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Attitudes and Practices Related to Essential Newborn Care among Rural Community Women in Gombe State, Nigeria

James Allen Otunomeruke,
Demographer and Consultant
divineallen2000@yahoo.com

ABSTRACT

Right attitudes of mothers and caregivers towards good practices of essential newborn care (ENC) can save many newborn lives in poor resource constraints settings. However, the practices of newborn care among women of reproductive age and caregivers is still at low ebb, hence, there is need to have understanding about the current practices which could inform decision making and newborn care intervention with view of addressing morbidity and mortality arising from lack of good practices of newborn care. The researcher assessed the current practices of essential newborn care among mothers who had delivery at health facilities and home. The study used the interview data of 7,447 households in which married women aged 13-49 who delivered live birth within the past 12 months prior survey were found in the selected 10 LGAs in Gombe State in December 2013-2014. These data revealed essential newborn care practices among mothers in the labour ward in health facility and at home after the discharged. The researcher analyzed the number and proportion of births that had good essential newborn care practices by delivery type with 95% confidence intervals, adjusted for enumeration areas in the period. The results show that the proportion of new mothers who practiced immediate breastfeeding (that is, within an hour of delivery) increased from 14 percent to 25 percent with p-value (p< 0.0001), delayed bathing increased from 10% to 33% with p-value (p< 0.001) and newborn dried and wrapped increased from 72% to 87% among mothers visited by trained traditional birth attendant. Coverage of essential newborn care practices in Gombe State was low and there is need for government and implementing partners to intensify essential newborn care practices campaign at the community level.

Key Words: Essential newborn care, Traditional Birth Attendant, Heath Facility, Home

BACKGROUND

Good practices of essential newborn care play a critical role in child survival. Poor attitude of mothers toward essential newborn care can have adverse effect on the survival of the child. Invariably, can adversely affect the growth of the child. Newborn care is essential to reduce neonatal health problems, challenges and death. Generally, countries and communities have their own unique cultures and traditions; traditional newborn practices may differ from community to community. Good essential newborn practices need to be identified and promoted whilst bad essential newborn practices must be discouraged and stopped.

Research findings show that newborn deaths occur at home in developing countries as a result of poor access to health facility services due to shortage in health manpower, ill-equipped facilities and difficult terrain. Although neonatal mortality accounts for 38% of under-five deaths, Lawn, McCarthy and Ross (2001) argued that there has been a general lack of interventions that address the unmet needs due to misconception and lack of well thought out of the type of interventions needed to address the unmet needs are too expensive and technical to be applied in a poor developing countries.

In most of developing countries, the community health workers including trained TBAs play an increasingly significant role in the delivery of preventive and curative healthcare to populations for whom location, economic status, gender, and other factors make direct access with the

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formalized health system difficult (Haines *et al*. 2007).

High coverage of basic, low cost and proven newborn essential care has the potential to prevent up to 70% of deaths (Darmstadt *et al*. 2005).

Six composite newborn care practices (safe cord care, optimal thermal care, delayed bathing, neonatal breastfeeding, sleeping under insecticide treated bed net and postnatal check within 48 hours of delivery) were investigated in this study in Gombe State. These composite variables give a better reflection of safe cord, optimal thermal care, delayed bathing, neonatal feeding and sleeping under insecticide treated bed net. Safe cord care was defined in this study as use of a clean cutting instrument to cut the umbilical cord plus clean thread to tie the cord plus no substance applied to the cord. Thermal care is defined as wrapping the baby as soon as he/she is born and put on mother's chest. In Gombe State, the practice safe cord care was 4% as at January 2013, delayed bathing in the same period was 8% and thermal care from 30%. According to Nigeria Demographic and Health Survey, 2013 shows that the proportion of new mothers who practiced immediate breastfeeding (that is, within an hour of delivery) was 48.2%, percentage who started breastfeeding within 1 day of birth was 70% percent in 2013 compared with national percentage who started breastfeeding within 1 hour of birth 33% and percentage who started breastfeeding within 1 day of birth as 74% (NDHS, 2013).

In Gombe State, 33.7% used new or boiled blade to cut the umbilical cord of the newborn compared to 43 percent of cases that used a new or boiled blade in non-institutional births with a clean delivery kit used.

Percentage of mothers' whose neonates were dried and wrapped recorded 28% and out of these, 10% of neonates were put on their mothers' belly or breast in Nigeria while in Gombe State, 65 percent on newborn were wiped before the placental was delivered and out of this 32 percent were placed on belly/breast before placenta was delivered and wrapped in cloth before placenta was delivered was 93 percent (NDHS, 2013).

Essential newborn care according to health professionals requires specific evidence-based interventions to improve the chances of survival, normal growth and development of the neonates. ECN is an integral package of newborn care at the primary health care level mainly focusing on skilled health care providers. However, in rural setting, community health volunteers were trained in providing home-based care during home visits to the mothers.

Research Objectives

The main objective was to assess the habits and practices of essential newborn care among mothers that had live births in the last 12 months prior the survey period, review the impact and ascertain any existing gaps.

