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ABSTRACT

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EXTENT OF PROVISION AND UTILIZATION OF ANTENATAL, DELIVERY AND POSTNATAL CARE SERVICES AT THE FIRST TIER OF HEALTH CARE IN A NORTH CENTRAL STATE OF NIGERIA

Introduction: Maternal health is one of the components of primary health care services aimed at providing quality care to the mother and baby in the peripartum period through the prevention, detection and management of any potential complication of pregnancy and childbirth. The elements of Maternal Health services are antenatal care, delivery care and postnatal care services. With the high maternal mortality ratio of Nigeria standing at 814 per 100,000 live births, it became imperative to examine maternal health services provision and utilization at the Primary health care level in Benue state, Nigeria.

Materials and Methods: Descriptive survey research design was adopted for this study. Multistage random sampling technique was used to select 360 women of childbearing age (15-49 years) and 72 health workers from 2 local government areas each of the 3 geographical zones of the state. Pretested and validated Questionnaire titled MHSPUBS was used for data collection. Respondents' responses were graded on Likert 4 point scale, with Alpha mean score fixed at 2.50. Chi-square was used to test hypotheses, with null hypothesis rejected at $p < 0.05$.

Results: Findings indicate that there is a high extent of provision of antenatal care services ($\bar{x} = 2.51 \pm 0.86$) and postnatal care services ($\bar{x} = 2.62 \pm 0.92$). On the other hand, extent of delivery care services was low at $\bar{x} = 2.21 \pm 0.96$. Utilization of maternal health services at the primary health care level in Benue state was high extent ($\bar{x} = 2.61 \pm 0.93$). There were significant differences in the provision and utilization of the components of maternal health services in the 3 geographical zones.

Conclusions: The provision and utilization of maternal health services (especially delivery care) at the primary health care level in Benue state fell short of the recommended standard by WHO which calls for quick intervention from the necessary stakeholders.

Key words: maternal health, maternal mortality ratio, infant mortality, geographical zones.

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INTRODUCTION

Maternal health, an important component of global health, is a state of complete physical, mental and social well-being in all matters relating to the reproductive system and all the processes of childbearing [1]. It is the aspect of medical services that provide essential health services relating to the wellbeing of the women entering into motherhood to about 42 days after they give birth and the accompanying neonate. In other words, maternal health services (MHS) refer to that health care services provided to the women of childbearing age in order to preserve their lives and to ensure the wellbeing of their babies [2]. Maternal health is an international public health importance with much attention focused on reducing maternal mortality and morbidity; targeting a maternal mortality ratio (MMR) of less than 70 per 100,000 live births by 2030. Nigeria and India alone accounts for 34% of global maternal deaths, with MMR of Nigeria standing at 814 per 100,000 live births. The lifetime risk of a Nigerian woman dying during pregnancy, childbirth, postpartum or post-abortion is 1 in 22 [3, 4]. Maternal mortality rate in Nigeria rose by 14% from was 917 deaths per 100,000 live births in 2017 to about 1047 deaths per 100,000 live births in 2020 [5]; an unacceptable trend that is potentially reversible through the provision and utilization of adequate MHS.

Maternal health is one of the components of primary health care (PHC) services aimed at providing quality care to the mother and baby in the prepartum/antenatal, intrapartum/delivery and postpartum/postnatal periods. The focus of MHS is the detection and prevention of any potential complication of pregnancy and childbirth. The elements of MHS are antenatal care (ANC), delivery care (DC) and postnatal care (PNC) services.

Antenatal care refers to the regular medical and nursing care recommended for women during pregnancy to ensure healthy outcomes for women and their newborn babies [6,7]. The components involve nutritional counselling and multivitamin supplements, regular visits to skilled personnel, blood and urine tests, provision of tetanus toxoid and antimalarial prophylaxis, health education on pregnancy and birth danger signs [8]. It is generally recommended that pregnant women initiate ANC within the first trimester of pregnancy and to receive at least eight antenatal visits

in total [1,6]. This way, at risk pregnant women are screened and monitored throughout pregnancy. The women are also educated about several matters related to pregnancy so that they might experience a healthier pregnancy and outcome [9]. However, most women, including those in Nigeria, are reluctant in seeking this care and if they do, they book late. Women who are unable to access the above services during the antenatal period are at risk of serious obstetric and medical complications for themselves and their babies.

