Tropical Journal of Obstetrics & Gynaecology
ISSN-Print: 0189-5117
Online: 2543-148X
Official Publication of Society of Obstetrics & Gynaecology of Nigeria

■ Original Research Article

Maternity Waiting Homes (MWH): Bridging the Physical Access to Obstetric Care for Pregnant Women in Rural Areas of Sokoto State, Northwest Nigeria

Audu Alayande[1], Rabiatu Sageer[2], Abdulrahman Ahmad[3], Gloria Enueze[4], Yusuf Bello[5], Islamiyat Nuhu[6].

1.Assistant Representative Reproductive Health. United Nations Population Fund, United Nations House, Plot 617/618, Diplomatic Drive, Abuja, Nigeria. alayande@unfpa.org. +2348035368020; 2. Technical Specialist, EU-UN Spotlight Initiative. United Nations Population Fund, United Nations House, Plot 617/618, Diplomatic Drive, Abuja, Nigeria. sageer@unfpa.org; 3. Director Public Health, Ministry of Health Sokoto, No. 16, Shehu Kangiwa Secretariat, Sokoto, Nigeria; abdultsohoo@yahoo.co.uk 4. Gender/SRH Analyst. United Nations Population Fund, United Nations House, Plot 617/618, Diplomatic Drive, Abuja, Nigeria. enueze@unfpa.org; 5.M&E Analyst. United Nations Population Fund, United Nations House, Plot 617/618, Diplomatic Drive, Abuja, Nigeria. alayande@unfpa.org; 6. House officer. College of Health Sciences, Igbinedon University Okada, Benin City, Nigeria

ABSTRACT

Introduction: The MMR in Nigeria stands at 512/100,000. This is due to poor access to quality health services. Thus, Maternity Waiting Homes (MWHs) which are residential facilities where pregnant women can await their delivery and be transferred to a nearby medical facility shortly before delivery, or earlier should complications arise is key to reducing the physical access to obstetric facilities and skilled delivery services for rural dwellers. This study seeks to establish the impact of MWH on physical access to obstetric services and on related pregnancy outcomes. Methodology: This is a cross-sectional study of data generated between January to December, 2022 from all the 5 MWHs in Sokoto State. The data was entered onto Microsoft Excel sheet, cleaned, and generated descriptive statistics. Results: A total of 1,183 pregnant women received care across the five MWHs throughout the twelve months of the year 2022 with a monthly attendance range of 62 in March to 133 in August. Their age ranged from 14 to 56 years with the commonest age group being 25 to 29 years. They stayed in the waiting homes from between 1 to 14 days of which the commonest stay period was 2 days. The commonest services received by the pregnant women in the MWHs were ANC (1157, 98%), normal delivery (1065, 90%), family planning (514, 43%), and assisted delivery (3, 0.3%). Although one perinatal death was recorded, there was no maternal deaths in all the MWHs during the reporting period. Conclusion: MWH proved to be a tool to enhance ANC attendance, hospital delivery, and reduce maternal and perinatal death in Sokoto State.

Correspondence:
*Dr Audu Alayande.

Keywords: Maternity Waiting Home, Family planning, Sokoto State

INTRODUCTION

Trends in maternal deaths have reduced in the last decades but,[1] about 20 percent of global deaths still occur in Nigeria,[2] with a maternal mortality rate (MMR) of 512/100,000 live births.[3] This ranged from 16/100,000 in the Southwest to 1,800/100,000 in the Northeast of Nigeria.[4] The reported MMR in Sokoto State is about 2,151 deaths per 100,000 live births.[5] "These deaths are needless and unacceptable".[6] The proven solution is to address the three delays in accessing quality obstetric care by bringing health services closer to the beneficiaries or vis visa thus eliminating the physical distance (geographical gap) to care.[7]

Maternity waiting homes (MWH) are residential facilities, located close to a medical facility, where women can await their delivery,[8] as a strategy to access timely skilled delivery services.[9] Evidently, such services have been accessed by pregnant women aged 15 – 35 years, and over 50 percent of these users were aged 20-29 years.[10]

The existence of MWH has led to an increase in Ante Natal Care (ANC) attendance by 64.9 percent[10], contributed to the improvement in Skilled Birth Attendance (SBA) and health facility delivery in remote communities of Ethiopia[11], Zambia[12] and Eritrea.[13] The increase in SBA by 24.9% over a decade in Eritrea contributed to the reduction of MMR from 804 /100 000 live births to 480/100 000 live births between 2005 and 2017,[13] and reduced the risk of birth complications by more than three quarter (77%) in Ethiopia.[14]

