Analyses Of Achieving Sdg 3.2 And Mobility And Retention Of Skilled Health Professionals In Selected Local Government Areas Of Nasarawa State

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Abstract
This paper examined the historical trends and causes of infant and under-five deaths, viz-a-viz the impacts of the mobility and retention of skilled health professionals on their mortalities in Lafia and Wamba Local Government Areas (LGAs). The study adopted a survey research design. A sample size of 290 women age 20-49 was statistically determined and the administration of one-time structured questionnaire to randomly selected 220 and 70 reproductively active women, respectively, in Lafia and Wamba LGAs. A session of FGDs comprising 8 women were conducted in selected PHCs in the two LGAs while IDI was conducted with a senior official in the State Ministry of Health. Data from questionnaire forms were analysed via SPSS[+] 25 while FGDs and IDI were content analysed. The study revealed that 37.8 per cent of respondents got pregnant at least two times while 94.5 per cent attended health facilities for prenatal/antenatal services. Majority (63.5%) attended clinic more than 4 times, with 41.6 per cent gave birth to more than 4 children. Over four-fifths (86.5%) attested to have experienced the death of children and almost three-quarters have lost under-1 children. Prolong labour was reported by 24.8 per cent as leading cause of infant mortality while 39.8 per cent reported malaria fever as main cause of death of under-5 children. Almost all (92.6%) seek medical attention from skilled and semi-skilled health providers during pregnancy complication. However, in Nasarawa State, mobility of skilled health professionals from public health facilities was spontaneous and dynamic. Core health workers moved from rural to urban, state health facilities to federal health facilities, and to other countries' health facilities. In sum, the study informed that the retention ratios of doctors and nurses and midwives were too low, in contrast to the global recommendations. Therefore, it is apparently impossible for Nasarawa State to achieve the target two of the Sustainable Development Goal 3 (SDG 3.2) before its expiration in 2030.
Keywords: *SDG 3.2, Mobility, Retention, Skilled health professionals, Nasarawa State.*

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I. Background

    In Nigeria, indicators of health outcomes in most of the health surveys conducted in country have revealed that Nasarawa State is having the highest infant and under-five mortality rates among the states in the North-central Geo-political Zone. In addition, the state has the lowest accessibility rate to skilled health workers compared to its counterpart states in the same geo-political zone. And this largely seemed to have the intonation of inequality in the mobility and retention of few skilled health workers available in the state. For instance, the National Multiple Indicator Cluster Survey (MICS) conducted in 2011 indicated in its report that Nasarawa State had the highest IMR and U5MR among the states in the North-central Geo-political Zone, with 109 and 182 per 1,000 live births, respectively. Also, the report indicated that the state had the lowest percentage (35.1%) of women being delivered with the assistance of any skilled worker (MICS, 2011).

    Furthermore, the state has the lowest attendance of medical doctors (6.9%) to assist women at delivery in its Geo-political Zone, and came behind Niger State (25.4%) with the least of percentage of nurses/midwife in assisting in the pregnant women delivery. However, the state has the highest percentage (2.8%) of auxiliary midwife, second in position (10.3%) of the traditional birth attendance and having the highest percentage of relative/friend (44.1%) assisting in child delivery. Based on the above statistics, it seems the state has acute shortage of medical doctors and qualified nurses that could be attending to pregnant women at child birth. Therefore, complicated child labouring that could have been solved by Caesarean Section was at the lowest in the state with 0.7 per cent when compared to other states in the same geo-political zone (MICS, 2011).

    Undoubtedly, Nigeria was among the Sub-Saharan African (SSA) countries that the United Nations (UN) classified as the Millennium Development Goals (MDGs) 'Priority Areas' (World Health Statistics, 2018). In other words, such priority areas were nations that could not achieve any of the set targets of the eight

(8) MDGs agenda throughout its 15 years (2000-2015) implementation. Of the particular interest of the targets unable to achieve by Nigeria were goals 4 and 5. These goals were meant to reduce child mortality by two-thirds and improve maternal health by three-quarters respectively. However, the formulation and implementation of the Sustainable Development Goals (SDGs) in 2015, which was designed to consolidate the nascent progress achieved from the MDGs has 17 agenda. Of particular concern is Goal 3, Target 2, which stated that "by 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births." This goal's target might as well become a nightmare to achieve in developing and poor countries of the world by 2030, if inequality and lopsidedness of the international, national and local recruitments of health workers through migrations- internationally and internally are not of major concern to governments at all levels, in particular and international community, as a whole (Bhorat, H., Cassim, R., Meyer, F., & Ranugha, D, 2002). These inequality and lopsidedness in recruiting health workers is what Taylor, I, Adams, J., Brown, M., Clark, R., and David, F., (2011) referred to as, "the fundamental root cause of the weak health systems of countries," in the sub-Saharan Africa.

