POLIO GLOBAL ERADICATION INITIATIVE

TECHNICAL BRIEF: GENDER

World Health Organization · Rotary · CDC · unicef · Bill & Melinda Gates foundation

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▼ A girl receives two drops of the oral polio vaccine in Sokoto, Nigeria. © WHO/J Swan

EXECUTIVE SUMMARY

Gender roles and norms, and their underpinning power relations, are powerful determinants of health outcomes. To reach every last child and achieve a polio-free world, the Global Polio Eradication Initiative (GPEI) is committed to identifying and addressing gender-related barriers to immunization and disease surveillance.

Gender-related barriers to immunization operate at multiple levels, from the individual and the household to the community, hindering access to immunization services. Health interventions cannot effectively meet the needs of all unless informed by sex-disaggregated data and gender-sensitive analyses. An integral part of reaching every last child with vaccines is also the increased participation of women in immunization activities. Recognizing this, the GPEI has conducted a thorough gender analysis to identify and measure gender-related barriers in its immunization, communication and disease surveillance activities.

The Gender Technical Brief analyses the ways in which the gender of the child, caregiver and front-line worker influences the likelihood that a child is immunized against polio, with a specific focus on gendered determinants of immunization in the GPEI's 16 priority countries. The Brief introduces four gender-sensitive indicators for monitoring progress towards ensuring equal access to vaccinations and the engagement of women. The indicators address: 1) girls and boys reached in vaccination activities; 2) total vaccine doses that girls and boys aged 6–59 months have received; 3) the timeliness of disease surveillance; and 4) the participation of female front-line health workers. These indicators function as measuring tools for gender-related changes, specifically in access to immunization and the provision of immunization.

Analysis of the data for the four indicators for 2016 and 2017 does not show significant differences in terms of gender for most countries analysed in this Brief, either for children reached in vaccination campaigns or for surveillance data. Endemic countries continue to engage female front-line workers in immunization activities, and women currently constitute 56% of front-line workers in Pakistan and over 90% in Nigeria. In Afghanistan, currently 13% of front-line workers are women, while the figure is around 40% in urban areas.

Data for the indicators are analysed in the GPEI's semi-annual reporting for the three remaining endemic countries, Afghanistan, Nigeria and Pakistan, as well as for outbreak and high-risk countries. This Brief is intended to inform and support the development of the GPEI's gender strategy, which will be available in 2018.

▼ Women have just visited a house to vaccinate children against polio in Sokoto State, Nigeria. © WHO / J.Swan

STATEMENT OF INTENT

The Global Polio Eradication Initiative (GPEI) has conducted a gender[1] analysis to identify and measure gender-related elements in its immunization, communication and disease surveillance activities. The Gender Technical Brief presents the results of the gender analysis and introduces four gender-sensitive indicators for monitoring gender equality. The Brief is intended to inform and support the development of the GPEI's Gender Strategy which will be publicly available in 2018.

INTRODUCTION

The GPEI is committed to the complete eradication and containment of all wild, vaccine-related and Sabin polioviruses. Fundamental to the GPEI's commitment is the recognition that every child, regardless of gender, ethnicity, nationality, social or economic status, has the right to vaccination. Reaching every last child is the guiding principle for all of the GPEI's work in fulfilment of the Polio Eradication and Endgame Strategic Plan 2013–2018.

An integral part of reaching every last child with repeated vaccination has been the increased role of women at different levels of the polio eradication programme. The GPEI has continually developed or adapted local strategies to engage women in the critical decision to vaccinate their children – as mothers and caregivers of children and as the heroes on the front line of eradication.

The right to health is universal, and gender is an important determinant of the realization of this right. Gender equality in health is defined by the absence of discrimination on the basis of gender. Whereas sex refers to characteristics of men and women that are biologically determined, gender can be applied to socially constructed norms, roles and relations. The social expectations of gender, as well as their replication through time, influence health-seeking behaviours and health outcomes, intersecting with other determinants of health, including age, socio-economic status, education and environment.

The Gender Technical Brief identifies and measures gender-related elements in the GPEI's work to achieve a polio-free world. This includes the identification of barriers to gender equality – factors that may restrict equal opportunity to health, including allocation of health resources and access to health services. The Brief reviews the mechanisms by which the gender of the child, the gender of the caregiver and the gender of the front-line worker influence the likelihood that a child is immunized against polio.

The Brief broadly defines the gender-related barriers to the GPEI's activities as access to immunization and the provision of immunization. Four gender-sensitive indicators are developed for monitoring any gender-related disparities in these areas. The indicators address vaccination coverage, front-line health workers and disease surveillance. Data for the indicators are analysed for the three remaining polio-endemic countries (Afghanistan, Nigeria and Pakistan), the GPEI's 16 polio-priority countries, and six World Health Organization regions[2].

Additional gender data are analysed from Harvard University's project with UNICEF polling on the knowledge, attitudes and practices of caregivers. Gender narratives are also incorporated into the Brief, presenting first-hand perspectives from women on the front line of eradication. The Brief culminates in a proposed framework for the GPEI's future gender reporting, to be incorporated into the GPEI's Semi-Annual Status Reports in 2018.

1 Gender refers to the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men. It varies from society to society and can be changed.

2 WHO Member States are grouped into six regions: WHO African Region, Region for the Americas, Eastern Mediterranean Region, European Region, South-East Asia Region, Western Pacific Region

▼ © UNICEF/C.Hibbert

GPEI COMMITMENT TO GENDER EQUALITY

The GPEI is a public-private partnership led by national governments with five partners: the World Health Organization (WHO), United Nations Children's Fund (UNICEF), Rotary International, the US Centers for Disease Control and Prevention (CDC) and the Bill & Melinda Gates Foundation.

The partners' respective commitments to gender equality are outlined in the following section. Table 1. GPEI partners' gender policies and Table 2. GPEI partners' gender strategies and implementation summarize the available resources for the partners' commitments to gender equality and engagement of women.

World Health Organization (WHO)

As a specialized United Nations agency, WHO has been mandated to mainstream gender in accordance with the UN System-wide Action Plan on Gender Equality and the Empowerment of Women (UN-SWAP) (1). This action plan builds upon the agenda set by the landmark Beijing Declaration and Platform for Action as well as other internationally agreed commitments and development goals (2). In January 2016, the United Nations passed the 17 Sustainable Development Goals (SDGs), including Goal 5: "achieve gender equality and empower all women and girls".

United Nations Children's Fund (UNICEF)

As a United Nations programme, UNICEF operates in accordance with the UN-SWAP. UNICEF's gender policy is additionally grounded in the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the Convention on the Rights of the Child (CRC) (3) (4). The Gender Action Plan (GAP) 2018–2021 specifies how UNICEF will promote gender equality across all of the organization's work at the global, regional and country levels, in alignment with the UNICEF Strategic Plan. The GAP elaborates the gender dimensions of the programmatic results across the outcome areas of the Strategic Plan along with the relevant indicators for measuring success. It also specifies the steps UNICEF is undertaking with regard to institutional effectiveness in implementing the programmatic work on gender, through commitment of resources and strengthening of staffing, capacity and systems.

Rotary International

Rotary promotes diversity in its membership. In its Rotary Code of Policies, Rotary outlines its Statement on Diversity: "Rotary recognizes the value of diversity within individual clubs. Rotary encourages clubs to assess those in their communities who are eligible for membership, under existing membership rules, and to endeavour to reflect their community with regard to professional and business classification, gender, age, religion, and ethnicity." A primary goal for Rotary regarding membership attraction is to "improve Rotary's overall age, gender, ethnic and vocational diversity based on the existing qualifications for membership." Diversity assessment tools are used to identify those people who may be under-represented.

In January 2017, President of Rotary International, Ian H.S. Riseley, focused on gender equality as a priority for Rotary in his speech to Rotary's International Assembly. His presidential citation includes a goal for clubs to achieve a net gain in female members. In the President's Rotary citation brochure, he states, "we're focused more than ever on making sure that Rotary reflects the people it serves, with more women and a more diverse membership."

The US Centers for Disease Control and Prevention (CDC)

The CDC is committed to ensuring that research conducted with CDC funds addresses health problems that affect women and minority populations. CDC works consistently to protect the health of women and girls throughout the world, including countries affected by conflict and disaster. This work is accomplished through a number of the CDC's centers, institutes and offices, all supporting efforts to be more responsive and effective in improving the status of women and girls. CDC's strengths and resources include the following: building public health workforce capacity, developing surveillance and strategic information systems, conducting monitoring and evaluation activities and translating research into public health policy.

The Bill & Melinda Gates Foundation

The Bill & Melinda Gates Foundation is guided by the principle that "all lives have equal value and every person deserves the opportunity to lead a healthy and productive life." The Foundation invests in programmes and partnerships that work side by side with women and girls to clear some of the biggest barriers that keep them from reaching their full potential. Through its gender equality strategy, the Foundation aims to empower more women and girls with the economic opportunities they need to act and engage as equals in society and exercise power over their own lives. To better understand the barriers that stand in the way of women's and girls' health and prosperity, the Foundation invests in sex-disaggregated data that paint a more accurate picture about the realities of their lives. Similarly, the Foundation supports grassroots women's movements and leaders to drive change from the ground up, holding leaders accountable for their promises to women and girls. The Gates Foundation has also developed a gender empowerment model to ensure that empowerment is a central objective of the grants that the Foundation makes.

Table 1. GPEI partners' gender policies

WHO	Gender Policy
UNICEF	Policy on Gender Equality and the Empowerment of Girls and Women
Rotary International	Rotary Code of Policies
CDC	Inclusion of Women and Racial and Ethnic Minorities in Research
Bill & Melinda Gates Foundation	Global Diversity & Inclusion Commitment

Table 2. GPEI partners' gender strategies & implementation

WHO	Gender Strategy
UNICEF	Gender Action Plan 2018–2021
Rotary International	Member Diversity Assessment and Membership Assessment Tools
Bill & Melinda Gates Foundation	Gender Equality Strategy

▼ During a door-to-door national polio campaign, a polio worker vaccinates a young girl in Drrimiann Goth Village in Hyderabad District, Sindh Province, Pakistan. © WHO Pakistan / A. Zaidi

GENDER ANALYSIS FRAMEWORK AND METHODOLOGY

World Health Assembly resolution WHA60.25 urges WHO and Member States to integrate gender analysis and planning to ensure that the "gender-equality perspective is incorporated in all levels of health-care delivery and services, including those for adolescents and youth". The resolution specifically calls for the collection and analysis of sex-disaggregated data for informing policy and programmes.