MWH ensures timely access to Emergency Obstetric Care (EOC) services for pregnant women within the facility due to its proximity to the hospital when complications of delivery occur.[15] Thus, access to SBA and EOC in the MWH helps to reduce maternal and perinatal mortality, especially among women in rural communities.[16]

The utilization of Post Natal Care (PNC) services is more likely to happen, increase, and be completed by users of MWH.[9,12] Evidence indicated that more than half (52.1%) of MWH users attended PNC visits [10] and showed that PNC attendants tripled.[16]

MWHs have also improved access and utilization of Family (FP) services and information.[9] About 41.6 percent of users of MWH in Zambia accessed contraceptives[10] and postpartum FP practice increased by 8 percent in Ethiopia MWH users compared to non-users.[17]

MWHs prevent maternal and perinatal mortality[18] and reduce the probability of maternal deaths and stillbirths by 80 and 73 percent respectively. [8] In Ethiopia, it reduced maternal deaths and stillbirths by 91 and 83 percent respectively.[18] Only one maternal death was reported among MWH users in rural Zimbabwe over the course of twelve months.[16]

It was based on these premises that UNFPA under the Spotlight Initiative established five pilot MWHs in Sokoto State, Nigeria to demonstrate its effectiveness in increasing access to obstetric care and reducing maternal deaths among pregnant women in rural areas.

This study is aimed to review the outcome of the MWHs on maternal and perinatal deaths in 2022 calendar year across all the 5 MWHs in Sokoto state. It is therefore the objective of the study to measure the effect of MWHs on the utilization of obstetric services and their impact on pregnancy outcomes.

MATERIALS AND METHODS

The Study

This is a cross-sectional study that uses retrospective record generated from January - December 2022 at the five MWHs established in Sokoto. The sample size for the study is all the 1183 pregnant women captured in the registers of the MWHs in 2022. All the data generated from the five homes were included with both pregnant women and Gender-Based Violence survivors considered. A case report form was developed for data collection at the MWHs. The case report forms were used by two trained research assistants for data collection from the registers. The data generated was entered into a Microsoft Excel, cleaned, and analyzed to generate descriptive statistics.

Prior approval was secured from the research and ethics committee in the Sokoto State Ministry of Health.

The Maternity Waiting Home Establishment

United Nations Population Fund (UNFPA) in partnership with the European Union-United Nations Spotlight Initiative established five MWHs each in five wards located in five separate Local Government Areas (LGAs) of Sokoto State, Nigeria between October 2020 and June 2022. These are Kofar Rini in Sokoto North LGA, Bagarawa in Bodinga LGA, Bunkari in Binji LGA, Gidan Madi in Tangaza LGA, and Gagi gidan gero in Sokoto south LGA. The MWHs were located within the premises of existing Primary Health Care (PHC) facilities in the wards.

The Health Facilities selection was based on the volume of patients and their accessibility to remote villages in the state. Advocacy visits were conducted to policymakers, community members, and CSOs. Sensitization workshops were organized for the Traditional and Religious leaders, Women and Youth groups, including Ward Development Committee members, and Health workers. These were aimed to get the acceptance of these stakeholders and to ensure the sustenance of the MWHs after the end of the project.
Subsequently, the identified locations were renovated, furnished, provided with maternal life-saving drugs, and food items including cooking materials. Health workers were trained on the operations of the MWH giving emphasis to Interpersonal Communication and measures to address the three delays contributing to Maternal Death.

High-risk pregnant women detected during the ante-natal clinic visits and community outreaches were counseled in the presence of their husbands or close family members on the benefits of admission into the MWH at the eighth month of gestation. Those who consented were admitted into the MWHs where the following services were provided; antenatal care, deliveries, family planning, personal hygiene care including management of Gender Based Violence.

All the services, meals, drugs, and supplies were provided free by the Government with the support of partner agencies and community volunteers. All pregnant women who were due for delivery were taken to the labor ward within the host PHC facility while all complications of deliveries were referred to the nearest referral centers for timely emergency obstetric care.

RESULTS

A total of 1,183 pregnant women received care across the five MWHs throughout the twelve months of the year 2022 with a monthly attendance range of 62 in March to 133 in August. The 1,183 women is equivalent to 15.2 % of the total ANC attendance in the host health facilities in 2022. Their ages ranged from 14 to 56 years with the commonest age group being 25 to 29 years. They stayed in the waiting homes from between 1 to 14 days of which the commonest stay period was 2 days. The services received by the pregnant women in the MWHs were ANC (1157, 98%), normal delivery (1065, 90%), family planning (514, 43%), assisted delivery (3, 0.3%), GBV (5, 0.4%) and referrals (14, 1.2%). Although one perinatal death was recorded, there were no maternal deaths in all the MWHs during the reporting period (Table 1).

