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FACTORS INFLUENCING THE TIMING OF COMPLIANCE WITH NON-EMERGENCY OBSTETRIC REFERRALS AT THE TAMALE TEACHING HOSPITAL

BY

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DECLARATION

I, Seidu Barikisu Abukari, hereby declare that, apart from other people‟s works which have been duly acknowledged, this work is the result of my own original research, and that this dissertation, either in whole or in part has not been presented elsewhere for another degree.

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DEDICATION

This work is first and foremost dedicated to the Almighty Allah, the Beneficent, the Merciful for His guidance and protection throughout my entire study period. I further dedicate this work to my parents particularly my mother, Hajia Safura who has shown me so much love throughout my life and also to my Mother-in-law, Hajia Rabi who took care of my children while I concentrated on my studies in pursuit of my MPH programme. I finally dedicate this dissertation to my husband Dr. Sherif and our two God given sons: Tipagya and Suglo.

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ABSTRACT

Background: It is known that significant reduction in maternal mortality cannot be attained without an effective and efficient referral system. Maternal mortality in the Northern Region remains high with the Tamale Metropolis alone recording 76 out of 133 deaths in 2016. Anecdotal evidence in the region suggests that majority of referred maternal patients do not comply promptly with referral recommendation especially during non-emergency referrals. This could be a contributory factor to the high institutional maternal deaths recorded in the region.

Objective: the objective of this study was to determine the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital.

Methods: The study was conducted at the Tamale Teaching Hospital Obstetrics Unit from 4th June to 14th June 2018. It was an analytical cross sectional quantitative study. The data were obtained from 213 participants who were recruited through simple random sampling. They were interviewed using a data extraction tool adapted and modified from the WHO rapid assessment of referral care systems. Descriptive statistics, bivariate and multivariate analyses were performed at 95% confidence interval and the results presented in tables and charts.

Results: The study found that about one in five (22.1%) of pregnant women do not comply early with non-emergency referrals to the Tamale Teaching Hospital. Age, marital status, health insurance status, severity of condition, journey time and road network were significant factors found to influence the timing of compliance.

Conclusions: The study concluded that there was late referral compliance among some pregnant women in non-emergency situations. Hypertensive disorders, previous caesarean section and anaemia in pregnancy were the leading conditions that necessitated referrals. Age, marital status, health insurance status, severity of condition, journey time and road network predicted timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital and therefore recommended

the need for the coordination of referral processes within the region and patient education through community participation.

Keywords: Compliance, Non-Emergency, Maternal Mortality, Referrals

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LIST OF ABBREVIATIONS

ANC	Antenatal care
BASICS	Basic Support for Institutionalizing Child Survival Project
cEMOC	Comprehensive Emergency Obstetric Care
DHS	District Health System
FDG	Focus Group Discussion
GHS	Ghana Health Service
GSS	Ghana Statistical Service
LB	Live Births
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
MPH	Master of Public Health
NHIS	National Health Insurance Scheme
NR	Northern Region
NRHD	Northern Regional Health Directorate
PCA	Principal Composite Analysis
SDG	Sustainable Development Goal
TCH	Tamale Central Hospital
TTH	Tamale Teaching Hospital
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children Fund
UNPD	United Nations Population Development
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Client/Patient	A pregnant woman, irrespective of her gestational age.
Danger Sign	A clinical manifestation indicating that a pregnant woman‟s life is in jeopardy.
Timing of Compliance	How early or late patients adhere to referral advice after being referred.
Early Compliance	Adherence to referral recommendation within 7 days of referral.
Late Compliance	Adherence to referral recommendation after 7 days of referral.
Maternal Mortality/Death	Death of a woman while pregnant or within 42 days of termination of pregnancy despite the pregnancy duration from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
Non-Emergency/ Elective Obstetric Referral	Referral of a pregnant woman when her condition is not immediately life-threatening.
Referral /Receiving Facility	A health facility from which a client is being referred.
Referring Facility	A health facility to which a client is being referred.

CHAPTER ONE

INTRODUCTION

1.1 Background

The millennium development goal 5 called for a reduction in maternal mortality ratio by 75% by 2015 (WHO, 2008). Unfortunately, no country in Africa was able to achieve that goal. Ghana recorded MMR of 319/100,000 live births in 2015 despite all efforts made by international, local and government agencies to curtail this menace (WHO, UNICEF, UNFPA, World Bank Group, & UNPD, 2015).

Evidence suggests that in a well-functioning health system, referrals can reduce maternal deaths by 50% (Atuoye et al., 2015). Referrals ensure that patients can access care at the primary levels and be referred promptly for secondary or tertiary care if required (Ministry of Health, 2012). Thus, the referral system is a critical component of the district health system. It is especially important in obstetrics for providing access to care and for backing up antenatal and delivery care in first line facilities (Jahn & Brouwere, 2001).

A referral is a process in which a health worker, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in the patient"s care (WHO, 2013). Referrals can take two forms either for emergency or non-emergency (elective) conditions.

The Ghana Health Service has organized health care system into three or four depending on the district thus adopting the district health system (DHS) and the referral system is the main link between them. This system links the lowest level of care to the highest level and ensures access to specialist and continuum of care, as patients are referred from hospitals and health centres in communities to a secondary and tertiary levels of care (Affour et al., 2016).

In Ghana, policy makers are mandated to ensure an effective and efficient referral system that enables continuity of health services to every person (GHS Annual Report, 2016). The realization of this is however faced with numerous challenges such as unavailability of the appropriate logistics to facilitate the referral process. The situation is not different from the Northern Region which has the TTH as its only tertiary hospital serving all the three regions in the North. It is not amazing that the facility receives an average of 39 non-emergency obstetric referrals daily (TTH ANC Records, 2017). The effectiveness and efficiency of referrals to this facility is questionable as cases referred there cannot even be traced if they do not show up and only appear later in emergency situations most likely to culminate as mortalities.

Experts in the field of obstetrics and gynaecology are of the view that pregnant women should comply with their referrals within 7 days after referral in non-emergency situations because a well-functioning referral system can reduce mortality by about 50% (Atuoye et al., 2015).

Prompt compliance with maternal referrals is key in preventing maternal mortality which is mostly preventable when detected early and the right measures taken. Early identification of obstetric emergency, appropriate referrals and prompt compliance with referrals to seek treatment will help in the progress towards attaining sustainable development goal (SDG) 3.

Despite the fact that there have been several advancement in medical and surgical intervention in recent times, maternal morbidity and mortality still remains a challenge in Ghana and sub-Saharan Africa. Most of the maternal complications resulting in mortalities often present as emergencies either from aggravation of pre-existing conditions during pregnancy, directly from the pregnancy or even after delivery which could have been prevented if detected early enough and the appropriate measures put in place or if patients complied promptly with referral advice by their health care providers.Identifying that prompt compliance with maternal referrals prevents undesired maternal outcomes and reduces maternal mortality, this study seeks to

assess the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital

1.2 Problem Statement

The Northern Region has consistently recorded high maternal mortality ratio of about 144/100,000 LB and 207/100,000 LB in 2015 and 2016 respectively (GHS Facts and Figure, 2017). Thus, an increase of about 44% in 2016 over 2015. The Tamale Metropolis alone recorded 76 out of 133 total deaths in 2016 (NR Annual Report, 2017). Thus, accounting for more than half (57.1%) of the total maternal deaths.

Anecdotal evidence in the Northern Region suggests that majority of referred clients do not comply with referral recommendation in non-emergency situations and the few who do turn up late. Despite the importance and benefits of complying early with referrals, very little empirical evidence exists in the region with regards to compliance with non-emergency obstetric referrals.

Prompt compliance with referrals is influenced by socio-demographic (age, gravidity, parity, gestational age, marital status, educational level, occupation, ethnicity, religion), socio-cultural (perception about severity of illness, previous experience, belief about cause of illness), economic (health insurance status, socio-economic status), geographic (distance or journey time, road network, means of transportation), and health system or factors at the health facility level (staff attitude, waiting time, availability of logistics) (Atuoye et al., 2015).

Failure to comply promptly with maternal referrals has the potential to prolong illness, increase the cost of treatment and worsen the patient‟s condition leading to morbidity and mortality.

This study was therefore conducted to assess the factors influencing the timing of compliance with non-emergency obstetric referrals in order to bridge the data and literature gap in terms of referral compliance within the Northern Region.

1.3 Conceptual Framework

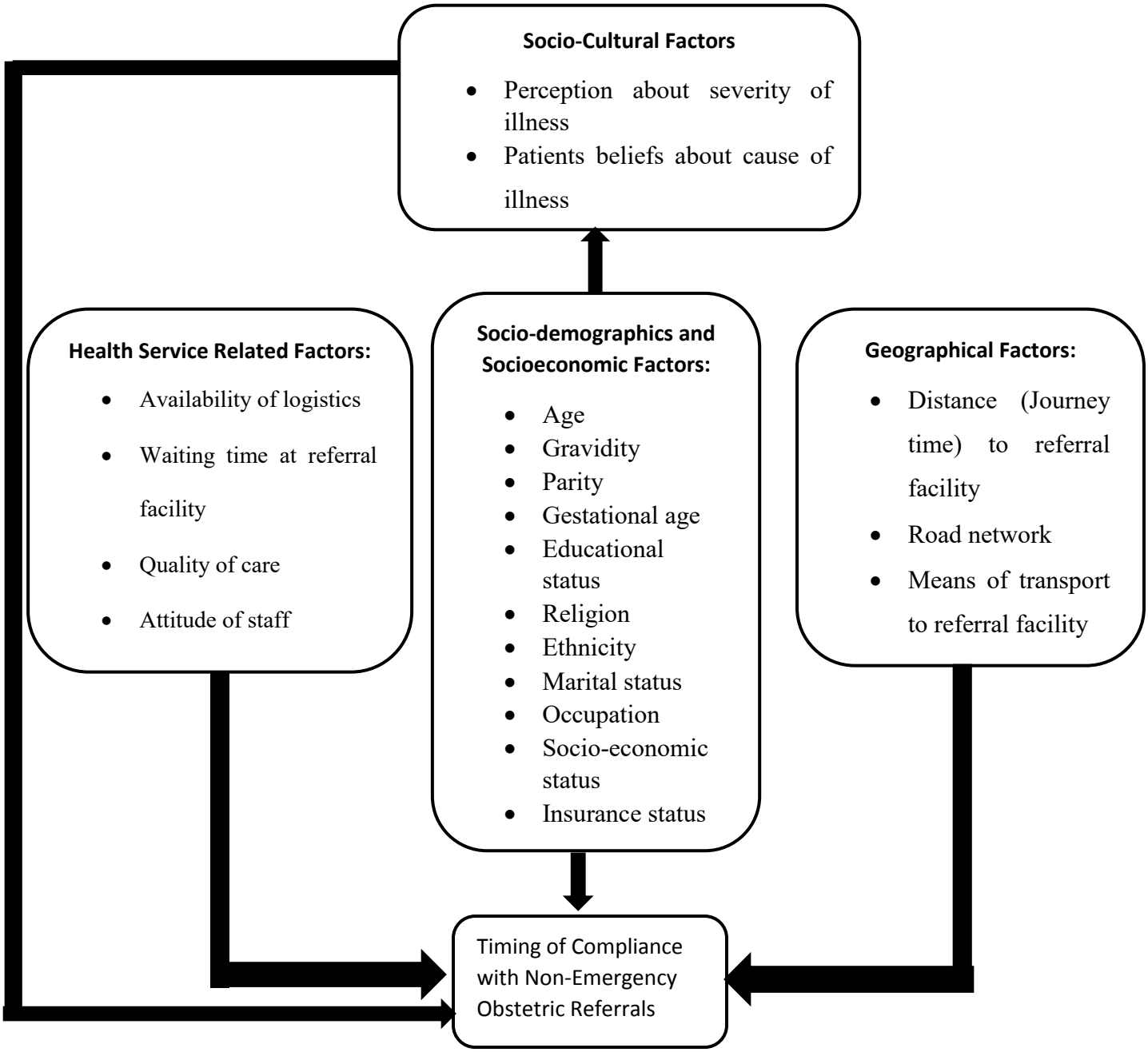

Figure 1.1: Anderson's Model of Health Care Utilization Adapted with Modification (Neman & Anderson, 1973)

Description of the Conceptual Model

The conceptual framework used for this study was adapted from Newman and Anderson (1973). As illustrated in Figure 1.1, the model of the study shows the relationship between the independent variables (socio-demographic, health service related, sociocultural and geographic factors) and the outcome variable (timing of compliance with non-emergency obstetric referrals).