On the one hand, many studies on the movement of the skilled health workers have been focusing on the international mobility (brain-drain) of these workers from countries of origin to countries of destination (OECD and WHO, 2010). On the other hand, there is dearth of studies on the internal mobility (urban-rural) of these health workers within the health facilities in their countries of origin (WHO, 2009). These comprise the mobility of health workers within the public health facilities; movement from urban to urban, urban to rural and or rural to urban (Abejide, 2016). This however, has resulted to paucity of information of the availability, accessibility and retention of health workers to healthcare services in areas they are most demanded within their countries of origin. The study therefore, analysed achieving SDG 3.2 and the mobility and retention of skilled health professionals in selected Local Government Areas (LGAs) of Nasarawa State by answering the following questions: 1) What is the historical trend of infant and child births and mortality in the study area? 2) What are the causes of infant and child mortality rates in the study area.? 3) What is the trend of mobility and retention of skilled health workers within and outside the public health facilities in the study area.? 4) What factors motivating the mobility and retention of skilled health workers in the study area.? 5) What are effects of the mobility and retention of health workers on infant and under-five mortality rates in the study area.? 6) What policy and programme could enhance the mobility and retention of health workers in the study area for the attainment of the first two targets of SDG 3.2?

II.   Theoretical Underpinning
Theory of mobility and retention of health professionals- Push-pull forces

The theory of mobility of health professionals is a critical area of study that addresses the global challenge of ensuring a stable and well-distributed healthcare workforce. Research has shown that various factors influence the decision of health professionals to migrate or remain in a location, including economic incentives, working conditions, career development opportunities, and personal preferences. However, the decision of health professionals to migrate or remain in a location is influenced by a complex interplay of factors. Toyin-Thomas, Ikhurionan, Omoyibo, et al. (2023) highlighted a systematic review in which remuneration and security problems are significant macro-level factors, while career prospects, a good working environment, and job satisfaction are critical meso-level factors. On health professionals' retention, Walton-Roberts, Runnels, Rajan, Sood, Nair, Thomas and Bourgeault (2017) emphasized the lack of clear policy agenda to manage health worker migration, therefore, suggesting that domestic policies on training, recruitment, and retention need examination. Furthermore, research indicates that socio-economic conditions, political stability, professional opportunities, and family concerns are strong push factors, while the desire for a better quality of life and financial gain are major pull factors (Lee, 1966).

Theory of political economy in the health industry

The theory of political economy in the health industry is a multifaceted subject that explores the intricate relationship between economic policies, political decisions, and the health sector. Costa-Font, Turati and Batinti (2020) gave a crucial political economy perspective to understanding the complexities of healthcare financing, the challenges of providing universal coverage, and the dynamics of institutional change within the health sector. The authors equally expound on comprehensive work that explores the intersection of health economics, policy, and political science, thereby, offering a global perspective on the governance of healthcare systems.

III.   Methodology

Study area

The study covers both Lafia and Wamba LGAs. Lafia is geographically located between latitudes 8˚20'N-8˚38'N and between longitudes 6˚34'E-7˚30'E. The area covered by Lafia LGA is 2,7975 km^2, with a tropical type of climate; the wet and dry season. It has generally high temperature because of its location in the tropical sub- humid climate. The high radiation from the sun in the area, which is also evenly distributed through the high temperature recorded. However, there is a marked seasonal variation in the temperature of Lafia. The mean monthly temperature in the area ranges between 25^{0}C in December to 30^{0}C in March. Because of this very close range and at such high level, the hot weather is a regular feature the area. Lafia, aside from being an administrative and educational centre, it is also vast in agricultural activities and collecting point for sesame seeds, soybeans, rice, and a trading centre for yams, sorghum, millet, and cotton (Figure 1).

Wamba Local Government Area is one of the 13 Local Government Areas (LGAs) in Nasarawa State, North-central Nigeria, with its headquarters situated in Wamba town, and geographical coordinates of 8°56′0″N 8°36′0″E. It has a climatic characteristic of summer months from January through April, with March being the hottest month. And, from June to October is considered the cool season, with August being the coolest month. The LGA has an estimated land area of 1,156 km^2 and a population of about 72,894 based on the 2006 census estimates. Wamba local government is an agrarian sub-rural area, with minerals deposit like lead, barite, tantalite, columbite, and gems (Figure 1).
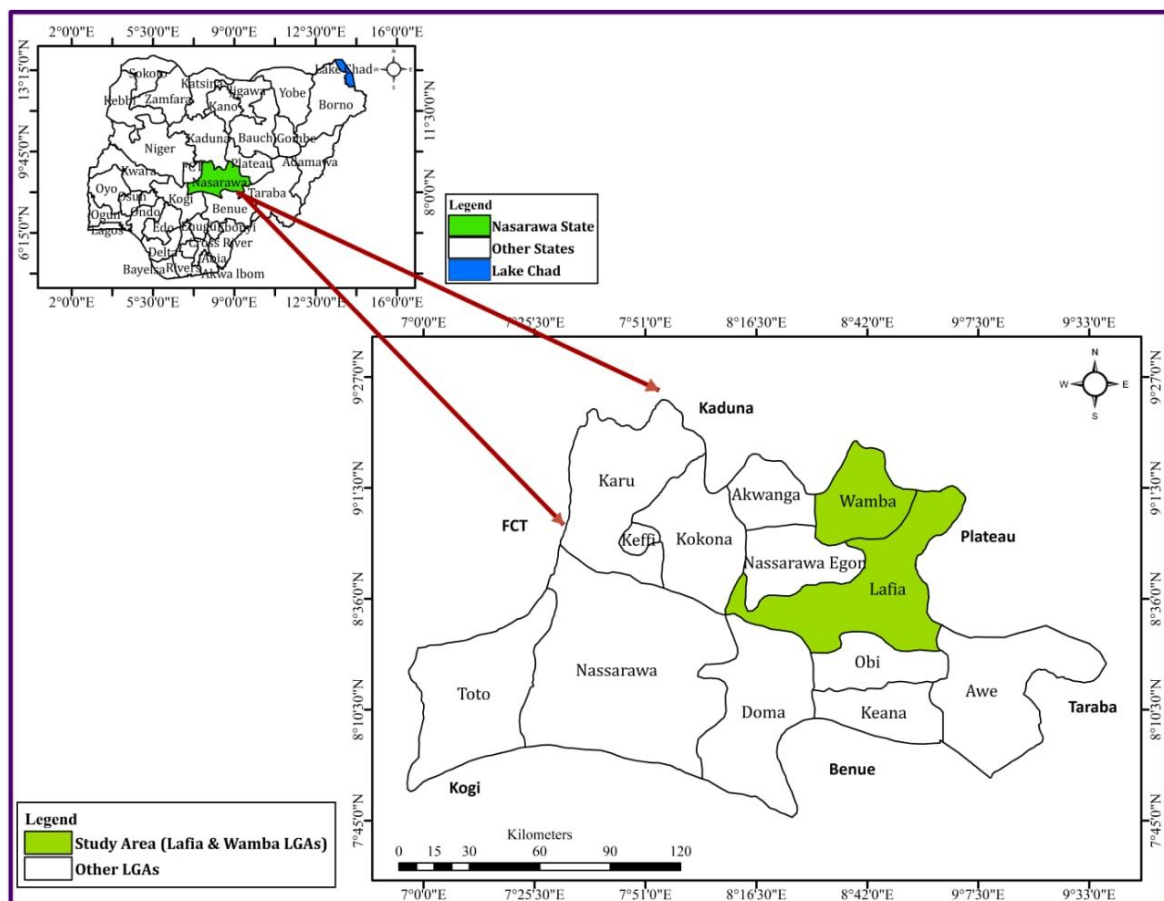

