/useful/effective, believed that children would become ill if receiving too many drops (this finding was particularly true in Killa Abdullah), or simply stated that their child had received ‘enough drops already’.
- At the provincial-level, a significant number of caregivers stated that vaccinator visits during campaigns had ‘never’ interrupted important activities. However, in Killa Abdullah, nearly 30% of respondents opinioned that vaccinators ‘never’ showed respect to their decision-making authority. A significant number of caregivers in Killa Abdullah also refused to respond to specific questions regarding campaigns and/or vaccinator behaviour during campaigns.
- When probed further about their reasons for not accepting polio drops, nearly one-third of ‘sometimes’ and ‘never’ caregiver survey respondents mentioned they did not believe polio drops were effective, believed that drops would give their child other side effects, and/or believed their child had already had enough drops. Nearly 20% of caregivers in Killa Abdullah refused to respond to this question.
- Approximately one-third of caregivers at the provincial-level believed that giving polio drops in any location (homes, schools, parks, streets, festivals, etc.) was a ‘very bad idea.’ This finding was particularly true in Killa Abdullah.
- Less than one-third of caregivers at the provincial-level stated a ‘great deal of trust’ in international organisations, the national government and local health organisations. District variations were evident with caregivers indicating various levels of mistrust in specific organisations to include: local health organizations, national, provincial and local governments. Similarly, slightly less than one-third

of caregivers felt that the PEI programme's efforts to bring polio drops to children in their neighbourhood were 'too much'.

- Nearly 70% caregivers at the provincial-level reported an intention to give polio drops to children every time they are offered (before their child reaches their 5th birthday). However, almost half of caregivers in Killa Abdullah were not comfortable accepting polio drops for their children every time they were offered before their child reached their 5th birthday.
- Almost 72% of caregivers at the provincial-level stated their preference to receive polio drops at home, however around one-third of caregivers in Killa Abdullah either didn't know or refused to respond to place preference questions. Further, in Killa Abdullah, approximately half of caregivers didn't want vaccinator's to visit their home.
- Among qualitative study participants, anger over past coercive practices was a key feature of sampled respondents – e.g. families who have had their electric meters taken from them during past campaigns when refusing vaccination – and is a leading reason why they continued to have anger and mistrust towards the polio programme. More indirect forms of "feeling forced" to vaccinate their children were also commonly reported by caregivers, such as feeling threatened by the presence of police forces accompanying polio teams, and vaccinators not leaving them alone until they accepted (e.g. "they just keep knocking").
- Hiding children from vaccinators – by moving them to other households or locations during campaigns – was a commonly reported occurrence among 'sometimes' and 'never' qualitative study participants. Older siblings, in addition to adult caregivers, were also involved in moving children away from vaccinators so that they would be 'safe' from vaccination. Outright refusing to answer the door when vaccinators knocked, and fake finger marking, were also strategies utilized by caregivers to avoid vaccination during campaigns.

Recommendations for Improvement

- Recommendations for improving the delivery of OPV to children, as provided by survey respondents at the provincial-level, included not forcing or coercing families to vaccinate, raising awareness in local languages, giving attention to other needed health services, ensuring vaccinators interact respectfully and politely with caregivers, and engaging local female vaccinators. District-level variations were evident with 35.7% of caregivers in Killa Abdullah responding 'don't know' and 10% refusing to provide any recommendations at all.
- All categories and genders of caregivers sampled for the qualitative study referenced doubt in the PEI programme in terms of overprovision of one *free* service (too frequent OPV campaigns), paired with lack of investment in other needed basic health services. Here, it is important to note that mistrust of the polio programme and demand-based refusals are interlinked. As summarized by one father from Quetta, the operation of the campaigns "in coming again and again for just these two drops" instead of also addressing other basic health needs creates "doubt in people's minds about why is the government only focusing on polio?" Caregivers most frequently mentioned their lack of trust in public health centres due to their poor quality, lack of qualified healthcare workers, and lack of medicine. This situation, which has been reported elsewhere in this report for other provinces, leads to scenarios in which caregivers demand their other needs be met, prior to accepting OPV for their children. This also relates to what one ALSM from Quetta Block meant when he said, "If Killa Abdullah residents do somehow let you vaccinate their children, then they treat you as if they have somehow granted you a favour so that you can get your salary. They do not see it as a parent doing something for their child so that they will be safe from polio." OPV is not a service which is in demand, however, other health services are. Caregivers therefore use OPV refusal to gain whatever leverage they can for gaining access to needed services.



پاکستان
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PAKISTAN
POLIO
ERADICATION
PROGRAMME

Missed Children



CONTECH INTERNATIONAL

8. Missed Children – Health Seeking Behaviour of High Risk Populations

“Our major issue is the team reaches the household, but are unable to vaccinate all children.”
~Surveillance team member, NEOC (May 2021)

“Not available children may be masking some ‘hidden refusals.’ While NA are reducing nationwide, in some areas in Punjab (Lahore, Rawalpindi) and Balochistan (Quetta Block, Killa Abdullah) the number of NAs are growing.”
~UNICEF Communications Presentation: ‘What Does Missed Children Data Tell?’ (June 2021)

8.1 Background

As noted in the province-by-province sections above, trust in health systems (both formal and informal) was a key topic upon which both qualitative and quantitative data collection focused. In specific relation to health-seeking behaviours of caregivers for their children, one aspect of care in particular – amulets (or talismans) of protection¹⁴ provided to children, often *as a preventative measure of protecting them from future harm* – were highlighted from all provinces. This action by caregivers stands out as an important finding not only because it is a strong indicator of who caregivers trust for health-related advice and assistance, but also because it is an analogous concept to understanding the purpose of routinely immunizing children *as a preventative measure of protecting them from future harm*. And this analogous concept has potential important implications for changes in behaviour of caregivers away from a reactive stance towards disease and illness, towards a more proactive and engaged role in preventative care not only for accepting OPV, but also in terms of routine immunizations. For example, analysis produced by the Gates Foundation in 2020 concluded that, among reported acute flaccid paralysis (AFP) cases from 2017-2020, cases among Pashtun children were more prevalent (62% of total reported cases) and were younger than non-Pashtun children (by an average of 18 months), and Pashtun child AFP cases also had fewer total RI doses at any given age than non-Pashtun children.¹⁵

8.2 Methods

In order to probe more deeply into caregiver beliefs regarding how and who within the informal care system they most trusted for child-related advice and assistance, and why certain children within the same household were more likely to be missed, in April 2021 three additional components were added to the KAP+E research design: **1)** IDIs with amulet providers and receiving caregivers, and Islamic scholars; **2)** review of case investigation files from 2017-2021 for evidence of HSBs; and **3)** a pilot study using secondary data obtained from Peshawar from the Missed Children Tracking Database and CBV Registration Books.

