ORIGINAL RESEARCH ARTICLE

Performance Needs Assessment of Maternal and Newborn Health Service Delivery in Urban and Rural areas of Osun State, South-West, Nigeria

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Abstract

The study aimed to determine performance and compare gaps in maternal and newborn health (MNH) services in urban and rural areas of Osun State, Nigeria, to inform decisions for improved services. This study involved 14 urban and 10 rural-based randomly selected PHC facilities. Using a Performance Needs Assessment framework, desired performances were determined by key stakeholders and actual performances measured by conducting facility survey. Questionnaire interview of 143 health workers and 153 antenatal clients were done. Performance gaps were determined for the urban and rural areas and compared using Chi-square tests with SPSS version 17. PHC facilities and health workers in Osun State, Nigeria, were found to have significant gaps in MNH service performance and this was worse in the rural areas. Root cause of most of the performance gaps was poor political will of local government authorities. Improved government commitment to MNH is needful to address most of the gaps. *Afr J Reprod Health 2014; 18[2]: 105-116).*

Keywords: Performance, maternal health services, health systems

Résumé

L'étude avait pour objectif de déterminer les performances et comparer les lacunes en matière de service de santé maternelle et néonatale (SMN) services dans les zones urbaines et rurales de l'Etat d'Osun, au Nigeria, afin d'éclairer les décisions pour assurer les meilleurs services. Cette étude concernait 14 établissements de CSP en milieu urbain et 10 en milieu rural qui ont été choisis au hasard. A l'aide d'un cadre d'évaluation des besoins de performance, les principales parties prenantes ont déterminé les performances souhaitées et les performances réelles ont été mesurées en menant des enquêtes dans les établissements. Nous avons recueilli des interviews basées sur des questionnaires auprès de 143 agents de santé et 153 clients prénatals. Les écarts de performance ont été déterminés pour les zones urbaines et rurales et ont été comparés à l'aide des tests de chi carré avec SPSS la version 17. On a découvert qu'il y avait des lacunes importantes dans les établissements de CSP et chez les agents de santé dans l'État d'Osun, au Nigeria dans la performance du service SMN et ce qui est pire dans les zones rurales. La cause profonde de la plupart des écarts de performance était la mauvaise volonté politique des autorités locales. L'engagement du gouvernement à l'amélioration de SMN est nécessaire pour répondre à la plupart des lacunes. *Afr J Reprod Health 2014; 18[2]: 105-116).*

Mots-clés: performance, services de santé maternelle, systèmes de santé

Introduction

Nigeria's maternal, newborn and child health (MNCH) status is poor and worse than that of many other African countries. According to the 2008 Nigeria Demographic Health Survey (NDHS), the country's maternal mortality ratio was 545 per 100,000 live births and the under-five mortality rate was 157 per 1000 live births[1]. In 2012, Nigeria recorded a score of 51 on health on the Ibrahim Mo Index which was lower than the continental average of 66. The Ibrahim Mo Index health score is a composite one based on data on maternal mortality, child mortality, immunization (Measles and DPT), antiretroviral treatment provision, and disease burden of malaria and tuberculosis[2].

To address her MNCH challenges, Nigeria initiated the integrated maternal, newborn and child health (IMNCH) strategy in 2007, with the

main aim of reducing the maternal and under-five mortality in the country so as to meet the fourth and fifth Millennium Development Goals (MDG). IMNCH Strategy intends to accomplish its aim by improving the coverage of relevant health services through the revitalization of the primary health care (PHC) system[3]. In this regard, the IMNCH strategy has a system strengthening focus. This is based on the increasing knowledge that failing health systems are one of the main obstacles to scaling-up interventions. This makes the achievement of internationally agreed goals such as the MDGs an unrealistic prospect. If health systems are lacking capabilities in key areas such as the health workforce; drug supply; health financing; and information systems, they may not be able to respond adequately to various disease specific interventions implemented[4].

