

# Community Involvement in Polio Vaccination Activities in the Polio Eradication Process in Cameroon

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**Abstract Background:** The fight against poliomyelitis has been one of the World's biggest public health challenge. With immunization being the most public health cost-effective strategy, complete eradication of poliomyelitis remains a major public health concern especially in areas where community involvement in polio vaccination activities is poor. Given the fact that community key informants are influential actors in vaccination activities, community involvement is crucial to the polio eradication process. **Methods:** A review was conducted using Google Scholar, PubMed, ResearchGate and ScienceDirect online in 2017 with poliomyelitis, eradication, community health, community involvement, vaccination activities, Cameroon, Africa and the World as key words. Our search was limited to articles published between 2002 and 2017. A total of 172 articles were identified, of which 26 met our inclusion criteria. Studies to assess community involvement as a primary outcome were reviewed. **Results:** The importance of assessing community involvement in vaccination activities was found in several of the studies. We identified common factors such as community opinion, benefits, ownership and sustainability, self-fulfillment, numbers game, more perspectives, new information and challenges, as factors influencing community involvement. The review further showed that community involvement in vaccination was the secret behind the success of most countries in the polio eradication process and that increase in vaccination coverage in most countries was due to community involvement. The study also revealed some challenges faced with Community Involvement in vaccination activities. **Conclusion:** Community partnership and strong accountability systems are critical for all health programs, and polio eradication has shown a pathway for equitable immunization programs to achieve universal coverage.

**Keywords:** poliomyelitis, eradication, community, health, involvement, vaccination, activities

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## 1. Introduction

Poliomyelitis is a vaccine preventable disease targeted by CDC, WHO, UNICEF and the GPEI for its fatality and devastating effects [1]. Poliomyelitis remains one of the major world public health concerns as it affects 1% of the world's population, with an estimated disability adjusted life years (DALYS) of 25% [2]. Poliomyelitis, sometimes called *infantile paralysis* is a serious infectious disease of the central nervous system caused by a virus called the Poliovirus, affecting primarily children. Symptoms begin with body aches and stiff neck. As the disease progresses, it affects the nerve tissues causing paralysis and wasting of muscle tissues [3]. The risk of lifelong paralysis is very high especially in children below the ages of less than 15 years [4]

The fight against polio has been one of the biggest public health success stories of humanity, with the number of reported WPV cases dropping from 350,000 in 1988 to 385 confirmed cases in 2013 [5]. This progress encouraged WHO to pledge to eliminate polio altogether by 2018 [5].

### 1.1. Polio Epidemics in the World from 2013 to 2017

In April 2013 there were 24 confirmed cases of WPV and by the same time in 2014, 68 cases were reported [6,7,8]. In May 2014, the World Health Organization declared the renewed spread of polio, a world health emergency [9].

Table 1 presents wild polio virus epidemic outbreaks by country worldwide, from 2013 to 2017 in which there was a steady drop in the number of cases from 385 in 2013 to 19 by November 2017 [10,11]. Pakistan, Nigeria and Afghanistan were the persistent endemic countries, with Pakistan recording the highest number: 303 (85.1%) in 2014 [10,11,12].

Table 1. Trend of Polio case outbreak by country from 2013 to 2017

| Country           | 2013<br>Number (%) | 2014<br>Number (%) | 2015<br>Number (%) | 2016<br>Number (%) | Nov. 2017<br>Number (%) | Total<br>Number (%) |
|-------------------|--------------------|--------------------|--------------------|--------------------|-------------------------|---------------------|
| Somalia           | 189 (49)           | 5 (1.4)            | 0                  | 0                  | 3 (15.7)                | 197 (22.7)          |
| Pakistan          | 91 (23.6)          | 303 (85.1)         | 54 (72.9)          | 20 (54.0)          | 0                       | 468 (54.1)          |
| Nigeria           | 53 (13.7)          | 6 (1.6)            | 0                  | 4 (10.8)           | 0                       | 63 (7.2)            |
| Syria             | 16 (4.1)           | 1 (0.2)            | 0                  | 0                  | 0                       | 17 (1.9)            |
| Kenya             | 14 (3.6)           | 0                  | 0                  | 0                  | 0                       | 14 (1.6)            |
| Afghanistan       | 13 (3.3)           | 28 (7.8)           | 20 (27.0)          | 13 (35.1)          | 5 (26.3)                | 79 (9.1)            |
| Ethiopia          | 9 (2.3)            | 1 (0.2)            | 0                  | 0                  | 0                       | 10 (1.1)            |
| Cameroon          | 4 (1.0)            | 5 (1.4)            | 0                  | 0                  | 0                       | 9 (1.0)             |
| Chad              | 0                  | 0                  | 0                  | 0                  | 0                       | 0                   |
| Niger             | 0                  | 1 (0.2)            | 0                  | 0                  | 0                       | 1 (0.1)             |
| Iraq              | 0                  | 2 (0.5)            | 0                  | 0                  | 0                       | 2 (0.2)             |
| Equatorial Guinea | 0                  | 5 (1.4)            | 0                  | 0                  | 0                       | 5 (0.5)             |
|                   | <b>385</b>         | <b>356</b>         | <b>74</b>          | <b>37</b>          | <b>19</b>               | <b>865</b>          |