¹⁴ An amulet or talisman given to children in Pakistan is most often an ordinary object such as a piece of string, a bead, or a piece of leather or cloth wrapped around a piece of paper with a Qur’anic verse (re: calling on the divine to access healing power/protection). This object is imbued with protective powers from someone who is recognized by the receiver as a qualified provider (e.g. a recognized Islamic religious figure and/or someone with spiritual powers). The most powerful verses are prayers which evoke the name of God or the Prophet.

¹⁵ Gates Foundation (2020). Data deep dive into polio cases among Pashtun populations (2017-2020). Unpublished document.

Subsequently, three IDIs with Islamic religious scholars of Pakistan, eight observational activities of amulet providers interacting with clients, and 16 IDIs with amulet providers (n=8) and amulet receivers/caregivers of children under five (n=8) in Rawalpindi and Peshawar were conducted to probe more deeply into caregiver beliefs regarding the informal care sector. A summary of demographic details of study participants is available in Annex 8. Case investigation files from 2017-2021 of children in Pakistan with confirmed cases of wild polio virus (WPV) were reviewed in-depth for information regarding the health-seeking behaviour of caregivers (e.g. who did parents first take their child to for care/healing when paralysis was first discovered?) and other potential sources of information regarding belief in amulets of protection (e.g. photo evidence of children wearing amulets). Finally, pilot study was conducted in May-June 2021 with secondary data obtained from Peshawar from the Missed Children Tracking Database and CBV Registration Books.

The Missed Children Tracking Database (MCTDB) contains a detailed record of all children in CBV areas who are 'missed' for vaccination (e.g. their age, gender, household identification number, name of vaccinator, reason missed, etc.). CBV Registration Books contain, among other things, a detailed listing of all children under 5 within a household who are eligible to be vaccinated. Here, it is important to note that these are two sources of data which are not put into context with one another for analysis purposes – the MCTDB is an online repository of campaign data available to anyone with proper credentials to access; CBV Registration Books are offline, locally held documentation on households in CBV areas with eligible children. By putting these two sources of information together, we were able to compare available data on which children within a household were missed *in comparison to which children within these same households who may have been reached with vaccination* during any one campaign. That is, for any child under 5 listed in the Registration Book who was *not* listed in the MCTDB, the assumption was made that this child received OPV. Our working hypothesis for this pilot study was that by comparing available data on *all* eligible children within any one household (not just missing children), we would be able to determine specific characteristics (within the available dataset) to better identify the children which are *most and least likely to be vaccinated* within a household. By only looking at children who are missed, and not the children who vaccinated – within the same household – there exists the possibility of not capturing inter-household trends in terms of who, why, how, and where vaccine hesitancy is more likely to happen.

To correspond to one of the locations where the KAP+E study was conducted (and to identify a smaller sub-set of locations upon which a small-scale pilot could be conducted), we chose Peshawar as the starting point. The same 30 clusters (representing 18 SHRUCs) that were selected for KAP+E data collection, were targeted for this study. In order to compare data for the same households within both data sets, three similar data points in both the MCTDB and the Registration Books were used: 1) the name and code of the vaccinator, the household number, and the name of the child's father (which served as the basis for identifying how children, within a joint family household, were characterized). The selected list of 30 vaccinators (i.e. the proxy for 30 cluster locations selected for the survey) were shared with the DSC in Peshawar. DSC colleagues in Peshawar then pulled all available data from CBV Registration Books – for the past five campaigns (at the time of data collection) – for each of the identified households from the CBV cluster with at least one child labelled as a 'still refusal' and/or 'persistently missed child' (PMC).

8.3 Findings – IDIs with Amulet Providers/Receivers & Islamic Scholars

Why do caregivers believe in religious/spiritual protections for children? Which caregivers in a household are most likely to hold these beliefs?

The topic of providing children (or anyone) with divine protection from harm through the use of protection amulets, can be controversial among Pakistani Islamic scholars, politicians and the media. For example, use of these items of protection – for a price – have been interpreted by popular Pakistani television personality and journalist, Iqar Ul Hassan, as preying upon the poor and ignorant who do not recognize that the persons who provide these services are charlatans whose only goal is to earn money. Ul Hassan has done considerable reporting in the country to expose these practices as corrupt and fake through his program *Sar-e-Aam*. And yet, these practices and practitioners flourish to such an extent that they frequently advertise their services on popular television programming and wall advertisements in both urban and rural locations.

For many Islamic scholars use of such amulets proceeds Islam in the sense that use of such items have deep roots in traditional beliefs and conceptions of spirituality. Digging into the theological debates among Islamic scholars and practitioners regarding these practices is beyond the scope of this research. What can be summarized here for discussion purposes in terms of caregiver behaviours towards children is that among families who believe strongly in the power of divine protection for children, a spiritual understanding of the world (e.g. mysticism) is often interpreted as opposed to biomedical interventions (e.g. materialism) – e.g. Why would a child need to be protected from harm by a vaccine if they are already protected? An underlying belief among OPV refusals within this category of caregivers is the idea that trying to protect yourself from disease or illness is “un-Islamic” and a sign of a person who is “weak of faith” in not believing that God would protect you. As stated by one Islamic scholar familiar with vaccine hesitancy among some conservative segments of the population, “They live in an enchanted world, and enchantment is directly related to feeling disenfranchised in other aspects of their lives especially access to healthcare...belief in these objects is not just about protecting a child, it is about protecting a way of life.”