In year 2000, the World Health Organization (WHO) ranked the Nigerian health system as 187th out of 191 member States, indicating its poor state[5]. Since then, there has been several efforts to strengthen the Nigerian health system, including the launch of the National Strategic Health Development Plan Framework with the overarching goal being to significantly improve the health status of Nigerians through the development of a strengthened and sustainable health care delivery system[6]. However, field experiences have suggested that progress has been uneven and not adequately documented. Progress made in health system strengthening and quality of service delivery may particularly differ between urban and rural areas as the latter may be particularly disadvantaged in terms of social amenities and health infrastructure, despite the fact that most of the Nigerian population dwell in the rural areas. In general, little is known about the current state of MNCH service delivery at the PHC level, which is the healthcare level closest to the grassroots as well as the gaps in performance that needs to be addressed for improved health outcomes. This study aimed to assess the delivery of the MNCH services at public-sector PHC facilities in urban and rural areas of Osun State, using the 'Performance Needs Assessment' (PNA) approach. PNA is a systematic process for determining and addressing needs or gaps between current performance and the desired performance.

Among others, it focuses on understanding the environment in which service providers work, and how well the system supports them to do their work well. PNA provides a framework for conducting criteria based audit of health systems, and underpins the performance improvement approach to improve the quality of service delivery and the entire health system. Thus, it has potentials for improving service delivery and the health system at large[7]. This study specifically focuses on the following maternal and newborn health interventions in its application of PNA: focused antenatal care (FANC); intra-partum or delivery care and basic emergency obstetric care (BEmOC). Focused antenatal care is a new model of antenatal care declared by the World Health Organization in 2001 for developing countries with a reduced number of antenatal visits[8]. It provides focused services in four planned visits. The first visit is slated for the 12th week, but not later than the 16th week. The second visit is between the 24th to the 28th week. The third visit is between the 30th and 32nd week while the fourth visit is between the 36th and 40th week[9].

Methods

This study was carried out in Osun State, which is located in the south-west region of Nigeria. Administratively, the state is divided into six zones and has a total of 30 Local Government Areas (LGA). Ethical approval was obtained from the Research and Ethical Committee of the Obafemi Awolowo University Teaching Hospital Ile-Ife, Osun State. Approval for the study was also obtained from the State Ministry of Health, while informed consent was obtained from all study participants. The study involved 24 public sector PHC facilities randomly selected across all the health zones. A mixed method approach which involved both qualitative and quantitative methods was used in the data collection. Performance needs assessment framework was employed in the study to assess the standard of service provisions regarding FANC, delivery care and EmOC. PNA involves five key inter-related steps[7] which includes defining the desired performance for the focal services and health workers. The desired performance defined by the stakeholders' sets the

standard level at which the providers are expected to perform. The second step is the assessment of the actual performance of the health system while the third step is determining the gaps in health services or health system performance. (The gaps are determined by calculating the difference between the desired performance and the actual performance; this is then further divided by the desired performance).The fourth step is to conduct a root cause analysis of the identified gap and finally, the relevant interventions are determined to improve on the gaps identified.

In this study, the desired performances were determined by the Medical Officers of Health and the State Reproductive Health Coordinator using the Nominal Group Technique to reach a consensus. Actual performances were measured. Through multiple data collection involving the facilities, service providers, and clients as described in the data collection sub-section. A second Nominal Group Technique session was conducted with the Medical Officers of Health in the Local Government Areas after the identification of performance gaps to identify the reason for the gaps. Suggestions were then made as to possible solutions for improved performance.

The PHC facilities that participated in the study were selected via a multi-stage sampling technique. At the first stage, each of the six health zones was stratified into predominantly urban and rural areas. This was based on the population threshold specified by Nigeria's National Population Commission for rural-urban designation[10,11]. One urban and one rural LGA were randomly selected in each of the health zones. One of the health zones had no predominantly rural LGA; therefore two urban LGAs were selected for that zone. Next, one eligible public primary health facility was selected from each of the randomly selected LGAs by simple random sampling, making a total of 14 urban and 10 rural facilities. Provision of the full complements of focal maternal health interventions (FANC, delivery care and EmOC) on a 24-hour basis was the facility eligibility criterion. Finally, five health care providers offering the focal services were selected in each PHC by simple random sampling from the list of facility based health workers. In facilities where