Sources: [10,11,12].

## 1.2. Polio Epidemics in Cameroon

In 1988, The Global Polio Eradication Initiative was launched with CDC as leading partner Organization [13]. Its mission was to eradicate polio in the world by 2015. Cameroon being a member of this organization and at the same time in the endemic zone was not left out of the race. At that time, the country was doing relatively well on poliomyelitis control. However, in 2009 the three cases of the wild polio virus (WPV) species were notified in the country after the two cases of 2006 and five cases in 2014 [13]. It was then understood that the work being done was not enough given that a single confirmed case constitutes an epidemic. Figure 1. shows the situation of polio epidemics in Cameroon from the years 2000 to 2015, in which the highest epidemics were recorded in 2003 and 2014. Since then, no cases have been recorded in the country [17].

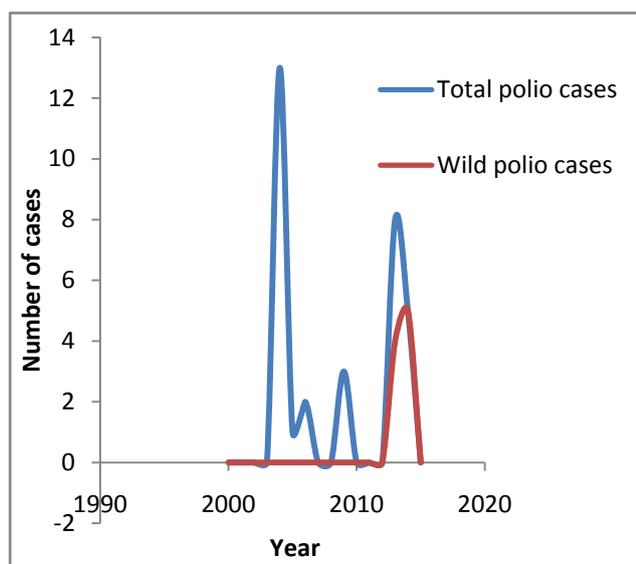


Figure 1. Trend of Polio Epidemics in Cameroon (Source: [10,17])

In 1988, WHO/UNICEF in their goal to eradicate polio, targeted a vaccination coverage of >80% [14], given the fact that vaccination remains the most effective means of prevention (thus eradication). Cameroon among other African nations concerned about the health of its

population was actively involved in this process. In view of this eradication process, Cameroon's Ministry of Public Health since 1995 set a coverage objective of >80% which moved up to >90% in 2013 at the level of the districts [15]. However, the 19 districts with a population of 2,125,900 inhabitants that make up the North-West Region, one of the 10 regions of Cameroon has never attained this objective [16].

