

Retraction

Retracted: A Survey of Home Delivery and Newborn Care Practices among Women in a Suburban Area of Western Nigeria

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The paper titled “A Survey of Home Delivery and Newborn Care Practices among Women in a Suburban Area of Western Nigeria” [1] has been retracted as it is found to contain a substantial amount of material from the published paper in BMC Pregnancy and Childbirth 2006 titled “Home delivery and newborn care practices among urban women in western Nepal: a questionnaire survey” by Chandrashekhar T. Sreeramreddy, Hari S. Joshi, Binu V. Sreekumaran, Sabitri Giri, and Neena Chuni.

References

- [1] L. M. Adelaja, “A survey of home delivery and newborn care practices among women in a Suburban area of Western Nigeria,” *ISRN Obstetrics and Gynecology*, vol. 2011, Article ID 983542, 9 pages, 2011.

Clinical Study

A Survey of Home Delivery and Newborn Care Practices among Women in a Suburban Area of Western Nigeria

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Context. Information about reasons for delivering at home and newborn care practices in suburban areas of Western Nigeria is lacking, and such information will be useful for policy makers. *Objectives.* To describe the home delivery and newborn care practices and to assess the reasons for delivering at home. *Study Design, Setting, and Subjects.* A cross-sectional survey was carried out in the immunization clinics of Sagamu local government, Western part of Nigeria during January and February 2008. Two trained health workers administered a semistructured questionnaire to the mothers who had delivered at home. *Main Outcome Measures.* Planned or unplanned home delivery, reasons for delivering at home, the details of events that took place at home from the onset of labour pains till delivery and after birth till initiation of breast-feeding, attendance at delivery, cleanliness and hygiene practices during delivery, thermal control, and infant feeding. *Results.* A total of 300 mothers were interviewed. Planned home deliveries were 200 (66.7%) and 100 (33.3%) were unplanned. Only 13.4% of deliveries had a skilled birth attendant present, and 47 (15.7%) mothers gave birth alone. Only 51 (16.2%) women had used a clean home delivery surface. Majority (98.2%) of the newborns were given a bath soon after birth. Initiation rates of breast-feeding were 65.3% within one hour and 95.7% within 24 hours. *Conclusion.* High-risk home delivery and newborn care practices are common in semiurban population also. Community-based interventions are required to improve the number of families coming to health facilities and engaging a skilled attendant and hygiene during delivery.

1. Background

Of the approximately four million global neonatal deaths that occur annually, 98% occur in developing countries, where most newborns die at home while they are cared for by mothers, relatives, and traditional birth attendants [1]. During the past two decades, infant mortality rate has declined very slowly. This is as a result of a very slowly declining neonatal mortality rate. There has been relatively little change in neonatal mortality despite proven cost-effective solutions to reduce neonatal mortality, such as promoting tetanus toxoid immunisation, skilled attendance during delivery, immediate and exclusive breastfeeding, and clean cord care [2, 3]. In Nigeria, approximately 67% of births occur at home [4]. In 2005, the infant mortality rate in

Nigeria was 64 per 1000 live births, and the neonatal mortality rate was 39 per 1000 per live births [5]. In rural areas of Nigeria, the proportion of institutional deliveries is as low as four percent [4, 6]. Even in urban areas like Lagos, a significant proportion of women (19%) still deliver at home [7]. This is in spite of a relatively easy access to institutional maternity services in urban areas. Previous studies about home deliveries in urban and periurban areas of Abeokuta have reported poor maternal education, multiparity, and low socioeconomic status as the predictors of home deliveries [6]. A study carried out in Sagamu reported “cost” and “convenience” as the reasons for delivering at home [8].

