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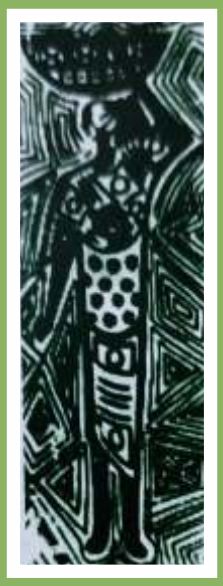

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ORIGINAL ARTICLE

Prevalence of Constipation among Adolescent Secondary School Students in Yenagoa, Nigeria
BinafeighaIhekerenma J, AkinbamiOlukayode F, Tunde-OremoduImma

The State of Human Papillomavirus (HPV) Vaccination Among Secondary School Adolescents in Nnewi, Nigeria Prior to Free Routine HPV Vaccine Rollout
DuruChinefo G, Ugochukwu Ebelechuku F, Onubogu Chinyere U, Ushie Simon N, MbachuChiomaNgozichukwu P

Health Providers' Readiness for Immunization Services in Selected Primary Health Care Facilities in Kaduna State, Nigeria
Joseph Jonathan G, Brown Victoria B, Oluwatosin Oyeninhun A

The Impact of Hydroxyurea Therapy on Clinical and Haematological Parameters in Children with Sickle Cell Anaemia
Oni Nathaniel O, OgundeyiMojisola M, Dedeke Iyabo O, Adebola Mukhtar B, Olanrewaju Durotoye M

A Retrospective Study of the Prevalence and Pattern of Intracranial Haemorrhage Among Preterm Neonates in Makurdi, Nigeria
Michael Aondoaseer, Adikwu Morgan G, Ochoga Martha O

Clinical and Laboratory Profile, Management and Parental Perception of Micropenis in Childhood: Experience at a Referral Centre in Abidjan, Cote d'Ivoire
Dainguy Marie E, MicondoKoumane H, Oyenusi Elizabeth E, KouakouCyprien, AbodoJackot R, AmorissaniFolquet M

PAN GUIDELINES

The State of School Health Services of the School Health Programme in Nigeria: A Position Paper by the Paediatric Association of Nigeria (PAN) Sub-Committee on School Health Programme
UghasoroMaduka D, Jiya Fatimat B, Muhammed Bashir F, Garba Maria A, Hafsat Umar I, Oguche Stephen, *et al.*

CASE REPORT

Noonan Syndrome in a Nigerian Neonate: A Case Report and Review of Literature
AkowunduKasarachi P, SalakoOlubunmi H

EDUCATIONAL SERIES

Synopsis: Vitamin D-Resistant Rickets
Ugochukwu Ebelechuku F

Table of Contents

Nigerian Journal of Paediatrics

Volume 51 Number 3
July-September 2024

ORIGINAL RESEARCH

Constipation Among Adolescent Secondary School Students in Yenagoa, Nigeria
Binafeigha Ihekerenma J, Akinbami Olukayode F, Tunde-Oremodu Imma 228

The State of Human Papillomavirus (HPV) Vaccination Among Secondary School Adolescents in Nnewi, Nigeria Prior to Free Routine HPV Vaccine Rollout
Duru Chinefo G, Ugochukwu Ebelechuku F, Onubogu Chinyere U, Ushie Simon N, Mbachu Chioma Ngozichukwu P 241

Health Providers' Readiness for Immunization Services in Selected Primary Health Care Facilities in Kaduna State, Nigeria
Joseph Jonathan G, Brown Victoria B, Oluwatosin Oyeninhun A 251

The Impact of Hydroxyurea Therapy on Clinical and Haematological Parameters in Children with Sickle Cell Anaemia
Oni Nathaniel O, Ogundeyi Mojisola M, Dedeke Iyabo O, Adebola Mukhtar B, Olanrewaju Durotoye M 265

A Retrospective Study of the Prevalence and Pattern of Intracranial Haemorrhage Among Preterm Neonates in Makurdi, Nigeria
Michael Aondoaseer, Adikwu Morgan G, Ochoga Martha O 278

Clinical and Laboratory Profile, Management and Parental Perception of Micropenis in Childhood: Experience at a Referral Centre in Abidjan, Cote d'Ivoire
Dainguy Marie E, Micondo Koumane H, Oyenusi Elizabeth E, Kouakou Cyprien, Abodo Jackot R, Amorissani Folquet M 290

PAN GUIDELINES

The State of School Health Services of the School Health Programme in Nigeria: A Position Paper by the Paediatric Association of Nigeria (PAN) Sub-Committee on School Health Programme
Ughasoro Maduka D, Jiya Fatima B, Muhammed Bashir F, Garba Maria A, Ibrahim Hafsat U, Oguche Stephen, *et al.*
300

CASE REPORT

Noonan syndrome in a Nigerian Neonate: A Case Report and Review of Literature
Akowundu Kasarachi P, Salako Olubunmi H
309