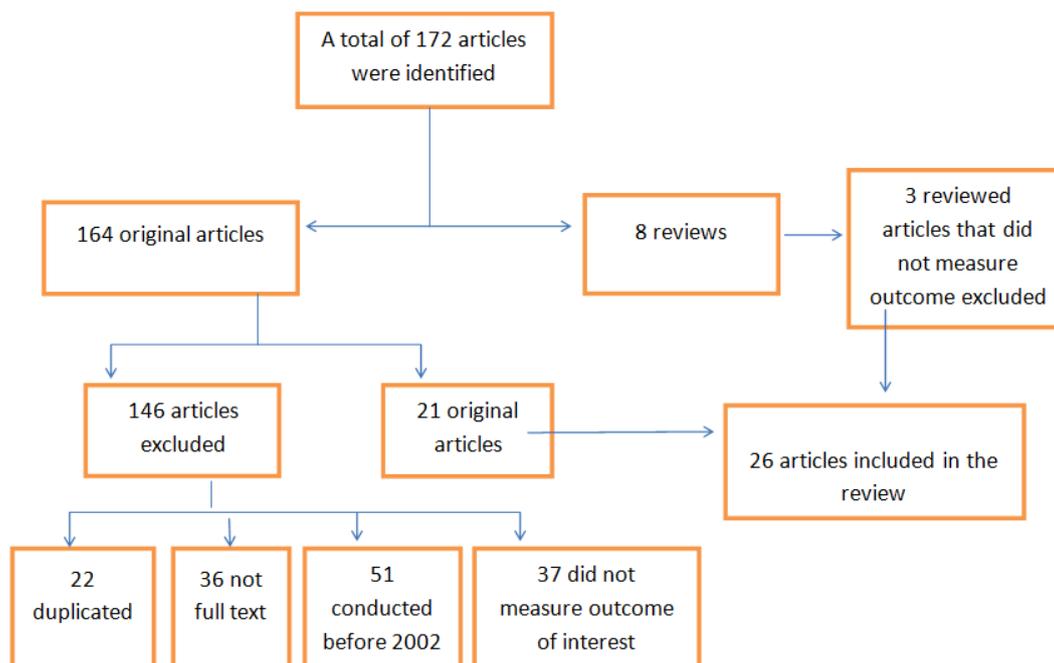
It is worth noting here that focus on the polio eradication through vaccination activities has been placed more on the health system and health care providers while the immediate beneficiaries (the population found in communities) who normally play the most crucial role in the uptake of vaccination activities have to an extent been neglected [17]. Bearing in mind that vaccination remains the most effective preventive measure, polio vaccination coverage however stands below the 90% objective [16,17]. Given that no study has been done in the North-West Region to find out community opinion on these important free services offered to them and why they do not consume them and their level of involvement in polio eradication activities, [16], this study was necessary.

Therefore this study sought to: "Assess Community Involvement in Vaccination Activities in the Polio Eradication Process in the North-West Region" in Cameroon, particularly in Kumbo-East and Nkambe Health Districts.

## 2. Methods

### 2.1. Search Strategy Used for the Review

Google Scholar, PubMed, ResearchGate and ScienceDirect were searched online in 2017 with poliomyelitis, eradication, community health, community involvement, vaccination activities, Cameroon, Africa and the World as key words. A review of qualitative and cross-sectional studies was also done with the intention of assessing factors influencing community involvement as the primary outcome variable in Africa and Cameroon in particular. Our search was limited to articles published in French and English from 2002 to 2017.



**Figure 2.** Inclusion and exclusion criteria for the studies included in the review (2002 to 2018) (Source: [18,19])

## 2.2. Inclusion and Exclusion Criteria for the Studies Included in the Review

We reviewed qualitative and cross-sectional studies that assessed the factors associated to community involvement in vaccination activities in the World, Africa and Cameroon from 2002 to 2017. [Figure 2](#) shows online search framework with the inclusion and exclusion criteria according to The Joanna Briggs appraisal tool [18,19] which we used.

## 3. Results and Discussion

### 3.1. Community Involvement in Polio Vaccination Activities as an Important Strategy to Enhance Eradication

The study settings in the articles reviewed were rural, semi-urban and urban with an approximated total population of 31,700 Participants. Participants varied from 25 to 15, 500 per study [18]. Participants in these studies were key informants like caregivers, healthcare providers, and opinion leaders, traditional and religious authorities.

### 3.2. Importance of Assessing Community Involvement in Vaccination Activities

Community health assessment is a process that uses quantitative and qualitative methods to systematically collect and analyze data to understand health within a specific community [20]. Community health assessment is a systematic examination of the health status indicators for a given population that is used to identify key problems and assets in a community, the prioritization of health problems, and the development, implementation, and evaluation of community health improvement [21,22]. A variety of tools and processed may be used to conduct a community health assessment but the essential ingredients

are community involvement and collaborative participation [20].

An understanding of the determinants of health and of the nature and extent of community need is a fundamental prerequisite to sound decision making about health systematically collect, assemble, analyse, and make available information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems, strengths, weaknesses, challenges, and opportunities that exist in the community to improve the health status (vaccination status inclusive) of that community [21].