The GPEI gender analysis was informed and guided by WHO and UNICEF gender analysis tools. The analysis framework is based on adherence to the WHO Gender Mainstreaming Manual for Health Managers, which includes the WHO Gender Analysis Matrix (GAM) and the WHO Gender Analysis Questions (5). Other frameworks were also consulted for reference, including the gender and immunization summary report for the Strategic Advisory Group of Experts (SAGE) on Immunization and UNICEF's Policy on Gender Equality and the Empowerment of Girls and Women (6) (7).

Data analysis consisted of four stages. In the first stage, systematic literature searches were conducted in WHO's Global Information Full Text (GIFT), Google Scholar, Cochrane Library, PubMed, JSTOR and ISI Web of Knowledge. Relevant keywords were applied including "polio", "gender", vaccin* and individual country names for the GPEI's 16 priority countries. Additional free searches were conducted in the grey literature. A qualitative synthesis methodology was used to identify gender-related barriers in immunization activities of the 16 priority countries.

The second stage of analysis comprised the identification and application of gender-sensitive indicators. Based on the key barriers identified, four measures were designed to test gender differences across immunization and surveillance activities. Sex-disaggregated data were analysed from WHO country office campaign data, WHO acute flaccid paralysis surveillance data and UNICEF social mobilizer data. Data were analysed for all four indicators for the three endemic countries in 2016 and 2017. Data were also analysed for indicators 2 and 3 for the GPEI's priority countries. Nepal was excluded from the analysis because sex-disaggregated data were not available.

Data for boys and girls were compared to determine if any major gender differences were encountered. Statistical significance for indicators 2 and 3 was determined by applying Fisher's exact test with a P value of < 0.05. In addition to statistical significance, differences across boys and girls that were strikingly important although not flagged as statistically significant were also considered. This mainly occurred when the surveillance data sample size was quite small. An "important difference" is defined as a difference of at least 10% points (percentage point difference = percentage in boys – percentage in girls) or an odds ratio (OR, effect size) ≥ 2. If surveillance data had less than 10 observations altogether, it was not considered noteworthy for any comparison.

The third stage of analysis investigated polling data from the perspective of caregivers. This stage involved the collection and analysis of sex-disaggregated data from Harvard Opinion Research Polling. The UNICEF and Harvard T.H. Chan School of Public Health (HSPH) collaboration conducts Knowledge, Attitudes and Practices (KAPs) polls on caregivers' perspectives about polio vaccination. These polls are administered in Afghanistan, the Democratic Republic of the Congo, Nigeria, Pakistan and the Horn of Africa. Relevant polio questions were selected for inclusion in the Gender Technical Brief that compare answers by gender. The HSPH team performed the analysis for the polling data.

The final stage of analysis focused on qualitative gender data. Interview data were collected and analysed from individuals on the front line of eradication, including vaccinators and social mobilizers. Gender narratives were selected for inclusion from the three polio-endemic countries. These narratives represent first-hand perspectives from women on the front line. Quotations from the women's stories are reproduced in this Brief.

▲ Polio vaccinators visit a house in Bamyan province, Afghanistan, to vaccinate all children under the age of 5. © WHO Afghanistan/R.Akbar

IDENTIFYING GENDER-RELATED BARRIERS

Gender is relational, operating between people and across social factors. Gender determinants of health do not act alone, but in concert with individual, household, communal and contextual factors. A multiplicity of gender-linked factors affect a child's immunization status. From son preference to maternal education, the relevant gender dimensions of childhood immunization vary between and within countries. In this Brief, specific focus is given to gendered determinants of immunization in the GPEI's 16 priority countries.

Three important individuals are recognized whenever a child is immunized against polio: the child, the parents (or caregivers) of the child and the health worker. Gender-related barriers exist for these individuals and for their interactions with one another. By considering these barriers, the Brief elucidates potential mechanisms through which gender inequality directly and indirectly contributes to missed children in polio campaigns.

Risk factors and vulnerability

The most at-risk population for contracting poliomyelitis is children aged under 5 years, with over 80% of cases occurring in children aged under 2 years. Sex is a risk factor for polio, with a slight predominance found in males, who are more at risk for developing paralytic polio (8) (9). Adult females are also at risk if they are pregnant (10) (11).

Other risk factors for polio, immune deficiency and malnutrition, are influenced by gender. Male infants and children have weaker immune systems (12). Genetic, hormonal and physiological differences help explain females' stronger innate and adaptive immune responses. Severe malnutrition has been linked to gender discrimination in children aged under 5 years (13) (14). Although there is some variation in weight differences, boys have a higher likelihood of being underweight than girls worldwide (15).

Physical activity is a risk factor associated with the severity of paralysis. This factor too is influenced by gender. A review of physical activity studies found that gender was consistently associated with physical activity in children and adolescents (16). Boys were found to be generally more active than girls. That girls exercise less than boys in the majority of developing countries is suggestive of differences in opportunities, shaped by strict gender roles limiting girls' mobility (17).

Of all the risk factors associated with polio, the greatest one is not being immunized against the virus. For this reason, barriers that prevent a child from being fully immunized are the most important obstacles to achieving a polio-free world. Barriers that are linked to the gender of the child, the caregiver and the front-line worker are discussed in the following sections.

Gender of the child

Worldwide, a child's gender does not have a significant influence on immunization status. A SAGE report on 67 countries found no significant difference between immunization coverage of girls and boys (6). Subsequent studies have confirmed the lack of gender disparity in immunization coverage (18) (19) (20) (21). A study specifically investigating

unvaccinated children (having received no doses) across 96 countries also confirmed no significant gender differences (22).

Nevertheless, there are notable variations, where immunization coverage is higher for girls in some countries and higher for boys in others (17). For instance, females receive lower immunization coverage in south-central Asia (12). Additionally, gender interacts with other factors like socio-economic status to affect immunization status. For example, the SAGE report found that boys from the poorest households were less likely to receive vaccination.

Across countries, no significant gender disadvantage was observed in polio immunization from 1990 to 2008 (23). More recent analyses continue to demonstrate a lack of gender differences, both in measures of vaccination coverage and in measures of poliovirus seroprevalence (24) (25) (26) (27) (28). For example, a study of missed children in routine polio vaccination in Nigeria found no significant gender differences (29). However, an important exception is India, where one study found that gender was significantly associated with poliovirus seropositivity (30). Female children were also associated with missed polio vaccination in another Indian study (31).

The gender disparity in immunization coverage in India has been the subject of several long-term studies (32) (33) (34). Whereas the vast majority of countries demonstrate non-significant gender differences in immunization, India is one of only a handful of countries (including Somalia, another GPEI priority country) to immunize significantly more boys than girls (20). Pande and Yazbeck suggest that gender differentials in India's immunization are not necessarily health system related, but are instead reflective of deep-rooted, societal norms (35):

> "Compared to wealth and urban-rural inequalities, gender inequalities appear to be much more widespread, and unrelated to overall state immunization performance. This very different state-level pattern for gender differentials suggests that the reasons for worse immunization among girls than boys may lie not as much in the immunization or public health system per se but, rather, may reflect a pervasive social situation that goes beyond the public health system. In other words, the gender differentials reflect the well-documented strong and persistent discrimination against girl children in Indian society. (p. 2086)

It is also important to recognize that India's polio programme is considered a gold-standard programme within the GPEI, still reaching >97% of children in polio immunization campaigns in 2017 with a front-line workforce that is overwhelmingly female – more than 98% of front-line vaccinators and social mobilizers are women – and relentlessly focused on ensuring no children are missed during campaigns. In National Immunization Days in India, more than 172 million children aged under 5 years are vaccinated in five days. The last case of wild poliovirus in India was recorded on 13 January 2011 and the country, as part of WHO's South-East Asia Region – is now certified polio-free.

Child preference

Although gender disparities in immunization are not widespread, the preferential treatment of boys is perpetuated in certain contexts, as in the example from India. Countries with higher levels of gender inequality have been associated with lower, less equitable levels of immunization (36). The GPEI's 16 priority countries include countries with some of the widest gaps in gender equality, according to the World Economic Forum's Global Gender Gap Index rankings (37). Polio-endemic Pakistan, for example, is ranked second-to-last of the 144 countries. For the sub-index of health and survival, India is ranked third-lowest in the world, demonstrating the least improvement over the past decade.

Son preference influences parents' utilization of health services for their children. Daughters have faced greater abandonment and neglect in many areas of the world, particularly Asia (38). Gender disparities in health are higher in South Asia than any other part of the world (39). For example, Indian girls are less likely to receive health treatment, have less money spent on them for medicine, and are taken to health-care facilities at later stages of illness (40).

Cultural preferences for sons are typically investigated by two proxy measures: sex ratios at birth and childhood mortality. Distorted sex ratios at birth and high rates of sex-selective abortion demonstrate prenatal bias in parents. In China, the sex ratio at birth is 113 males to 100 females, the highest in the world (41). In a study of the desired sex ratio at birth, Bongaarts found substantial differences for the preferred gender of a child between married women and married men (42). Countries with the strongest preferences are those with desired ratios exceeding 120. These countries included Pakistan, Nepal and India.

Few studies have investigated the link between son preference and differences in childhood immunization. A systematic review of gender-related studies found that only one study from rural China specifically cited the sex of the child as influencing immunization decisions (43) (44). A more recent study from Pakistan also investigated whether gender preference impacts a mother's decision to vaccinate. Around 10% of the Pakistani mothers surveyed reported having gender preferences for child immunization (45). The importance of the parent's decision-making is thereby another key element to gender-linked barriers, discussed in the following section.

Gender of the parent or guardian

Since polio mostly affects children aged under 2 years, parents or caregivers are the critical decision-makers for allowing a child's access to immunization. The type of decisions

they make, their power to make decisions and their available resources to act on those decisions are all influenced by gender.

