

Full Length Research Paper

A mixed method approach for the assessment of demand creation intervention strategy for polio eradication on exclusive breast feeding in Northern Nigeria

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The Federal Ministry of Health, Nigeria introduced incentives such as sachets milk powder to increase demand for oral polio vaccine (OPV). This study assessed whether the milk encourages the use of breast milk substitutes thereby dis-incentivising exclusive breastfeeding (EBF) in children during the first six months of life. A cross sectional design with mixed method was used for collecting quantitative and qualitative data in Borno and Kaduna states. Questionnaire was administered to 808 caregivers. There were focus group discussions, in-depth interviews and observations of an ongoing OPV+ intervention campaign. Quantitative and qualitative data were analysed using STATA 10 and MAXQDA, respectively. Milk was an infrequent component of the incentive package and accounting for only 4.6 and 1.5% in the 3 most recent immunisation campaigns. The high EBF awareness (82.4%) was associated with the demand creation campaign which the health service providers used to reinforce EBF messages. Breastfeeding decisions were mainly influenced by family and group norms and not by the sachet of milk powder that was given during the OPV+. There were no indications of inappropriate promotion of foods or any of the incentives. The inclusion of sachet milk in OPV+ kit did not compromise EBF but further enhanced it since the same service providers were responsible for all health interventions in the local government. Using milk powder and other incentives are effective for increasing participation and compliance with uptake of OPV in both states.

Key words: Polio eradication, incentive, exclusive breastfeeding, demand creation.

INTRODUCTION

Infant and child health remains a priority in many developing countries and is considered critical to the

attainment of child related Sustainable Development Goals (SDG3.2) and national development in Nigeria

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(WHO, 2019; Oleribe and Taylor-Robinson, 2016). Several health interventions programmes (including nutrition, immunization and education) are directed at children that are less than five years old due to their high level of vulnerability (Onwujekwe et al., 2019). Implementation of such health interventions criss-cross and unless operational care is taken, the advantages that accrue to a programme may be a concern to or undermine the other intervention. There are two major interventions that are given high priority for improving the health of the Nigerian child. One of it is the eradication of poliomyelitis (NPHCDA, 2016; McArthur-Lloyd et al., 2016; Oyo-Ita et al., 2016; Warigon et al., 2016). The other is promotion of exclusive breastfeeding (EBF) for infants (WHO, 2000).

The World Health Assembly at its sixty-fifth session of May 2012 declared polio eradication as a public health emergency of global significance (Warigon et al., 2016a). In response, Nigeria which is one of the three polio endemic countries that is yet to interrupt its transmission developed the National Polio Eradication Emergency Plan (NPEEP) as a strategic priority for 2013, 2016 and 2018. The main goal was to intensify “efforts to scale up communication and advocacy in the high-risk areas to contribute to a reduction in the percentage of missed children”, while sustaining the gains existing initiatives (NPHCDA, 2013, 2016, 2018). In 2014, although polio intervention efforts had improved significantly in Nigeria, persistent poliovirus transmission underscores the urgent need to reach the 5% children that are missed and who may be responsible for sustaining polio virus transmission (WHO, 2019; Tobin-West and Alex-Hart, 2011; Johri et al., 2015; Machingaidze et al., 2013). Independent monitoring data from previous immunisation rounds showed that children continue to be missed even after several campaigns (WHO, 2019). Outright rejection, of oral polio vaccine (OPV), among other factors, was identified as a central problem in interrupting polio transmission in Nigeria, making Nigeria the only polio endemic country in the African Region for a considerable period of time (Oku et al., 2019).