The study revealed the following characteristics of common interest influencing community involvement in polio vaccination activities.

**Community Health:** The term "community health" refers to the health status of a defined group of people, and the actions and conditions that protect and improve the health of these people [22]. Those individuals who make up a community live in a somewhat localized area under the same general regulations, norms, values, and organizations [22,23].

**Community Involvement in Health Activities:** Community involvement in health activities is a proven approach to addressing health care issues and has been long utilized in HIV prevention in the United States and in development internationally, in projects varying from sanitation to child survival, clean water, and health infrastructure [12]. However, the quality of participation varies from project to project [15]. Moreover, in spite of the failure of many health programs designed without the participation of target communities, some professionals continue to question the value of community members' participating in program design, implementation, and evaluation [22].

**Their opinion is important:** Decision makers genuinely want to hear your ideas and feedback. Community involvement is a vital part of many projects and its

benefits are well documented, such as better outcomes for all stakeholders, community ownership and lower project costs [20]. Effective community involvement is about recognizing that involving the people of the community in a project is no longer about information dissemination and telling the people what is being done, but a two-way information sharing tool. Regardless of one's qualifications, everyone knows what they like and dislike, has an opinion about what needs to be done and where priorities should lay [23].

**More perspectives:** Community involvement is often heavily one-sided, and engagement projects can be inundated with input only from those community members who have a strong opinion (and more often it is a negative opinion about a project) [22]. Without other perspectives being expressed, decision makers might not make the best decision for the community as a whole simply because of a minority of loud voices (squeaky wheel gets the grease). If your opinion differs to the more popular opinions, decision makers want to hear from you so they get a balanced understanding of the community's views [22,24]. Additional perspectives expand options and enhance the value of the ultimate decision. The more views gathered in the process of making a decision, the more likely the final product will meet the most needs and address the most concerns possible [23].

**New information:** Decision makers recognize that the community that uses the spaces that it is planning for have an intimate and unique relationship with the area that they themselves often do not have [23]. Because of this knowledge, community members can provide new information on a project that has yet to be considered. Community involvement brings more information to the decision, including knowledge about the context where decisions are implemented, history and personalities [22]. More information can make the difference between a good and poor decision [23].

**Community benefit, ownership and sustainability:** When the community is involved in a project, they have ownership of it and the decision making process, which is key to a successful project outcome, even if not all individuals necessarily agree with the outcome. This equally ensures sustainability [23].

**Self-fulfilment:** When a project is finalized and you can see the fruits of your labor, it feels good knowing that one was involved in something that benefits your community [22].

**A numbers game:** For community agencies with opinion leaders, the total number of people engaged is important. Engaging higher numbers gives the elected representatives confidence in their decision [22].

### 3.3. Community Involvement in the Vaccination Activities was the Secret behind the Successes in other Countries in the Polio Eradication Process

In India, the community's unwavering commitment to complete the eradication of polio has been vital to the success of the program. The community also played important leadership roles in eradication campaigns. An example of this was found in the organization of the polio eradication campaign from 1995 to 2000 [25]. During the

operation, the community worked on advocacy, sensitization and mobilization, financial support, and assisting the European laboratory network in collaboration with other core partners. The participation of expert advisors was essential to meet the changing needs of the program [22,25].

In the Democratic Republic of Congo, Nigeria, Pakistan, Somalia, and India community engagement expertise area of the polio program was extended and adapted to routine immunization [22]. The GPEI-supported Harvard Opinion Research Polling provides robust quantitative data on social issues such as polio eradication, and the approach was expanded to routine immunization [23]. Polio social mobilization networks were used for routine immunization defaulter tracing, new-born tracking, nutrition screening and referral, and promotion of family planning in Angola, Chad, Democratic Republic of Congo, Ethiopia, Nigeria, Pakistan, Somalia, and India. GPEI formalized and incentivized these efforts in some countries (Nigeria, Pakistan, and India). In other countries, GPEI improved capacity and coordination of communication and community engagement efforts (Chad, Ethiopia, and Somalia) [23].