And, of course, as pointed out by both journalist and religious critics of the practice, there is a monetary component to spiritual healers who, in the absence of qualified health professionals which caregivers can easily access and afford, have a monopoly on the ‘business of protecting children’ and therefore they have a financial stake in discrediting any health services which is seen as competition.

Regardless, for caregivers of children under 5, amulets are a form of access to the divine in order to protect children. Among our study sample, such practices are more common among those who follow the Sunni branch of Islam, and those who adhere to the Deobandi Islamic revivalist movement. Deobandi is one of the most popular doctrines among Pashtun populations on both sides of the Durand Line. Within Pakistan, the largest majority of these populations live in KP and Baluchistan Provinces. Among such households, elder female caregivers are more likely to take children to amulet providers for these services. This was acknowledged by both male and female caregivers within the larger KAP+E study, and is further supported by additional data collected on the topic in that women can more easily afford the low cost of these services and are more likely to be free to travel to these providers as trusted members of their communities. This is in direct contrast to the need for women to obtain both permission and financial resources for traveling to health centres and hospitals in order to access care for children.

Which child(ren) within a household are most likely to receive a protection amulet? Why?

Not all children with caregivers in a household, who strongly believes in the religious and spiritual protections of amulets, will possess one. That is, some children within the same household are more likely than others to wear these protections – although for different reasons and at different points in their childhood. Table 4, while not exhaustive, lists several trends among amulet child bearers our study has discerned:

Table 4: Trends among children who are given amulets of protection.

Age	Gender	Reason	Ethnicity
< 2 yrs (esp. newborns)	M	<ul style="list-style-type: none"> • Protection from evil eye (envy) • Protection from disease/illness (before illness occurs) • First male born 	<ul style="list-style-type: none"> • Any
< 5 yrs.	M or F	<ul style="list-style-type: none"> • Basis of need (e.g. excessive crying, not eating properly, scared of dark/not sleeping properly, naughty/fighting with siblings) • Protection from disease/illness (often after illness occurs, e.g. fever) • Beautiful (e.g. fair complexion) and therefore requiring protection from envy • First of their gender born after several other children of different genders (e.g. first girl after 3 boys; first boy after 3 girls) 	<ul style="list-style-type: none"> • Pashtun

The first category presented above is in recognition that birth is an event which can elicit envy due to the importance families in Pakistan often place upon large families. And the birth of a male child in particular, due to strong cultural preferences for sons, is an event which is even more likely to elicit envy. Therefore, young male children (and in some cases a pregnant mother who is expecting a son), require additional protections from ‘evil eye.’ Son preference, paired with widespread rumours and misinformation that OPV causes sterility, is one of the strongest reasons vaccine hesitant caregivers have for not vaccinating male children in particular. As stated by one father from Peshawar, “I prefer to use these amulets for protection and make an excuse to the vaccinator on why my son is not available to be vaccinated...my child is already safe from any kind of diseases.”

In terms of whether or not these practices are concentrated in any one ethnic group in Pakistan the short answer is, no. Pashtun and non-Pashtun families in Pakistan utilize these forms of protection for their children. However, our data does indicate that non-Pashtun families are more likely to believe in religious/spiritual protections to the exclusion of any other forms of biomedical health interventions for children. Within Pashtun families in particular, younger male children are often considered to be weaker than girls because they are perceived as more susceptible to harm. Inversely, within such families, the more strongly a vaccine hesitant caregiver believes their child to be ‘weaker’ the less likely they are to be vaccinated due to strongly held beliefs that children must be ‘strong enough’ to withstand the side effects of vaccination. Female children are also often perceived as maturing faster than boys (e.g. are eligible for marriage and being mothers themselves earlier than boys), and are therefore more likely to be perceived as stronger or eligible for vaccination at an earlier age than their male siblings. In all cases, when a child is wearing an amulet, and they reside within a household with one or more vaccine hesitant caregivers, it is these children specifically which we hypothesize are less likely to be vaccinated with OPV or to have received adequate doses of routine immunization for their age. Caregivers interpretation of how vulnerable (or not) children within their household are to harm, is an important consideration when trying to effectively target these beliefs with counter messages.

8.4 Findings – Review of Case Investigation Files

Significant findings from the detailed review of case investigation files revealed that of the 53 case investigations able to be reviewed for 2019 which had photo evidence available, 71.7% of children

(n=38) paralysed by WPV were wearing one or more amulets of protection (28.3% or n=15 children were classified as indeterminate on the basis of poor image quality). Of the 17 case investigations able to be review for 2020 which had photo evidence available, 35.3% of children (n=6) paralysed by WPV were wearing one or more amulets (64.7% or n=11 were classified as indeterminate). Analysis of the 44 confirmed cases of WPV1 from the 2019-20 period where photo evidence of HSB was available, reveals several striking trends which confirm data reported elsewhere in this report. These trends include: 1) the majority of cases (n=23) were less than 1 year of age, 2) most AFP sites reporting cases were private health institutions (n=20), 3) over 75% of cases (n=34) were zero dose for any routine immunization, and 4) over 90% (n=41) were Pashtun (see Table 5). Upon point 2, even though ‘informal health care provider’ is an option for the type of site reporting an AFP case, none of the 44 confirmed cases where photo evidence of HSB was evident had a case reported in this manner. Only n=5 (less than 2%) of all cases reported from 2017-2021 were reported via informal healthcare provider even though our data (and photo evidence) indicates this is a trusted source of information and advice regarding child healthcare needs.

Table 5: Demographic and RI data of n=44 confirmed cases of WPV from 2019-20.