Specifically, the objectives include:

i. To assess attitudes and practices of essential newborn care among new mothers such as clean cord care, thermal care, delayed bathing, immediate breastfeeding and postnatal check within 48 hours of delivery

ii. To determine whether home visits by trained traditional birth attendants (TBAs) and Federation of Muslim Women's Association of Nigeria (FOMWAN) had effect on the practices of essential newborn care

iii. To determine the number of newborns receiving thermal care

Literature Review

The purpose of this chapter is to briefly appraise the literature relating to essential newborn care practices among community women especially in

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rural areas of a developing country like Gombe State, Northeast, Nigeria.

Proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that could cause the death or serious illness of the mother and/or the infant (Van Lerberghe and De Brouwere, 2001; WHO, 2006). High coverage of basic, low cost and proven newborn essential care has the potential to prevent up to 70% of deaths (Darmstadt *et al*. 2005). Similar studies in India have shown that non-sterilized materials for cutting the cord are used both by TBAs and formal health personnel (ANMs) (Khandekar et al., 1993, Mathews et al., 2005, Nandan and Mishra 1996). WHO notes in a report on umbilical cord care that the current recommendations for cord care are chiefly based on research in hospital nurseries in developed countries, which may not apply in developing countries where resources are scarce, most deliveries take place at home and different sources of bacteria can cause cord infections (WHO 1998).

Itina (1997) in his paper recommended that educational programmes for TBAs and better integration into the health care system are essential and necessary for lowering maternal mortality and morbidity rates in areas where most mothers are not open to nor have access to professional care in childbirth.

In the same vein Satishchandra et al. (2009) argued that programme for TBAs with regular reinforcements in the resource poor setting would not only improve the quality of newborn care but also reduces peri-natal deaths. More studies reviewed also show positive results on the impact of training TBAs on maternal and newborn mortality (Begum et al., 1990; Sibley, 1997; Garcéset al., 2012).

Survey Methodology

The survey methodology adopted probability sampling in which every member of the population has equal chance of being selected into the sample.

Study Design

The survey design was a cross-sectional population household-based survey in which quantitative method was adopted. Quantitative technique produced real-time data that state the performance level of essential newborn care for inference in Gombe State. A multi-stage cluster sampling technique was employed in the population-based household survey using structured questionnaire. The interviews were face-to-face (personal interview method) among mothers with a live birth in the last 12 months of delivery prior the survey period. Eight wave's surveys were conducted to track the coverage and performance of trained TBAs as it affects the beneficiaries at the community level. The first quarter was used as pre-run (pilot study), which was used for refinement of processes of the surveys.

The study was conducted in the 10 out of 11Local Government Areas (LGAs) that make up Gombe state. Gombe LGA metropolis was excluded from the intervention because it is the capital of the state and has every infrastructure that is absent in the rural communities in other LGAs in the state. The 11 Local Government Areas are: Akko, Balanga, Billiri, Dukku, Funakaye, Gombe, Kaltungo, Kwami, Nafada, Shongom and Yalmatu Deba.

The study population was household-based comprised the married women of reproductive age (15 – 49 years) who had at least a live birth in the last 12 months per wave of the preceding survey period (January 2013 –December 2014). The waves were (January-March, April-June 2013, July –September 2013, October –December 2013, January – March 2014, April –June 2014, July – September 2014 and October – December 2014). Each quarter, 120 clusters were considered, that is, 60 clusters were selected from rural and 60 clusters from urban areas in all the 10 LGAs. A probability proportional to size sampling was adopted to select clusters given every element in the sampling frame an equal chance of inclusion into the final sample for the study. Clusters were

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defined as enumeration areas and were selected with probability proportional to population size, with implicit stratification. Every wave sample selection was with replacement given all the elements in the population equal chance of inclusion.

Data Source and Instrument

This study was based on interview data from the Continuous surveys of maternal and neonatal health programme conducted in the 10 LGAs of Gombe State. The MNHC is a program implemented by the Society for Family Health Program, Phase II funded by Bill and Melinda Gates Foundation. The researcher from January 2013 –December 2014, conducted the continuous surveys. A standardized and close-ended questionnaire was used in the conduct of the interview with women who had at least a live birth either at home or health facility in the given waves period.

Information was collected on the following areas: the respondent's background, home-based interactions with the TBAs on: clean cord care, delayed bathing, thermal care, breastfeeding, and use of bed-nets and newborn postnatal care during the first 48 hours.

Sample Design, Size and Selection of Respondents

The study was based on quarterly Continuous Household Survey at population level, which was considered to produce real-time data for implementation monitoring of the community-driven intervention. The study adopted multi-stage cluster sampling design to select the required number of 120 clusters in the state. The dependent variables of interest for this analysis are a cross-sectional measure of women who had a live birth in the last 12 months preceding survey per cluster was interviewed. The researcher used 80% power, assuming design effect of 1.5, and 95% confidence interval. In the first stage, all clusters excluding Gombe metropolis were subdivided into rural and urban sectors (localities with settlements of less than 20,000 inhabitants were classified as **rural** while the localities with settlement of more than 20,000 inhabitants were classified as **urban**).

All the clusters per sector were serialized from 1 to nth population. The enumeration areas (clusters) were regarded as the primary sampling unit. The 120 clusters were drawn from 1990 National Population Commission Master Cluster list. 60 clusters were randomly drawn using probability proportional to size (PPS) technique from rural list and 60 clusters drawn from urban list respectively. In each wave of the continuous survey, 120 clusters were randomly selected into the sample for interviews by the researcher. It was observed that some clusters have up to 40 households while some do not. The second stage was the grouping of the clusters into local government areas (LGAs) within the state.

