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Antenatal care on the Agenda of the Post-Millennium Development Goals in northern Ghana

Joshua Sumankuuro, Judith Crockett, and Shaoyu Wang

School of Community Health,
Charles Sturt University,
Orange, NSW, Australia

ABSTRACT: *Background:* Antenatal care (ANC) is a key strategy to improve maternal and infant health. However, many pregnant women often do not achieve the recommended number of ANC visits although it recommended pregnant women undergo focussed ANC for up to 8 times in a single pregnancy. The aim of the paper was to assess influence of ANC services on women's acceptance maternity care and initiation of early breastfeeding. *Methods:* Data on three ANC components and breastfeeding from the Health Information Unit of Ghana Health Services for 2012 to 2015 were analysed for ANC attendance, exclusive breastfeeding, intermittent treatment of malaria in pregnancy and skilled childbirth. Primary survey of expectant mothers, health care staff and community members on birth preparedness and complication readiness in the district were abstracted to support the clinical data. Data were cross-examined for completeness for all years and analysis carried out based on the frequencies and percentages. *Results:* ANC patronage in the district was averagely low for all years considering the number of women in fertility age, however, stigmatisation and pregnancy "rites/announcement/cleansing" defined late uptake of ANC services by primes mothers in rural areas. Increased or decreased ANC visits influenced uptake of other components. *Conclusion:* it is not factual that, mothers who attend ANC and give birth in a health facility, initiate and continue exclusive breastfeeding. On an average, 35% of mothers who received ANC and gave birth in a public health facility breastfed exclusively. Reinforcement at community level to create awareness on the effects of cultural beliefs on pregnancy are recommended to step up patronage of ANC services.

KEYWORDS: Antenatal Care, Skilled Attendants, Breastfeeding, Maternal and Child Health.

1 INTRODUCTION

Maternal mortality is unacceptably high. About 800 women die from pregnancy- or childbirth-related complications around the world every day [1]. About 99 percent of these deaths occur in developing countries [1, 2]. Based on these, the WHO proposes all women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support at early postpartum. Timely and skilled management and treatment of risks ensures safe pregnancy and childbirth [1, 2]. Can a country achieve and sustain the millennium development goals without attaching significance to ANC?

Antenatal care constitutes screening for health and socio-economic conditions likely to: a) increase the possibility of specific adverse pregnancy outcomes; b) providing therapeutic interventions known to be effective; and c) educating pregnant women about planning for safe birth, emergencies during pregnancy and how to handle them, general health check, healthy eating habits education, exercise advice as well as breastfeeding and exclusive breastfeeding education [3]. Antenatal care is generally aimed at producing a healthy mother and baby at the end of any pregnancy and the early postpartum period [1, 4]. Thus, it has been suggested that antenatal care plays very significant role in reducing maternal mortality and also ensure pregnant women deliver with the assistance of a skilled attendant [5].

Considerable variation exists in the content of antenatal care worldwide [6]. This has probably led to the inconsistencies reported on the effectiveness of antenatal care services on improved maternal and neonatal healthcare particularly in

Corresponding Author: Joshua Sumankuuro

developing regions [7]. In Ghana, the routine content of antenatal care services includes: a) assessment of previous and current pregnancies routine measurement of weight; b) height and blood pressure; c) abdominal palpation; d) nutritional advice; e) examination for the presence or absence of oedema, f) distribution of iron and folate supplements; g) malaria prophylaxis; h)blood testing for haemoglobin; i) urine testing for protein; j) birth preparedness and complication readiness education; and k) tetanus toxoid vaccination [3, 8]. The WHO recommends eight ANC visits under the focussed antenatal care initiative for all developing countries.

Breastfeeding provides many benefits to both infants and mothers [9]. The practice of exclusive breastfeeding in some countries in sub-Saharan Africa is undesirable in comparison to the optimum period of six months set forth by World Health Organisation (WHO) and United Nations' Children's Fund (UNICEF) [10]. Although evidence of the life-saving benefits of exclusive breastfeeding for up to 6 months of age is convincing [9], only 30% of children <6 months of age in sub-Saharan Africa are exclusively breastfed [11]. Although there is a steady progress in the rates of exclusive breastfeeding in the sub-region, it implies that social and environmental factors may be influencing such rates [3, 8]. These have challenged some sub-regional governments to adopt, formulate, and implement strategies to improve the practice of exclusive breastfeeding among mothers. To ensure that infants are exclusively breastfed, a number of interventions have been implemented in Ghana. Some of these interventions include the adoption of the 1991 Baby-Friendly Hospital Initiative (BFHI), to ensure health workers provide mothers with early support for exclusive breastfeeding through: the "Kangaroo mother care programme"; Mother-to-Mother Support Groups (MMSGs); CHIPS initiative to ensure health professionals are readily available to provide counselling services to communities [12]. Formulation and implementation of breastfeeding interventions are essential to achieving improved newborn care [12].

Ghana, like many other countries in sub-Saharan Africa, experiences high rates of maternal and child under-nutrition including moderate to severe micronutrient deficiencies [9]. This poses a challenge to meeting the nutrition-related Millennium Development Goals (MDGs 1, 4 and 5), and place Ghana amongst the 36 countries with a high burden of malnutrition [13].