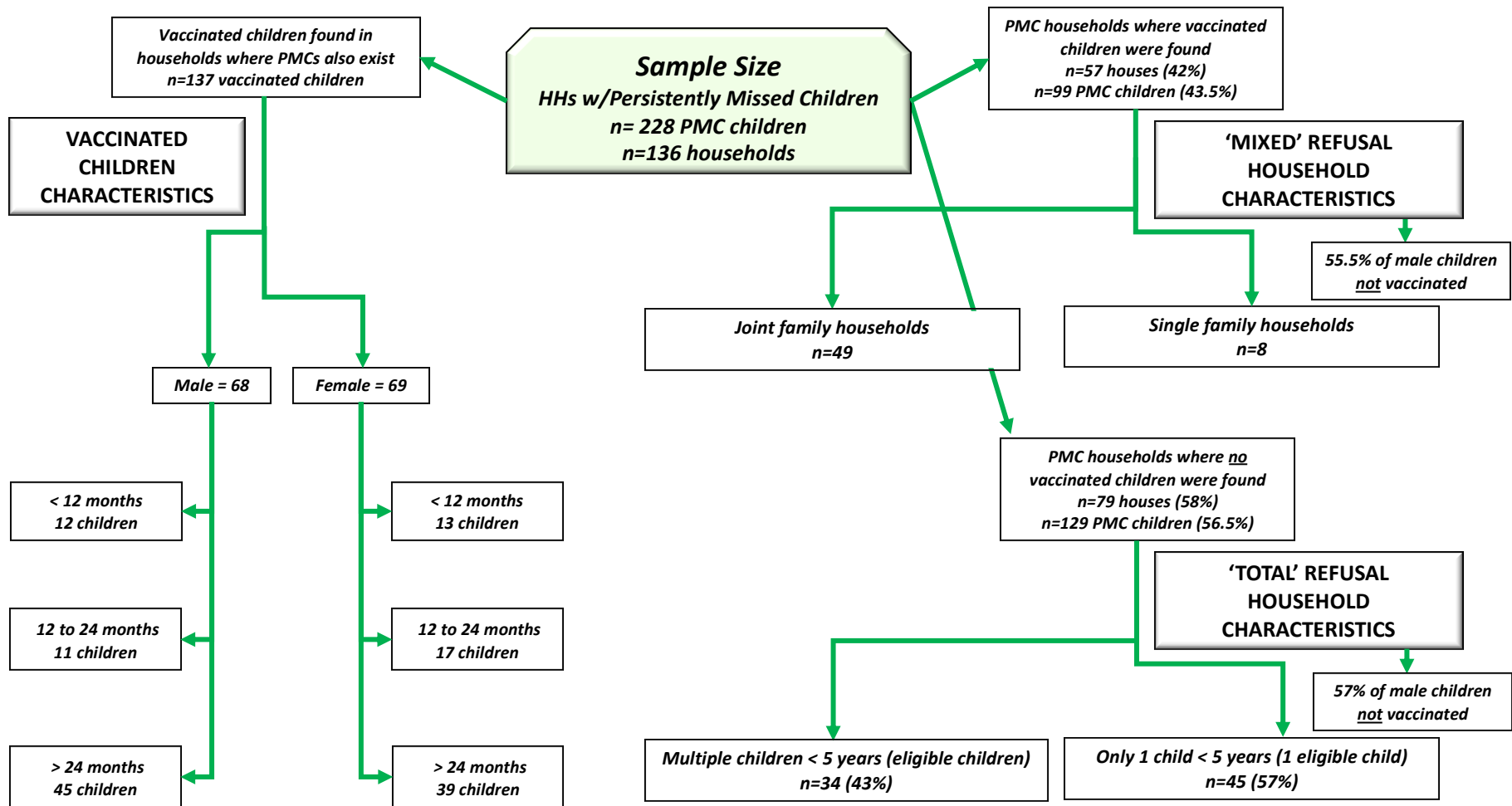
Province	Age at onset of WPV	Type of site reporting AFP case	RI dose(s)	Language	Gender
KP, n=39	0-12 mo, n=23	Private, n=20	0 dose, n=34	Pashto, n=41	Male, n=23
Baluchistan, n=2	13-24 mo, n=14	Public, n=15	1 dose, n=6	Siraiki, n=1	Female, n=21
Punjab, n=2	25-36 mo, n=5	Community, n=8	2 doses, n=1	Punjabi, n=1	
Sindh, n=1	37-48 mo, n=2	Armed Forces Institution, n=1	3 doses, n=3	Sindhi, n=1	
		Informal health care provider, n=0			

8.5 Findings – Pilot Study Using MCTDB and CBV Registration Books

Review of MCTDB data from Peshawar in connection to CBV registration books resulted in a list of 228 individual entries for PMC children and 137 children (within PMC households) who *were vaccinated* during campaigns. This list encompassed 136 individual households with a unique identification number. The data presented in Figure 3 is reflective of the characteristics of these 137 vaccinated children and 136 households. In summary, forty-two percent of households with PMCs also had children who received OPV. Of those vaccinated, the majority (61%) were over <2 years of age.

The majority (86%) of children in ‘mixed’ refusal households (i.e. households with both PMCs and vaccinated children) were living in joint family households (i.e. multiple families living within the same compound). Of these households, the children who were missed were slightly more likely to be male (55.5%) and more much likely to have the same father (98%). Within these ‘mixed’ households, forty-four percent of male PMCs under the age of 2 were not vaccinated in comparison to 41% of female PMCs. In total, 43% of all children, under the age of 2 in ‘mixed’ refusal households, were not vaccinated. These are potential indicators of mixed reactions towards OPV for younger children, for male vs. female children, and (in general) mixed reactions towards OPV within the same family. The latter finding suggests which family/head of household in particular to target for mediation sessions. That is, specific refusing individuals within a joint household family system (e.g. father of missed child(ren), wife(ves) of missed child(ren), paternal grandparents of missed child(ren), older siblings of missed child(ren) could be targeted for refusal mediation sessions for most impactful results. The majority (57%) of children in ‘total’ refusal households (i.e. households with only PMCs) only had one child under the age of 5 (i.e. only one child eligible for OPV). Male children who were not vaccinated were more likely to belong to these households (i.e. households with only one male child less likely to accept OPV). A more detailed analysis of HSB of high-risk populations is available in Annex 13.

