An exploratory study of the key determinants of self-referral by women in labour to Chris Hani Baragwanath Hospital in the Johannesburg Metro District, South Africa

by

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SIGNED DECLARATION

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
CARMMA	Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa
CHBH	Chris Hani Baragwanath Hospital
CHC	Community Health Centre
CHW	Community Health Worker
CS	Caesarean section
DOH	Department of Health
DCST	District Clinical Specialist Team
EMS	Emergency Medical Services
GCP	Good Clinical Practice
GDM	Gestational diabetes mellitus
ICH	International Conference for Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use
IMPAC	Integrated Management of Pregnancy and Childbirth Care
JHB	Johannesburg
MCH	Maternal and Child Health
MDG	Millennium Development Goal
SDG	Sustainable Development Goal
MOU	Maternity Obstetric Unit
RPHC	Re-engineering of Primary Health Care
SAFE	Skilled Attendance For Everyone
UCT	University of Cape Town
WBOT	Ward-Based Outreach Team
WHO	World Health Organization

DEFINITIONS

Community Health Worker: a member of the community where (s)he works, selected by the community, answerable to the community for his/her activities, supported by the health system but not necessarily a part of its organization, and has shorter training than professional workers (World Health Organization, 2007)

District Clinical Specialist Team: a team of specialists in a health district in South Africa consisting of a family physician, a primary health care nurse, an obstetrician and gynaecologist, and advanced midwife, a paediatrician, paediatric nurse and an anaesthetist (Department of Health, 2012)

Low-risk pregnancy: a pregnancy that is anticipated to be without problems in terms of a woman's past medical, gynaecological and obstetric history and any other relevant issues as the pregnancy continues (Department of Health, 2015).

High-risk pregnancy: a pregnancy which is thought from the outset to be more at risk of obstetric complications before, during or after the delivery (Department of Health, 2015).

Maternal Health: the health of women during pregnancy, childbirth and the postpartum period (Department of Health, 2015).

Maternity Obstetric Unit: a health service unit within a community health center that is staffed by midwives and offers maternal health services before, during or after the delivery (Department of Health, 2015).

Mother-Baby Package: a basic set of health system interventions and activities that are needed before and during pregnancy, during delivery, and after delivery for mother and new-born (Starrs, 2014:211)

Safe Motherhood: a series of health care interventions that ensure that women receive high-quality gynaecological, family planning, prenatal, delivery and postpartum care, to achieve optimal health for the mother, foetus and infant during pregnancy, childbirth and postpartum (Starrs.2014:211)

Self-Referral: An act of self-recommendation for an appointment (Oxford Dictionary, 2010). In this study, it refers to pregnant women who refer themselves to a hospital for delivery, without being told to do so by a health professional.

Ward-Based Primary Health Care Outreach Team: a team comprised of a professional nurse and six community health workers that provides primary health care services to communities, families and individuals at household level within a ward (Department of Health, 2011).

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Introduction

At Chris Hani Baragwanath Hospital (CHBH) in Johannesburg overcrowding remains a concern as women who have low-risk pregnancies continue to bypass community-based obstetric facilities to deliver at the tertiary hospital. A significant number of self-referred pregnant women had no obstetric risk factors qualifying them for delivery at CHBH Maternity Unit. The primary concern at CHBH was that the management of low-risk maternity patients in high-risk a setting interfered with the care of patients requiring specialist care.

Study Objectives

To determine the socio-demographic characteristics of the women who self-refer to CHBH; to explore the reasons why low-risk patients present at CHB Maternity Hospital in labour, and to determine obstetric risk factors amongst self- referred pregnant women.

Methods

A descriptive, cross-sectional study was conducted focusing on self-referred pregnant women who delivered at CHBH and were in the post-natal ward during the study period (26 October 2013 to 03 November 2013). A structured questionnaire was administered by the researcher to each study participant to establish variables of the key determinants of self-referral. The data were analyzed using SPSS version 18 and all tests for statistical significance between appropriate and inappropriate self-referral were carried out at a p=0.05 level of significance with a 95% confidence interval.

Results

The total number of deliveries for the study period 26 October 2013 to 3 November 2013 was 514 of which 112 were self-referrals. Only 108 women consented to participate in the study and were subsequently interviewed. The results indicated that of the pregnant women who self-referred to CHBH for delivery (N=108), 58.33% travelled more than 5km, 14,81% were teenagers, 81.48% were single, only 1.85% had no formal education, while 72.22% were unemployed. The results further showed that 47.22% of the

women had a history of obstetric risk factors and were appropriate for delivery at CHBH, while the majority (52.78%) were low-risk pregnancies and should have delivered at local MOUs. Analysis of the results showed that age (p=0.042), transport mode (p=0.030), transport cost (p=0.001), transport ownership (p=0.041), distance (p=0.032) and waiting times (p=0.025) had statistically significant influence on self-referral. 22.22% were of the high-risk age-groups (<20 years and >35 years), 2,78% had previous surgery, and 12.04% had medical conditions for which they were on treatment.

Conclusion

This study showed that the referral system for maternity care within the Johannesburg Metro Health District is not fully functional. Most of self-referrals were inappropriate for CHBH. The age of the pregnant woman, transport, distance and waiting times at the service point are key determinants of self-referral.

Key words:

maternal care, maternal referral system, self-referral, key determinants, maternal mortality and morbidity

CHAPTER 1

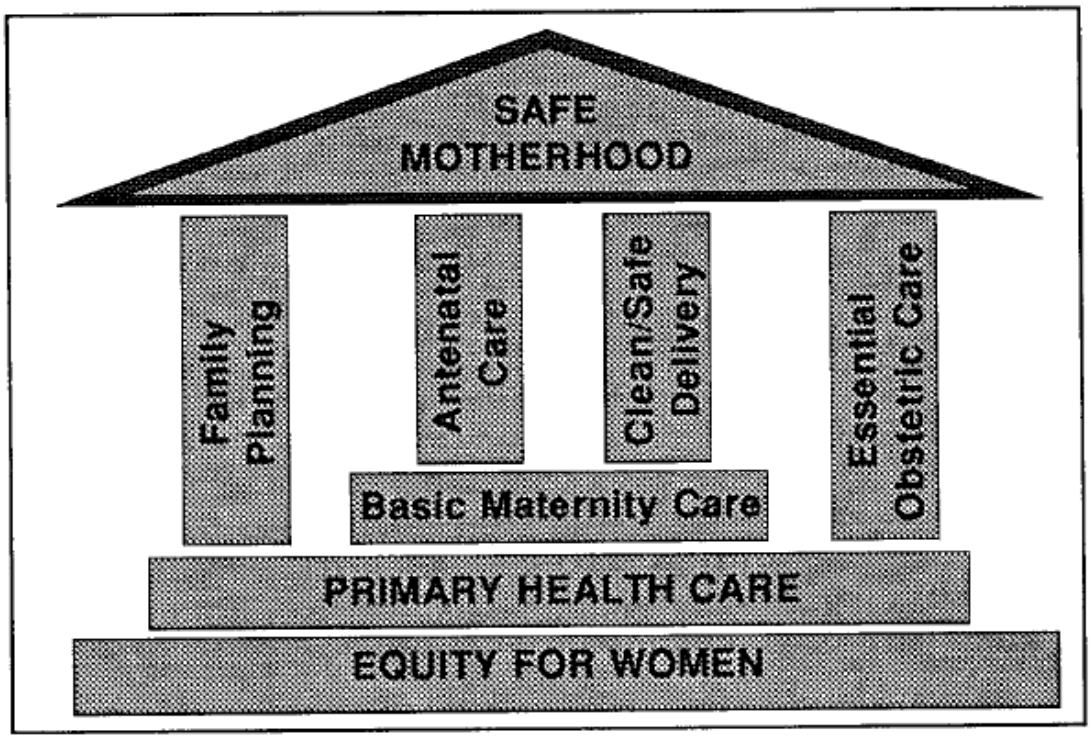
INTRODUCTION AND BACKGROUND

1.1. Introduction

1.1.1. Safe Motherhood Initiative - Global Perspective

Prior to 1987, maternal and newborn care was characterized by high numbers of high-risk and unwanted pregnancies, obstetric complications and high case fatality rates among women with complications. In 1987 the World Health Organization (WHO) introduced the Safe Motherhood Initiative (SMI) as a strategy for improving maternal and newborn care. The initiative was a response to the pregnancy-related risks that women in low-income countries (LICs) face. At the time, it was noted that maternal and child health programmes in LICs and middle-income countries (MICs) tended to focus almost exclusively on child health benefits (Starrs, 2006:1130). At the SMI conference held in Nairobi in 1987 the need for improving women's status, educating communities, and strengthening the core elements of women's health (that is, antenatal, delivery and postpartum care) at the community and referral levels was emphasized (Starrs, 2006:1130). The strategy sought to reduce maternal morbidity and mortality through the provision of family planning services, promotion of antenatal care, improving essential maternal care and improving the socio-economic status of women. In 2007, two decades after the implementation of the SMI strategy, there were more than half a million maternal deaths reported, with most of the deaths being preventable. Some estimated 11-17% of deaths occurred during childbirth, and 50-71% of maternal deaths occurred in the postpartum period (Islam, 2007:735). Islam (2007:735) emphasized the role of ineffective referral systems, and organizational strategies that ensure a continuum of care. The implementation tool of the strategy was the Mother-Baby Package (Figure 1) with four strategic interventions (pillars) based on primary health care and the greater equity of women.

