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Community Perspective of Alternative Methods of keeping Immunization Records in a Rural Setting of Southwest Nigeria

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ABSTRACT

Background: Evaluation of the objectives of immunization programme will be impossible in settings where immunization record keeping and verbal reports may be unreliable like Nigeria. This necessitates a need for improved record keeping. Using end users' approach to seeking alternative record keeping system might serve as a model on which to plan improvement of immunisation service delivery. This study was conducted to assess other methods of keeping childhood immunization records based on community's suggestions in a rural setting of Southwest Nigeria.

Methodology: A cross-sectional study of mothers/care-givers of under-5-children in a rural community was carried out using a mixed-method approach [questionnaire survey and focus group discussion (FGD)]. Quantitative data were analysed using descriptive statistics and qualitative data by thematic approach.

Results: Mean age of the respondents was 28.3 ± 5.5 years and 98.5% were females. Most (65.4%) of the respondents could not think of any other way of keeping immunisation assessment records. The use of a notebook was the only new method suggested by few (0.4%) of the respondents. From the FGD, participants opined that they had no challenge with the use of the immunisation card as a way of keeping immunisation records and that there were no better ways. However, suggestions reported revolved around better ways of maintaining the cards such as keeping the cards in the bank or having a duplicate in the health facilities.

Conclusion: Respondents in the study area felt the use of immunization card for keeping immunization records should be continued with improved maintenance culture.

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INTRODUCTION

Immunization coverage serves as an indicator of a health system's capacity to deliver essential services to targeted segments of a population, usually children at certain ages,[1] and it is one of the indicators used to monitor progress toward the achievement of the third sustainable development goals.[2] To assess it, either the administrative method or survey method or both can be used.[1, 3] Using data from multiple sources are however recommended.[3] The administrative method is based on immunization data collected from health facilities and other providers.[1] Traditionally, these data are collected using

paper-based medical records such as the facility tally sheets, child immunization register and vaccine ledger.[4, 5] With advancement in technology, mostly in the developed countries, electronic medical records using computers and mobile devices are now been used to collect these data.[6, 7] The data are then aggregated at district levels to generate geographical immunization coverage or aggregated in sophisticated health information systems or immunization registries to generate national immunization coverage.[1]

The survey method is based commonly on data collected from household cluster surveys (such as the Demographic and Health Surveys and the Multiple Indicator Cluster Surveys), the Expanded Programme on Immunization cluster surveys and the Lot Quality Assurance Sampling (LQAS).[1, 5] It is based less commonly on retrospective school surveys and birth certificate follow-back surveys.[8] These surveys rely on information from mothers' verbal report, vaccination card records and school health records.[1, 5, 8, 9] The LQAS survey sometimes rely on an indelible ink finger mark on the child in addition to the caretaker's report or vaccination card record.[5]

Most low-income countries still rely on the administrative paper-based record system to derive their immunization coverage.[10] However, the accuracy of using the paper-based method to estimate immunization coverage depends on good record-keeping practices of doses of vaccines administered in addition to accurate population estimates.[5, 6, 10, 11] Due to the record-keeping challenges and other problems associated with the administrative method, the survey methods was recommended as a better alternative for assessing immunization coverage in low and middle income countries.[5] But like the administrative method, the accuracy of the survey method also depends in part on the quality of primary recording on the vaccination card in addition to information bias, selection bias and sampling error.[5] The card may be illegible, contain incomplete or incorrect records, torn or unavailable,[1, 5] while the use of survey data gotten from maternal history is subject to recall bias.[8]

Given the many problems that make data from the health facilities, immunization cards and survey data unreliable in low and middle income countries, exploring other reliable methods of keeping immunisation records which will allow for proper data collection and statistics is therefore advocated in resource poor settings where electronic medical record is an expensive option at the moment. An alternative home-based record keeping system from the community perspective might serve as a new model on which to base a comprehensive community immunization database, especially in a country like Nigeria that is plagued with record-keeping problems at the health facility level. However, there is paucity of studies focusing on alternatives to keeping immunisation records especially at the community level. Evidence has also shown that community participation at all levels, including at the assessment stage, is key to the success of any programme including immunization programmes.[12, 13] This study therefore aims to look at other methods of keeping childhood immunization records based on suggestions from the community.