The negative anti-intervention campaigns that were launched by influential individuals in Northern Nigeria which had a devastating effect on the eradication effort made the creation of demand for OPV a necessity (Warigon et al., 2016b). The strategy comprised activities that attract the children from high-risk communities to the polio vaccine. Health providers worked in collaboration with local government officials, community leaders and caregivers to build trust and confidence in immunization programme (NPHCDA, 2016). The most popular approach is the oral polio vaccine plus (OPV+) which consisted of child-friendly gifts of whistle, toys, biscuits and 12 g sachet of milk powder to reinforce child acceptance of the immunization (Korir et al., 2018). Caregivers who presented their children for immunization

received a gift with some health value, such as soap, sachet of detergent or similar article. An OPV+ campaign was heralded by announcements in the health facility catchment area. The rapid decline in polio cases in some states was attributed to this change in strategy.

Exclusive breastfeeding (EBF) on the other hand is the feeding of infants with only breast milk, be it directly from breast or expressed, with no addition except drops of syrups consisting of vitamins, mineral supplements or medicine (WHO, 2001, 2002; Setegn et al., 2012). EBF of infants for the first six months and the continuing breastfeeding of children for up to two years of age with appropriate complementary feeding, are highly recommended by WHO and UNICEF in preventing childhood illnesses and maximizing the growth of children (WHO, 2016). However, multiple factors contribute to poor breastfeeding practices including the inappropriate promotion of breast milk substitutes (Piwoz and Huffman, 2015; Hadihardjono et al., 2019). Inappropriate promotion of breast milk substitutes such as snack foods targeted at infants are said to be common in countries like Indonesia and have contributed to stunted growth in children (Green et al., 2019; Purwestri et al., 2018; Hadihardjono et al., 2019).

In 2008, only 17% of Nigerian infants receive appropriate breastfeeding and the duration of exclusive breast feeding is 15 days and 50% of infants are denied exclusive breastfeeding for up to one month (Victora et al., 2011). Nwankwo and Brieger (2006) associate the problem with cultural practices, ignorance and beliefs as well as corporeal cosmetic preservations. Yet EBF is intensely promoted at all levels of the health administration as the main strategy for preventing childhood illnesses and maximizing the growth of children (WHO, 2016). Antenatal care health education campaigns and social gatherings are used as forums for promoting the benefits of the EBF (UNICEF/WHO, 2003).

Both the OPV+ which includes gifts of sachets of milk powder and the EBF campaigns are co-implemented in same communities. However, it is unclear whether the inclusion of the provision of sachet milk as an incentive in the OPV+ campaigns unintentionally encourages the use of breast milk substitutes in areas where both interventions are co-operational in Northern Nigeria.

This study reports an assessment of the EBF practices in an area where polio eradication campaign using a sachet milk powder as an incentive for creating demand is co-implemented with exclusive breastfeeding promotion.

METHODOLOGY

A cross sectional study design using mixed methodological data collection technique was employed to assess the factors associated with the co-implementation of OPV+ (oral polio vaccine incentivised with sachet of milk) and EBF interventions. Quantitative and

qualitative data were collected from mothers who have children less than 5 years and living in a community where demand creation interventions have been implemented for polio eradication in Northern Nigeria for at least three years.

Study site and sample size

The study was carried out in Northern Nigeria states of Borno and Kaduna. A 50% chance of every child accessing OPV+ was assumed at 95% confidence to give a sample size of 384 per state. A sample of 400 per state was considered more appropriate to compensate for cluster effect in respondent selection and losses.

A rural and an urban LGA were selected from Borno and Kaduna states for the study. Only LGAs that have an ongoing OPV+ component (sachet milk powder intervention), with consistent implementation in the preceding three years, that has attained 80% compliance coverage and have coverage rate data for all communities within it. Sample selection was multi-stage and received the assistance of the local government personnel. Two wards (one urban and one rural) were selected from each of the LGAs and ten communities/neighbourhoods were selected in each of the wards. Ten households were selected in each community for the quantitative survey. Qualitative data collection was purposive, and sampling depended on the attainment of saturation point.

Data collection

For household selection, the researcher moved to the centre of the community which served as reference point and rotated a pencil and let it freely fall. The team selected the households in the direction of the pencil tip and then continued until the number of required households was obtained. Where there is a *cul-de-sac*, the step is retraced, and a turn in the opposite direction to the tip of the pencil was taken to continue the sampling process.