Figure 3: Summary findings from pilot analysis of MCTDB and CBV Registration Boo



9. Summary, Conclusions & Recommendations

This study provides insights into knowledge, attitudes, practices and experiences (KAP+E) of caregivers with children under 5 years of age, in high-risk locations in Pakistan. Eight districts in four provinces across Pakistan were selected for this study. Mixed methods (qualitative and quantitative) highlighted caregivers' perceptions of OPV, trust in local health systems, trust in vaccinators and the PEI programme, and trust in various sources of information.

9.1 Summary Findings & Conclusions (Qualitative, Quantitative)

In-depth interviews and campaign observations revealed several trends in caregiver responses which we have highlighted in the summary sections at the end of each provincial section (as they apply to that province). Here we summarize a few key points which are cross-cutting across all study locations: the fluid and dynamic nature of 'refusals', present refusals as related to past negative experiences, and health-seeking behaviours of vaccine hesitant caregivers (including reasons why some children within the same household may be more likely to be 'missed'). Here it is important to emphasize that qualitative data collection activities were conducted with a purposive sample of families who (based on past campaign data) equally represented each of the following three groups: caregivers with a history of 'always' accepting vaccination, those with a mixed history ('sometimes') and those who were chronic refusals ('never' accept).

Survey results revealed additional trends which we have also highlighted per province and summarize below several key points which are cross-cutting across all study locations: RI and OPV status; knowledge of polio virus and vaccination; and trust in health systems, polio vaccine, polio-related sources of information, vaccinators, and campaigns. Here, again, it is important to emphasize that survey activities were conducted with a random selection of caregivers who self-reported their vaccine acceptance. As the findings below indicate, the majority of these caregivers self-reported themselves as 'always' accepting vaccination.

Status of First RI dose, and OPV during Last Campaign and Past Year

Over 91% of caregivers across all four provinces informed that their children had received their first RI dose immediately after birth. Further, in their self-reported OPV status, nearly 93% of children received OPV during last campaign, including 99% from KP, 94% from both Punjab and Sindh, and 84% from Baluchistan. Overall, more than 90% of caregivers self-reported that their children had 'always' received polio drops during the past year. In comparison to the other three provinces, a more moderate number of caregivers in Baluchistan (72%) self-reported accepting OPV in past year, with 19% of caregivers acknowledging that they 'sometimes' accepted polio drops for their children. Overall, a very few number of caregivers informed that their children had missed OPV during the last campaign or that they 'never' accepted OPV during the past year. One exception to this was observed in the case of Killa Abdullah, where nearly 14% of caregivers expressed they 'never' accepted OPV in the past year.

Trust in Health System

Regarding the healthcare seeking behavior of caregivers and their trust in local health systems, the majority of survey respondents showed a great deal of trust in the public health sector, followed by the private health sector, for both routine immunization and general health services. However, a significant trust deficit was found in both public and private health systems in Baluchistan. These

findings indicate that both public and private health facilities are inadequate in the province to fulfill people's needs. Further, a wide contrast in caregivers' perceptions was observed regarding their trust in traditional healers/hakeems and spiritual/religious healers for general health services for children. Nearly half of caregivers in three provinces (Punjab, Baluchistan and KP) had a great deal of trust in spiritual/religious healers and were more likely to have less trust in local traditional healers/hakeems. In the case of Sindh Province (Karachi), more than 90% of caregivers showed trust in local spiritual/religious healers, however, 82% also indicated 'a great deal of trust' in traditional healers. These findings highlight strong cultural beliefs and practices amongst caregivers in high-risk locations, which often lead to consultation with local religious healers (all provinces), and particularly in the case of Karachi with traditional healers as well. The section below which reports on qualitative data on health seeking behaviours of vaccine hesitant caregivers in particular, supports this finding.

Health-seeking behaviours of vaccine hesitant caregivers

Who are trusted sources of information for children's health?

Caregivers-children-amulet providers (i.e. spiritual/religious healers) often have a close relationship within families who strongly believe in these forms of protection for children. If such trusted informal providers of care do not trust in OPV (or other routine immunizations) then this is a powerful negative influence on caregiver behaviours. As stated by one grandmother from Bannu, "My granddaughter was getting scared while sleeping so I visited nearby Maulana and brought this amulet for her protection...that Maulana didn't favour polio vaccination and never accepted it for his children so I stopped accepting it too." As stated by a religious healer in Rawalpindi, "I don't favour polio vaccination or other immunization services. I believe in treatment of children's illness through Quranic versus...there is no need for any kind of injections or polio drops."

It is the hypothesis of this research that informal providers of care (such as amulet providers) are a utilised and trusted source of child health care for OPV refusing caregivers. Further, it is theorised that such informal providers of care may actively counsel caregivers not to accept vaccination due to a perception that use of biomedical forms of preventative care are: 1) competition to a belief system which proposes they (e.g. not doctors) have access to divine intervention on children's behalf, and 2) competition to the financial and social gains they reap from caregivers who seek their assistance. Changing behaviours of such caregivers towards preventative, biomedical care such as vaccines requires changing a persons' understanding of what protection is and can do, and what a vaccine is and can do. To be most efficacious, increasing caregiver understanding (and use) of vaccines would need to connect with individually held belief systems of divine protection (and the local providers of informal care who call upon this form of protection). It is also important to reiterate here that when caregivers do not have positive relationships with biomedical health service providers, they are more likely to look locally to informal providers of care from within their own communities.

Which children are more/less likely to be vaccinated?