the health workers were five or less in number, all who consented were involved in the study. In all, a total of 143 health care providers consisting of 84 in urban and 59 in rural- based health facilities participated in the study. A total of 153 ANC clients were interviewed, and 85 of these were directly observed receiving ANC. The sample size of the clients was determined statistically based on the 2008 NDHS figures[1] of 83.8% for urban and 46.4% for rural areas which represented the proportion of pregnant women who received ANC from a skilled provider. Also inclusive in the sample size calculation was a 95% confidence interval and a power of 80%. The clients were serially recruited from the study sites until the required number per facility was met.

The desired performances were determined by conducting key informant interviews with the Medical Officer of Health, who was in charge of PHC activities at the state level, and the State Reproductive Health Coordinator. These desired performances were equally applied to both the urban and rural based health facilities. The findings from these interviews were then ranked and voted on using the Nominal Group Technique conducted with 12 Medical Officers of Health in charge of the PHC facilities at the local government area level.

The facility survey done to measure actual service delivery performance, was carried out using the facility management component of WHO's Safe Motherhood Needs Assessment package[12]. Assessment of the knowledge of health care providers on relevant MNH service delivery was done using a semi-structured self-administered questionnaire adapted from the JHPIEGO/ Maternal and Neonatal Health program tool[13]. An exit interview was done for the antenatal clients using the antenatal client exit interview component of the WHO Safe Motherhood Needs Assessment Package[12]. The interviewer-administered questionnaire was translated into the local language (Yoruba) and back translated to English.

Availability of EmOC was determined based on the performance of the following six signal functions for the PHC facilities which included the administration of parenteral antibiotics, administration of parenteral oxytoxics,

administration of parenteral anticonvulsants, manual removal of the placenta, assisted vaginal delivery and removal of retained products[14]. The service resources (equipment and drugs) and basic infrastructure were assessed as specified in the facility management component of WHO's Safe Motherhood Needs Assessment package[12]. The health facilities were scored one for each of what they had, and scored zero if such were absent. In terms of required knowledge, heath workers were scored 1 on each question they got right otherwise they were scored zero. The total scores were then summed up for each individual and converted to a percentage with the total obtainable mark as the denominator. For ANC clients, a key measure was the knowledge of warning (or danger) signs in pregnancy. Each of them was scored one on each sign that was mentioned without any prompting. The standard was the list of danger signs they were expected to have been taught during their antenatal visits as generated during the study. The mark obtained in each area was summed up and converted to percentage based on the total obtainable mark.

To be regarded as having satisfactory status in terms of any of the required resources such as staff, drugs and equipment, health facilities must score a minimum of 70%. Similarly, to be regarded as having satisfactory knowledge, health workers and ANC clients were required to have scored a minimum of 70% of the total obtainable mark in each relevant area. The 70% cut-off used followed the Nigeria Education Grading Systems where a score of 70-100% was defined as excellent and would afford a first class honours[15,16]. This same grading system was used by Ijadunola et al[17] when they studied the knowledge of health care providers on emergency obstetric care services in the prevention of maternal mortality in Nigeria.

As indicated earlier, stakeholders were required to indicate the desired performance level such as the proportion of health workers that were expected to have satisfactory knowledge of ANC. Actual performance was then measured An example is the proportion of health workers with satisfactory knowledge of ANC. Gaps in performance were measured by finding the difference between the desired performance and

the actual performance using this formula[18]:

$$\frac{Desired\ performance - Actual\ performance}{Desired\ performance} \times 100$$

Data were analyzed using SPSS software version 17. Univariate analysis was carried out to determine the availability of relevant services and relevant resources for service provision. Mean knowledge scores were determined for health workers, and gaps in their service delivery performance identified. Bivariate analysis (Chi-square) was carried out to compare the performance of urban and rural health facilities across the measures of interest, and statistical significance was determined at $p < 0.05$.

Results

The mean age of the urban and rural–based health care providers was 36.56 ± 9.16 and 36.89 ± 8.65 respectively (p=0.471). The mean age of the interviewed antenatal clients was 25.53 ± 4.62 in urban and 25.07 ± 4.99 in the rural health facilities (p=0.574).