It was assumed that at least one woman with a child who is less than five years would be in such household. Once in a selected household, a mother (15-49 years) with a child less than five year-old, was identified for inclusion as a participant. In the absence of the mother, any other individual caregiver that fulfilled the inclusion criteria was substituted. A researcher-administered household questionnaire was used for collecting quantitative information from selected households.

An observation guide was used to follow up a Supplementary Immunisation Activities (SIA) event in the communities and to record the use by beneficiaries of the gifts they received during the OPV+.

Focus group discussions (FGDs) were held with both male and female groups to obtain the perspective of fathers of U5 children (male group), in addition to that of mothers (female groups), about breast feeding practice, the polio plus incentives and the use of the intervention components. Mothers of U5 children that received the sachet of milk powder were also interviewed about their breast-feeding behaviour and the use of the sachet of milk powder that they received. The FGDs were complemented with in-depth interviews with purposefully identified community and opinion leaders as well as individuals involved in the polio eradication programme at the state, LGAs, communities and facility levels. Five individuals that shunned the programme were traced and also interviewed to understand the reasons for rejection.

Data analysis

The quantitative data were entered using Epidata version 3.1

(Odense, Denmark) and processed using STATA v 14 (StataCorp). Descriptive statistics was used to determine proportions of various categories of respondents, and for comparison. Qualitative data were transferred into MAXQDA 12 software package (Verbi Software) and analysed. The themes from the qualitative data aligned with the variables of interest in the quantitative data to ensure data harmony, triangulation and to enable complementary and analogous interpretation.

Ethical clearance

The National Research Ethics Commission (NREC) reviewed the study protocol and granted an ethical clearance for its conduct.

RESULTS

Study population

Kachia (rural) and Kaduna North (urban) LGAs from Kaduna and Biu (rural) and Maiduguri Metropolitan Council (MMC) (urban) LGAs from Borno were used for the study. A total of 808 mothers and caregivers were interviewed. Seventy-four (74) in-depth interviews and group discussions were conducted. The similarities in the samples irrespective of their locations, culture, religion and states were striking (Table 1) thus allowing our conclusions to be highly representative of the study communities and states. More than 60% of the caregivers in the household survey had a child less than 24 months and only 9.3% had children between age 37 and 60 months.

Awareness of polio disease and vaccination

Awareness about polio disease is very high in the two states (92.9%) but the proportion of those that have seen a polio case was relatively low (27%). Almost all caregivers know that polio vaccine or a visit to a health facility can protect a child from polio disease. 99.7% (last child) received polio vaccination during the last polio vaccination exercise (Table 2).

Respondents in qualitative interviews are also aware about the disease and vaccination although some have seen cases while others have never seen a case.

I know of a woman called whose child is a victim of polio. Polio has been here long before I was born. My grandparents also had the issue but then no one knew what to do. We thought it was iska (bad omen). Female community leader, Biu, Borno State.

Since we grew up to know our community, we have not seen any case of polio, we only hear about it. But the vaccine is given to the children despite our awareness that polio is not one of the health challenges the community. FGD Mothers, Kachia, Kaduna.

Table 1. Description of study population¹.

Settlement type	Total (%)	State (%)		Religion (%)	
		Borno	Kaduna	Moslem	Christian
Urban	417	50.3	50.1	52.9	47.2
Rural	391	49.7	49.9	47.1	52.8
Total Sample	808	403	405	628	180
	-	No difference	-	No difference	-
Caregiver has child aged					
Less than 6 months	157 (19.4)	21.6	17.3	21.0	13.9
6 to 24 months	374 (46.3)	49.1	43.5	45.7	48.3
25 to 36 months	202 (25.0)	24.3	25.7	24.0	28.3
37 to 60 months	75 (9.3)	5.0	13.6	9.2	9.4
Last child's median age (months)	14	18	17	17	-

¹Household survey respondents were strictly mothers of U5 children. Vertical comparison only.