Based on our pilot study of available DSC data in Peshawar SHRUCs, 42% percent of households with PMCs also had children who received OPV. We characterize these as 'mixed' households. Of these vaccinated children (within PMC households), the majority (61%) were over 2 years of age. Within this sub-set of data, age was *the* determinate factor in whether a child was vaccinated. Supporting qualitative data indicates that not all children with a refusal/mixed household are equal in terms of how a caregiver feels about their children receiving OPV. For example, a 'refusal' household may be more likely to 'accept' vaccination through intervention activities for some children (e.g. older, female), yet continue to reject for other children (e.g. younger, male) in the household. This is a simplistic explanation for a complex phenomenon in which many factors may be associated with a

caregiver feeling more protective of certain children within their household – child is first/only child, child is ‘weaker’ than their siblings, mother had difficulty conceiving the child, etc. – but perhaps this finding may be helpful in determining alternate methods of analysing regularly collected household data such as contained within CBV registration books.

Our sample size for the MCTDB/CBV Registration Book pilot study was not large enough to characterize (on a national-level) the reasons why children within the identified ‘mixed’ households were missed, however, our findings do suggest that such families use multiple direct and ‘soft’ and/or non-direct (e.g. child ill, child sleeping, child not at home) methods of refusing vaccination. Further, within a family which has multiple forms of non-directly refusing vaccination, these tend to follow a direct refusal. Meaning that where families have refused OPV directly (and have likely been targeted by the PEI programme for follow-up visits on the basis of their refusal), they are more likely to give a non-direct method of refusing vaccination during subsequent campaigns and/or their children are more likely to be recorded as NA. Again, this suggested finding should be confirmed or rejected based on further analysis of data using a larger sample size. The findings presented here were a pilot study to determine the usefulness of such an integrated approach to data collection and analysis. If useful, this approach can be scaled-up to other CBV locations for providing additional data to: 1) ‘feed’ this model of analysis and determine if our initial conclusions drawn are applicable on a wider scale, and 2) provide an integrated analysis of inter-household dynamics with regards to decision-making for which children receive (and which do not) OPV. Prior to scaling-up such a project, it must be noted that such an endeavour to compare both online and offline data will require a more significant time commitment and dedicated team of analysts to interpret findings. Such an analysis should be done through collaboration with Communications colleagues to best determine how data on inter-household dynamics would be of most use to the PEI programme (e.g. to establish a model for mediation committees, to direct limited resources by prioritizing specific households for pre-campaign messaging, etc.).

Knowledge of Polio Virus

More than 97% of interviewed caregivers had knowledge of polio disease, including 100% in Baluchistan, 99.7% in Sindh, 98.6% in KP and 91.3% in Punjab. A significant number of these caregivers in most provinces were also ‘very concerned’ about the potential for their child contracting polio. The exception to this finding was in Baluchistan where a moderate number of caregivers were either ‘somewhat concerned’ or ‘not at all concerned’ about the possibility of their child contracting polio. Additionally, among caregivers in Baluchistan, more than one-third did not know about what was the best period for children to receive their first RI does (i.e. immediately at birth), and some caregivers, especially in Killa Abdullah, opined that children should never be vaccinated. A significant minority of caregivers in Bannu District in KP expressed that children’ best age to receive their first RI dose was between 1-3 months after birth (i.e. *not* immediately after birth).

Trust in Polio Vaccine

Refusal and acceptance of OPV are fluid concepts

While qualitative data collection sampled participants on the basis of their behaviour during past campaigns – e.g. as ‘always’, ‘sometimes’ and ‘never’ – acceptance of OPV during any one campaign by any particular caregiver is fluid. The category of ‘sometimes’ is evident of this fact. For example, a caregiver may in general have negative feelings about OPV and want to reject vaccination, but they may be appealed to by a social mobiliser in such a way that they accept vaccination during one campaign cycle, but revert back to refusing vaccination during subsequent campaigns. An ‘always’ caregiver may also feel social pressure to *always* accept OPV for their child(ren) due to the negative

attention they would receive if they refused (or knowing that a vaccinator would return to their house until their children were reached), so they may accept OPV because this is the path of least resistance. Alternately, a caregiver may have no particular issues with OPV, but during a vaccinator's campaign visit are hosting friends or relatives (e.g. a religious figure, in-law, elder head of household) who has a negative opinion about vaccination so in deference to that person's views (or to avoid a family argument), they refuse to vaccinate their children during that particular campaign cycle. Finally, 'chronic' or 'never' refusers of OPV may give the impression that they completely reject vaccinating their children, often for religious/misconception reasons. And this is to a degree true in many of the locations and scenarios discussed within the provincial findings presented above. However, this is often only part of the story. In many scenarios we see caregivers who see other services as more essential for their families' welfare (e.g. clean water, electricity, other health services) and therefore bargain or 'demand' these needs be met before they will allow their children to be vaccinated. Among such caregivers, we can reasonably conclude that OPV is not necessarily objectionable in and of itself – it is just not as valued as other services.

Throughout certain sections of this report, many issues have arisen with regards to challenges the polio programme in Pakistan faces with vaccine hesitant caregivers. Most of these are not new issues, but are ones the programme has been struggling with for years. Therefore, it is worth reflecting on some of the deeper reasons for refusal which lie beneath the surface of caregiver concerns which have been consistently reported from the districts and provinces included in this study: 1) too frequent campaigns, 2) demands for other services, and 3) coercive tactics.

Too frequent campaigns

The common caregiver refrain of 'too frequent campaigns' can be heard from all UCs, districts and provinces where this research was conducted. And this caregiver concern extends several years into the past history of the PEI programme. Understanding this statement on its face is simple – caregivers are tired of the frequency of campaigns which bring people to their doorstep, on average, every several months. Vaccinators require that caregivers bring their children out of their homes, open their mouths and receive 'drops' regardless of how many times that child may have been vaccinated in the past. Many of these caregivers are genuinely worried their children are being 'overdosed' with a vaccine that has no set schedule or maximum dosage. These caregivers may therefore refuse – sometimes forcefully so – to have their child vaccinated beyond a limit which they have (internally) decided is 'enough drops' for their child to receive. For caregivers who live in households with a diversity of opinions regarding the safety and efficacy of OPV, campaigns may be a source of tension and stress. As the scenarios presented in this report indicate, these tensions may arise when: a wife is threatened with beatings or divorce by a husband who does not want his family "shamed" by polio workers constantly on his doorstep; when mothers must comply with the demands of a mother-in-law or family elder to reject OPV while at the same time feeling pressured by vaccinators to accept OPV; when a mother must organize herself to be outside of her household and away from a refusing family member if she wants her child to be vaccinated; when a husband must deal with the long-term effects of a wife angered that she was forced to vaccinate her child; when a caregiver feels pressured by police forces (or the threat of force) if they do not accept vaccination; when a caregiver who feels protective of her ill or disabled child worries (and feels guilt) for weeks and months after a campaign is over that OPV may have harmed her child; etc. These are just a sample of the family tensions and stressors revealed in the case studies discussed in this report.