In India, the Social Mobilization Network (SMNet) engaged >8000 frontline social mobilizers, mostly female, in the states of Uttar Pradesh, Bihar, and West Bengal to advocate for vaccination in their own communities, which were underserved, marginalized, and at risk for polio outbreaks and other communicable diseases [22]. Cameroon could also do same with its Sort Message Service for Life (SMS for Life) used by the HIV/AIDS program [17]. The SMNet applied a range of community involvement approaches by involving individuals, communities, religious leaders, and policy makers, creating champions of change in the most disadvantaged communities and reaching 2.7 million families each month in the 3 states [22]. The approaches were based on evidence and addressed the beliefs and behavior for health at the individual level and determinants for health at the community level, focusing on perceptions and priorities. Although focusing initially on generating demand for polio vaccination, the approaches later promoted full infant immunization and other health and sanitation interventions related to maternal and children's health, resulting in an increase in DTP3 and Polio3 coverage from 36% in 2009 to 78% in 2016 in Uttar Pradesh and from 54% to 89% in Bihar (WHO/UNICEF India, unpublished data) [22,23]. Learning from the example of India, Nigeria's polio community infrastructure has built demand for routine immunization through 11000 community mobilizers, mostly female, operating in high-risk areas or in hard-to-reach settlements and engaging with local religious and community leaders. Female mobilizers conduct regular household visits to educate families on key family practices, including immunization, hygiene promotion, and birth registration, conduct dialogues with communities and track new-borns and pregnancies with appropriate referrals [20,22]. This resulted in referral of more than 322,000 new-borns to routine immunization services in 2014, notification of communicable diseases, including acute flaccid paralysis (AFP), measles, and cholera; and referral of >32,000 malnourished children to appropriate care [23]. According to the Nigeria's Ministry of Health,

these efforts have helped to establish trust in the health system [21,26].

In Ethiopia, polio-funded communication materials in book form with recorded messages (speaking books) are used by health promoters to deliver integrated immunization messages [22]. In Chad, polio-funded communication personnel oriented community mobilizers on active house-to-house search of defaulters from routine immunization and subsequent registration of all children aged less than 2 years in the community to mobilize those who have never been vaccinated, with monthly monitoring meetings to review performance, identify challenges, and agree on corrective activities for the next month [24]. According to the Ministry of Health in Chad, this has contributed to an approximate 2-fold increase in the number of children vaccinated with DTP3 and Polio3 [26].

In support of routine immunization, Pakistan's polio program initiated a series of focus group discussions to gauge existing knowledge, attitudes, and practices of parents and caregivers toward routine immunization. In particular, the main barriers preventing parents and caregivers from bringing children to health facilities for routine immunization were explored [24,26]. The findings of the focus group study enabled further fine-tuning of communication strategies and communication tools and pretesting of communication materials before mass production and roll out. This resulted in a well-developed, community-derived social mobilization kit for routine immunization in Pakistan today [22]. This approach has been replicated in Nigeria. In India and Nigeria, high-risk communities identified through the polio program were recorded by settlement, and this information was integrated into Routine Immunization Microplans [24]. In Nigeria, the use of data systems such as District Vaccine & Devices-Management Tool (DVD-MT) and District Health Immunization Systems has been supported by polio-funded personnel. In Angola, immunization system data quality assessments have been supported by polio-funded personnel [24,25].

### 3.4. Increase in Vaccination Coverage in Other Countries was due to Community Involvement

Achieving improvements in immunization systems depends on multiple factors. Polio functional expertise in different areas can help strengthen certain components of immunization systems and outcomes (i.e., increase vaccination coverage and reduce inequities in immunization), even though other factors such as security, availability of vaccines and supplies and quantity and quality of health work staff may impact the quality of immunization systems and the extent to which coverage and equity targets are achieved [24,26]. DTP3 and Polio3 coverage in 6 of the 10 focus countries improved between 2013 and 2015 (Chad, Democratic Republic of Congo, Ethiopia, Nigeria, Afghanistan, and India) while staying the same in 2 countries (Somalia and Pakistan), but dropping in 2 countries (South Sudan and Angola) [20]. In the 6 countries where coverage improved, reductions in the number of children who did not receive DTP3 and Polio3 between 2013 and 2015 were substantial: 1 million reductions in India, 0.6 million reductions in Nigeria, 0.4

million reductions in Ethiopia, 0.1 million reductions in Democratic Republic of Congo, and <100000 reductions in both Afghanistan and Chad [20]. In India, polio assets have helped increase coverage in the most challenging settings, vaccinating an additional 7.6 million children during the first phase of Mission Indradhanush [24] and contributing to the reduction of under immunized children among the most disadvantaged children. In Angola, the applied polio expertise contributed to an approximate 10% increase in DTP3 coverage in 34 of the 35 focus districts between 2014 and 2015 [22]. In Ethiopia, the combination of polio assets and other resources resulted in an increase from 31% to 48% in the proportion of high-risk zones having at least 80% DTP3 coverage [24]. In the Democratic Republic of Congo, systematic support, including polio assets for the RED approach, led to coverage improvements in targeted geographies. Although these reports are encouraging, validation of administrative coverage remains challenging, and coverage surveys have not been conducted to validate these changes [20,24].