After the random selection, the Enumeration Area sketch maps were extracted from the archive of the NPC, which provided guide to the boundary of each E.A. at the community level. Where the sketch maps were not found, new demarcation of the enumeration area was conducted before the listing of buildings and households with the assistance of Village Head or representative to determine the clear demarcation of such E.A. The number of buildings and households were serially numbered and recorded in the listing forms provided. The sketch maps of such E.As were equally developed on the spot for such E.As.

The structured questionnaire was designed first in the English language and key words in the questionnaire translated to Hausa and Fulfulde language for uniformity purposes. All the people in Gombe State can speak either Hausa or Fulfulde language; hence, it was imperative for the researcher to have considered the languages spoken during the development of the questionnaire. The questionnaire comprises of the profile page which have the state name and code, local government areas and code, Sector: urban and rural setting, building number, household number, date of interview, questionnaire number, interviewer name, code and signature, type of interview: completed, partial completed, not at home –with three calls back allowed and complete refusal. The quantitative questionnaire was mainly for mothers that had at least a live birth in the last

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12 months prior the survey period. The duration of the interview was between 30 – 45 minutes. It was observed after three days on the field, interviewers on average spent 20 minutes to complete an interview provided there was no intruder during the course of interview.

(i) Identification Information: The identification details in the questionnaire included; questionnaire number, name of village, household number and person code.
(ii) Household Information: This section included list of all individual in the household starting from the head of household. After the listing, identification of eligible mother with her unique identification number, child whose age is 12 months below unique identification number, individual information such as relationship to the head of household, age, sex, education that is, highest school completed, religion, occupation, and slept in the house a day to interview. Questions were asked of every member of the household. All of these questions were open-ended except the sex, education and religion of the person that were coded
(iii) Essential Newborn Practices: These include clean cord care, thermal care, delayed bathing, breastfeeding initiation, exclusive breastfeeding, sleeping under insecticide treated net and postnatal check within 48 hours of delivery.
(viii) Postnatal Care: The information in the section included utilization of check-up within 48 hours, and within 7 days

Pre-testing of the questionnaire was conducted in Gombe metropolis rural slum to assess the wording, sequencing of the questionnaire, appropriateness of the language, skip patterns, cultural suitability, and no offensive words used. The pretest was able to check the clarity, simplicity, and sensitivity of the questions. Sequencing, vagueness and ambiguity of the questionnaire was equally tested. The results of the pretest were used to fine-tune the final questionnaire.

A pilot study was conducted in the first quarter (January-March 2013) and the findings were used for corrections of all stages of the survey. The timing, number of questionnaire per interviewer, average time for one completed interviewed, cost, difficult terrain issues were adequately addressed and data processing cost was estimated. This process yielded high quality of fieldwork.

The research assistants (interviewers) were recruited for the purpose of data collection. Prior the conduct of the interviews, the 45 research assistants and 9 supervisors were identified and recruited for the fieldwork. One week training on act of conducting face-to-face interview, role-play and field trial were conducted to ascertain the proficiency of the research assistants. All the research assistants were either undergraduates or graduate that has at least two years' experience in data collection. Only few of the interviewers used in the data collection have postgraduate certificates or qualified nurse/midwife certificates. The research assistants were subdivided into nine groups. Each group is made of 4 research assistants and a supervisor to cover particular supervisory areas. Each of the research assistants was given well-structured questionnaires, sketch map of the enumeration areas for easy identification, pen, notepad and identity card. The sketch maps enable the research assistants to identify the household with eligible mother selected for the interview.

The population per wave of the continuous survey varies from one quarter to another. This was as result of eligible mothers identified during complete listing of the households and those found during interview time were interviewed.

Coding of Variables
The researcher edited the completed questionnaires from the field and coding of the variables followed immediately.

The key variables the questionnaire addressed were demographic information, socio-economic, frequency of home visits, antenatal visits, frequency of visits, referrals, health facility delivery, thermal care, clean cord care, and breastfeeding.

Safe Cord Cutting: A dichotomous variable was created to measure the safe cord cutting practice. Those women who used a new blade or the instrument from a clean home delivery kit to cut the cord of the newborn were assigned a score of "1". Those women who used any other instruments such as used blade and knife were assigned a score of "0". Those women who could not recall what instrument was used to cut the cord of their newborn were not included in the analysis.

Thermal Care: Those women who had a live birth in the 12 months preceding survey that placed the baby on the mother's chest or next to the mother immediately after delivery, was dried and wrapped were assigned a score of "1". Those women who had a live birth in the 12 months preceding survey whose babies' were not placed on the mother's chest or next to the mother immediately after delivery, was dried and wrapped were assigned a score of "0".

Initiation of breastfeeding: A dichotomous variable was created as a measure for immediate practice breastfeeding. Those mothers whose newborn were breastfed within one hour of birth were scored as "1". Those women whose newborn were breastfed anytime after one hour of birth were assigned a scored as "0". Those women who could not recall when their newborn was first put to the breast were not included in the analysis. A score of '1' represented the preferred practice.

Delayed Bathing: Those women whose newborn were first bathed after 24 hours of birth were assigned a score of "1" and those mothers whose newborn were bathed anytime before 24 hours after birth were assigned a score of "0". A score of '1' represented the preferred practice.

