



Determination of the level of knowledge about polio eradication efforts in a rural area in Nigeria

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Abstract

Nigeria is the highest reservoir of polio in the world, with northern Nigeria accounting for 98% of confirmed cases. However, pockets of paralytic poliomyelitis still occur in the southern part which informs the need to assess the knowledge of people. This is imperative because of the polio endgame, given the advocacy and orientation programmes currently underway. This study investigated the knowledge of rural dwellers about polio eradication. One hundred and twenty respondents were randomly selected from wards in the villages within the study area. Data gathered was analysed using descriptive and inferential statistics ($p=0.05$). Most respondents were females (60.8%), married (58.3%) and predominantly Christians (55.0%). Frequently used information sources were Primary Healthcare Centres ($\bar{x}=1.85$) and radio ($\bar{x}=1.81$). Although overall knowledge of polio eradication initiatives was 68.3%, most were ignorant of key symptoms like pains in the limb (51.7%) and stiffness of the neck (65.0%). There was a significant association when knowledge of polio eradication was compared between gender ($X^2 = 6.47$) and education ($X^2 = 11.683$). We recommend conventional and traditional means for dissemination of information on polio initiatives while community based approaches should be employed to overcome possible constraints to polio-information accessibility.

Keywords: Polio eradication; Knowledge; Rural dwellers

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1. Introduction

The global polio eradication emergency action plan aims to boost vaccination coverage to levels needed to stop polio transmission in Nigeria, Pakistan and Afghanistan which are the three remaining polio endemic countries (GPEI, 2012). Nigeria is the source of Wild Polio Virus (WPV) imported into 25 previously polio-free countries since 2003 (CDC, 2011; 2012). In 2012, it ranked highest with 111 WPVs (93 WPV1 and 18WPV3) isolated from northern Nigeria (WHO, 2012a). One WPV isolated from a patient with onset of paralysis on 11th November 2012 in Nassarawa state was particularly interesting because the state had not reported a single case since June 2009 (FMOH, 2013). Poliovirus has no natural non-primate reservoir and survival of the virus in the environment for an extended period is uncommon (Dowdle and Birmingham, 1997). As such, it is best to interrupt person to person transmission of the virus by vaccination and this is a critical step in polio eradication (Fine and Carneiro, 1999). Based on the propagation of poliovirus in monolayer of mammalian cells cultivated in-vitro, inactivated and live attenuated polio vaccines were developed by Salk and Sabin in 1954 and 1961 respectively and licensed. Their use quickly led to the decline of infantile paralysis due to polio throughout the developed world (Salk et al., 1954; Sabin, 1962). The incidence of poliomyelitis has been eliminated from most countries in the world by vaccination, with a reduction from about 350,000 cases in 1988 to 1,652 cases in 2007 and 650 in 2011 (WHO, 2012a). Polio was officially eradicated in 36 Western Pacific countries, including China and Australia (WHO, 2002). In 1994, it was eradicated in the Americas while Europe was declared polio-free in 2002 (Dowdle and Cochi, 2002). Four hundred and thirty-three scientists and technical experts from 80 countries including leading virologists from Nigeria launched a scientific declaration on polio eradication in April 2013. The declaration emphasized strengthening routine immunization in a bid to achieve polio eradication (Pawson, 2013). Nigeria is striving to keep up with the global eradication initiative through radical immunization efforts. Immunization coverage in Nigeria was 74% in 2011, an improvement on 69% in 2010 and 50% in 2008 (WHO, 2012b). These efforts can be attributed to concerted efforts by the Federal government, community and religious leaders (UNICEF, 2011). However, in northern Nigeria there is a major challenge of erroneous beliefs and negative attitude towards acceptance of polio vaccination (Akande and Akande, 2006; BBC, 2012). Even with the acclaimed improved vaccination coverage, Onoja et al. (2012) reported low level of immunity among children in Ilorin - Kwara State (northcentral Nigeria) and Ibadan -Oyo State (southwest Nigeria). Oyo State is relatively large with a population of about 4 million people belonging to different socioeconomic status. We investigated the level of knowledge about polio eradication efforts to assess impact of several awareness and sensitization campaigns on people living in Akinyele Local Government Area (LGA) with a view to identifying gaps responsible for the low immune response in that rural area of Oyo State.