Fig 1: The study area - Lafia and Wamba Local Government Areas.
Source: GIS-Cartography Lab., Dept. of Geography, Federal University of Lafia (2024)

Research Design & Sampling Techniques

The study adopted a survey research design, in which both primary and secondary data were collected. The former involved the administration of a designed, one-round structured questionnaire for acquiring quantitative data, and the conduct of focus group discussions (FGDs) and in-depth interviews (IDIs), to obtain qualitative data. A multi-stage sampling method was adopted. First, purposive sampling was adopted to selecting two LGAs; urban and rural.

Sampling Framework
The classification of the selected LGAs to either urban or rural areas ratified by the Organization for Economic Cooperation and Development (OECD) proposal of defining rural areas in World Health Organization (WHO) (2009). Women selected were reproductively active and had at least one or more live births six months before the field work commenced. women age 20-49 in the two LGAs. They were systematically randomly sampled in households in each of the wards of the two LGAs.

Study Population
The population for the study was sampled in the two (2) selected LGAs. Women selected were reproductively active and had at least one or more live births six months before the field work commenced. Also, such women must be permanent residents of the selected households and or visitors who must have stayed in the households the night before the field work commenced.

Method of Data Collection
Data collection for the study were in two phases, 1) of reconnaissance survey and 2) the field work. The first phase consisted of requests for the lists of skilled health workers (Doctors, Nurses, Midwives, Community Health Extension Workers (Chews), Junior Community Health Extension Workers, Community Health Officers (JCHEWs) Community Health Officers (CHOs), etc.), and the primary healthcare centres in the selected two LGAs from the Nasarawa Primary Healthcare Development Agency (NSPHDA) and State Ministry of Health (MoH). Also, it involved meeting with state and local health administrators and officials of the NSPHDA in Nasarawa State.
The second phase was divided into three sections. In the first phase, a sample size of 290 women age 20-49, statistically determined using level of confidence approach and based on the projected 2016 population of women, who are permanent residents was adopted. The second phase was the administration of one-time structured questionnaire to randomly selected 220 women (age 20-49) in Lafia LGA and 70 to the same categories of women in Wamba LGA by ten (10) trained field data collectors. conduct of one session of FGDs with at eight (8) women within the reproductive age in selected Primary Healthcare Centres (PHCs), one (1) each in Lafia and Wamba. And the third phase was the conduct of in-depth interview (IDIs) with volunteered key officials of health facilities in the selected LGAs and a Senior Official in the State Ministry of Health.

Data Analysis
Quantitative data from the questionnaire forms were checked and edited for inconsistencies, incompleteness, and outliers, and were inputted into the IBM SPSS$^+$ version 25. Cross tabulation of background and socioeconomic characteristics of respondents were computed via bar graphs and pie chart. The history of birth, death of infant and child and maternal mortality were analysed via cross tabulation FGDs and IDIs sessions were content analysed via the transcribed and translated versions from the recording gadgets.

IV. Results And Discussions

Pregnancy history of respondents by LGAs
Table 1 reveals the overall pregnancy history of respondents in both LGAs, with 37.2 per cent being pregnant at least 2 times, 31.2 per cent between 3 to 4 times and 31.6 per cent more than 4 times. At the level of LGAs, majority of respondents, with almost two-fifths (39.4%) of them were pregnant more than 4 times in Lafia while very few of them (5.8%) in Wamba. Respondents that were pregnant between 3 to 4 times were of equal prominence in both LGAs; with Lafia (31.7%) and Wamba (31.9%). Wamba recorded substantial number of respondents, with over three-fifths (62.3%) of them being pregnant at least 2 times while Lafia recorded 29.0 per cent of them.

