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TECHNICAL REPORT

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Community knowledge, attitude and practice of childhood immunization in Southwest Nigeria: Data from a Paediatric Association of Nigeria town hall meeting.

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Abstract *Background:* Vaccine preventable diseases account for 22% of under-five deaths in Nigeria and poor knowledge and attitude have been responsible for non-vaccination of children. This study aimed to assess the knowledge, attitude and practice of childhood immunization among community members in Ile-Ife. *Methods:* Quantitative data (using an interviewer-administered questionnaire) was collected from a convenience sample of 36 adult residents who attended a town hall meeting with the Paediatric Association of Nigeria. Two focus group discussions were also conducted among sub-samples of male and female respondents. *Results:* The mean age of respondents was 43.2 ± 11.9 years with a male to female ratio of 1:0.7. Most had secondary education (63.9%) and had children (91.7%). Most of the respondents understood what immunization was and knew the benefits but were unaware of several of the specific types of immunization. There were erroneous beliefs about the contraindications for immunization and mothers were entrusted with the sole responsibility of getting children immunized. Although most of the respondents had immunized their children, they identified laziness of mothers, negative attitude of health workers and logistics problems at facilities as barriers to patronage of immunization services. *Conclusion:* This study identified knowledge gaps and negative attitudes towards childhood immunization. We therefore recommend a community-wide health education intervention with emphasis on substantial male involvement in immunizations and improvement in immunization service delivery.

Key words: Community, knowledge, attitude, childhood immunization.

Introduction

In Nigeria, one child in five dies before its fifth birthday and vaccine preventable diseases (VPDs) account for 22% of deaths.[1] Routine immunization has proven to be one of the most cost-effective interventions for reducing childhood illness and mortality.[2] The Expanded Programme on Immunization was initiated in 1979, relaunched in 1984 due to poor coverage and launched as National Programme on Immunization in 1996. Routine immunization is provided largely through the public health system, with significant variations between the states of the Federation. In south-west Nigeria, 82.4% of immunizations are provided by the government free to the populace.[1] Despite this, only about 43% of children 12-23months in the zone were fully vaccinated according to the 2008 National Demographic and Health Survey (NDHS); this proportion is still much higher than the national average of 23%.[3]

Mother's knowledge about immunization was found to be a predictor of full immunization in rural Nigeria.[4]

unwillingness to vaccinate child with mild illness have been responsible for non-vaccination of children.[5] Most KAP studies on childhood immunization have been among mothers and health workers. Also immunization programs in low-income settings have targeted women and neglected the role of men; the non-supportive role of male partners has been shown to negatively influence mother's immunization behaviour.[6] This study explores opinions from both male and female members of the community since the woman is usually not the only person to make health decisions and may not be the primary decision-maker.[7]

This paper reports on a survey by the Paediatric Association of Nigeria (PAN) during a town hall meeting with community members to sensitize them on the importance and benefits of childhood immunization as part of activities towards its 43rd Annual General and Scientific conference in Ile-Ife. The objectives of this study were to understand the knowledge on immunization as well as the attitude and immunization practices in the study area. The findings from this study are useful as a baseline in the planning of interventions to improve immunization knowledge, attitude and services in the area.

Methods

This was a descriptive, cross-sectional study that used quantitative and qualitative methods to collect data from a convenience sample of 40 adult residents of Ile-Ife who attended a town hall immunization advocacy meeting with Paediatrics Association of Nigeria in January 2012. Six trained research assistants fluent in Yoruba interviewed the participants using a structured questionnaire after collecting verbal informed consent. Two focus group discussions (FGDs) were conducted: one among 12 males and another among 12 females. The discussions were held one after the other at the Ife town hall, each session lasted one hour and was conducted in Yoruba language. The discussion was organized around five themes namely: knowledge of and attitudes to routine immunization; perceived benefits and risks of routine immunization; routine immunization decision making; service availability, accessibility and costs; and patronage and recommendations. Quantitative data was analyzed using Epi-info windows version 3.5.1. The focus group discussions were transcribed and transcripts were thematically coded. Next, joint discussions were held to identify similarities, resolve differences and achieve consensus, with refining of coding occurring as required. Verbatim passages were selected from the transcripts to illustrate themes.

Results

There were 36 valid questionnaires for analysis. Respondents ranged in age from 21 – 70 years with a mean age of 43.2 ± 11.9 years. They were mostly male (58.3%), married (86.1%), with secondary education (63.9%), semi-skilled (44.4%) and Christians (72.2%). All the respondents were Yoruba and over 90% had children (Table 1).

