

Primary Health Care Workers Knowledge and Practice Related to Key Child Health Practices in Ibadan, Nigeria

OE Omunagbe, KI Adediran, and SO Bamidele

Institute of Child Health, College of Medicine, University of Ibadan, Nigeria

Abstract

Background: Nigeria along with other low-income countries still contribute significantly to the high under-five mortality globally, hindering the attainment of the Sustainable Development Goal (SDG) 3:2, as these deaths are caused by five major preventable diseases. At the community level, Primary Health Care Workers (PHCWs) are the major source of information for caregivers on key child health practices to help prevent these diseases, however, knowledge of PHCWs in Nigeria about these practices are yet to be fully assessed.

Objectives: The objective of the study was to assess the knowledge and practice of PHCWs in primary health care centers, related to five key child health practices, and to determine correlates and factors associated with the depth of knowledge of PHCWs on the key practices in Ibadan, Nigeria.

Subjects and Methods: This cross-sectional study was carried out to assess PHCWs' knowledge and practice regarding five key child health practices (exclusive breastfeeding, infant immunisation, micro-nutrient supplementation, hygiene among mothers and caregivers, and prevention of malaria), and a 3-stage sampling technique was used to select 6 local governments, 52 primary health centres, and 160 PHCWs. A self-administered questionnaire was used. A score of 1 was given for each correct answer, while a total score of $\geq 60\%$ was considered 'good'. Descriptive and inferential statistics were utilised in analysing data with level of significance set at $P < 0.05$. **Results:** Out of 157 PHCWs, ninety two percent were females, 83% married, 35% aged between 40–49 years and 31% were in the SCHEW cadre. Fifty-five percent had attended training sessions on the key child health practices. On knowledge, 67.5%, 88.5%, 20.4%, 65.6%, and 91.1% of respondents correctly defined exclusive breastfeeding, indicated the number of times a child should be vaccinated, defined micro-nutrient, and sleeping under ITNs respectively. Only 28% of the respondents had a good knowledge score on the five key child health

practices. There was no significant difference in the level of knowledge and duration of practice ($p > 0.05$) and also the level of knowledge and attendance at training courses on key child health practices ($p > 0.05$). **Conclusion:** The study reveals that the knowledge of primary health care workers on some of the key child health practices is sub-optimal.

Keywords: Breastfeeding, child health, health care workers, immunisation, micro-nutrients knowledge and practices

Abstrait

Contexte: Le Nigeria, ainsi que d'autres pays à faible revenu, contribuent encore de manière significative à la mortalité élevée des moins de cinq ans dans le monde, ce qui entrave la réalisation de l'objectif de développement durable (ODD) 3 : 2, car ces décès sont causés par cinq maladies majeures évitables. Au niveau communautaire, les agents de soins de santé primaires (PHCW) sont la principale source d'informations pour les soignants sur les principales pratiques de santé infantile pour aider à prévenir ces maladies. Cependant, les connaissances des PHCW au Nigeria sur ces pratiques doivent encore être pleinement évaluées.

Objectifs: L'objectif de l'étude était d'évaluer les connaissances et les pratiques des agents de santé dans les centres de soins de santé primaires, liées à cinq pratiques clés en matière de santé des enfants, et de déterminer les corrélats et les facteurs associés à la profondeur des connaissances des agents de santé sur les pratiques clés à Ibadan, Nigeria.

Sujets et méthodes: Cette étude transversale a été réalisée pour évaluer les connaissances et les pratiques des travailleurs de la santé concernant cinq pratiques clés en matière de santé des enfants (allaitement maternel exclusif, vaccination des nourrissons, supplémentation en micronutriments, hygiène des mères et des soignants et prévention du paludisme), et une technique d'échantillonnage en trois étapes a été utilisée pour sélectionner 6 gouvernements locaux, 52 centres de santé primaires

et 160 agents de soins de santé. Un questionnaire auto-administré a été utilisé. Une note de 1 était attribuée à chaque bonne réponse, tandis qu'une note totale e" 60 % était considérée comme « bonne ». Des statistiques descriptives et inférentielles ont été utilisées pour analyser les données avec un niveau de signification fixé à $P < 0,05$.