Figure 1: The Four Pillars of Safe Motherhood



The district health system was identified as the basic unit for the planning and implementation of the Mother-Baby package, by linking families and communities with health facilities through an effective referral system. In this regard, Starrs (2014:211) emphasizes the need for integration of maternal and newborn care and other primary health care programmes. Of the four strategic pillars of Safe Motherhood, antenatal care (ANC) was regarded as the most important strategic intervention with its aim being to produce a healthy mother and baby after delivery. The purpose of ANC is the early identification of pregnancy-related risk (Starrs, 2006:1130). This is achieved through the prevention and treatment of pregnancy-related illnesses such as hypertension of pregnancy, anaemia, malaria, tetanus and sexually transmitted infections, and detection of women at high risk of complications of delivery.

The framework for antenatal care includes the use of a professional birth attendant with midwifery training; preparation of a simple and cheap clean birth kit; knowledge of the signs and symptoms of possible complications during pregnancy, delivery and after delivery; knowledge of where to go for delivery and how to get there; compilation of a transport plan in case of

complications or emergencies; compilation of a plan of saving money in the event of an obstetric emergency; and availability of a person to accompany the pregnant woman to hospital in the event of an emergency and referral (Gerein, Mayhew & Lubben, 2003).

1.1.2 Standards for Maternal and Neonatal care

Standards for maternal and neonatal care consisting of key recommendations for the delivery of maternal and neonatal care in health facilities, starting from the lowest to the highest level of care, were introduced in 2007. These standards were part of the WHO Integrated Management of Pregnancy and Childbirth Care Package of guidelines to improve maternal and neonatal health care (WHO, 2007) and were recently updated to the 2016 WHO ANC model which requires all pregnant women attending ANC to have a minimum of eight contacts (ANC visits) to reduce perinatal mortality and improve the woman's experience of care; counselling about healthy eating and keeping physically active during pregnancy; supplementation with daily oral iron and folic acid 30 mg to 60 mg of elemental iron and 400 µg (0.4 mg) folic acid for the prevention of maternal anaemia, puerperal sepsis, low birth weight, and pre-term birth; depending on previous tetanus vaccination exposure, tetanus toxoid vaccination, to prevent neonatal mortality from tetanus; one ultrasound scan before 24 weeks' gestation (early ultrasound) for the pregnant woman to estimate gestational age, improve detection of foetal anomalies and multiple pregnancies, reduce induction of labour for post-term pregnancy, and improve a woman's pregnancy experience and that health-care providers should enquire about their use of alcohol and other substances (past and present) as early as possible in the pregnancy and at every antenatal visit (Tunçalp et al., 2017).

After thirty years of the introduction of the Safe Motherhood Strategy and its implementation through the Mother-Baby Package, significant global progress has been made in reducing maternal mortality, mainly because of the Mother-Baby Package around the Millennium Development Goals (MDGs). The MDGs are a set of internationally accepted development goals, with MDG 4 aimed at reducing child mortality, and MDG 5 addressing

maternal health (Barros et al, 2010:1877). By 2015, the mortality rate had decreased from 532 000 in 1990 to 303 000 women in 2015, more than halving the approximate global lifetime risk of maternal death from 1:73 to 1:180. Most of these deaths, however, occur in poorly resourced settings (WHO, 2015). On September 25th in 2015 United Nations (UN) countries adopted a set of 17 Sustainable Development Goals (SDGs) with 169 targets. SDG 3 addresses all important health priorities, including reproductive and maternal health (Barroso et al., 2016:27). In line with the SDG framework, WHO facilitated the updated Global Strategy which sets out a vision, guiding principles, objectives and set targets to attain the SDGs by 2030 (Kuruvilla et al., 2016:398).

In South Africa (SA) the maternal mortality rate (MMR) in 1980 was 208 per 100,000, and in 2008 it was 237 per 100,000 (Hogan et al., 2010). By 2013 the MMR in SA declined to 141/100,000 with 85.6% of births occurring in healthcare facilities (Statistics South Africa [StatsSA], 2015). One of the challenges in addressing the MMR in SA relates to establishing an effective district health system and referral pathway. Addressing factors that constrain the capacity of the health system to address the health needs of the population, specifically pregnant women in the context of this study, warrants urgent attention (Chopra et al., 2009:1023).

1.1.3 Safe Motherhood Initiative - South African Perspective

South Africa adopted the WHO Safe Motherhood Initiative. In this regard, Guidelines for maternity care in SA were developed by the National Department of Health (NDoH) based on the WHO pillars of Safe Motherhood which entail choice on contraception, which seeks to ensure that women and couples receive information about family planning and available services; provision of basic antenatal care to identify risk factors, early diagnosis of pregnancy complications and appropriate management; assurance of clean and safe delivery by providing knowledgeable and skilled health workers and adequate equipment; provision of essential obstetric care to all women who need it, and provision of choice on termination of pregnancy for unwanted pregnancies (Department of Health [DoH], 2015).

1.1.4 National Strategy for Maternity Care in South Africa

A national strategy for maternity care was developed to implement Safe Motherhood in South Africa (DoH, 2015). The strategy was based on the following:

1.1.4.1 Community Participation by which women, families and communities are empowered to participate in the improvement of maternal, perinatal and family health;

1.1.4.2 A supportive legal framework whereby politicians publicly commit themselves to support maternal care improvements;

1.1.4.3 Adaptation to local realities by considering underlying causes of maternal and perinatal mortality such as poverty and illiteracy:

1.1.4.4 Quality of care whereby health workers demonstrate respect and genuine interest in pregnant women;

1.1.4.5 Ensuring improvement in the status of women in society especially in education, reproductive choice, employment and abuse prevention;

1.1.4.6 Ensuring the availability of skilled midwifery and obstetric services at all levels of care to improve service cost-effectiveness and efficiency;

1.1.4.7 Development of clinical guidelines for normal and high-risk pregnancies to provide a framework for high standard of maternity care;

1.1.4.8 Regionalized care and referral systems whereby a well-coordinated system is put in place where access to transport and facilities are ensured for the provision of optimal care to all pregnant women in the district;

1.1.4.9 Improving management capacity by proper financial planning and optimal staff and resources management;

1.1.4.10 Ongoing clinical service audits at all levels of care to improve services and develop new services when required; and

1.1.4.11 Ongoing research for evaluation of the impact of community involvement, effectiveness and cost-effectiveness of various interventions.

1.1.5 Levels of Perinatal Care

Perinatal care is delivered in a tiered system organised in accordance with the primary healthcare model advocated by WHO. Perinatal services are organised at primary, secondary, and tertiary levels of care within geographically delineated health districts. Management protocols provide guidelines on the risk-classification of the pregnant woman at the first antenatal visit. Pregnant women with low-risk pregnancies continue receiving antenatal care and deliver their infants at clinics which are located at community level. Clinics are staffed by professional nurses, enrolled nurses, nursing assistants, community volunteers, and a visiting medical officer. Community health centres (CHCs) provide 24-hour comprehensive health services with an obstetric unit staffed by midwives. Stand-alone obstetric services are called midwife obstetric units (MOUs). CHCs and MOUs provide low- to intermediate-risk antenatal care, as well as basic emergency obstetric care signal functions that include intravenous antibiotics, magnesium sulphate, oxytocics, vacuum extraction, and neonatal resuscitation (DoH, 2015). CHCs are staffed by advanced midwives, midwives, enrolled nurses, nursing assistants, community volunteers, and a visiting or resident medical officer. District and regional hospitals manage complicated cases (DoH, 2015). District hospital staff include midwives, nurses, and doctors (including visiting specialist obstetricians). To ensure that pregnant women receive effective, appropriate care it is important that each health facility follows prescribed obstetric management and referral protocols, and that staff deliver care in relation to management guidelines (DoH, 2015).