Contextual factors

Several contextual factors interact with gender, including socio-economic status, ethnicity, religion, age and place of residence. Ethnic disparities in children's immunization coverage have been documented in Nepal, Pakistan and Nigeria (46) (47) (48) (49). In Indonesia, utilization of health services differs significantly by gender and urban or rural communities, with two thirds of the population estimated to use self-treatment when ill (50). Immunization coverage in most low- and middle-income countries reveals pro-urban and pro-rich disparities (20). Nigeria, Pakistan and India display the greatest pro-rich inequalities, in terms of slope indices. Children from the richest quintile of Pakistan are 18% more likely to receive polio vaccinations (51). In terms of place of residence, Ethiopia displays the greatest absolute pro-urban disparity, with a difference of 28% between immunization coverage in urban areas compared to rural areas.

Pakistani women who are younger, uneducated, from the poorest wealth quintile and living in rural settings are less likely to have children vaccinated against polio (52). Similarly, Nigerian mothers who are uneducated, unemployed, living in poorer households and from communities with high maternal illiteracy rates are more likely to have children who receive no polio vaccination (29). An in-depth review of gender determinants for childhood immunization found that (44):

> "...women's low social status manifests on every level as a barrier to accessing vaccinations: access to education, income, as well as autonomous decision-making about time and resource allocation were evident barriers. (p. 1)

Gender discrimination against women is amplified in contexts where women are impoverished, marginalized and belonging to minority religious or ethnic groups. The compounding of social and physical barriers for women in patriarchal societies constrains their capacity to provide health care to their children. Mothers are at the intersection of two conflicting sets of demands; on the one hand they are seen as responsible for their children's health but, on the other, they may lack the resources and autonomy to seek out health care.

Education and communication

Uneducated women are less likely to immunize their children. Although paternal education is also associated with a child's immunization status, lower educational levels of maternal caregivers are more commonly related to under-vaccination (53). A comprehensive review of immunization equity found that the greatest disparity exists for children with uneducated mothers (18). A mother's individual educational level as well as the literacy rate of her community are important factors for a child's complete immunization (54).

There is a serious gender gap in education in Afghanistan and Pakistan. Female enrolment is low for both countries, even at the primary level of schooling (23). There is also substantial regional variation, with literacy rates for rural females in the Federally Administered Tribal Areas (FATA) and Balochistan falling below 10% (55). Significant variation in Nigeria is apparent, too: a wealthy urban child attends school for 10 years on average while a poor rural Hausa girl attends school for less than six months on average (23).

Maternal education has been significantly associated with polio immunity in the Democratic Republic of the Congo and total doses received in Nigeria (28) (27). Maternal education was the only significant factor associated with accepting the injectable inactivated polio vaccine (IPV) in Nigeria (56). In Pakistan, uneducated women are significantly more likely to have children who received no polio vaccination (52). Pakistani health workers also reported lack of education as the main reason for parents' refusal of oral polio vaccine (OPV) (57).

Knowledge, attitudes and perceptions

Higher educational levels are associated with greater knowledge about immunization, which is in turn associated with more positive attitudes towards immunization (58). Mass media campaigns are a common source for vaccine-related information (59). In sub-Saharan Africa, a mother's access to mass media was significantly associated with the likelihood of vaccinating her children against polio (60).

The most common reason for non-vaccination given by women in Nigeria and Pakistan is lack of knowledge (61) (59). The Pakistani study defined the domain of lack of knowledge as lack of awareness, illiteracy and misconceptions. Lack of knowledge and illiteracy also contributed to missed polio vaccinations in India (31). Of the Nigerian mothers who had never vaccinated their children, 66% gave reasons related to lack of knowledge (58).

A parent's understanding of immunization is also hampered by myths, rumours and suspicions. A Nigerian study found that trust in vaccination safety, rather than poor knowledge of immunization, was a more relevant factor (62). Challenges to trust were associated with religious entrenchment, especially among northern Muslim communities. Distrust has been fuelled in the past by erroneous misconceptions about the polio vaccine, most notably that the vaccine included anti-fertility agents, HIV and/or cancer-causing agents, or its production was haram, or contrary to the requirements of Islam. Erroneous perceptions about the polio vaccine persist in some areas. For example, 14% of the mothers surveyed in northern Nigeria believed that vaccination may cause infertility (58). A study of high-risk areas in Pakistan found that 32% of residents expressed fears that the polio vaccine causes infertility (63). Fear of sterility was also commonly reported among Pashtuns in Pakistan as a reason for refusing polio vaccination (64).

Cultural and religious beliefs influence perceptions of OPV. In Nigeria, local perceptions of polio give the disease a gendered identity. Polio paralysis is called Shan-Inna by the Hausa and the disease is believed to embody a powerful female spirit (65). In Pakistan, religious misconceptions were reported by 39% of male and female residents surveyed (63). Although religion and religiosity have been linked to immunization rates, one study found that in Nigeria, "the greater explanatory factor is not religion itself, but religiously fuelled social tendencies of poor education, low economic status and isolated livelihood, which predict low uptake of immunization" (p. 53) (62). When mothers are poorly educated and socially marginalized, they are more vulnerable to misconceptions propagated by others in positions of authority, like religious leaders and local politicians.

Health-seeking behaviours

Maternal health-seeking behaviours are also important indicators for children's vaccination status. A study of 241 household surveys from 96 countries found that the strongest predictor for children not having received any vaccination was whether the caregiver had received two or more doses of tetanus toxoid (TT) vaccine (22). Besides TT vaccination, a mother's use of antenatal care and her place of delivery are other health-seeking behaviours linked to children's immunization. Limited or no antenatal care and home delivery have been associated with a lower likelihood of children being fully immunized in India, Ethiopia, and Pakistan (66) (67) (68) (69). Of the GPEI's 16 priority countries, four countries have the lowest percentages of reproductive-aged women receiving antenatal care globally. Less than half of women receive antenatal care in Afghanistan, Ethiopia and South Sudan, and less than one third in Somalia (70). Similarly, the five countries with the lowest percentages of reproductive-aged women giving birth in a health facility are also represented in the priority countries: Chad, Ethiopia, Somalia, South Sudan and Sudan. All five have less than one quarter of women delivering in a health facility, with only 10% of women in Ethiopia and 9% in Somalia (70).

Access to and control over resources

Access to and control over resources are other limiting factors for accessing vaccination services. When mothers have to travel to receive vaccinations for their children, they incur costs, even if the vaccination itself is free. Travel imposes direct costs associated with transportation and indirect costs associated with wage loss and childcare provisioning. Where gender norms preclude mothers from travelling alone, mothers face the additional burden of arranging a guardian or suitable companion to travel with them. Nigerian women reported that lacking a person to accompany them was a barrier to seeking health care (71).

In a study across all 36 states of Nigeria and the Federal Capital Territory, the most commonly reported barrier to accessing immunization was lack of financial resources for the costs of transportation or services (71). The second most commonly reported barrier was distance from the nearest health facility. Mothers living eight to 10 km away from immunization facilities were the least likely to have their children immunized (72). Another Nigerian study found that although the cost of transportation prevented many mothers from completing immunization, the fact that polio supplementary immunization activities (SIAs) are conducted door-to-door improved immunization rates (73).

The type of terrain to be crossed and the time needed to transverse it are additional constraints. In Nepal, for example, travel time to the closest health facility was inversely associated with the probability of immunization (74). This association was stronger in the rural, harder-to-reach mountainous regions. Travel distance was also associated with missed polio vaccinations in India (31). Interestingly, maternal perception of distance is an important factor, too; mothers who perceive the distance as being able to be overcome, regardless of the absolute distance values, were over four times more likely to immunize their children (72).

Decision-making capacity

A woman's autonomy affects her ability to access health services for herself and her children. Women's agency and decision-making have been significantly associated with children's immunization status (75) (49) (76). The higher the mother's agency, the more likely she will immunize her children. Pakistani mothers who were directly involved in decision-making for health care, household purchases or visits to family and friends had significantly higher odds of taking their children for polio immunization (52).

Access to and control over household resources is an important dimension of autonomy, particularly for financial decision-making. In Ethiopia, children of women who made joint decisions with their husbands on financial earnings were eight times more likely to be fully immunized (66). Inability to access the household's financial resources has a knock-on effect for a mother's capacity to accomplish other tasks, like travel to a health facility. Mothers with lower financial access have children with higher odds of being incompletely immunized (77).

Where women lack autonomy, they may require spousal permission to immunize their children. Mothers who perceive that spousal permission is required for their child's immunization are less likely to fully immunize their child (72). A spouse who is against immunization was a commonly reported reason for non-vaccination of children in Pakistan (59) or for mothers asking for their children to be vaccinated but not finger-marked as vaccinated. Spousal disapproval was also commonly reported by Nigerian mothers as the reason for non-immunization (61). In Zamfara state, 37% of women cited lack of permission from their husband as the reason for non-vaccination and in Borno State, 32% of mothers reported their husbands' permission as affecting their children's chances of being immunized (58) (72). In fact,

some mothers in the Borno study could not be interviewed precisely because they feared obtaining their husband's permission.

Spousal resistance was the primary barrier to OPV acceptance cited by mothers in Nigeria (78). Of the reasons given for OPV refusal, the most common reason (45%) was disapproval from the male head of household or if he was absent, lack of permission. A common reason for why children were missed during an OPV campaign in Katsina State was that a caretaker did not allow vaccination (79). For Pashtun families in Pakistan, fathers are the primary decision-makers. Lack of permission from a father or family elders was the most common reason (77%) for OPV refusal in Pashtun families (64). Another study in northern Nigeria tested the extent to which male and female caregivers agree that children were missed in vaccination campaigns and agree about whether OPV will be refused in the future (80). The study found substantial differences, with male and female caregivers in rural Kano demonstrating the greatest lack of agreement.