Table 2. Caregivers' awareness about polio disease and vaccination.

Polio Awareness	Borno (403)	Kaduna (405)	Total (808)
Seen child with polio	42.1	13.2	202 (27.0)
Aware vaccine prevents	99.7	96.2	739 (97.9)
Monthly campaign	96.8	75.6	696 (86.1)
Last child received polio vaccine	99.7	99.8	794 (99.7)
2 nd child received polio vaccine	100	100	524 (100.0)
3 rd child received polio vaccine	100	100	154 (100.0)
4 th child received polio vaccine	100	100	13 (100.0)

Awareness and practices of exclusive breastfeeding

Participants' awareness of EBF among caregivers is 82.4% (Table 3). Awareness about EBF was higher in Kaduna (96.8%) than in Borno State (68%). The local health personnel were the main source of information about exclusive breast feeding (90.5%) through antenatal health education and home visits. Only 3.6% attributed awareness of EBF to campaigns.

Local health personnel display messages about exclusive breast feeding in health facilities and provide health talk at health events and particularly during antenatal meetings.

The information on exclusive breast-feeding was passed to us at the health facility by the officer in-charge who came here this morning. It was during ante-natal care. We were told about the importance of breast milk without water or any other processed milk or food. We were also told to exceed the six months if we want. ... believe me, you would love this method of breast feeding because ...

the child will be active and agile. Female community leader, MMC, Borno State.

The in-charge told us to breast feed our children for at least six months of life before giving them water and other food. FGD Mothers, Biu, Borno State.

Participants (32.6%) confirm practising exclusive breastfeeding (22.4% in Borno and 42.7% in Kaduna State). Processed milk (infant food formula is introduced before the age of 6 months by 14.9% while solid food is introduced by 11.8% (Table 4).

Caregivers with only one child were more likely to be exclusively breastfed (35.4%) than those with more than one child. From the results, the first child received less exclusive breast milk than those born later. Irrespective of the birth order, the proportion of children that were exclusively breastfed was higher in Kaduna than Borno State. Overall, 49.5% of 283 caregivers had exclusively breastfed at least one child.

Mothers start giving water at birth and may then resort

Table 3. Awareness and source of information about EBF (multiple responses allowed)

State	Borno	Kaduna	Total
Awareness	68.0	96.8	666 (82.4)
Source of information about EBF			
Health worker	85.3	94.1	602 (90.5)
Health campaign	7.0	1.3	24 (3.6)
Relative/Family	2.2	1.5	12 (1.8)
Friends	5.1	1.3	19 (2.9)
Poster/advertisement	0.4	1.0	5 (0.8)
Others	0	0.8	3 (0.5)
Total	273	392	665 (100)

Table 4. Exclusive breastfeeding practices among caregivers (%)

Parameter	Borno	Kaduna	Total
Before age 6 months, caregiver			
Exclusively breastfed child	90 (22.4)	173 (42.7)	263 (32.6)
Gave breast milk+ processed milk	90 (22.4)	30 (25.0)	120 (14.9)
Gave breast milk+ processed milk + Solid food	90 (22.4)	5 (1.2)	95 (11.8)
Gave other	132 (32.8)	197 (48.6)	329 (40.8)
Caregivers that			
EBF all 4 children	7 (14.3)	1 (0)	8 (12.5)
EBF all 3 Children	101 (21.8)	43 (20.9)	144 (21.5)
EBF all 2 children	189 (18.0)	178 (41.0)	367 (29.2)
EBF the only child	105 (24.8)	183 (41.5)	288 (35.4)
Caregiver exclusively breast fed			
1 st Child	12 (16.7)	1 (0)	13 (15.4)
2 nd Child	294 (20.7)	224 (40.2)	518 (29.2)
3 rd Child	111 (20.7)	43 (23.3)	154 (21.4)
Last child	12 (16.7)	1 (0)	13 (15.4)

to only breast milk in addition to water before introducing adult meals at a later age and finally weaning the child. Even though awareness of EBF is high, community members were concerned about denying a new-born water considered giving water as integral component of exclusive breast feeding.