Desired performance, actual performance and performance gaps for health facilities

The same desired standards of performance were specified by the key stakeholders for the focal maternal and new-born health (MNH) services in the urban and rural areas as expected. The desired standards ranged from 50% for "the percentage of PHC facilities expected to offer all the components of BEmOC to 100% for three parameters; "the proportion of PHC facilities expected to offer FANC", "the proportion of facilities expected to carry out laboratory test for packed cell volume (PCV)" and "the proportion of facilities expected to have at least 70% of essential drugs and consumables (Table 1).

In terms of actual performances, the worst performance for the rural areas was with respect to "the proportion of health facilities providing all the components of BEmOC" (with a score of 0%), whereas the best performance was with respect to "the proportion of health facilities offering laboratory testing of PCV" (with a score of 60%). With respect to the urban areas, the worst performance was in "the proportion of health

facilities providing FANC" (with a score of 0%), whereas the best performance was in "the proportion of health facilities offering laboratory testing of PCV" (with a score of 78.6%). The proportion of facilities where labour was being monitored with the use of partograph was 40% for rural areas and 64.3% for urban areas.

The performance gaps recorded for the urban primary health facilities ranged from a low 11% in the offering of urinalysis tests to 100% in the offering of FANC. For the rural health facilities, the performance gaps ranged from a moderately high 40% in the testing for PCV to a much worse 100% in the offering of all the components of

BEmOC. The performance gap in the urban-based health facilities was significantly lower than those in the rural areas in the following: the proportion of PHCs providing all the components of BEmOC (57.2% vs. 100.0%, p<0.001); the proportion of health facilities undertaking urinalysis (11.0% vs. 50.0%, p<0.023); and the proportion of ANC clients that relayed at least 70% of the danger signs they had been told in pregnancy without prompting (41.1% vs. 76.6%, p=0.007). On the other hand, the performance gap in rural facilities was significantly lower than that of urban facilities with respect to the proportion of health facilities providing FANC (90.0% vs. 100.0%, p =0.002).

Table 1: Desired, Actual and performance gaps of PHC facilities in Osun State in maternal health service delivery by rural-urban location

Performance variables	Rural health facilities (N= 10)			Urban health facilities (N = 14)			p- value
	Desired	Actual (%)	Performance Gap	Desired	Actual (%)	Performance Gap	
% of health facilities providing focused antenatal care services.	100%	1 (10.0)	90%	100%	0 (0)	100%	0.002
% of health facilities in which labour is monitored partographically.	80%	4 (40.0)	50%	80%	9 (64.3)	20%	0.066
% of health facilities providing all the components of basic emergency obstetric care	50%	0 (0.0)	100%	50%	3 (21.4)	57.2%	< 0.001
% of health facilities offering basic laboratory testing like:-							

☐ **PCV**

☐ **Urinalysis**

	100%	**60 (60.0)**	**40%**	**100%**	**11 (78.6)**	**21%**	**0.263**
	80%	**4 (40.0)**	**50%**	**80%**	**10 (71.4)**	**11%**	**0.023**
% of health facilities that have satisfactory status in terms of infrastructure, and equipment.	80%	3 (30.0)	63%	80%	6 (42.9)	46%	0.208
% of health facilities that have satisfactory status in terms of essential drugs and consumables.	100%	1 (10.0)	90%	100%	2 (14.3)	86%	0.440
% of ANC clients with satisfactory knowledge of warning/danger signs in pregnancy	70%	9(16.4)	76.6%	70%	41(41.2)	41.1%	0.005

Desired performance, actual performance and performance gaps for health workers

The desired standard specified for the knowledge level of health workers in various areas of MNH services was 60% for both rural and urban areas (Table 2). However, a desired level of 80% was specified for the proportion of health care providers trained in the Life Saving Skills (LSS).

