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Refusal of oral polio vaccine in northwestern Pakistan: A qualitative and quantitative study

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ABSTRACT

Background: Refusal of the oral polio vaccine (OPV) is a difficulty faced by the Polio Eradication Initiative (PEI) in multiple endemic areas, including the Khyber Pakhtunkhwa Province (KPP), Pakistan. In 2007, we investigated community perceptions of the OPV and estimated the prevalence of OPV refusal in three districts in Swat Valley, KPP, a polio-endemic area.
Methods: Qualitative data concerning community perceptions were collected by focus group discussions among lady health workers (LHWs) and mothers with children <1 year old and by key informant interviews with local health managers and officials. Quantitative data collection followed using a questionnaire survey of 200 LHWs and a cluster sampling survey of 210 mothers (per district) with children <1 year old.
Results: The qualitative assessments identified the grounded theory of OPV refusal involving facts known by the residents that are related to the OPV (too frequent OPV campaigns, an OPV boycott in northern Nigeria in 2003 and that birth control is viewed as is against Islam), the local interpretations of these facts (perceptions that OPV contained birth control or pork, that OPV was a foreign/central plot against Muslims, and that the vaccination was against the Hadith and the fate determined by God) and different manifestations of OPV refusal. Among the three districts studied, the proportion of LHWs who encountered OPV refusal ranged from 0 to 33%, whereas among the districts, the proportions of mothers unwilling to give OPV to their children ranged from 0.5 to 5.7%. Refusal of other injectable vaccines was almost equally prevalent for reasons that were very similar.
Conclusions: The PEI needs to reflect local value system in the path to polio eradication in the studied districts in the Swat Valley. The religious and cultural values as well as the interpretation of the international political situation are of particular importance.

1. Introduction

Significant progress has been made since 1988 when the resolution on the global eradication of poliomyelitis by the year 2000 was adopted [1]. By 2000, the disease had been eliminated from the Americas [2] and the Western Pacific Region [3]. The European Region was certified polio-free two years later in 2002 [4]. Other regions also made remarkable progress, and a large part of the world was polio-free by mid-2008.

However, by 2012, the Polio Eradication Initiative (PEI) faced difficulties in endemic areas in three countries: northern Nigeria, eastern and southern Afghanistan and the Federally Administered Tribal Area (FATA) and the Khyber Pakhtunkhwa Province (KPP) of Pakistan [5–7]. Each of these areas faced operational problems that were greater in magnitude and complexity than those experienced by other countries [8–12]. Polio was still endemic in India in 2010, but no cases with isolation of wild poliovirus have been reported since January 2011, potentially marking the interruption of the circulation of the wild virus domestically [13,14]. In 2011, Angola, Chad and the Democratic Republic of Congo reported re-established transmission of wild poliovirus, and new outbreaks occurred in seven countries, including western China [15]. In 2012,

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there were no outbreaks outside Nigeria, Afghanistan and Pakistan [16].

Pakistan and Afghanistan form a common epidemiological block [14,17]. With 47 and 26 cases of polio caused by the wild virus from January to November 2012 in Pakistan and Afghanistan, respectively, these countries had 42% of the 175 cases worldwide during this period [16]. In 2011, there were 198 and 80 cases, respectively, in the two countries, accounting for 43% of the 650 cases worldwide [15].

Refusal of the oral polio vaccine (OPV) by the general public exemplifies the difficulties faced in multiple endemic areas, including Pakistan [18–22]. Adding to these difficulties, the local government in northern Nigeria announced in 2003 that OPV inoculation would be suspended for 12 months based on a rumour about contamination of the OPV with birth control substances and with the HIV virus [23–26].

This report presents the results of a qualitative and quantitative study conducted in the Swat Valley, KPP, Pakistan in 2007. The study investigated community perceptions of the OPV and estimated the prevalence of OPV refusal in order to reveal the generic, socio-cultural context of OPV refusal among the population in Swat Valley, KPP, before the current social unrest.

2. Methods

2.1. Study area

The study area was the Swat Valley, which is in the central northern half of KPP and which consists of three districts, Swat, Buner and Shangla, that had populations of 1.48, 0.57 and 0.50 million people, respectively, in 2007. The Swat Valley remains one of the last polio-endemic areas in the world. Nine OPV campaigns were conducted annually in the study areas during the study period.