EDUCATIONAL SERIES

Synopsis: Vitamin D-Resistant Rickets
Ugochukwu Ebelechuku F ES024

Excerpts of PAN Webinar: *Helicobacter pylori*
Atimati Anthony O ES-029

Excerpts of PAN Webinar: Hypothyroidism
Yarhere Iroro E ES-035

Excerpts of PAN Webinar: Tuberculosis
Onubogu Chinyere U ES-039

Excerpts of PAN Webinar: Upper Airway Obstruction
Ibrahim RM, *et al* ES-048

Clinical Quiz
Olatunya Oladele S ES-053

ORIGINAL RESEARCH

Nigerian Journal of Paediatrics 2024; Volume 51(3): 251-264.
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Health Providers' Readiness for Immunization Services in Selected Primary Health Care Facilities in Kaduna State, Nigeria

Joseph Jonathan G[1], Brown Victoria B[2], Oluwatosin Oyeninhun A[3]

[1]Kaduna State College of Nursing and Midwifery, Kafanchan, Nigeria.
[2]School of Midwifery, University College Hospital (UCH), Ibadan, Nigeria.
[3]Department of Nursing, College of Medicine, University of Ibadan, Nigeria.

Correspondence
Dr Victoria B. Brown, School of Midwifery, University College Hospital (UCH), Ibadan.
E-mail: vicbrown2010@gmail.com; ORCID – https://orcid.org/0000-0001-6601-4307.

Abstract

Background: Immunisation is a critical primary health care (PHC) component. However, Nigeria has yet to meet the target of immunisation services. Therefore, the present study examined the interplay between training, motivation and involvement in determining health providers' readiness for immunisation services.

Method: A descriptive, cross-sectional design was used. Stratified sampling was adopted to select 39 of 43 PHC centres. Using a ballot system, 133 health providers were proportionately drawn to respond to a semi-structured questionnaire. Items were scored under training, motivation, and involvement—the cumulative score of the three variables determined readiness.

Result: The mean age of the respondents was 29.4±6.7 years; 115 (86.5%) were females, and only 32 (24.1%) were Nurses/Nurse-Midwives. The respondents that reported adequate training were 75 (56.4%), adequate motivation 79 (59.4%, and adequate involvement 112 (84.2%). Consequently, 84 (63.2%) respondents were considered ready for immunisation. The Local Government Area of the PHCs was associated with immunisation readiness ($p = 0.012$). Over a third of the health providers in the study setting were not ready for immunisation services. No significant association was found for immunisation readiness across professional cadres ($p = 0.283$). Meanwhile, a significant association was found between involvement in providing immunisation and professional cadres ($p<0.001$).

Conclusion: To ensure optimal readiness for immunisation, improving in-service training and supportive supervision, particularly for nurses/nurse-midwives and demand for enhanced health investments in PHC facilities, should be prioritised.

Keywords: Health providers, Immunization, Primary Healthcare, Readiness.

Introduction

As an approach, Primary Health Care (PHC) has received increasing attention within the health care delivery system. Since the global target of Health for All was declared in 1978, PHC has been adopted and accepted universally to achieve this lofty goal. [1, 2] The PHC system is, therefore, a grass-root approach meant to address the main health problems in the community by providing promotive, preventive, curative and rehabilitative services. [2]

The Declaration of Alma-Ata in 1978, [3] the 1987 Bamako Initiative [4] and the 2006 Abuja Call,[5] all indicated the benefit of investing in PHC for health services. However, Nigeria is still below expectations on important health indicators such as child mortality compared to other countries. The obvious reason for this is

the poor performance of the country's PHC system. [6]

Some studies in Nigeria have indicated the challenges in PHC inputs, including health facilities and health workers, to explain Nigeria's poor performance in PHC coverage. [7-9] Altogether, these factors reflect two overarching supply side challenges - system and health providers readiness - that are crucial root causes of the dysfunctions observed in the PHC system in Nigeria. [6] This is because, in Nigeria, available data shows that there are 18 PHC facilities per 100,000 people, which is higher than what is obtainable in other comparison countries (Kenya, Tanzania, Uganda, and Senegal) [10] and by WHO Global Health Workforce Statistics, Nigeria had a total health worker density of about 1.95 per 1,000 in 2016 which is slightly above the WHO minimum standard for health care worker density of 2.3 per 1,000 population. [6, 11]