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (n = 36)	Percent (%)
Age group		
< 35	7	19.4
35 – 44	11	30.6
45 – 54	7	19.4
>54	5	13.9
Non-response	6	16.7
Sex		
Male	21	58.3
Female	15	41.7
Marital status		
Single	5	13.9
Married	31	86.1
Educational level		
Primary	6	16.7
Secondary	23	63.9
Tertiary	7	19.4
Occupation		
Senior professional	1	2.8
Intermediate professional	3	8.3
Junior professional/skilled	6	16.7
Semi-skilled	16	44.4
Unskilled	7	19.4
Student/apprentice	3	8.3
Tribe		
Yoruba	36	100
Religion		
Christianity	26	72.2
Islam	10	27.8
Number of children		
None	3	8.3
1 – 3	13	36.1
4 – 6	17	47.2
>6	3	8.3

All the respondents had heard about immunization and their sources of information were health workers (60%), news/media (25.7%), family (11.4%) and friends (2.9%). Most (77.8%) of the respondents knew immunization as an injection that prevents diseases in children. They were aware mostly of BCG (79.6%), Measles (52.8%) and Yellow fever (50%) immunization. All of them knew immunization to be good and 77.8% recognized the benefit of prevention of diseases (Table 2).

Over 30% of respondents would not take their child back for immunization if he/she develops mild fever, moderate to high fever and soreness/redness at injection site and convulsions (Table 3).
Half of the respondents would not immunize their child if he/she was taking antibiotics, was born prematurely and if there is a family history of convulsions (Table 4).

Over 40% of respondents would not accept polio vaccination for the children during National Immunization Days (NIDs), most (55.6%) felt the cost of immunization is affordable and 66.7% felt the clinic staff were cordial/friendly. Twenty seven point seven percent spent over 2 hours to get child immunized and 61.1% felt the time spent is not too much (Table 5).

Among the 33 respondents that had children, 97% of them had immunized their child/children and all the children of 93.9% of them had been immunized. Most (54.5%) of them received immunization for their children at the health centre (Table 6).

Table 3: Willingness to take child back for immunization if certain conditions develop

Variables	Frequency (n = 36)	Percent (%)
Mild fever		
Yes	22	61.1
No	13	36.1
Not sure	1	2.8
Moderate to high fever		
Yes	23	63.9
No	12	33.3
Not sure	1	2.8
Soreness/redness at injection site		
Yes	24	66.7
No	11	30.6
Not sure	1	2.8
Convulsions		
Yes	23	63.9
No	11	30.6
Not sure	2	5.6
Abscess at injection site		
Yes	25	69.4
No	9	25.0
Not sure	2	5.6
Cough and catarrh		
Yes	24	66.7
No	10	27.8
Not sure	2	5.6

Table 4: Circumstances under which respondents would immunize child

Variables	Frequency (n = 36)	Percent (%)
Would allow child to be immunized on NIDS		
Yes	17	47.2
No	15	41.7
Not sure	4	11.1
Cost of immunization is affordable		
Yes	20	55.6
No	10	27.8
Not sure	6	16.7
Attitude of clinic staff		
Cordial and friendly	31	66.7
Rude	1	30.6
Impatient	1	2.8
Unfriendly	1	2.8
Nonchalant	1	2.8
Other	2	5.6
Time spent in clinic to immunize child		
< 30 mins	8	22.2
30 mins – 1 hour	8	22.2
1 – 2 hours	10	27.8
2 – 3 hours	7	19.4
> 3 hours	3	8.3
Feels too much time is spent on immunization		
Yes	11	30.6
No	22	61.1
Not sure	3	8.3

Table 2: Respondents' knowledge of immunization

Variables	Fre-quency n = 36	Percent (%)
Understanding of immunization		
Injection that prevents diseases in children	28	77.8
Injection that helps child grow well	5	13.9
Injection that makes child strong	4	11.1
Don't know	1	2.8
Knowledge of types of immunization		
BCG	18	50.0
OPV	15	41.7
DPT	11	30.6
Yellow fever	18	50.0
Hepatitis B	8	22.2
Measles	19	52.8
Meningococcal	3	8.3
Pneumococcal	3	8.3
Don't know	2	5.6
Knowledge of whether immunization is good		
Yes	36	100
Knowledge of benefits of immunization		
Makes child grow	11	30.6
Makes child smart	7	19.4
Makes child bright	5	13.9
Prevents diseases	28	77.8
Don't know	1	2.8

Table 5: Attitude towards immunization services

Variables	Frequency (n = 36)	Percent (%)
Taking antibiotics		
Yes	16	44.4
No	18	50.0
Not sure	2	5.6
Just recovered from illness		
Yes	16	44.4
No	17	47.2
Not sure	3	8.3
Child is premature		
Yes	15	41.7
No	18	50.0
Not sure	3	8.3
Family history of convulsions		
Yes	15	41.7
No	18	50.0
Not sure	3	8.3
Child is breastfeeding		
Yes	27	75.0
No	9	25.0
Child has diarrhoea		
Yes	20	55.6
No	14	38.9
Not sure	2	5.6
Child has malnutrition		
Yes	22	61.1
No	12	33.3
Not sure	2	5.6
Child is jaundiced at birth		
Yes	17	47.2
No	16	44.4
Not sure	3	8.3
Child has HIV		
Yes	16	44.4
No	16	44.4
Not sure	4	11.1
Child has skin infection		
Yes	20	55.6
No	13	36.1
Not sure	3	8.3
Child is mentally challenged		
Yes	16	44.4
No	17	47.2
Not sure	3	8.3