Delivery care or intrapartum care, the second element of MHS, refers to the health care services provided to a woman while in labour [10]. This form of maternal health care emphasizes the need for the woman to deliver her baby under the care of skilled health personnel in clean environment, in keeping with safe and hygienic delivery practices and maintaining the highest standards of sterility of tools and instruments. Quality DC involves respectful care, clear and compelling communication between the women and health workers, the option of a companion during labour and childbirth, health facility birth attended by skilled personnel, appropriate pain relief strategies, mobility in labour where possible, and choice of birth position, the use of uterotonics and delayed cord clamping (after a minute), immediate kangaroo care and breastfeeding, delayed bathing of the newborn (24 hours), and the care of mother and newborn in a health facility for at least 24 hours after birth [10,11].

Post-natal care is the third component of MHS. According to the World Health Organization (WHO), it is the immediate PNC within 24 hours after birth and at least three additional postnatal visits within 42 days after birth for the mother and newborn, home visits in the first week after birth, exclusive breastfeeding, cord care, prophylactic antibiotics for the mother, and health education on maternal and newborn health danger signs [12]. Post-natal care is essential for the mother and the newborn baby, which ensures the return to normalcy of some physiological changes in pregnancy and delivery, as well as detection of other abnormalities that may have arisen. A proper PNC service is a key strategy to reduce maternal and neonatal mortality. This service affords the mother the opportunity of receiving on the one hand, education on healthy practices that are crucial to maternal and child health survival like advice on

clean delivery practice, then care of the umbilical cord, newborn care practices such as early and exclusive breastfeeding practices, thermal care, special care of low birth weight or preterm birth, immunization and use of family planning [13]; on the other hand, mothers could be treated for health conditions like postpartum haemorrhage, infection/genital tract sepsis and pre-eclampsia/eclampsia that may be observed within the postnatal period, while babies who have jaundice, thrush or even sepsis can also be treated [14].

The provision and utilization of these three components of MHS holds the key to reducing maternal and newborn mortality and morbidity. Provision of MHS refers to the timely and appropriate healthcare provided to mothers before, during, and after childbirth, with a focus on improving overall well-being and ensuring informed choices and evidence-based guidelines are followed, or the way variables such as money, staff, equipment and drugs are combined to allow the delivery of effective maternal health interventions [1, 12]. Utilization of MHS, on the other hand, is the uptake of recommended number of ANC visits, delivery of a child by skilled health personnel, and such appropriate PNC services [13, 15, 16] in order to bring maternal mortality and pregnancy-related morbidities to the barest minimum. Governments all over the world, including that of Nigeria, have been making concerted efforts in providing qualitative MHS targeted at reducing the number of maternal mortality and morbidity through the provision of universal access to maternal healthcare evidenced by expansion of medical education, improvement of primary health care systems, provision of primary health care (PHC) facilities in many rural areas.

In Nigeria, the uptake of facility delivery is still poor, with many women failing to utilize health care facility during delivery and preferring home delivery, assisted by unskilled birth attendants; a behaviour attributed to factors such as lack of transportation of women in labour to PHC, long distance to the nearest health facility, preference for untrained traditional/religious birth attendants and attitude of healthcare providers [13,17,18,19]. Nonetheless, the consequence of under or non-utilization of MHS by mothers during the antenatal, intranatal and postnatal periods may be evidenced by high maternal and newborn morbidity and mortality. Hence, woman's extent of delivery care utilization plays a significant contribution to the level of maternal health. This study was therefore, designed to investigate the extent of provision and utilization of MHS at the level of PHC in Benue state, Nigeria. It is hoped that the findings of this study will provide stakeholders with baseline data/knowledge tool about the subject matter for the

purpose of better planning and appropriate intervention in upscaling maternal health in Benue state.