A pregnant woman upon referral is influenced by socio-cultural, demographic and socio-economic, health system related and geographic factors to take a decision on compliance with the referral. The socio-cultural context within which she finds herself influences her perception about the severity of her condition and her belief about the cause of her illness and whether or not she should delay compliance. Demographic and socio-economic factors such as her age, number of children she has (parity), her educational level, religion, ethnicity, marital status, occupation and socio-economic standing although affects her decision on when to comply also influence her socio-cultural makeup.

Finally the distance she needs to travel, the nature of the road and the means by which to do so to get to the receiving facility affects her willingness to comply early or late. All these independent factors outlined ultimately affect the direct and indirect accessibility of the referral facility to the patient and consequently her decision to comply early or late with non-emergency referral.

1.4 Justification

This study will serve as a baseline study and inform decision makers on how to appropriately address challenges associated with delay in compliance with maternal referrals especially in non-emergency situations and to formulate interventions or policies on how to influence expectant mothers to comply early with referrals so as to improve their health outcomes, wellbeing and reduce maternal mortality in the region. It will also bridge the gap in literature and data as well

as provide empirical evidence with regards to the timing of compliance with non-emergency obstetric referrals in the region.

1.5 Objectives

1.5.1 General Objective

The general objective of this study was to assess the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital.

1.5.2 Specific Objectives.

The specific objectives of this study were to:

1. determine the proportion of women who comply late with non-emergency obstetric referrals to the Tamale Teaching Hospital.
2. identify the non-emergency conditions for which pregnant women are being referred to the Tamale Teaching Hospital.
3. assess the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital.

1.6 Research Questions

1. What proportion of women comply late with non-emergency obstetric referrals to the Tamale Teaching Hospital?
2. What are the non-emergency conditions which necessitate obstetric referrals to the Tamale Teaching Hospital?
3. What are the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital?

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A systematic review involving 16 studies concluded that about one-third to one-half of pregnancies in rural populations are assessed as high risk and are referred from lower health facilities to higher facilities for further antenatal check-up and delivery care (Singh, Doyle, Campbell, Mathew, & Murthy, 2016). These findings suggest that about one-half to two-thirds of all pregnant women attending lower level health institutions are likely to be referred during pregnancy or delivery (Singh et al., 2016). Many Scholars from sub-Saharan countries have studied different aspects of referral systems (Newbrander et al., 2012). There is however limited studies on the timing of compliance with referrals. Most studies have focused on reasons for compliance or non-compliance with referrals. Meanwhile timely compliance with non-emergency referrals and not only compliance is key in obstetrics for optimal care and prevention of avoidable deaths. This chapter provides general conceptions on related studies on referral compliance as well as highlights factors that influence compliance with referrals.

2.2 Compliance with Referrals

Earlier studies have demonstrated that there is widespread non-adherence among clients referred to seek care at alternative facilities in Africa and beyond (Gupta & Gupta, 2000; Affour et al, 2016; Pembe et al, 2010; Pierre Ilboudo, Chou, & Huang, 2012). For instance, a study in the Amansie West District in Ghana revealed that only 21.7% of pregnant women complied with referral advice (Affour et al., 2016). Also, out of 1,538 women referred, 70% on account of demographic risks, 12% for obstetric historical risks, 12% for prenatal complications and 5.5% for natal and immediate postnatal complications, the compliance rate was 37% for demographic

risks and more than 50% among the other risk groups (Pembe et al., 2010). In contrast to these findings, a study in Wisconsin, United States found a relatively higher referral compliance rate of about 83%. (Forrest, Shadmi, & Nutting, 2007). In addition, 90% of those referred by a relative or friend complied with the referral advice, despite not receiving a referral slip (Newbrander et al., 2012). Similarly, majority (83.0%) of patients indicated they complied with their referral to see a specialist and "lack of time" and patients" perception that their condition had resolved were the reasons cited for non-compliance. The study concluded that referral compliance rates may be increased by helping patients with scheduling their referral appointments and promoting continuity of care (Forrest, Shadmi, Nutting, & Starfield, 2007).

Considering these earlier studies, none of them examined how long it took patients to honour referral advice by their primary care providers to the next level. The relevance of promptly seeking health care cannot be overemphasized and in some cases makes the difference between life and death. This current study therefore has the goal to focus on the timing of compliance, an often forgotten component of research studies on referrals to gain greater insight into what influences patients" timing with compliance to bridge this gap in literature and more importantly to inform policy makers on how to appropriately intervene to reverse the status quo in the Northern Region.

2.3 Conditions and Reasons for Obstetric Referrals

The reason for referrals should be purely medical, objective and in the interest of the patient (Bossyns et al., 2006). This may sometimes not be as simple and straight forward as it appears. Obstetric patients are referred for diverse reasons including the presence of danger signs, demographic risk and inadequate expertise or skills of the primary care giver.

In Tanzanian, criteria for referral have been grouped into 3 broad categories: medical history, findings related to pregnancy (antenatal) and findings related to delivery (Jahn, Kowalewski, & Kimatta, 1998). According to Jahn et al (1998), despite pursuing the risk approach and very good coverage, antenatal care in Tanzania has only limited effect on extending maternal health care to high-risk mothers. In recent times, the approach to reduce maternal mortality has shifted from the risk approach involving identification of high risk pregnancies which can progress into complications to provision of skilled care during delivery and emergency obstetric care when complications develop. This is necessary because most maternal mortalities occur during labour, delivery and the first day postpartum (Pembe et al., 2010).

However, previous studies have shown that risk identification and referral can be beneficial if carried out properly. For instance, checking blood pressure for hypertension and measuring fundal height in order to identify multiple pregnancies (Jahn & Brouwere, 2001).

A study in India revealed that premature rupture of the membranes, failure to progress, foetal distress, malpresentation, gestational hypertension, postdate, preterm labour and patients choice were reasons for referral to a tertiary care centre (David et al., 2012). Similarly, in the Ashanti Region, pregnant women were referred on account of oedema, cough, rashes, malaria among other conditions (Affour et al., 2016). Also, in the Greater Accra, studies have shown that gestational hypertension, antepartum hemorrhage, postpartum haemorrhage, obstructed labour, sepsis, ruptured uterus, foetal distress, neonatal complications, anaemia in pregnancy, primiparity, poor maternal effort in labour, fetal malpresentation, non-pregnancy related complications, twin pregnancy, macrosomia, intrauterine death, delayed second stage, placenta praevia, retained placenta, amniotic fluid embolism, postmaturity were the reasons for maternal referral (Nwameme, Phillips, & Adongo, 2014).

It is not known what similarities or differences exist in the Northern Region with regards to reasons and conditions for obstetric referral as compared with other regions. This current study aims to find out the reasons that necessitated referrals at the TTH in the Northern Region.

2.4 Factors Influencing Compliance with Referral

2.4.1 Socio-Demographic Factors

Demographic factors have been shown to be associated with women‟s decision to use pregnancy-related care (Smith & Sulzbach, 2008). Factors including maternal age, parity, ethnicity as well as religion have been demonstrated to influence maternal health seeking behaviors (Smith & Sulzbach, 2008; Affour et al, 2016; Oduro-Mensah et al, 2013). Affour et al (2016), argued in their cross-sectional study that economic status could have influence on who is being referred and whether the referred patient will honour such referrals. They found that obstetric referral compliance increases with educational level while age of the mothers, marital status, parity, occupation, NHIS subscription, duration of stay in community, had no influence on maternal referrals in the district. On the contrary, another study found a negative correlation between referral compliance and parity, a correlation was evident between parity and time lapse from being referred to reporting at the referral centre showing that the more children women had, the less likely they were to heed to referral advice. On the other hand, no association was found between marital status and delays in reporting at the referral centres (Nwameme et al., 2014).

In a qualitative interview conducted in Ghana using cross-sectional and descriptive mixed method design involving desk review of maternal and newborn protocols and guidelines availability, religious and societal interference on decisions taken for patients and clients refusal to accept care provider‟s advice was found to create provider disappointment (Oduro-Mensah et al., 2013). Another research studies concluded that low compliance with referral advice was

significantly associated with patient characteristics such as patients gender (Pierre Ilboudo, Chou, & Huang, 2012).

Although empirical evidence from referral studies generally postulate a relationship between socio-demographic factors and referral compliance this evidence is however not universal.

2.4.2 Geographical Factors

Distance as well as transport are important in health care access, serving as an intermediate between home and the health facility (Atuoye et al., 2015). Inadequate referral communication and low compliance, is likely to contribute to gaps and delays in the provision of emergency obstetric care (Singh et al., 2016). In developing countries, poor road network and absence of regular means of suitable transport leaves rural areas inaccessible, making physical access to specialized health care, which is not provided in local health facilities difficult (Atuoye et al., 2015).

For instance, in a previous study conducted in the Upper West Region of Ghana, respondents indicated that more than 70 % of the cases referred to the hospitals are not honored mainly due to high cost and unavailability of regular transportation (Atuoye et al., 2015). Similarly, in the Greater Accra Region, healthcare facilities involved in maternal referrals had a means of transporting their emergency obstetric cases to the referral centre but considering the nature of these transport arrangements, it goes without saying that the time lapse between a referral and the patient‟s arrival at the referral centre could be unnecessarily prolonged (Nwameme et al., 2014). Conversely, in Burkina Faso, in terms of the effect of travel time, 50.5% of those who were referred by a health centre situated less than 30 minutes from the district hospital complied compared with only 32.7% of those who were referred by a health centre 30 minutes or more from the district hospital (Pierre Ilboudo et al., 2012).

Generally, the number of obstetric clients decline sharply with distance from health care facility (Jahn et al., 1998).

Therefore, there is a general conclusion about the influence of transportation and distance on referral compliance in some regions in Ghana and most parts of Africa but this finding is unknown in the Northern Region.

2.4.3 Economic Factors

In the advent of the National Health Insurance Scheme and free maternal policy it is expected that pregnant women should not have any financial or economic excuse barring them from seeking health care. However, lack of income or poor financial status has been reported as a reason for not being able to access health care because the cost of transport, living expenses at the health facility, the working time lost due to travel and the hospital stay may still pose a strong financial burden to referred pregnant women (Pierre Ilboudo et al., 2012).