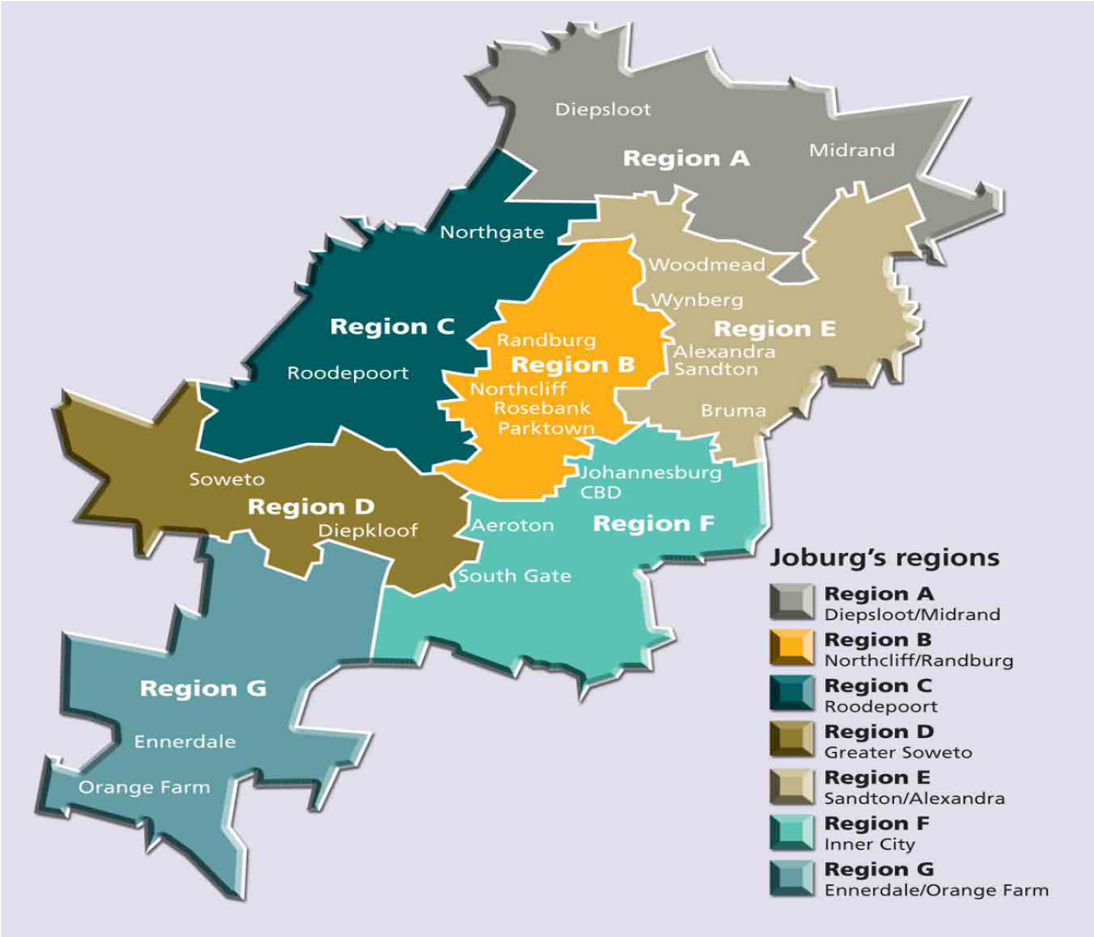
1.1.6 Study Area

Gauteng Province is the smallest of the nine provinces in SA and accounts for 1,5% of the land area. The province has a population of 13.2 million. Gauteng Province is subdivided into five health districts (Johannesburg Metro, Tshwane Metro, Ekurhuleni Metro, West Rand and Sedibeng).

The Gauteng Department of Health, like other provincial departments of health, delivers maternal and neonatal care in accordance with the Guidelines for Maternity Care in South Africa. Johannesburg Metro is the largest health district with a population of 4.4 million, consisting of 76.4% Blacks, 5.6% Coloureds, 4.9% Indian/ Asian, and 12.3% White. The spoken languages for Johannesburg Metro Health District are Zulu (23.4%), English (20.1%), Sotho (9.6%), Tshwana (7.7%) and other languages (39.2%). Soweto has a population size of 1.25 million (Statistics South Africa [SSA], 2011).

The Johannesburg Metro Health District is sub-divided into 7 regions (also called sub-districts) and is served by 74 Local Municipal Clinics, 22 Provincial Clinics, 10 Community Health Centers (CHCs) (with MOUs), 1 District Hospital, 2 Regional Hospitals and 2 Central Hospitals (Figure 2).

Figure 2: Johannesburg Regions



1.1.7 Johannesburg Metro Health District Referral Pathway

Department of Health Guideline for Maternity Care in South Africa seeks to ensure that pregnant women have access to, receive appropriate care at and are referred to appropriate facilities within the referral chain (DoH, 2015).

The referral system within the health district is such that the clinics render antenatal care only and the MOUs within the CHCs, providing low-risk delivery services. All identified high-risk and obstetric emergencies are referred to next level of care.

There are seven MOUs that are in regions D (Soweto) and G (Lenasia and Orange Farm) that provide both antenatal care and low-risk delivery services and refer high-risk and obstetric emergencies directly to CHBH. These are Itireleng, Zola, Mofolo, Chiawelo, Lillian Ngoyi, Lenasia South and Stretford. Each MOU has a designated maternity ambulance for referral purposes. All

the MOUs are staffed by midwives. The MOUs are supported by the CHBH Department of Obstetrics through its outreach program whereby monthly obstetrician support visits were undertaken to each MOU to up-skill midwives on maternal and new-born care including referral protocols.

Chris Hani Baragwanath Hospital (CHBH), where the study was conducted, is a central hospital situated in Soweto within the Johannesburg Metro Health District rendering district, regional and tertiary services. The hospital serves a population of about two million people through municipal and provincial clinics as well as seven CHCs (with MOUs). Its drainage area includes Greater Soweto, Orange Farm and Lenasia. During the study period (2013) the hospital had about 340 maternity beds and had about 21 000 deliveries.

The clinics located in this drainage area offer antenatal care five days a week from 08h00 to 16h00. Because of shortage of staff, some of these clinics render antenatal services only two days in a week, resulting in pregnant women being turned away if they come on "wrong" days. This has contributed to poor attendance of antenatal care (Section27, 2013)

1.2 Problem Statement

Low-risk pregnant women are self-referring to CHBH (Tertiary Level) for delivery and by-passing their local MOU (Primary Level), leading to severe overcrowding at the hospital and thereby compromising healthcare for all (Dlakavu, 2012).

On the 1st October 2007, the Star daily morning newspaper (published in Johannesburg) reported that several new-born babies were being nursed in cardboard boxes in the nursery at CHBH in Soweto (Figure 3). Following this disturbing report, the Minister of Health dispatched a team to the hospital to investigate the allegations (Flanagan, 2007). The minister discovered that the allegations were indeed valid and that the maternity service at the hospital was plagued by overcrowding. The Minister commissioned an audit of the maternity services at CHBH to determine the causes of overcrowding in the service.

Figure 3: Newborns Share Cardboard Boxes at Bara

While CHBH is a central hospital providing highly specialized obstetric services, the task team found that several low-risk obstetric cases were inappropriately delivered at the hospital in stead of being delivered at the appropriate MOUs. A significant number of women delivering at the hospital were self-referred and had no obstetric risk factors qualifying them to present at CHBH Maternity Unit for delivery. At the time of the study, the seven MOUs in the health district, referring all complicated deliveries to CHBH collectively conducted about 10 000 deliveries per annum (Dlakavu, 2012).

The primary concern at CHBH was that the management of low-risk maternity patients in high-risk settings was causing overcrowding of the facility, was wasteful and interfered with the care of patients requiring specialised care. Attending to low-risk pregnant women who present in labour in such a setting diverts resources from high-risk pregnant patients. In addition, a pregnant woman at low risk for complications cannot compete for care in such an environment, and may not receive adequate attention by the staff. The fact that CHBH provides both secondary and tertiary services for the entire Greater Soweto, Orange Farm and Lenasia areas, results in a high number of deliveries at this institution. The situation is exacerbated by some patients who come from other provinces and are often unbooked (Dlakavu,

2012). The other contributing factor to the situation was that Chris Hani-Baragwanath Hospital had its equipment budget slashed by more than half in 2007, resulting in the hospital having to use old equipment (Flanagan, 2007).

1.3 Study Aim

The aim of this study was to explore key determinants of self-referral by women in labour to CHBH in the Johannesburg Metro District.

1.4 Specific Objectives

The main study objectives are:

1.4.1 To determine the socio-demographic characteristics of the women who self-refer to CHB Hospital.

1.4.2 To explore the reasons why low-risk patients present at CHB Maternity Hospital in labour.

1.4.3 To determine obstetric risk factors amongst self- referred pregnant women.

1.5 Research questions

1.5.1 What are the socio-demographic characteristics of the women who self-refer to CHB hospital?

1.5.2 What are the reasons given by self-referred pregnant women who present at CHB hospital?

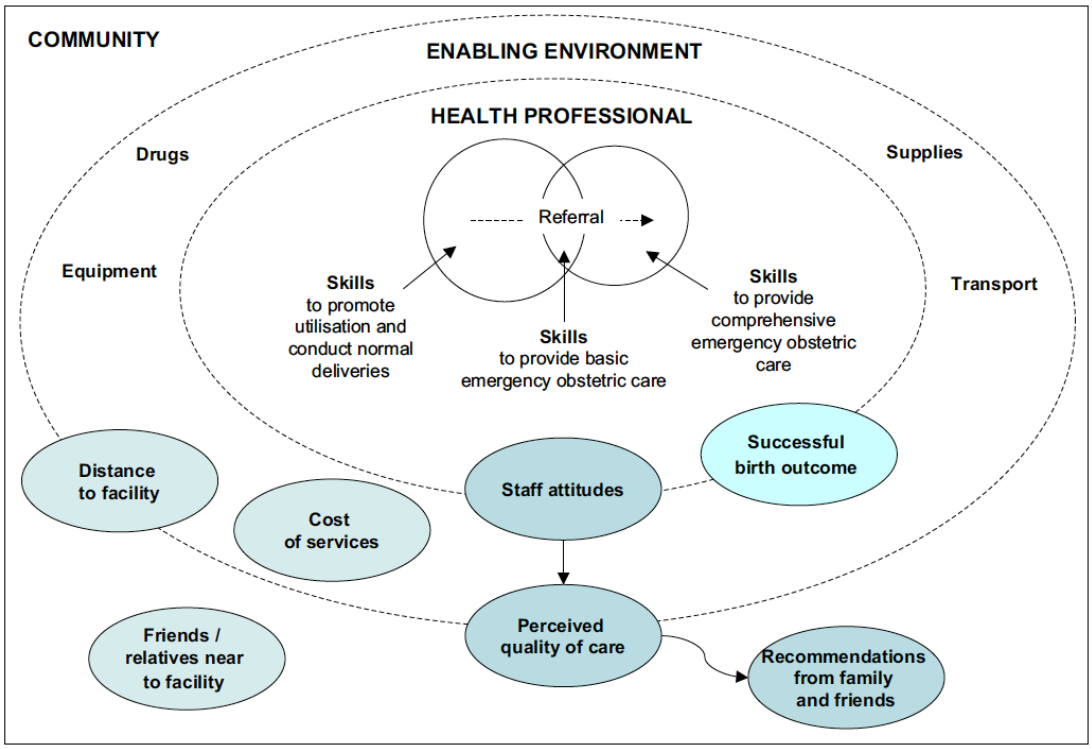
1.5.3 What are the obstetric profiles of women who self-refer?