MATERIALS AND METHODS

Descriptive survey design was adopted for this study, which was conducted in Benue State, located in the North Central part of Nigeria. The state lies between Latitudes 6.5° and 8.5° North and Longitudes 7.47° and 10° East (Benue State Government, 2016) and shares boundaries with Nasarawa to the north, Taraba to the east, Kogi and Enugu states to the west and Ebonyi and Cross River to the south. It also shares an international boundary with the Republic of Cameroun in the south-east.

The study population comprised of comprised of 563,005 women of childbearing age (15-49 years) attending antenatal and postnatal clinics and 3,024 registered health care personnel providing MHS at the selected health care facilities in the sampled local government areas in Benue State. Using Yamane's formular [20], a sample population of 432 (comprising of 360 women of childbearing age attending antenatal and postnatal clinics and 72 trained health personnel of MHSs) was obtained through multistage sampling design in which Benue state was stratified into three senatorial zones A, B and C. From each of these zones, two Local Government Areas comprising of Katsina-Ala, Vandeikya (Zone A); Gboko, Makurdi (Zone B); and Ogbadibo, Otukpo (Zone C). were selected randomly. From each of these LGAs, two PHC centers were purposively selected. Ten women of childbearing age and 2 registered skilled health care providers were subsequently selected by random sampling from each of the PHC centers. Two instruments were used for data collection. The first was a structured questionnaire developed by the authors titled "Maternal Health Services Provision and Utilization in Benue State" (MHSPUBS) which comprised of a section on personal biodata of the respondents, while the other section contain statements on extent of provision and utilization of ANC services, DC services and PNC services in the PHC centers study. The responses of the respondents to these statements were weighed on Likert four-point scale format of 4-Very High Extent (VHE), 3-High Extent (HE), 2-Low Extent (LE) and 1-Very Low Extent (VLE) respectively. An alpha mean score of 2.50 was set as a significant level (level of decision); scores below indicating low or very low extent (rejected) while the score above indicates high or very high extent (accepted).

Statistical Analysis

All the 432 questionnaires were returned for analysis (100% return rate). The complete copies of the questionnaires were collated, coded and entered the Microsoft Excel spread sheet. The data analysis was

done using SPSS version 2021. Frequency distribution and simple percentages was used to describe the socio-demographic attributes of the respondents. Mean \pm standard deviation was employed to answer the research questions. Chi-square test was used to test the hypotheses at 0.05 level of significance.

Ethical Considerations

Institutional ethical certificate number CREC/THS/003 was sought and obtained from the College of Health Sciences, Benue state, Nigeria.

RESULTS

Sociodemographic Attributes of Respondents

The sociodemographic attributes of the respondents are given in Table 1. Majority of respondents (236 or 54.72%) were within the age range of 31-40 years while those above 50 years were least (54 or 12.5%). 191 or

44.3% of the respondents were married, with the remaining 241 (55.7%) having a marital status ranging from single to divorced. The women of Christian faith were in the majority (339 or 78.4%) and 172 or 39.7% attained secondary level education as against 28 (6.5%) that attained degree level education. All the respondents, but 50 (11.5%) had a form of vocational training (with the predominant number of them (187 or 43.3%) been hairstylist). This was reflected in the high self-employment status (181 or 41.8%) of the respondent mothers. The average monthly income of majority of these women (173 or 40%) stood at N16,000-N20,000, with most of them (302 or 70%) residing in the rural area. 214 (53%) of the respondents had a parity of 1-3 times, resulting in the majority of the women (165 or 41.2%) having maximum of 2 children.