Social and physical mobility

In deeply patriarchal societies, strong gender norms restrict women's social and physical mobility. The culture of *purdah*, for instance, prevents many Afghan women from moving freely outside their home. Girls in rural areas of Pakistan are often confined to their homes due to cultural norms (81). In Bauchi, Nigeria, most Muslim women can leave their homes only if accompanied by their husbands (82). The Hausa observe norms related to the seclusion of married women (83). Muslim practices also restrict postnatal mobility, prescribing that newborn infants and their mothers remain indoors for 40 days. In all of these cases, door-to-door immunization services are crucial to addressing gendered mobility restrictions.

One way to measure women's physical mobility is through freedom of movement indicators. Although there are a dearth of studies on freedom of movement and child immunization, some have demonstrated significant associations. A study in rural Bangladesh found that mothers with restricted permission to travel alone to the hospital were less likely to have fully immunized children (84). In Ethiopia and Eritrea, greater maternal freedom of movement (measured via decisions to visit family and friends) was associated with children receiving full immunization (85). A study of 25 623 mother-child dyads in India measured freedom of movement through a mother's ability to travel to the market, to a health facility and to places outside the village or community (77). This study found that a mother's low freedom of movement increased the odds of her children being incompletely immunized by 20%. Moreover, only around one third of the mothers had permission to travel alone outside the village or community. Where mothers' mobility is restricted, there is even greater importance for the role and gender of the health worker, discussed in the next section.

Gender of the front-line worker

In a review of the GPEI's lessons learned from India and Pakistan, the researchers concluded (86):

> "There is no vaccine against resistance or refusals that are rooted in social-cultural, religious and political contexts. No supply chain can overcome issues of gender-based decision-making in households. Medical approaches alone cannot address certain community concerns [...] These challenges demand effective communication action. (p. 628)

The GPEI's front-line workers (FLWs) are a critical source of communicative action. In rural Nigeria, for example, health workers were the main source of information on immunization, as reported by 72.7% of mothers interviewed (87). The GPEI's FLWs comprise the vaccinators and social mobilizers who not only provide and assist in immunization activities, but also supply important health information. These FLWs interact with children and/or their parents or guardians. Gender dynamics influence the form of these interactions and their capacity to take place.

Gender norms for male-female interactions

Gender norms for acceptable male-female interactions shape and determine the delivery of immunization. Islamic law often regulates the type of behaviour allowed between women and men who are not blood relatives. Unrelated men are not permitted to enter Muslim households if women are alone with their children (88). In certain cultural contexts, as in Hausa tradition, unrelated men may not speak to women without permission from their husbands (78). Because of these religious and social customs, women may be prevented from receiving health-care services from men, especially at the household level.

In contexts where having an open conversation with a male health worker is not possible, it is imperative that female FLWs are available to speak to women and deliver health services. A study in Karachi found that a lack of female health workers was associated with poor TT vaccination coverage of mothers (89). The presence of female health workers in Pakistan has been associated with substantial increases in TT coverage, attended deliveries, and full immunization coverage of children (90). Another study from Afghanistan found that nearly all health supervisors and managers agreed that female health workers were more effective at delivering services focused on maternal and child health (91).

In the GPEI's immunization activities, female FLWs have also increased the effectiveness of health service delivery, and in many settings only women can access households and vaccinate infant children inside the household. Female social mobilizers have improved attitudes towards polio vaccination and the perceptions of risks associated with the disease (86) (92). All-male vaccinator teams, on the other hand, were found to be ineffective, posing a critical

gender-related barrier to polio eradication efforts (86) (88). In Nigeria, for example, all-male vaccination teams were unable to engage with young mothers during polio supplementary immunization activities (78). A review of polio immunization in Afghanistan from 1997 to 2013 suggested that mothers' refusals were related to interactions with all-male vaccination teams (93).

Trust-building capacity

Trust in polio vaccinators is an important determinant for acceptance of OPV (94). Trust in vaccination services is also influenced by gender constructs. When women's use of space is structured by gender norms, female FLWs have greater access to building relationships with mothers. Women on the front line communicate directly with female caregivers and indirectly with other women in the community. The recruitment of local women, in particular, enables a larger capacity for trust. In cases where female FLWs do not conform to local practices, such as veiling in northern Nigeria, then acceptance may be limited (95). For this reason, recruitment of women from within their local community is essential. In Pakistan, for example, recruitment of female community-based vaccinators was pivotal to improving trust (96).

Health worker preference

Mothers also demonstrate gender preferences for FLWs. There is greater demand from mothers for female vaccinators and social mobilizers. For example, around 70% of Pakistani mothers said they preferred female vaccinators to immunize their children (45). Nigerian women reported that the main barrier to accessing health care was the non-availability of a female provider (97). In polio immunization activities, UNICEF and Harvard Opinion Research Polling demonstrate significant demand for female vaccinators. When posed with the choice of vaccinator teams as a single man, a single woman, two men, two women, or a man and a woman, over 60% of Pakistani caregivers preferred two women (96). Further results from the UNICEF and Harvard KAP studies are discussed in later sections.

Social and cultural status

Although female FLWs improve the quality and outcome of polio campaigns, their recruitment is hampered by gender-related barriers. Where women maintain lower cultural status, they face economic, social and physical restrictions. In rural areas of Afghanistan, the recruitment of female health workers is often difficult (98). To become a community health worker in Afghanistan, women must obtain permission from a male head of the family (91). The freedom of movement is also an important barrier to overcome, as described earlier in relation to women's autonomy. Mobility of female FLWs is improved by compliance with gender norms of companionship. A female health worker is paired with a male *mahram*, a male relative with whom contact is permissible. To perform her role, however, a FLW must be able to convince that relative to travel with her.

Safety risks

Safety risks are also a gender-related barrier to FLWs. For example, some women have dropped out of the Afghanistan health workforce in areas where there is increased insecurity (99). In recent years, both male and female polio vaccinators have been targeted by fatal militant attacks in polio-endemic countries (100). Although most attacks appear to be unrelated to polio, the increased participation of female FLWs entails increased vulnerability for women on the front line. Where necessary, these FLWs are accompanied by security personnel or operate in areas that have been blocked off by security personnel. Increasing security protection, however, sometimes has the adverse effect of drawing greater attention and publicity. For this reason, the model of local, trusted, community-protected vaccinators and social mobilizers has in itself been a key factor in the reduction of security incidents around polio FLWs. These locally known women are able to maintain lower profiles and move more freely within communities that trust them.

Framework for gender-related barriers

Table 3. Gender-related barriers to the GPEI's immunization activities

ACCESS TO IMMUNIZATION	**Child favouritism or preference** Cultural preferences favouring a child by gender may influence a parent or guardian's decision to seek health services.
	Education and communication Literacy and educational status may be affected by gender. Understanding health communications may be hampered by illiteracy or low levels of education.
	Health-seeking behaviours Gender may influence health-seeking behaviours, and the gender of a parent or guardian may differentially influence if and when the child is immunized.
	Decision-making capacity Gender norms may influence the agency that a parent or guardian has to make health-related decisions.
	Access to and control over resources Different access and management over resources by gender may influence a parent or guardian's capacity to partake in immunization activities for his or her child.
	Social and physical mobility Cultural norms or factors may influence a parent or guardian's mobility, either socially or physically.
PROVISIONING OF IMMUNIZATION	**Gender norms for male-female interaction** Religious or cultural norms may influence the type of interactions expected or permitted between males and females, which is especially relevant for vaccinators seeking access to chidren at the household level.
	Trust-building capacity Perceptions of front-line workers workers and trust in what they say and do may be influenced by the gender of the worker and the gender of the parent or guardian.
	Health worker preference Parents or guardians demonstrate differential preference for the gender composition of vaccinator and social mobilizer teams.
	Social and cultural status Individuals may have differential access to becoming vaccinators or social mobilizers based on lower social or cultural status.
	Safety risks Vulnerability to physical attacks may be affected by the gender of front-line workers.

▼ A young girl displays her finger marking following polio vaccination in Afghanistan © WHO/S.Ramo

MEASURING GENDER-RELATED BARRIERS

Gender-sensitive indicators

The GPEI has developed four gender-sensitive indicators to monitor progress towards ensuring equal access to vaccinations and to the engagement of women. Gender-sensitive indicators allow the GPEI to assess changes in gender equity over time. These indicators function as measuring tools for gender-related changes specifically in access to immunization and the provision of immunization. Regular application of the indicators is critical to monitoring the status of gender equality in the GPEI's activities.

The GPEI collects sex-disaggregated data for vaccination campaigns and for global disease surveillance. The four gender indicators have been developed from these two data sources. Post-campaign data include the record of vaccinated children, either by finger-marking or through other post-campaign independent monitoring data. The disease surveillance data include all acute flaccid paralysis (AFP) cases that were notified and investigated.

The GPEI's four gender-sensitive indicators are outlined in Table 4. The GPEI's gender-sensitive indicators. The first three indicators measure progress towards equality of access to immunization and the fourth shows progress towards the engagement of women in immunization activities.

(1) Girls and boys reached in vaccination campaigns

Data Source: Campaign data from WHO country offices, including Lot Quality Assurance Sampling (LQAS), Post-Campaign Monitoring coverage (PCM) and other independent post-campaign monitoring.

Description: The number of children vaccinated is recorded after vaccination campaigns, by LQAS or other independent monitoring data. These post-campaign data include sex-disaggregated data for children aged under 5 years. The participation measure compares the percentage of girls and boys vaccinated after a vaccination campaign has been completed.

(2) Total doses received

Data Source: Acute Flaccid Paralysis (AFP) surveillance data from WHO.

Description: The total number of doses received is recorded in the AFP case data. The dosage count is an additional measure for assessing children's overall participation in vaccination campaigns or routine immunization. Because the number of doses increases with age, it is important that any comparison controls for age. The number of doses is investigated with respect to children aged 6–59 months. Gender comparisons are established as median number of doses received, percentage of zero doses received, and percentage of 3+ doses received.

(3) Timeliness of disease surveillance

Data Source: Acute Flaccid Paralysis (AFP) surveillance data from WHO.

Description: The AFP case data include information on the date of onset of paralysis and the date of notification by the caregiver(s). The delay of notification is calculated by the difference in days between onset and notification. This measure informs whether or not the child's gender biases how quickly his or her disease is notified within the surveillance system. Timeliness is assessed by comparison of median values and by the percentage of male and female cases notified within three days.