Résultats: Sur 157 agents de santé, quatre-vingt-douze pour cent étaient des femmes, 83% étaient mariées, 35% étaient âgées de 40 à 49 ans et 31% appartenaient au cadre SCHEW. Cinquante-cinq pour cent avaient assisté à des séances de formation sur les pratiques clés en matière de santé des enfants. En termes de connaissances, 67.5%, 88.5%, 20.4%, 65.6% et 91.1% des personnes interrogées ont correctement défini l'allaitement exclusif, indiqué le nombre de fois qu'un enfant devrait être vacciné, défini les micronutriments et dormir sous MII, respectivement. Seulement 28% des personnes interrogées avaient un bon score de connaissances sur les cinq pratiques clés en matière de santé des enfants. Il n'y avait pas de différence significative dans le niveau de connaissance et la durée de pratique ($p > 0,05$) ainsi que dans le niveau de connaissance et de participation aux formations sur les pratiques clés en matière de santé de l'enfant ($p > 0,05$).

Conclusion: L'étude révèle que les connaissances des agents de soins de santé primaires sur certaines des pratiques clés en matière de santé des enfants sont sous-optimales.

Mots-clés: *allaitement maternel, santé de l'enfant, agents de santé, vaccination, connaissances et pratiques en matière de micronutriments*

Introduction

Globally it is estimated that about 11 million children die annually before their fifth birthday, a significant number occurring within the first year of life [1]. Most of these deaths occur in developing countries of the world, Nigeria contributing about 10% whilst similar patterns exist in Uganda [6], and Guinea – Bissau [5]. The major causes of deaths are due to five major preventable diseases namely, acute respiratory infections, diarrhoea, measles, malaria and HIV/AIDS, with malnutrition as the underlying cause and a risk factor for these diseases [1-5,7]. These diseases contribute about 50% to under five deaths in Nigeria and with six other less developed countries contribute to about 60% of these deaths globally. According to the Nigeria National Demographic Health Survey (NDHS) 2013 and 2018, under five

mortality rate is 129 - 132 per 1000 live births, and most of these deaths occurred in the rural areas due to various reasons such as poor infrastructure, poor education status of mothers etc. [7–10]. There was a decrease of - about 7.3% for under five mortality between 2009 and 2013, transpiring to about 40 million under five children saved from death [1,11]. The challenge is that, the rate of reduction is very slow because most interventions do not target the most affected group who live in the rural areas and this hinders the achievement of the SDG 3, target 2, which is to end preventable deaths of new born and under five children by 2030 and achieve under five mortality of 25 or less per 1000 live births [12].

WHO and UNICEF's Integrated Management of Childhood Illnesses (IMCI) strategy developed in the year 1992, aims at the reduction of child morbidity and mortality in developing countries by targeting the five major diseases [13]. Components of the IMCI include the improvement in the health care system and in the skill of health care workers. Another pertinent component is the improvement of family and community practices through a community – based approach (C-IMCI) which creates a relationship between the health care workers at the grass root level of government and individual families [14-21]. Twelve key family and community practices have been identified, which if adequately adopted, will contribute to child growth, development and survival in developing countries with a high burden of the five major childhood diseases [3,5,14]. Some of the key practices enhance disease treatment and management but the present study focuses on the five which are required for physical growth and disease prevention. These child health practices include; Immunisation, Exclusive breastfeeding, micro-nutrients, Hygiene, Use of bed nets. The practices should be implemented at home but taught to caregivers via the health care system.