Quality PHC initiatives related to its components have been recognised as fundamental to improving health outcomes. Nigeria acknowledges and has always hoped to implement all the elements of PHC, but the country's underperformance has made the realisation of even essential PHC pillars more difficult. The country's underperformance on important health outcomes such as child mortality [6] reflects the inadequate provision of the fifth PHC component, routine immunisation services. Vaccine-preventable deaths constituted 21·7% and 29% of under-5 deaths globally and in Nigeria, respectively. [12, 13] Meanwhile, immunisation is one of the essential public health interventions and cost-effective strategies, requiring a system-wide change to reduce morbidity and mortality associated with infectious diseases and improve healthy lifestyles among the populace. It is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to prevent 3.5-5 million deaths every year. [14] Despite the proven benefits of immunisation, vaccine-preventable diseases persist in Nigeria, and the country continues to face perennially low immunisation coverage. Different challenges have continued to threaten the gains in the fight against Vaccine-Preventable Diseases. [15]

One important factor influencing the successful implementation of system-wide change is readiness. [15] Service readiness refers to the overall capacity of health systems and providers to provide health services. Specifically, readiness is defined as the degree to which those involved are individually and collectively primed, motivated, and technically capable of readiness to provide immunisation. [16, 17] For this study, service-specific readiness includes the availability of personnel with relevant training, motivation and involvement to provide immunisation services. [18] Service readiness is, therefore, a prerequisite for service quality.

The Service Availability and Readiness Assessment (SARA) developed by the WHO is designed to assess health facility service delivery, such as the availability of essential human and infrastructure resources and the readiness of health facilities to provide basic healthcare interventions, [18] but does not focus on the readiness of the health workers themselves. [16] Several studies,[16, 19, 20, 21] using SARA, reported on the readiness of PHCs to provide services on the components of PHCs, and specific aspects of services, but there is no information available on studies that examined providers' readiness to provide immunisation services at PHCs level. To successfully achieve full immunisation coverage, providers' service readiness remains critical. [22] This underscores the importance of the present study, which is aimed at assessing health providers' readiness for immunisation services in selected PHCs and the factors associated with readiness towards achieving health-related SDGs. This is very critical for Kaduna State in particular and Nigeria in general, given its seemingly present poor performance in some health indices.

Methods

Study participants and sampling procedure

The study employed descriptive, cross-sectional survey design in drawing 133 PHC

clinical staff [Nurse-midwives, Nurses, Midwives, Junior Community Health Extension Workers (JCHEWs) and Community Health Extension Workers (CHEWs)] out of 200 in 43 PHC centres in four selected LGAs (Jaba - 28; Jema'a - 43; Kaura - 28; Zango Kataf - 34) in southern Kaduna senatorial district, Kaduna State. The sample size was derived using Taro Yamane's sample size calculation formula: $n = N/ 1+ N(e)^2$. [23]

Southern Kaduna Senatorial District, formerly Southern Zaria, is made of eight Local Government Areas consisting of Jaba, Jema'a, Kachia, Kagarko, Kaura, Kauru, Sanga and Zango, out of which four LGAs (Jaba, Kaura, Jema'a and Zango Kataf) were enrolled into this study. The number of PHCs corresponds to the number of electoral wards, accounting for 255 in the state. [24] These are expected to fully complement PHC services with the estimated clinical staff strength of 1476 nurses, midwives, CHEWs, and JCHEWs. Of the estimated clinical staff strength of 1476, 29.6% (437) were based in the 87 PHCs (average of five clinical staff per PHC) located in southern Kaduna [25] and each of its eight LGAs had an average of 11 PHCs. [26] Thus, there were 200 clinical staff in the 43 PHCs from the four included LGAs (Jaba - 10 PHCs with 48 staff; Jema'a - 12 PHCs with 52 staff; Kaura - 10 PHCs with 49 staff; Zango Kataf - 11 PHCs with 51 staff). These comprised 76% of community health extension workers, and the remaining 24% were nurses/midwives. [25]

The study participants were selected using a multistage sampling technique comprising three stages. In the first stage, a simple lottery (balloting) was used to select four LGAs from the eight LGAs in the senatorial district. In the second stage, 39 PHC facilities (Jaba - 9; Jema'a - 11; Kaura - 9; Zango Kataf - 10) were selected from the total of 43 PHCs in the four LGAs using balloting. In stage three, proportionate samples of clinical staff were randomly selected from each selected PHC, making a total of 133, utilising a simple sampling technique of balloting.

A validated questionnaire from related studies was used for data collection. [16, 27, 28] It consisted of four sections (six-item section A for socio-demographic characteristics of the respondents; 24-item section B for data on training in immunisation services; 16-item section C for information on motivation in immunisation services and 10-item section D for details on involvement in immunisation services). The use of relevant literature ensured face and content validity. Construct validity was ensured by presenting the instrument to experts in the field of study, senior researchers, and statisticians. Similarly, the instrument was checked for clarity, adequacy of content, appropriateness, and ability to elicit accurate information concerning the research objectives, questions and hypotheses. For the reliability of the research instrument, the questionnaire was administered to 10% of the calculated sample size (13 healthcare providers) comprising ten registered JCHEWS/CHEWS and three Nurses/Midwives in three selected PHCs (Bongdong, Sabzuro, and Godogodo). These were excluded from the facilities enrolled into the study for data collection. The instrument was administered once. The data obtained was subjected to the Cronbach Alpha test, and the coefficient result was 0.7, depicting the good reliability of the adapted instrument for data collection.