The World Health Organization (WHO) guidelines for essential newborn care include the following: hygiene during delivery, keeping the newborn warm, early initiation of

breastfeeding, care of the eyes, care during illness, immunization, and care of low-birth-weight newborns [9]. Therefore it is necessary for the mother and her family to understand these aspects of childbirth and newborn care and be prepared to react to the potential danger signs. A study from rural areas of Oyo State, Nigeria reported that a very large proportion (>90%) took place at home. The study also reported that only six percent of home deliveries were attended by skilled government health workers and newborn care practices were unhygienic and of high risk [10]. Such high-risk practices have also been reported from remote Osun State, Nigeria [4]. Newborn care practices may change over time and may be different in urban areas. Studies from low socioeconomic settlements of Karachi, Pakistan [11], Bangladesh [12] and Delhi, India [13] have reported that traditional newborn care practices were of high risk and emphasized the need for community-based interventions to promote proper newborn care practices in urban areas.

Implementation of an effective program for promotion of childbirth and newborn care practices requires understanding of the community and household traditional newborn care practices. Such information will enable the development of programs to promote culturally sensitive and acceptable change in practices. Information about the reasons for delivering at home is also necessary for health care planners to design appropriate maternity services. Information about reasons for delivering at home, home delivery, and newborn care practices in suburban areas of Nigeria is lacking. Therefore, this study was undertaken in a suburban population of Western Nigeria with the following objectives:

- (1) to describe the home delivery and newborn care practices,
- (2) to assess the reasons for delivering at home.

2. Methods

2.1. Study Setting. Nigeria has a population of about 135 million people, 70% of whom live in rural areas [5]. With an estimated per capital income of \$1000 per year, Nigeria is a “poor developing country” in Sub-Saharan region of Africa because of uneven distribution of wealth—few are extremely stinking rich while the majority are languishing in abject poverty. Life expectancy at birth of 47.5 years is low, and it is still lower than neighboring West African countries. Infant mortality rate is among the highest in the region. Due to high maternal mortality rate in women and high mortality from road traffic accident in men, life expectancy for women is slightly higher than that of men (49 versus 47). Gender disparities are also common in terms of literacy. The literacy rate of Nigerian women as a percentage of men is 77% [5]. Curative and preventive health care is organised primarily by the Ministry of Health through hospitals located at federal, state, and local government levels, and primary health centres, health posts, and subhealth posts located at the community level. Private hospitals and clinics exist mostly in urban areas. Missionary and nonprofit hospitals operate in a few areas [14]. Nigeria spends about five percent

of its gross domestic product on health of which only one fifth comes from the public sector, and the remainder is paid for by the individual households [5].

Ogun State is one of the 6 states in the western region of Nigeria. The state has a land area of 2017 square kilometers and a population of 380,527. Ogun State has 20 local government areas of which Sagamu, with a population of 156,312, is one. Sagamu local government is administratively divided into 18 wards. In each of these wards immunisation clinics are conducted once a month in the child health clinics of public and private health institutions. The child health clinics are managed by the national, state, and local governments, and private hospitals, each providing manpower, vaccines, medicines, and technical input, respectively. Since primary immunisation in Nigeria is completed at one year of age, the majority of the children attending these clinics were infants. A few children who missed Measles vaccine between 9 and 12 months are older than a year when they attend the immunisation clinic.

2.2. Study Design and Participants. The institutional ethics committee of Olabisi Onabanjo University Teaching Hospital, approved this study. A cross-sectional study was carried out in the immunisation clinics of Sagamu local government. We included the mothers of all the infants who were brought for immunisation during the months of June and July 2008. The framework used for the design and presentation of our study was based on a similar study carried out in rural area of Nepal [14]. A semistructured questionnaire was developed for the purpose of this study and was pretested among 25 mothers during the month of June 2008. After pretesting, the questionnaire was modified according to local traditions and cultural sensitivity. The questionnaire sought information about sociodemographic characteristics of the family, planned or unplanned home delivery, reasons for delivering at home, and the details of events that took place at home from the onset of labour pains till delivery and after birth till initiation of breastfeeding. The details included attendance at delivery, cleanliness and hygiene practices during delivery, thermal control, and infant feeding. The information about the reasons for delivering at home was sought by both open- and closed-ended questions. Those women who reported that they had decided to deliver in a hospital but could not reach the hospital after the onset of labour pains due to various reasons were categorized as unplanned home deliveries. Those women who reported that they had decided to deliver at home were categorized as planned home deliveries.