Demands for other services

Concerns over the frequency of campaigns also have an impact on caregiver demands for other services in that they can clearly see the effort and resources which are placed in the PEI programme

(and are not placed in other areas of need). This creates a sharp contrast between PEI priorities (to eradicate polio) and caregiver priorities to have greater access to other health services, clean water, electricity, etc. Therefore, the complaint of ‘too frequent campaigns’ is also a condemnation by caregivers of too frequent provision of one service, while other important basic health needs are ignored.

Coercive practices

While it is important that new and innovative ideas be debated and discussed as a potential way forward for reaching vaccine hesitant caregivers, it is equally important to recognize where past strategies have failed to have their intended impact (and therefore should *not* be considered moving forward). For example, our evidence strongly suggest that when local administrators put heads of household in jail, ‘pulled’ a families’ electric meter, or otherwise threatened a refusing caregiver with law enforcement, the long-term consequences of such programme. Several ‘down-the-line’ unintended consequences of such actions include:

- Hardening/solidifying of community sentiment against vaccination;
- Increase in rumours surrounding the harmful impact of OPV (e.g. “The vaccine must really be bad for children if the government has to force families to accept”);
- Increase in data falsification (e.g. areas listed as visited when they have been missed, fake finger marking) whereby local PEI staff avoid want to avoid confrontations with angry careivers/communities;
- Increase in ‘silent’ refusals (e.g. n/a, ill, sleeping or otherwise unavailable children during campaigns) due to caregivers want to avoid by OPV and attracting the attention of coercive administrative officials;
- Increase in violence/threats of violence against frontline workers; and
- Demotivated communication staff whose potential gains made in increasing trust in the PEI programme, are quickly erased when coercive practices are used.

More than 90% of caregiver survey respondents in KP, Punjab and Sindh, and more than one-third of caregivers in Baluchistan, reported the polio vaccine as ‘very effective’ for polio prevention and ‘very safe’ for children to receive. In comparison to the other provinces, the majority of caregivers in Baluchistan (and especially in Killa Abdullah) perceived polio drops as either only ‘somewhat effective/safe’, ‘not very effective/safe’, or ‘not at all effective/safe’.

These findings highlight that vaccine acceptance is widespread and ‘refusals’ must be addressed locally in the smaller pockets in which they are found. However, Baluchistan is an exception to this rule. There are obvious variances within this metric at the district-level and therefore caregiver consideration of ‘trust in polio vaccine’ deserves a more nuanced consideration at the district and UC (rather than national) level. Further, findings reported above from the qualitative component of this study highlight specific reasons, per district and per province, as to the trust in OPV among vaccine hesitant caregivers. These findings reveal that trust in OPV is a multi-layered issue which requires nuanced and localized approaches to address in most locations. However, largescale changes to the PEI programmes approach to caregivers in Baluchistan (e.g. at the provincial-level) deserves careful consideration.

Trust in Polio-related Information Sources, and Local Social Norms

Provincial-level variations exist regarding trust in polio related sources of information. More than 90% of caregivers in KP and Sindh, and just over 66% in Punjab, and 39% in Baluchistan, perceived it was a ‘very good idea’ to give polio drops to children. More specifically, caregivers in KP, Sindh and (to a lesser extent) in Punjab informed that health workers, grandparents, friends, neighbours and

community leaders all perceived it was a ‘very good idea’ to give drops to children. Inversely, the majority of caregivers in Baluchistan perceived that most persons they knew within these different groups did *not* think it was a good idea to give drops to children. As this finding indicates, caregivers in Baluchistan, were more likely to state higher levels of awareness of negative information about OPV and the PEI programme. Observed nuances within these findings in terms of the extent to which information sources were trusted and which sources of information were more likely to be negative (or positive), should be explored in more detail at the district-level as reported above in report sections above.

The most common negative statements about OPV that were reported by caregivers included: polio drops can give a child a fever or other side effects, polio drops cause infertility amongst boys and girls, and polio drops are not halal (this finding was most significant in Baluchistan). On the other hand, the majority of caregivers (with the exception of Baluchistan) reported that such negative statements were not valid. These findings are indicative of the PEI programme’s continuous and extensive efforts, as well as regular contribution of outreach and other channels of information, in addressing misinformation and false statements related to OPV. However, there is still a gap which needs to be bridged, especially in Baluchistan. In terms of the extent of trust of family and community about polio-related sources of information, a moderate to majority percentage of caregivers indicated that they had a ‘great deal of trust’ in polio vaccinators, health workers at local facilities, family members, friends and TBAs for information about polio drops. In case of Baluchistan, caregivers displayed lower levels of trust in polio vaccinators, health workers at local facilities, and in some cases neighbors and community leaders. Qualitative findings indicate that where such trust deficits exist, any person who speaks positive about drops or the PEI programme is often viewed with suspicion. In terms of social media sites as a potential source of negative information, a majority of caregivers stated that they did not have access to these platforms. Among those caregivers who were more familiar with social media, caregivers in Baluchistan and Sindh provinces were more likely to report having heard, read or seen negative content on WhatsApp and Facebook (access and use of Twitter was negligible).