1.6 Conceptual Framework

The SAFE Strategy Development Tool (Bell et al. 2003:227) which was designed to assist policy makers to develop strategies to improve maternal care and reduce maternal and perinatal mortality and morbidity was used as the framework for this study. The categorization of components of care that women perceived as important during delivery as shown below and proposed by D'Ambruoso, Abbey and Hussein (2005:1), was used as a guide in developing the data collection tool used during the study (Figure 4). In

this regard, the following elements of the framework were used in the questionnaire: distance to facility, transport, friends and family, perceived quality of care, birth outcome, staff attitudes and skilled staff. The study determined the significance and interplay of these factors among women who self-referred to CHBH to guide policy makers and managers in making appropriate interventions.

Figure 4: Categorized components of care as perceived by pregnant women



[Source: D'Ambruoso, Abbey and Hussein (2005:1)]

1.7 Conclusion

This Chapter presented a background to the study, which explored the key determinants for self-referral of women in labour who self-referred to CHBH. Chapter two presents a literature review of the topic, and Chapter 3 provides details about the research methodology applied in the study. In Chapters 4 and 5 the results of the study are presented and discussed. Chapter 6 summarizes the study findings, and presents the limitations and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A literature review was carried out to support the investigator in establishing the key determinants for self-referral by pregnant women who by-passed midwife obstetric units (MOU) to deliver at Chris Hani Baragwanath Hospital (CHBH).

The literature search focused on the description of the key determinants of obstetric self-referral and obstetric risk factors. The literature review assisted in identifying appropriate questions that were included in the questionnaire. The search engines Google Scholar, PubMed, National Health Department web-page, WHO web-page, and EBSCOhost were used to extract international and national literature related to the research questions. Only English language publications were used. The following search terms were used to access the relevant articles: "functional maternal referral system", "key determinants and reasons for obstetric self-referral", "obstetric risk factors", "socio-demographic characteristics of the women in labour who self-refer".

The literature search was done using the SAFE Strategy Development Tool used by governments and other organizations concerned with the implementation of maternal health programmes (Bell et al. 2003:227) This framework (see Figure 4) provides three components of care as perceived by pregnant women (D'Ambruoso, Abbey & Hussein, 2005:1). The community is the first component and focusses on the socio-demographic characteristics of the pregnant woman in terms of maternal age, marital status, education level and employment status. The second component is an enabling environment which relates to the health system and covers factors such as the distance that pregnant women travel to the health facility, the form of transport available and its cost, availability of local facility in terms of the applicable norms and standards, availability of drugs, equipment and supplies in the health facility, the cost of the service provided in these

facilities. The third and last component of the framework relates to the health workforce. This focuses on the staff skills base in relation to the conduct of normal deliveries, provision of basic and comprehensive emergency obstetric care, and staff attitude. A good health service should be effective, and of good quality, available to those who are in need thereof, when and where it is needed, without wasting resources (World Health Organization [WHO], 2007).

In South Africa, the SAFE strategy was implemented through the adoption of the Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa (CARMMA) the key components of which are to strengthen and promote access to comprehensive sexual and reproductive health services with specific focus on family planning services, advocacy and health promotion for early antenatal care and attendance, to improve access to skilled birth attendants, to strengthen human resources for maternal and child health, and to improve child survival (Department of Health (DoH), 2013)

2.2 Levels of Perinatal Service Delivery in South Africa

In South Africa there are different levels of care for managing pregnancy and childbirth. Low-risk women are managed at the primary level of care, while high-risk obstetric emergencies and complications are managed at the secondary and tertiary levels of care (Department of Health [DoH], 2015). Clinics are the first level of care for pregnant women and operate on weekdays from 07H00 to 16H00, offering antenatal care (ANC) for low-risk pregnancies as well as family planning and reproductive health services. Pregnant women who are identified as high risk (at risk of obstetric complications before, during or after the delivery), including obstetric emergencies, are referred to the next level of care, either to a secondary or tertiary hospital (DoH, 2015).

Community Health Centers with Maternity Obstetric Units (MOUs) are the next level of care providing 24-hour obstetric services that are provided by midwives. Essential services that are offered in MOUs are inclusive of

antenatal care, normal delivery of babies, and referral of high risk deliveries to the next appropriate level of care, namely district, regional or tertiary hospitals, depending on the condition of the patient (DoH, 2015).

The District hospital is the next level of obstetric care to which CHCs and MOUs refer pregnant women. District hospitals operate on a 24-hour basis and provide high risk antenatal care, complicated deliveries and caesarean section. Maternity services in district hospitals are provided by doctors (general practitioners) and midwives (DoH, 2015).

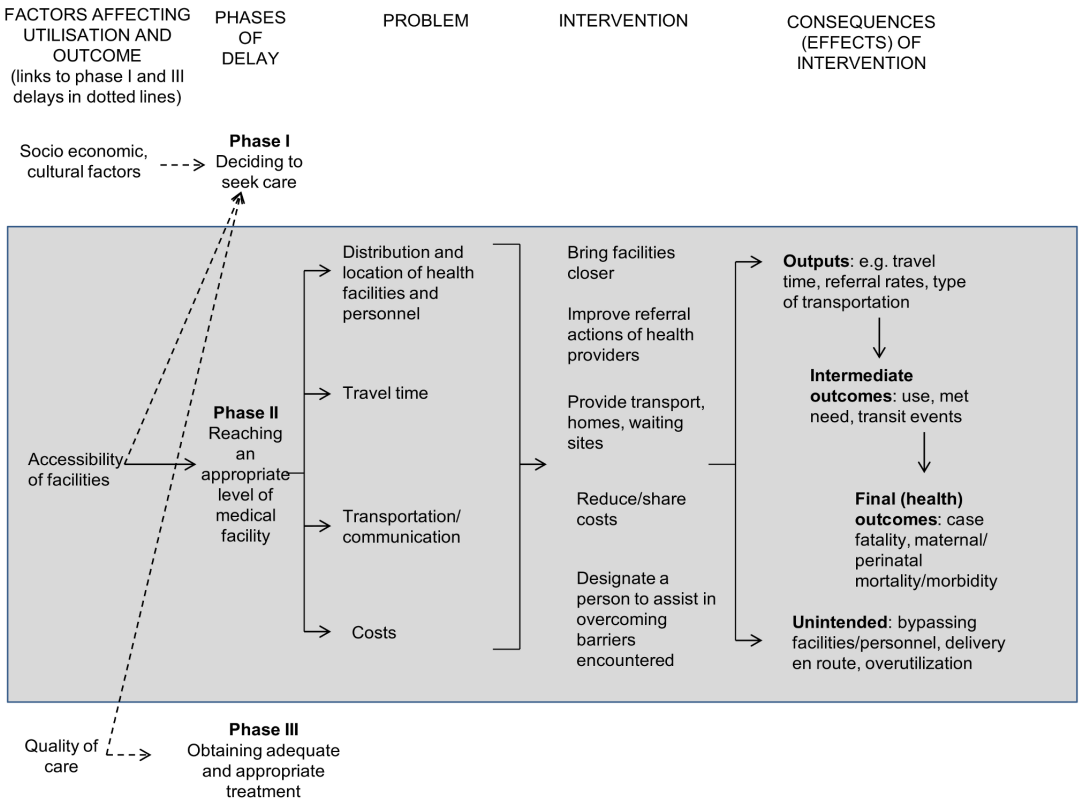
The Regional hospital is the next level of obstetric care. It provides a specialist package of services inclusive of obstetric and paediatric services. District hospitals refer complicated obstetric cases to regional hospitals. Regional hospitals constitute the epicentres for clinical training and research in obstetrics and neonatal care. They have the responsibility for both in-reach and outreach services within regions (DoH, 2015).

Tertiary and Central hospitals are the last and highest level of care. This level renders highly specialized obstetric and neonatal care. Tertiary hospitals are staffed by sub-specialists in obstetrics and neonatology. Tertiary Hospitals provide clinical training and research in highly specialized obstetric and neonatal care (DoH, 2015).

2.3 Functional Maternal Referral System

An effective, efficient and functional referral system between the primary, secondary, and tertiary levels of care in the public health system is an important element of a successful Safe Motherhood programme (Murray and Pearson, 2006:2205; Singh et al., 2016:1). Factors that affect a referral system include geographical access to care, transport availability and cost, means of communication, availability of health services locally (Hussein et al., 2012) (see Figure 5). In a similar study, Chaturvedi et al. (2014:1), stressed the importance of access to care and the quality of the referral system.

Figure 5: The referral chain



Referral from home may be either to the nearest community health centre or directly to hospital. The above diagram shows that a decision to refer at family or community level is dependent on the accessibility of the health facility with regards to the distribution and location of the health facility, the time it takes to reach the facility, means of transport and costs, as well as means of communication (Hussein et al., 2012)

At community health centre level, factors that are taken into consideration are obstetric risks, applicable referral guidelines, quality of care at the community health centre in relation to availbility of skilled personnel, equipment and drugs, the patient's clinical condition and available means of transport (Hussein et al., 2012).