Table 6: Immunization practice of respondents

Variables	Frequency (n = 33)	Percent (%)
Immunized child/children		
Yes	32	97.0
No	1	3.0
Diseases immunized against		
Tuberculosis	22	66.7
Diphtheria	19	57.6
Whooping cough	21	63.6
Tetanus	21	63.6
Polio	21	63.6
Hepatitis B	20	60.6
Measles	26	78.8
Yellow fever	19	57.6
Haemophilus	11	33.3
Others	3	9.1
Don't know	1	3.0
Possession of immunization card		
Yes	32	97.0
No	1	3.0
Children with up to date immunization		
None of them	1	3.0
Some of them	1	3.0
All of them	31	93.9
Place of immunization		
Government hospital	15	45.5
Health centre	18	54.5
Ever missed child's immunization		
Yes	6	18.2
No	27	81.8
Reasons for missing immunization	*n = 6*	
Could not afford cost	1	16.7
Non-availability of vaccines	2	33.3
Strike	3	50.0
Child too ill	1	16.7
Not enough children to vaccinate	1	16.7
Could not wait	1	16.7
Forgot	1	16.7

The focus group discussions

Generally, the male and female participants could adequately explain that immunizations help to prevent disease although there were some misconceptions among the female participants. "Polio is taken 3 weeks, 3 months, 6 months and 9 months after birth."
"A child with rashes or high body temperature should not receive vaccine."
When asked if the people in their community believe or trust that immunization of children can truly prevent diseases, the male and female participants agreed that immunization has helped in preventing diseases in the community. The female participants identified other means in the community by which people prevent diseases; "There are various other options that people in this community have and these include *agbo* (herbal concoction), cow urine. Infant deaths were rampant in those days."
"To prevent measles, mothers use *eeru gbigbona* (hot ashes) and sand with herbs and use this to rub the child's body after which they will place the child close to naked burning fire and wrap the child with many clothes sometimes thick ones. The child and the mother must not bath for days until the perceived disease comes out of the child's body, so that the concoction would not rub off."

The male and female participants commonly shared views on the perceived benefits of immunization: "For the children, it reduces death of our children, make the children useful to the parents, makes the parents to have rest of mind." "Parents will not be spending money on hospital bills on their children. It makes our children healthier." However, while the female participants felt there was no disadvantage to childhood immunization, the male participants had a divergent view; "Sometimes if it is not well done, the child will develop temperature (fever), it may lead to death or to paralysis which the immunization is trying to prevent."
"Some of our health workers are not well trained. Only those who have adequate training should be allowed to administer vaccines. Immunizing a child may result to illness or swelling of the child's body."

When probed about decision-making about childhood immunization at the household level, the male and female participants agreed that it is the mothers' responsibility to ensure that children are immunized. According to the male participants, "It is the sole responsibility of the mother to carry her children for immunization. Fathers can only encourage the mother, pay for the transport to health facility; or carry wife on *okada* (commercial motorcycle) to the health facility."
"The role of government is to ensure vaccines are available as at when due, encourage mothers by giving incentives like insecticide treated nets, pampers (diapers) etc. This will encourage mothers to come to access immunization."

In addition to government, the female participants also mentioned health workers, community leaders, religious leaders and school as having responsibility for immunization at the community level.

Regarding service availability, accessibility and cost, the male and female participants agreed that health facilities and health workers are not sufficient in villages and vaccines are often unavailable. The male participants identified other barriers: "another thing is that the roads are bad and the cost of transportation is another barrier to accessing immunization by mothers. There is poverty in the land you know."

The male participants were of the view that laziness of mothers is an obstacle to patronizing health facilities for immunization services and they made the following recommendations: "Government should employ more workers. Those to administer vaccines should be well trained not just anybody."
"The health workers should be friendlier to mothers. Attitudes of some are discouraging to mothers, especially when they shout on them or ignore them. Mothers should be attended to promptly and should not spend long hours in the clinic and sometimes come back without vaccines for their babies."
"Government should provide vehicles to be carrying mothers to the clinics during immunization days. Immunization should also reach those in the villages."
"Knowledge about immunization is inadequate. There

should be more enlightenment campaign especially on whether there is overdose of immunization or the implication for a child who receives the same immunization at school and at church or health centre."
"There should be incentives for mothers who bring their babies for immunization e.g. giving them insecticide treated nets or baby pampers (diapers)."
"Government should ensure that vaccines are available at all times."
The female participants identified more barriers to patronage: ignorance, fear of side effects, time consumption, unwillingness to leave work and discouragement when visits are made to the hospital without immunization. They made similar recommendations as the male participants.