Two health workers were trained to administer the questionnaire during a one-day training conducted by the investigator at OOUTH. The health workers were stationed at the registration counter and enquired from the mothers about place of delivery. The mothers of the infants who reported that they delivered at home were invited to participate. Verbal consent was sought and the respondents were assured that the interviewers were not a part of the health service team and services would not be denied if they declined to participate in the interview. After obtaining verbal consent, the health worker carried out the interview

and recorded the necessary information on a semistructured questionnaire. The chief investigator and a staff nurse who trained the interviewers supervised all the interviews. The data were coded and analyzed using the SPSS 15.0 for Windows Evaluation Version package (Statistical Package for Social Sciences). Frequencies and percentages of different variables were calculated.

3. Results

Three hundred and seven out of 1420 infants were brought to the immunization clinics during the study period. Three hundred and seven were born at home. Seven infants were brought by a family member other than the mother or a relative, and they could not provide reliable information. Hence they were excluded from the analysis. Two hundred (66.7%) of these 300 home deliveries were planned whereas 100 (33.3%) were unplanned.

3.1. Sociodemographic Profile of the Respondents. The median age of the infants was 4 months (interquartile range: 4 months). One hundred and forty seven (49%) infants were males and 153 (51%) were females. The median age of the mothers was 26 years (interquartile range: 8 years). More than half of the mothers were Christians (171, 57%), followed by Muslims (99, 33%) and traditional religion worshippers (30, 10%). Forty-three (14.3%) respondents were illiterate, and the majority of the mothers (202, 67.3%) had education of high school and above. The mean monthly family income was 18,360 naira (approximately 122.4 USD).

3.2. Antenatal Care and Past Obstetric Performance of the Respondents. Out of the 300 mothers interviewed, 76 (25.3%) had not gone for antenatal visit and about 91 (30.3%) mothers had at least four antenatal visits as recommended by National Safe Motherhood Program of Nigeria. The majority of women received antenatal care from the publicly funded Sagamu local government health centers. Fifty (16.7%) mothers did not receive tetanus toxoid vaccine during their previous pregnancies; >48 hours and 210 (70%) received at least two doses of tetanus toxoid as recommended by National Safe Motherhood Program. Of the multiparous women, 181 (83.8%) had delivered at home at least once before. Only 100 (46.3%) mothers had at least one institutional delivery in the past. Nine mothers reported of having had a stillbirth (3.0%), 18 a neonatal death (6.0%), and eight a postnatal death (2.7%) after their previous home deliveries.

3.3. Birth Place and Attendance at Delivery. The majority (277, 92.3%) of the deliveries took place either in a separate room or inside the house, and the remaining 23 deliveries (7.7%) took place outside the house, either at the backyard or other places. One hundred (33.3%) deliveries were attended by neighbors, 70 (23.3%) were attended by traditional birth attendants and 47 (15.7%) were auxiliary nurse midwife or health assistant, and 47 (15.7%) were attended by auxiliary nurse midwife or health assistant, and 40 (13.3%) were attended by family members (Table 1).

TABLE 1: Place of delivery and attendance during delivery.

Place of delivery	Number of births (N = 300)	Percentage
In a room	181	60.3
Inside the house	96	32.0
Outside the house	12	4.0
Backyard of the house	8	2.7
Others	3	1.0
Attendant during delivery*		
Neighbor	100	33.3
No attendant	47	15.7
Mother	15	5.0
Mother-in-law	15	5.0
Other family members	10	3.3
Auxiliary nurse midwife	32	10.7
Health assistant	8	2.7
Traditional birth attendant	70	23.3
Others	3	1.0

* More than one attendant might have been present.