Nigeria's health care system at the lowest tier i.e. Primary Health Care (PHC), managed by the local government, is operated at the community level very close to the populace and has a wide coverage. Studies have revealed that women and children patronize the PHC centers more [22] hence the PHC centers should be instrumental in upholding community and family practices [22 - 24]. At the PHCs, Primary Health Care Workers (PHCWs) provide PHC services. They are the frontline service providers in the health care system in developing countries like Nigeria and are expected to be a reliable source of information, guidance and direction with regards to health [25]. The ability of community

health care workers to provide appropriate child health interventions and to effectively communicate key practices on child health to caregivers is a major factor in the reduction of child morbidity and mortality in developing countries [26-28]. In a study conducted by Adeyemi and Oyewole (2012), 70% of mothers reported that their knowledge of childcare practices was as a result of their attendance at the PHC or consultation with a health worker [29]. However, studies assessing the knowledge of PHC workers' knowledge on child health practices are few and do not focus on preventive practices that directly affect the five major diseases. The present study was therefore conducted to assess the level of knowledge of health care workers and their child health practices.

Methods

Study design

A descriptive cross-sectional design was employed to assess the knowledge and practice of PHCWs.

Study area

This study was conducted in Ibadan, Oyo State, Nigeria. Ibadan, which is Nigeria's largest city by geographical area covering a total area of 3,080 square kilometers, has a total of 11 local government areas with about 250 primary health care centers [30–33]. There is an average of 15 PHCs in each LGA, with at least one PHC in every ward. A PHC should have at least one medical officer (If available), 1 CHO, 4 nurse/midwives, 3 Senior Community Health Extension Workers (SCHEWs), 6 Junior Community Health Extension Workers (JCHEW) [22,33].

Study participants

Four cadres of PHCWs in the PHCs (CHO, Nurse/Midwife, Senior CHEW and JCHEW) were the focus of this study because they render services such as health education and promotion, routine home visits and community outreaches and they constituted the unit of enquiry for this study.

Sampling technique

A four-stage sampling procedure was used. In the first stage of sampling, six LGAs were randomly selected from the eleven LGAs that constitute Egbeda, Ibadan North, Ibadan south-east, Ibadan south-west, Ona ara and Lagelu LGAs. In the second stage, from each of the six LGAs selected, a minimum of five wards were selected using the systematic sampling. A list of the wards in each local government area and a sampling interval were

obtained using a simple random sampling to pick the first number; then the sampling interval was added to the selected number to get the total number of wards. The number of wards selected from each local government was dependent on the number of wards in the respective LGA. Also in the wards, systemic sampling was used to select PHCs (third sampling stage) A list of the PHCs in each ward was obtained, a sampling interval was obtained, simple random sampling was used to obtain the first number, and then the sampling interval was added to the selected number to obtain the desired number of PHCs. The number of PHCs selected from each ward was dependent on the number of PHCs present in the wards. In the last stage, a minimum of four PHCWs from all the cadres of interest was recruited using simple random sampling and the number of PHCWs obtained was dependent on the number of workers present in each facility.

Study instrument

Data was obtained using a pre-tested, semi-structured and self-administered questionnaire. The questionnaire was divided into three sections; socio-demographics, knowledge on the five key child health practices (exclusive breastfeeding, immunisation, hygiene, micro-nutrients, and insecticide treated bed nets) and practice on the child health practices by the PHCWs in the center. The questions were mostly open-ended, with a few in close-ended and multiple-choice formats.

Data collection

Collection of data for the study was from August to October 2016. Three trained research assistants were used. At the beginning of each session, after permission had been obtained from the CHO at the center, the randomly selected PHCWs were administered questionnaires after a written informed consent was obtained from the HCWs. Explanation was given to the PHCWs who needed clarification on some of the questions, and it took a minimum of twenty minutes to adequately fill the questionnaires.

Study measures

Knowledge and practice were accessed utilising questions on; exclusive breast feeding, knowledge on immunisation, knowledge on age of immunisation for infant, knowledge on micro-nutrient and its forms, knowledge on hygiene, knowledge on malaria prevention among children. Level of knowledge with years of experience and attendance of training courses on child health were compared.