Table 1: Pregnancy history of respondents by LGAs

LGA	Lafia		Wamba		Total	
Pregnancy history	Frequency	%	Frequency	%	Frequency	%
(1-2) times	64	29.0	43	62.3	107	37.2
(3-4) times	68	31.7	22	31.9	90	31.2
More than 4 times	87	39.4	4	5.8	91	31.6
Total	220	100	69	100	289	100

Source: Field-work, 2024

There is a significant association among the two LGAs as regards their pregnancy history, according to the Chi-square test (χ^2 = 28.719, df =2, α <0.05, see Appendix 8). However, there is a wide gap among women

being pregnant more than 4 times. The explanation for this occurrence could be as a result of the age differential. Women sampled in Wamba as against their counterparts in Lafia were mostly young adults, possibly with understanding, awareness and utilization of family planning methods, thereby, reducing the number of times they became pregnant. On the contrary, for women sampled in Lafia to have had high propensity of becoming pregnant more than 4 times, this could have alluded to the unhealthy competition that used to ensue among women in polygamy system of a family setting.

Respondents' duration of prenatal clinic visitation during pregnancy of by LGAs

Respondents attended prenatal clinic 'more than 4 times' were of the majority, with over three-fifths (63.5%) of them in both LGAs. Above one-tenth (21.2%) of the respondents attended prenatal clinic 'between 3 and 4 times' while over one-tenth (15.3%) of them attended 'once or 2 times.' Respondents that attended prenatal clinic 'more than 4 times' were preponderant in Lafia, with over three-quarters (76.9%) of them while less than one-fifth (17.7%) of them in Wamba. Over half (53.2%) of respondents in Wamba attended prenatal clinic 'between 3 and 4 times,' as against slightly above one-tenth (11.8%) in Lafia. Furthermore, in proportion, 29.1 per cent of respondents attended prenatal clinic 'once or 2 times' in Wamba compared to 11.3 pe cent in Lafia, as presented on Table 2.

Table 2: Respondents duration of prenatal clinic visitation during pregnancy of by LGAs

LGAs	Lafia		Wamba		Total	
Duration of prenatal clinic during pregnancy	Frequency	%	Frequency	%	Frequency	%
(1-2) times	24	11.3	18	29.1	42	15.3
(3-4) times	25	11.8	33	53.2	58	21.2
More than 4 times	163	76.9	11	17.7	174	63.5
Total	212	100	62	100	274	100

Source: Field-work, 2024

The significant association in the duration of prenatal clinic attendance amongst the LGAs as depicted by the Chi-square test ($\chi^2 = 13.093$, df =3, α < 0.05, see Appendix 8) indicates that women are more conscious of their rights to healthcare services during pregnancy, as well as that of their unborn child than before. Generally, the ubiquitousness and accessibility of primary healthcare centres (PHCs) in both urban and rural areas of the state have availed pregnant women to be more responsive to safe pregnancy terms and deliveries. For instance, Lafia LGA alone has 52 PHCs while Wamba LGA has two (2) PHCs. In the same vein, the policy 'zero cost' to pregnant women and under-five children at all levels of healthcare services could have surged the attendance of prenatal clinics.

Birth history of respondents by LGAs

According to Table 3, slightly above two-fifths of respondents (41.6%) in the two LGAs having more than four children, followed by over one-fourth (27.5%) of them with two children. Close to one-fifth (19.8%) were having two children while a little above one-tenth (11.1%) were having one child. At the levels of LGAs, respondent with more than four children were the most prominent in Lafia, with 47.9 per cent of the sample population in the LGA while the majority (48.9%) of respondents in Wamba were having two children. This is followed by over one-fifth each for respondents with two children in Lafia (23.0%) and three children in Wamba (22.2%). Significant percent (19.4%) of respondents with three children were recorded in Lafia and 17.8 per cent with one child in Wamba. Very few (9.7%) respondents were recorded having one child in Lafia and 11.1 per cent of respondents represented the few with more than four children in Wamba.

Table 3: Birth history of respondents by LGAs

LGA	Lafia		Wamba		Total	
Birth history	Frequency	%	Frequency	%	Frequency	%
One	21	9.7	8	17.8	29	11.1
Two	50	23.0	22	48.9	72	27.5
Three	42	19.4	10	22.2	52	19.8
Four and above	104	47.9	5	11.1	109	41.6
Total	217	100	45	100	262	100

Source: Field-work, 2024

There is a significant association in the birth history of respondents in the two LGAs, with the results of the Chi-square test ($\chi^2 = 23.567$, df =3, $\alpha < 0.05$, see Appendix 8). The prominence of four (4) children in the study area was in tune with the Babangida military administration's policy of four (4) children per woman in 1988. Nevertheless, there was a proposed plan to reduce the number of children per woman to two (2) by the Federal legislature in 2018 (Okwe, 2018). However, for the greater part of sampled women in Lafia to having more than four children, this could be tied to a cultural factor, in which there is a competition among women in a polygamy system of family. The situation whereby the most senior wife wanted to have more children than the junior wives or vice versa. Again, the societal idiosyncrasy of referring to a gender better than the other. This could possibly trigger the quest for wanting such particular gender of a child, and this might lead to giving birth to many children. On the other hand, the possible explanation for the majority of sampled women in Wamba to have giving birth to quite few numbers of children could have been as a result of their youthfulness. As earlier discussed, sampled women in Wamba were young-adult, with few years in marriage, and likely to be utilising family planning methods. In addition, the economic situation of the country might have been another possibility of not wanting many children due to their low level of income.