Table 1: Sociodemographic Attributes of Respondents

Variables	Frequency	Percentage (%)
Age		
18-30	80	18.5
31-40	236	54.7
41-50	62	14.3
> 50	54	12.5
<i>Total</i>	432	100.0
Religion		
Christianity	339	78.4
Islam	36	8.3
Traditional religion	41	9.5
No religious affiliation	16	3.8
<i>Total</i>	432	100.0
Marital Status		
Married	191	44.3
Single	72	16.5
Divorced	35	8.0
Widowed	85	19.7
Cohabiting	14	3.3
Separated	35	8.2
<i>Total</i>	432	100.0
Educational attainment		
No formal education	26	6.0
Primary	127	29.5
Secondary	172	39.7
NCE/OND	79	18.3
Degree	28	6.5
<i>Total</i>	432	100.0
Technical/Vocational training received		
Hair Styling	187	43.3
Fashion Designing	55	12.7
Makeup Artistry	40	9.3
Event Planning	64	14.9
Arts and Crafts	23	5.3
Others	13	3.0
None	50	11.5
<i>Total</i>	432	100.0

Variables	Frequency	Percentage (%)
Occupation		
Self-employed	181	41.8
Civil servant	93	21.5
Full housewife	42	9.8
Others	116	26.9
<i>Total</i>	432	100.0
Estimated monthly income (naira)		
< 10,000	77	17.8
11,000-15,000	81	18.8
16,000 - 20,000	173	40.0
>20,000 and above	101	23.4
<i>Total</i>	432	100.0
Location		
Rural	302	70.0
Urban	130	30.0
<i>Total</i>	432	100.0
Parity		
1-3 times	214	53.5
3-6 times	165	41.2
> 6 times	21	5.3
<i>Total</i>	432	100.0
No. of children		
1 -2	191	44.2
3 -4	135	31.3
> 4 times	106	24.5
<i>Total</i>	432	100.0

Thus, the sample population was characterized by rural women within their active reproductive age, highly religious and possessing moderate level of education, some degree of economic power (but low-income earner) and well controlled parity.

Extent of Maternal Health Service Provision in PHC Centers in Benue State

Table 2 shows the mean aggregate scores of the ANC, DC and PNC services provision in Benue State, Nigeria. Against the background of the Likert scale significant Alpha mean score of 2.50, there was high extent of provision of ANC and PNC services while DC services had a low extent of provision in the PHC in Benue state. This implies that antenatal and postnatal health care services offered to clients/mothers at the

health centers exceed the minimum required standard while DC services offered at the centers fall below the minimum standard of delivery care.

The table also shows that the extent of utilization of MHS provided at the PHCs was of high extent, indicating a significant level of awareness on the part of the mothers of the importance of, the need for, and uptake of these services provided at the health centers for their wellbeing as well as that of baby. It was observed in this study, and supported by other studies, that where ANC services such as qualitative counselling, availability of basic equipment and consumables in the facility as well as friendly and supportive attitude of the health personnel are available, the mothers are keen on utilizing MHS to the full.

Table 2: Extent of Provision and Utilization MHS at Primary Health care centers in Benue State

Maternal Health Services	Aggregate Mean \pm SD	Remark	Maternal Health Services
Antenatal care services provision	2.51 \pm 0.86	High extent	Antenatal care services provision
Delivery care services provision	2.21 \pm 0.92	Low extent	Delivery care services provision
Postnatal care services provision	2.62 \pm 0.96	High extent	Postnatal care services provision
Maternal health service utilization	2.63 \pm 0.93	High extent	Maternal health service utilization

Note: Alpha mean score = 2.50; High extent = > 2.50, Low extent = < 2.50

Difference in Extent of MHS Provision and Utilization in the Three Geographical Zones of Benue State

In Table 3, the difference in the extent of provision of MHS in the 3 geographical zones of Benue state. The provision of ANC services was higher (30.0%) Zone A, compared to 7.0% in Zone B and 1.8% in Zone C. On the other hand, provision of DC services was higher in

Zone B at 35% relative to 2.3% in Zone A and 6.8% in Zone C. Regarding provision of PNC services, Zones A, B and C had a proportion of 10.3%, 5.3% 1.8% respectively, again showing that Zone A exhibited a higher provision of MHS compared to remaining 2 zones. These differences observed among the 2 geographical zones of Benue state were significant ($p < 0.05$).