2. Methodology

The study was conducted in Akinyele LGA which is one of the thirty-three LGAs in the state and occupies a land area of 464,892km² with a population of 239,740 people. It is essentially a rural settlement. The study

population included adults with children between 0 and 5 years of age. A multi-stage sampling technique was used to select the respondents. Initially, four wards were randomly selected in the LGA, then a random selection of four villages from each of the wards and finally thirty households were randomly picked from each village. One respondent in each household (a man or woman within reproductive age and with at least a child) were interviewed. This gave a total of one hundred and twenty respondents that were interviewed in the study. A twenty-item scale was used to measure respondents' knowledge of polio eradication with maximum and minimum scores of 20 and 0 respectively. Aggregate mean score of respondents' knowledge score was used to categorize respondents into high or low knowledge levels. All respondents with scores greater than or equal to mean score were classified as highly knowledgeable while scores less than the mean score were considered less knowledgeable.

2.1. Study design

The study set out to determine the knowledge of respondents on issues of polio eradication, considered respondents' sources of information pertaining to polio eradication and the frequency of use and constraints in accessing such information.

3. Results and discussion

3.1. Respondents' socio-economic characteristics

Table 1 shows that most respondents were females (60.8%), married (58.3%) and were Christians (55.0%). The large number of married women in this study is an indication of the quality of the findings because it is the mothers who take the children to the hospital when they are ill while the men go out in search for means of livelihood to run the home. As mothers, they discuss with their counterparts on child welfare issues. Information from this gender is valid for this reason, more so that the study did not target a particular gender which could have introduced bias. This is consistent with the findings of Thomas et al. (2012) who reported that majority of women are interested in child health issues. Table 1 further shows that 67.5% of the respondents had primary education while 27.5% had no formal education. This means that majority of the people studied had a level of listening skill and could have heard when public announcements are made pertaining to polio eradication initiatives. More than half (52.5%) of the respondents were farmers and about two-third (32.5%) were artisans. This shows the rural nature of the area and the caliber of people which suites the design of the study.

Table 1. Frequency distribution of respondents' socio-economic characteristics

Variables		Frequency	Percent
Sex	Male	47	39.2
	Female	73	60.8
	Total	120	100.0
Age	20-25	31	25.8
	26-30	46	35.8
	31-35	13	10.8
	36-40	9	7.5
	40-45	4	3.3
	46-50	17	14.2
	Total	120	100.0
Marital status	Married	70	58.3
	Single	23	19.2
	Widowed	15	12.5
	Divorce	12	10.0
	Total	120	100
Religion	Christian	66	55.0
	Islam	43	35.8
	Tradition	11	9.2
	Total	120	100.0
Education Attainment	Non formal education	33	27.5
	Adult literacy	4	3.3
	Primary education	81	67.5
	Secondary education	2	1.6
	Total	120	100.0
Occupation	Farming	63	52.5
	Fishing	2	1.7
	Civil service	14	11.7
	Mid wife	2	1.7
	Artisan	39	32.5
	Total	120	100.0

Source: Field Survey, 2012

3.2. Sources of information on polio eradication initiatives

Primary Healthcare Centres (PHCs) ($\bar{x} = 1.85$) and radio ($\bar{x} = 1.81$) were the most frequently used sources of information (as shown in Table 2). It is interesting to know that the PHC is informing the rural people on

polio initiatives and enlightening them. But there is just one primary health centre in the entire LGA, which is peculiar to other rural settings in Nigeria and not everyone attends PHCs for antenatal care or to give birth hence it is interesting that the radio is an alternative means of disseminating information in the area. Ajayi (2003), Olajide (2011) and Ajayi et al. (2011) reveal that radio was the foremost source information available to the rural dwellers. The Fulanis (an ethnic group in Nigeria noted for nomadic pastoralism) in such rural areas carry radio set while on the move and may get information about polio eradication. This avenue could be employed in the northern parts through short radio plays or community/religious leaders' involvement in information dissemination to gain their confidence in the entire programme. Again, mission homes ($\bar{x} = 1.41$) and community leaders ($\bar{x} = 1.25$) were rated as sources of information. Mission homes especially churches are emerging issues in healthcare delivery, becoming popular and enjoy so much patronage for healthcare. In recent times, these homes record high attendance despite contrary advice from orthodox practitioners. Therefore, strategies could be evolved to incorporate community leaders and mission homes in information dissemination related to polio eradication.