Referral to hospital is determined by the quality of care at the the hospital in relation to the availbility of doctors, equipment and drugs, financial accessibility in terms of whether maternal health services are paid for or not, whether the patient receives preferencial care or not, and user friendliness in relation to staff attitudes (Hussein et al., 2012). The type of obstetric

complication determines the level of care the patient is referred to, and this sometimes renders the referral pathway complex (Singh et al., 2016:1). The requirements of an effective referral system entail adequately resourced referral centres, communication and feedback systems, designated maternity ambulance service, referral protocols, appropirately skilled personnel, collaboration between referral levels, standard patient record system, and often someone to accompany the referred patient to the next level of care (Singh et al., 2016:1). These requirements were later revised to focus on a referral strategy, adequately resourced referral facilities, a good relationship between referral levels of care, an efficient patient transport system, specific referral protocols between referring and receiving facilities, strong policy support, and skilled personnel at all levels of care (Singh et al., 2016:1). In addition to these requirements, Wambui (2013) stressed the woman's ability to pay and her awareness of what services are available at each level of care as very important.

In his assessment of referrals to Dilokong Hospital maternity unit in South Africa, Mashishi (2012) found non-compliance with the established referral system by health users and, to a lesser extent, health care providers in the Greater Tubatse Local Municipality. In the case of health care providers, lack of understanding of referral systems and guidelines resulted in a dysfunctional referral system. A study conducted in India reported that 97% of referrals were before delivery, and 60% were admitted at the first facility prior to referral (Chaturvedi et al., 2014:1). Singh et al. (2016:1) in their review of obstetric referral pathways noted that challenges in the referral pathway relate to the inability of delivering emergency obstetric care at primary facilities, inadequate referral communication and record-keeping, the absence of clear referral guidelines, and bypassing community health centers.

2.4 The Concept of Triage

Triage is a process in which patients are assessed in relation to the urgency of their condition, with the purpose of prioritizing those who need immediate and urgent care (Forshaw et al., 2016:1). Initiated in military field hospitals,

the triage process plays a key role in ensuring that patients receive the appropriate level of care, and plays an important role in mortality-prevention (Zocco et al., 2007:315). In obstetric services triage units were introduced to reduce the large numbers of non-labouring women who present in the labour ward. The assessment of non-labouring women places demands on the staff and resources required to assess non-labouring women in the labour ward. It is estimated that a third of the women examined in the labour ward do not deliver, and are either discharged home or transferred to another unit (Zocco et al., 2007:315). Triage units are often introduced to address challenges like an overall increase in the number of deliveries, patient and staff frustrations, resource constraints, and misuse of beds in the labour ward. The benefits of obstetric triage systems in the labour ward include workload reduction, overall satisfaction with care, and reductions in wait time (Zocco et al., 2007:315).

In July 2008, a triage system was introduced at CHBH to curb the high number of low-risk self-referred deliveries. In her study, which assessed the triage system at CHBH, Dlakavu (2012) found that the introduction of the triage system there had been a reduction of low-risk self-referred deliveries compared to four years previously.

2.5 Socio-Demographic Factors

Socio-demographic factors influence the choice of place of delivery by pregnant women (Ravi and Kulasekaran, 2014:75). In this regard, family tradition and poor socio-demographic conditions of the family appear to be the main reasons for delivering at home. According to Mashishi (2012) in his study on referrals in South Africa, states that pregnant women do play a role in the choice of their delivery site, and that it is their choice and right to decide where to deliver. Mthethwa (2006) in her study conducted in Sedibeng, South Africa found that demographic factors such age, race and gender do influence choice of delivery site.

2.5.1 Maternal Age

Maternal age is a key determinant of choice of delivery facility among pregnant women. In Ethiopia, Teferra, Alemu and Woldeyohannes (2012) found that maternal age influences choice of delivery facility among pregnant women of 15–19 years of age being about 5 times more likely to choose to deliver in health institutions compared to those who are 35 years and above. This finding is consistent with studies done in other parts of Ethiopia which also showed that younger women to be more likely to deliver in a health facility as compared to older ones (Bayu et al., 2015). This was confirmed by Mutihir and Nyiputen (2007) among un-booked pregnant women who presented at the Jos Teaching Hospital in Nigeria who reported that un-booked patients were mainly young (mean age 26.7 years).

2.5.2 Marital Status

According to Kkonde (2010), the marital status of a pregnant woman influences the choice of delivery facility. He argues that in the case of a married woman, in most instances, the husband decides as to where the pregnant wife should deliver. On the other hand, in Debra Markos, Ethiopia, Bayu et al. (2015) found that 73.3% of pregnant women's husbands preferred institutional delivery for their wives.

2.5.3 Female Education

Education influences choice of the delivery facility by pregnant women (Bayu et al., 2015). This was established through a community-based follow-up study in Ethiopia. The study found that of the 292 pregnant women who had planned to deliver in a health facility, 234 (80.1%) actually delivered in a health facility. The pregnant women who were less educated contributed to those who ended up not delivering at a health facility. In Vietnam, Duong, Binns and Lee (2004) found that women who had attained secondary school education and higher, tended to deliver at a health facility, compared to those who had a primary school education or less. However, in Nigeria, Akande (2004) showed that patients self-referred regardless of their education level, thus by-passing lower levels of care. Magoro (2015) on the

other hand, confirmed that education does not play a role in the choice of the facility in that regardless of their higher education level, women who presented at Dilokong Hospital had poor knowledge of the referral channels as well as the different levels of health care.

2.5.4 Obstetric Risk Factors

The guide to effective care in pregnancy and childbirth explains that a key objective of antenatal care is screening for risk factors that could place the mother and infant at an increased risk for an adverse outcome. A risk-scoring system was introduced into routine antenatal care to classify women into different categories. Based on the risk category, pregnant women are assigned an appropriate level of care. A low-risk pregnancy is anticipated to be without problems in terms of a woman's past medical, gynaecological and obstetric history and any other relevant issues as the pregnancy continues (DoH, 2015). A high-risk pregnancy is thought from the outset to be more at risk of obstetric complications before, during or after the delivery (DoH, 2015). The first antenatal visit is usually the time when a risk-score is done, although women are assessed for risk at every subsequent antenatal visit (Enkin et al., 2000). Obstetric risk assessment is primarily based on medical risk factors. Such risks range from medical conditions like diabetes mellitus, hypertension, epilepsy, mental illness and cardiac disease; previous caesarean section, primiparity, multiple gestation, Tuberculosis, asthmatic on treatment, epilepsy, substance abuse, previous perinatal death, infections in pregnancy and multiple pregnancies, bleeding during pregnancy, preterm labour, pre-labour rupture of membranes and previous infant death (DoH, 2015). The most common reason for referral to a higher centre includes preterm labour, threatened preterm labour, premature rupture of membranes, antepartum haemorrhage, failure to progress in labour, and pregnancy-induced hypertension (Goh et al., 2015).

Routine antenatal service delivery emphasizes that pregnant women are made aware of obstetric danger signs so that they are able to recognize when they need to return to the health facility for urgent attention. General obstetric danger signs include swollen hands, face and feet, blurred vision,

vaginal bleeding, convulsions, premature rupture of the membranes, and decreased foetal movement (Maseresha, Kifle & Lamessa, 2016). In a study to investigate the characteristics of the "unbooked mother". Obstetric risk factors that warrant admission to tertiary health facilities include hypertensive disorders and infections like urinary tract infections (Datarray et al., 2013).

Gestational diabetes mellitus (GDM) has become increasingly important during the last 20 years. Xiong et al (2001) showed that the prevalence of GDM was 2.5% among 111 563 women who had delivered in 39 hospitals in Canada, with age over 35 years, obesity, history of prior neonatal death, and prior caesarean section being important risk factors for GDM. The study also found that pregnant women with GDM were at increased risk of presenting with pre-eclampsia, premature rupture of membranes, caesarean section, and preterm delivery. Women who have been diagnosed with GDM are more likely to self-refer for delivery.

Regarding HIV infection as a risk factor during pregnancy, Arab et al. (2016) found that HIV+ pregnant women in the U.S. had a greater likelihood of antenatal complications ranging from premature delivery, premature rupture of membranes, urinary tract infections, gestational hypertension, delivery by caesarean section, postpartum sepsis, venous thromboembolism, blood transfusions and postpartum depression. These women are most likely to self-refer compared to HIV-negative pregnant women.

Regarding caesarean sections Sørbye et al. (2011) in Tanzania found that women who are referred for delivery at a health facility had higher caesarean sections rates and poorer neonatal outcomes, as compared to those who self-refer, suggesting that the formal referral system successfully identifies high-risk birth.

2.5.5 Socio-cultural factors

In a study conducted in UK which compared maternity-seeking behaviour by women of different ethnic groupings, Cresswell et al., (2013) found that socio-cultural factors including inability to speak English, influenced

antenatal booking. In this regard, women of African/Caribbean origin, were at higher risk of late antenatal booking compared to British (White) women.

There is a widespread belief that in Africa maternal mortality is influenced by socio-cultural beliefs inclusive of gender and power relations as well as differences in roles and status between men and women (Kyomuhendo, 2003). In the study cited above, women of Bariba in Benin take pride in giving birth unassisted and are thus silently admired for their assumed bravery. Onah, Ikeako and Iloabachi (2006), in their study conducted in Enugu, Nigeria, found that a variety of interacting social, economic and health system factors, positively influenced the choice of the delivery facility by the women. As reflected in the conceptual framework (D'Ambruoso, Abbey and Hussein, 2005), there is a significant interplay between distance to facility, cost of services, staff attitude, perceived quality of care, successful birth outcome and recommendations from family and friends among women who self-refer.