### 3.5. Challenges Faced with Community Involvement in Vaccination Activities

Performing a community assessment in a town without a master plan or preference for redevelopment option is usually a very difficult task [24]. Reaching a consensus from diverse backgrounds and needs as well as accommodating interests when feasible and within the goals of the project is not easy with people that have other priorities especially when it comes to educating residents about the goals of the project/process [20,25]. Conducting community involvement or participation among the local residents, who have competing priorities/language barriers is a big challenge [20]. As a stranger among community people, one needs to build trust among various stakeholders in order to effectively convey to local residents other stakeholders' involvement and support of the revitalization process [25]. It is also usually very difficult to communicate technical information in an easy to understand manner and to identifying stakeholders that can represent a diverse constituency, and represent these constituencies at public meetings and planning sessions [20,24].

## 4. Conclusion

Routine immunization systems have used the result-based approach from the polio program to focus on targeting high-risk areas and critical barriers. In addition, the real-time monitoring elements of the polio program have the potential to build accountable and strong immunization and health systems [26].

The accountability framework introduced by the polio program has been adopted by the broader immunization system and has shown positive signs of contributing to a reduction in the number of under immunized children in Nigeria, with increase in national coverage from 46% to 56% from 2013 to 2015 [23,25].

The increasing focus on people and communities, building trust between the caregivers and the program, and the realization that the interaction between the vaccinator and caregiver is a critical moment to enhance

immunization demand helped contribute to progress on polio eradication, and this focus is now being applied to routine immunization in priority countries [26].

The engagement of female community members in particular, traditional and religious influencers in the program has built trust in the system and created demand for immunization and other services. Female community members also promote healthy behaviors and birth registration for vaccination follow-ups. In a sense, the vertical polio program has made the full circle back to a more comprehensive primary healthcare approach, where communities are at the Centre [23,24].

Although polio eradication is a global public good and global steering is justified, successful interruption of polio virus circulation hinged on a coherent program under strong government and community leadership, as shown in India [23]. Routine immunization is foremost a government-driven program, and protecting children and women from all vaccine-preventable diseases is a human right and a government responsibility. Building routine systems led by governments may be slow, but ultimately will be sustainable with the involvement of communities, as local solutions will guide the way to better outcomes. Community partnership and strong accountability systems are critical for all programs, and polio eradication has shown a pathway for equitable immunization programs to achieve universal coverage [24].

## 5. Recommendations

The Government and its partners should actively involve community key informants in all stages of vaccination activities. More investments should be done on vaccination, especially on Information, Education and Communication (IEC) and social mobilization. Studies should be encouraged on vaccination activities, especially at community levels.

Documentation and achieving on health activities should be encouraged.

## Projections for Further Studies

We intend to carry out field studies in the Kumbo and Nkambe Health Districts of Cameroon in view of identifying mitigating strategies to improve on vaccination uptake by caregivers. This is intended to contribute to the polio eradication process in Cameroon.

## Author Contributions

Tatah Eunice Kisifen and Nsagha Dickson Shey conceived and designed the study. Tatah Eunice Kisifen and Nsagha Dickson Shey contributed in data analysis and interpretation. Tatah Eunice Kisifen and Nsagha Dickson Shey wrote the original manuscript. Tatah Eunice Kisifen, Nsagha Dickson Shey, Njamnshi Alfred Kongnyu and Sama Martyn reviewed and significantly revised the manuscript. All authors read and approved the final manuscript.

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## Statement of Competing Interests

The Authors declare that they have no competing interests.

## List of Abbreviations

CDC: Centre for Diseases Control and Prevention  
 WHO: World Health Organization  
 UNICEF: United Nations International Children Emergency Fund  
 WPV: Wild Polio Virus  
 GPEI: Global Polio Eradication Initiative  
 HIV: Human Immunodeficiency Virus  
 AIDS: Acquired Immunodeficiency Syndrome  
 RED: Reach Every District.

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