In terms of actual performances, the worst performance for the rural-based health workers was the proportion of health care providers who scored satisfactory mark ($\geq$70%) in the knowledge of the use of partograph (6.8%) while the best performance was in the knowledge of ANC (45.8%). With respect to the urban-based health workers, the worst performance was with knowledge of normal labour and delivery care (9.5%), whereas the best performance was in knowledge of ANC (51.2%). Performance gap was lowest for knowledge of ANC in both rural and urban areas (23.7% and 14.7% respectively). The proportion of health workers trained in LSS was 23.1% for rural areas, and 32.1% for urban areas, and the performance gap in this respect was 70.4% for rural health workers and 59.9% for their urban counterparts (p=0.357). There was no significant difference in the performance gap recorded for rural and urban-based health workers in the knowledge of any of the following; ANC, normal labour and delivery care, use of partograph, newborn care, management of emergency obstetrics complications, and management of post-partum haemorrhage.

Table 2: Desired, Actual and performance gaps of healthcare providers in Osun State in maternal health service delivery by rural-urban location

Variables for Desired Performance	Rural health facilities (N= 10)			Urban health facilities (N = 14)			p- value
	Desired	Actual (%)	Performance Gap	Desired	Actual (%)	Performance Gap	
% of health care providers with satisfactory knowledge of antenatal care	60%	27 (45.8)	23.7%	60%	43(51.2)	14.7%	*0.706
% of health care providers with satisfactory knowledge of normal labour and delivery care	60%	7 (11.9)	80.2%	60%	8 (9.5)	84.2%	*0.695
% of health care providers with satisfactory knowledge of new born care	60%	6 (10.2)	67.2%	60%	14 (16.7)	72.2%	*0.225
% of health care providers with satisfactory knowledge of use of partograph	60%	4 (6.8)	88.7%	60%	9 (10.7)	82.2%	*0.381
% of health care providers with satisfactory knowledge of management of obstetric complications	60%	12 (20.3)	66.2%	60%	18 (21.4)	64.3%	*0.893
% of health care providers with satisfactory knowledge of management of postpartum haemorrhage	60%	22 (37.3)	37.8%	60%	29 (34.5)	42.5%	*0.853
% of health care providers trained in the Life Saving Skills	80%	14 (23.7)	70.4%	80%	27 (32.1)	59.9%	*0.358

Table 3: Identified root causes of performance gaps and recommendations for health facilities in maternal health service delivery

Problems	Causes	Recommendation	Responsible party
Health facilities not providing Focused Antenatal care (FAC)	Desire by patient to regularly meet with the healthcare provider at the clinic.	Implement and enforce FAC policy in health facility	Healthcare provider
	Routine ANC is the known tradition and preferred	Training and updating of health workers on FAC	State ministry of health
	Lack of cooperation by clients in enforcing FAC.	Educate patient on FAC.	Healthcare provider.
Health facilities not providing all components of BEOC	Shortage of skilled manpower/ trained staff.	Recruitment of qualified/skilled health personnel.	Local Government Authority (LGA)
Health facilities not offering basic lab testing: PCV and URINALYSIS.	Lack of laboratory health facilities	Establish more medical laboratories.	LGA.
	Insufficient manpower.	Recruitment /re-training of skilled health personnel	Local and State government.
	Lack of political will.	Advocacy for strong political will.	Healthcare provider
Facilities status not satisfactory in terms of availability of infrastructure and equipment	Lack of fund.	Provision of fund for health facilities.	LGA and state government.
	Lack of political will.	Advocacy for strong political will.	Healthcare provider
Health facilities status not satisfactory in terms of availability of essential	Insufficient fund.	Provision of fund for health facilities.	LGA and state government.

drugs and consumables.	Lack of political will.	Government's commitment	PHC Directors
	Insufficient drugs	Increase the quantity of drugs being brought on monthly basis.	The LGA management.