Initial visits were made to the study settings to conclude on dates, days, time, and venues for completing questionnaires. The data collection exercise took eight days in the company of five recruited and trained research assistants (two days dedicated to each of the four LGAs). The study was guided by the Declaration of Helsinki [29] regarding research involving human subjects. Ethical approval for the study was obtained from the Human Research and Ethics Committee (REC) of the Kaduna State Ministry of Health and Human Agency (certificate number NHREC/17/03/2018). Institutional permission was obtained from the selected LGA directors of health for access to the

selected PHC facilities. Written informed consent was also obtained from the selected clinical staff in the PHCs, and the data were obtained with voluntariness, and confidentiality was ensured.

Measures

The Statistical Package for Social Science (SPSS) version 23.0 was used for data analysis. Socio-demographic data were analysed using descriptive statistics such as frequency and percentage, while percentage scores of all correct responses for each objective were used to assess study objectives. They were graded using a 70% arbitrary cut-off point as adequate (percentage score ≥ 70%) and inadequate (percentage score> 70%) for all the variables of training, motivation, and involvement in immunisation service provision.

Twenty- four items were used to assess the training experiences of the respondents, and scores were awarded to their responses. Each 'Yes' or 'No' response was awarded a 1 or 0 mark. The scores were computed to generate a total adequacy score of a minimum of 0 and a maximum of 24. The overall score was dichotomised into adequate and inadequate training using an arbitrary 70% of 24 as a cut-off value (approximately 17). Scores ≥70% defined adequate training in immunisation services, while scores <70% defined inadequate training. [30]

Sixteen items were used for motivation assessment on a five-point Likert scale. All the items were worded positively, and the degree of agreement to the statement was awarded scores ranging from 0-4. The 'Strongly agree' response was awarded 4, and the 'neutral' response was awarded 0. The scores were computed to generate a total motivation score of a minimum of 0 and a maximum of 64. The overall score was dichotomised into adequate motivation and inadequate motivation using an arbitrary cut-off point of 70% of 64 as a cut-off value (approximately 45). Scores of ≥70% defined adequate motivation in immunisation service provision, while scores of <70% were considered inadequate.

Ten items were used to assess the respondents' involvement on a three-point Likert scale: 'never', 'sometimes', and 'regularly'. 'Never' was awarded 0, 'sometimes' was awarded 1, while 'regularly' was awarded 2. The scores were computed to generate a total involvement score of a minimum of 0 and a maximum of 20. The overall score was dichotomised into adequate involvement and inadequate involvement using 70% of 20 (=14) as the cut-off value. Scores of ≥70% defined adequate involvement in immunisation service provision, while <70% defined inadequate involvement.

Readiness in providing immunisation services included scores from training, motivation and involvement in immunisation services. The scores for readiness for the provision of immunisation services among the respondents were computed from the cumulative scores from training (24), motivation (64) and involvement (20), giving a total of 108. Therefore, a cumulative score of <70% (< 76) described those not ready, while a score of ≥70% (≥76) defined readiness for immunisation service provision. Hypotheses were tested using inferential statistics in the form of a Chi-square test, while ANOVA was used to test the predictiveness of the readiness by the independent variables. Statistical significance was defined by $p<0.05$.

Results

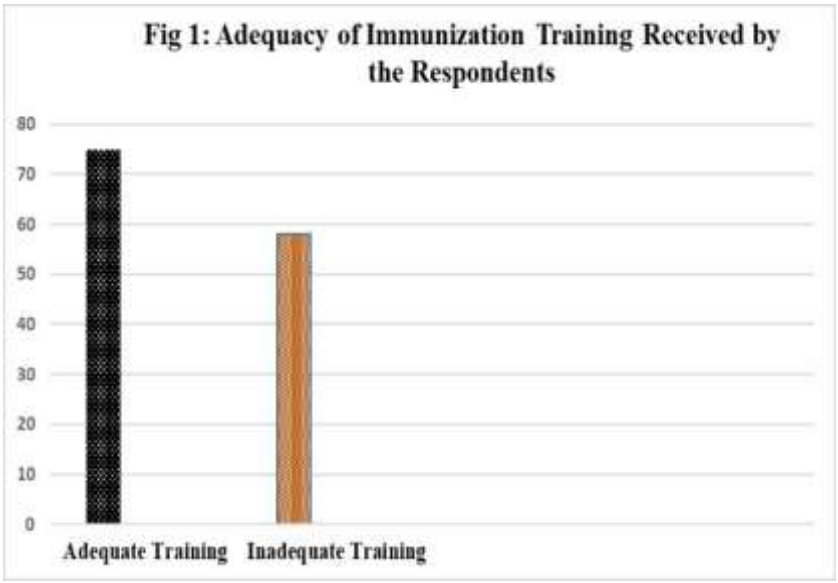
One hundred thirty-three questionnaires were administered, 133 were retrieved, given a 100% response rate, and included in the final analysis. The respondents' mean (± SD) age was 29.2 (±6.7) years. Other socio-demographic characteristics of the respondents are described in Table I. A short assessment of the respondents on immunisation training is shown in Table II.