The highest ANC attendance by pregnant women were from metropolitan LGAs like Sokoto South (7760, 51%) and Sokoto North (3623, 23.8%). About 14.4% of the ANC attendants delivered in the health facilities of which 1.1% (23 deliveries) ended in still births. Some 27.7% of the ANC attendance later accessed family planning services. All the MWHs were occupied throughout 2022 with a proportionate monthly attendance ranged of 5.2% (62) in March to 11.2% (133) in August (Table 2).

The ages of the pregnant women in the MWHs ranged from 14 to 56 years of which the age group of 25 to 29 years is the commonest (52.3%)- Table 3. Table 4 shows the duration of stay in the maternity, waiting homes ranged from between 1 to 14 days of which the commonest stay period was 2 days. About 97.2% of all the beneficiaries stayed for a maximum of one week at the MWHs.

The major reproductive health services received by pregnant women in the MWHs were ANC (98%), normal delivery (90%) and family planning (43%). All the GBV survivors were referred to the

Table 1: Service utilization and pregnancy outcome in Facilities Hosting MWHs Sokoto State on DHIS2.0. January -December 2022

LGA*	Ward	Name of Health Facility Hosting MWHs†	Total ANC Attend-ance	Total Health Facility Delivery	Total Assisted Delivery	New FP‡ Acceptors	LGA Maternal Deaths	Total Still birth in Health Facility
S/North	K/R	PHC K/R	3623	343	ND§	2297	2	2
Bodinga	Bagarawa	PHC Bg	1035	296	ND§	132	5	6
Binji	Bunkari	PHC Bk	1983	221	ND§	150	2	1
Tangaza	GM	PHC GM	810	280	ND§	416	8	1
S/South	GGG	PHCGGG	7760	1044	ND§	1217	50	13
Total			15,211	2,184		4,212	67	23

S/North = Sokoto North; S/South = Sokoto South**;** K/R = Kofar Rini; Bg = Bagarawa; Bk = Bunkari; GM = Gidan Madi; Gagi Gidan Gero. *LGA Local Government Area. †MWH Maternity Waiting Homes. ‡FP Family Planning. §ND No Data

Table 2: Monthly Attendance at Sokoto MWH† January – December 2022

Months	**PHC‖ Kofar Rini**	**PHC Bagarawa**	**PHC Bunkari, Binji**	**PHC Gidan Madi, Tangaza**	**PHC Gagi Gidan Gero**	**Total**	**%**
January	39	12	4	30	7	92	7.8
February	39	28	6	34	7	114	9.6
March	23	5	2	24	8	62	5.2
April	25	17	11	20	11	84	7.1
May	39	13	13	22	9	96	8.1
June	13	18	12	24	10	77	6.5
July	25	25	30	28	11	111	9.4
August	20	16	54	22	22	133	11.2
September	24	28	29	3	25	109	9.2
October	20	22	38	5	28	113	9.6
November	16	21	37	6	20	101	8.5
December	12	10	39	9	13	91	7.7
	295	215	275	227	171	**1183**	100.0

†MWH Maternity Waiting Homes. ‖Primary Health Care

Table 3: Age Groups of Pregnant Women that Attended Sokoto MWH† in 2022

Age Group in Years	PHC Kofar Rini	PHC Bagarawa	PHC Bunkari, Binji	PHC Gidan Madi, Tangaza	PHC Gagi Gidan Gero	Total
0-14	2	0	0	0	0	2
15- 19	22	68	42	5	11	148
20 – 24	74	55	53	51	38	271
25 – 29	65	43	75	78	28	289
30 – 34	39	21	63	50	34	207
35 – 39	22	8	26	26	21	103
40 – 44	5	5	10	9	7	36
45 – 49	4	0	3	3	3	13
50 – 54	0	0	1	0	0	1
55 – 60	0	0	1	0	0	1
	233	200	274	222	142	**1071**

†MWH Maternity Waiting Homes.