Exclusive Breastfeeding: Those women who had a live birth in the last 12 months preceding survey who exclusively breastfed their newborn in the first 6 months of life were assigned a score of "1". And those mothers who had a live birth in the last 12 months preceding survey who did not exclusively breastfed their newborn in the first 6 months of life were assigned a score of "0".

Postnatal Check: Those women who were checked within 48 hours of delivery were assigned a score of "1". Those that were not checked within 48 hours of delivery had a score of "0".

Six dependent variables (ANC, facility delivery, clean cord care, thermal care, delayed bathing and breastfeeding) were created from questions included in the maternal health component of the continuous survey questionnaire on essential newborn care practices as states earlier. The variables included as predictors were trained TBAs home visits, frequency of home visits, and exposure to intervention messages, residence, women's age, women's education and religion.

In line with the national guidelines on ethical consideration, ethical approval was sought for this survey from National Health Research Ethical Committee (NHREC), a division of the Federal Ministry of Health, granted ethical approval to conduct this survey.

Protection of Confidentiality

To ensure quality of data from fieldwork, 25 percent of completed questionnaires were spot-checked and back-checked. At the office, 100 percent of the questionnaires were edited before data entry. CSPro software, a census Survey Professional package was used for data entry. Prior to the commencement of the data entry, a template for data entry was developed and tested. CSPro has some in-built checks, which prevent data entry clerks from some errors.

Results of the Surveys

Demography Characteristics

Demographic variables used in this analysis include age of mothers, and education. Socio-economic factors include geographical location, women's education, religion and exposure to intervention messages through trained TBAs.

Table 1: Demographic Characteristics of the Sample

Description	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Sample Size	841	1118	1205	940	1178	1144	821
Sector							

Urban	47.0	41.2	46.6	49.3	51.4	48.9	44.3
Rural	53.0	58.8	53.4	50.7	48.6	51.1	55.7
Age of Mothers							
15 – 19	11.7	9.1	7.6	10.6	7.0	8.9	11.0
20 – 24	27.9	29.9	30.0	29.7	25.9	29.3	27.3
25 – 29	30.6	30.1	31.5	27.3	31.5	30.2	27.4
30 – 34	23.1	19.7	20.4	20.3	25.5	19.7	22.9
35 – 39	6.3	8.2	8.0	9.0	9.6	8.9	9.0
40 – 49	0.5	3.0	2.7	2.6	2.6	3.0	2.4
Mothers' Highest School Completed							
No Formal Education	23.1	20.9	21.8	28.8	25.6	26.3	36.7
Qu'ranic Education	8.6	7.9	7.3	12.7	9.6	9.9	13.8
Did not complete primary	11.2	8.4	7.8	7.1	5.7	4.7	6.6
Completed Primary School	29.7	22.7	18.7	27.8	19.7	15.4	16.8
Secondary	22.9	35.1	34.8	19.9	34.8	28.4	22.2
Tertiary	4.5	5.0	9.6	3.7	4.7	15.3	4.0
Mean	3.34	3.58	3.66	3.08	3.43	3.56	2.86
Religion							
Christian	17.1	18.6	17.8	19.3	19.7	18.9	18.3
Muslim	82.9	81.4	82.2	80.7	80.3	81.1	81.7

Source: Field Survey, 2014

Table1 describes the demographic characteristics of the respondents. The sample included all women that have at least a live birth in the last 12 months prior the continuous survey. Many people can speak up to three dialects in Gombe state. Hausa (75%) was the first and most comfortable language for all rural community dwellers and followed by Fulfulde (44%), which is dominantly spoken by Fulani clan in Gombe state.

In this analysis, the first quarter of 2013 continuous survey was used as pilot study, hence, the analysis start from quarter two April 2013 to December 2014, seven quarters (three-month periods) of continuous survey were completed in Gombe State. A total of 7,447 households were visited during this period. In those households, 7,247 women aged 15-49 years were listed as having had a live birth in the 12 months prior to survey and of these 7,239 were successfully interviewed. The analysis excluded interviews for which no valid date of births was recorded; As a result the total of 6,676 women who had a live birth 0-11 months prior to survey were analyzed and presented (table 1). The characteristics of these women were comparable between quarters, with 47% living in urban areas in quarter 2 (April-June 2013) compared to 44% in quarter 8 (October-December 2014).

Demographic Variables

Over half of the sample was aged between 20 -29 years, about one-third were aged 30-39 years, about one-tenth were aged 15-19 years and less than three percent were aged 40-49 years. In the age distribution, the teenage mothers (15-19) had 9%, age cohort 20-24 years (29%), the mothers' whose age lies between 25-29 years recorded 30%, aged 30-34 had 22%, 35-39 recorded (8%) and aged 40-49 had 2%.

Majority (68%) of respondents had some formal education in quarter 2, 2013 compared to 50% in quarter 8 in 2014. Among the respondents 23% had secondary education across the seven waves, followed by no formal education (27 percent), respondents that had their primary school education completed (18%), Qu'ranic education (10 percent) and tertiary education (7%). 68% having some formal education in quarter 2, 2013 compared to 50% in quarter 8 in 2014.