Regarding positive information caregivers had heard, read or seen about polio drops in the past year, more than 78% caregivers across all provinces stated that polio drops protected children against polio. Forty-two percent of caregivers had not heard, read or seen anything negative about polio, especially in Punjab. More than 67% caregivers across all provinces (however, less than one-fourth of caregivers in Baluchistan) stated their belief that ‘all their neighbors’ accept polio drops for their children. In Baluchistan, more than 63% of caregivers perceived that ‘some neighbors’ were against polio drops. For those caregivers who stated that not all of their neighbors accepted OPV, their reasons for avoiding vaccination included: children were sick/ill, asleep or not at home; and a low-risk perception (i.e. belief their children were not likely to contract polio).

These results highlight vaccination as a social norm within many (but not all) communities included in this study. As with the finding reported above with regarding to trust in OPV, trust in polio-related information sources requires a nuanced and sub-national approach for deeper exploration of local, contextual factors that support or hinder positive impressions of OPV and the PEI programme.

Trust in Vaccinators

A large number of caregivers in all provinces, with the exception of Baluchistan, had great deal of trust in polio vaccinators, and found them caring and knowledgeable about their children’s health. Regarding their reasons for accepting the drops provided by vaccinators (if they accepted), the most frequently reported caregivers response were: to protect their child from polio; to end polio for children in their village/neighbourhood and in Pakistan; and the perception of vaccination as a social norm (e.g. their family has always given drops to their children, many friends/neighbours give polio

drops to their children). Provincial-level variations were observed with regards to caregiver perceptions that vaccinators had showed respect to their spouse' authority to make decisions for children's health. Caregivers in KP and Sindh were more likely to report their vaccinator as demonstrating respect 'every time'. However, more mixed opinions were found in both Punjab and Baluchistan with caregivers reporting respect was more frequently demonstrated 'most of the time' or 'never'. A high proportion of caregivers in Punjab, followed by KP and Sindh, believed their vaccinators to be from their local villages/neighbourhood. In contrast, the majority of caregivers in Baluchistan believed their vaccinators were outsiders (i.e. not from their village/neighbourhood).

Perception of/Trust in Polio Campaigns

More than half of caregivers in KP (86.9%) and Baluchistan (52.5%) reported that vaccinators visited their home during every campaign within the past year. A minority of respondents in Punjab (41.3%) and Sindh (39.3%) reported that vaccinators visited their home during every campaign held within the past year (i.e. July 2020 – June 2021). Lower rates of reporting for Baluchistan and Sindh provinces can be partially explained by many caregivers responses of 'don't know' when asked this question. Overall, more than 96% of caregivers across all provinces confirmed that polio vaccinators had visited their house *during the last campaign*. In Sindh and KP, most caregivers were of the opinion that vaccinators visited their homes 'about the right number of times' for giving polio drops. More caregivers in Baluchistan (and to a lesser extent in Punjab) felt that polio vaccinators visited their homes 'too many times'. A high proportion of caregivers in KP, Sindh and Punjab believed vaccinator visits to be very important. In Baluchistan, a more moderate number believed vaccinator visits to be important with a significant minority stating vaccinator visits were 'not at all important'. Caregivers in Baluchistan were also more likely to report feeling pressured to either refuse (community pressure) or accept polio drops (administrative pressure). Caregivers in Baluchistan were also more likely to state that giving polio drops to children in locales such as schools, parks, streets, festivals etc. was a 'very bad idea.' More than three fourths of caregivers across all provinces expressed their intention of giving polio drops to children 'every time' they were offered before their child reached their 5th birthday (this finding was more pronounced for Sindh and Punjab). A majority of caregivers in KP, Sindh and Punjab showed preference for vaccination to happen in the morning and at homes. More caregivers in Baluchistan stated they had no desire to vaccinate children, either at home or at a local health facility. In terms of caregivers' trust in the organizations believed responsible for the PEI programme, a high to moderate proportion of caregivers in KP, Sindh and Punjab, had a 'great deal of trust' in national and provincial governments, and local health organizations. Trust deficits were noticeably higher among caregivers in Baluchistan. Overall, nearly half of the caregivers across all provinces perceived that programme efforts to bring polio drops to children in their neighborhood were 'too much' (i.e. 'too much' emphasis was being placed in OPV). This finding was particularly true in KP and Baluchistan.

9.2 Recommendations

Both qualitative and quantitative components of this study concluded by asking for these recommendations which we present in the provincial summary findings above. When comparing these findings across provinces, we can clearly delineate four reoccurring recommendations: **1) reduce the frequency of campaigns** (this finding was emphasized most by caregivers in Sindh and Punjab), **2) meet caregiver demands for other services** (this finding was emphasized by caregivers across all study provinces), **3) eliminate the use of coercive tactics** (this finding was emphasized by caregivers across all study locations and includes both actual (e.g. imprisonment, taking electric meters) and implied (e.g. use of police forces to support campaigns) use of coercive tactics), and **4) increase awareness raising efforts in local languages and/or using visual methods which illiterate populations can understand**. The similarity in these findings across provinces serves to emphasize their importance among the population sampled for this study.

10. List of Annexed Documents (1-14)

All Annex documents listed below can be found on the UNICEF 'KAPE' SharePoint folder.

- Annex 1: Research Team
- Annex 2: Theory of Change (ToC)
- Annex 3: Methodology (Detailed)
- Annex 4: Rate of Non-Responsiveness (Detailed)
- Annex 5: Training Report
- Annex 6: KAPE Survey Questionnaire
- Annex 7: No Objection Certificates (NOCs) for Study Provinces
- Annex 8: Summary of Caregiver Demographic Details from Qualitative Study Participants
- Annex 9: Additional Case Studies and Tables for KP
- Annex 10: Additional Case Studies and Tables for Punjab
- Annex 11: Additional Case Studies and Tables for Sindh
- Annex 12: Additional Case Studies and Tables for Baluchistan
- Annex 13: Missed Children – Health Seeking Behaviour of High Risk Populations (Detailed)
- Annex 14: Details and Table Summaries of Cross-Tabulations (Per Province)