In establishing in what way the woman's position in the household affects receipt of obstetric care, Fawole and Adeoye (2015) found that those women who were in a strong position of decision making were more likely to receive skilled antenatal and natal delivery services compared to those who were controlled by their partners. In South Africa belief in witchcraft and reliance in traditional healers are still common and do influence choice of delivery site (Mthethwa, 2006).

2.5.6 Perceived quality of care

Perceived quality of care is a key determinant for the choice of delivery facility. Availability of staff, facility arrangement and capacity are components of quality and important predictors of utilization of maternal services by women. Quality is so important that pregnant women do not mind bypassing facilities that offer services of inferior quality care, in favour of those that offer high-quality care and have knowledgeable medical personnel and are better stocked with medicines and other commodities, in

spite of such a decision involving high travel costs (Sharan et al., 2010; Mashishi, 2012).

Duong, Binns and Lee (2004) showed that in Vietnam, client-perceived quality of services had an effect on the choice of service delivery point in that if the pregnant woman is not satisfied with the quality of service at the local MOU, she is unlikely to choose that health facility for delivery the next time. In a similar study in Ghana, Floyd et al (2014) demonstrated that the pregnant woman's perceptions of quality of care included respect, good communication and tailored care, and that women prefer healthcare professionals who combine their clinical knowledge and skills with good interpersonal and cultural competence. In Enugu, South-eastern Nigeria, Onah, Ikeako and Iloabachie, (2006) established that quality of care often takes precedence over concerns about distance and cost among pregnant women.

2.6 Enabling Environment

2.6.1 Distance

In their assessment of the effectiveness of emergency maternal care in developing countries Hussein et al. (2012), found that non-medical factors such as cost and distance between place of residence and health facility were important in determining a decision for delivery. Distance from the pregnant woman's place of residence to the delivery facility of choice, is one of the key determinants of self-referral by pregnant women. According to Mashishi (2012), a high number self-referred women lived closer to Dilokong Hospital than those who were referred.

2.6.2 Transport

Transport from home to the delivery facility of choice plays an important role in safe motherhood initiatives. Pembe (2010) found that transport mode and cost were major reasons for non-compliance with the referral system. Considering the importance of the transport system in the referral chain, Raj, Manthri, and Sahoo (2015) suggested a response time of 30 minutes, that the transport vehicle should be able to transport the woman or the newborn to a

referral site within an hour, and that the transport mode must preferrably be an ambulance service that is free of cost at the time of need. The Confidential Enquiry into Maternal Deaths (CEMD) in South Africa (Moodley et al., 2014) found that in 35% of maternal deaths transport problems to facilities played a significant role.

2.7 Staff related factors

In Gutu district, Zimbabwe, it was found that in spite of the existence of a functional referral system, its effectiveness and efficiency was negatively affected by the health workers themselves who failed to comply with referral protocols and referred low-risk pregnant women for delivery at higher levels of care (Majoko et al., 2005). In addition, choice of the facility is influenced by the emotional support given by health care workers to pregnant women during delivery, the respect shown, the kindness displayed as well as reassurance that was given. Previous obstetric health care experience and perceptions by the pregnant woman of the place of delivery and those of staff attitudes, influence the decision of where to deliver (Floyd et al., 2014).

D'Ambruoso, Abbey and Hussein (2005) in a study that they undertook in Ghana, found that women expect humane, professional and courteous treatment from healthcare workers and a reasonable standard of the physical environment. Where pregnant women experience degrading and unacceptable behaviour from healthcare workers, they will consciously change their place of delivery and recommendations to others. In its statement about "the prevention and elimination of disrespect and abuse during facility-based childbirth", the WHO confirms that "many women across the globe experience disrespectful, abusive or neglectful treatment during childbirth in facilities" (World Health Organization, 2014). In a study conducted by Magoro (2015) at Dilokong Hospital in South Africa, the majority (93.1%) believed that midwives were rude towards them at the clinic level, which made them to self-refer.

2.8 Appropriateness of self-referrals

Among self-referred women two groups are identifiable, namely those that do meet the hospital admission requirements, and those who do not and should have delivered at the primary level of care.

2.8.1 Appropriate Self-referrals

A delivery of a pregnant woman at a secondary or tertiary level of obstetric care is considered appropriate in instances where a pregnant woman who is less than 20 years or above 35 years old, with an obstetric history of complications such as previous caesarian section, a high-risk pregnancy such as multiple pregnancy, serious medical condition such as heart disease and has no access to an MOU within a radius of 5km (DoH, 2015). In her study on the assessment of referrals of pregnant women to Dilokong district hospital maternity unit, Mashishi (2012) found that 37% of the self-referred women were appropriate for delivery at the hospital level of care.

2.8.2 Inappropriate Self-referrals

Where a pregnant woman of 21 to 34 years' age, with a low-risk pregnancy bypasses an MOU which is within five kilometers from home, and delivers at a secondary or tertiary facility, such self-referral is inappropriate (DoH, 2015). In rural Tanzania, Pembe (2010) demonstrated that transportation difficulties and the costs involved are among the geographical factors that result in inappropriate self-referral. This was confirmed by Mashishi (2012) who showed that most (85%) of the women who delivered at the hospital were self-referred and that 57% of the referrals were inappropriate for the level of care in that many of them lived close to a clinic or CHC.

2.9 Conclusion

This chapter reviewed the literature on functional referral systems, the South African obstetric referral system, key determinants of self-referral, obstetric risk factors and the appropriateness of deliveries.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes the methodology used to collect data on the key determinants of self-referral by post-delivery maternity patients at CHBH. It provides a detailed description of the study design, study population, study sample, inclusion and exclusion criteria, setting, data collection, data analysis, reliability and validity, generalisability, ethical considerations, and risks and benefits.

3.2 Study design

This was a descriptive, cross-sectional study using quantitative methods amongst post-delivery maternity patients at CHBH in Johannesburg, Gauteng Province, South Africa. A 51-item questionnaire was administered by the researcher during the period 26 October 2013 to 03 November 2013.

3.3 Study Population and Sample Size

The study population was all self-referred women who had delivered at CHBH during 2013. Self-referred women in this study, refers to pregnant women who had delivered their babies at the hospital, without being referred by a health professional. According to the patient admissions register of the CHBH maternity unit for the year 2012, the hospital had 20844 deliveries of which 5840 (28%) were self-referrals.

Sample size calculation

Assuming a 50% prevalence of self-referrals, at a confidence level of 95% with 9.43 confidence interval, and using Sample Size Calculator, a minimum sample size of 106 was required for this study. For this study, a sample size of 108 was used.

3.4 Recruitment and selection.

On each day of the study all self-referred women who had delivered at the hospital and admitted to the post-natal ward, were identified from the admissions register and serially approached and recruited for the study. The

sampling was purposeful in that the researcher only recruited self-referred women who met the inclusion criteria and consented to participate. A total of 108 women consented to participate in the study and were subsequently interviewed.

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criteria:

All self-referred women who delivered at CHBH during the study period (26 October 2013 to 03 November 2013).

3.5.2 Exclusion criteria:

All referred women who delivered at CHBH during the study period (26 October 2013 to 03 November 2013).

All booked high-risk women who delivered at CHBH during the study period (26 October 2013 to 03 November 2013).

3.6 Setting

The study was conducted at CHBH which is a tertiary level health facility situated in Soweto within the Johannesburg Metro Health District. With approximately 3 200 beds and about 6 760 staff members, CHBH is the largest hospital in the Southern Hemisphere and the 3rd largest hospital in the world. It provides both secondary and tertiary health services in the absence of a dedicated secondary (regional or Level 2) hospital. The hospital is therefore the only government hospital for Greater Soweto, Orange Farm and Lenasia, performing both secondary and tertiary functions for the drainage area (CHBH Website, 2016). CHBH has 300 obstetric beds and with facilities for sophisticated antenatal, intrapartum and postpartum maternal care. The maternity unit treats about 60 000 patients per year currently and has 17 000 deliveries (3 500 low birth weight babies, 700 stillbirths, 280 neonatal death), and 4 160 caesarean sections per annum. (CHBH Website, 2016).

Johannesburg Metro Health District, situated in Gauteng Province, is subdivided into seven regional implementation units (A, B, C, D, E, F, and

G), demarcated according to the regions of the city, which are responsible for managing the clinics under the city's jurisdiction and delivering primary and environmental health services. There are 22 provincial and 74 local authority clinics all offering antenatal care. There are 8 MOUs in the district, all referring to CHBH (City of Johannesburg).

Gauteng Province is the smallest of the nine provinces in South Africa and has a population size of 13.2 million. Gauteng Province is subdivided into five health districts (Johannesburg, Tshwane, Ekurhuleni, West Rand and Sedibeng), Johannesburg being the largest with a population size of 4.4 million. The spoken languages for Johannesburg Metro Health District are Zulu (23.4%), English (20.1%), Sotho (9.6%), Tswana (7.7%) and other languages (39.2%) (Statistics South Africa [SSA], 2011).

3.7 Data collection

Data was collected by the researcher during the period 28 October 2013 to 03 November 2013.