Rates of infant or child mortality of respondents by LGAs

On the overall, above two-thirds (69.5%) of respondents from the two LGAs lost one (1) child while less than one-third (30.5%) lost more than one (1) children. At the LGAs, proportionally, the number of respondents that lost one (1) child in Wamba (17; 85.0%) was higher in proportion to that of Lafia (122; 67.8%). However, respondents that lost more than one (1) children were significantly higher in Lafia but very few (15.0%) in Wamba, as indicated on Table 4.

Table 4: Rates of infant or child mortality of respondents by LGAs

LGA	Lafia		Wamba		Total	
Number of infant-child deaths	Frequency	%	Frequency	%	Frequency	%
One (1)	122	67.8	17	85.0	139	69.5
More than One (1)	58	32.2	3	15.0	61	30.5
Total	180	100	20	100	200	100

Source: Field-work, 2024

The Chi-square test results ($\chi^2 = 2.519$, df =1, $\alpha > 0.05$, see Appendix 8) show that there is significant difference in the death of infant/child in the LGAs. Conspicuously, this could be noticed in the low response of deaths of infant/child in Wamba. To be candid, the death of a child is a tragic loss, therefore, recounting such death is sadly emotional because of the supernatural mother-child bond. Unfortunately, majority of sampled women in the study area deliberately absconded or totally refused to respond to the part of deaths of children because of the pains and sorrows attached to it. However, the FGDs conducted for eight (8) participants each in both LGAs disclosed the raw facts experiences about the rates of infant/child mortality as it occurred to them in following excerpts:

All of us have lost one child or more children to death. Four (4) of us here have lost one (1) child each at birth (still birth), two (2) of us have lost two (2) children each under age five (5) and two (2) of us had miscarriage (FGD, PHC, Tudun Kauri, Lafia, 2024).

Every one of us here have lost children at the infancy or under-five children. Four (4) of us have lost four (4) children each; both at the infant and child stages. Two (2) of us have lost two (2) children each, both at the infancy and as under-five children. Two of us lost one child each at their infancy (FGD, PHC, Wamba, 2024).

Causes of respondents' under-5 child mortality by LGAs

Table 5 reveals probable causes of under-5 child mortality in the study area. In the order of proportion, 'malaria fever' is the leading cause of the deaths of under-5 children, with close to two-fifths (39.8%) of respondents in Lafia and Wamba reported it. However, over two-fifths (43.3%) of respondents in Wamba reported 'malaria fever' as the principal cause of under-5 child mortality while close to two-fifths (39.3%) reported the same cause in Lafia. The second likely leading to the cause of under-5 child mortality is 'diarrhoea,' which was reported by slightly above one-fourth (26.2%) in the two LGAs. On the other hand, 'diarrhoea' was majorly reported by 28.4 per cent of respondents in Lafia, as against very few (10.0%) in Wamba. The third possible cause under-5 child mortality in the two LGAs is 'respiratory problem,' has being reported by over one-fifth (22.6%) of respondents. However, one-fourth (25.7%) of respondents in Lafia stated 'respiratory problem' to be cause of under-5 child mortality while just one respondent (3.3%) admitted such in Wamba.

Table 5: Causes of respondents' under-5 child mortality by LGAs

	LGA	Lafia		Wamba		Total		
		Frequency	%	Frequency	%	Frequency	%	
Malaria Fever	No	116	60.7	17	56.7	133	60.2	
	Yes	75	39.3	13	43.3	88	39.8	
	Total	191	100	30	100	221	100	
Diarrhoea	No	136	71.2	27	90.0	163	73.8	
	Yes	55	28.8	3	10.0	58	26.2	
	Total	191	100	30	100	221	100	
Cerebrospinal Meningitis	No	182	95.3	23	76.7	205	92.8	
	Yes	9	4.7	7	23.3	16	7.2	
	Total	191	100	30	100	221	100	
Measles	No	159	83.2	25	83.3	184	83.3	
	Yes	32	16.8	5	16.7	37	16.7	
	Total	191	100	30	100	221	100	
Poliomyelitis	No	176	92.1	29	96.7	205	92.8	
	Yes	15	7.9	1	3.3	16	7.2	
	Total	191	100	30	100	221	100	
Respiratory problem	No	142	74.3	29	96.7	171	77.4	
	Yes	49	25.7	1	3.3	50	22.6	
	Total	191	100	30	100	221	100	
Malnutrition	No	171	89.5	28	93.3	199	90.0	
	Yes	20	10.5	2	6.7	22	10.0	
	Total	191	100	30	100	221	100	

Source: Field-work, 2024

'Measles' is likely the fourth cause of under-5 child mortality in the study area, with 16.7 per cent of respondents reported it in the two LGAs as well in Lafia (16.8%) and Wamba (16.7%). 'Malnutrition' is likely the fifth cause of under-5 child mortality in the study area, with one-tenth (10.0%) of respondents stated it as a principal cause of death. Meanwhile, one-tenth (10.5%) of respondents in Lafia attested to it as one of the causes of death while 6.7 per cent of respondents in Wamba reported such. The least probable causes of under-5 child mortality by respondents in the two LGAs are 'cerebrospinal meningitis' and 'poliomyelitis,' with 7.2 per cent each. Respondents in Wamba proportionally (23.3%) led those in Lafia (4.7%) in reporting 'cerebrospinal meningitis' as a probable cause of under-5 child mortality. On the contrary, though few (7.9%) but majority of respondents in Lafia reported 'poliomyelitis' as one of the possible causes of deaths of under-5 child but just one respondent (3.3%) stated the same cause of deaths.