Table 4: Identified root causes of performance gaps and recommendations for health care providers in maternal health service delivery

Problems	Causes	Recommendation	Responsible party
Poor performance of health providers in knowledge of all interventions.	Lack of continuing education of health care providers.	Training and re-training through workshop and seminars.	Local Government Authority
Health care providers not trained in life saving skills.	Lack of fund. Lack of or irregular continuing health education Poor quality of training	Provision of fund Training and re-training. In- service training	LGA Local and State Government Authorities
	Poor knowledge about universal precautions. Poor supervision	Health education.	PHC Directors

Reasons for Gaps in Performance

The reasons for the performance gaps in the health facilities and health workers in respect of MNH service delivery are shown in Table 3 and Table 4 respectively. For the health facility, the reasons identified for performance gaps included lack of clients' interests in FANC, inadequate number of skilled health workers, and inadequate material resources. The major underlying factor for most of the problems, from the root cause analysis, was inadequate political will on the part of the government, particularly the Local Government Authorities. The lack of provision of continuing education for the health care providers by the LGA and lack of tools to carry out their functions effectively were identified as reasons for poor performances recorded among the health care providers. Poor supervision of health care providers by the Medical Officers of Health and other supervisors was also mentioned. The key stakeholders in health in the state proffered a number of recommendations to address the performance gaps identified in the study. Inadequate political will on the part of the government was also identified as a root cause of performance gaps on the part of health workers due to low interest in funding human capacity building activities and supplying relevant job aids and tools.

Discussion

It had been reported that across countries at similar levels of income and educational attainment, and within nations, there is wide variation in health outcomes, and some of these variations are due to differences in health system performance[19]. As stated in the WHO framework for assessing performance of health systems, decision-makers at all levels need to quantify the variation in health system performance, identify factors that influence it and ultimately articulate policies that will achieve better results[19]. The PNA used in this study provides a suitable approach in this regard: it is a framework for conducting a criteria based audit of health systems, and underpins standards-based management and recognition approach or a performance improvement approach to improve the quality of service delivery and the entire health system[7]. In this study, the performance of MNH service delivery and health workforce were measured and gaps in performance determined with the aim of strengthening the entire health system in Osun State. Our result indicates that the expectation of the key stakeholders regarding the performance of the PHCs and health workers in MNH was somehow low in some areas, particularly the proportion of facilities expected to be providing all the components of BEmOC (which was just 50%) and the proportion of health

workers expected to have satisfactory knowledge of MNH (60%). Their expectation, rather than being aspirational, may have been shaped by background knowledge of the realities on ground in terms of the state of the health facilities.

On the other hand, in comparing the expected and the actual performance, the study found noteworthy gaps in all areas assessed irrespective of the high or low level of the expectation of the stakeholders. The provision of FANC recorded the highest level of performance gaps in urban areas, and ranked as the second highest in the rural areas as most health facilities still offered the routine antenatal care rather than FANC. Amosu, in a study carried out in South-west Nigeria in 2011[20], reported that 42% of the health care providers interviewed preferred to offer the routine antenatal care to focused antenatal care. Also, Aniebue et al[21] noted that the perception of pregnant women was a barrier to the introduction of focused antenatal care in south-eastern Nigeria as only 20.3% of them desired a change to FANC. The reasons given by these pregnant women were fear of inadequate learning during antenatal care as well as the suspicion that four visits were inadequate for familiarization with care providers, early detection of disease, and having social satisfaction from antenatal visits[21]. Thus, there is the need to health educate and socially mobilize pregnant women and their health care providers to improve the acceptability of focused antenatal care in Nigeria.

Monitoring labour using the partograph was reported in 64.3% in urban and 40.0% in rural health facilities which were below the desired standards. This situation could have negative implications for MNH outcomes. This finding is similar to that of an earlier study published from the same state which showed that only 56% of the maternal health workers in Ife Central LGA had ever used a partograph[22]. A study by Ogwang et al[23] in 2009 reported a higher level of partograph use with 69.9% of the deliveries recorded in eight facilities which were monitored using partograph. The poor knowledge of the health workers in Osun State regarding partograph as recorded in this study is likely to be contributory to the poor utilization of partograph. In this present study, only 21.4% in urban and none of the rural health

facilities offered all the components of the basic emergency obstetric care services. Fatusi and Ijadunola[24] had reported that only 1.2% of public sector health facilities in Nigeria met the criteria for BEmOC. Ijadunola et al in a study carried out in one LGA in Osun State in 2007[25] had also reported that none of the public sector health facilities met the criteria for offering BEmOC. Thus, compared to the results of previous studies[24,25], our finding indicates that availability of BEmOC facility remains a continued challenge for MNH services in Osun State. Nonetheless, the situation appears to have improved in the urban area. With the continued poor availability of BEmOC in Osun State, maternal mortality is likely to remain a significant challenge as 5%-15% of all pregnancies are expected to need emergency obstetric services[26].