Adequacy of training

Overall, 75 (56.4%) reported adequate training for immunisation service provision (Figure 1).

Table I: Socio-demographic and professional characteristics of the respondents (n = 133)

Variables		Frequency	Percentage
LGA of the PHC	Jaba	28	21.1
	Jama'a	43	32.3
	Kaura	28	21.1
	Zongon Kataf	34	25.6
Age (years)	21-30	61	45.9
	31-40	30	22.6
	41-50	29	21.8
	51-60	13	9.8
Sex	Male	17	12.8
	Female	116	87.2
Marital status	Single	43	32.3
	Married	88	66.2
	Widowed	2	1.5
Level of education	Less than Diploma	23	17.3
	Diploma	92	69.2
	First Degree	15	11.3
	Master's degree (MSc/MPH)	3	2.3
Basic Training/Profession	CHEW	70	52.6
	JCHEW	31	23.3
	Nurse/Nurse-Midwife	32	24.1



Motivation for immunisation service provision

The respondents' motivation for the provision of immunisation services is presented in Table III. Overall, 79 (59.4%) reported adequate motivation, whereas 54 (40.6%) reported inadequate motivation for providing immunisation services.

Involvement in immunisation service provision

Table IV shows that 112 (84.2%) reported adequate involvement, while only 21 (15.8%)

reported inadequate involvement in providing immunisation services.

Readiness for immunisation services

Eighty-four (63.2%) were categorised as ready for immunisation, as shown in Figure 2.

Table II: Respondents' Training Experiences on Immunization (n = 133)

Variable	Yes Freq (%)	No Freq (%)	Total Freq (%)
Have you had any Routine Immunization (RI) training courses?	109 (82.0)	24 (18.0)	133 (100)
If yes, did you receive new immunisers' foundation training?	95 (87.0)	14 (12.8)	109 (100)
If yes, areas of training:			
What are the aims of immunisation, national vaccine policy and schedules?	103 (94.5)	6 (5.5)	109 (100)
What is the immune response to vaccines, and how do vaccines work?	107 (98.2)	2 (1.8)	109 (100)
Vaccine-preventable diseases?	102 (93.6)	7 (6.4)	109 (100)
The different types of vaccines, their composition and the indications and contraindications?	97 (89.0)	12 (11.0)	109 (100)
Current issues in immunisation?	101(92.7)	8 (7.3)	109 (100)
Communicating with patients, parents and carers about vaccines?	106 (97.2)	3 (2.8)	109 (100)
Legal issues in immunisation?	85 (78.0)	24 (22.0)	109 (100)
Storage and handling of vaccines?	95 (87.2)	14 (12.8)	109 (100)
Correct administration of vaccines?	107 (98.2)	2 (1.8)	109 (100)
Anaphylaxis and adverse reactions?	94 (86.2)	15 (13.8)	109 (100))
Documentation, record keeping and reporting?	101 (92.7)	8 (7.3)	109 (100)
Strategies for optimising immunisation uptake?	85 (78.0)	24 (22.0)	109 (100)
If yes, was the minimum duration of two days (or 10 hours of e-learning) for foundation immunisation training observed?	79 (72.5)	30 (27.5)	109 (100)
Do you have access to national policies and updates?	88 (80.7)	21 (19.3)	109 (100)
If yes, have you had any immunisation update training?	85 (78.0)	24 (22.0)	109 (100)
Current issues in immunisation (introduction of new vaccine)?	76 (89.4)	9 (10.6)	85 (100)
Recent epidemiology of vaccine-preventable disease?	73 (85.9)	12 (14.1)	85 (100)
Any changes to vaccine recommendations or national policy?	65 (76.5)	20 (23.5)	85 (100)
Any changes to legislation relevant to vaccination?	56 (65.9)	29 (34.1)	85 (100)
Review of current practice, recent vaccine incidents and identification of areas for improvement?	75 (88.2)	10 (11.8)	85 (100)
Questions and Answers (Q&A) session for problems encountered in practice?	65 (76.5)	20 (23.5)	85 (100)
Was the minimum of half a day duration for update training observed?	67 (78.8)	18 (21.2)	85 (100)