To substantiate the above results, Abejide and Kupoluyi (2007) submitted that most of all the symptoms of sicknesses that kill under-5 5children are preventable but every year, almost 11 million children die before their fifth birthday, with pathogenic (biological) causes, such as respiratory infections (pneumonia), diarrhoea, malaria, and measles while malnutrition is a contributing factor in over 60 per cent of deaths of children in Nigeria. Furthermore, Statista (2020) in their survey conducted in 2019 to analyse the causes of deaths of children between 1-59 months. It was revealed that diarrhoea (17.14%) was deadliest symptoms leading to deaths of under-5 children in Nigeria. This was followed by respiratory infection (16.74%), malaria (12.37%) and meningitis (4.23%). In addition, the IDI conducted with the senior health officer at the PHC in Lafia informed that malaria is the major symptom that of deadly symptoms leading to the deaths of under-5 children in Nasarawa State. The interviewee submitted further:

From my experience as a matron for many years, the most dreaded symptom that leads to death among infants and child is 'malaria.' And, most times, it leads to other symptoms, such as anaemia, cerebrospinal meningitis (fever), seizures or convulsion and later on, death (IDI, Matron PHC, Tudun Kauri, Lafia, 2024).

Respondents' health provider during pregnancy and before infants' death by LGAs
Table 6 reveals respondents seek for medical attention during pregnancy complications, at child birth and before the death of a child as well as the health providers that given the medical attention. Overwhelming majority (92.6%) of sampled population seek for medical attention for their infant children before death while very few (7.4%) did not seek for medical attention for their infant children in the study area. Almost all

respondents (97.5%) in both LGAs received medical attention during pregnancy complications but infinitesimal percent (2.5%) did not receive. Slightly above half (51.5%) of respondents received medical attention from doctors, less than one-third (69.2%), from nurses, close to one-fifth (19.2%), from midwives but vast majority (88.4%), from auxiliary nurses, community health worker or other allied healthcare providers. However, very few (6.6%) respondents received medical attention from traditional or religious healthcare provider. Going by the LGAs reactions, vast majority (92.8% and 91.3%, respectively) of respondents in Lafia and Wamba, seek for medical attention during pregnancy complications and for their infants before death.

Table 6: Respondents' health provider during pregnancy and before infants' death by LGAs

Healthcare provider	LGA	Lafia		Wamba		Total	
		Frequency	%	Frequency	%	Frequency	%
Seek for medical attention for the child	Yes	180	92.8	21	91.3	201	92.6
	No	14	7.2	2	8.7	16	7.4
	Total	194	100	23	100	217	100
Received medical attention during pregnancy	Yes	177	97.3	21	100	198	97.5
	No	5	2.7	0	0	5	2.5
	Total	182	100	21	100	203	100
Treated by doctor	No	86	48.3	10	50	96	48.5
	Yes	92	51.7	10	50	102	51.5
	Total	178	100	20	100	198	100
Treated by nurse	No	123	69.1	14	70	137	69.2
	Yes	55	30.9	6	30	61	30.8
	Total	178	100	20	100	198	100
Treated by midwife	No	143	80.3	17	85	160	80.8
	Yes	35	19.7	3	15	38	19.2
	Total	178	100	20	100	198	100
Auxiliary nurses, community health worker or other allied healthcare providers.	No	22	12.4	1	5	23	11.6
	Yes	156	87.6	19	95	175	88.4
	Total	178	100	20	100	198	100
Treated by traditional or religion healthcare provider	No	165	92.7	20	100	185	93.4
	Yes	13	7.3	0	0	13	6.6
	Total	178	100	20	100	198	100

Source: Field-work, 2024

All respondents (100%) in Wamba and almost all (97.3%) in Lafia received medical attention during pregnancy complications and before the death of their infants. Slightly above half (51.7%) and half (50.0%) respondents respectively in Lafia and Wamba received medical attention from doctors, less than one-third each (30.9% and 30.0%, respectively) received medical assistance from nurses in Lafia and Wamba. Less than one-fifth (19.7%) received medical assistance from midwives in Lafia while 15.0 per cent of them in Wamba. Virtually all (95.0%) respondents in Wamba and substantial percent (87.6%) of them in Lafia received medical assistance from auxiliary nurses, community health worker or other allied healthcare providers. However, only few respondents (7.3%) in Lafia received medical attention from traditional and religious healthcare providers while Wamba reported none.