Table 4: Duration of Stay at Sokoto MWH†, 2022

Number of Days Stayed	PHC Kofar Rini	PHC Bagarawa	PHC Bunkari, Binji	PHC Gidan Madi, Tangaza	Total	%
1	7	49	69	0	128	19.
2	19	42	51	37	156	24.
3	43	4	46	38	131	20.
4	46	0	4	5	55	8.5
5	21	0	0	43	64	9.9
6	20	0	0	0	20	3.1
7	3	0	0	71	74	11.
8	7	0	0	0	7	1.1
9	1	0	0	0	1	0.2
10	0	0	0	0	0	0.0
11	0	0	0	0	0	0.0
12	0	0	0	0	0	0.0
13	0	0	0	0	0	0.0
14	0	0	0	10	10	1.5
	167	95	170	204	**646**	100

†MWH Maternity Waiting Homes.

nearest sexual assault referral centers for services. Ninety-two percent of all the pregnant women that had ANC in the MWHs delivered in the health facility, 44.4 percent received family planning and 1.2 percent were referred to other facilities due to complications (Table 5). All the five GBV survivors that reported to the MWHs were sent to the nearest sexual assault referral center (Table 5: Services received and pregnancy outcome in Sokoto state MWH on the facility registers January - December 2022).

DISCUSSION

ANC is one of the maternal health services rendered to the pregnant women, in the MWH setting, one of the ways to get the beneficiaries to the center is through ANC.

Therefore, all the women who were admitted into the MWHs had outcome of either delivery or referral. The 2022 DHIS2.0 platform reported a total of 15,211 pregnant women attended ANC mostly from metropolitan LGAs like Sokoto South (51%) and Sokoto North (23.8%). Fourteen percent (14.4%) of the ANC attendants delivered in the health facilities while 27.7% later accessed family planning services. A total of 1.1% (23) still births were reported. Although the reported LGA level maternal deaths on the DHIS2.0 during the period ranged from 2 in Sokoto North to 50 in Sokoto South. There were no specific health facility level data on numbers of assisted delivery and maternal deaths on the DHIS2.0 during the reporting period.

Although the 2022 DHIS2.0 platform showed that Sokoto South LGA had the highest number of pregnant women of 7760 (51%) that accessed health services with the lowest attendance of 810 (5.3%) in Tangaza LGA. Conversely, the most patronized MWH in 2022 is PHC Rini in Sokoto North LGA which received 295 (24.9%) pregnant women while the least was in PHC Gero in Sokoto South LGA with 171 (14.5%) pregnant women in attendance. Both Sokoto south and north are within the metropolis while Tangaza LGA is in the rural area

Table 5: Services Received and Pregnancy Outcome in Sokoto State MWH† on The Facility Registers. January - December 2022

Health Facility	ANC	Normal Delivery	Assisted Delivery	Family Planning	GBV¶ cases	Others	Referred to Other Facilities	Maternal Deaths	Still Birth
PHC Kofar Rini	212	288	0	79	4	0	6	0	0
PHC Bagarawa	154	208	3	122	0	0	2	0	1
PHC Bunkari	375	239	0	85	1	0	2	0	0
PHC Gidan Madi	300	208	0	175	0	0	0	0	0
PHC Gagi Gidan Gero	116	122	0	53	0	7	4	0	0
Total	**1157**	**1065**	**3**	**514**	**5**	**7**	**14**	0	1
%	**97.8**	**90.0**	**0.3**	**43.4**	**0.4**	**0.6**	**1.2**	0	0.1

†MWH Maternity Waiting Homes. ¶GBV Gender Based Violence

which depicts client preference for urban facilities which are expected to have more resources to provide quality care. Likewise, although both Kofar Rini and Gagi PHCs were primary health facilities, they are located with metropolis with implication of having more manpower and facilities compared with rural PHC. This fact can make them for prone to having more referrals from other rural communities outside the catchment settlements. This further reiterate the strategic role of the MWH as a bridge in access to skilled delivery services between rural areas, with poor access to obstetric facilities, and the cities where the services are available.[9]

The majority (85.4%) of the pregnant women in the MWHs were within age range of 15 to 39 years (Table 3) of which the age group 25 to 29 years is the commonest. This finding aligns with previous report that beneficiaries of MWHs were pregnant women aged 15 – 35 years and above that reside far from a health facility.[10] Also, the percentage of those in age group 20-29 years being more than half correlates with the report from Zambia. [10] This happens to be the peak of the active reproductive life of women in this region. The above finding of young age group can be explained by the fact that Sokoto is a part of Nigeria where early marriage is still taking place despite all the interventions to stop it.

Over ninety seven percent of the beneficiaries stayed for a maximum of one week in the MWHs. It's likely that most of the pregnant women reported to the facilities at the early stage of labor or as determined by the expected date of delivery. Also, the duration of stay may be related to the opportunity cost of staying away from their homes and its associated responsibilities. Nevertheless, their long stay within the service delivery point ensures for the pregnant women timely access to emergency obstetric care when complications occur as evident in other studies.[9] As indicated by the DHIS, a fraction of the pregnant women who attended ANC actually delivers in the Health Facilities in Sokoto resulting in late presentation and high maternal with perinatal mortalities. The operation of the MWHs at the Health Facility level could have developed strategy to ensure those at the remote areas are gotten early into the MWH not waiting until when the labor starts. This scenario could explain further the increase duration for up to a week among the majority of the beneficiaries of the intervention across all the Health Facilities in the state.