TABLE 2: Cleanliness and hygiene practices during delivery.

Instrument used for cutting umbilical cord	Number of births (N = 300)	Percentage
New or boiled blade	209	69.7
Sterilized scissors	70	23.3
Household knife	8	2.7
Old unboiled blade	4	1.3
Unknown	6	2.5
Dressing applied to umbilical stump		
Nothing	50	16.7
Methylated spirit	211	70.3
Oil	14	4.7
Antiseptic	4	1.3
Unknown	21	7.0
Cloth used for wrapping the baby		
Old washed cloth	208	69.3
Old unwashed cloth	23	7.7
New unwashed cloth	26	8.7
New washed cloth	41	13.7
Unknown	2	0.6

3.4. Cleanliness and Hygiene Practices during Delivery. One hundred and twenty (40%) mothers recalled that the birth attendants had washed their hands, and 152 (50.7%) recalled that they did not do so. Twenty eight (9.3%) mothers could not remember at all. Clean home delivery surfaces are being encouraged in Nigeria. Emphasis is laid on a clean sheet,

TABLE 3: Practices related to maintenance of the warm chain for the newborn.

Heating of the birthplace	Number of births (N = 300)	Percentage
None	53	17.7
Before birth	0	0.0
After birth	247	82.3
Throughout birth	0	0.0
Time to wrapping the baby		
≤5 minutes	43	14.3
≤10 minutes	150	50.0
≤20 minutes	287	95.7
≤30 minutes	297	99.0
≤60 minutes	300	100.0
Time to bathing		
≤5 minutes	43	15.3
≤10 minutes	200	70.9
≤30 minutes	270	95.8
≤60 minutes	277	98.2
≥60 minutes	300	100.0

a clean razor blade, a clean surface for cutting cord, soap, and a cord tie. Fifty one (17%) mothers responded that a clean surface was used, and 165 had not used clean surface during their last delivery. The umbilical cord was cut after the expulsion of placenta in 203 (67.7%) deliveries. The umbilical cord was cut with a new, boiled blade or sterile scissors in 279 (93.0) deliveries, and in 12 (4.0%) deliveries a sickle/household knife or an old unboiled blade was used. The stump of umbilical was left undressed in 50 (16.7%) deliveries. But oil was applied in 14 (4.7%) deliveries. In 211 (70.3%) deliveries, methylated spirit was used to dress the umbilical stump. Applications like antiseptics were also reported by the mothers. The newborn was often wrapped in an old washed cloth (208, 69.3%) (Table 2).

3.5. Maintenance of Warm Chain for the Newborn. Since more than 90% of the deliveries took place in a room or inside the house, information about heating of the birthplace was also asked. In 247 (82.3%) deliveries the birthplace was heated only after birth. There was no heating of birthplace before or throughout birth. The heating of birthplace was not statistically significant between planned and unplanned home deliveries. The time taken to wrap the baby was usually prolonged. Only 150 (50%) newborns were wrapped within 10 minutes, and 287 (95.7%) newborns were wrapped within 30 minutes after birth. By one hour all the newborns were wrapped. Two hundred and seventy seven (98.2%) out of 300 newborns were bathed after birth. Almost all of these newborns were bathed within six hours after birth. More than a third of them were bathed within ten minutes, 95.8% within half an hour, and 98.2% within one hour (Table 3). The massage of the newborn with oil was a common practice, and 184 (61.3%) newborns received an oil massage any time after birth.

TABLE 4: Type and timing of first feed.