(4) Representation in immunization activities

Data Source: Campaign data from WHO country offices and social mobilizer data from UNICEF.

Description: The representation indicator measures the percentage of female and male front-line workers. The designation of front-line workers includes all vaccinators and social mobilizers. UNICEF provides sex-disaggregated data for social mobilizers as well as community-based vaccinators (CBVs) in Pakistan.

Table 4. GPEI's gender-sensitive indicators

(1) GIRLS AND BOYS REACHED IN VACCINATION CAMPAIGNS	Percentage of girls and boys aged under 5 years recorded as vaccinated.
(2) TOTAL DOSES RECEIVED	Median number of doses of girls and boys aged 6-59 months. Percentage of girls and boys aged 6-59 months with 0 doses. Percentage of girls and boys aged 6-59 months with 3+ doses.
(3) TIMELINESS OF DISEASE SURVEILLANCE	Median number of days for disease notification for males and females. Percentage of males and females with disease notification within three days.
(4) REPRESENTATION IN IMMUNIZATION ACTIVITIES	Percentage of female and male front-line workers (vaccinators and social mobilizers).

▼ A man holds his baby who was vaccinated against polio in Kandahar, southern Afghanistan. © WHO/J.Jalali

RESULTS

The results of the data analysis are presented in the tables below. Statistical significance for indicators 2 and 3 was determined by applying Fisher's exact test with a P value of < 0.05. In addition to statistical significance, differences across boys and girls that were strikingly important although not flagged as statistically significant were also considered. This mainly occurred when the surveillance data sample size was small. An "important difference" is defined as a difference of at least 10% points (percentage point difference = percentage in boys – percentage in girls) or an odds ratio (OR – effect size) ≥ 2. If surveillance data had less than 10 observations altogether, it was not considered noteworthy for any comparison. Results that showed an important difference according to statistical testing (p-value, percent point difference and/or OR) are marked with the symbol α in the tables below.

Statistical testing and analysis of the data do not show significant differences in terms of gender for most countries analysed in this Brief, either for children reached in vaccination campaigns or for surveillance data. Based on statistical analysis, noteworthy differences were noted for Ethiopia (indicator 3 - % <= 3 days), India (indicator 3 - % <= 3 days), Somalia (indicator 2 - % 3+ doses) and South Sudan (indicator 2 - % 0 doses and indicator 3 - % <= 3 days).

Many of the statistically significant results were found for indicator 3 measuring the timeliness of surveillance, where for example in South Sudan, 60.8% of boys had disease notification within three days, compared to only 48.9% of the girls surveyed. Results from India also show delays for disease notification for girls. For indicator 2, measuring the percentage of girls and boys aged 6–59 months with 3+ doses, results for Somalia show that girls have received more doses than boys. During the first half of 2017, 84.8% of girls were recorded as having 3+ doses, compared to 67.7% of boys. For South Sudan in 2016, the percentage of girls with 0 doses was 3.82% while it was 0.75% for boys. The programme continues to closely monitor the data for these countries and investigate significant findings to guide its work.

Endemic countries continue to engage female front-line workers in immunization activities, and women currently constitute 56% of front-line workers in Pakistan and over 90% in Nigeria. In Afghanistan, where insecurity and strict gender roles in many areas restrict women's work and movement in the public sphere, currently 13% of front-line workers are women in the country overall, while the figure is around 40% in urban areas.

Data as of June 2017

Afghanistan

Table 5. Afghanistan's gender-sensitive indicators

		2016			2017		
		FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
(1)*	% vaccinated	89.64	89.98	0.34	92.64	92.5	0.14
	N	29 853	34 104		14 640	17 277	
(2)	Median doses	13	12		13	13	
	% 0 doses	0.86	1.41	0.55	0.48	0.53	0.05
	% 3+ doses	97.5	96.3	1.2	97.62	98.94	1.32
	N	813	1 067		421	565	
(3)	Median days	3	3		3	3	
	% <= 3 days	54.1	53.5	0.6	52.9	56.9	4
	N	1 257	1 648		665	868	
(4)	% front-line workers	11.5	88.5		12.6	87.4	
	% front-line workers in urban areas				42.5	57.5	
	N	56 236	56 236		69 613	69 613	

*LQAS data; N: population size.

Nigeria

Table 6. Nigeria's gender-sensitive indicators

		2016			2017		
		FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
(1)*	% vaccinated	96.9	96.5	0.4	96.41	96.36	0.05
	N	20 244	20 976		35 581	36 969	
(2)	Median doses	10	10		11	11	
	% 0 doses	0.19	0.17	0.02	0.39	0.24	0.15
	% 3+ doses	98.1	98.2	0.1	98.5	99.0	0.5
	N	5 833	7 512		3 088	4 083	
(3)	Median days	4	4		4	4	
	% <= 3 days	42.0	41.5	0.5	40.9	39.5	1.4
	N	7 725	10 142		4 184	5 465	
(4) **	% front-line workers						

N: population size;
*LQAS data

** Exact sex-disaggregated data were not available for this reporting period. However, women constitute more than 95% of front-line workers (FLWs) in Nigeria, and the Nigeria programme will start collecting and reporting on sex-disaggregated data on FLWs in the second quarter of 2018.

Pakistan

Table 7. Pakistan's gender-sensitive indicators

		2016			2017		
		FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
(1)*	% vaccinated	89.7	90.2	0.5	90.3	90.6	0.3
	N	305 391	335 109		210 165	220 477	
(2)	Median doses	10	11		10	10	
	% 0 doses	0.18	0.39	0.21	0.36	0.42	0.06
	% 3+ doses	99.3	98.9	0.4	98.6	99.1	0.5
	N	2 234	3 049		1 393	1 884	
(3)	Median days	3	3		3	3	
	% <= 3 days	52.4	53.6	1.2	53.2	53.5	0.3
	N	3 292	4 556		2 081	2 810	
(4) **	% front-line workers	54.8	45.2		55.6	44.4	
	N	210 597	210 597		217 899	217 899	

N: population size; *Post-campaign monitoring data

Priority countries

Table 8. Gender-sensitive indicators for other priority countries

			2016			2017		
COUNTRY			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
Angola	(2)	Median doses	3	4		3	3	
		% 0 doses	6.90	5.05	1.85	12.5	9.9	2.6
		% 3+ doses	75.9	79.8	3.9	68.75	67.9	0.85
		N	116	99		64	81	
	(3)	Median days	5	4		5	4	
		% <= 3 days	35.2	35.3	0.1	38.1	48.9	10.8
		N	196	201		105	135	

α = Results showing an important gender difference according to statistical testing

COUNTRY			2016			2017		
			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
Bangladesh	(2)	Median doses	6	6		5	5	
		% 0 doses	0.96	0.21	0.75	1.17	0	1.17
		% 3+ doses	97.1	98.7	1.6	98.3	97.6	0.7
		N	311	477		171	249	
	(3)	Median days	3	3		3	3	
		% <= 3 days	56.4	60.6	4.2	55.7	55.8	0.1
		N	569	868		314	423	
Cameroon	(2)	Median doses	6	6		8	9	
		% 0 doses	0.5	1.47	0.97	0	1.18	1.18
		% 3+ doses	96	93.4	3.4	94.6	93.5	1.1
		N	201	272		110	170	
	(3)	Median days	4	4		4	4	
		% <= 3 days	40.7	39.8	0.9	46.9	46.1	0.8
		N	376	490		194	269	
Chad	(2)	Median doses	5	4		4	5	
		% 0 doses	0.69	1.53	0.84	4	2.83	1.17
		% 3+ doses	90.3	88.3	2	88	85.9	2.1
		N	145	196		100	196	
	(3)	Median days	5	5		6	6	
		% <= 3 days	33.2	34.7	1.5	26.5	28.4	1.9
		N	193	291		136	162	
Democratic Republic of the Congo	(2)	Median doses	4	4		4	4	
		% 0 doses	2.66	3.42	0.76	3.01	3.88	0.87
		% 3+ doses	79.8	79.7	0.1	80.1	82.2	2.1
		N	451	526		266	309	
	(3)	Median days	5	5		5	5	
		% <= 3 days	35.9	33.5	2.4	33.9	33.2	0.7
		N	843	969		418	543	

COUNTRY			2016			2017		
			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
Ethiopia	**(2)**	Median doses	4	4		4	4	
		% 0 doses	0.53	0.89	0.36	1.01	0	1.01
		% 3+ doses	84.7	83.6	1.1	82.8	88.2	5.4
		N	189	225		99	135	
	(3)	Median days	5	4.5		3	5	
		% <= 3 days	35.1	39.4	4.3	48.9	36.7	**12.2[a]**
		N	428	619		235	324	
India	(2)	Median doses	15	15		14	14	
		% 0 doses	0.35	0.34	0.01	0.52	0.48	0.04
		% 3+ doses	99.2	99.1	0.01	98.84	98.91	0.07
		N	10 275	14 306		4 049	5 576	
	(3)	Median days	3	3		3	3	
		% <= 3 days	51.9	54.9	**3[a]**	50.8	53.1	**2.3[a]**
		N	19 267	27 314		7 619	10 070	
Indonesia	(2)	Median doses	4	4		4	4	
		% 0 doses	6.16	4.59	1.57	6.45	5.29	1.16
		% 3+ doses	80.4	83.4	3	82.26	81.76	0.5
		N	276	392		124	170	
	(3)	Median days	2	2		2	2	
		% <= 3 days	65.64	64.45		59.26	63.19	3.93
		N	582	827		270	364	
Myanmar	(2)	Median doses	3	4		3	3	
		% 0 doses	2.74	6.82	4.08	0	8.82	8.82
		% 3+ doses	83.56	86.36	2.8	78.95	85.29	6.34
		N	73	88		19	34	
	(3)	Median days	3	3		2	3	
		% <= 3 days	57.8	56.2	1.6	53.7	58.6	4.9
		N	192	258		51	68	