The above analyses imply that for few women being attended to for medical assistance during pregnancy complications and to infants before their death by core health professionals such as doctors, nurses and midwives in the study areas could attributed to shortage of those skilled health professionals. The severe shortage of skilled health professionals is serious felt in all the PHCs in both urban and rural settings; of which Lafia and Wamba represented. Aside the fact that doctors are inadequate in the state health sectors, all PHCs in the study area have never had doctors attending to patients in their centres. Meanwhile, some PHCs have only two midwives without nurse, some have one nurse and one midwife but numerous community health extension workers or their junior counterparts. To corroborate the above assertion of not having skilled health professionals in the most of the PHCs in the state. A senior health officer in one of the selected PHCs in Lafia when asked about the categories of skilled health professionals working in the centre and who do the consultation with the patients, she submitted that:

We don't have a single doctor, either temporary or visiting the centre but we have two (2) midwives, ten (10) community health extension workers (CHEW), six (6) medical lab technicians and 2 pharmacy technicians. As for the consulting with the patients, the community health workers have been trained to do the consultation. However, we have the standing order that guides us, anything beyond the standing order, we refer it (IDI, Matron PHC, Tudun Kauri, Lafia, 2024).

In validating the submission of the matron of the above PHC, the IDI conducted with one of the most senior officials of the MoH, Nasarawa State responded when asked about the role of government in reducing the infant, child and maternal mortality before the end of SDGs in 2030, as follows:

Government has put in a lot of interventions to address these issues of infant, child and maternal mortality. The first is that we have been able to build the capacity of our health professionals. We have accepted our reality that we don't have enough doctors, nurses and midwives. So, we have adopted the WHO and National Task Shifting and Task Sharing Strategies; where community health workers have been trained to be providing services that the nurses and midwives ought to have provided. In other words, where we don't have midwives, we have community health workers in abundance, and this has helped us a lot (IDI, Director of Clinical Services, MoH, Nasarawa State, 2024).

Trends of and reasons for mobility of skilled health professionals in the study area and Nasarawa state

Mobility of skilled health professionals has been a dynamic phenomenon globally, and not peculiar to neither Nasarawa State nor Nigeria. Mobility of any sort, is a constant, particularly that of the skilled health professionals due to prompting factors. The core of medical personnel, such as doctors, nurses and midwives are of very high demand, due to the limited number of them available to cater for the particular population. Unfortunately, the selected PHCs in the study area have not been having doctors but only the nurses and midwives. Therefore, the IDIs conducted to the matrons of the two selected PHCs explained the trends of and reasons for mobility of their medical staffers, as follows:

For the past 3 years that I have been posted here as matron, one (1) midwife moved from this facility to DASH. One (1) staffer moved from the medical record unit and got appointment with the state hospital management board and was transferred to Keana. One of the two (2) pharmacy technicians I met on ground was transferred to the state Ministry of Health (IDI, Matron PHC, Tudun Kauri, Lafia, 2024).

In the past two (2) years, four (4) of our medical staffers left. One (1) midwife got appointment with DASH, two (2) medical laboratory technicians moved; one of them was appointed by the Hospital Management Board and the other got an appointment in DASH and one (1) community health worker was promoted to become officer in charge of a PHC (IDI, Matron PHC, Wamba, 2024).

The IDI conducted with the senior official of the MoH corroborated the mobility of skilled health professionals from the state health facilities this way:

As for the actual number of the healthcare personnel in the state, it is a moving target. You know, we employ today they leave tomorrow but government is aware of their movement. For the trajectory of their movements, some of them moving from rural to urban centre, some moving from state to federal, we have some moving from health to nonhealthy sector, and we have some moving out of the country. So different diverse direction of movement (IDI, Director of Clinical Services, MoH, Nasarawa State, 2024).

And, the reasons for the mobility of health professional within and outside the state was expatiated by the senior health official from the state MoH, as follows:

For why they (health professionals) move? We have to look at all the diverse of movement. Now, we have tried to interrogate this movements, and one of the reasons we found out is that some are moving because of the differential in salary. One of the shocking is that some doctors moving from Dalhatu Araf Specialist Hospital (DASH) Lafia to Federal Medical Centre, (FMC) Keffi because of the differential in salary. They are in the same grade but for the fact that doctors in FMC get 70,000 naira more than what they get in DASH, therefore, they moved. Then, some of them leave because they wanted to further their education, they want built more skills for themselves, unfortunately, training opportunities are not so much available here. Also, some leave because they want more pay and better conducive working environment, therefore, they go outside the country to achieve those dreams. So, we cannot pin point one particular reason why they are leaving because there are diverse reasons why healthcare professionals are leaving the facilities. But to sum up the basic and fundamental reasons of skilled health professionals leaving the state health facilities is, 1) because of money, 2) non-conducive working environment, 3) insecurity of lives and properties and of course, 4) for training capacity building in their chosen fields of interest (IDI, Director of Clinical Services, MoH, Nasarawa State, 2024)

Retention of skilled health professionals in the study area and Nasarawa state

Table 7 depicts that over one-tenth (926; 14.7%) are doctors working and retained in all health facilities of Nasarawa state as of December, 2023. Close one-third (2,034; 32.4%) of nurses and over half (3,321; 52.9%) of CHEWs, JCHEWs, CHOs. This translates that the ratio of doctors and nurses and midwives

to the population of Nasarawa state is too low when compared to the global recommended ratio. According to the table, with the estimated total population of Nasarawa state standing at 2,523, 400, the ratio of a doctor to the population equals 1:2725 as against global ratio of 1:400 while that of nurses and midwives equals 1:1241 as against 1:30 of the global ratio.