In Ghana, health care professionals during ANC visits are usually Community Health Nurses (CHN) and Enrolled Nurses (called Auxiliary Nurses), due to the shortage of midwives. In the rural health set up, the CHN is the health functionary closest to the community and provides care including motivation of pregnant women to come to the health centre or CHIPS compound for initial check-ups and taking full course of iron and folic acid. Although opportunities exist during antenatal visits, counselling mothers regarding breastfeeding is often not done [12], despite recommendations on the world-view that the primary focus of antenatal care interventions should be on improving maternal health, as both an end in itself and necessary for improving the health and survival of infants [8] . According to a study in central Ghana, nearly half the pregnant women did not receive information regarding breastfeeding. This deficiency is likely to affect the promotion and support of breastfeeding [3]. With reference to these, this study seeks to assess the influence of ANC services on women's acceptance of ANC services and initiation of early breastfeeding using Nadowli-Kaleo District, Ghana.

HYPOTHESIS

The paper hypothesised that, pregnant women who make the minimum of four plus antenatal care visits as recommended by WHO will complete intermittent preventive treatment (IPTs) and initiate breastfeeding early, receive Tetanus Toxoid Immunisations (TTIs) and have birth supervised by skilled person.

2 MATERIALS AND METHODS

Women in Fertility Age (WIFA)

The District has an estimated population of 66,625 constituting 52% females and 48% males. Women in Fertility Age (WIFA) comprise 15,990 (estimated) with expected pregnancies estimated to be 2,665 by 2015.

Study population

Participants comprised of all groups of women, ranging from prime to multipara women.

DATA COLLECTION

Time series data were collected from Nadowli/Kaleo District Health Administration on ANC services and exclusive breastfeeding from the period of 2012 to 2015. Data covered 138 communities across 29 clinics and 1 public hospital in the District. The study considered three key areas of ANC services – intermittent preventive treatment for malaria in pregnancy

(IPTp), tetanus toxoid immunisation (TTI) and skilled births. These were chosen because district is basically agrarian and everyone does subsistence farming including the formal sector workers. The country also grapples with malaria infestation. We also collected data on ANC registration and attendance, and exclusive breastfeeding. 21 midwives were at post serving a current population of 15,990 Women in Fertility Age (WIFA) and estimated expected 2,665 pregnancies in the district. ANC and PNC participants receive services from professional midwives on a regular basis in the cycle.

The District Health Information Unit collated data across all these health facilities (Community Health and Planning Survey Compounds, Health Centres and Hospital) in the District. The ANC were mainly conducted by community Health Nurses (CHN) and Auxiliary Nurses (Enrolled Nurses) in addition to trained midwives.

A primary study involving 240 focus group participants (males=100, females =233), 13 healthcare staff, and 80 expectant mothers (4^{th} to 8^{th} month of gestation) responded to structured quantitative questionnaire and semi-structured qualitative guide. Ethical approval for the study was given by Charles Sturt University Human Research Ethics Committee (Ref. No. 2016/013).

Setting

Nadowli-Kaleo District is centrally located in the Upper West region of Ghana. It is bordered to the south by Wa Municipal, west by Burkina Faso, north by Jirapa and Lambussie-Karni Districts and to the east by Daffiama-Bussie-Issa District. It has a territorial size of 1,132.02 km^2 (Figure 1 & 2).