METHODS

This cross-sectional study was carried out between July and September 2016 in Igbo-Ora, a rural community in Oyo South senatorial district of Southwestern Nigeria, using a mixed method approach of questionnaire survey and focused group discussion (FGD). Igbo-Ora, the administrative headquarters of Ibarapa Central Local Government Area of

Oyo state, has ten wards. The 2013 dejure census of Ibarapa Central Local Government Area conducted by the Department of Community Medicine, College of Medicine, University of Ibadan, Nigeria revealed an estimated population of about 64,431 people with children under-five years accounting for about 10.6% of this population.[14] The inhabitants are majorly yorubas with a few minority groups including fulani cattle herders.

The study population consisted of mothers/care-givers with children aged greater than six months but less than five years at the time of the study. Mothers/care-givers who were severely ill, mentally ill or visitors in Igbo-Ora were excluded from the study. A minimum sample size of 547 was calculated using the Leslie Kish formula for descriptive survey for single proportion.[15] A cluster sampling technique was employed for the quantitative phase to obtain the unit of enquiry. A sampling frame of all the ten wards in Igbo-Ora was obtained and two wards were selected using simple random sampling. Mothers/care-givers of under-five children in all the households within the selected wards in the community were interviewed.

A purposive sampling was employed for the qualitative phase based on age only (≤ 24 years and > 24 years). Twenty four-years was used as cut-off for age categorization to accommodate adolescents/youth differently so as to enhance quality group discussion. In all, four FGDs comprising 36 mothers/care-givers (6-10/group) of under-five children were conducted. FGDs 2 and 4 comprised of mothers/care-givers aged ≤ 24 years while FGDs 1 and 3 comprised of mothers/care-givers aged > 24 years.

An interviewer administered questionnaire was used to obtain the quantitative data on socio-demographics, awareness about childhood vaccines, knowledge of importance of immunisation uptake assessment, knowledge and suggestions of ways of keeping immunisation records for assessment. The questionnaire was developed in english language but was translated to yoruba language and then back translated to english language to ensure that its original meaning was retained. To assure data quality, the questionnaire was pretested at Igbole, another community but with similar population.

To further understand the result of the quantitative survey, a FGD was conducted using a FGD guide for data collection. The FGD guide was used to collect relevant information on ways of keeping important documents, knowledge of immunisation programme, knowledge of ways of assessing immunization, knowledge of ways of keeping immunisation records for immunisation assessment, usefulness and challenges of immunisation card and alternative methods of keeping immunisation records for assessment purposes. At the start of each FGD session, the moderator reiterated the purpose of the FGD to the participants. The moderator also facilitated the discussion and ensured that every member of the group participated in the discussion. There was a recorder who took notes on paper in addition to recording the discussion with a digital recorder, while an observer took note of non-verbal expression of the participants. The FGDs were conducted in yoruba language.

The questionnaires were checked daily for consistency and completeness and were coded before computer entry. Data was managed using the Statistical Package for the Social Sciences (SPSS) version 20 software. The variables were summarized using proportion, mean and standard deviation. The data from the FGDs were transcribed,

translated into english language and analysed using the thematic framework approach to qualitative data analysis. Ethical clearance for the study was given by the Ibarapa Programme Research Advisory Committee. Permision to conduct the study was also obtained from the community head. The purpose of the study was explained to the respondents and written informed consents obtained before data collection commenced.

RESULTS

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (n = 547)	Percent
Age (Years)		
≤ 24	132	24.1
> 24	415	75.9
Mean ± SD[a]	28.3 ± 5.5	
Gender		
Male	8	1.5
Female	539	98.5
Religion		
Traditional	12	2.2
Christianity	222	40.6
Islam	313	57.2
Ethnicity		
Yoruba	533	97.4
Others[b]	14	2.6
Marital status		
Divorced	2	0.2
Widowed	4	0.7
Single	19	3.5
Married	522	95.6
Level of education		
No formal education	55	10.1
Primary education	141	25.7
Secondary education	287	52.5
Tertiary education	64	11.7
Occupation		
Civil servant	10	1.8
Teaching	19	3.5
Farming	27	4.9
Unemployed	53	9.7
Artisan	107	19.2
Trading	331	60.5

[a]Standard deviation [b]Hausa, Igbo, Nupe, Urhobo, Fulani

Quantitative findings

A total of 547 respondents were interviewed. The mean age of the respondents was 28.3 ± 5.5 years. Majority were females (98.5%), Yoruba (97.6%) and married (95.6%). More than half (52.5%) had secondary education while about three-fifth were traders (60.5%) (Table 1).