Newborn's first feed	Number of newborns	Percentage
Breast milk/colostrum	290	96.7
Breast milk from other woman	1	0.3
Glucose water	5	1.7
Plain water	2	0.7
Formula feed	2	0.7
Time to breast-feed		
Immediately after birth	15	5.0
≤15 minutes	45	15.0
≤30 minutes	90	30.0
≤60 minutes	196	65.3
≤24 hours	287	95.7
≤48 hours	293	97.7
≥48 hours	300	100.0

3.6. Newborn Feeding. All the newborns were breast-fed. Plain water, sugar, or animal milk was sometimes given to the newborns (9/300, 3.0%) before the initiation of breast-feeding. Overall, 291 (97%) mothers had given colostrums or breast milk to their babies as the first feed. Only one (0.3%) mother had given breast milk from other lactating mother when there was delay in initiation of breastfeeding. Six (2.0%) out of 300 mothers had discarded colostrums before initiating breastfeeding. The rates of initiation of breastfeeding were 65.3% within one hour and 95.7% within 24 hours (Table 4).

3.7. Reasons for Delivering at Home. In our study, 200 (66.7%) out of 300 home deliveries were planned, and, in 153 (76.5%) of these planned home deliveries, the reasons cited by the mothers were "I prefer home delivery," "home delivery is easy and convenient," and "all my previous deliveries were at home." In our study, 100 (33.3%) home deliveries were unplanned. The common reasons cited for unplanned home deliveries were "precipitate labor" (57.0%), "lack of transportation" (21.0%), and "lack of escort during labor" (5.0%). "Worries about cost of care in the hospital" and "financial problems at home" (13.7%), "distance of the hospital" (2.7%), family members preference for home delivery (1.7%), and "before the expected date" (0.7%) were also mentioned as the reasons for delivering at home (Table 5).

4. Discussion

This study shows that home deliveries are not only common in rural areas but also in semi-urban areas where maternity services are relatively easily accessible. An earlier study carried out in Ogun State reported that 90.2% of deliveries took place outside health facility [6]. The proportion of home deliveries in the present study are similar to that reported from earlier studies in Sagamu and its surrounding areas. These studies reported that the proportion of home

TABLE 5: Reasons for choice of planned and unplanned home deliveries.

Reason given	Planned	Unplanned	Total (%)
Preference for home delivery	77	—	77 (25.7)
Home delivery is easy and convenient	66	—	66 (22.0)
All my previous deliveries were at home	10	—	10 (3.3)
Hospital is too far	5	3	8 (2.7)
Worries about cost in the hospital	24	7	31 (10.3)
Financial problems at home	7	3	10 (3.3)
Family members prefer home delivery	4	1	5 (1.7)
Fear of hospital	2	—	2 (0.7)
Health worker lives close to house	5	—	5 (1.7)
Precipitate labor*	—	57	57 (19)
Lack of transport during labor	—	21	21 (7.0)
Lack of escort during labor	—	5	5 (1.7)
Onset of labor before the expected date	—	2	2 (0.7)
Other reasons	—	1	1 (0.3)
Total	200	100	300

* Precipitate labor: labor results in rapid expulsion of fetus.

deliveries increased the farther one gets from urban areas [4, 6].

Interestingly, some findings of the present study are similar to the previous study from rural Nigeria [4]. It was surprising that skilled attendance health workers or auxiliary nurse midwife, use of clean surfaces, and hygiene practices during delivery were low in semi-urban areas also. Practices like cutting the cord with new or boiled blade, application of methylated to the umbilical stump, bathing the baby soon after birth, and delay in wrapping the baby after birth were common in semi-urban areas. Early initiation of breastfeeding and use of prelacteal feeds are also practices prevalent in semi-urban areas.

4.1. Attendance during Delivery. Most deliveries took place either in a separate room or some place inside the house which is similar to the report from a Nepal study [14]. Studies from areas had reported prominent role played by the mothers and mother-in-law during delivery and care of new born [4, 7]. But in our study, mothers and mother-in-law were present in only a small proportion (10%) of home deliveries. One-third of the deliveries were attended by neighbors. Such a difference may be due to demographic structure of the semi-urban population in which many families may be economic migrants and nuclear families. This is similar to the findings reported by a study in Nepal [14]. Earlier studies have confirmed the extremely low presence of skilled government health staff or auxiliary nurse midwife during delivery in rural areas of Nigeria [4, 6]. Registered nurse midwives and community extension health workers who are identified as key birth attendants by the policy makers were not present at delivery during our study either. This study highlights that skilled attendance at home deliveries is very low in semi-urban areas also. Previous studies found that about 15% of the mothers had delivered alone at home [4, 14]. This may emphasize the low status of women in the society and the gender inequalities in