Majority of the sampled population are Muslim. 83% being Muslim in quarter 2 compared to 82%

in quarter 8; while 17% Christian in quarter 2 compared to 18% in quarter 8. Over half (53%) of the surveyed mothers that had at least a live birth in the last 12 months prior the survey period are living in rural area while 47% of the mothers place of living is in urban

Essential Newborn Care Practices

Good essential newborn care practice is a prerequisite to the survival of the neonates within the first 28 days, hence, mothers are advised to cultivate positive attitude that always ensure that neonates are well protected. In Gombe State, some essential newborn care practices is still low compared with the national figures and health planners and government need to do something to educate and encourage mothers on the good practices of essential newborn care. On this premise, SFH through funding from Bills and Melinda Gates Foundation since 2010 continue to implement maternal and neonatal health care community-driven intervention in Gombe State. High coverage of basic, low cost and proven newborn essential care has the potential to prevent up to 70% of deaths (Darmstadt *et al*. 2005).

Six composite newborn care practices (safe cord care, optimal thermal care, delayed bathing, breastfeeding, sleeping under insecticide treated bed net and postnatal check within 48 hours of delivery) were investigated. These composite variables give better reflection of attitudes and practices among the mothers in the state.

Safe cord care is defined in this study as use of a clean cutting instrument to cut the umbilical cord plus clean thread to tie the cord plus no substance applied to the cord.

Coverage of Essential Newborn Care Practices

Safe Cord Care

Safe cord care was defined in this study as use of a new razor blade to cut the umbilical cord plus cord clamp or clean thread to tie the cord plus no substance applied to the cord.

In quarter two (Q2), 69% of mothers against 56% in quarter eight (Q8) reported that the umbilical cord of their babies was tied with new string or cord clamp, 94% in Q2 and 95% in Q8 used a new razor blade to cut the cord while there was significant increase of 13% in Q8 among mothers who had live newborn in the last 12 months prior survey that applied methylated spirit or applied nothing to the umbilical cord. In terms of clean cord care, there is appreciable improvement in the attitude and practices among mothers of reproductive age (15-49) years in Gombe State, Nigeria.

Table 2: Percentage distribution of clean cord care among women that had a live birth in the last 12 months prior the survey

Description	% Quarter 2 (April-June 2013)	% Quarter 8 (Oct. – Dec. 2014)
Clean Cord Care		
Tied with new string/thread/cord clamp	69	56
Cord cut with new razor blade	94	97
Applied methylated spirit /nothing	2	15

Source: MNHC Continuous survey April 2013 – December 2014

The results of the continuous surveys show that 94% cases of new razor blade was used in cutting the umbilical cord of newborns in second quarter of 2013 and the use of new razor blade was consistent (98%) in quarter eight. Hence, little or no infection could have been contacted through

instrument used to cut the cord. Using new razor blade or sharp object to cut the umbilical cord was in line with the world health organization (WHO) recommendation. In term of cord clamp or new thread in tying the cord, the data was not so impressive when compared to new instrument of cutting the cord. Those that applied methylated spirit or nothing to the cord in April 2013 were 2 % but increased15% in December (Q8), 2014.

Thermal Care

Thermal Care (defined as baby wrapped within 10 minutes of birth plus first bathed with warm water after 24 hours of delivery. Bathing the newborn in less than six hours after delivery appears to be a common practice within many cultures.

Table 3: Percentage distribution of essential newborn care practices among mothers in Gombe

Description	% Quarter 2 (April-June 2013)	% Quarter 8 (Oct. – Dec. 2014)
Thermal Care (defined as baby wrapped within 10 minutes of birth plus first bathed with warm water after 24 hours of delivery		
Delayed Bathing		
After one day (24 hours) delayed	10 (8,12)	33 (30,36)
Skin-to-skin Contact after birth		
Newborn dried/wrapped and put mother chest	72(69,73)	87(85,89)

Source: Field Survey, 2014

The survey findings revealed significant proportion of babies (65%) that were bathed in the first hours of delivery in quarter two compared to 27% bathed in the first hour of birth, proportion of babies bathed after one hour but in the same days increased from 25% in quarter two to 40% in quarter eight, while newborn bathed after one day increased from 10% in quarter two (April 2013) to 33% in quarter eight (December 2014) showing an increase of 23%.

This is in line with behavior change that it takes time to adopt changes especially when people have strong notion that vernix in the baby body is dirty and needs to be cleaned to avoid body odour in near future. The increase may partly be attributed to the effort of trained TBAs as demand creation agents that conducted home visits to educate and encourage pregnant women on importance of essential newborn care to the baby especially delayed bathing till 24 hours after delivery.

Newborns that were wrapped within 10 munities of birth and were placed on mother chest increased from 72% in April-June 2013 to 87% in October-December 2014. This practice was observed to be high among mothers and health professionals in Gombe State. To maintain optimal thermal care (defined as baby wrapped within 10 minutes of birth plus first bathed with warm water after 24 hours of delivery), there is need for mothers and caregivers to cultivate habits of wrapping newborns immediately delivery and delay bathing newborns for maximum of 24 hours after birth.

The increase may partly be attributed to the effort of trained TBAs as demand creation agents that conducted home visits to educate and encourage pregnant women on importance of essential newborn care to the baby especially delayed bathing till 24 hours after delivery.