Table 7: Skilled health workers information in Nasarawa state

Medical Professionals	Frequency	%
Doctors	926	14.7
Nurses and midwives	2,034	32.4
CHEWs, JCHEWs, CHOs	3,321	52.9
Total	6,281	100

Source: Ministry of Health, SPHCDA, HMB, DASH, FMC(K), Military &
Para-Military and Dept of Clinical Services (Dec 2023). Modified by current authors (2024)

In other words, the interpretation of the above ratio means that Nasarawa state is approximately 7 times short of doctors and 41 times short nurses and midwives to the population of the state has been recommended by the World Health Organization (WHO). Therefore, based on the above statistics, it is obvious that consultation, diagnosis, surgery, and other complex health issues to be carried out by doctors and administered by nurses/midwives are minimal in the state. Hence, this might be one of the major indicators confirming the literature that Nasarawa State is still having the highest infant and child and maternal mortality in Nasarawa State.

Furthermore, the findings from the two LGAs reveal that only handful of nurses and midwives working in the PHCs across the state are full-time employees of government. Others like community health extension workers (CHEWs), junior community health extension workers (JCHEWs) and other allied medical personnel are working as casual workers. Although their recruitments passed through the MoH, but they are being paid salaries by government but from the internally-generated revenue (IGR) of the PHCs. The officer in charge of the PHC, Lafia narrated the ordeal as follows:

Majority of those that left were casual workers, so whenever they get full-time appointment with the state, they leave. Meanwhile, aside the two (2) midwives that were recruited by government, even the pharmacy technician and the laboratory technicians are all casual staff. All the community health workers you see here were qualified and registered by government to practice. What happens is that they used to come here for vacancy, and if there are any, we will recruit them and send their names to the ministry for approval. If the director in charge of recruitment gives approval, then, we will absorb them. However, government has not been recruiting them and they are not being paid by government. They are all working as causal staff, it is what we are able to generate in the facility we used to pay them (IDI, Matron PHC, Tudun Kauri, Lafia, 2024).

In sum, the fact the state has overwhelming number of CHEWs and JCHEWs has buttressed the literature claim that the state has the highest medical assistants among the North-central Geo-political zone of the country. However, the high number of these medical assistants could not substitute for the availability of the core medical professionals in the state, hence, the possibility of the state not to be able to achieve SDG 3.

V.   Conclusion

The study has established that the sampled population mean age was between 21 and 40 years, therefore, they are old enough to decide on any issue concerning their health. Majority of them were married, mostly housewives and practicing Islamic faith. Most of the respondents are living far below minimum wage, particularly in the rural areas, with secondary as their highest educational background. The study also revealed that most of the sampled population got pregnant at least two times, with majority of them attended health facilities for prenatal/antenatal services. Also, majority of the respondents attended clinic more than 4 times, with over two-fifths of the sampled population gave birth to more than 4 children. Overwhelming majority attested to have lost at least one child which was infant and the main cause of the death of under-5 child was malaria fever. However, prolong labour was reported by the majority of sampled population as leading cause of infant mortality while most of them seek medical attention from skilled and semi-skilled health providers during pregnancy complications. The study affirmed that haemorrhage during birth, high blood pressure and obstructed labour were the leading causes of maternal mortality of respondents' relatives. Half of the sampled population attested that their relatives received healthcare before their death while religious belief was the reason while majority of pregnant women died without receiving medical attention.

The study revealed that mobility of skilled health professionals was spontaneous and dynamic, core health workers were moving from rural to urban, state facility to federal facility and outside the country. In addition, the study informed that the ratios of both doctors and nurses and midwives were too low to the global

recommendations required to achieve the goal of SDG 3 before 2030 in Nasarawa state. In summary, the study has been established from both primary and secondary data that infant and child and maternal mortalities in Nasarawa State are still on the high side, which is contrary to the set goal of SGD 3, which stated: "That by 2030, there would be end to preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births, and the reduction of maternal mortality." Meanwhile, with the shortage of core health professionals, it might be impossible for the state to achieve the above targeted goal before the expiration of the goal in 2030.

VI. Recommendations

The following recommendations were generated from the findings of the study, in order to speed-up the achievement of SDG 3 in the study area and Nasarawa state in general, that:

1) The state government should recruit more core medical personnel such as doctors, and nurses and midwives into the health facilities in the state and develop them so as to meet their quotas.
2) Both state and local governments should increase the allowances of medical workers and reduce the disparities between the state and local skilled health workers' salaries as against that of the federal for skilled health workers.
3) Modern and necessary equipment and structures that would be able to monitor the infant and pregnant women should be put in place.
4) The state government should make health provisions for infant and child and pregnant woman free for all, particularly to those in the rural areas, through the health insurance scheme targeting Early Pregnancy Test (EPT) established by the state.
5) The state government should intensify the importance of immunization to mothers through the MoH information unit's awareness programme to the religious and community leaders, which would be communicated to their subjects, in order to avoid preventable diseases that kill under-5 children.
6) Finally, the inclusion, recognition and training of Faith Homes and Traditional-Based Healing Centres into the pool of orthodox healthcare providers should be expediated by government.

Acknowledgments

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