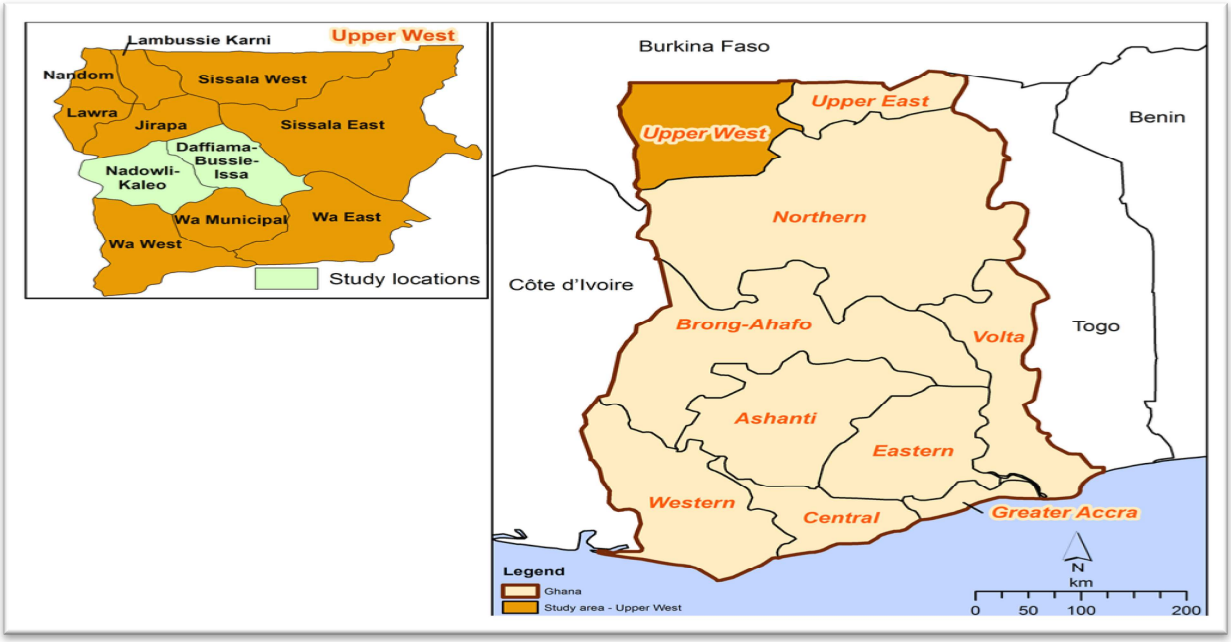


Figure 1: Map of Ghana Showing regional and district location

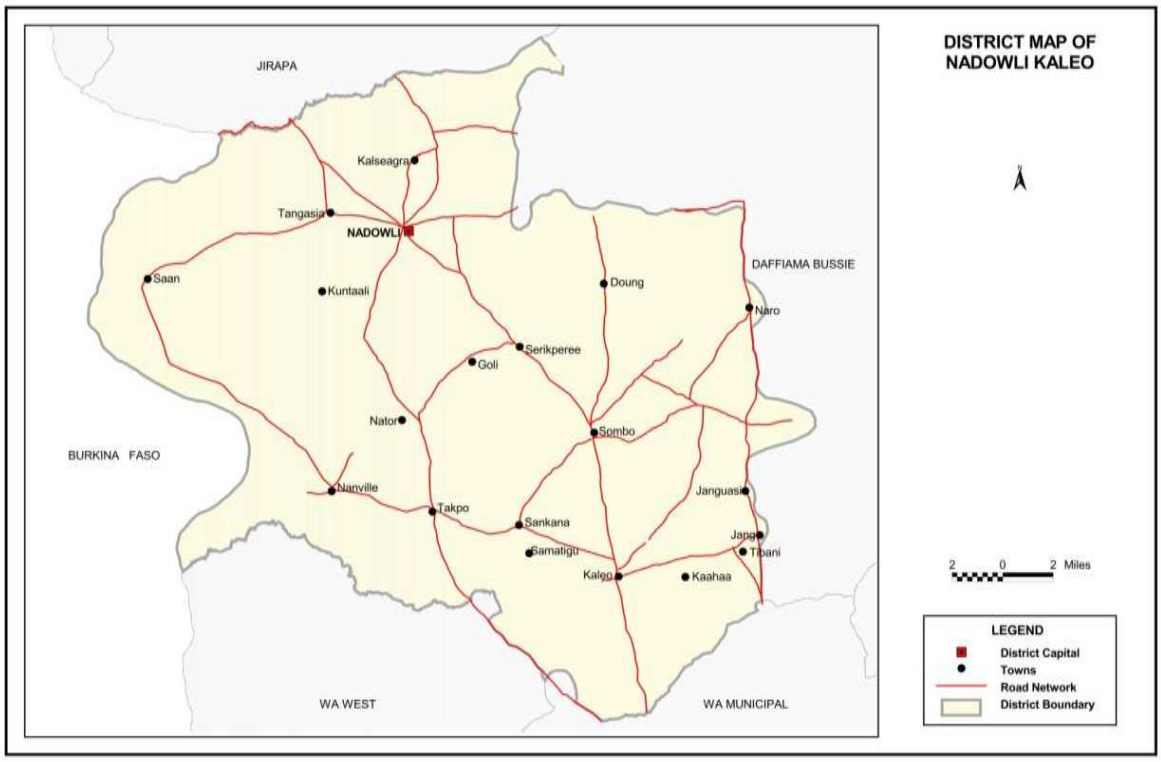


Figure 2: The Nadowli/Kaleo District is located in the centre of upper west region of Ghana as shown in figure 1.

3 RESULTS

With reference to these broad themes, the analysis was presented in five areas: Antenatal care (ANC) registration and attendance, exclusive breastfeeding, Intermittent Preventive Treatment of malaria in pregnancy (IPTp). These three core components were selected for the study due to their contribution to the immunologic defence system of the pregnant woman, the unborn baby and the neonate.

ANTENATAL CARE (ANC) REGISTRATION AND ATTENDANCE

Antenatal care; an essential component of healthcare and related areas with a prime aim to maintain and improve the health of pregnant women body and mind for complications and safety of the unborn baby [14, 15]. It is a key determinant of safe pregnancy and childbirth outcomes. Therefore, the WHO recommends four visits for uncomplicated pregnancies and eight to thirteen visits for developing countries like Ghana [3, 8]. It is means to establish contact with pregnant women in order to detect and manage health problems to prevent complications that might arise and pose threat to the mother and the unborn child. For a mother to derive maximum benefit from antenatal care, it is essential for her to start utilizing the services early enough to attain a minimum number of contacts with the services [3, 7]. The services provided at ANC include: immunization, PMTCT, Physical examination, laboratory investigations, counselling, treatment of minor ailments and referrals to higher level facilities for further interventions and management [8]. The coverage of ANC services is shown below (Table 1).