COUNTRY			2016			2017		
			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
Somalia	(2)	Median doses	7	7		7	7	
		% 0 doses	14.29	12.69	1.6	11.39	15.15	3.76
		% 3+ doses	80	79.1	0.9	84.81	67.68	**17.13[a]**
		N	140	134		79	99	
	(3)	Median days	3	3		3	3	
		% <= 3 days	55.49	51.97		55.95	55.45	0.5
		N	164	152		84	110	
South Sudan	(2)	Median doses	7	7		6	6	
		% 0 doses	3.82%	0.75%	**3.07[a]**	2.9	0	2.9
		% 3+ doses	89.31%	92.48%	3.17	89.86	79.31	10.55
		N	131	133		69	58	
	(3)	Median days	3	3		3	2	
		% <= 3 days	55.41%	54.88%	0.53	48.91	60.81	**11.9[a]**
		N	157	164		92	74	
Sudan	(2)	Median doses	11	9		10	10	
		% 0 doses	1.79%	2.61%	0.82	1.75	1.2	0.55
		% 3+ doses	96.43%	96.08%	0.35	94.74	96.39	1.65
		N	112	153		57	83	
	(3)	Median days	3	3		3	3	
		% <= 3 days	59.2%	65.1%	5.9	59.43	63.33	3.9
		N	211	298		106	150	

N: population size

WHO regions

Table 9. Gender-sensitive indicators for WHO regions

REGION			2016			2017		
			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
African Region	-2	Median doses	6	6		7	8	
		% 0 doses	0.67	0.81	0.14	1.1	0.82	0.28
		% 3+ doses	93.66	93.91	0.25	93.83	94.45	0.62
		N	9 415	11 954		5 012	6 362	
	-3	Median days	4	4		4	4	
		% <= 3 days	41.89	41.77	0.12	41.79	39.99	1.8
		N	14 098	18 210		7 477	9 491	
Region of the Americas	-2	Median doses	4	4		4	4	
		% 0 doses	1.4	0.67	0.73	0	1.52	1.52
		% 3+ doses	82.24	82.49	0.25	83.75	83.33	0.42
		N	214	297		80	132	
	-3	Median days	5	6		5	5	
		% <= 3 days	19.31	19	0.31	23.61	21.1	2.51
		N	1 020	1 300		415	583	
Eastern Mediterranean Region	-2	Median doses	10	10		10	10	
		% 0 doses	1.02	1.17	0.15	1.18	1.3	0.12
		% 3+ doses	97.41	97.17	0.24	96.69	97.2	0.51
		N	4 408	5 911		2 541	3 462	
	-3	Median days	3	3		3	3	
		% <= 3 days	54.99	56.54	1.55	56	56.59	0.59
		N	6 747	9 285		3 950	5 321	
European Region	-2	Median doses	5	5		5	5	
		% 0 doses	1.83	2.05	0.22	2.52	2.51	0.01
		% 3+ doses	91.46	89.94	1.52	90.57	88.7	1.87
		N	328	487		159	239	
	-3	Median days	3	3		3	3	
		% <= 3 days	51.5	50.27	1.23	51.04	53.32	2.28
		N	792	1 126		386	572	

REGION			2016			2017		
			FEMALE	MALE	% DIFFERENCE	FEMALE	MALE	% DIFFERENCE
South-East Asia Region	-2	Median doses	14	14		13	13	
		% 0 doses	0.53	0.48	0.05	0.71	0.65	0.06
		% 3+ doses	98.58	98.62	0.04	98.26	98.29	0.03
		N	10 935	15 263		4 363	6 029	
	-3	Median days	3	3		3	3	
		% <= 3 days	52.43	55.37	2.94	51.31	53.56	2.25
		N	20 610	29 267		8 254	10 925	
WPRO	-2	Median doses	3	3		3	3	
		% 0 doses	1.67	1.05	0.62	1.7	1.97	0.27
		% 3+ doses	95.58	96.16	0.58	94.55	93.68	0.87
		N	1 379	2 187		587	965	
	-3	Median days	3	3		3	2	
		% <= 3 days	57.87	59.6	1.73	56.19	59.73	3.54
		N	2 701	4 307		1 180	1 907	

N: population size

Harvard Opinion Research Polling

Four questions were selected from the Harvard Opinion Research Polling (HORP) data to investigate potential gender differences in caregivers' knowledge of polio, trust in vaccinators, preferences for vaccinators and intentions to vaccinate their children. Responses from male and female caregivers were compared for polling data from Afghanistan, Democratic Republic of the Congo, Nigeria, Pakistan and Somalia (Puntland, Somaliland and South Central).

The results were analyzed in terms of statistical significance and effect size and do not suggest any pattern of gender differences. By considering both measures, the analysis detects results that are not only statistically different, but also meaningfully different. No pattern of statistically significant and meaningful differences by gender were detected for any of the four questions.

For knowledge of the symptoms of polio (Table B.1), the majority of respondents in each country, with the exception of one sample from Nigeria, knew that paralysis was a symptom of polio. The majority of respondents also trusted the vaccinators (Table B.2), with over 70% reporting that they trusted the vaccinators a great deal in Afghanistan, the Democratic Republic of the Congo, Nigeria and Somalia. When caregivers were asked which pair of vaccinators was most acceptable, the majority of male and female caregivers chose "includes a woman" in every poll (Table B.3 and Table B.4). In Nigeria, over 90% of men and women preferred that the vaccinator pair include a woman.

Caregivers were also asked about their intent to vaccinate their child. Gender differences for this question were analyzed in terms of the gender of the caregiver (Table B.5) and the gender of the child (Table B.6). As with the other three questions, no significant pattern of gender differences was detected for either the gender of the caregiver or the gender of the child. Table B.7 presents the breakdown of respondents' answers by gender of caregiver and the index child. The vast majority of male and female caregivers intended to vaccinate their child every time, whether the index child was female or male.

▼ Polio vaccinators cross the Indus River to vaccinate children in the Shikarpur district of Sindh, Pakistan. © NEOC Pakistan / A. Zaidi

DISCUSSION

Gender on the front line

The GPEI has initiated a number of strategies to reach more girls and engage more women, as caregivers and as front-line workers. The following section highlights how women have been engaged on the front line of eradication in the three polio-endemic countries, as well as other priority countries. The commitment of locally-known women as vaccinators and social mobilizers has been vital to improving immunization coverage. As trusted members of their communities, these women enable more access to more households, helping to reach every last child.

A report from the Organisation for Economic Co-operation and Development (OECD) on gender in conflict-affected states used the GPEI's engagement of women on the front line as an example for how to integrate gender issues (101). Women on the front line of service delivery not only ensure better quality of services, but also represent role models to other women. A review of the GPEI's social mobilization activities concluded (88):

> "...challenges encountered in the implementation of polio eradication efforts have served as an entry point to facilitate the participation of women as members of vaccination teams or of local dialogues, therefore creating opportunities for increased visibility of women and space for their voice. (p. 39)

Creating a space for women's dialogue is paramount to reaching marginalized women and children. Often mothers themselves, female vaccinators and social mobilizers share the same concerns as the women they are serving, and can build trust through comfortable conversation. Hiring women in difficult contexts is the ideal strategy, as female health workers are best able to convince other mothers to vaccinate their children.

Widespread recruitment for the GPEI's female front-line workers began in India, with a surge of female recruitment between 2007 and 2013. After 2013, recruitment pushes in Nigeria and Pakistan inspired thousands of women to join forces in the polio programme, serving as vaccinators, social mobilizers or both. In Afghanistan's highest-risk areas, women now account for 27% of social mobilizers – up from 6% only one year ago. In Pakistan, of the 15 712 CBV staff targeting 3 million children in the country's highest-risk Tier 1 areas, 83% are now women.

Afghanistan

Female vaccinators and social mobilizers are the face of the polio programme in urban areas and are instrumental in building trust in their communities and encouraging vaccination. Nearly 7000 mobilizers are currently working full-time in their communities to build demand for vaccines and provide broader child health services. These mobilizers are tracking missed children and ensuring that they are recovered between campaigns. Of 5477 social mobilizers, 27% are now female, rising from 9% in June 2016.

In eastern Afghanistan, women's sessions are held in districts where women often gather to drink tea in airy courtyards. During this break from the day's chores, female health workers trained by the polio programme visit to share information and hold conversations with mothers over chai. These messages spread from the courtyard to the community, boosting trust and uptake.

In Kandahar City, female social mobilizers were able to reach and vaccinate more than 2000 "ghost" children who had previously never been recorded, either because they were out of the household during vaccination campaigns or for other reasons.

Prior to August 2016, social mobilizers only worked on the specific days of immunization campaigns. This part-time status led to frequent changes in personnel during campaigns. As of June 2016, 450 female social mobilizers were fully employed, representing about 9% of total active social mobilizers. By May 2017, 1487 full-time female social mobilizers were employed, representing 27% of total active social mobilizers and a sharp increase from 2016. UNICEF Afghanistan's Polio Chief and Polio Deputy Chief positions are held by women.

Nigeria

Around 95% of Nigeria's 21 000-person Volunteer Community Mobilization (VCM) network is comprised of local women from the highest-risk northern states. Originally created to support polio eradication, female VCMs are working between immunization campaigns to register and refer pregnant women for antenatal care, conduct birth registrations and promote routine immunization. They are trained to provide life-saving messaging on handwashing with soap, exclusive breastfeeding, and the prevention and treatment of diarrhoea. They also help with screenings and referrals for the treatment of malnutrition.

Nigeria's VCM network provides polio vaccinations during community initiatives called naming ceremonies, which take place across northern states. In the past year, approximately 4 million children received polio vaccinations during these ceremonies as well as other initiatives like the community management of acute malnutrition sites. The community volunteers also vaccinate children between campaigns, helping to reduce the number of missed children. During the last 12 months, 350 000 missed children were vaccinated, with 93% of tracked newborns receiving polio vaccination.

Direct community outreach has also improved the ratio of women who decide to vaccinate their children. The ratio of women as the decision-makers increased from 36% in August 2016 to 49% in July 2017. Such an increase speaks to the empowerment of caregivers through outreach, with greater awareness leading to stronger voices from the community.