Also, Pierre Ilboude et al (2012) explained in their study that the low referral compliance rate was due to financial barrier as more than 60% of the population lived below the national poverty line in Ouargaye District, Burkina Faso. Similarly, a study involving three Sub-Saharan African countries concluded in their qualitative interviews with parents who did not adhere to referral recommendation the actual and anticipated cost at the referral facility was the primary constraint to proceeding with referral advice was heeded to (Simba et al., 2009).

Lack of financial support has been found as the major challenge preventing referred patients from honouring referral advice (Affour et al., 2016; Nwameme et al.,2014; Atuoye et al., 2015). Financial constraints has been observed to delay arrival at the facility because patients and

relatives have to find the means to pay for transport cost and other cost pertaining to seeking health care when referral advice was followed.

Although the Northern Region is one of Ghana‟s poorest regions with age dependency ratio for the metropolis estimated at 70 dependents for every 100 people in the working age bracket (GSS, 2014) literature is virtually silent on studies that explored referral compliance and socio-economic status in the Northern Region. Therefore, this present study examined the extent to which socio-economic status of pregnant women influences their compliance with non-emergency obstetric referrals.

2.4.4 Socio-Cultural Factors

Societal and cultural factors such as the avoidance of bad pregnancy outcomes and readiness to change failed treatment are key factors for effective use of health services and consequently for mortality levels in societies (Jahn et al., 1998). The reasons for preferentially choosing one referral facility over the other varies, and includes previous experiences with reception at the receiving facility (Oduro-Mensah et al., 2013).

Earlier research studies on referral compliance involving pregnant women found that the patient‟s perception of the risk is a determinant of referral compliance (Pembe, 2008). Pregnant women and their relatives may decline a referral when they have witnessed other women with the same problem deliver without complications after being referred and not honouring the referral. Some patients do not honour referrals because of the belief that the problem has resolved (Forrest, Shadmi, & Nutting, 2007). For women to comply with referrals they have to understand that something is wrong with the pregnancy (Pembe et al., 2010). In some particular areas, there are restrictions enshrined in the cultural setup that influence pregnancy or affect

interpretation of ill health. Such beliefs are generally associated with non-medical causes that exempts the use of medical health care (Koblinsky et al., 2015).

In many sub-Saharan African countries and settings, culturally specific behavioral and systemic factors determine if a sick person go to the referral care site or not, and even when they do, how soon that happens. It has been revealed that pregnant women seek traditional medicines and traditional birth attendants assistance for their health care (Atuoye et al., 2015).

Therefore, there is the conclusion that socio-cultural beliefs affect maternal health care in many parts of the world including Ghana. The Tamale Metropolis is made up of people with diverse cultural, religious and ethnic background (GSS, 2014). The beliefs of the people cannot be separated from their health seeking behavior of which their promptness to comply with referrals is part and hence needs to be examined.

2.4.5 Health System Factors

Health system factors such as quality of care is central to all aspects of access to health services, because it is an important component of each aspect and consequently relates to the technical ability of health services to affect people‟s health (Peters et al., 2008). Studies reveal that quality of facility-based obstetric services is poor in sub-Saharan Africa (Koblinsky et al., 2015). Studies in Bangladesh, Burkina Faso, and India have been used to demonstrate that patients‟ perceptions of quality can be more important determinants of utilization than prices or other dimensions of access (Peters et al., 2008).

The perception of how equipped or ready the receiving facility is perceived to be in managing conditions influences patients willingness to visit the facility when referred (Oduro-Mensah et al., 2013). It was shown from a FGD that quality of care was perceived as a multi-faceted entity

with several overlapping dimensions such as the clients chances of recovery, the provision of free medicine and other services and respectful treatment by care providers (Aggarwal et al., 2015).

Previous research studies from other countries have found that longer waiting time increases the chances of non-attendance to referrals (Forrest, Shadmi, & Nutting, 2007). Existing evidence show that clients refused referrals for logistic and service responsiveness reasons such as the time involved as well as the uncertainty of the kind of reception they would get at the receiving hospital and the delay due to the waiting time to see a doctor (Oduro-Mensah et al., 2013).

Although, the facts from previous referral studies generally show a relationship between health system factors and referral compliance however this relationship is unknown in the Northern Region.

2.5 Summary

The referral process is multi-dimensional and comprises aspects besides risk factors. It also involves the decision to seek care, belief about the risk status by both the client and service provider. Compliance with referral is an important indicator for evaluating the effectiveness of the referral system. An effective referral system is critical to primary health care delivery.

The decision to adhere with referral is as critical as the time to comply with this decision. The time lapse between referral and compliance if delayed can be unhealthy to both the pregnant woman and her unborn baby. This decision and timing are influenced by factors such as socio-demographic, economic, health system, socio-cultural and geographic factors.

A non-exhaustive search of the literature revealed that several research studies have been done on different aspects of referrals including compliance with referrals in diverse areas of health and among different populations.

Empirical evidence from referral studies generally postulates a relationship between socio-demographic factors and referral compliance. However, this is not universal. There is also a general conclusion about the influence of distance and transportation on referral compliance in most parts of the world. In addition, it has been generally established that poor economic status is a major challenge preventing referred patients from adhering to referral advice. Furthermore, socio-cultural beliefs and health system factors such as staff attitude and patient waiting time at the referral facility have been found to affect maternal health care in many parts of the world. These findings however, are unknown in the Northern region of Ghana.

CHAPTER THREE

METHODS

3.1 Study Design

This study adopted an analytical cross-sectional design using quantitative approach. It involved referred pregnant women who had complied with their referral to the Tamale Teaching Hospital from 4th to 14th June 2018.

3.2 Study Area

The Tamale Metropolis is one of the 26 districts in the Northern Region. It is located in the central part of the region and shares boundaries with the Sagnarigu District to the west and north, Mion District to the east, East Gonja to the south and Central Gonja to the south-west. The metropolis has a total estimated land size of 646.90 square kilometres and geographically, located between latitude 9º16 and 9º 34 North and longitudes 0º 36 and 0º 57 West (GSS, 2014). The metropolis has a total population of 223,252 with a sex ratio of 99.1 for every 100 females. It has crude birth rate of 24 births per 1000 women of reproductive age and general fertility rate of 101.9 births per 1000 women of reproductive age (GSS, 2014).

The Tamale Teaching Hospital is the only tertiary healthcare facility in the Northern part of Ghana. It is the main referral point for all other health facilities within the Tamale Metropolis and beyond. It also serves as the referral centre for the other two regions in the North (Upper East and Upper West Regions) hence it serves as the referral hospital for the three regions in the northern part of Ghana. It has several departments and units which include: the Central Administration, Surgical Department, Medical Department, Paediatrics and Child Health Department, Pharmacy Department, Accident and Emergency Department, Laboratory Department, Radiology Department and the Obstetrics and Gynaecology Department. The hospital is located in the Tamale Metropolis.

3.3 Study Population

This study involved referred pregnant women who had complied with their non-emergency referrals to the Teaching Hospital within the period of 4th to 13th June, 2018.

3.4 Sample Size Calculation

Using the Cochran"s formula the estimated sample size for the study was calculated using a study in Amansie West District, Ghana (Affour et al., 2016) with referral compliance rate of 21.7% a desired precision of 5% , 95% confidence interval and a power of 80%, a sample size of 261 was required

The minimum sample size that was required for this quantitative study was deduced using the Cochran equation as follows:

$$n = \frac{z^2 * p * q}{e^2}$$

Where: n = sample size, z = standard deviation at 95% confidence interval (standard value = 1.96), p = estimated proportion of clients who complied with their referrals consulting a study in Amansie West District = 21.7%, q=1-p, e = desired precision =5%.

$$n = \frac{1.96^2 * 0.217 * (1 - 0.217)}{0.05^2} = 261$$

3.5 Sample Size Adjustment

The finite population correction formula was used to adjust the sample size for the study because the sample population was relatively smaller. Based on an expected estimated monthly attendance of 390 referred clients to the TTH who complied with their referrals in June, 2017.

$$n_1 = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where: n_1 = sample size, n_0= supposed sample size N = expected sample from last year data.

$$n_1 = \frac{261}{1 + \frac{261 - 1}{390}} = 157$$

To cater for non-response, 10% was added to the sample size to arrive at a sample size of 173.

3.6 Inclusion Criteria

The study included

- All pregnant women who showed up at the TTH with their referral letters attending ANC.

3.7 Exclusion Criteria

This study excluded:

- Any pregnant woman with a referral letter not indicating the date of the referral
- Any pregnant women who could not speak English , Dagbani or Twi

3.8 Sampling Procedure

The study employed purposive sampling to select the facility for this study. Purposive sampling technique is a strategy in which particular settings, persons, or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices (Maxwell, 2009). The technique can be used to achieve representativeness or typicality of the settings, individuals, or activities selected (Maxwell, 2009). The TTH was purposively chosen because it is the largest referral facility in the metropolis and also receive referrals from all the three regions in the north. The sampling technique employed in the selection of the study participants was probability sampling. The kind of probability sampling that was used was simple random sampling. The minimum sample size calculated was 173 and the respondents were selected randomly. The 173 participants were divided over the period of data collection (11 days) to get an average daily participants of about 16, this was approximated to 20 participants

per day. Background checks using 2017 data from the TTH for the same period revealed a daily attendance of averagely 39 patients per day and for this reason one was expecting an average of 39 respondents per day. The 20 eligible participants who agreed to take part in the study were selected each day by allowing respondents to randomly pick a number from a box containing 39 pieces of undisclosed choices of which 20 were labelled “yes” and 19 were labelled „”no”.“ Those who selected “yes” were interviewed and those who selected “no” were not interviewed. In the end, an average of 20 respondents was interviewed each day except on the last day of the data collection when only 13 participants were interviewed and so a total of 213 respondents participated in the study.