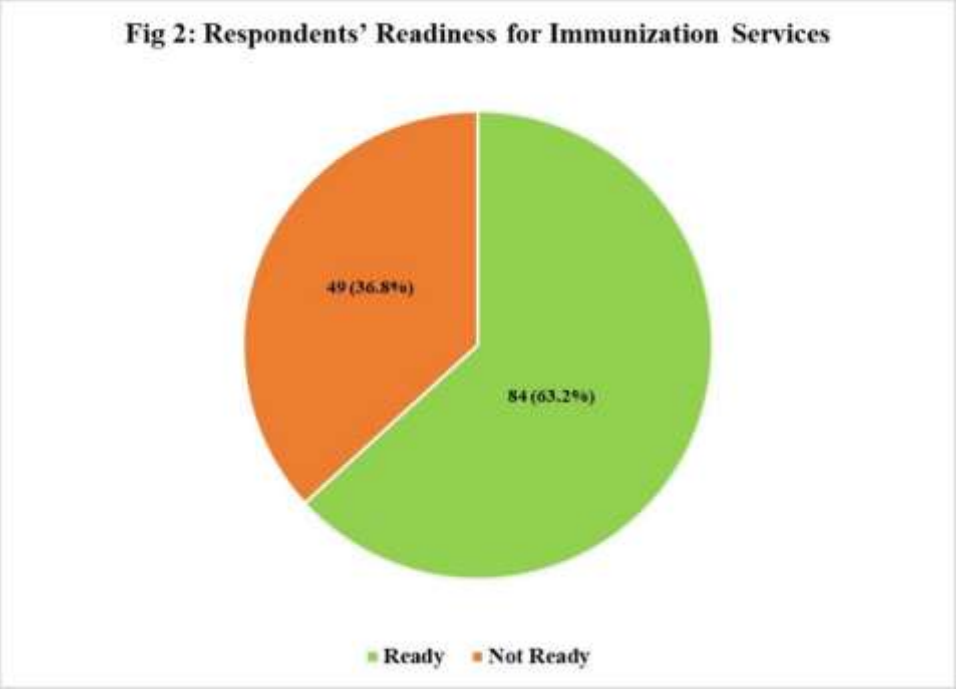
Freq - Frequency, % - Percentage

Association between PHC Local Government Area of the PHC and Immunization Readiness

Immunisation readiness was composed of three dimensions: training, motivation, and involvement. As shown in Table V, a significant association was observed between the local government Areas (LGAs) where the PHC centres were located and the respondents' readiness for immunisation ($p = 0.012$), suggesting that the respondents from Jaba and Kaura LGAs showed a higher level of readiness for immunisation.

The association test between professional cadres and readiness to provide immunisation services (Table VI) showed no statistical significance for overall readiness to provide

immunisation across professional cadres (p = 0.283). However, a significant association occurred between involvement in providing immunisation and professional cadres (p<0.001).



Discussion

This study examined health providers' readiness to provide immunisation services in selected PHCs in Kaduna State, Nigeria. Most of the respondents in the study were females who were CHEWs under 30 years of age, corroborating previous findings. [31-33] The findings from the present study showed that over half of the respondents had adequate training for immunisation. The conclusions of the present study further show similarity with the findings from the study in Enugu, Nigeria, [31] where it was reported that two-thirds of PHC centres had staff that had received pre-service training in at least immunisation, HIV services, family planning or malaria services. The present study's findings are similar to another Nigerian study [34] and other studies in India, [35] and Ethiopia [16] where most respondents indicated adequate training for routine immunisation. However, the findings in the present study are contrary to those from the study conducted in four states and the federal capital territory (FCT) in Nigeria, [19] which reported that only 18% of the facilities assessed had staff who had received training on some important health issues.

Furthermore, a majority of the respondents recorded adequate motivation in the provision of immunisation services. This finding aligns with the level of motivation in studies in Australia, where individuals worked long hours when motivated to do so. [37] This is also similar to the situation in China, where public service motivation plays important roles in work engagement, organisational commitment, and job satisfaction. [38]

In a study in Ethiopia [16], respondents felt motivated to provide immunisation-related services. In the Greater Mekong Subregion in Southeast Asia [35], health providers engaged in malaria elimination activities because of internal and external motivational factors independent of remuneration or financial gain.

Table III: Respondents' Motivation for Immunization Service Provision (n = 133)