Gaps in performance of health facilities seen in this study are also similar to the findings of Combary and Akpan[27] who reported inadequacy of equipment and supplies in all the four Nigerian states where PNA was carried out for reproductive health services in 2003. The facilities we studied also had poor performance in the availability of basic infrastructure which is similar to the findings of a previous PNA in Armenia where only 22% of facilities had running water and 16.4% had functional toilets[28]. The poor performance of the health facilities in our study in terms of availability of infrastructure and equipment necessary for MNH service delivery in both the urban and rural health facilities pose the risk of third level delays for pregnant women seeking to deliver in the public health facilities, with the potential for high maternal mortality and stillbirth rates.

There was poor performance of both the urban and rural based health care providers in terms of their knowledge of various MNH interventions of interest, with the exception of antenatal care. This implies that most of the health care providers who assist in deliveries in Osun State do not have sufficient knowledge about maternal and newborn health care. Thus, while theoretically, these health workers are deemed as being skilled birth attendants on the basis of their professional qualification, their capacity for addressing MNH challenges may be compromised. The disturbing

poor level of MNH knowledge of health care providers recorded in our study is similar to the findings by Harvey et al[29] among health care providers in Nicaragua. The poor level of knowledge of our health workers also has direct implications for the knowledge and behaviour of their clients. It is possible for example; that the poor knowledge found among clients with regards to warning or danger signs in pregnancy may be a reflection of inadequate information or education given to them at ANC due to the poor knowledge of the health workers themselves. The low proportion of health care workers who had been trained in life saving skill may be a critical factor in the inadequate knowledge and performance of the health care providers.

In general, the urban-based health facilities performed better with lower gaps in performance compared to the rural health facilities in this study. This is likely to be as a result of relative neglect of rural health facilities by the government and raises the question of equity, which is an important overall goal of the health system. Overall, our study has implications for improving MNH outcome in Nigeria by focusing on the performance gaps that need to be addressed in the context of both the health facilities and the health workers. The reasons identified for the performance gaps by health workers particularly deserve close attention by policy makers and other key stakeholders in the health sector as they point to the directions where interventions need to be directed. Taken as a whole, our findings indicate that significant health strengthening efforts are needed in Osun State to improve MNH outcomes as there are challenges in virtually all the six system building blocks identified by WHO for improved health performance; service delivery, health workforce, information, medical product, vaccine and technologies; financing; leadership and governance[30].

Conclusion

This study showed significant performance gaps in MNH service delivery at the Primary Health Care level in Osun State with regards to both the health facilities and health workers. The situation in the rural health facilities is significantly worse than that of the urban facilities, which raises a question

of equity. Root cause analysis suggests that most of the performance gaps are traceable to poor political will on the part of policy makers and other key stakeholders in the health sector. This suggests the need to strengthen the governance and leadership component of the health systems building blocks as the place to start with in strengthening the health system. This may result in positive changes in other health system building blocks and thereby positively impact on the performance of the health facilities and their health care providers. There is the need to conduct PNA across other levels of health service delivery and in other states to provide a comprehensive picture of the MNH situation in Nigeria. This will help to highlight the progress being made as well as the challenges confronting the implementation of the IMNCH Strategy in Nigeria. It will also help to identify the critical interventions needed.

Contribution of Authors

Oluwaseun Taiwo Esan designed the study, the concept of the study, actively coordinated the acquisition of data, solely analyzed the data, and drafted the initial version of the manuscript.

Adesegun Olayiwola Fatusi conceived the study and was also involved in the design of the study, supervised the entire conduct of the study, and critically edited the initial and subsequent versions of the manuscript to produce the final version.

Both authors approved the final version of the manuscript.

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