Immediate Breastfeeding

Healthcare professional confirmed that the suckling reflex of a newborn is at its height 20 to 30 minutes after birth. If the neonate is not fed at this time, the reflex diminishes rapidly to reappear adequately 40 hours later. Breastfeeding immediately after delivery also has a laxative effect on the meconium. The early evacuation of

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meconium tends to decrease the re-absorption of bilirubin (the yellow pigment responsible for jaundice). Bilirubin is liberated by the breakdown of cast-off red blood cells present in the intestines. Decreased re-absorption of bilirubin reduces the appearance of jaundice.

Studies had shown that the first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the newborn from diseases. Mothers were admonished put their neonates into breast milk immediately after delivery since it also fosters bonding between mother and child. It had been established that mothers do not practice immediate breastfeeding and most often the first breast milk is extracted and disposed.

The benefit that follows immediate breastfeeding to mothers from early suckling was equally lost due to lack of breast milk initiation. The first breast milk that contains colostrum, which is highly nutritious and has antibodies that protect the newborn from diseases was equally lost, hence, deprived the early bonding between mother and child.

Table 4: Percentage distribution of breastfeeding practices among the mothers interviewed in Gombe State

Description	% Quarter 2 (April-June 2013)	% Quarter 8 (Oct. – Dec. 2014)
Breastfeeding Practice		
Immediate breastfeeding after birth	14(11,16)	25(22,28)
Exclusive breastfeeding in the first three days of birth	25(22,28)	44(41,47)
Exclusive breastfeeding in the first 30 days of birth	5(4,7)	22(20,25)

Source: MNHC Continuous survey April 2013 – December 2014

Early initiation of breastfeeding is encouraged for a number of reasons. Mothers benefit from early suckling because it stimulates breast milk production and facilitates the release of oxytocin, which helps the contraction of the uterus and reduces postpartum blood loss. The data revealed that only 14 percent of mothers practiced immediate breastfeeding after delivery in quarter two in 2013 but increased to 36 percent in quarter eight in 2014

Exclusive Breastfeeding of Neonates

The coverage of exclusive breastfeeding for the first 30 days of life amongst newborns in the twelve months prior to survey in urban and rural areas revealed similarity in breastfeeding practices. The performance of this indicator in (Apr-Jun 2013) was the same in urban and rural areas and increased by a similar magnitude in both settings by October -Dec 2014 by 16 percentage points in urban areas, and by 15% percentage points in rural areas. The coverage of exclusive breastfeeding for the first 30 days of life amongst newborns born in the twelve months prior to survey, as reported by mothers living in urban and rural areas revealed similarity in breastfeeding practices. The performance of this indicator in Q2 (Apr-Jun 2013) was the same in urban and rural areas and increased by a similar magnitude in both settings by Q8 (Oct-Dec 2014): by sixteen percentage points in urban areas, and by fifteen percentage points in rural areas. In urban areas of Gombe, the point estimate of exclusive breastfeeding for the first 30 days of life increased from 10% (95% CI 4-24) in Q2 (April-June 2013) to 33% (95% CI 34-41) in Q8 (October-December 2014). In rural areas, coverage increased from 7% (95% CI 3-13) in Q2 (April-June 2013) to 46%(95% CI 26-28) in Q8 (October-December 2014).

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Postnatal Check-Up for Newborn

Early postnatal check-up within the first 48 hours of newborn from healthcare provider is very important to detect complications that could arise after delivery since inability to detect danger signs could be fatal to the mother and neonates.

The research findings revealed that 9 percent of newborns received postnatal check-up in April 2013 and this increased to 43 percent in quarter eight, December 2014.

Discussion

Respondents' data were classified in terms of age, mother's education, religion, and place of residence. Three-quarter (75%) of the respondents are comfortable with Hausa language in terms of speaking and writing and this was followed by Fulfulde (44%), which is dominantly spoken by Fulani clan in Gombe state. In this analysis, researcher found that many people could speak up to three dialects in Gombe State. This implies that health messages should be communicated in Hausa and Fulfulde, two major languages spoken in the community. This will help in understanding of the health issues health promoters want to address in the communities. Over half of the sample was aged between 20 -29 years, about one-third were aged 30-39 years, about one-tenth were aged 15-19 years and less than three percent were aged 40-49 years. In the age distribution, the teenage mothers (15-19) had 9%, age cohort 20-24 years (29%), the mothers' whose age lies between 25-29 years recorded 30%, aged 30-34 had 22%, 35-39 years recorded (8%) and 40-49 years had 2% respectively. Majority (68%) of respondents had some formal education in quarter 2, 2013 compared to 50% in quarter 8 in 2014. Among the respondents 23% had secondary education across the seven waves, followed by no formal education (27 percent), respondents that had their primary school education completed (18%), Qu'ranic education (10 percent) and tertiary education (7%). 68% having some formal education in quarter 2, 2013 compared to 50% in quarter 8 in 2014. Majority of the sampled population are Muslim. 83% being Muslim in quarter 2 compared to 82% in quarter 8; while 17% Christian in quarter 2 compared to 18% in quarter 8. Over half (53%) of the surveyed mothers that had at least a live birth in the last 12 months prior the survey period are living in rural area while 47% of the mothers place of living is in urban.

High coverage of basic, low cost and proven newborn essential care has the potential to prevent up to 70% of deaths (Darmstadt *et al*. 2005).