Scores were calculated for the knowledge of the key practices examined. The scores were generated by comparing the answers provided by the respondents with WHO/UNICEF family and community child health practices as standard [20,21]. Any answer provided that corresponds with the standard practice was considered correct and allotted one point, if otherwise, it was considered wrong and allotted zero point. Scores from all sections of the questionnaire was added together and divided by the total score then multiplied by 100 to get the percentage score. Scores equal or higher than 60% was considered 'good' knowledge and scores equal or lower than 59% was considered 'poor' knowledge. The level of knowledge was determined based on the scores. A score of 1 was given for each correct answer, while a total score of 60% was considered 'good'.

Data Analysis

Data was presented on tables, frequency distribution tables were generated, mean values were calculated and associations within variables were assessed using analysis of variance (ANOVA).. ANOVA was utilised to compare level of knowledge and years in employment, and independent T-test was employed to compare level of knowledge and attendance of health care workers at training courses on child health. The level of significance was set at $P < 0.05$

Ethical Considerations

Ethical approval for the study was from the Oyo State Ethical Review Committee (Ref. No.: AD13/479/111), Department of Planning, Research and Statistics Division, Ministry of Health and informed consent was obtained from the participants.

Results

Socio-demographic characteristics of health care workers

Data were collected from 157 PHCWs. The Socio-demographic characteristics of PHCWs show that 35.0% of the PHCWs were between the ages of 40 and 49 years. Ninety two percent of them were females. Majority (31.2%) were in the SCHEW cadre, 24.2% were Nurse/Midwives and 19.2%, CHO (Table 1).

Knowledge about Exclusive Breastfeeding

Most (106, 67.5%) of the health workers correctly defined EBF. On recommended breastfeeding duration, 43.9% (69) stated 2 years as the appropriate duration (Table 2). Knowledge about the constituents

Table 1: Socio-demographic characteristics of PHCWs

Variable (n=157)	Frequency (n)	Percentage (%)
Age		
<20	9	5.7
20-29	21	13.4
30-39	29	18.5
40-49	55	35.0
≥50	43	27.4
Total	157	100.0
Sex		
Male	12	7.6
Female	145	92.4
Total	157	100.0
Cadre		
CHO	31	19.7
Nurse/Midwife	38	24.2
SCHEW	49	31.2
JCHEW	26	16.6
Not specified	13	8.3
Total	157	100.0
Qualification		
MBBS	2	1.3
RN	29	18.5
CHEW	62	39.5
Others	36	22.9
Not specified	28	17.8
Total	157	100.0
Marital status		
Never married	22	14.0
Married	130	82.8
Separated/widowed/divorced etc.	5	3.2
Total	157	100.0
Years in Service		
<5	30	19.1
5-10	16	10.2
11-20	54	34.4
21-30	37	23.6
≥31	20	12.7
Total	157	100

of breast milk and conditions when a mother should not breast feed are also shown in table 2.

Knowledge about immunisation

Responses for the number of times that a child should receive immunization before the first birthday and the types of vaccines are shown in table 2.

Knowledge about micronutrients

In table 2, the knowledge about micro-nutrients among the PHCWs is shown. Only 32 (20.4%) of PHCWs had the correct definition and idea about micro-nutrients. The essential micronutrients stated by the PHCWs to be necessary for growth and