Table 1: Antenatal care and child births with skilled attendants

Indicator	2012	%	2013	%	2014	%	2015	%
Total number of expected deliveries (January to December)	2640		1811		2735		2716	
ANC Registrants	1035	-	2158	80.4	2176	80.0	2050	75.5
ANC[1] Coverage (%)		70.8		82.3		89.1		95.8
4 ANC Visits+	584	56.4	1833	84.9	1966	90.3	1648	80.4
% of Registrants who did not start or complete ANC course	451	43.6	325	19.9	210	12.0	402	16.6
Total Child Births with skilled care	733	19.6	1777	66.2	1938	71.1	1964	72.3
Number of Child Births by TBAs	57	32.9	56	32.4	36	20.8	24	13.9
Number of unskilled births (homebased and unnoticed)	245	23.7	325	15.1	202	9.3	62	3.0

Source: Nadowli/Kaleo District Health Administration, 2015

The provision of special care for women during pregnancy through the public health services has been a very positive and recent development in obstetrics towards achieving improved maternal and neonatal health outcomes. The proportion of antenatal registrants are 1035 in 2012; 2158 in 2013; 2176 in 2014 and 2050 in 2015. The data indicated the annual ANC registrations for the various years as follows: 70.8% (2012); 82.3%% (2013); 89.1% (2014) and 95.8 % (2015) for the district. These indicate improvements in the acceptance of ANC services. With the increased awareness of the significance of the IPT, TTIs and ANC lessons, one would have anticipated communities to embrace the concept completely. Research found a positive correlation between ANC attendance and childbirths under skilled supervision [3, 16]. However, this is not the case for the study area. The frequencies in Table 1, observed an inverse relationship between these key variables with 32.9% (2012); 32.4% (2013); 20.8 (2014); and 13.9 (2015) of expectant mothers who registered for ANC, gave birth supervised by Traditional Birth Attendance (TBAs). To add, a whooping number of 43.6% (2012); 19.9 (2013); 12.0% (2014) and 16.6% (2015), of expectant mothers who subscribed to receive antenatal care were unable to either commence it or complete the full antenatal course.

The study found a positive relationship between the numbers that made four plus visits and those who received skilled attendant at birth. It supports Biks, Tariku and Tessema [11] position that, ANC creates congenial environment for skilled attendant during birth as well as gets them ready for early detection of risks and complications readiness. Results show, 70.8% (2012); 66.2% (2013); 71.1% (2014); and 72.3% (2015) had their child births supervised by skilled professionals (see Table 1). Though data differentiation was not done by the health information unit to ascertain the turn up for each visit up to four plus visits and the expectant mothers within each cohort of ANC attendees who eventually had their child birth in a health facility, it is conclusive since ANC prepares women for skilled attendant at birth as well as complication readiness.

EXCLUSIVE BREASTFEEDING

The health of the child at the early stages of life is important for the proper growth of the child [9]. Breastfeeding provides many benefits to both infants and mothers, including optimal nutrients for infant growth and development, enhancing infants' immunologic defences, and facilitating mother-infant attachment and mothers' recovery from childbirth [11]. Despite, the known benefits of breastfeeding, substantial proportion of mothers do not breastfeed their infants at all or for ≥6 months postpartum [17, 18]. Studies discovered, completion of four or more ANC visits as a positive signal of adequate knowledge on the relevance of breastfeeding to trigger increase in EBF acceptor rate; hence, mothers would have taken a bold step to practice it [9]. It is the reverse in the study area. The annual performance review data for the study area

[1] *Antenatal care coverage (at least one visit) is the percentage of women aged 15–49 with a live birth in a given time period that received antenatal care provided by skilled health personnel at least once during their pregnancy. Also, antenatal care coverage (at least four visits) is the percentage of women aged 15–49 with a live birth in a given time period that received antenatal care by any provider four or more times during their pregnancy*

ANC coverage is percentage of the number of births by skilled person over total number of registrants within the same time period (in years)

indicated; 1,556 babies were born in 2012. Out of which 77.2% were exclusively breastfeeding at discharge from the health facility. In 2013, statistics found 1,214 babies (68%) exclusively breastfed out of 1,786 babies that were born in accredited public health facilities (CHPS compounds, health centres and hospital). Subsequent years experienced tremendous decrease in the acceptor rate to about 47.3% of babies exclusively breastfed in 2015 (see Figure 3). Lactating mothers who initiated breastfeeding within one hour of childbirth constituted 31.7% of the 1,214 women (in 2013) who were found breastfeeding exclusively at discharge. In 2014, there was further remarkable decrease early breastfeeding initiation rates from 31.7% to 26% of lactating mothers who initiated EBF. Lactating mothers who were still practising EBF in 2013 and 2014 were respectively 35.5% (431 out of 1,214) and 21% (297 out of 1,413).