Research findings show that newborn deaths occur at home in developing countries as a result of poor access to health facility services due to shortage in health manpower, ill-equipped facilities and difficult terrain. In one study on newborn care, it was found that neonatal mortality accounts for 38% of under-five deaths, Lawn, McCarthy and Ross (2001) and argued that there has been a general lack of interventions that address the unmet needs due to misconception and lack of well thought out of the type of interventions needed to address the unmet needs which are considered to be too expensive. In most of developing countries, the community health workers including trained TBAs play an increasingly significant role in the delivery of preventive and curative healthcare to populations for whom location, economic status, gender, and other factors make direct access with the formalized health system difficult (Haines *et al*. 2007 and Otunomeruke et al 2016).

In another research, it was posited that health care providers and trained TBAs should 'provide health education, serve as role models and community advocates, increase access to healthcare resources, and collect data for research purposes' (O'Brien *et al*. 2009). Research findings revealed that there is package on evidence-based which noted low-cost, and highly effective interventions for newborn exist, however, very few of these high impact interventions for newborn care are systematically measured (Lawn *et al*. 2012; Otunomeruke et al. 2016).

In maternal and neonatal health care intervention in Gombe State, trained traditional births

attendants and faith-based organization were trained to conduct home visits to women with view to educate women on recognition of danger signs, personal and environmental hygiene, antenatal care, delivery, postnatal care and essential newborn care (safe cord care, thermal care, delay bathing and breastfeeding). The data analyzed show that there was a strong association between home visits by trained TBAs and essential newborn care (ENC) practices among the women. The five composite newborn care practices (safe cord care, thermal care, delayed bathing, breastfeeding, and postnatal check-up within 48 hours) were investigated and the coverage was generally low with exemption of quarter eight with 30%. I was found that women visited by trained TBAs are more likely to practice essential newborn care than women with no visit. The women that had at least two or more home visits are 1.6 times more likely to adhere to the practices of essential newborn care. Likewise, the odds of practicing essential newborn care for women with four or more home visits were 4.2 times higher than women with no home visit. Newborn care campaign needs to be intensified by the government and implementing partners so that newborn will no longer survive neglect by the parent and community at large.

Safe Cord Care

Safe cord care was defined in this assessment as use of a new razor blade to cut the umbilical cord plus cord clamp or clean thread to tie the cord plus methylated spirit or no substance applied to the cord. The results show that 94% cases of new razor blade was used in cutting the umbilical cord of newborns in second quarter of 2013 and the use of new razor blade was consistent (98%) in quarter eight. This was in line with the world health organization (WHO) recommendation. In term of cord clamp or new thread in tying the cord, the data was not so impressive when compared to new instrument of cutting the cord. For instance, in quarter two (April-June 2013), newborn that had their cord tied with new thread or cord clamped was 64% but in quarter 8 (October-December 2014) recorded 56% only. There was a decreased among mothers that used new thread or cord clamp. From the analysis, some women applied toothpaste, charcoal, palm and palm kernel warm oil into the cord.

Similar studies in India have shown that non-sterilized materials for cutting the cord were used both by TBAs and formal health personnel (ANMs) (Khandekar et al., 1993, Mathews et al., 2005, Nandan and Mishra 1996). WHO notes in a report on umbilical cord care that the current recommendations for cord care are chiefly based on research in hospital nurseries in developed countries, which may not apply in developing countries where resources are scarce, most deliveries take place at home and different sources of bacteria can cause cord infections (WHO 1998).

Delayed Bathing

Bathing the newborn in less than six hours after delivery appears to be a common practice within many cultures. A significant proportion of babies were bathed within 6 hours of delivery making it impossible to maintain optimal thermal care (defined as baby wrapped within 10 minutes of birth plus first bathed using warm water after 24 hours of delivery). Findings revealed that 10% of the newborns had their bathing after 24 hours in second quarter 2013. The delayed bathing was not very common among the women of reproductive age in Gombe State especially among women in rural communities. However, this practice went up to 65% after 18 months of community-driven education and mobilization of women on needs to practice delay bathing. Delayed bathing in quarter eight among women that had a live birth in the last 12 months showed an increase of 23% from quarter two practices. This is in line with behavior change theory that states adopting new behavior takes times before people tend to change and try new behavior.

Generally, women have strong notion that vernix in the baby body is dirty and needs to be cleaned immediately to avoid body odour of baby in near future. The increase in delay bathing may partly be attributed to the effort of trained TBAs as demand creation agents for the delayed bathing in community. More trained TBAs will be required in sensitization and education of women through home visits to pregnant women on importance of

delay bathing of newborn till 24 hours after delivery. Supportive supervision of the project staff will checkmates and encourage the frontline workers to regularly conduct home visits. This study findings correspond to the research findings found in Nepal that newborn babies are considered dirty since they came out of their mother's womb, so almost all newborn babies are bathed within the first hour of birth.

Another study conducted in rural settlements of Karachi, Pakistan, revealed that newborns were bathed immediately after delivery as the vernix was considered "dirty looking" and it was felt that such dirt be removed immediately after birth. As part of life saving strategy for newborns, world health organization (WHO) recommended delayed bathing up to minimum of 6 hours and maximum of 24 hours after delivery. There still need on the part of frontline workers to intensify effort in educating and encourage mothers to adopt delay-bathing practice to protect their babies from cold.