Frankly speaking, I know of this exclusive breast feeding, but I do not practice it because I cannot deny my child of water for six months. I do not give any other food but breastmilk and water until after six months. FGD mothers, MMC, Borno State.

However, others comply with EBF.

I usually give my child other food like pap and spaghetti at twenty months. As for the child before the last child, I breastfed him exclusively for the first seven months before I started giving him water and later, I added pap, and it continued until he could eat food by himself, then I weaned him off breast milk. Female community leader, Biu, Borno State.

In Borno, Moslem women would give holy water, zam-zam from Mecca to infants as soon as they are born. The water is assumed to have spiritual cleansing and it is believed to make children brilliant and healthy.

Some mothers dropped zam-zam (water from Mecca

Table 5. Age (months) at which breast feeding is stopped.

Parameter	Borno	Kaduna	Total
Age (months) when last child stopped breastfeeding			
Sample	157	201	358
Mean age	19.17	18.67	18.89
Median age	19.00	18.00	19.00
Mode	18	18	18
Age when first Child stopped breastfeeding			
Sample	12	1	13
Mean	19.42	20.00	19.46
Median	20.00	20.00	20.00
Mode	20	20	20
Reasons for stopping to breast-feed the child (multiple responses allowed)			
Sample	157	204	361
Tired (%)	1.3	13.7	8.3
Usual/normal time to stop (%)	76.4	28.4	49.3
Prefer powdered milk (%)	0	0.5	0.3
Child old enough (%)	14.6	53.9	36.8
Other reasons ¹ No breast milk (%)	0.6	9.9	4.7

¹No breastmilk, not my child. Vertical comparison only.

which is believed to be holy water for the Moslems) in the baby's mouth to make the child brilliant and to prevent diseases. If the mother lacks breast milk, we give zamzam to the child to drink. Female community leader, MMC, Borno State.

Breast feeding duration varied and the interpretation of EBF had different interpretations depending on the caregivers. The mean age of weaning is 19 and 18.7 months in Borno and Kaduna states, respectively (Table 5). Children are introduced to adult food after weaning between 18 to 20 months.

In both states, the age at which a child was weaned seemed to decline from the first (Mean 19.42, mode 20.0) to the last child (Mean 19, Mode 18) indicating that the first child had more breastmilk than the successive siblings. The most commonly cited reason for stopping to breast feed were compliance with culturally appropriate time for stopping (76.4% in Borno) and when the child was old enough (53.9%, Kaduna). The introduction of supplementary milk feeding was the least important reasons (0.3%) for stopping to breast feed the child.

Impact of demand creation strategy on polio immunization

A mobile "road show" is conducted by a team which has

health personnel, recorder, vaccinator, mobiliser as well as entertainer that led the street-to-street show. The entertainer used various theatrics, music and acrobatic displays to draw children to a central location.

During the first two days, we focus on entertaining the community by organising street shows, dances, and revelry often on their market days. As the children come out to enjoy the shows, the team would give the vaccine and present gifts to those that had received the vaccination. Those who receive the presents would then go to bring other children. This creative approach proved to be a highly effective mobilisation strategy in all the communities that we visited. Senior Health Management official, Kaduna State.

Caregivers are presented with some gift of soap, noodles and other items of value to the household. In addition, children between the ages of 24 to 60 months who are attracted to the road shows, are given toys, whistles and sachets of milk powder.

The gifts that the nurses give our children is like magic. The nurses now have absolute control on the children during the vaccination. No parent can prevent the child that can walk from rushing off into the streets to receive the vaccine and the gift that comes with it from a smiling nurse. No one. The children love the nurses now more

Table 6. Motivational items that caregivers received in the last campaign.