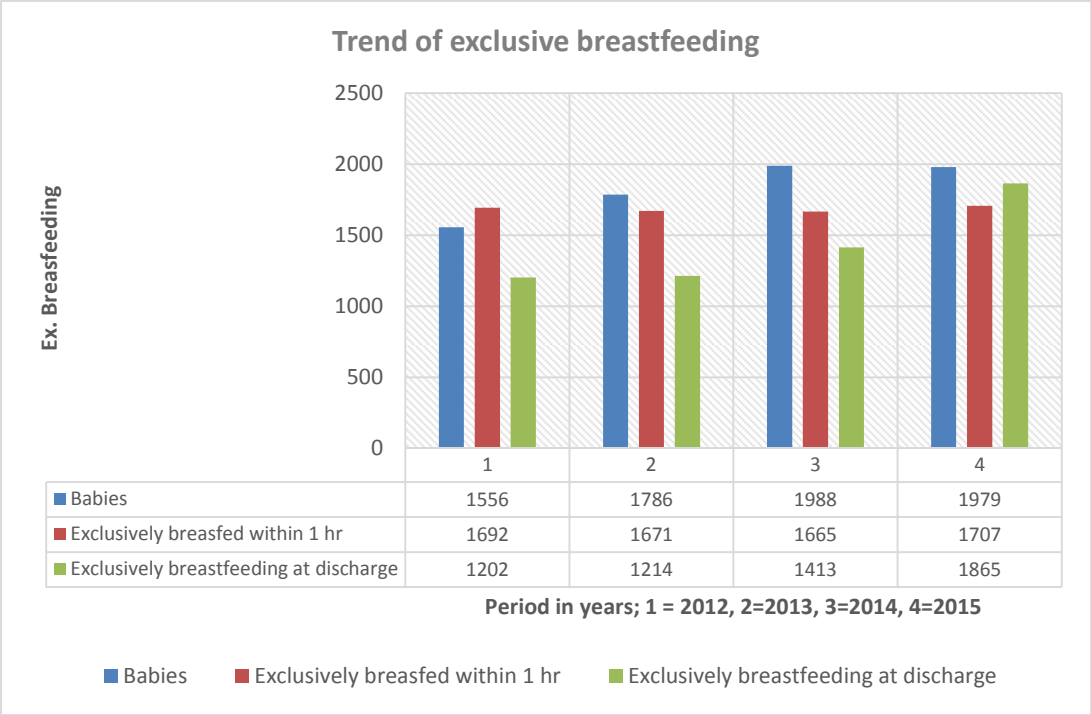


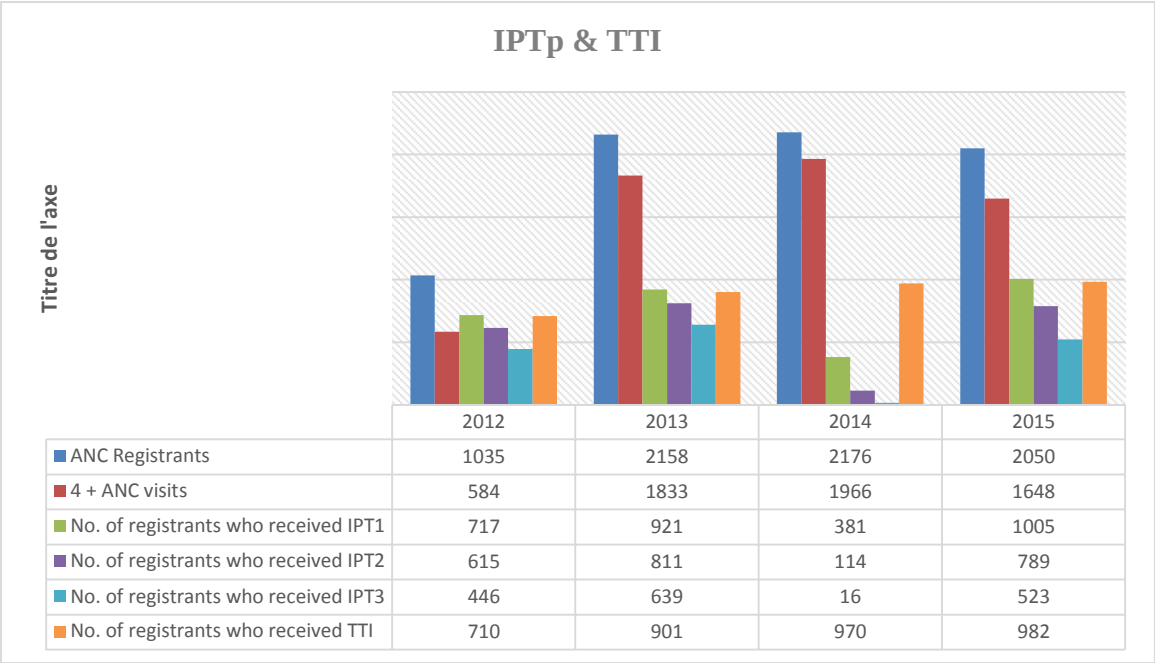
Figure 3: Trend of exclusive breastfeeding[2] at discharge from health facility

INTERMITTENT PREVENTIVE THERAPY FOR MALARIA IN PREGNANCY (IPTP)

Intermittent preventive therapy for malaria in pregnancy (IPTp) with sulphadoxine-pyremathmine (SP) is a full therapeutic course of anti-malarial medicine given to pregnant women at routine prenatal visits, regardless of whether the recipient is infected with malaria [14, 19]. IPTp-SP is provided to: *reduce maternal malaria sicknesses, maternal and foetal anaemia, placental parasitaemia, low birth weight, and neonatal deaths or stillbirths [3, 20, 21],* which will further propel maternal health indicators towards achieving MDGs 4 and 5. Research show 15 million pregnant women classified as at risk did not receive IPTp [22].