Table 2: Knowledge about Exclusive Breastfeeding, Micronutrient and Immunization

Knowledge on Exclusive Breastfeeding	Frequency (n)	Percentage (%)
*Major constituent of Breast milk		
Water	105	66.9
Protein	112	71.3
Lactose	81	51.6
Minerals and vitamins	95	60.5
Fat	66	42
Copper	3	1.9
Lead	1	0.6
Aluminum	1	0.6
Cobalt	2	1.3
*Conditions a mother should not breastfeed child		
Tiredness of the mother	8	5.1
Sickness of the child	8	5.1
Absence of mother temporarily	35	22.3
HIV/AIDS	46	29.3
Death of mother	108	68.8
To prevent breast from sagging	2	1.3
Number of times a child should receive immunization before first birthday		
1	2	1.5
2	3	2.3
3	10	7.6
5	116	88.5
*Type of immunisation a child should receive		
BCG	146	93
OPV	117	74.5
HBV	117	74.5
Pentavalent	130	82.8
IPV	81	51.6
Yellow fever	132	84.1
Measles	130	82.8
PCV	71	45.2
Hib	1	0.6
*Essential micronutrients for growth and development		
Zinc	28	17.8
Vitamin A	27	17.2
Iron	23	14.6
Iodine	8	5.1
Forms of micronutrient intake		
In diet	117	74.5
As supplement	115	73.2
By fortification of food items	79	50.3

*Multiple choice

development as well as the forms in which they can be taken are shown also in table 2

Knowledge about hygiene and use of ITNs for malaria prevention

In table 3, with regards to the knowledge of PHCWs about hygiene among mothers, and caregivers, 8.3% (13) stated proper faeces and refuse disposal and 103 (65.5%) , stated hand washing after defecation, before preparing meals and before feeding children.

Table 3: Knowledge of PHCWs on hygiene and use of ITNs

Knowledge on Hygiene	Frequency (n)	Percentage (%)
*Ways of proper hygiene among mothers and caregivers		
Dispose of faeces and refuse	13	8.3
Hand washing after defecation, before preparing meals and before feeding children	103	65.6
Washing of hand with soap and clean water	90	57
Washing of hands with water only	52	33.1
Incorrect answer	14	8.9
*Best ways to dispose child's faeces		
Dispose faeces into toilet	112	71.3
Sanitary facility	4	2.5
*Benefit of hand washing		
Reduce morbidity	122	77.7
Decrease mortality	3	1.9
Total	157	100.0
Best time for child to sleep under ITN		
Incorrect answer	49	31.2
At night	55	35.0
Whenever children want to sleep	38	24.2
No response	15	9.6
Total	157	100.0

Multiple choice*Table 4: Practice of PHCWs related to the 5 key child health practices**

Practice on Exclusive Breastfeeding	Frequency (n)	Percentage (%)
Mode of encouraging and supporting mothers to exclusively breastfeed by health caregivers		
Through health education and counseling	128	81.5
Through mass media and community education	2	1.3
No response	27	17.2
Total	157	100.0
Ways employed to ensure immunisation procedures are not missed, are completed and are taken at the right time		
Immunisation trackers and cards	53	33.8
Home visit and outreaches	24	15.3
Periodic evaluation and proper record keeping	6	3.8
Phone calls and SMS of the reminder and of defaulters	7	4.5
Through health education/talks and counseling	46	29.3
Ensure vaccines are available	6	3.8
No response	15	9.6
Total	157	100.0
Micro-nutrient preparations recommendation to caregivers		
Diet rich in micro-nutrients	102	65.0
Fortified foods	11	7.0
Supplement form	18	11.5
No response	26	16.6
Total	157	100.0

Table 5: Comparison of Mean Knowledge Score and Years in Employment using ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	26.966	4	6.742	0.266	0.899
Within Groups	3851.301	152	25.338		
Total	3878.268	156			

Table 6: PHCWs Attendance of Training Sessions and Mean Knowledge Score

Attendance of training on child health practice and Knowledge score	N	Mean	T	Df	P-value
Attended training	87	26.0115	0.348	136	0.729
Not attended	51	25.7059			

Majority (143, 91.1%) of the PHCWs were of the opinion that sleeping under Insecticide Treated Nets (ITNs) is best way of preventing malaria among children. The responses for the time of the day when a child should sleep under an ITN (Table 3).

Practices about Exclusive Breastfeeding

Table 4 shows the support given by PHCWs for exclusive breast feeding.