Variable	Strongly Disagree Freq (%)	Disagree Freq (%)	Neutral Freq (%)	Agree Freq (%)	Strongly Agree Freq (%)
I enjoy supportive supervision	1 (0.8)	3 (2.3)	9 (6.8)	77 (57.9)	43 (32.3)
I am satisfied with the immunisation services	1 (0.8)	2 (1.5)	7 (5.3)	87 (65.4)	36 (27.1)
Supervision helps improve the RI	2 (1.5)	0 (0.0)	7 (5.3)	50 (37.6)	74 (55.6)
There is shared synergy and commitment to service delivery among PHC leadership, staff, and stakeholders	1 (0.8)	2 (1.5)	10 (7.5)	90 (67.7)	30 (22.6)
The mission/purpose of PHC makes me feel my job is important	3 (2.3)	2 (1.5)	10 (7.5)	62 (46.6)	56 (42.1)
I know what results are expected of me in the provision of immunisation services	2 (1.5)	3 (2.3)	7 (5.3)	70 (52.6)	51 (38.3)
My boss leads by example	3 (2.3)	2 (1.5)	15 (11.3)	73 (54.9)	40 (30.1)
I have the opportunity to do what I know is best in providing immunisation services	5 (3.8)	2 (1.5)	10 (7.5)	68 (51.1)	48 (36.1)
I have all the materials and equipment I need to provide RI every day	2 (1.5)	6 (4.5)	14 (10.5)	77 (57.9)	34 (25.6)
My relationship with my boss enables me to open up when discussing work problems and concerns	4 (3.0)	1 (0.8)	16 (12.0)	81 (60.9)	31 (23.3)
In the last month, I have received recognition/praise for doing good work	5 (3.8)	10 (7.5)	20 (15.0)	71 (53.4)	27 (20.3)
My boss keeps me informed about what is going on in the provision of immunisation services	4 (3.0)	6 (4.5)	22 (16.5)	62 (46.6)	39 (29.3)
I am adequately remunerated for what I do at work	4 (3.0)	7 (5.3)	19 (14.3)	80 (60.2)	23 (17.3)
Working relationship with my immunisation team is good	2 (1.5)	3 (2.3)	12 (9.0)	85 (63.9)	31 (23.3)
I am consulted, and my opinion seems to count	6 (4.5)	6 (4.5)	17 (12.8)	83 (62.4)	21 (15.8)
In the last year, I have had opportunities to learn and develop in the area of immunisation provision	4 (3.0)	2 (1.5)	17 (12.8)	72 (54.1)	38 (28.6)

Freq - Frequency, % - Percentage

Table IV: Respondents' Involvement in Immunization Service Provision (n = 133)

Item	Never Freq (%)	Sometimes Freq (%)	Regularly Freq (%)
Are you involved in the provision of immunisation services?	11 (8.3)	29 (21.8)	93 (63.3)
If yes, indicate whether you provide the following vaccination services:			
Measles and Rubella vaccine	12 (9.0)	14 (10.5)	107 (80.5)
Penta (DPT+Hib+HepB) vaccine	18 (13.5)	14 (10.5)	101 (75.9)
Polio vaccine	16 (12.0)	10 (7.5)	107 (80.5)
BCG vaccine	17 (12.8)	15 (11.3)	101 (75.9)
PCV	16 (12.0)	16 (12.0)	101 (75.9)
IPV	11 (8.3)	21 (15.8)	101 (75.9)
At birth vaccination	17 (12.8)	17 (12.8)	99 (74.4)
Infant vaccination	14 (10.5)	17 (12.8)	102 (76.7)
Adolescent/Adult vaccination	15 (11.3)	27 (20.3)	91 (68.4)

Freq -Frequency, % - Percentage

Table V: Association between PHC Local Government Area of the PHC and Immunization Readiness (n=133)

LGA	Training		χ2	p-value
	Inadequate Freq. (%)	Adequate Freq. (%)		
Jaba	8 (6.0)	20 (15.0)	5.018	0.173
Jama'a	20 (15.0)	23 (17.3)		
Kaura	11 (8.3)	17 (12.9)		
Zongon Kataf	19 (14.3)	15 (11.3)		
LGA	Motivation			
	Inadequate Freq. (%)	Adequate Freq. (%)		
Jaba	8 (6.0)	20 (15.0)	7.862	0.049
Jama'a	21 (15.8)	22 (16.5)		
Kaura	7 (5.3)	21 (15.8)		
Zongon Kataf	18 (13.5)	16 (12.0)		
LGA	Involvement			
	Inadequate Freq. (%)	Adequate Freq. (%)		
Jaba	2 (1.5)	26 (19.5)	10.303	0.016
Jama'a	13 (9.8)	30 (22.6)		
Kaura	2 (1.5)	26 (19.5)		
Zongon Kataf	4 (3.0)	30 (22.6)		
LGA	Readiness			
	Not ready Freq. (%)	Ready Freq. (%)		
Jaba	7 (5.3)	21 (15.8)		
Jama'a	19 (14.3)	24 (18.0)	10.808	0.012
Kaura	5 (3.8)	23 (17.3)		
Zongon Kataf	18 (13.5)	16 (12.0)		

Freq - Frequency, % - Percentage

However, the finding in the present study differs from the findings in other Nigerian and Kenyan studies, which found only about a quarter of the respondents reported motivation to deliver quality care, [39] thirteen per cent indicating that they had changed their job in the last 12 months and twenty per cent indicating that they could leave their current job within the

next two years due to motivation-related issues. [40]

The present study's report of adequate healthcare providers' involvement in immunisation services is congruent with the study conducted in Ethiopia, where almost all the study respondents claimed they were involved in EPI-related activities. [16] On the contrary, the findings from Kenya [41] found that sufficient stocks of vaccines were not delivered or distributed equitably within the healthcare system due to inadequate healthcare providers' involvement.