Table 2. Frequency distribution of sources of information on polio eradication initiatives

Information Source	Always		Occasional		Never		Mean
	F	%	F	%			
Community dialogue	5	4.2	65	54.2	50	41.7	0.63
Traditional Birth Attendance	7	5.8	44	36.7	69	57.5	0.48
Mission Home	66	55.0	37	30.8	17	14.2	1.41
Local leader	41	34.2	68	56.7	11	9.2	1.25
Primary Health Centers	10.7	89.2	8	6.7	5	4.2	1.85
Radio	10.3	85.5	11	9.2	6	5.0	1.81

Source: Field survey 2012* multiple responses

3.3. Constraints to accessing information on polio eradication initiatives

Inadequate information dissemination, inadequate treatment of social norms, language barrier and poor communication strategy were rated by 45.0%, 44.2% and 41.7% of the respondents respectively as severe constraints in accessing polio eradication information. If inadequate information dissemination is a constraint then it means that most information from these sources are not appropriately tailored to meet the goals of the eradication initiatives which makes it imperative for policy makers to consider this option. Furthermore, the improper treatment of social norms perhaps justifies the position of Aliyu (2012) who reported that women were not allowed to go for immunization by their husband, because most of them believe oral polio vaccine causes infertility. Though constraint like language barrier and poor communication strategy were rated severe by the respondents, it is heartwarming that more than half (53.3%) and close to half (47.5%) of the respondents dismissed these constraints as not severe. Also, non-engagement of traditional and religious leaders (51.7%) and poor mobilization strategy (48.0%) were seen as not severe

constraint. These claims stemmed from the knowledge in past and current efforts which involved prominent religious/traditional leaders and institutions in media campaign for polio eradication.

Table 3. Constraints faced by respondents in accessing polio eradication information

S/N	Variable	Very severe		Severe		Not severe	
		F	%	F	%	F	%
1	Inadequate information dissemination	13	10.8	54	45.0	52	43.3
2	Lack of campaign to create awareness	22	18.3	44	36.7	54	45.0
3	Language barrier	6	5.0	50	41.7	64	53.3
4	Poor communication strategy	13	10.8	50	41.7	57	47.5
5	Poor Mobilization strategy	17	14.2	45	37.5	58	48.3
6	Inadequate treatment of social norms in the messages	19	15.8	53	44.2	48	40.0
7	Group conflict	18	15.0	48	40.0	54	45.0
8	Non-engagement of Local leaders	16	13.3	47	39.2	57	47.5
9	Non-engagement of traditional/religious leaders	13	10.8	44	36.7	62	51.7

Source Field survey, 2012

3.4. Knowledge about polio initiatives and pathological conditions caused by the virus

Most respondents (68.3%) were very knowledgeable while 31.7% had little knowledge (Table 4a). This implies that about one-third of the respondents were still ignorant about polio eradication initiatives hence acceptance may be low, which is responsible for low immune response. It is therefore worrisome that many respondents were ignorant of symptoms of poliomyelitis as shown in Table 4b where pains in the limb (51.7%) and stiffness in the neck (65.0%) as potent symptoms of onset of poliomyelitis. However, it is funny to learn that most respondents felt that polio was deadly (89.2%) but interesting to know that they knew the aetiology was viral (78.3%) which is contagious (80.8%) and preventable (79.2%). This may be attributed to the content of radio campaigns and pictures in PHC used in polio vaccination campaigns.