2.2. Study design and subjects

Five data collection methods were used in this study. First, six focus group discussions (FGDs) were conducted with lady health workers (LHWs). The LHWs gradually began to assume the responsibility of the tasks of immunisation in addition to their traditional tasks of maternal and child health. Second, six FGDs were conducted with mothers with children <1 year old. The FGDs with both LHWs and mothers were conducted in January 2007. Third, semi-structured key informant interviews (KII) were conducted with the staff of basic health units (BHU) and with district/provincial staff of the Expanded Programme on Immunization (EPI) and public health managers in June and July 2007. Fourth, a questionnaire survey of 200 LHWs was conducted in February 2007. Finally, a questionnaire survey of 630 mothers (210 from each of Swat, Buner and Shangla) with children <1 year old was conducted in February 2007.

2.3. Qualitative assessments

Each FGD conducted with the LHWs and mothers had an average of 8–10 participants and were facilitated by female moderators working as university teaching staff in Peshawar (the capital of the KPP) who were fluent both in English and Pashto, which is the dominant local language. All LHWs belonging to two non-randomly selected BHUs in each of the three districts were invited and enrolled in the FGDs. Mothers were chosen from the service areas of the same BHUs. With the consent of the participants, the FGDs were audio-recorded and were later transcribed into English by the moderators.

The FGDs and semi-structured interview data were analysed in accordance with the Grounded Theory Approach using ATLAS.ti software. Open coding was used rather than using a pre-determined coding guide, and the codes were categorised according to the contextual similarities. Relationships between different categories were analysed in reference to the original quotes. After a preliminary theory was developed, aspects of our understanding of the local perceptions that remained ambiguous were clarified further through KIIs before the grounded theory was completed.

2.4. Quantitative surveys

The questionnaire survey of LHWs focused on their involvement in OPV campaigns, and in particular on their experiences with OPV refusal and the refusal of other vaccines. In Swat, Buner and Shangla, 100, 50 and 50 LHWs were selected randomly from staff lists that included 761, 228 and 189 LHWs, respectively.

The questionnaire survey of mothers with children <1 year old focused on the receptiveness of the mothers to the vaccines and on the mothers' perceptions of the need for different EPI vaccines. The subjects were selected using two-stage cluster sampling in which seven mothers were chosen from 30 randomly selected villages; thus, a total of 210 mothers were surveyed in each district. In total, 630 mothers in the three districts were studied. The 30 villages were selected using Probability Proportionate to Size (PPS) sampling. A list of villages as per the 1998 census was used as the sampling frame. For sampling seven subjects in each cluster, a starting household in a selected village was selected randomly from the latest voters list as of 2004, which was obtained from the district election offices. The next household was the one nearest to the previous household, and so on. Surveyors continued visiting the households until seven eligible mothers were surveyed.

Draft questionnaires for both the LHWs and the mothers were developed on the basis of the findings of the FGDs and were pretested in Peshawar in late January 2007 before finalisation. Both word selection and the translation into the Pashto language were corrected when the meanings of the phrases differed from the original intent of the research.

2.5. Statistical analysis

The mothers' survey did not apply strictly the equal probability of selection method (EPSM). Rather, only the first household was selected randomly, followed by surveys of the nearest households until seven mothers were surveyed (quota sampling) in line with the EPI coverage cluster survey [27]. Since this did not allow quantification of the selection probability of each sample, sample weights were not calculated. The design effect (Deff) was estimated to be 2, thus the sampling error (SE) was estimated to double the SE of simple random sampling due to the cluster effect. We adjusted the 95% confidence intervals using this assumption. Survey data analysis was conducted using STATA 10.0 and MS-Excel 2007 software.

2.6. Ethical considerations

The study protocol was examined and approved by the Public Health Office of KPP (then North West Frontier Province), Pakistan. Informed consent was obtained in accordance with the ethical guidelines for non-interventional epidemiological studies without human specimen collection as stipulated by Japan's Ministry of Health, Labour and Welfare and by the Ministry of Education, Culture, Sports, Science and Technology. The consent agreement was obtained orally after verbal explanation of the purposes of the survey and the rights of the subjects to decline participation.