Table VI: Respondents' Professional Cadre and Immunization Readiness (n = 133)

Domain	Profession	Training		χ^2	p-value
		Inadequate *n (%)*	Adequate *n (%)*		
Training	CHEW	29 (21.8)	41 (30.8)	0.305	0.859
	JCHEW	14 (10.5)	17 (12.8)		
	Nurse/Nurse-Midwife	15 (11.3)	17 (12.8)		
Motivation	CHEW	27 (20.3)	43 (32.3)	1.628	0.443
	JCHEW	11 (8.3)	20 (15.0)		
	Nurse/Nurse-Midwife	16 (12.0)	16 (12.0)		
Involvement	CHEW	4 (3.0)	66 (49.6)	15.388	<0.001
	JCHEW	5 (3.8)	26 (19.5)		
	Nurse/Nurse-Midwife	12 (9.0)	20 (15.0)		
Readiness	CHEW	25 (18.8)	45 (33.8)	0.974	0.614
	JCHEW	10 (7.5)	21 (15.8)		
	Nurse/Nurse-Midwife	14 (10.5)	18 (13.5)		

In England, [42], it was reported that only a third of health workers wished to be vaccinated due to concerns about increased workload and inadequate training. Meanwhile, the study of Bosnia and Herzegovina judged the knowledge of healthcare providers on immunisation programmes to be satisfactory but emphasised the need for additional education to address vaccine hesitancy. [43]

Overall, most respondents in this study demonstrated adequate readiness for immunisation service provision. The finding on immunisation readiness in this study corroborates findings from Ethiopia [16] and Bangladesh [44], where the majority of respondents in the studies demonstrated a commendable level of readiness for immunisation service provision. However, this current study finding is in dispute with that of a Mongolia study [45] that reported inadequate general service index of the PHC facilities assessed for immunisation and other essential service readiness.

In this current study, two LGAs, Jaba and Kaura, showed higher readiness levels for immunisation. Even though all cadres are in the business of immunisation service provision at the PHCs, Nurse/Nurse-Midwife hardly get involved in the final vaccination exercise as they accounted for the difference in the level of involvement for immunisation across professional cadres. The findings are contrary to the findings of the study in Ethiopia [16] that reported nurses and those who claimed higher satisfaction with supportive supervision were more likely to be ready to provide immunisation services. The professional cadre of Nurse/Nurse-Midwife and Zango-Kataf LGA of the PHCs were found to be low in the overall readiness for immunisation service, suggesting the need for intervention. With the

diminishing presence of Nurses/Nurse-Midwives at the PHC, [46 - 48], the likelihood of those available feeling being left out is a plausible explanation for the recording of lowest scores in all the dimensions of readiness in the present study. From all indications, CHEWs and JCHEWs have been the target of many interventions, hence, a higher level of motivation among them in the present study. Similarly, despite the Primary Health Care Under One Roof (PHCUOR) policy in Nigeria, it is expected that the difference in commitment to the health of the various LGA council chairpersons/administrators should account for the difference in readiness for immunisation between the top three LGAs (Jaba, Jama'a and Kaura) and that of Zongo-Kataf LGA. The latter happens to be the LGA with the most security challenges in the zone affecting commitment to essential services such as health, and this could explain the low mean scores obtained by the LGA.

Limitations of the study

The test items in the questionnaire were later noticed to be positively skewed throughout, which might have affected the discrimination index expected in the respondents' responses to the test items.

Implication of the study

Nurses and Midwives accounted for the minority in the study setting, and this signifies the diminishing presence of this essential health workforce whose central role is not only in the delivery of healthcare but also in the implementation of health promotion initiatives, preventive strategies and integration of health care services. The need for stakeholders concerned in the deployment of the health workforce to consider increasing the presence of nurses at this critical level of healthcare delivery is germane. The clinical staff at the PHC need to know that readiness for service provision in any PHC component(s) requires adequate training, motivation and direct involvement in providing such services in addition to having a ready system for the services.

Conclusions

Less than one-third of the health providers in selected PHCs in the southern Kaduna senatorial district, Kaduna state, Nigeria, are adequately trained and motivated to provide immunisation services, which may translate to optimum involvement in providing immunisation services. Over half of the respondents were considered ready to provide immunisation services. More so, readiness for the provision of immunisation services differed across the LGAs. To ensure health providers and PHC facilities' readiness to provide immunisation services, improving in-service training and supportive supervision, particularly for nurses and demand for improved health investments in facilities in under-served parts should be prioritised.

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