In northern Nigeria, women empowered with jobs and skills through the polio programme are reinvesting in their own communities. They have the economic power to make purchases within their community, thereby supporting the local economy. Some groups of polio VCM alumna have chosen to pool their funds and start businesses. For example, funds have been used to buy sewing machines for a family member to become a tailor and ensure income for the future.

The Nigerian Ministry of Health is currently adopting a similar programme, engaging women in community health mobilization and data collection. With the training received from UNICEF, members of the VCM network are ideally placed to qualify for openings that have longer-term sustainability.

Pakistan

A new model of community-based vaccinator (CBV) who works locally, without security protection, was a vital entry point for women in Pakistan. The model provides the familiarity and protection of the women's own neighbourhoods, in addition to a steady source of work. Thanks to the first pilot of the programme, which started in Karachi in 2014, it became clear that familiar female vaccinators were accepted more readily than outsiders armed with security details. This female workforce enabled access inside homes to vaccinate children who would otherwise be missed, and improved recording and coverage of missed children more broadly.

Known as *Sehat Muhafiz*, or "Guardians of Health", these vaccinators are drawn from the communities in which they work. They are supported by community engagement and mass media strategies highlighting their role as health workers, and supported by focused training including interpersonal communication skills, on-time payment and appropriate social mobilization tools. The results of the CBV model have been strong: since its launch, the proportion of children who had never received a single dose of polio vaccine was reduced from 7% in 2014 to 1% in 2016, and the proportion of children missed during national campaigns fell from 25% in 2014 to 5% in 2017.

UNICEF started its CBV programme with only 2000 staff in August 2015, targeting 780 095 children aged under 5 years in 133 union councils. By the end of March 2017, the initiative had expanded to 13 995 workers (including supervisory tiers)

targeting 2.9 million children aged under 5 years in 417 union councils in the highest-risk Tier 1 areas and core reservoirs. To date, 76% of the total workforce is female. In addition, of the 10 480 vaccinator positions, 80% are held by women.

Social mobilization in Pakistan includes 1196 Communication Network (COMNet) personnel (as of second quarter 2017), deployed to record and vaccinate missed children during post-campaign catch-up activities. Of these COMNet personnel, 33% are women. Within COMNet, there are 281 social mobilizers, 60% of whom are women. Based in 25 districts/agencies and six frontier regions, COMNet workers are a key resource for provinces, districts and union councils in the reduction of missed children. Social mobilization activities and community engagement strategies are directed towards families with persistently missed children. COMNet also focuses on training, as in the provision of interpersonal communications skills for vaccinators.

Priority countries

The Social Mobilization Network (SMNet) in India comprises 7377 social mobilizers and supervisors across the states of Uttar Pradesh, Bihar and West Bengal. The network aims to maintain a trusted bridge between communities and the polio programme. SMNet members are recruited from inside their own communities, such as in the Kosi River Basin, where members of lower caste groups are recruited to serve their neighbours. At present, 94% of social mobilizers and 29% of supervisors are female. There has been a 1.9% increase in female mobilizers and 1.3% increase in female supervisors in the past 24 months. Within the UNICEF India country office, female staff constitute 40% of the total polio-funded positions.

In Ethiopia and Somalia, UNICEF engages social mobilizers for three to five days during campaign days only. In South Sudan, full-time mobilizers are engaged via multiple funding sources encompassing polio eradication, health emergencies, nutrition, as well as water, sanitation and hygiene efforts. In February 2017, 3157 community social mobilizers and 505 supervisors were trained for the National Immunization Days. UNICEF's Eastern and Southern Africa Regional Office is currently developing a database aimed at organizing information for the networks' gender and age breakdowns.

REPORTING FRAMEWORK FOR GENDER DATA

The four gender-sensitive indicators defined in this Brief will be analysed semi-annually for the three endemic countries as well as outbreak and high-risk countries. The results of the analysis will be presented in the GPEI's Semi-Annual Status Report. The current reporting mechanism in the Status Report includes descriptors for variables of "outcome", "indicator" and "target" for multiple measures in the endemic countries. Gender-sensitive indicators will be added to the tables in the report, as outlined in Table 10. Monitoring of gender equality and women's engagement in the endemic countries. The four gender-sensitive indicators are formulated in terms of intended outcomes: 1) equal reach in vaccination campaigns; 2) equal doses received; 3) equal timeliness of disease surveillance; and 4) increased female representation in immunization activities.

For the first three indicators, the target is gender equality. The target value is represented by "ns", referring to non-significant results in terms of gender differences. For the fourth indicator, the target is the engagement of women. The proposed target value is represented as the percentage of female front-line workers (including vaccinators and social mobilizers). The targets for this indicator are country-specific.

Table 10. Monitoring of gender equality and women's engagement in the endemic countries

ENDEMIC COUNTRY	OUTCOME	INDICATOR	TARGET	JAN-JUN YEAR	JUL-DEC YEAR
Afghanistan	Equal reach in vaccination campaigns	% M/F vaccinated	ns*		
	Equal doses received	Median # doses M/F	ns		
		% M/F 0-dose	ns		
		% M/F 3+ doses	ns		
	Equal timeliness of disease surveillance	Median # days disease notification	ns		
		% M/F <= 3 days	ns		
	Increased female representation in immunization activities	% F front-line workers	>50% in urban areas		
Nigeria	Equal reach in vaccination campaigns	% M/F vaccinated	ns		
	Equal doses received	Median # doses M/F	ns		
		% M/F 0-dose	ns		
		% M/F 3+ doses	ns		
	Equal timeliness of disease surveillance	Median # days disease notification	ns		
		% M/F <= 3 days	ns		
	Increased female representation in immunization activities	% F front-line workers	>80%		
Pakistan	Equal reach in vaccination campaigns	% M/F vaccinated	ns		
	Equal doses received	Median # doses M/F	ns		
		% M/F 0-dose	ns		
		% M/F 3+ doses	ns		
	Equal timeliness of disease surveillance	Median # days disease notification	ns		
		% M/F <= 3 days	ns		
	Increased female representation in immunization activities	% F front-line workers	>80%		

*Target of ns refers to achieving a non-significant result in terms of gender differences.

▲ An Afghan boy received a balloon from polio workers after he was vaccinated against polio. © WHO Afghanistan/T.Hongisto

FUTURE RECOMMENDATIONS

Numerous avenues can be explored in relation to gender and polio immunization. Applying a gender lens to polio illuminates many areas that deserve greater attention and where further studies are recommended:

- **Investigate the gender dimensions of living with polio**
  An important extension of the present review is an investigation of how gender influences the lived experience of polio. An in-depth literature review should be conducted for studies that consider the gendered lives of polio survivors. For example, gender has been found to impact the physical experience of late effects of polio. A longitudinal study found that gender was the strongest predictor of decline in muscle strength for individuals with late effects of polio (102).

- **Investigate women's decision-making capacity in relation to polio immunization**
  More local ethnographies and focus group discussions should be conducted on women's decision-making capacity with regard to polio immunization. Many decision-making studies use proxy measures for women's autonomy, including the ability to decide on household goods and on visiting friends and family. While these measures are consistent with the traditional questions asked during household surveys, they do not hone in on decision-making at the health-care level. While data are being collected on who is the decision-maker at the household level regarding the provision of health care, this needs to be further explored both in terms of study preparation and focused data analysis.

  Another important reason for conducting more ethnographies and focus group discussions is to elucidate the views and opinions of female front-line workers. The majority of studies focus on perspectives from the mother or female caregiver. The point of view of female vaccinators and social mobilizers is under-represented in studies about female autonomy and decision-making.

- **Collect more qualitative data from male caregivers**
  Studies of gender-related barriers to childhood immunization rarely involve first-hand accounts from male caregivers; most studies reference responses solely from mothers. The GPEI Harvard Polling, from its inception, made the conscious decision to adopt a model that included the views of all caregivers: mothers, fathers, grandparents, even uncles. Given joint decision-making increases the likelihood of children being vaccinated (66), further data analysis of the motivations of male caregivers is required.

  An additional reason for the inclusion of male perspectives is the preponderance of studies referencing spousal resistance as a barrier to childhood immunization. Despite the frequent reports of spousal resistance from husbands, there is a paucity of data/data analysis as to the exact motivations behind husbands' objections. A study on polio activities in Nigeria, for instance, found that female heads of household "cited spousal resistance as the primary barrier to OPV acceptance, although overall, they did not identify specifically why their husbands were resistant" (p. 95-96) (78). Engaging men in questions about their children's immunization builds a better understanding of gender-related barriers and encourages them to participate in conversations about health.

- **Investigate the son preference of caregivers**
  Although son preference has been well-documented in relation to distorted sex ratios and childhood mortality, the phenomenon is seldom explicitly linked to childhood immunization. Higher rates of childhood immunization for males in certain contexts may be another extension, and thereby proxy measure, of preferential treatment for sons. This phenomenon deserves more qualitative and quantitative data collection, particularly in Pakistan where significant gender differences were found.

- **Investigate the gender-based refusal of caregivers**
  One data source not systematically collected regards gender-based refusal, i.e. if a family believes a rumour and refuses to vaccinate their child, are they more likely to refuse vaccinations for sons or daughters, and why. Collection of this data and expanded data analysis are recommended to both inform the programme and for future GPEI reports on gender.

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NARRATIVES: In her words

KARACHI, PAKISTAN

57-year-old Khalida is a supervisor for one of Pakistan's female vaccinator teams. She is based in Karachi, Pakistan's largest city.

"I have been working as a supervisor for three years, but I have been associated with polio vaccination campaigns for many years as [a] volunteer," Khalida explains.

"In my community, the number of polio cases has decreased drastically. The progress is visible with the naked eye. We hold rigorous polio campaigns, which are being carried out frequently in the area to reach every child multiple times with vaccines and keep them safe against paralysis. In this regard the contribution of the front-line health workers I supervise is remarkable, as they work hard to ensure each and every child is protected from this crippling disease," Khalida says.

Khalida is well-known and trusted in her community, traits that enable her and her team to be more easily accepted into households.

"Since I began working to end polio, I feel like I am a soldier. Just as an army fights to protect a country, similarly I fight against a virus which is disabling our beloved children. I will fight against this crippling disease until the virus is permanently eradicated and our beloved children are fully protected," she says.