Immediate Breastfeeding

Practices of immediate breastfeeding among mothers that had at least a live birth in the last 12 months was generally low. The first breast milk that contains colostrum, which is highly nutritious and has antibodies that protect the newborn from diseases, was discarded among mothers due to ignorance. Secondly, benefit that follows immediate breastfeeding to mothers from early suckling and early bonding between mother and her baby was equally lost. This practice is not peculiar to rural women only but it applies to urban women in Gombe State. One of major causes could be lack of awareness and state of ignorance on benefits of breastfeeding initiation. More work need to be done since this is one of the unmet needs among the target audience in the state.

Exclusive Breastfeeding

The coverage of exclusive breastfeeding for the first 30 days of life amongst newborns in the twelve months prior to survey in urban and rural areas revealed similarity in breastfeeding practices. Mothers generally do not practice exclusive breastfeeding. They tend to believe that newborn cannot survival without water and some liquid; in their opinion, water and other liquid apart from breast milk will aid the baby growth. In the second quarter of the survey only 5 % of the mothers were found to have practiced exclusive breastfeeding for the first 28 days of life of the newborn. The performance of this indicator in (April-June 2013) was the same in urban and rural areas and increased by a similar magnitude in both settings by October -December 2014 by 16 percentage points in urban areas, and by 15% percentage points in rural areas. Among other factors, the increase knowledge levels of mothers could also be due to frequent home visits to expectant mothers and education of women on newborn care practices at the antenatal care at home as well as at the health facility antenatal care (ANC). To achieve 100% in immediate breastfeeding and exclusive breastfeeding (EBF), it is therefore recommended that support and motivation package should be designed for trained TBAs to enable them repeatedly continue the home visits and meeting with mother-in-laws after the expiration of maternal and neonatal health care in Gombe state. This is another area; government can use trained TBAs as demand creation agents to educate the generality of women of reproductive age 15-49 years on importance of exclusive breastfeeding for the first 30 days and maximum six months before food supplement can be introduced to the infant.

Postnatal Check-up Service

Postnatal care has been identified by the World Health Organization (WHO) as an important component in addressing prevention of newborn mortality, and this aspect was also embedded in the work plan of trained TBAs. The WHO information and accountability for women and children's health (2012) identified early postnatal care as one essential indicator to measure progress for newborn health. In Gombe state, trained TBAs played an increasingly significant role in the delivery of preventive and curative health care to women of reproductive age and infants especially newborn. In the continuous survey, about 9.4% of the women went for checkup service after delivery in the reporting period. The practice is unacceptably low and health intervention

managers need to intensify action to increase uptake of postnatal care in the state. This will reduce the mother and babies complications within the first 7 days of delivery.

Conclusion and recommendations

The researcher posits that integration of more trained TBAs or community health volunteers in maternal and neonatal health care intervention should be encouraged. Community health volunteers act as demand creation agents that visits homes to educate, mobilize and encourage good essential newborn care practices among community women in the state. Involvement of mother in laws in health intervention will enhance cooperation, and their buy-in, which will remove barriers on the ways of daughter-in-laws to adopt good newborn care practices. The level of coverage of essential newborn care practices in Gombe State were generally low, and this suggests that community-driven intervention emphasizes was mainly on mothers than newborns. Government, non-governmental organizations and civil service organization need to promote community-driven intervention that will center on essential newborn care practices in the state. Health care providers should not relent their effort in health education on benefits of essential newborn care during antenatal care visits.

Author's Biography

Dr. James Allen Otunomeruke graduated in Demography and Social Statistics (Second Class Upper) at Obafemi Awolowo University (1992), M.Sc. in Marketing from University of Lagos, Lagos (1996), M.Sc. in Demography and Social Statistics (2013) as well as PhD in Demography at International University Bamenda, Cameroon (2016). He started his career at Federal office of Statistics, Lagos in 1980 and rose to position of Statistician II and left to join Research International, Nigeria in 1996 as Manager. During the period at the Research International, Allen gradually took on increasing levels of responsibility to become Group Head (Research) in charge of many clients products portfolio. He left Research International January 31, 2001 to become Research and Evaluation Officer at Johns Hopkins University/Center for Communication Programs with responsibility of producing high quality data to monitor, refine strategies and evaluate their communication programs in Nigeria. This role also encompassed regular tracking of programs, provide oversights to project staff, training of monitoring and evaluation staff and provide technical inputs to external evaluators. Apart from JHU/CCP, he has worked also with international NGOs such as CEDPA, Futures Groups, Institute of Human Virology, Nigeria, Catholic Relief Services, and at national, Society for Family Health. He was a Senior Research Manger at Society for Family Health until February 2016. He is a seasoned demographer, statistician and consultant. Allen over the years have directed and guided monitoring and evaluation activities of health programs/projects and operations in reproductive health, public health, family planning, HIV/AIDS, Orphan and Vulnerable Children (OVC), maternal and child health; child survival, governance and democracy at community-driven intervention and health system strengthen. He builds the capacity of project and research staff both at health facilities and community-driven projects for proper implementation of project goals and strategic objectives of different interventions. Allen directs and provides an oversight for program teams ensuring delivery of quality results in accordance with the donor's plans, standards of performance and accountability framework, ethics and integrity through provision of high quality data derived from monitoring and research findings. Allen knows what results are important, and mobilizes project team, M&E team and research team to achieve them. Accepts responsibility for own actions and decisions and demonstrates commitment to accomplish work in efficient way. He loves a collaborative working atmosphere by encouraging high integrity, trust, commitment, drive for results, growth driven and team spirit.

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