Table 3: Chi-square test showing the Difference in the Extent of Maternal Health Care Provision in the three Geographical Zones in Benue State

Zones	Extent of MHS Provision			χ^2 - value	Df	p-value
	Zone A	Zone B	Zone C			
ANC services provision	120 (30.0%)	28 (7.0%)	7 (1.8%)	87.346	4	0.30
DC services provision	9 (2.3%)	140 (35.0%)	27 (6.8%)			
PNC services provision	41 (10.3%)	21 (5.3%)	7 (1.8%)			

Note: Significance = $P < 0.05$; Critical Chi value = 9.488, Calculated value = 0.30. Null hypothesis is rejected

The extent of utilization of all components of MHS at the 3 geographical zones of Benue state is given in Table 4. The result showed that there was a high utilization of ANC services in Zone A (26.3%), followed by Zones B and C (3.8% and 6.5% respectively), while DC services showed that Zone B

had a higher utilization proportion of 35.3%, compared to Zone A (11.0%) and Zone C (9.0%). Similarly, Zone B had a high proportion of PNC services, followed by Zones C and B (5%, 1.8% and 1.5% respectively). There was significant difference in the utilization of MHS between the 3 geographical zones of Benue state.

Table 4: Chi-square test showing the Difference in the Extent of Maternal Health Care Utilization in the three Geographical Zones in Benue State

Zones	Extent of MHS Utilization			χ^2 -value	Df	p-value
	Zone A	Zone B	Zone C			
Antenatal Care utilization	105 (26.3%)	15 (3.8%)	26 (6.5%)	125.245	4	0.43
Delivery Care utilization	44 (11.0%)	141 (35.3%)	36 (9.0%)			
Postnatal Care utilization	5 (1.5%)	20 (5.0%)	7 (1.8%)			

Note: Significance = $P < 0.05$; Critical Chi value = 9.488, Calculated value = 0.43. Null hypothesis is rejected

DISCUSSION

The findings of this study have revealed that there was high extent of ANC and PNC services provision at the PHCs in Benue State, Nigeria. The place of qualitative provision of ANC and PNC services to pregnant mothers cannot be overemphasized as it ensures the survival of the mother and newborn and encourages health-seeking behaviours on the side of the mothers during pregnancy. All the components of ANC and PNC services were provided at the PHC centers in Benue state as prescribed internationally [1, 3, 4, 6, 8, 12] to the satisfaction of the respondents (high extent) except for a) ANC services such as (i) clinical

investigative procedures related to pregnancy like routine laboratory investigations and ultrasonography, (ii) access to high quality maternal care and (iii) supply of drugs and consumables which were scored low extent; as well as b) PNC services like (i) lack of postnatal vaccination and (ii) lack of trained health providers. This finding is supported by studies conducted elsewhere in Nigeria, Africa and other part of the globe which showed significant gaps in the provision of ANC and PNC services arising from lack of adequate facility/equipments, lack of skilled health providers or misinformation and believe in myths by the care givers [21, 22, 23, 24]. Despite these commendable

services been provided at the PHCs, the findings of this study underscore some inadequacy of ANC and PNC services provision in Benue state that should be addressed in order to mitigate the high MMR associated with poor MHS provision [12].

There was a low extent of DC services provision in PHCs of Benue state, implying that mothers do not receive satisfactory delivery care as required [10, 25, 26, 27]. This observation is potentially associated with high risk of maternal and infant mortality and morbidity arising from intrapartum bleeding, prolonged/obstructed labour etc. An earlier study [28], which lent support to the finding of the present study, observed low quality of delivery care across public health facilities, particularly in PHC facilities with a low delivery volume. Similarly, Udenigwe et al. observed that barely half of the health facilities in Edo state of Nigeria provided low DC services in their maternity units [29]. Whereas the present study showed that poor state of the health facilities, lack of skilled birth services to lack of skilled birth health providers were the main reasons or the observed low DC services provision, the study conducted in Ethiopia attributed low DC service provision in Ethiopia and most developing nations to “out of stock” syndrome [26, 30]. Inequitable distribution of health resources is also a major cause of poor MHS provision [31].