health. For many of these semi-urban families, pregnancy and delivery may not be taken seriously. It will take huge efforts to change the tradition of home deliveries and lack of skilled attendance during delivery in home setting. There is an ongoing debate about reinforcing home-based delivery strategies by training the traditional birth attendants who are closer and more acceptable to women who prefer home delivery in developing countries [12]. Such a study might cost huge amount of money. Therefore, there is a need for research comparing the feasibility, cost-effectiveness, cost-efficiency, acceptability, and equity implications of skilled home-based and facility-based obstetric care [12].

4.2. Hygiene and Thermal Control. Studies from Nigeria and India had reported that infection accounts for up to 40% of neonatal deaths [15, 16]. Hence, WHO emphasizes on five cleans during the delivery. The “five cleans” are a clean place, a clean surface, clean hands, clean cord and dressing, and a clean tie. In this study, forty percent of the attendants had washed their hands before delivery, a proportion which is less satisfactory. Clean surfaces were used only in 45% of the deliveries, which is higher than that reported in a study in rural Nepal [14]. Despite perceived usefulness and awareness, the use of clean surface was low. The reason for this was not clear. In this study, despite the low usage of clean surface, new razor blade/sterilized scissors were used to cut the cord in a majority (93%) of deliveries. This practice is encouraging as compared to practice in rural areas where sickle or kitchen knife was used in nearly one-third of deliveries and old/unbolted blade in 23% [17]. This practice was complemented by leaving umbilical stump undressed which is similar to the practice in rural areas [18]. The practice of applying substances like oil or animal dung is a more important risk factor than the means of cutting the cord as reported in earlier studies [18–20]. The common substances applied to the cord were “spiritual” oil and disinfectants. This practice was similar to the reports from earlier studies

from urban settlements of Karachi Pakistan, semi-urban Nigeria, and rural Nepal [11, 17, 18]. The WHO has focused on thermal control of newborn care [21]. Previous studies from Nigeria, Nepal, India, and Bangladesh have reported on health beliefs about pregnancy and childbirth. The common view is that pregnancy is a “hot” state while postpartum is a “cold” one [15, 22–24]. Neonatal hypothermia has been described earlier in Nigeria and Nepal [7, 25]. In this study, it was found that in 83.2% of the instances birthplace was heated only after the delivery. Heating of the birthplace before birth is not practiced in Nigeria because it is a tropical country where warm weather is experienced in most of the months of the year. However, it is a fairly common practice to ensure warmth is provided for the baby and hence the reason for having the birthplace heated in over four-fifth of the deliveries. The practice of waiting for the placenta to deliver before cutting the umbilical cord was observed in 67.7% of the deliveries, a rate similar to that reported in a similar study in Nepal [14]. This practice delays immediate wrapping of the baby. This was further compounded by bathing the baby soon after birth which seems to be a universal practice. In this study, 98.2% of the newborns were given a bath within one hour after delivery. Similar practices were also reported in urban Nepal [11, 14, 17].

4.3. Infant Feeding. In this study, the only traditional newborn care practice which seems healthy and encouraging is breastfeeding. As reported in earlier studies, rates of initiation and exclusive breastfeeding are high [7, 17, 26–28]. However, practices like prelacteal feeding and discarding colostrum which still persist in urban areas are a cause for concern. Qualitative studies suggest that the traditional practice is to give a taste of non-breast-milk food and usually only once [7, 22]. In our study, 3% of the newborns received a prelacteal feed though low but significant, this is lower than that reported in Nepal (17,26). In this study, only two percent of the mothers discarded colostrum which is similar to 3% in rural area in Nigeria but lower than that reported in rural areas in Nepal [10, 17]. Use of formula feeds was minimal and feeding with bottles and nipple almost nonexistent in Nigeria. A recent study from urban area in Nigeria reported that grand mothers held colostrum in high regard, did not use prelacteal feeds, and also supported early initiation of breastfeeding [10]. These findings have positive implications on child nutrition.