3.9 Study Variables

3.9.1 Outcome Variable

Table 3.1: Outcome Variable

Outcome Variable	Operational Definition	Type of Variable
Timing of Compliance with Non-Emergency Obstetric Referrals	This is the outcome variable with two options; • Early Compliance (adherence to referral recommendation within 7 days.) • Late Compliance (adherence to referral recommendation after 7 days.)	Categorical

3.9.2 Explanatory Variables

Table 3.2: Socio-Demographic Factors Influencing Compliance with Non-Emergency Obstetric Referrals

Socio-demographic Factors	Operational Definition	Type of Variable
Age	Age as at last birthday at the time of the interview in years.	Continuous
Gravidity	Clients number of pregnancies. Expressed in terms of times the woman have been pregnant; 1, 2, 3, 4, 5 and above. This was then categorized during the analysis as; • First pregnancy (1) • Second or more pregnancy (2 or more)	Discrete
Parity	Number of children a women has given birth to both alive and dead. Expressed in terms of number deliveries; 0, 1, 2, 3, 4, 5 and above. This was categorized during the analysis as; • Never given birth (0) • Ever given birth (1 or more)	Discrete

Marital Status	Whether patient is • Married • Divorce • Widowed • Cohabiting • Single	Nominal
Educational Level	Highest educational level at the time of the interview; • None • Basic • Secondary • Tertiary	Ordinal
Occupation	The work or job of the respondent did to earn a living; • Unemployed • Formally employed • Informally employed	Nominal
Religion	Religious affiliation as reported by the respondent; • Islam • Christianity • Traditional • No religion • Others: specify	Nominal
Ethnicity	Tribe as reported by the respondent; • Mole-Dagbani • Gonja • Hausa • Ga-Dangme-Ewe • Others: specify	Nominal

Table 3.3: Quality of Care Factors Influencing Compliance with Non-Emergency Obstetric Referrals

Factor	Operational Definition	Type of Variable
Staff Attitude	Health workers behavior towards clients at the referral facility which could be good or bad expressed as; • Courteous • Not Courteous	Ordinal
Perception of Availability of Logistics	Whether or not clients thought that the required logistics were present and adequate to manage her condition	Categorical
Waiting Time	How long a client waited at the referral point before seeing the doctor expressed in hours and minutes; 1, 2, 3, 4, 5 and above categorized as • Less than or equal to 1 hour • Greater than 1 hour	Continuous

Table 3.4: Geographic Factors Influencing Compliance with Non-Emergency Obstetric Referrals

Factor	Operational Definition	Type of Variable
Distance (Journey Time)	Clients perceived proximity from their home to the referral facility which could be far or near expressed in minutes.	Continuous

Transportation	Means of transportation to receiving facility. • Walked • Commercial car • Private car • Bicycle • Motor bike • Tricycle	Categorical
Road Network	How good the road is for vehicular use categorized • Very good • Good • Fair • Poor	Ordinal

Table 3.95: Economic Factors Influencing Compliance with Non-Emergency Obstetric Referrals

Factor	Operational definition	Type of variable
Insurance Status	Whether clients had health insurance or not; • No health insurance • Has health insurance	Norminal
Socio-Economic Status	It is a composite measure of a client"s economic and sociological being. It was derived by using variables that captured living standards adapted from the DHS 2014 report (Appendix 3). For instance, information on household and personal possession (e.g. radio, TV, car), access to utilities and infrastructure (e.g. electricity, sanitary facilities) and housing characteristics. The scores were categorized into 5 groups or	Ordinal

	wealth quintile (low, second, third, fourth and high) using principal composite analysis (PCA). These five categories were later used to perform analyses at the bivariate and multivariate levels. • Low • Second • Third • Fourth • High	

Table 3.6: Socio-Cultural Factors Influencing Compliance with Non-Emergency Obstetric Referrals

Factor	Operational Definition	Type of Variable
Perception about severity of illness	How serious a client views her condition; • Not severe • Severe • Very severe	Categorical
Belief about cause of illness	What the client thinks caused her illness; • Spiritual • Physical	Categorical
Previous experience at referral facility	Past memory of the receiving facility which could be pleasant or not	Categorical

3.10 Training of Research Assistants

Three research assistants were trained for three days. The training covered general information of the study, the study objectives, study methods and sampling procedure to be used. They were taken through the consent process (confidentiality and privacy). At the training, role play was organized to mimic typical respondent and interviewer as presumed will occur during data collection. Research assistants were made to shift roles so every assistant can mimic both respondent and interviewer during the role play. This was done to help teach them patience, innovation and how to handle different respondents during the data collection process.

3.11 Pre-testing

Pre-testing of the tool was conducted at the Tamale Central Hospital, the Regional Hospital that shares similar health indicators and characteristics as the TTH using ten (10) of the questionnaire (Appendix 3). This was done to ensure clarity, reliability and readability of the data collection tool. Required modification to the tool was then made before the actual study is carried out at TTH.

3.12 Data Collection Tool

A structured questionnaire (Appendix 3) was adapted from WHO rapid assessment of referral care systems and modified with new variables added to measure the study‟s objectives. The Socio-economic status of the study participants were measured using some items from the Ghana Demographic and Health Survey 2014 report (Appendix 3).

The instrument was constructed in English language using closed and opened ended questions. The questions were constructed to reflect the variables under study. Questions covered thematic areas such as socio-demographic factors (age, gravidity, parity, gestational age, occupation, marital status, and educational level), geographic factors (distance, road network and transportation), socio-economic factors (household items and possession), health system factors

(staff attitude, perception of availability of logistics, waiting time) and socio-cultural factors (perception about severity of illness, previous experience, beliefs about cause of illness).

3.13 Data Collection Method/Technique

Data was collected using interviewer administered questionnaire method. Trained research assistants interviewed participants face to face using the data collection tool (Appendix 3).

3.14 Data Management and Analysis

The data collected was first assessed for quality through checking the filling of questionnaire to ensure completeness and consistency to improve data quality.

The coded data were entered using SPSS and cleaned before being exported to Stata. In stata, the data were further cleaned to ensure removal of erroneous material by running frequencies. The edited data were statistically analyzed using Stata software version 15.0.

The data analysis was in three stages:

- Basic descriptive statistics were run and the results were presented using tables depicting frequencies and percentages. Quantitative (discrete and continuous) variables such as age, gravidity, parity, gestational age, waiting time and journey time were categorized before running them against the outcome variable. Test of association to determine the association between the timing of compliance and each independent variable was done and if the expected count of 25% of the cells were less than 5 then fisher"s exact test was used otherwise the chi-square test was used to show the association between the variables.
- Bivariate analysis (simple logistic regression) of the outcome variable (timing of compliance) and the independent variables were run and variables that showed significance of p value <0.05 were used in the multiple regression model.

- Multiple logistic regression was done using all demographic variables and only variables that showed significance in the bivariate analysis. The variable gravidity was excluded from the multiple logistic regression even though it was a demographic characteristic because it exhibited multicollinearity when run together with parity. Those variables that remained significant with p value < 0.05 in multivariate analysis were considered the true predictors or factors that influence the timing of compliance (outcome variable).
- The results were presented in two by two tables which displayed the frequencies, percentages, unadjusted (crude) and adjusted odds ratios, confidence intervals and p values.

3.15 Data Quality Control

To ensure good quality data collected the following control measures were considered:

- Data collection tool (Appendix 3) was pre-tested at the TCH. This was done for the needed revisions and validations of the data collection tools.
- The data was double entered and data cleaning was done.
- Three research assistants were trained in the use of the standardized tool and on data collection.

3.16 Ethical Consideration

Ethical clearance was obtained from the Ghana Health Service Ethical Review Committee with approval number GHS-ERC 038/01/18 (Appendix 5). Permission was sought from the TTH management authority and also from the Departmental Head of obstetrics at the facility as well as the Officers‟ in-charge of the antenatal care units.

3.16.1 Consenting Process

Informed consent (Appendix 2) was obtained from participants who were made aware that this is a research work and that ethical approval had been obtained from the Ghana Health Service Ethical Review Board (Appendix 5) and also the hospital authorities.

3.16.2 Privacy and Confidentiality

Participants were assured of privacy and confidentiality and that the data obtained will be used only for the intended purpose of the study (Appendix 1 & 4). They were also informed that the recorded information did not contain their names and will be kept confidential (Appendix 1 & 4). All responses given in the study was kept only for the study and was made available to individuals involved in the study without secondary disclosure.

Interviews with participants were carried out in an office and were between the research assistants and only the participant ensuring that no third party listens to the conversation between the two. Participants in this study were also informed that their participation was neither going to facilitate nor deny them access to seeking health care and so an individual can either participate or refuse to participate in this study as she so pleases. Again, a participant could also choose to withdraw at any point in the study.

3.16.3 Voluntary Withdrawal

Participants were reminded that they possessed the right to exit the study at any given time and that this shall not go against their ability to access health care or obtain any medical benefit (Appendix 1).

Participants were informed that despite their participation in this study adding to knowledge and contributing to improving compliance with obstetric referral in the region, there will be no immediate motivation or benefit for them in this research as well as no potential risk to their par taking in this study (Appendix 1).

3.16.4 Potential Risk of the Study to Participants

The study was to provide minimal discomfort to participants since the interview session with each clients could last between fifteen to twenty minutes. Additionally, some questions could have been viewed personal as such, questions of those nature were asked in ways to reduce such undesirable and unintended effect.

3.16.5 Conflict of Interest

The principal researcher had no conflict of interest with regards to this study but was only seeking to comprehend the factors that influence the timing of compliance with obstetric referrals at the Tamale Teaching Hospital to fill in the literature and data gap and also help policy makers with empirical evidence to address the issue of obstetric referral compliance in order to reduce maternal mortality in the region.

3.16.6 Funding

Participants were told that this study was funded fully by the Principal Investigator and that the Principal Investigator had no conflict of interest in this study.

Also, limiting the study to only the TTH might have also biased the study since the Regional and District Hospitals also receive referral cases from the sub-district facilities within the metropolis but background checks revealed that very few clients honour referrals to those other two facilities and so this would not affect the findings of this study.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the key findings and interpretation of the data collected with regards to the factors influencing the timing of compliance with non-emergency obstetric referrals at the TTH. It provides an overview of respondents‟ background characteristics, the proportion who complied within 7 days (early) and those that complied after 7 days (late), the non-emergency conditions for which pregnant women were being referred as well as the factors influencing the timing of compliance with non-emergency obstetric referral at the Tamale Teaching Hospital.

4.2 Socio-Demographic Characteristics of Referred Pregnant Women

A total of 213 referred pregnant women within the ages of 17 and 42 participated in the study. The mean age was 28.9 years (SD=4.87 years). About three-quarters (73.7%) of the respondents were between the ages of 25 and 34 years while about 14% were within the 17-24 years age bracket. About four in ten women (39.9%) had not been to school while a little over one in ten (12.7%) women had had tertiary education. Also close to a quarter (24.9%) of the women were unemployed with only about one in ten (12.7%) of them formally employed. Majority (93%) of these participants were registered with the National Health Insurance Scheme with very few (7%) of them not having any form of health insurance. The details of characteristics of the pregnant women is illustrated in Table 4.7.

Table 4.7: Socio-Demographic Characteristics of Referred Pregnant Women Attending ANC at the TTH.

Characteristics (n=213)	Frequency	Percentages (%)
Age (years) Mean± SD	28.9 ± 4.87	
Age in years		
17-24	30	14.1
25-34	157	73.7
35-42	26	12.2
Marital Status		
Single	17	8.0
Married/Cohabiting	195	92.0
Religion		
Islam	159	74.7
Christianity	52	24.4
Traditional	2	0.9
Ethnicity		
Mole-Dagbani	128	60.1
Gonja	20	9.4
Hausa	8	3.8
Akan	18	8.5
Ga-Dangme-ewe	12	5.6
Others	25	11.7
No response	2	0.9
Educational Level		
None	85	39.9
Basic	63	29.6
Secondary	38	17.8
Tertiary	27	12.7
Occupation		
Unemployed	53	24.9
Informal	133	62.4
Formal	27	12.7
Health Insurance Status		
No health insurance	15	7.0
Health insurance	198	93.0
Gravidity		
First pregnancy	48	22.5
More than one pregnancy	165	77.5
Parity		
Never given birth	57	26.8
Ever given birth	156	73.2
Wealth Quintile		
Lowest	62	29.1
Second	38	17.8
Average	41	19.3
Fourth	35	16.4
Highest	37	17.4

SD: Standard Deviation

4.3 Prevalence of Referral Compliance

Out of a total of 213 pregnant women who were referred from various health facilities to the TTH, 77.9% (95% CI=71.3-83.3) reported within 7 days (early compliance) while the remaining 22.1% (95% CI=16.7-28.3) reported to TTH after 7 days of their referral (late compliance). This did not include patients who did not show up at TTH after being referred from other facilities.