Most of the respondents surveyed knew correctly the importance of assessing immunization uptake. Five hundred and twenty-one (95.2%) said it was important for planning purposes, 95.1% said it was important for decision-making while 86.1% reported that it was important to know the percentage of the immunized and unimmunized children in the community (Table 2).

Majority of the study respondents knew that immunization cards and hospital records (99.5% and 97.1% respectively) were ways of keeping immunization records which can be used for coverage assessment. About two-thirds knew that survey data record is a way of keeping immunization records for coverage assessment (Table 3). Only a few of the respondents suggested personal notebooks (0.4%) as another way of keeping immunization records. Others (99.6%) could not suggest other alternative ways of keeping immunization records.

Table 2: Knowledge of importance of immunization uptake assessment [a]

Variable	Knowledgeable	
	Frequency	Percent
For planning	521	95.2
For decision-making	520	95.1
To know if mothers are compliant	506	92.5
To know the proportion of immunized and unimmunized children	471	86.1

n = 547
[a] Multiple response

Table 3: Knowledge of ways of keeping immunization records for coverage assessment

Variables	Frequency (n = 547)	Percent
Immunization card		
Yes	544	99.5
No	3	0.5
Hospital record		
Yes	531	97.1
No	16	2.9
Survey data record		
Yes	358	65.4
No	189	34.6

Qualitative findings

Three themes emerged from the qualitative analysis: Knowledge of ways of assessing immunization, knowledge of ways of keeping immunization records for assessment purposes and alternative methods of keeping immunization records for assessment purposes.

Knowledge of ways of assessing immunisation

Most of the participants were more knowledgeable about the household based methods of assessing immunization than the health facility based methods. Hand marking, house marking and use of the immunisation card were methods that were mentioned consistently in all the discussions.

''Those that go from house-to-house, they write the figure maybe about the people they met in the house and what they have given them. Then the date, they write all these on the house.'' (FGD 1)

''What is there is that they write on the house and mark the hand of the child'' (FGD 2)

''They will see it inside our card if we bring it out'' (FGD 4)

A few of the respondents felt that mothers' recall can be used to assess immunisation. A few others believed that hospital records can be used.

''The mother should know that she has collected such thing for the child. The mother that collected it for the child should know if the immunisation was given to the child on the two thighs or on the shoulder'' (FGD 1)

''……if the parent cannot find the card again, you know the file is in the hospital for everybody. They will look at the file to know if the child has been immunised or not. It is the file they will look at'' (FGD 2)

Knowledge of ways of keeping immunisation records for assessment purposes

The immunisation card was mentioned in all the FGD sessions as a way of keeping immunisation records which can later be used to assess immunisation coverage.

''It will be written inside the card'' (FGD 3)

''……..when it is time for the child to be given immunisation, the parent will be told to bring the card so that they can write there that the child has been immunised'' (FGD 2)

Some of the participants however opined that the health workers will be in a better position to state how immunisation records can be kept. They attributed this to the fact that it is the health workers who administer this vaccines and therefore should know better the ways to keep the records.

''It's those that know about it like nurses that can know about the methods that they can use to know that people have not received immunisation. They are the ones that can know about it. We can't know about it. They will have the record of the day or date we came to collect it. They will also write it in our card'' (FGD 4)

Alternative methods of keeping immunisation records for assessment purposes

Majority of the respondents had no problem with the use of the immunisation card except a few who expressed concern about possibility of it been destroyed by children.

''*There is no problem with using the immunisation card. I have not faced any problem*'' (FGD 4)

''*There is no problem with using it. Only that one must be careful to keep it where children will not play with so that it will not get stained or torn*'' (FGD 4)

As most respondents had no challenge with the immunisation card which they were more familiar with for keeping immunisation records, almost all of them insisted that the immunisation card was an acceptable and convenient way of keeping immunisation records at home and that there were no better ways they can think of.