Immunisation

On immunisation of children, about 147 (93.6%) of the PHCWs give vaccines in their center. The ways employed to ensure children do not miss their immunisation are shown in table 4.

Micro-nutrient intake by children

Micro-nutrient supplements for children were prescribed by 135 (86%) of PHCWs. Also, some sources of micronutrients were recommended to the caregivers for the children (table 4)

PHCWs Education of caregivers about ITN use

With regards to children sleeping under ITNs, majority 152 (96.8%) of the respondents told mothers to ensure their children sleep under ITNs. Also, majority of the PHCWs (134, 85.4%) suggested the use of ITNs to mothers as a way of preventing malaria among children. Half (51%, 80) suggested free and adequate distribution of ITN, and 108 (68.8%) suggested health education/talks as some of the ways to increase the use of ITN

Comparison of the level of knowledge on key child health practices with years in employment

The mean total score of knowledge and years of experience were compared by the analysis of variance (ANOVA). Comparisons showed that the mean total scores of knowledges and years of service show that there was no statistically significant difference in the mean score of knowledge across the different years in service and figure 1 presents graphical representation of the means score across the years in service (Table 5).

Attendance of training sessions and mean knowledge score using independent T-test

Based on the knowledge score and training attendance on child health practice, there was no statistically significant difference in the mean knowledge score of those that attended the training and those that did not (Table 13).

Discussion

The majority of the PHCWs in this study were between the ages of 20 – 49 years, which indicates that most of the respondents were still within the age of active service. Female health care workers were 12 times more in number compared to their male counterparts, which is similar to some studies [34,35]. Most of the respondents were in the CHEW cadre; this is expected because CHEWs are considered as the building blocks of the primary health care system, since they are trained to offer health services to the communities and villages in order to augment the few

medical personnel available in these areas of Nigeria (36).

On the key child health practices, 28% percent of the PHCWs in this study scored equal or above the defined knowledge score of 60%, which is considered 'good' knowledge. This is higher than the finding from a study in which only 10% of the community health care workers had good knowledge, however the finding from the present study can still be considered as suboptimal. A plausible reason for the poor knowledge may be inadequate training as observed in a research by Utoo, Ochejele and Obulu, and Olayemi *et al*, however, for this study, inadequate training is not likely the primary reason for the poor knowledge of the PHCWs [35,41]. Although the assessment of effectiveness of the training sessions attended by PHCWs is beyond the scope of the present study, more than 75% of the PHCWs had attended one or more training sessions on child health practices.

Knowledge on exclusive breastfeeding among the PHCW's was considered 'good', as most of them could properly define exclusive breastfeeding, knew the recommended duration of exclusive breastfeeding, constituents of breast milk and a few disadvantages breastfeeding. The responses were good when compared with the responses in studies by Utoo, wherein the PHCW's indicated 'sagging of the breast' as a reason why a mother should not breastfeed her child [35] and by Akuse and Obinya where PHCWs, for unacceptable reasons, prescribe pre lacteal foods for infants as substitutes for breast milk [34]. The good knowledge among the PHCWs in this study could be attributed to the fact that most of the health workers had attended trainings in at least the last six months, on childhood nutrition and feeding such as exclusive breastfeeding. This supports the recommendation by Akuse and Obinya, of intense and adequate periodic training for PHCW's on breastfeeding practices [27,34]. A study conducted in South Africa by Faber and Bernade, which gave a prevalence of 25% exclusive breast feeding rate, is worthy of note, as 62% of the caregivers reported PHCW's as their source of nutrition information [37].

The knowledge about immunisation was also good, since most of the PHCWs knew correctly, the number of visits, vaccines and appropriate age a child should receive vaccines before the first birthday. This finding is contrary to the finding by Odiit and Amuge [38], that poor and inadequate knowledge of the PHCWs was one of the challenges to the poor vaccination status of children [38]. In this study, the

good knowledge can be attributed to the training sessions that a majority of the PHCWs had attended on immunisation in the previous six months as well as the regular trainings on current available vaccines. This corroborates the documentation by Hunt, that training programs, increase knowledge, power and the potential to perform at higher levels than would otherwise had been the case [39].