4.4 Non-Emergency Conditions for Referral

About 79.3% of those that participated had previously delivered by caesarian section. Thus, most of the non-emergency referrals were occasioned by previous caesarean section on the respondent (79.3%), while a little over a quarter (25.8%) of them were referred because of mild to moderate hypertensive disorders such as pre-eclampsia and gestational hypertension. A very few (1.4%) of them were also referred as a result of gestational diabetes. Other condition which patients presented with included viral hepatitis, cellulitis, and small uterus for gestational age among others. Some women were referred on account of multiple conditions. As illustrated below, Figure 4.2 shows the proportional distribution of some common reasons for which pregnant women were referred to TTH.

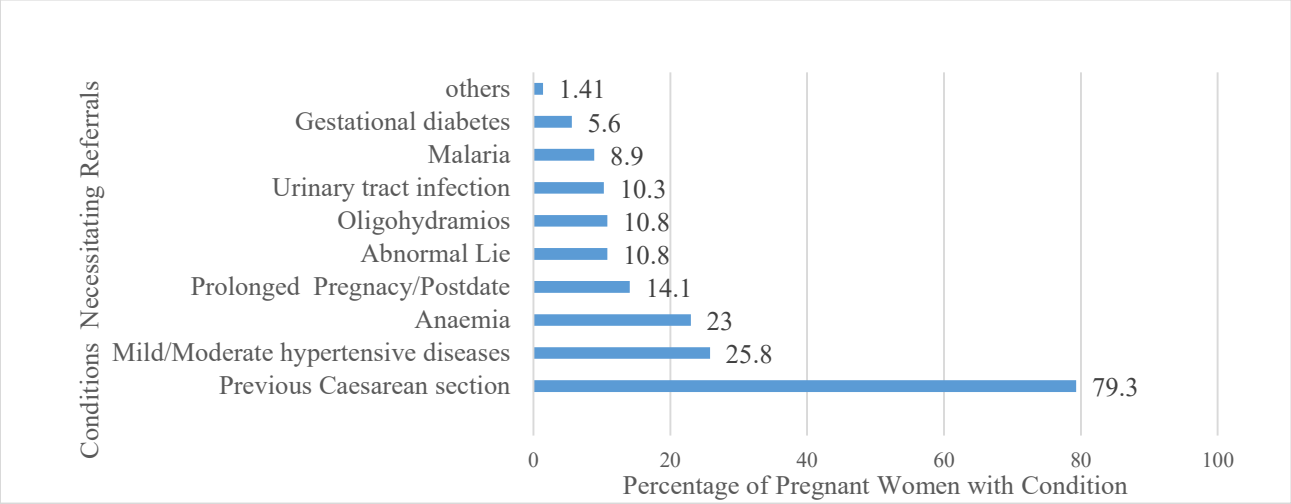

Figure 4.2: Common Reasons for which Pregnant Women Were Being Referred TTH

4.5 Factors Influencing the Timing of Compliance with Non-Emergency Referral

4.5.1 Test of Association

As illustrated below, Tables 4.8 and 4.9 present the results of the bivariate analysis of socio-demographic and other factors influencing the timing of compliance with non-emergency obstetric referrals respectively. Chi square test for trends revealed that there is a significant association between the timing of compliance and age ($\chi^2 = 12.74, p = 0.002$). The marital status of the referred pregnant women was also significantly associated with the timing of compliance with referral ($\chi^2 = 31.79, p \leq 0.001$). There were significant association between other predictors such as educational level, occupation, health insurance status, perception about cause of illness, severity of condition, travel time, and road network and the outcome variable. Also there were no significant association between religion, ethnicity, socio-economic status, transportation cost, staff attitude, waiting time and perception of availability of logistics and the outcome variable.

Table 4.8: Bivariate association between Socio-Demographic Characteristics and the Timing of Compliance with Non-Emergency Obstetric Referrals

Variable	Total	Early compliance n(%)	Late compliance n(%)	Chi square	*p*-value
Age (years) Mean± SD	28.9 ± 4.87				
Age (years)				12.7371	0.002**
17-24	30	16 (53.3)	11 (46.7)		
25-34	157	130 (82.8)	27 (17.2)		
35-42	26	20 (76.9)	6 (23.1)		
Marital status				31.7981	<0.001***
Single	17	4 (23.5)	13 (76.5)		
Married/Cohabiting	196	162 (82.7)	34 (17.3)		
Religion				0.1697	0.680
Islam	159	125 (78.6)	34 (21.4)		
Christianity	54	41 (75.9)	13 (24.1)		
Ethnicity				5.7357	0.333
Mole-Dagbani	128	104 (81.3)	24 (18.7)		
Gonja	20	14 (70.0)	6 (30.0)		
Hausa	8	4 (50.0)	4 (50.0)		
Akan	18	13 (72.2)	5 (27.8)		
Ga-Dangme-ewe	12	10 (83.3)	2 (16.7)		
Others	25	19 (76.0)	6 (24.0)		
Educational Level					
None	85	60 (70.6)	25 (29.4)	8.2555	0.041*
Basic	63	49 (77.8)	14 (22.2)		
Secondary	38	31 (81.6)	7 (18.4)		
Tertiary	27	26 (96.3)	1 (3 .7)		
Occupation				8.3869	0.015*
Unemployed	53	36 (67.9)	17 (32.1)		
Informal	133	104 (78.2)	29 (21.8)		
Formal	27	26 (96.3)	1 (3.7)		
Health Insurance Status					
No health insurance	15	7 (46.7)	8 (53.3)	9.1738	0.002**
Health insurance	198	159 (80.3)	39 (19.7)		
Gravidity				0.0002	0.990
First pregnancy	50	39 (78.0)	11 (19.3)		
Second or more pregnancy	163	127 (77.9)	36 (22.1)		
Parity				0.3466	0.556
Never born	57	46 (80.7)	11 (19.3)		
Ever born	156	120 (76.9)	36 (23.1)		
Gestational Age					
First trimester	6	6 (100.0)	0 (0.0)	2.0682	0.356
Second trimester	30	22 (73.3)	8 (26.7)		
Third trimester	177	138 (78.0)	39 (22.0)		

n: cell frequency. % row percentage. *: p <0.05. **: p <0.01. ***: p < 0.001 SD: Standard Deviation

Table 4.9: Bivariate association between Other Factors and Timing of Compliance with Non-Emergency Obstetric Referrals

Variable	Total	Early compliance n(%)	Late compliance n(%)	Chi square	*p*-value
Wealth Quintile					
Lowest	62	48 (77.4)	14 (22.6)	4.0704	0.397
Second	38	33 (86.8)	5 (13.2)		
Average	41	28 (68.3)	13 (31.7)		
Fourth	35	28 (80.0)	7 (20.0)		
Highest	37	29 (74.4)	8 (21.6)		
Belief about Cause of Illness				13.4107	<0.001***
Spiritual	29	15 (51.7)	14 (48.3)		
Physical	184	151 (82.1)	33 (17.9)		
Severity of Condition				53.2608	<0.001***
Not severe	50	21 (42.0)	29 (58.0)		
Severe	91	75 (82.4)	16 (17.6)		
Very severe	70	68 (97.1)	2 (2.9)		
Journey Time (Minute)				29.7299	<0.001***
<1 hour	89	78 (87.6)	11 (12.4)		
1-2 hours	75	60 (80.0)	15 (20.0)		
>2hours	46	25 (54.4)	21 (45.6)		
Mean ± SD	68.6 ± 49.8				
Min/Max	1.0/240.0				
Nature of Road				9.2428	0.026*
Very good	32	29 (90.6)	3 (9.4)		
Good	101	83 (82.2)	18 (17.8)		
Fair	42	29 (69.1)	13 (30.9)		
Poor	38	25 (65.8)	13 (34.2)		
Transportation Fare (GHS)				0.0076	0.930
≤ GHS 10.00	158	123 (77.9)	35 (22.1)		
>GHS 10.00	51	40 (78.4)	11 (21.6)		
Mean ± SD	8.5 ± 10.1				
Min/Max	0.0/90.0				
Waiting Time (Minutes)					
≤ 1 hour	170	130 (76.5)	40 (25.5)	0.7953	0.373
>1 hour	41	34 (82.9)	7 (17.1)		
Mean (SD)	51.9± 65.9				
Min/Max	0.0/450.0				
Perception of Adequate Logistics					
No	21	14 (66.7)	7 (33.3)	1.7199	1.190
Yes	192	152 (79.2)	40 (20.8)		
Staff Attitude					
Not Courteous	26	21 (80.8)	5(19.2)	0.1484	0.700
Courteous	186	144 (77.4)	42 (22.6)		
Patient Satisfaction of Care					
Not Satisfied	29	22 (75.9)	7 (24.1)	0.0838	0.772
Satisfied	184	144 (78.3)	5 40(21.7)		

n: cell frequency. % row percentage. *: p <0.05. **: p <0.01. ***: p < 0.001 GHS: Ghana Cedi SD: Standard Deviation Min: Minimum Max: Maximum.

4.5.2 Crude and Adjusted Logistic Regression Model

As shown below, Tables 4.10 and 4.11 respectively present odds ratios, 95% confidence intervals and *p*-values of the predictor variables and the timing of compliance with non-emergency obstetric referrals using both the simple and multiple logistic regression model.

Age was a strong predictor of the timing of compliance with non-emergency obstetric referrals. The odds of a referred pregnant woman between the ages of 25-34 years complying late with non-emergency referral was 76% less (UOR: 0.24; 95% CI: 0.10-0.54) compared to those within the 17-24 years age bracket. After controlling for other independent variables (marital status, religion, occupation etc.), the adjusted odds was 96% less (AOR: 0.04; 95% CI: 0-0.37). These reduced odds ratios implies that those within the 25-34 years bracket were more likely to comply early with their referrals as compared with those who were aged between 17-24 years. Also after adjusting for other independent variables, the odds of a pregnant woman between the ages of 35-42 years complying late with non-emergency referral was 99% less (UOR: 0.01; 95% CI: 0.-0.3) compared to pregnant women between the age 17-24 years old. Hence, those between the ages of 35-42 years were also more likely to comply early than those who were aged between 17-24 years.

The odds of women who were married or cohabitating complying late with referrals was 94% less compared with single women complying late with referrals (UOR: 0.06; 95% CI: 0.02-0.21). After controlling for other independent variables, the odds of pregnant women who were married complying late with non-emergency obstetric referrals were 99% less compared with single women (A0R: 0.01; 95% CI: 0-0.12).This reveals that married women were more likely to comply early than single women.

Similarly, the adjusted odds of a pregnant woman complying late with obstetric referrals was reduced by 95% and 99% respectively for those with the perception of having severe condition

(AOR: 0.05; 95% CI: 0.01-0.26) and those with the perception of very severe condition (AOR: 0.02; 95% CI: 0-0.08) as compared to those with the perception of having no severe condition.

Additionally, patients travel time to TTH and back home was a significant factor with the timing of compliance. Pregnant women whose travel time was between 1- 2 hours were about 6 times more likely for to comply late compared with those whose travel time was less than 1 hour (AOR: 5.8; 95% CI:21.08-31.16.). This means that the longer the travelling time the more likely the patient was to comply late as compared with those with relatively shorter travelling time.

Finally, the adjusted odds of pregnant women complying late with referrals were above 215 times, almost 500 times and over 260 times more likely for those with good road (AOR: 215.11; 95% CI: 2.62-17690.14), fair road (AOR: 492.33; 95% CI: 4.42-54900.42) and poor road networks (AOR:264.73; 95% CI: 2.88-24309.40) respectively, compared to those with very good road network.