These maternal health indices in the MWHs were much better than those reported for Sokoto State in the 2018 demographic and health survey as follows[3] ANC 24.3%, normal delivery 7.8%, assisted delivery by skilled birth attendant 9.2% and family planning prevalence of 2.1%. These are attributable to the removal of several obstacles to health care access and utilization most especially the geographical access. Such improvement was also found in a community - based study in Ethiopian which reported an ANC attendance rate of 64.9% in MWHs.[10] A further improvement in these results is expected in the coming years as MWHs model become more acceptable by the decision makers, gate keepers and the beneficiaries at various levels.

The health facility delivery rate (92%) by all the ANC attendees in the MWHs was higher than the 16 percent reported in the 2021-2022 DHIS2.0 platform for the host health facilities. This corroborates the studies from MWHs in Ethiopia[11], Zambia [12] and Eritrea [13] which reported their contribution to the improvement in skilled birth attendance and health facility delivery in remote communities. The increase in skilled birth attendance especially in Eritrea contributed to about 50 percent drop in MMR from 804 /100 000 live births to 480/100 000 live births between 2005 and 2017.[13] In addition MWHs also reduced the risk of birth complications by more than three quarter (77%) [14] in Ethiopia.

The modern contraceptive utilization rate among the five MWHs ANC attendees was 44.4 percent. This almost double the figure of 28 percent recorded by the five host facilities. The contraceptive utilization rate (44.4%) is almost the same with the value of 41.6% reported among users of MWH in Zambia.[10] Also, report from Ethiopia indicated an 8 percent increase in the practice of postpartum family planning by MWH users compared to non-users. [17] Therefore MWHs improves access and utilization of FP services and information.[9]

Routine health service utilization data are collected and stored on the District Health Information Software 2 (DHIS2.0). The 2022 DHIS2.0 platform in Table1 recorded a total of 67 maternal deaths spread across all the five LGAs. These ranged from 2 in Sokoto North and Binji LGAs to 50 in Sokoto South LGA. Conversely the data from January – December 2022 indicated zero maternal deaths from all the MWHs despite all the normal deliveries, assisted deliveries and referrals for complication. Therefore, MWHs aside from increasing skilled birth attendance at deliveries also enables prompt referral for complications which contributed to the zero maternal deaths reported. This aligns with the studies from MWHs in Ethiopian which reported improvement in skilled birth attendance by 24.9%[11], a reduction in the risk of birth complication by 77 percent[14] and a reduction of MMR from 804 /100 000 live births to 480/100 000 live births between 2005 and 2017.[11] In fact, MWH users in rural Zimbabwe recorded only one maternal death over the course of twelve months.[16] Easier access to skilled birth attendance and emergency obstetric care in the MWH helped to reduce maternal and perinatal mortality, especially amongst women in rural communities.[8,16] This may be due to the provision of additional facilities, equipment, and manpower in the host health facilities in 2022. Such a conducive operational environment is not the norm in most health facilities in the state.

In 2022 a total of 23 stillbirths were reported on the DHIS2.0 platform across all five health facilities

while the MWHs had only 1 stillbirth at the PHC Bagarawa due to severe congenital abnormality. Such a very low stillbirth rate in MWHs is corroborated by studies from Zimbabwe[16] and Ethiopian which reported a reduction in the probability of stillbirths by 73 percent and a reduction of stillbirth by 83 percent among the MWHs users.[8] The proximity of the MWHs to health facilities had increased access to skilled birth attendants and emergency obstetric care for timely and quality care thus resulting in reduced perinatal mortality, especially amongst pregnant women from low-resourced settings.[16]

CONCLUSION

Maternity waiting homes appear promising in bridging the 'geographical gap' in obstetric care for women in rural and hard-to-reach areas and have the potential to serve as a conduit for community outreach for antenatal and family planning uptake. Further studies should be conducted to establish factors that influence a woman's decision and subsequent ability to use an MWH, its cost-effectiveness, and cost-benefit.

Limitations of the study

1. This study is retrospective, where secondary data was used with some missing variables observed.
2. No sample size was calculated due to a limited number of all the beneficiaries of MWHs.
3. The study is also a cross-sectional study with no room for comparison with previous times

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