Parameter	Borno	Kaduna	Total
Sample	403	405	808
I and, or my child received nothing	0.7	23.5	12.0
I and, or my child received:			
Vitamin A	0.5	23.5	12.0
Deworming medicines	1.2	20.0	10.6
Sachet milk powder	70.5	57.0	63.7
Others	86.8	20.5	53.6
The items motivate me	100.0	100.0	100.0

Table 7. Receipt and use of the sachet of milk.

Parameter	Borno (403)	Kaduna (405)	Total (808)
Received milk sachet at least once in three campaigns	49.4	57.3	53.3
Children less than 6 months that consumed sachet milk at least once in three campaigns	6.0	3.4	4.6
Received milk in campaign before last	37.5	2.2	19.8
Children less than 6 months that consumed the sachet of milk powder at least once	2.0	11.1	2.5
Received milk in campaign last campaign	32.0	0.2	16.1
Children less than 6 months that consumed the sachet of milk powder at least once	1.6	0	1.5
How the milk was used			
made tea with it.	119 (32.3)	136 (32.2)	155 (32.2)
gave to a child that is breast feeding who is OLDER than six months	75 (20.4)	107 (25.3)	182 (23.0)
gave to a child who is NO LONGER breast feeding	170 (46.2)	175 (41.4)	145 (43.6)
gave to a child that is breast feeding who is YOUNGER than six months	3 (0.8)	2 (0.5)	5 (0.6)
It makes women to start buying sachet milk for the bf children	1 (0.3)	3 (0.7)	4 (0.5)

¹These relate to the caregiver and excludes milk that is given to children during the road shows. Vertical comparison only.

than their teachers because of this. Female community leader, Biu, Borno State.

Collection and consumption of the demand creation incentive (sachet milk powder)

In Borno and Kaduna states, 70.5 and 57% of the caregivers, respectively received a sachet of milk powder and other items such as sweet (19.9%), soap and sweet (11.4%), soap (10.6%), sweet (4.7%), and biscuit (3.6%) during the polio campaigns. Every community member attested that the gifts influenced the acceptance of the vaccine (Table 6).

In the three campaigns before the last, 53.3% of the caregivers received sachets of milk powder at least once in both states while 16.1% of the caregivers received it during the last campaign thus showing a decline in

sachet milk distribution (Table 7).

Less than 50% of caregivers in Borno State received the sachet of milk powder during the three polio vaccine campaigns considered with the proportion of caregivers given milk reducing it from the previous to the most recent campaigns. Only 1.5% of the children less than 6 months old were given the milk received by caregivers. There was a reduction in the proportion of children less than six months that received the sachet milk from the previous polio campaign to the most recent one.

Neither caregivers nor community members gave the milk powder to children that were breastfed. Reasons for not giving babies include: the powder will choke them, milk only for grown-ups, it was not enough.

We don't give the milk to the children and babies because you know they can't take it and the milk can cause choking since it is in powder form. FGD Fathers,

Miringa, Biu, Borno State.

It is only the grown-up children who were not breastfed that got the milk and they gave me soap or detergent for bringing my youngest child and I use it to wash her clothes. She is now one year old. There was no time I gave the milk to my breast feeding baby. Female participant, Biu, Borno State.

There was not any instance where it was reported to us that a mother gave our milk to anyone less than two years. The older children like milk and sometimes insist. The milk has resolved most of the issues of noncompliance. Health Personnel interview, MMC, Borno State.

I do not think any mother that has chosen to exclusively breastfeed will interrupt it because of this small thing that you get once in many months. A woman will not stop her exclusive breast feeding just because she was given a sachet of milk. Female Community leader, Kachia, Kaduna State.

In my community we practice exclusive breast feeding. It is cheap, and we are poor. Community leader, Kachia, Kaduna State.

DISCUSSION

Influence of gifts and entertainment on polio vaccination

The study shows that the mothers and caregivers are well aware of, and accept polio vaccine. The high level of awareness is largely influenced by the demand creation strategy through the distribution of incentives to children, mothers and caregivers.