Other predictor variables such as health insurance status, parity and belief about cause of illness were significant whereas ethnicity, religion, educational level, occupation, transportation cost, socio-economic status, waiting time, staff attitude and patient satisfaction were not significantly associated with the outcome variable, timing of compliance with non-emergency obstetric referral in the multiple logistic regression.

Table 4.10: Logistic Regression of Socio-Demographic Factors Influencing the Timing of Compliance with Non-Emergency

	SIMPLE LOGISTICS			MULTIPLE LOGISTICS		
Characteristics	**UOR**	**95% CI**	**p-value**	**AOR**	**95% CI**	***p>z***
Age (years)						
17-24 y	**Ref**			**Ref**		
25-34	0.24	(0.10, 0.54)	<0.001***	0.04	(0, 0.37)	0.010*
35-42	0.34	(0.11, 1.09)	0.071	0.01	(0,0.3)	0.010*
Marital status						
Single	**Ref**			**Ref**		
Married/Cohabiting	0.06	(0.02, 0.21)	<0.001***	0.01	(0,0.12)	0.010*
Religion						
Islam	**Ref**			**Ref**		
Christianity	1.17	(0.56, 2.42)	0.41	1.71	(0.31, 9.4)	0.540
Ethnicity						
Dagbani	**Ref**			**Ref**		
Gonja	1.86	(0.65, 5.33)	0.250	2.31	(0.34, 15.54)	0.390
Hausa	4.33	(1.01,18.57)	0.048*	4.68	(0.36, 60.51)	0.240
Akan	1.67	(0.54, 5.12)	0.373	0.31	(0.01, 6.33)	0.450
Ga-Dangme-Ewe	0.87	(0.18, 4.21)	0.859	0.12	(0, 47.62)	0.490
Others	1.37	(0.49, 3.79)	0.547	1.40	(0.19, 10.47)	0.750
Education						
No formal	**Ref**			**ref**		
Basic	0.69	(0.32, 1.46)	0.328	0.39	(0.09, 1.77)	0.220
Secondary	0.54	(0.21, 1.39)	0.203	0.73	(0.1, 5.58)	0.760
Tertiary	0.09	(0.01, 0.72)	0.023*	2.27	(0.08, 62.22)	0.630
Occupation						
Unemployed	**Ref**			**ref**		
Informal	0.59	(0.29, 1.2)	0.145	1.90	(0.42, 8.67)	0.400
Formal	0.08	(0.01, 0.65)	0.018*	0.03	(0, 1.26)	0.070
Health Insurance						
No health insurance	**Ref**			**ref**		
Has health insurance	0.21	(0.07, 0.63)	0.005**	0.07	(0.01, 0.65)	0.020*
Gravidity						
Pregnant once	**Ref**					
Pregnant > once	1.01	(0.47, 2.12)	0.990			
Parity						
Never born	**Ref**			**Ref**		
Ever born	1.25	(0.47, 2.12)	0.557	8.46	(1.09, 65.82)	0.040*
Gestational Age						
First trimester [a]	1.00			1.00		
Second trimester	1.29	(0.53, 3.11)	0.576	1.84	(0.35, 9.66)	0.470
Third trimester	**Ref**					

[a]: Category not used in simple logistic model because it did not vary with outcome variable. Ref: reference category. UOR: Unadjusted odds ratio. AOR: Adjusted odds ratio. *: p < 0.05. **: p <0.01. **: p <0.001

Table 4.11: Logistic Regression of Other Factors and the Timing of Compliance with Non-Emergency Obstetric Referrals

	SIMPLE LOGISTICS			MULTIPLE LOGISTICS		
Characteristics	**UOR**	**95% CI**	**p-value**	**AOR**	**95% CI**	***p>z***
Belief about Cause of Illness						
Spiritual	**Ref**			**ref**		
Physical	0.23	(0.10, 0.53)	<0.001***	0.15	(0.02, 0.91)	0.040*
Severity of Illness						
Not severe	**Ref**			**ref**		
Severe	0.15	(0.00, 0.34)	<0.001***	0.05	(0.01, 0.26)	<0.001***
Very severe	0.02	(0.00, 0.1)	<0.001***	0.01	(0.00, 0.08)	<0.001***
Journey Time to TTH						
< 1 hour	**Ref**			**ref**		
1-2 hours	1.77	(0.76, 4.14)	0.186	5.80	(1.08, 31.16)	0.040*
>2hours	5.96	(2.53, 914.04)	<0.001***	1014	(1.25, 82.39)	0.030*
Road Network to TTH						
Very good	**Ref**			**ref**		
Good	2.10	(0.58, 7.64)	0.262	215.11	(2.62, 17690.14)	0.020*
Fair	4.33	(1.12, 16.83)	0.034*	492.33	(4.42, 54900.42)	0.010*
Poor	5.03	(1.28, 19.67)	0.020*	264.73	(2.88, 24309.4)	0.020*
Transport Fare						
≤ Gh¢ 10.00	**Ref**					
> Gh¢ 10.00	0.97	(0.45, 2.08)	0.090			
Socioeconomic Status						
Low quintile	**Ref**					
Second quintile	0.52	(0.17, 1.58)	0.249			
Third quintile	1.59	(0.66, 3.87)	0.304			
Fourth quintile	0.86	(0.31, 2.38)	0.767			
High quintile	0.95	(0.35, 2.53)	0.912			
Waiting Time						
≤ 1 hour	**Ref**					
>1 hour	0.67	(0.28,1.63)	0.375			
Perception of Adequate Logistics	**Ref**	(0.20,1.39)	0.196			
No	0.53					
Yes						
Staff Attitude						
Not Courteous	**Ref**					
Courteous	0.82	(0.29, 1.39)	0.701			
Patient Satisfaction						
Satisfied	**Ref**					
Not Satisfied	0.82	(0.29, 1.39)	0.701			

Ref: reference category. UOR: Unadjusted odds ratio. AOR: Adjusted odds ratio. *: p < 0.05. **: p <0.01. **: p <0.001

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This study sought to assess the factors influencing the timing of compliance with non-emergency obstetric referrals at the Tamale Teaching Hospital which encompasses the proportion of pregnant women who complied late with their non-emergency referrals, the conditions for which they were being referred and the factors that determine the timing of their compliance. The findings indicate about one in five (22.1%) women complied late with their referrals. This proportion could have been higher if those that were referred to the TTH from other facilities but did not show up were at all were included. Unfortunately, it was not within the scope of this study.

5.2 Prevalence of Referral Compliance

Prompt compliance with referral is very important in maternal healthcare to ensuring that non-emergency conditions are well taken care of before they become severe or immediately life-threatening to both the pregnant woman and her unborn baby.

Refusal to comply with referral can be detrimental to both the pregnant woman and the foetus leading to preventable maternal or foetal demise (Nwameme et al., 2014).

This current finding is similar to several previous studies which have shown that there is non-adherence among some patients referred to seek care at alternative facilities. (Gupta & Gupta, 2000; Affour et al, 2016; Pembe et al, 2010; Pierre Ilboudo, Chou, & Huang, 2012; Jahn, Dar Iang, Shah, & Diesfeld, 2000). It is advocated that when patients are referred to other facilities to seek health care they comply with the referral advice completely and promptly and so a 100% compliance rate is expected for all referrals even in non-emergency situations.

It is however contrary to a study carried out in Burkina Faso where about 99.3% of referred clients reported within a day after being referred (Pierre Ilboudo et al., 2012).

The rate of late compliance in this study could be explained by the finding that majority of the women who complied late were single (Table 4.8) and probably had no or little spousal support unlike their colleagues who were married or cohabitating. In addition, women in the 17-24 years age bracket with gestational ages above the first trimester and majority of whom were without any formal education mostly reported late (Table 4.8).

The variation in this result from that of the Burkina Faso study could also be attributed to the fact that the Burkina Faso study included emergency referrals which constituted nearly half of the total sample size and hence those respondents had the tendency to comply early with their referrals.

This rate of late compliance in the present study suggests that most of these women will report at the facility when their conditions have deteriorated and become life threatening. Such emergency cases usually progress with complications culminating in mortality.

5.3 Non-Emergency Referral Conditions

Using a 100 percent scale for each non-emergency referral conditions to the TTH obstetrics unit, previous history of caesarean section and mild to moderate pre-eclampsia or gestational hypertension were the major reasons for referral to the TTH. Anaemia, prolonged pregnancy (postdate), oligohydramnios, urinary tract infection, malaria, gestational diabetes and others such as viral hepatitis, polyhydramnios, small baby for gestational age were among the common conditions that were referred to the TTH (Figure 4.2).

The findings of this study is consistent with a similar study conducted in Southern Tanzania which showed that more than half of the pregnant women were referred on account of previous caesarean section (Jahn et al., 1998).

On the contrary, several other previous studies that were conducted for instance, in the Greater Accra Region reported some other conditions like antepartum haemorrhage, post-partum haemorrhage, obstructed labour, ruptured uterus, foetal distress, amniotic fluid embolism and poor maternal effort as the conditions that necessitated referral (Nwameme et al., 2014). This variation occurred because this study focused on only non-emergency and non-labour related referrals unlike in the Greater Accra study where all cases were considered whether or not they were emergencies or labour conditions.

Also the Amansie West District study cited oedema and cough as the common conditions that were prevalent amongst referred pregnant women in that study (Affour et al., 2016).

Furthermore, a study in Tanzania found large uterine size for gestational age and intrauterine death as the common reasons for referral among pregnant women who complied with their referrals. Previous caesarean section was the reason for slightly over half of the patients who had complied with the referral (Pembe et al., 2010).

Anaemia in pregnancy as the third cause of referral to the TTH is not surprising because nutritional anaemia is the commonest form of anemia in sub-Saharan Africa owing to intake of low-bioavailability diet poor in iron and proteins, poor dietary habits and defective iron absorption resulting from intestinal infestations with hookworm and other worms, schistosomiasis, chronic malaria and frequent pregnancy (Tony, 2008).

Also, majority of people in the Northern Region live below the minimum daily wage (GSS, 2014) and so may not be able to afford nutritious diet to sustain their wellbeing. Poor nutrition in pregnancy can be detrimental for both the fetus and the mother and could result in the demise of

either or both of them. Prematurity, low birth weight, spontaneous abortions and fetal deaths are complications of severe maternal anemia (Sifakis & Pharmakides, 2000).

5.4 Factors Influencing the Timing of Compliance with Non-Emergency Referral

5.4.1 Socio-Demographic Factors

The ages of the respondents in this study ranged from 17 to 42 years with a mean of 28.9 years (SD=4.9 years). About three-quarters (74%) of the respondents were between 25-34 years with only 14% and 12% in the 17-24 years and 35-42 years old bracket respectively. This is consistent with the 2010 population and housing census finding that majority of the inhabitants are youthful (GSS, 2014). Age was found to predict timing of compliance. Those within the ages of 25 -34 and 35-42 years were likely to comply early with referrals than those between 17 to 24 years.

With respect to religion, about three-quarters (74.7%) of the respondents were Muslims while nearly a quarter (24.4%) of them were Christians. Traditionalist constituted 0.9% of the total (Table 4.7). This is in line with the findings of the 2010 population and housing census which revealed that the majority (90.5%) of the population in Tamale Metropolis were Muslims, Christians constituted only 8.8% and 0.2% had no religious affiliation (GSS, 2014).