3.7.1 Techniques of Data Collection

On each day of the study period, all self-referred women who had delivered at the hospital and admitted to the post-natal ward, were identified by the professional nurse on duty from the admissions register. The researcher serially approached and recruited the women for the study. Each potential research participant was subjected to the informed consent process by the researcher in a private side ward. Of the 112 women who self-referred, 108 consented to participate in the research. The researcher extracted data from the patient file and proceeded with the interview of the participant using the structured questionnaire.

3.7.2 Instruments

Data was collected from inpatient records as well as patient hand-held antenatal clinic cards. An abstraction sheet was used to obtain the following information from the patient files:

3.7.2.1 Demographic information: residential address, age, marital status.

3.7.2.2 Obstetric information: parity, gestational age, risk factors, blood group, surgical history, mode of delivery, pregnancy outcomes.

3.7.2.3 Delivery plan

3.7.2.4 Date, time and reason for admission.

A structured administered questionnaire was used to collect information from the selected sample of women who met the inclusion criteria. The questionnaire gathered information about each participant relating to the following sections:

The Biographical Data section was completed by the researcher and included the health facility name, municipal region, health district, date of interview, admission date, week day and time of admission. Information thus obtained sought to give the researcher insight into where the participants came from, what day of the week and what time they were admitted at CHBH.

The next section focused on the biographical details of the mother, namely: birth date, age, race, marital status, education level, occupation and household status. These were crucial for the establishment of the socio-demographic factors of self-referral.

The section of the questionnaire that focused on access to maternity services, covers the household type from which the participant comes, mode of transport used when self-referring, the cost of transportation, the ownership of the vehicle used for transportation, means of communication available to the participant, the time it takes to travel to the nearest local health facility, and whether that facility offers maternity services. The section also established whether the participant was advised which health facility to deliver at. The last question established how many times the participant delivered as CHBH.

The section on antenatal care received during the current pregnancy, had four questions covering the number of antenatal care visits made, verification of such visits by ANC card, whether any antenatal care visit was made at CHBH, and if there were any risks identified during these visits. This was to assist the researcher to establish the functionality of the referral system and risk factors that result in self-referral.

The past history section had two questions about the utilization of the services of CHBH by the participant and family. This information sought to assist the researcher in establishing the reasons for self-referral to CHBH.

The section on obstetric risks had seven questions covering history of previous miscarriages, birth defects, severe haemorrhage, obstetric/gynaecological surgery, assisted deliveries, medical conditions, and current chronic medication. Information gathered in this section sought to assist the researcher in establishing risk factors that might have contributed to the decision to self-refer.

The section on pregnancy outcome had six questions covering the delivery date, baby's sex, delivery method, birth weight, delivery outcome, baby's health status, and any problems after delivery. Answers to these questions sought to assist the researcher with information on the outcome of deliveries of self-referrals.

The last section of the questionnaire had seven questions covering reasons for choosing CHBH to deliver, whether the participant was referred or not, whether the participant would recommend CHBH to others for delivery, whether the participant was influenced to choose CHBH for delivery, an indication of the participant's choice of health care professional for delivery, whether there were any concerns during the pregnancy, and awareness by the participant of any problems experienced during delivery. Information obtained in this regard, sought to assist the researcher in establishing further reasons for self-referral.

The entire questionnaire was completed by the researcher who interviewed the participants (see Appendix 1).

The questionnaire was piloted amongst ten women who had delivered at CHBH during July 2013, to evaluate its validity and reliability. Results from the pilot were used to improve question formulation to reduce measurement error. An example of this is where the researcher wanted to establish the educational level of the participant by posing the following question: "Mother's formal education (highest level achieved)" which had to be refined to "State your level of education".

3.8 Data Analysis

Information from the questionnaires was coded and captured on a Microsoft Excel™ spreadsheet. Frequency distribution tables showing frequencies and percentages were used for summarizing the categorical variables. Frequencies were given as whole numbers while percentages were given correct up to two decimal places. These were followed up with the chi-squared test for goodness of fit to determine if the sample was equally distributed across the different categories of the variables. The Chi-Square Test of Independence was used to determine if there is a significant relationship between two categorical variables. The data analysis was carried out using SPSS 18. All reported p-values were 2 sided; difference with p-value <0.05 were considered significant.

3.9 Reliability and validity

The ability of a test to repeatedly deliver the same results is known as reliability, also known as the consistency of the measure. By pilot–testing the data collection instrument, and aligning the data to what is relevant to obstetric practice, the researcher set out to address the issue of consistency of data collection.

Validity reflects the extent to which it measures the construct is was meant to measure or the degree to which the study's finding reflect the truth, without any bias caused by confounding variables. The sampling in the study was affected because the triage process was removed from the CHBH labour ward, and the researcher was only able to interview patients who had self-referred and also delivered at the hospital. Thus, no information about pregnant women who had self-referred but who did not deliver their babies was included in the study.

3.10 Generalisability

Generalizability refers to the applicability of the research findings to other contexts, and to the whole study population, in this case pregnant women who self-refer. Study participants included a diverse sample of women who use the public health service. The findings of this study could be

generalizable to other metropolitan tertiary hospitals like CHBH in South Africa, provided that similar management protocols and referral criteria are used. It is possible that the findings would be generalizable to all pregnant women who self-refer to CHBH.

3.11 Ethical considerations

Ethics approval for the study was obtained from the University of Cape Town, Faculty of Health Sciences Human Research Ethics Committee (24/08/2012, HREC REF: 432/2012). Permission to conduct the research at CHBH in Gauteng Province was obtained from the Hospital Management and the Medical Advisory Committee of CHBH.

The study was conducted in accordance with the South African, WHO and International Conference on Harmonization (ICH) Good Clinical Practice (GCP) principles as stated in the Belmont Report (1979) and the Declaration of Helsinki (2013). In this confidentiality of the participants was ensured. The informed consent process was followed in conducting the research. Each research participant signed the consent form.

Data collection was conducted using the prepared questionnaire. The potential study participants were invited to a side ward that had been prepared for the interviews ensuring that they are comfortable and free of pain. The researcher explained the purpose of the study and benefits involved. Adequate time was given to the potential participant to ask questions, after which she was given the consent form to sign. Participants were given the assurance that all information supplied would be kept confidentially.

3.12 Risks and benefits

No invasive procedures or instruments were used in the conduct of the study that was risky to the participants. There were no direct benefits to participants.

CHAPTER 4

RESULTS

4.1 Introduction

The study initially sought to focus on the Triage Unit at CHBH whereby all pregnant women who presented in labour at the CHBH Maternity Unit would be triaged and those identified to be low risk pregnant women would be referred to their local MOUs for delivery. However, at the time of data collection, the triage unit was already closed. This resulted in the study population changing from all pregnant women who presented in labour at CHBH Maternity Unit, to all self-referred women in the post-natal ward who had already delivered.

CHBH had 20 844 deliveries in 2013 of which 5 840 were self-referrals. The total number of deliveries for the 9-day study period from 26 October 2013 to 3 November 2013 was 514 of which 112 (21.79%) were self-referrals. Only 108 women consented to participate in the study and were subsequently interviewed.

The chapter starts by presenting frequency tables of the socio-demographic characteristics of the 108 women who self-referred to CHBH. This is followed by the testing of the categories of variables for equality of proportions, the Chi-Squared Test to determine categories of variables that influenced decisions to self-refer, appropriateness of self-referrals to CHBH and conclusion.

4.2 Socio-demographic characteristics

4.2.1 Age distribution

The age range of the participants was 15 to 45 years with a mean age of 26.2 years and a median age of 27 years. Of the 108 participants, 14.81% were under twenty years of age with the majority (56.48%) being under thirty years. Few participants (7.4%) were 35 years and above (see Table 4.5).

Table 4.1 Age Distribution (N=108)

Variable	Frequency	Percentage
Age Groups:		
15 – 19	16	14.81
20 – 29	61	56.48
30 – 34	23	21.29
35 - 39	5	4.62
40 – 45	3	2.78
Total	108	100

4.2.2 Marital Status

More than three quarters (84.26%) of the participants were unmarried, 15.74% (17 participants) were married, 0.93% (1 participant) was divorced, and 1.85 % (2 participants) were co-habiting (see Table 4.2).

Table 4.2 Marital Status (N=108)

Variable	Frequency	Percentage
Marital Status:		
Single	88	81.48
Married	17	15.74
Divorced	1	0.93
Co-habiting	2	1.85
Total	108	100

4.2.3 Education Level

Table 4.3 below depicts education levels of the 108 participants according to the following categories: no formal education received, primary (Grades R-6), Grades 7-10, Grades 11-12 and tertiary education levels (beyond the high school level). More than three quarters of the participants (93.51%) had Grades 7 to 12 and tertiary education, while 6.48% were either uneducated or had primary education only.