The PHCWs knowledge about micro-nutrients was 'poor', as only a few of them could correctly define the term 'micro-nutrient', mention the four most important micro-nutrients necessary to prevent morbidity and mortality, enhance survival and promote growth and development in children. Even though vitamin A is given to children during immunisation sessions at nine months, only a few of the PHCWs knew that it is an essential micro-nutrient. It is however remarkable that despite the lack of knowledge about what micro-nutrients are, majority of the PHCWs knew that micro-nutrients could be found naturally in the diet, in supplement form and in fortified foods. This however does not translate to good knowledge about micro-nutrients.[39]. The poor knowledge could be a consequences of insufficient training on micro-nutrients. Faber and Bernade observed a high prevalence of micro-nutrient deficiency in children under five years of age as well as poor knowledge on micro-nutrients among the caregivers, hence deduced that PHCWs poor knowledge on micro-nutrients was directly responsible for the poor knowledge of caregivers and subsequent high prevalence of malnutrition [37].

Knowledge on hygiene was good, as majority of the PHCWs correctly pointed out that faeces should be properly disposed of in toilets or other sanitary facilities, and that hand washing with soap and water is necessary after contact with faeces, before preparing meals and before feeding children. Majority also agreed that proper hygiene by caregivers reduces morbidity in children and a few added that it can also reduce mortality.

The knowledge of PHCWs on the use of ITNs as a preventive measure against malaria was good because most of them agreed that ITN is the best way of preventing malaria in children. About the appropriate time ITN should be used for children, some agreed it should be used any time of the day that a child sleeps, others opted for its use at night as the best time.

As regards practice, the PHCWs in this study encouraged and supported mothers to exclusively breast feed their infants by giving mothers health education & counseling and also through mass media,

community mobilization and education. Majority of the PHCWs administered vaccines to children and ensured that immunisation is not missed; the latter was achieved by utilising immunisation cards and trackers, home visits and outreaches, periodic evaluation, use of phone calls and SMS as reminders, health talks and counseling. Furthermore, they ensured that vaccines were always available at the PHCs.

The result from this study is fraught with some untoward implications for child health care in Nigeria as the poor knowledge of PHCWs will negatively affect the information communicated to caregivers. As a case to consider for example, Agho *et al* and Olayemi *et al*, noted that mothers who attended antenatal clinic were more likely to exclusively breastfeed than those who had their children at home [40,41]. However, a number of women who do not deliver in health facilities still attend clinics to receive immunisation for their children and if proper health education is not given to them, they may practice exclusive breast feeding inappropriately, hence it is imperative that the PHCWs be armed with good knowledge and communicate such. As pointed out by Lambrecht *et al*, there is no strategy for improving child health that will be effective unless it addresses the behavior of families and the community [13]. Also noteworthy is that the IMCI guidelines for first level care are designed to improve PHCWs communication with mothers. Training is therefore important and necessary for assisting PHCWs communicate effectively to caregivers, consequently, contributing to the achievement of the SDG 3 with the target of reducing child mortality.

Conclusion

Generally, the level of knowledge of the PHCW was poor. No significant difference was found between the level of knowledge of the health care workers and their duration of practice and attendance at trainings.

Recommendations

There should be massive and improved training of PHCWs on C-IMCI, and the training should not be implemented as a new and separate initiative, but should be incorporated into existing community – based child health programs. Also, the PHCWs should be supervised and monitored periodically to ensure that effective and appropriate information are consistently communicated to caregivers. More research should be conducted to further understand

the factors responsible for poor knowledge despite training as well as those that influence PHCWs practice and the results of such findings translated to policy and better practice.

Limitation

This study being a cross-sectional study, a causal relationship between specific variables and key child health practices among health workers and care givers could not be inferred. It is also possible that some answers or responses might have been affected by recall bias.

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