Table 4a. Frequency distribution of respondents' level of knowledge on polio eradication

Category	Frequency	Percentage	Minimum	Maximum	Mean
High	82	68.3	4	18	13.98
Low	38	31.7			
Total	120	100.0			

Source, Field Survey 2012

Table 4b. Frequency distribution of respondents' knowledge of issues of polio eradication

S/N	Variable	Correct	
		Frequency	%
1	Polio is a deadly disease	107	89.2
2	All infant should get vaccinated	81	67
3	Polio is contagious	97	80.8
4	Refusal of vaccine by parent will increase it spread	87	72.5
5	No cure for polio	69	57.5
6	Pains in the limbs is a symptoms of polio	58	48.3
7	Polio is preventable	95	79.2
8	Polio vaccine given multiple times can protect a child	87	72.5
9	Stiffness in the neck is a symptoms of polio	42	35
10	Polio is cause by a virus	94	78.3
11	Oral vaccine given multiple times can stop the spread of the virus to others	103	85.8
12	Polio also affect adult	6	5.0
13	Polio is contact through faeces	97	80.8
14	Polio mainly affect children under 5years of age	108	90.0
15	Immunization is used to eradicate polio	94	78.3
16	Prolong breast feeding serve as vaccine	52	43.3
17	Unhygienic is the source of polio infection	99	82.5
18	Oral polio vaccine (OPV) is very effective in preventing polio	102	85.0
19	Polio vaccine is given orally	100	83.3
20	Polio outbreak is preventable	94	78.3

Source: Field Survey, 2012

3.5. Relationship between respondents' characteristics and knowledge of polio

Chi-square result shows the relationship between respondents' personal characteristics and knowledge of polio eradication initiatives. It indicates that there was no significant relationship between respondents' occupation ($X^2 = 10.564$, $p > 0.05$) and knowledge of polio eradication initiatives, whereas gender ($X^2 = 6.47$, $p < 0.05$) and education ($X^2 = 11.683$, $p < 0.05$) were significantly related to respondents' knowledge of polio eradication initiatives. This implies that irrespective of occupational affiliations, their knowledge and awareness of polio eradication issues were similar and that women could be more aware of polio eradication initiatives than men. Also, the level of education of the respondents' may impact on their awareness of polio issues. The correlation analysis in table 6 shows that a significant relationship exists between utilization of information sources and knowledge of polio eradication initiatives ($r = 0.312$, $p < 0.001$). This implies that quality of information from various sources influences respondents' knowledge. Given the different options of information sources used by respondents in this study, it could be inferred that respondents using radio and primary healthcare centres may be better informed than those who patronize mission homes and local leaders.

Table 5. Chi-square tests of relationship between respondents' characteristic and knowledge of polio eradication initiatives

Variable	Chi-square value	Df	P value	Remark
Sex	6.047	1	0.014	Significant
Education	11.683	1	0.001	Significant
Occupation	10.564	1	0.493	Non significant

Table 6. Pearson product moment correlation analysis of respondents' source utilization and their knowledge of polio eradication initiatives

Variable	N	r-value	p-value	Remark
Utilization of information	120	0.312	0.001	Significant

4. Conclusion

Most respondents are married female Christians with low level of education. Primary Healthcare Centres and radio are mostly patronized information sources. However, mission homes and community leaders are emerging information sources. Respondents are mostly constrained by inadequate information

dissemination, respect for societal norms, language barrier and poor communication strategy. Though most respondents have high knowledge of polio eradication issues, respondents are ignorant of key symptoms like pains in the limb and stiffness in the neck as potent symptoms of polio. Gender and educational level are significantly related to knowledge of polio eradication. Also, sources of information used by respondents' impact on their knowledge of polio eradication.

4.1. Recommendations

The following recommendations are to boost awareness and knowledge of polio eradication/ polio endgame initiatives: both conventional and traditional sources of information should be deployed for polio information dissemination; Information dissemination effort should be reengineered to circumvent all possible constraints to polio information accessibility. Such information should incorporate information about the symptoms of polio infection which are permanent disability so as to make them see the importance of the effort.

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