About 4 in 10 (39.9%) respondents had not been to school while close to one-third (29.6%) of had basic education (Table 4.7). Additionally, respondents with secondary education were 17.8% while those with tertiary education constituted 12.7% (Table 4.7). This study also showed that about one-third (29.4%) of respondents who complied late had no formal education while 81.6% and 96.3% of those with secondary and tertiary education respectively complied early with their referrals (Table 4.8). Thus, early compliance with referrals improved with increasing educational level. This is similar to the findings of Affour et al (2016) that, obstetric referral compliance increases with educational level.

Respondents who were formally employed (96.3%) mostly complied early with their referrals (Table 4.8). This could be because they had regular source of income and were financially sound to afford the cost of treatment. Although, there is the free maternal policy which recommends that all pregnant women should be treated free, this policy is not effectively implemented and so pregnant women are required to pay for certain services at the facilities as well as deal with the cost of transportation. Earlier studies have found that women in higher wealth quintile are more likely to adhere to referral recommendation than those in the lower wealth quintile (Affour et al., 2016). This finding contrasts that of this present study as there was no significant difference in the timing of compliances amongst respondents within the various wealth quintiles.

Additionally, 93% of the respondents had registered with the National Health Insurance Scheme with only a little (7%) of them not having any form of health insurance (Table 4.7). Also, 80.3% of those with insurance complied early (Table 4.8). Insurance therefore increased their accessibility to health care as they did not have to worry so much about the cost of treatment. This is similar to the population and housing census finding that about two-thirds (67.3%) of women in the metropolis have a valid National Health Insurance Scheme identification card.

Early compliance amongst participants (78%) whose current pregnancy was their first pregnancy slightly exceeded those (77.9%) whose current pregnancy was their second or more pregnancy. Also, early compliance amongst respondents who had never given birth was 80.7% compared with 76.9% among those who had ever given birth. Again, late compliance amongst those who had ever given birth was 23.1% relative to 19.3% amongst those who had never given birth (Table 4.8). Generally compliance was better amongst first time pregnant women and women who had never given birth. This could be due to the fear of losing their pregnancy or for the fact that they had little or no experience concerning pregnancy and child birth hence the need to comply early with the referral.

All respondents whose gestational ages were within the first trimester complied early while 26.7% and 22% of those within the second and third trimesters respectively complying late (Table 4.8). The fact that majority of women do not know that they are pregnant during the first trimester or the fear that they could lose the pregnancy at a very early age could be the reasons for early compliance.

Age, marital status, health insurance status and parity were significantly associated with timing of compliance in this present study. This is inconsistent with other studies in Ghana where age and marital status were not associated with referral compliance (Nwameme et al 2014; Affour et al 2016). The difference could be explained by the fact that both studies were done in the southern part of Ghana unlike this study which was done in the northern part.

5.4.2 Geographic Factors

Majority of the respondents described the nature of the road from their homes to TTH as good or very good (Table 4.9). This is similar to the findings of the population and housing census that described the road network in the metropolis as fairly good particularly the roads that connect the metropolis to other districts (GSS, 2014). However, one in four (37.6%) of respondents who complied late described the road as either fair or poor (Table 4.9). The poor road network could have been the reason for their late compliance.

The cost of transportation for respondents ranged from 0 Ghana cedis to 90 Ghana cedis with an average cost of 8.5 Ghana cedis (SD=10.1 Ghana cedis). About three-quarters (74.2%) of the women paid less than 10 Ghana cedis for transportation with only about a quarter (25.8%) of them paying more than 10 Ghana cedis (Table 4.9). Some women did not have to pay for transportation because they either rode motorbikes, drove themselves or were transported by friends or relatives to the facility.

The maximum journey time from the respondents home to the TTH was 4 hours using a commercial vehicle with an average journey time of 68.6 minutes (SD=49.9 minutes). A total of 89 respondents had a journey time of less 1 hour whiles 75 and 46 respondents had journey time of between 1-2 hours and more than 2 hours respectively (Table 4.9). It is evident in this study that late compliance with referral worsens with increasing journey time to the referral facility (Table 4.9).

The findings in this study are similar to several other studies. For example, a study in Tanzania reported long distance in accessing health care, high transport cost and poor road infrastructure as barriers to complying with referral (Aggarwal et al., 2015). Similarly, another study revealed that geographic accessibility was unanimously mentioned as the main barrier to complying with referral advice by all informants (Kowalewski, Jahn, & Kimatta, 2000). In addition, difficulty in getting transportation was another reason why pregnant women failed to comply with their referral as reported in a study (Pembe et al., 2010). Finally, Jahn et al (1998) demonstrated that obstetric coverage reduces with distance and this pattern has been reported in other parts of Africa.

Good road network, available transport and funds for fuel and maintenance cost are necessary to bridge the time elapse between referral and compliance. Though the Ghana National Ambulance System is in place, the number of ambulances is not sufficient to meet the increasing demand even in emergency scenarios. Besides, it is not mandated to transport patients in non-emergency circumstances. Reliable transport system required to facilitate early compliance with referral in most areas in the Northern Region are often lacking.

The vast nature of the region with poor road infrastructure is a disincentive for some commercial drivers to ply certain routes with bad road infrastructure because of the fear of breaking down their vehicles or reduction in the expected useful life span of their vehicles. Some communities

and health facilities have tricycle ambulance which again are used only for emergencies and also contribute to the reasons why non-emergency cases referred by these facilities will not be transported using the tricycle ambulance. In all the above examples, there has never been a transport system put in place for non-emergency referral and so most obstetric referrals deteriorate into emergency cases and are rushed to the facility with bad prognosis.

5.4.3 Economic Factors

It was evident in this current study that about one-third of the respondents were within the lowest wealth quintile where as one-fifth of them were either within the second, third, fourth or highest wealth quintile (Table 4.7).

This study found no association between respondent‟s socio-economic status and the timing of compliance with non-emergency referral (Table 4.9). This is contrary to other studies where most respondents were concerned about how to contain the cost at the receiving facility especially if it were found outside their immediate locality (Aggarwal et al., 2015). Studies have shown that majority of pregnant women failed to comply with referral as a result of financial constraint as most of these women had low socio-economic status associated with little or no income (Kowalewski et al.., 2000 ; Pembe et al..,2010 ; Pierre Ilboudo et al.., 2012 ; Nwameme et al.., 2014).

The difference could be attributed to the fact that this study adapted the DHS tool in measuring socio-economic status. Household items and personal possessions such as the presence or absence of toilet facility, electricity, cooking fuel, means of transport, main house floor material, number of rooms used for sleeping and main roof material were used in measuring respondents socio-economic status rather than income. Such of these are utility available in the metropolis (GSS, 2014). This could have accounted for the difference in terms of the association between economic factors and the timing of compliance in this study as compared with previous studies.

5.3.4 Socio-Cultural factors

This present study suggests that about half (51.7%) of the women who perceived their condition to have a spiritual origin complied late whereas majority (82.1%) of those who thought their condition had a physical cause complied early (Table 4.9). Also most respondents who viewed their condition as severe or very severe complied early unlike those who thought their conditions were not severe (Table 4.9).

The study showed an association between the timing of compliance and socio-cultural beliefs. Belief such as the cause of illness and perception of severity of illness (Table 4.9). This finding is in line with a study carried out in Tanzania where it was reported that the individuals own assessment of the severity of the condition determines how soon they comply with referral. Generally referral associated with pregnancy risk factors were not considered as critical as the ones during labour and delivery (Aggarwal et al., 2015). In another study it was revealed that some participants thought for example, that lack of blood, bleeding and still birth was due to supernatural interferences (Kowalewski et al., 2000).

An earlier study conducted in Nigeria based on reviews of multiple documents including demographic and other surveys, government policy documents, health reports and safe motherhood guidelines, documents from bilateral and multilateral donors, national government and development plans, published research on Nigeria safe motherhood and maternal mortality as well as field interviews in the rural areas concluded that socio-cultural factors contribute to maternal mortality especially in rural settings.

5.3.5 Health System Factors

The patient waiting time ranged from immediately being seen by the doctor up arrival 7.5 hours. The mean waiting time was 51.9 minutes (SD=65.9 minutes). About three quarters (76.5%) of those who complied earlier and a quarter (25.5%) of those who complied late waited for less than

or exactly an hour before being seen by the doctor upon arrival at TTH (Table 4.9). In addition, 82.9% of the women who complied late and 17.1% of those who complied early had to wait for more than an hour before being attended to by health staff upon arrival to the facility (Table 4.9). This implies that most of the clients were attended to in less than or exactly an hour.

Majority (90.1%) of the women were of the view that the facility had adequate logistics to take care of their condition and that the health staff were courteous to them for which reason they were satisfied with the care they received (Table 4.9).

There was no association between patients waiting time, perception of availability of adequate logistics, staff attitude and patient satisfaction and the timing of compliance with referrals in this current study though many previous studies have reported the contrary. For instance, Kowalewski et al (2000) reported that rural women were critical of the health workers' attitude and feeling of being neglected and not being welcomed as reasons for non-compliance with referral advice. The variation can be attributed to different settings in which both researches were conducted. Unlike the Tanzanian study which was carried out in a rural setting, this study was done in an urban setting. This variation can be further explained by the fact that receiving hospitals have been shown to provide more satisfactory services compared to the health centres and other lower referring facilities (Aggarwal et al., 2015).

5.3.6 Limitations of the Study

Perhaps the major limitation of this study was the fact that categorization of what early and late referrals were sought from experts in the field of obstetrics and gynaecology as there was no standard document defining what early compliance and late compliance with referrals were with regards to the number of days.

Furthermore, another limitation was recall bias, the self-reported nature of some of the variables that were collected such as gravidity and parity could have caused participants to give socially

desirable answers. Nonetheless, this was believed not to be so grave as to have affected the results of this study since most questions asked were pertaining to their current referral.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Based on the findings of this study, the following conclusions were drawn:

- This study revealed that some (22.1%) pregnant women complied late with non-emergency obstetric referrals to the TTH.
- The non-emergency conditions that necessitated referrals to the TTH include mild to moderate hypertensive diseases, previous caesarean section and anaemia being the leading conditions.
- Age, marital status, health insurance status, parity, perception of severity of condition, travel time and road network predicted timing of compliance with non-emergency referrals to the TTH.

6.2 Recommendations

6.2.1 Patient Education through Community Participation

There is the need for clients‟ education through community participation. All patients especially those aged between 17-24years, single women, women who lived far from the referral facility and those with perception of having no severe condition must be educated on the need to report early to the TTH when referred even during non-emergency situation as they were more likely to delay compliance with their referral. Once they report early they will be managed early to prevent or slow their disease progression with good prognosis. This can be done through community participation by midwives and community health workers during outreach programs as a means of empowering community members to comply early with referrals.

6.2.2 Coordination of Referral Process and Integrated Health Information System

Efficient coordination of the referral process will help reduce patient waiting time at the facility and improve patient satisfaction about the services provided.

Also, the referral process needs to be properly coordinated in the region to ensure that when pregnant women are referred, it becomes mandatory for the referring facility to contact the receiving facility before the patient is discharged to proceed to the receiving facility. This can be done by the creation of a common platform where health workers can share vital information including the reason for referral of clients which can help in the preparation towards receiving the clients as well as managing their conditions effectively. This will improve communication between primary care providers at the referring facility and health care providers at the TTH and empower primary care providers so as to improve their credibility within the communities. Consequently, this will impact the acceptability of pregnant women to comply early with referrals.