Pregnant women infected with malaria usually have more severe symptoms and outcomes, with higher rates of miscarriage, intrauterine demise, premature delivery, low-birth-weight neonates, and neonatal death [3]. To prevent these effects, IPTp was introduced as a mandatory component of ANC services to improve MNH care outcomes. IPTp can be provided up to five or more times throughout the gestation of the pregnancy. Figure 5 shows the performance of IPTp and tetanus toxoid vaccinations in the area.

[2] *Nadowli district hospital receives referrals of pregnancy women from: Nadowli/Kaleo district, Daffiama/Bussie/Issa district and Wa Municipal, therefore number of babies do not match up with number of ANC registrants*



	2012	2013	2014	2015
ANC Registrants	1035	2158	2176	2050
4 + ANC visits	584	1833	1966	1648
No. of registrants who received IPT1	717	921	381	1005
No. of registrants who received IPT2	615	811	114	789
No. of registrants who received IPT3	446	639	16	523
No. of registrants who received TTI	710	901	970	982

Figure 4: Intermittent preventive treatment for malaria in pregnancy and tetanus toxoid immunisations during ANC registration/visits

IPTp with Sulphadoxine-pyremathmine (SP) treatment was presumptive in the health facilities and administered at all ANC units. Among the registered pregnant women at ANC, 69.3%, 82.3%, 30.2% and 73.6% reported receiving the first dose of IPTp -SP during conception for the periods of 2012, 2013, 2014 and 2015 respectively.

The data obtained also showed that, 59.4% (2012); 74.2% (2013); 9.0% (2014); 61.7% (2015) of the pregnant women who registered for ANC and did honoured one or more visits received two doses of IPTp-SP during throughout the gestation of the pregnancy. Figure 4 highlights the uptake of IPTp-SP treatment. From the chart, the uptake of IPTp3, IPTp4 and IPTp5 or realised continued decline for all the periods (2012-2015), meaning that, many women do not receive the vaccine for up to four and five times as recommended. The low uptake of three vaccinations are inadequate to ensure improved health status of expectant mothers for safe childbirth to healthy baby. Considering the invaluable contribution of IPTp-SP toward good pregnancy outcomes, stringent communication and public awareness campaigns are required to step up the patronage of ANC and uptake of IPTp-SP.

TETANUS TOXOID VACCINATIONS

It is a general standard by the World Health Organisation (WHO) to ensure all women giving birth and their newborn babies should be protected against tetanus infection, thereby very integral to new-born health outcomes. We realised that out of the number of expectant mothers who registered for antenatal care, 54.4%, 710 (2012); 60.6%, 1307 (2013); 74.5%, 1622 (2014) and 93.6%, 1918 (2015) of them received TT immunisation. It's worth noting that, TT inoculation is a mandatory component of ANC for every pregnant woman up to two or three times during the gestation of the pregnancy to achieve safe and healthy childbirth outcomes. In the study area, tetanus dose was received ones or not all. It is conclusive to say mothers who did not receive TTI presuppose that, those neonates will be prone to health dangers.

BASIC ANTENATAL CARE AND OBSTETRIC HISTORIES OF EXPECTANT MOTHERS

Primary data on ANC variables and basic obstetric histories of the survey expectant mothers are as follows (Table 2): of the 80 expectant mothers who were in 4 to 8 months' gestation (2^{nd} and 3^{rd} trimesters), 67 (83.8%) were receiving ANC, 13 (16.3%) receiving and using ANC services (n=13, 16.3%). Primigravidarium constituted 20% (16) and women who had five or more childbirths were 23 (28.8%). The data depicted that a large proportion of the 64 non-prime mothers still had homebirths (n=18, 22.5%).

Community members did not provide divergent opinions from the comments provided in the survey data. When asked if there were expectant mothers who refused to receive ANC, some views given included:

.. Yes, we have some like that. Normally some of those expectant mothers are encouraged to receive ANC but they refuse to go for ANC (FGD, Adult women, Charikpong). Some pregnant women hide the conception from us as family heads (FGD, Opinion Leaders, Charikpong). They normally do not want others to know they are pregnant. Many of the expectant mothers who fail to attend antenatal care are the unmarried ones and under aged girls and school children. They keep it secretly whilst sometimes devising illegal means of terminating the pregnancy (FGD, Adult women, Charikpong).

Recalcitrant pregnant women refuse to attend ANC, instead they go to TBAs for herbs to ensure fast childbirth during labour. The herb is "mansugo" i.e. "cold" or "hot" local oxytocin. Hence, if expectant mother mistakenly takes the "hot" local oxytocin, it will lead to preterm or stillbirth or even terminate the pregnancy (FGD, Adult women, Woggu).