The gifts and entertainment motivate participation and compliance. In 2003, the polio vaccine was widely rejected in Northern Nigeria causing a setback to the previous accomplishments and a global health crisis. The gifts (and entertainment) resulted in significantly higher uptake of the vaccine in hitherto non-compliant communities (Warigon et al., 2016).

There is a high dependence on the gifts in Borno State as a motivator for compliance where traditional non-compliance had been the norm. The children were particularly motivated to come outdoors bringing their siblings and friends to receive the gifts and the vaccine. Stakeholders' opinion including representatives of international development partners and project managers attest to the influence of the incentive approach on local participation particularly where compliance is low. The incentives are a major motivating factor that could only be withdrawn gradually to avoid the unpleasant

consequence should they be removed by fiat.

Awareness and practices of exclusive breastfeeding

Awareness of EBF among caregivers in both states is also high and mainly influenced by the health personnel at the local health facilities whose responsibility include the coordination of all health education and intervention campaigns in their areas. The same health personnel that promotes polio immunization uptake, is also responsible for the promotion of EBF. That the high level of awareness has not translated to practicing exclusive breastfeeding especially for children under 6 months is much more complex and will require further study of culture, economic and other social factors.

Influence of the demand creation (sachet milk inclusive) on breastfeeding practice

The road shows attract children between 36 and 60 months who could join in the fun outside and follow up the vaccination team and makes it extremely difficult for children who are less than 24 months old to receive the sachet of milk powder. Incentives for mothers to bring children below twelve months of age focus on gifts that are of domestic value to mothers (wash soap, spoons) while gifts such as milk powder are used to attract the older children who may more easily avoid the vaccination teams.

The quantity of the milk powder and the distribution is too little and infrequent to cause any behaviour change that will make caregivers and mothers develop appetite for replacing breast milk with sachet milk powder. The milk powder costs about five US cents which is expensive for its value in the household priority list. Caregivers are also aware that the milk is not formulated for infants and could not be a substitute for breast milk.

The same health personnel that promote EBF also promote compliance with polio vaccine acceptance and use every opportunity for an outreach to pass the same information to the community members. For example, the house to house polio vaccine campaign was used to reinforce the exclusive breastfeeding message.

The study did not find any promotion (advertising, endorsing or preferment or advancement, encouragement in any form) of the gift items. All the motivational add-ons, although bearing trade names were procured using the WHO procurement processes and were neither donated nor branded for use thus excluding the likelihood of external influence.

The scope of the study was limited to Borno and Kaduna states and although a wider exploration would have been useful, it does not in any way diminish the quality of the evidence. The results were shared with a

cross section of the stakeholder community (UNICEF, WHO, Federal Ministry of Health) which recommended further use of the incentives approach to target areas with persistent low OPV uptake.

Conclusion

These findings show community entertainment and incentives were an effective strategy for increasing participation and compliance with OPV campaigns in Northern Nigeria. The involvement of the same local health personnel for the promotion of exclusive breast feeding and polio eradication campaigns at the community reinforced and complemented both health interventions. The use of OPV+ campaign for reinforcing EBF messages increased EBF awareness and could be extended to other interventions. The inclusion of sachet milk powder is popular among the children and should continue to be used to create demand for the OPV in age 24 months and older. A comparison of the nutritional status of children receiving OPV plus incentive with those receiving OPV without incentive, and an assessment of the influence of the strategy on child-friendly health facilities will be a valuable complement to the present study.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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ABBREVIATIONS

EBF, Exclusive breastfeeding; **FGD**, focus group discussion; **FMOH**, Federal Ministry of Health; **LGA**, Local Government Area; **MMC**, Maiduguri Metropolitan Council; **NPEEP**, National Polio Eradication Emergency Plan; **NREC**, National Research Ethics Committee; **OPV**, oral polio vaccine; **SIA**, supplementary immunization activities; **U5**, child(ren) less than five years old; **UNICEF**,

United Nations Children's Emergency Fund; **WHO**, World Health Organisation.

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