''*There is no other way that can be as easy as the card. Not everybody is the same. Truthfully, somebody might cram it that the child has been given this injection. My child has been given injections up to this point. But nothing can be as easy. We do not have the same brain. The card is the best. So that we can all use it to know the number the child has been given*'' (FGD 3)

However, few of the respondents had suggestions that revolved around better ways immunisation card could be kept. For example, keeping the card in banks or keeping duplicates of the card in the health facilities.

''*We can send it (immunisation card) to the bank (laughs). We can send it to the bank*'' (FGD 2)

New method for keeping immunisation records at home that was suggested by a minority of the respondents was the use of exercise books or jotters as stated below:

''*There is a way. Maybe like mark. Like those collecting savings, they have a place they mark that they have collected this amount. So if there is no card, if there is an exercise book, one can write the date and mark it*'' (FGD 2)

''*……one can get a small jotter for jotting. When one comes this month, one can write down the date. And then the next day, if the child receives injection the following month, one will write down the date as well*'' (FGD 4)

DISCUSSION

The results of this study indicate that the respondents were familiar with the vaccination cards and hospital health records as ways of keeping immunization records. They were less familiar with survey data as a way of collecting immunization record for determining immunization coverage. Other sophisticated ways of keeping immunization records that have been documented in literature like the immunization information system, information registry or even school health records were not mentioned in this study.[1, 16] This result may be explained by the level of exposure and education of the participants of this study. The respondents in this study live in a remote area where technological advancement is still far within reach and it is therefore not surprising what they know about immunization record keeping.

Our study revealed a high level of satisfaction with the use of the immunization card as a home-based record keeping document which can be used for assessing immunization coverage in the community. Researchers likewise seem to be satisfied with the use of this household vaccination record keeping tool in addition to maternal recall as they rely on the information gotten from it to generate immunization coverage statistics.[9, 17-19] Some other literture have however adviced that the data generated from these household records be interpreted with caution due to their questionable validity.[20, 21]

Notebooks and jotters were alternative ways of keeping records for immunization coverage assessment suggested by the end users of immunization activities in this study. Notebooks and jotters, if bought and filled by the mothers/care-givers of under-five

children, will bring about a sense of ownership and responsibility. It is however needful to mention that these alternative methods are not without their own demerits. They can be torn, misplaced or mistaken as a regular exercise book or jotter. Also, it cannot be used by illiterate mothers/care-givers if it is meant to be filled by the mothers/care-givers and as such do not seem to be a feasible and effective way of keeping records for assessing immunisation uptake. The fact that the highest level of education for most of the respondents in this study was secondary education and below coupled with their level of exposure may be a possible explanation for their inability to suggest a viable alternative to the vaccination card records.

Other suggestions reported in this study revolved round better ways of maintaining the cards such as keeping the cards in the bank or having a duplicate in the health facilities rather than alternative ways of keeping the records. The fact that the respondents in this current study demonstrated good understanding of the importance of assessing immunisation uptake, ways of assesing immunization uptake and ways of keeping immunization records makes this suggestion tenable. This suggestion of card maintainance is further corrborated by the conclusion of Brown and colleague. They concluded that the national immunization programmes should be encouraged to more actively promote the issuance and maintainance of the child immunisation cards with appropriate instruction for the utilization of the card by parents and healthcare workers at each encounter and also work to ensure accurate completion of the card by healthcare workers each time a child is immunized.[22]

Conclusions and recommendations

A feasible alternative to the current immunization card was not identified by this study rather the continued use of the immunization card was highly advocated as a record keeping document from which information needed for assessment of immunization coverage can be extracted. However, an improved maitainance culture of the immunisation card is important thereby making this an issue for future research. More studies on effective and efficient maintainace of the immunization card, including home maintainance, and the factors associated with the card maintainance culture is therefore suggested in the future.

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Conflicts of Interest

The authors state that they have no conflict of interest to declare.

Contributions to the manuscript

AMA was involved in the research conceptualization, contributed to the data analysis, participated in writing the draft of the manuscript, read and approved the final manuscript.

VOO was involved in the research conceptualization, participated in the literature review, contributed to the data analysis, participated in writing the draft of the manuscript, read and approved the final manuscript.

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