The GHS and TTH should establish an integrated information system of sending feedbacks to referring facilities so that health staff can learn from their mistakes and improve over their future practices.

6.2.3 Research and Education

There is the need for further research to ascertain the views of patients and frontline service providers to better understand the factors influencing the timing of compliance. Perception about the cause of their illness can be addressed by educating patients to gain insight into their condition.

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APPENDICES

Appendix 1: Participants Information Sheet

Project title:

Factors Influencing the Timing of Compliance with Non-Emergency Obstetric Referral to the Tamale Teaching Hospital

Name and Address of Principal Investigator

Seidu Barikisu Abukari, Department of Health Policy Planning and Management, School of Public Health, University of Ghana, Legon, Accra or Northern Regional Health Directorate, Ghana Health Service, Tamale.

Mobile: +233243443398/ +233207235819

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Institution Affiliated

School of Public Health, University of Ghana, Legon, Accra.

Introduction

Good day, my name is ……..and I work for Miss Seidu Barikisu Abukari, an MPH student from the School of Public Health, University of Ghana, Legon, conducting a research on the factors influencing the timing of compliance with non-emergency obstetric referral at the Tamale Teaching Hospital. I am going to give you some information and invite you to be part of the study. Thereafter, you decide whether or not you will participate in the research. You can talk to anyone you feel comfortable with about the research. Please ask me to stop if there is anything you need to clarify as we go through the information and I will take time to explain to you. If you have questions later you can ask me.

Purpose of research

The purpose of this study is to determine the factors influencing compliance with non-emergency obstetric referral at the Tamale Teaching Hospital. This will help policy makers address the issue of delay in compliance with obstetric referral in the Northern Region as well as help provide data

on referral compliance in the region. You are please reminded as an eligible participant to answer objectively to the questions.

Procedure

If you are eligible and agree to participate, you will be required to complete a consent form. You will then be given a set of questions that was developed by the Principal Investigator as a research tool to collect data on the factors influencing the timing of non-emergency obstetric referral at TTH. Information that will be required in the questionnaire include your background information, the age of your pregnancy and issues relating to your referral. Upon completion of the questionnaire, I will scan through to ensure that all questions have been responded to your satisfaction except for questions that you deliberately failed to respond to. The research project will last for a month in all. This interview will be conducted once and will last between 15 to 20 minutes. We will not contact you further after this interview.

You will be debriefed after the interview and once again be assured of privacy and confidentiality and that the information collected will be used only for the intended purpose of the study. The information recorded is confidential and no one else except Miss Seidu Barikisu Abukari who is the Principal Investigator and Dr Reuben Esena who is her supervisor will have it.

Risk and Benefits

Some of the questions may be discomforting, however, they are helpful for the purpose of the research and may help identify factors influencing the timing of compliance with non-emergency obstetric referral at TTH which may in turn benefit this study, other researches and more importantly may lead to policy formulation or change to address this problem.

Right to Refuse

Your consent to participate in the study is voluntary, you are not under any obligation to participate, and you are at liberty to withdraw from the study at any point in time. You may also choose not to answer any individual question or all questions. However, I will appreciate if you can complete it.

Anonymity and Confidentiality

Be rest assured that any information given will be used purely for the purpose of the research. Any information given will be treated with utmost confidentiality. Your name will not be used in any report but your ideas and suggestions may help to bring change in with regards to how non-emergency referrals are done in the Region.

Your right as a participant

This research has been reviewed and approved by the Ethical Review Committee of the Ghana Health Service. If you have any question about your right as a research participant you can contact the Ethical Review Administrator Ms. Hannah Frimpong on:

Office: +233 302 681109
Mobile: **233 (0) 243235225 or 0507041223**
Email: Hannah.Frimpong@ghsmail.org

Do you have any question…… (If yes, note questions below)

Voluntary agreement form for pregnant women who have complied with referral

The above document describing the benefits, risks and procedures for the research topic "Factors Influencing the Timing of Non-emergency Obstetric Compliance at the Tamale Teaching Hospital" has been read and understood or it has been read and explained to me in a language that I comprehend. I have been offered the opportunity to ask any question(s) about the research. I agree to partake as a participant.

Name: …….. **Date:** ……

Signature: ……

If the participant cannot read the form themselves, a witness must sign here:

I was present while the benefits, risk and procedure were read to participant .All questions were answered and the participant has agreed to take part in the research

Name: …… **Date:** ……

Signature/Thumbprint:…….……...…….....

Interviewer's Statement

I ……...the undersigned , have read and explained to the subject in the language she understands best and the subject has agreed to take part in the study.

Signature: …… **Date:** ……

Appendix 2: Consent Form

School of Public Health

College of Health Sciences

University of Ghana

I have been invited to participate in a research interview on the factors influencing the timing of compliance with non-emergency obstetric referral at TTH. I have read the foregoing information or the foregoing information has been translated to me in a language I speak and I understand its content. I have also been briefed thoroughly on the methods and importance of this study. The purpose of which I am told will inform policy makers on how to address the challenge of compliance with non-emergency obstetric referrals in the Northern Region. I have the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Respondent…….. Signature/Thumbprint……

Date……

Researcher: ……..... Signature……..

Date: ……

Appendix 3: Questionnaire on Factors Influencing the Timing of Compliance with Non-Emergency Obstetric Referrals at TTH

Instructions

Please tick (√) or circle the appropriate response in the boxes or fill in the blank spaces designated [ ] as required. Pleases note that there are no correct or wrong answers, your opinion is what matters

A. DEMOGRAPHIC CHARACTERISTICS		
No.	Question	Response/Coding
1.	Age (as at last birthday)	[ ] years
2.	Marital Status	1. Single 2. Married 3.Cohabiting 4.Separated 5.Divorced
3.	Religion	1. Islam 2.Christianity 3. Traditional 4. No Religion 5.Others: specify----------
4.	Ethnicity	1.Mole-Dagbani 2.Gonja 3.Hausa 4.Akan 5.Ga-Dangme-Ewe 6.others: Specify----------
5.	Educational Level	0. None 1. Basic 2.Secondary 3.Tertiary
6.	Occupation	0. Unemployed 1. Informal 2.Formal
7.	Type of Health Insurance	0.N0 Health insurance 1.National Health Insurance

B. PREGNANCY INFORMATION		
No.	Questions	Response/Coding
8.	Gravidity (Number of Pregnancies)	[ ]
9.	Parity (Number of Children)	[ ]
10.	Gestational Age	[ ]
11.	What is the reason for your referral to Tamale Teaching Hospital? (According to referral slip)? ***(Tick as many as apply)***	1.Hypertensive diseases in pregnancy 2.Previous caesarean sections 3.Prolonged Pregnancy (Postdate) 4.Urinary Tract Infection 5.Oligohydramnios/Ahydramnios 6.Abnormal Lie/Wrong Lie 7.Anaemaia in Pregnancy 8. Gestational diabetes 9.Malaria 10.others: Specify----------
12.	What type of facility were you referred from?	1. Health centre 2.District hospital 3. Regional hospital 4.Private facility
C. TIMING OF COMPLIANCE		
No.	Question	Response/Coding
13.	When were you referred?	--------/----------/--------- dd / mm / yy
14.	When did you report to TTH?	--------/---------/---------- dd / mm / yy
15.	When did the health provider tell you to report to TTH?s	1. Immediately or same day 2. If I get sicker 3. Didn't specify 4. Don't remember

D. FACTORS INFLUENCING TIMING OF COMPLIANCE		
I. SOCIO-ECONOMIC FACTORS		
No.	Question	Response/Coding
16.	Type of toilet facility	
	a. No facility	0. No 1. Yes
	b. Latrine	0. No 1. Yes
	c. Water sealed	0. No 1. Yes
	d. Septic tank/toilet	0. No 1. Yes
17.	Cooking Fuel	
	a. LPG/natural gas/biogas	0. No 1. Yes
	b. Charcoal and or wood	0. No 1. Yes
	c. No food cooked in house	0. No 1. Yes
18.	a. Has electricity	0. No 1. Yes
	b. Has radio	0. No 1. Yes
	c. Has television	0. No 1. Yes
19.	Means of transport	
	a. Has bicycle	0. No 1. Yes
	b. Has motorcycle	0. No 1. Yes
	c. Has car	0. No 1. Yes
20.	Main floor material	
	a. Ceramic/marble/porcelain tiles/terrazzo	0. No 1. Yes
	b. Cement/concrete	0. No 1. Yes
	c. Woolen carpets/synthetic carpet	0. No 1. Yes
	d. Linoleum/rubber carpet	0. No 1. Yes
21.	Rooms used for sleeping	
	a. One	0. No 1. Yes
	b. Two	0. No 1. Yes
	c. Three or more	0. No 1. Yes
22.	Main roof material	
	a. Thatch/grass	0. No 1. Yes
	b. Roofing sheets	0. No 1. Yes

II. SOCIO-CULTURAL FACTORS		
No.	Question	Coding
23.	In your opinion, what do you think was the cause of your illness?	1. Spiritual Cause 2. Physical Cause
24.	How severe do you think your condition is?	1. Not Severe 2. Severe 3.Very Severe
25.	Have you been to this facility before this seek healthcare?	0. No 1. Yes 2. If yes, how many times? ---------
26.	Will you visit this facility again if the need be?	0. No 1. Yes
III. GEOGRAPHIC FACTORS		
No.	Question	Response/Coding
27.	How long did it take you to get here from your home?	[ ] Minutes
28.	How was the road network from your home to TTH	1.Very good 2. Good 3.Fair 4. Poor
29.	What transport did you use to get here?	1. Walked 2.Commercial car 3. Private car 4. Bicycle 5. Motorbike 6. Tricycle
30.	How much money will you have spent to come here an return to your home?	GH¢ [ ]
IV. HEALTH SYSTEM FACTORS		
No.	Question	Response/Coding
31.	How do you feel about the reception or treatment received today?	1. Satisfied 2. Not Satisfied
32.	How would you rate the courtesy level of staff who attended to you?	1. Courteous 2. Not Courteous

IV. HEALTH SYSTEM FACTORS		
No.	Question	Response/Coding
33.	How much time did you spend waiting before being seen by the health worker?	[ ]Minutes
34.	Do you think the waiting time was long?	0. No 1. Yes
35.	Do you think TTH has the required logistics to take care of your condition?	0. No 1. Yes
36.	Do you think the referral is necessary?	0. No 1. Yes

Appendix 4: Debriefing Form

Thank you for taking part in this study. The study has now ended. Your participation is very much appreciated. We would like to take some time to provide you with a few more details concerning the study.

Aim of the study

The questionnaire was created by an MPH student at the School of Public Health at the University of Ghana as a data collection tool for collecting data for her thesis as part of the requirements towards submitting a dissertation in partial fulfilment for the award of the master of public health (mph) degree.

Contact Information

If you have any queries or questions concerning this study, please contact the the Ethical Review Administrator Ms. Hannah Frimpong on:

Office: +233 302 681109
Mobile: **233 (0) 243235225 or 0507041223**
Email: Hannah.Frimpong@ghsmail.org

Anonymity and Confidentiality

We would like to remind you that your information will be anonymised and will remain completely confidential. It will be stored on an encrypted, password-protected computer and will only be used for its intended purpose.

Thank you again for your time.

Appendix 5: Ethical Approval