Discussion

Most (77.8%) of the respondents had correct understanding of the meaning of immunization and this could be attributed to their high level of education. Similarly, 63.7% of mothers in a rural community in Edo state had correct knowledge of the definition/purpose of immunization.[4] Respondents in our study shared similar educational status with the Edo mothers. The respondents were however not so knowledgeable about the different types of immunization with measles being the most commonly mentioned by a little more than half of respondents. There were also some misconceptions identified among the female FGD participants regarding timing of polio vaccine and contraindications of immunization. This underscores the need for health education intervention to fill in the gaps in knowledge about immunization. Health workers, being the most common source of information in this survey will be useful in this regard.

The respondents in this study perceived immunization to be beneficial and this was similar to findings from the Edo study and a qualitative research among socio-economically challenged mothers in Turkey.[4, 8] Interestingly, the male FGD participants and not the female felt that immunizations could also be disadvantageous; they mentioned the possibility of side effects such as fever and swelling and also more grievous conditions such as paralysis or death. There appears to be some mixing up of their knowledge with myths which may adversely affect uptake of immunization if not addressed through health education. They seem to associate these negative conditions with poorly trained health workers. Health workers need to be properly trained as this not only ensures effective service delivery to the populace but would also boost the confidence of end-users of immunization services.

The female FGD participants identified some traditional means by which childhood illnesses were prevented n the community other than immunization. Sometimes, traditional methods are mixed with orthodox methods because of strong ties with culture. A qualitative study in South Africa, in contrast, revealed a negative attitude towards traditional medicine among caregivers of under 5s with the majority believing that it cannot prevent childhood illnesses.[9]

Apart from the appreciation of the benefit of immunization, the respondents' attitude left much to be desired. About a third of them would not be willing to take their children back for immunization if they developed common side effects of immunization such as mild fever and soreness at the injection site. Significant proportions would not take their child for immunizations for several conditions that were not contraindications such as antibiotics use, recent recovery from illness, family history of convulsions, mental challenges etc.

Mothers in a semi-urban community in India shared some of these erroneous beliefs.[10] Interestingly, almost all the respondents reported that their children had completed their immunization; this study however did not ascertain age(s) of completion. The implication of this is that children's immunizations would be avoidably missed and even if the schedule is completed it could be at ages older than required because of missed opportunity. These delays in immunization expose children to VPDs. Over 40% of respondents would not allow their children to be given supplemental polio vaccine during National Immunization Days possibly because of a preference for routine immunization to mass immunization as was observed in Turkey[6] or because they have not been educated on the additional benefit it offers towards herd immunity and the eradication of polio or because of the fear of overdose. Limited acceptance coupled with ongoing operational problems have resulted in low vaccination coverage and continued poliovirus transmission in the country.[11] We recommend that a lot more community-based enlightenment programs should be carried out among men and women to address misconceptions and encourage the uptake of supplemental polio vaccine.

Mothers were entrusted with the sole responsibility of immunization similar to findings in Turkey.[9] The men often supported with transportation money to the clinic. It appears that gender roles in this setting may limit male involvement in immunization; they identified laziness on the part of the mothers as a barrier to accessing immunization services but did not identify non-involvement of men as one. The implication of this is that a mother in this community who does not appreciate the benefit of immunization on her own may not take her children for this service especially without the encouragement of her male partner. Interventions to improve immunization uptake should thus include male members of the community to ensure their active participation in childhood immunization.

Apart from logistics issues, negative attitude of clinic staff was emphasized as another barrier to accessing services. There is a need for health workers to treat caregivers and children properly and with the right amount of respect so that they would willingly approach health facilities for immunization.

This study has some limitations. The number of the people surveyed was small because that was the turnout at the town hall meeting. The findings can thus not be generalized to the entire community. Also, we did not cross check immunization cards to confirm self-reported immunization status of children as was done in some other studies in Nigeria.[4,12] Future studies in this area should use a larger, more representative sample and should collect data in households where there can be access to immunization cards.

Conclusion

This study has demonstrated that misconceptions and gaps in knowledge about childhood immunization exist among the community members and dangers of delayed immunizations exist because of their negative attitude. We recommend a community-wide health education intervention with emphasis on substantial male involvement in immunizations and improvement in immunization service delivery.

Authors Contributions
The study was conceived by all the authors except ECI and BMR. The draft proposal was written by EEN and ECI. All authors except ECI and BB collected the data. BMR and EEN analyzed the data. The initial draft of the manuscript was written by BB; all authors reviewed and approved the final manuscript for submission.

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