4.4. Reasons for Delivering at Home. A study carried out in Sagamu and its surrounding areas has reported socioeconomic status and multiparity as strong predictors of the place of delivery. In this study, the reasons for planned home deliveries were related to “preference” for home delivery, perception of home deliveries as “easy” and “convenient,” and experience of previous home deliveries. For unplanned home deliveries, the reasons cited were “precipitate labor,” “lack of transport,” and “lack of escort” during labor. Similar findings were reported from earlier studies in Sagamu and urban Nepal [8, 14]. In semi-urban areas, there is a mix of traditional families and recent economic immigrant families. In rural areas, women have a strong cultural preference

for home deliveries because institutional deliveries are inaccessible. This could be the reason for women indicating “preference” as the reason for delivering at home. The decision making process in the family about the place of delivery is also an important aspect of the reasons for home deliveries. The details of this aspect could not be explored in this study. Therefore, a plan to undertake an in-depth qualitative study to explore the reasons for delivering at home is on the pipeline. The findings of this study suggest that easy access to maternity services may not be enough to ensure the use of such services. Lack of utilization may be influenced by income, education, and cultural beliefs. In Sagamu, institutional delivery facilities are available at the University Teaching Hospital, maternity centers, and many private hospitals. Since the services are “cash and carry,” financial constraints may be the main reason for not using these facilities. A large section of this semi-urban population may be recent economic migrants from rural areas. This may be the reason for semi-urban-rural similarities observed in home delivery and newborn care practices in this study. In this study, two-thirds (33.3%) of the home deliveries were unplanned. These women would have sought institutional delivery if an ambulance service or local facility for delivery was made available. In this respect it will be worth investing on satellite maternity services run by midwives. Mothers might prefer to utilize such local and user-friendly services than a tertiary care hospital. In addition, mothers need to have information about how to access a trained community health worker or a midwife during delivery. In this study, a quarter of the mothers had not gone for antenatal checkups and only 16.3% of them received two doses of tetanus toxoid during their previous pregnancy. There may be cultural constraints for use of maternity services, for example, decision of the husband or mother-in-law which often overrides that of the mother. The reasons for low uptake of maternity services in the urban/semi-urban population may be due to socioeconomic and cultural factors [29–31]. Therefore, interventions should address not only the medical problems but also need to deal with wider social problems. Intervention should also be targeted at improving the status of women in the society including increasing female literacy and economic empowerment to tackle the maternal health problems [32]. Recent studies carried out in Ilesa, Nigeria and Kathmandu, and Nepal reported that attitudes of pregnant women, husbands, and service providers were favorable towards encouraging greater male participation in maternal health services [29, 33]. Further qualitative studies are needed about quality of available maternal services and cultural beliefs about pregnancy and childbirth.

The present study may have both selection and information biases. Since this survey was carried out in immunization clinics, selection bias cannot be ruled out. Those mothers who delivered at home and did not attend immunization clinics could have been missed. However, the sample of mothers interviewed may be representative of the semi-urban population since the immunization coverage is more than 90% in semi-urban areas [5]. The high infant mortality rate in the study area means that twelve percent of the children who were born at home may have not reached their

first birthday. Therefore, twelve percent of the mothers did not attend the immunization clinics. Only those deliveries that took place within one year of the study were included in order to avoid recall bias over a longer period of time. However, some amount of recall and report bias cannot be completely ruled out. Hence, the interpretation and generalisability of this study is limited.