Khalida's work spans a large area of north-west Karachi. To support the polio teams under her care, she uses her four-wheel motorbike.

"Polio eradication is very important to have a healthy generation; as healthy generations, these children will be able to better serve the country

JALALABAD, AFGHANISTAN

Leila is a social mobilizer and polio vaccinator in Afghanistan. She is based in Jalalabad, a major city in eastern Afghanistan.*

"I studied medicine in university and always wanted to work to improve the health of children, but there were few opportunities to work in the east of Afghanistan," says Leila.

"Everyone tells me this work is important for the children and Afghanistan. But many don't know how important it is for women too."

Leila explains what happens when all-male vaccinator teams visit households. "If I am at home alone with my children and two men knock at my door, I cannot open [it]. I would be censured by my community."

She compares this scenario to when she visits homes in her community. "But women are allowed into Afghan homes," Leila says. "Other women who are at home will open the door to me so I can vaccinate children we might otherwise miss."

"This is the best part of my job. I help children and I can speak to other women."

*name changed for anonymity


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KADUNA, NIGERIA

Aminatu is a Volunteer Community Mobilizer in Kaduna, a state in Nigeria's north-west.

"I enjoy going to the field; I enjoy seeing the children. It feels like they are my children too. I know them and they know me. I enjoy talking with the mothers. I tell them about how vaccines protect children, and how breastmilk builds the soldiers inside your child and it saves you money because you don't need to find food for your child to eat," Aminatu says.

Adiza is one of the young mothers who Aminatu has helped from her community. Adiza explains, "Aminatu talked to me about antenatal care. She asked me to get the tetanus shot, and today she has brought me here to receive routine immunization for my baby. I am really grateful. If she wasn't here I wouldn't be here. I wouldn't know about it. She is the only one who tells me about this."

Aminatu has helped register hundreds of children in her area. She says, "I go to their houses and ask if they had the birth registration. If they say 'no' I take all the information. Now I will register them and get the certificate of birth and carry it to their house to give back to them. In a month I can do 50 of these. This year there are plenty of newborns."

ANNEX A.
SOCIAL MOBILIZATION DATA FROM UNICEF COUNTRY OFFICES

Table A.1 Social mobilization networks: A gender comparison

COUNTRY	CURRENT # OF SOCIAL MOBILIZERS/ CBVS IN 2017	#/% OF FEMALE SOCIAL MOBILIZERS /CBVS IN 2017	% INCREASE OF FEMALES FROM 2016 TO 2017	SOCIAL MOBILIZERS/ CBV ENGAGEMENT
Pakistan	13 995 (CBV total)	10 636/76	13	Full-time
	10 480 (CBV vacc)	8 384/80	15	
	1 196 (COMNet total)	392/32.8	9	
	281 (social mobilizers)	169/60	2	
Afghanistan	6 369	1 536/24	15	Full-time
Nigeria	18 565	16 541/89.1	0	Full-time
India	7 377 (total)	6 220/84.3	2	Full-time
	6 290 (mobilizers)	5 908/93.9	1.9	
	1 087 (supervisors)	312/28.7	1.3	
Somalia	3 615	2 674	0	Campaign only
Ethiopia	13	4/31	NA	Campaign only
South Sudan	3 157	NA	NA	Full-time (shared)
Total	52 526	NA	NA	NA

CBV: community-based vaccinator; NA: not available.

Table A.2 Focus on Afghanistan Immunization Communication Network (May 2017)

POSITION	PLANNED	CURRENT (M&F)	# FEMALE	% FEMALE
Provincial Communication Officers	22	22	0	0
District Communication Officers	132	126	5	4
Cluster Communication Supervisors	806	744	44	6
Social Mobilizers	6181	5 477	1 487	27
Total	7141	6 369	1 536	24

ANNEX B.
SELECTED POLIO QUESTIONS FROM THE HORP/HARVARD/UNICEF KAPS POLLS

Table B.1 If [index child] were to get sick with polio, what symptoms could [index child] get? (Among total)

	PARALYSIS %		CURABLE %		NOT CURABLE %		FEVER %		DIARRHOEA %		
	MALE	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**	
Pakistan II	89	87	16	13	72	72	23	18	6	4	*N=4 070*
Pakistan I	82	85	24	25	53	59	10	17	1	2	*N=3 396*
Nigeria II	45	38	19	18	24	17	29	27	7	5	*N=3 649*
Nigeria I	60	51	27	25	29	23	49	50	9	7	*N=2629*
Dem. Rep. of the Congo	73	71	30	24	43	46	14	16	2	3	*N=4 737*
Afghanistan I	68	72	40	43	26	27	43	38	14	13	*N=2025*
Somalia: Puntland	60	70	31	32	28	38	34	26	12	5	*N=696*
Somaliland	61	59	23	20	38	38	16	14	2	3	*N=666*
South Central	77	77	33	25	40	46	27	30	2	4	*N=653*

N: sample size.

Table B.2 Overall, how much did you trust the [polio] vaccinators? (Among respondents who saw a vaccinator during the last campaign)

	A GREAT DEAL %		SOMEWHAT %		NOT VERY MUCH %		NOT AT ALL %		
	MALE	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**	
Pakistan II	67	69	31	30	0	0	0	0	N=2 565
Pakistan I	57	68	40	30	2	2	0	0	N=2 689
Nigeria II	79	76	20	22	0	1	0	0	N=3 051
Nigeria I	85	84	13	13	1	2	0	0	N=2 058
Dem. Rep. of the Congo	86	88	11	9	1	1	1	1	N=3 498
Afghanistan I	73	74	27	25	0	0	0	0	N=1 064
Somalia: Puntland	71	78	26	19	2	2	0	0	N=678
Somaliland	94	94	4	3	2	2	0	1	N=524
South Central	82	81	15	14	2	3	1	1	N=585

N: sample size.

Table B.3 In your view, which of the following vaccinator pairs are most acceptable to send to homes in your neighbourhood? (Among total)

	INCLUDES A WOMAN %		ONLY MEN %		
	MALE	**FEMALE**	**MALE**	**FEMALE**	
Pakistan II	77	89	21	9	*N=4 070*
Afghanistan I	58	65	40	31	*N=2 025*

N: sample size.

Table B.4 In your view, which of the following vaccinator pairs are most acceptable to send to homes in your neighborhood? (Among respondents who saw a vaccinator during the last campaign)

	INCLUDES A WOMAN %		ONLY MEN %		
	MALE	**FEMALE**	**MALE**	**FEMALE**	
Pakistan I	78	93	20	7	*N=2 689*
Nigeria I	92	91	7	8	*N=2 058*
Somalia: Puntland	66	74	25	21	*N=678*
Somaliland	60	69	33	20	*N=524*
South Central	60	61	38	36	*N=585*

N: sample size.

Table B.5 By the time [index child] reaches [his/her] 5th birthday, how often do you intend to have [polio] vaccinators give [index child] polio drops? Intent by caregiver gender (%)

	EVERY TIME		NOT EVERY TIME		
	MALE CAREGIVER	**FEMALE CAREGIVER**	**MALE CAREGIVER**	**FEMALE CAREGIVER**	
Pakistan III	81	91	19	9	*N=4 800*
Pakistan II	97	97	3	3	*N=4 070*
Pakistan I	79	80	15	20	*N=3 396*
Nigeria II	67	61	28	34	*N=3 649*
Nigeria I	62	67	35	29	*N=2 629*
Dem. Rep. of the Congo	74	76	21	18	*N=4 737*
Afghanistan II	85	83	15	16	*N=2 400**
Afghanistan I	77	79	23	21	*N=2 025*
Somalia: Puntland	62	69	37	30	*N=696*
Somaliland	58	59	32	27	*N=666*
South Central	66	74	33	25	*N=653*

N: sample size; *Excludes Nangarhar due to gender distribution in sample.

Table B.6 By the time [index child] reaches [his/her] 5th birthday, how often do you intend to have [polio] vaccinators give [index child] polio drops? Intent by index child gender (%)

	EVERY TIME		NOT EVERY TIME		
	MALE CHILD	**FEMALE CHILD**	**MALE CHILD**	**FEMALE CHILD**	
Pakistan III	87	85	13	15	*N=48 00*
Pakistan II	97	97	3	3	*N=4 070*
Pakistan I	79	80	18	17	*N=3 396*
Nigeria II	64	65	33	30	*N=3 649*
Nigeria I	65	65	32	32	*N=2 629*
Dem. Rep. of the Congo	76	76	19	18	*N=4 737*
Afghanistan II	84	84	16	15	*N=2 400**
Afghanistan I	79	77	21	23	*N=2 025*
Somalia:	67	67	33	32	*N=696*
Puntland					
Somaliland	60	57	27	29	*N=666*
South Central	68	73	31	26	*N=653*

N: sample size; *excludes Nangarhar due to gender distribution in sample

Table B.7 By the time [index child] reaches [his/her] 5th birthday, how often do you intend to have [polio] vaccinators give [index child] polio drops? Intent by index child gender by caregiver gender (%)

	EVERY TIME				NOT EVERY TIME				
	MALE CAREGIVER		**FEMALE CAREGIVER**		**MALE CAREGIVER**		**FEMALE CAREGIVER**		
	MALE CHILD	FEMALE CHILD	MALE CHILD	FEMALE CHILD	MALE CHILD	FEMALE CHILD	MALE CHILD	FEMALE CHILD	
Pakistan III	81	81	92	90	19	19	8	10	*N=4 800*
Pakistan II	96	97	97	97	3	3	3	3	*N=4 070*
Pakistan I	78	80	80	80	18	14	20	20	*N=3 396*
Nigeria II	64	71	63	60	31	24	34	34	*N=3 649*
Nigeria I	63	62	66	67	37	37	32	31	*N=2 689*
Dem. Rep. of the Congo	76	72	76	77	24	28	24	23	*N=4 737*
Afghanistan II	85	85	83	84	14	15	17	16	*N=2 400**
Afghanistan I	78	75	79	78	22	25	21	22	*N=2 025*

N: sample size; *excludes Nangarhar due to gender distribution in sample.

Note: Analyses for Somalia not possible (insufficient sample size)

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