The discussions further revealed that, expectant mothers who use ANC also receive care from TBAs as indicated:

Yes, sometimes… the midwife is unable to reposition the well…… but, when we go to TBA, she is able to identify the problem and provide treatment. For instance, when I attended the clinic with breech presentation, the midwife was unable to correct it, so I went to the TBA at Da for repositioning and it was done (FGD, Adult woman, Charikpong).

Basic ANC variables and obstetric data show marked reduction in the number of ANC attendance among survey participants between the two conceptions (Figure 5). Out of the 64 non-primes, 8 did not receive ANC throughout the period of their gestation, and this value in the frequencies has increased to 13 among the same mothers. What could have accounted for the reduction in ANC visits?

Expect mothers feel shy to carry the card because of stigma of the public knowing she has conceived. Hence, the midwives are often compelled to keep the card with them so that people do not see them holding the card, because of stigma type of thing. The card is kept at the facility for until such a time when she can no longer hide the pregnancy, then the midwife will release the card for her to keep with her wherever she goes (face-to-face interview, DON, Daffiama/Bussie/Issa).

Out of 64 expectant mothers who were received ANC in their past and current pregnancies, the number who made four plus visits decreased by 15.6% (Figure 5).

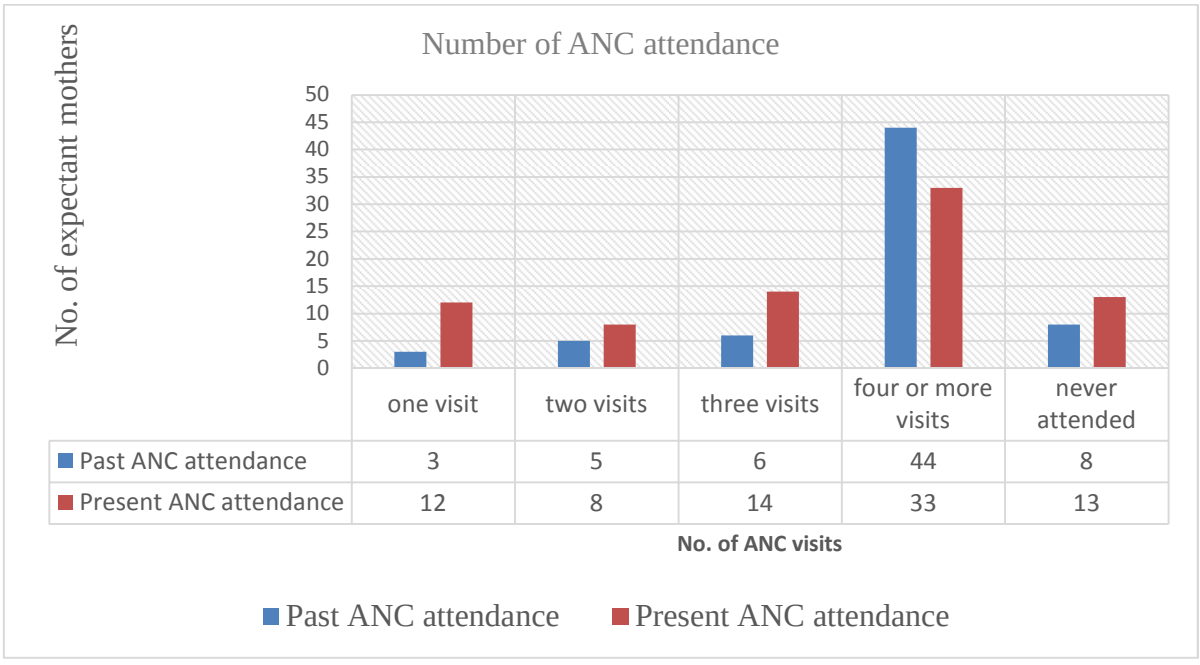


Figure 5: ANC attendance of multipara expectant mothers

ANC ATTENDANCE VERSUS IPTP AND TTI UPTAKE

Individual linear regression analysis was conducted for ANC and IPT and TTI. Using unstandardized B coefficient, ANC contributes -0.040 to the uptake of IPTp. Therefore, a decrease in ANC visits will lead a commensurate decrease in IPTp uptake. An increase in ANC visits will also increase the number of pregnant women receiving tetanus vaccination by 0.185 (Tables 2 & 3).

Table 2: ANC attendance and IPTp uptake

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	815.902	498.119		1.638	.243
	ANC	-.040	.311	-.090	-.128	.910

a. Dependent Variable: IPTp1

Table 3: ANC and TTI uptake

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	612.458	86.272		7.099	.019
	Four plus ANC visits	.185	.054	.925	3.430	.075

a. Dependent Variable: TTI

4 DISCUSSIONS

PA Afulani [23] posited in her thesis, 96% of pregnant women in Ghana attend ANC clinic at least once during pregnancy, thereby providing positive signals for delivering interventions to control malaria, tetanus infections, and general safety of pregnancy for healthy birth outcomes. Despite this high proportion for the nation, ANC coverage in Nadowli/Kaleo is rather the reverse, recording irregular pattern in the number who make up to four or more visits (focus antenatal care initiative) for 2012 (n=584, 56.4%); 2013 (n=1833, 84.9%); 2014 (n=1966, 90.3%) and reduction to 80.4% (1648) for 2015, although there was increase in Women in Fertility Age (WIFA) and the general population. ANC is the number one medium for implementing safe motherhood initiatives, thereby moving closer towards achieving the MDGs 4, 5 and 6.