In this study, all the women who delivered at home agreed to participate in the study. The interviewers identified themselves as independent researchers rather than as part of health service team present in the immunization clinics. The respondents were assured of being provided health services irrespective of their decision to participate in the interview, and verbal consent was sought. All the women agreed to participate in the study after receiving such assurance. The possibility that the women considered interviewers as a part of health service cannot still be ruled out. The mean monthly family income of the respondents was approximately US\$122. But the annual per capital income of Nigeria is US\$640 [5]. The reported monthly family income of this semi-urban population is higher than national average. The families in this semi-urban population may be more affluent than an average Nigerian the the family since Nigeria is an agrarian economy. In Nigeria, the majority of the population is mainly dependent on subsistence farming with constant migration to other economically perceived better countries.

Despite the above-mentioned limitations, this study has obtained important information about home delivery and newborn care practices and reasons for delivering at home. This information has many policy implications about the ongoing safe motherhood and child survival programmes in Nigeria. There is a need to focus more on the skilled attendance hygiene during delivery and the use of clean surfaces for delivery in semi-urban/population. Some high-risk newborn care practices like delayed wrapping, immediate bathing, oil application to the cord, prelacteal feeding, and discarding colostrum need more attention. This information will assist in planning public health interventions aimed at changing the behavior. Expanding skilled attendance during delivery is an important issue since these semi-urban women “prefer” home deliveries and home deliveries are perceived as “easy” and “convenient.”

5. Conclusions

There is a need for community-based interventions to improve the uptake of publicly funded maternity services. Health promotion interventions are required to improve the number of families engaging a skilled attendant and hygiene during delivery. High-risk traditional newborn care practices need to be addressed by culturally acceptable community-based health programmes to improve newborn care practices.

Conflict of Interests

The author declares that he does not have any conflict of interests.

Author's Contribution

The author was the primary researcher who conceived the study, responsible for the design and protocol of the study; design and development of the questionnaire; data collection and analysis; training and supervision of health workers during data collection; paper drafting and preparation for publication.

Appendix

Questionnaire on a Survey of Home Delivery and Newborn Care Practices among women in South Western Nigeria:

No.

Age:

Marital status:

Occupation:

Parity:

Religion:

Level of education:

(1) Where exactly at home did you deliver?

- in a room
- inside the house
- outside the house
- backyard of the house
- others (state)

(2) Who assisted or attended to you during delivery?

- no attendant
- neighbour
- mother
- mother-in-law
- other family member
- auxiliary nurse midwife
- health assistant
- traditional birth attendant
- others (state)

(3) What instrument was used to cut the cord?

- new or boiled blade
- old unboiled blade
- household knife
- unknown
- others (state)

(4) How was the umbilical stump treated/dressed?

(5) What kind of cloth was used to wrap the baby?

- old unwashed cloth
- old washed cloth
- others
- new unwashed cloth

- new washed cloth
 - unknown
- (6) Was the birthplace heated?
- none
 - before birth
 - after birth
 - throughout birth
- (7) How soon after delivery was the baby wrapped?
- ≤5 minutes
 - ≤10 minutes
 - ≤30 minutes
 - ≤60 minutes
 - >60 minutes
 - unknown
- (8) What was the baby fed on first?
- breast milk/colostrums
 - breast milk from other woman
 - formula feed
 - cow's milk
 - glucose water
 - plain water
 - honey
 - others (state)
- (9) How soon after birth was the baby breastfed?
- immediately after birth
 - ≤15 minutes
 - ≤30 minutes
 - ≤60 minutes
 - ≤24 minutes
 - ≤48 minutes
 - >48 minutes
- (10) Did you plan to deliver at home?
- Yes
 - No
- (11) Why did you deliver at home?
- preference for home delivery
 - home delivery is easy and convenient
 - all my previous deliveries were at home
 - worries about cost in the hospital
 - health worker lives close to house
 - onset of labour before the expected date

- lack of transport during labour
- -others (state)
- hospital is too far
- financial problems at home
- family members prefer home delivery
- fear of hospital
- precipitate labour
- lack of escort during labour

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