It was further observed in this study that the mothers showed high extent of utilization of MHS despite observed deficiencies in the provision of some of the components of MHS. Utilization of MHS has been associated with improved maternal and neonatal outcomes. This study showed that the most utilized MHS are antenatal components of health education and immunization; an observation supported by Ishola et al. [32] who opined that there was a high frequency of attendance regarding antenatal service, immunization and other curative service like treatment of minor ailments. Similarly, it was observed in the Southeastern part of Nigeria that many women utilized MHS owing to the perceived benefits therefrom [33]. This observed high level of MHS utilization has no socio-economic barrier as this observed MHS utilization occurred among women of childbearing age in both low- and middle- income countries [34]. This position contrast with findings that show poor utilization of delivery care component of MHS in many less developed countries like Nigeria, Ethiopia etc [35, 36, 37] due largely to age long held believe that home delivery by traditional birth attendants (TBA) are more sympathetic to the plight of the mother in labour, use culturally acceptable ways of conducting delivery and offer more affordable delivery services despite the attendant risk arising from use of unskilled hands.

The high extent of utilization of MHS by respondents in this study may be attributed to the educational status and economic empowerment of the respondents. Majority of the respondents had secondary school education, were self-employed with one vocation or the other, which confers on them some degree of economic empowerment; these are important variables in the utilization of MHS.

Another observation drawn from this study showed that there are differences in the extent of provision and utilization of MHS across the 3 geopolitical zones of Benue state as seen in Tables 3 and 4. Other studies supporting the present observation have shown that there were disparities in utilization of ANC service components in parts of Nigeria [38], as well as MHS and its components both in Nigeria and other parts of the globe based on geographical and socioeconomic reasons [39, 40], considering the wide disparity in socio-economic and political indices across the geographical zones in the Benue state and Nigeria as a whole. Political consideration has a strong influence in the distribution and provision of health resources in many developing nations as Nigeria, as it a well-known fact that the attraction of projects and resources from the central government are dependent on the lobbying power of the representative from the area concerned. In communities where health facilities are provided, observed difference in uptake and utilization MHS and its components may be related to the unfriendly attitude and poor communication skills of the health providers at a particular PHC, or differences in management style of the health facilities in the different zones and districts with consequential effect on accessibility and affordability of the maternal care services.

CONCLUSION

From this study, there was high provision and utilization of antenatal and postnatal care services at the level of primary health care in the 3 geographical areas of Benue state, ranging from qualitative health education, satisfactory attention given by skilled medical personnel, immunization services, treatment of ailments of mothers and newborns etc. This was unlike delivery care provision and utilization, which was of low extent occasioned by dissatisfaction with attitude of delivery care providers and lack of necessary delivery equipment. In addition, the provision and utilization of Maternal Health Services generally differ significantly between the 3 geographical zones of the State because of inequitable health resource distribution inherent cultural beliefs and attitude of the mothers toward MHS in general and DC in particular. This call for concerted effort to be made by stakeholders for the sustenance of ANC which is likely to encourage the mothers to utilize other components of MHS more through provision of

accessible health facilities, provision of mother and newborn centered health services, availability and affordability of services of trained and skilled health

providers and intensification of health education aimed at dissuading the mothers from harmful cultural believes and practices regarding maternal and newborn health.

PROSPECTS FOR FUTURE RESEARCH

To investigate and understand the specific barriers that undermine the full provision and utilization of antenatal, delivery and postnatal care services at the first tier of health services chain in the communities and make appropriate recommendation(s) to the authorities in order to improve maternal and infant health in Benue state.

AUTHOR CONTRIBUTIONS

Magaret Ada Onuh – Conceptualization, Field survey and Data collection, Data Analysis, Research write up, Resources

Sunday Adakole Ogli – Conceptualization, Data collection, Research methodology, Research Supervision, Writing-Editing and Review

Simon Inalegwu Ayegba – Field Survey and data collection, data analysis

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CONFLICT OF INTEREST

The authors do hereby declare that there is no conflict of interest in this study.

ARTIFICIAL INTELLIGENCE DISCLOSURE

The authors do hereby declare that no form of artificial intelligence was used for this study.

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