The provision of special care for women during pregnancy throughout the maternal healthcare services was found to be relatively late development in modern obstetrics in the District, although, the indicators covered in this study did not delve into the content or quality of the ANC services. Despite the broad consensus on what the content and quality should be, it is observed from the low patronage and performance in these key indicators, calls for reinforcement of strategies at the community level to meet the standards recommended by the WHO. Crucially, the number of pregnant women who registered for ANC vis-a-vis those who had their delivery under skilled supervision (see Table 1). Out of the 1,035 women who registered for ANC in 2012, 57 constituting 32.9% of the 584, and possibly made up to four plus visits still had their childbirths supervised by traditional birth attendants (TBAs) in same period. Considering the total number of childbirths supervised by TBAs (Tables 1), means the district is making significantly moderate progress towards achieving the MDGs 4 and 5 [23, 24]. These findings are similar to a study in Ghana, Malawi and Kenya [19].

It was observed that, despite significant contribution ANC lessons make towards promoting safe motherhood, the trend of refusal to have 4 plus ANC visits remains a major challenge among pregnant women in the area as found by [8] in a similar assessment in Ghana. This low rate in ANC visits has affected the other key components (see Tables 2 &3). IPTp-SP and Skilled attendant at birth and exclusive breastfeeding were also found to be relatively low to meet set target of improved maternal and child health outcome in the district [25].

The regression on 4 plus ANC visits and IPTp and TTI indicates that the uptake of the TTI and IPTp are dependent upon the number of ANC visits a mother is able to make. If expectant mothers are able to make four or more visits, they stand significant chance of receiving both vaccines.

5 POLICY IMPLICATIONS

What accounts for homebirths in the study area? Should stigmatisation scare expectant mothers from receiving ANC services in the post-MDG era? All pregnant women need access to antenatal care, skilled care during childbirth, and care and support in the weeks after childbirth [3]. The World Health Assembly called for reduction in global burden of malaria by 75%. Malaria infection in pregnancy has significant risks on the mother and the newborn, the reason for IPT in pregnancy; therefore, if the uptake maintains the current pattern, the district is far from achieving target [22]. Knowing the unequal importance of ANC services towards improved maternal health outcomes, it is incumbent for proactive and sustainable policy

initiatives to step up "anti-maternal" cultural beliefs and practices. ANC includes education on general safety of pregnancy. Social, family, and community context and beliefs that affect health during pregnancy such as; "pregnancy rites/announcement" and stigmatisation among communities should be incorporated into community context guidelines rather than rigidly adopting ANC elements as "rule-of-thumb". MDG seeks to achieve improved maternal and newborn healthcare outcomes regardless of the marital status or cultural components of the locality.

6 CONTRIBUTION TO EXISTING STUDIES

I. Antenatal registration should not be used as a measure of antenatal coverage of the population.

II. Content and services provided at ANC should be treated more highly than the number of visits made.

7 CONCLUSION

ANC services has significant potential towards reducing neonatal deaths and improving on maternal healthcare outcomes. It is prime strategy towards achieving the target towards achieving the targets of the Global Technical Strategy for malaria (2016-2030) and the MDGs 4 and 5. The conduct of ANC and community level barriers to the patronage of ANC services warrants further investigation.

8 LIMITATIONS

1. Data was not segregated with respect to pregnant women who registered for ANC and those who received the IPTp1, IPTp2, and IPTp3. ANC was conducted on group basis and therefore presented a challenge to specifying the behaviour of gravidity across the data. The performance of the indicators regarding geographical locations – remote or nearby and rural or town, to enable the differences in the acceptor rates was not equally segregated.
2. We further acknowledge that, data was taken from the District Health Information making us unable to predict possible errors in the data.
3. The data covered only women who gave birth in a healthcare facility and those who received postnatal care after giving birth without skilled attendant.

LIST OF ABBREVIATIONS

ANC	Antenatal care
ANM	Auxiliary Nurses/Midwife
BF	Breastfeeding
BFHI	Baby-Friendly Hospital Initiative
CHN	Community Health Nurses
DON	Director of Nursing services
EBF	Exclusive Breastfeeding
FGDs	Focus group discussions
IPTp	Intermittent preventive treatment in pregnancy
MCH	Maternal and Child Health
MMSGs	Mother-to-Mother Support Groups
MDGs	Millennium Development Goals
PNC	Postnatal care
SP	Sulphadoxine-pyremathmine
TBAs	Traditional Birth Attendants
TTI	Tetanus Toxoid Immunisation
WHO	World Health Organisation
WIFA	Women in Fertility Age
UNICEF	United Nations' Children's Fund

COMPETING INTERESTS

No competing interest to declare.

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