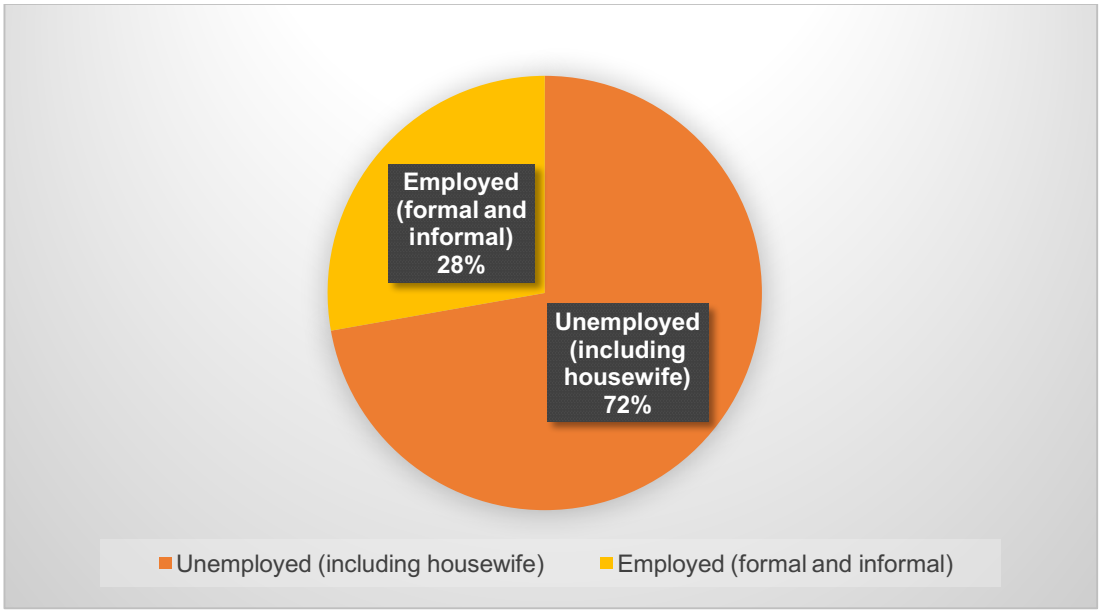
Table 4.3 Education Level (N=108)

Variable	Frequency	Percentage
Education Level:		
No formal education	2	1.85
Grades R-6	5	4.63
Grades 7-10	56	51.85
Grades 11-12	31	28.70
Tertiary (post high school)	14	12.96
Total	108	100

4.2.4 Employment Status

The majority of the participants (72.22%) were unemployed. Of those who were employed, 4.63% were self-employed (Figure 6).

Figure 6: Employment Status



4.2.5 Distance to CHBH

Table 4.4 shows the distance travelled by the 108 women who delivered at CHBH during the study period. The majority of participants (58,33%) travelled between 6 and 20km to the hospital, and less than one quarter (15.74%) lived within 5km from CHBH while 3.7% women had travelled a

distance of more than 36km to deliver at the hospital. There were 24 participants (22.22%) who travelled between 21 and 35 km to the hospital.

Table 4.4 Distance travelled by participants to CHBH (N=108)

Variable	Frequency	Percentage
Distance to CHBH (km):		
<5	17	15,74
6 – 20	63	58,33
21 – 35	24	22,22
>36	4	3,7
Total	108	100

4.2.6 Availability of local MOU

More than half of the participants (52.78%) (n=57) indicated that they did not have an MOU locally, and 47.22 % (n=51) reported having a local MOU. (Table 4.5)

Table 4.5 Availability of local MOU (N=108)

Variable	Frequency	Percentage
Availability of local MOU		
Yes	51	47.22
No	57	52.78
Total	108	100

4.2.7 Transport Factors

The majority of participants used either their own car (37.96%) or an ambulance (37.04%) to travel to CHBH. Less than a quarter (15.74%) of the women used a minibus taxi (a passenger van for transporting approximately 14 passengers at a time) to travel to the hospital (see Table 4.6a)

Table 4.6a Transport mode to CHBH (N=108)

Variable	Frequency	Percentage
Mode of transport:		
Own car	41	37,96
Minibus Taxi	17	15,74
Ambulance	40	37,04
Walked	10	9,26
Total	108	100

As shown in table 4.6b below, half of the women did not have to pay for travelling to CHBH. This was inclusive of those women who were transported by ambulance and those who walked to the hospital.

Table 4.6b Transport cost to CHBH (N=108)

Variable	Frequency	Percentage
Transport Cost (Rand):		
R41- R100	44	40,74
R1-R40	10	9,26
R0	54	50,00
Total	108	100

4.2.8 Perceived quality of care and staff related factors

In relation to quality more than a quarter (27.78%) of the women cited availability of doctors at the CHBH maternity unit as a factor, while 37.04% cited good service as a factor. (see Table 4.7).

Table 4.7 Perceived quality of care and staff related factors (N=108)

Variable	Frequency (#)	Percentage (%)
Perceived quality of care at CHBH:		
Availability of doctors	30	27.78
Skilled staff	10	9.26
Well-equipped facility	15	13.89
Caring Staff	13	12.04
Good Service	40	37.04
Total	108	100

4.2.9 Obstetric Risk Factors

From the interviews of the 108 women it was found that a quarter (25%) reported complicated obstetric histories, of which 6.48% had previous miscarriages, 3.7%), delivered babies with birth defects, 2.78% had obstetric surgery and 12.04% had HIV infection for which they were on medication. Furthermore, 16(14.81%) and 8(7.40%) of the women were of the high-risk age groups (Table 4.8).

Table 4.8 Obstetric Risk Factors

Variable:	Frequency	Percentage
Previous miscarriages	7	6.48
Birth defects	4	3.70
Previous obstetric surgery	3	2.78
Medical conditions and treatment	13	12.04
Age Group 15-19	16	14.81
Age Group >35	8	7.40
Total	51	47.22

4.3 Chi-Square Test for equality of proportions

The frequency distributions of the women across the different categories of the variables are shown in the frequency tables above. Those tables show different distribution patterns with some showing almost equal distributions while others are biased towards certain categories.

To determine if the women were equally distributed across all categories of the variable, the chi-squared goodness-of-fit test was used. The results of the analysis are shown in Annexure1.

Based on a significance level of 5%, these results show that the women were not equally distributed across the categories of most of the variables. Only the baby's sex (chisq=0.9; p=0.3314), having questions to ask (chisq=0.1; p=0.7003) and influence to choose CHBH (chisq=2.4; p=0.1237) had equally distributed proportions. This means there were just as many baby boys as there were girls, there were just as many who had questions to ask HCP as there were those who did not and finally, there were as many who were influenced as there were those who were not influenced.

4.4 Chi-Squared Test of Independence

To test for independence between two variables and establish whether one variable is independent from the other, the Chi-Square Test of independence was used. The test checks whether or not there is a statistically significant relationship between the two variables. For this purpose, a cell size below five frequencies was used as a cut -off point for selecting variables as follows:

4.4.1 For age the groups 35-39 and 40-45 were excluded because of frequencies that were five and below, resulting in three groups (15-19, 20-29 and 30-34) being subjected to the Chi-Square Test;

4.4.2 For marital status both the divorced (frequency =1) and the co-habiting (frequency =2) statuses were excluded, resulting in only single and married being compared using Chi-Square testing;

4.4.3 For education level both No Education Level (frequency = 2) and Grade R-6 (frequency = 5) were excluded, resulting in Grade 7-10, Grade 11-12 and Tertiary being compared;

4.4.4 For employment status (occupation) both housewife (frequency=2) and informal employment (frequency=5) were excluded, resulting in only unemployed and formal employment being compared;

4.4.5 For distance travelled to CHBH distance longer than 36km (frequency=4) was excluded, resulting in three variables (<5, 6-20, 21-35) being compared;

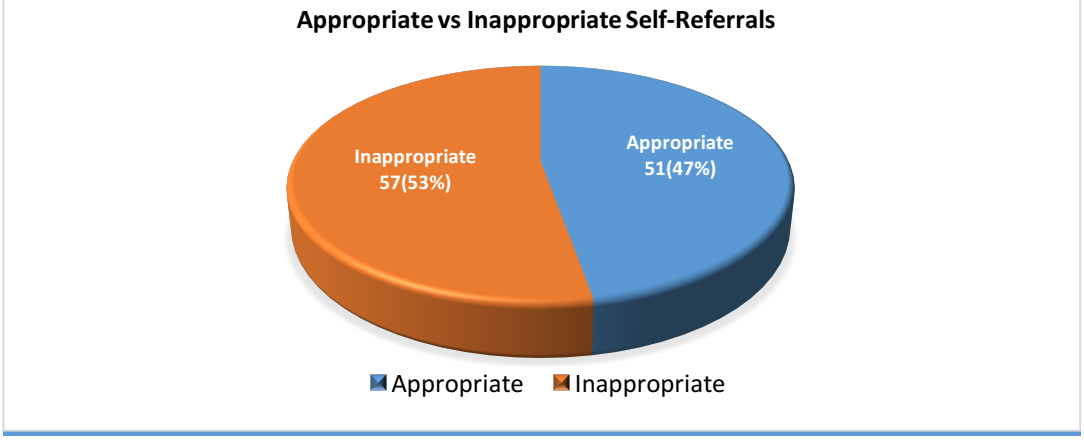
Annexure 2 shows the chi-squared test results accompanied by odds ratios and the corresponding 95% confidence intervals. The results show that Age (p=0.042), Transport mode (p=0.030), Transport cost (p=0.001), Transport ownership (p=0.041), Distance (p=0.032) and Waiting times (p=0.025) have statistically significant influence on self-referral.

With regards to all other variables, there was no statistically significant dependence of one variable on the other.

4.5 Appropriateness of self-referrals to CHBH

The study showed that 51 (47.22%) of the women who self-referred to CHBH had obstetric risks and were appropriate self-referrals (Figure 7). Of these women 6.48% had previous miscarriages, 3.70% had birth defects, 2.78% had previous obstetric surgery and 12.04% had medical conditions for which they were receiving treatment. In addition, 14.81% were younger than twenty years and 7.40% were over 35 years old. The majority of the women 57 (52.78%) were low-risk self-referrals who were inappropriate for delivery at CHBH.

Figure 7: Appropriate vs Inappropriate self-referrals to CHBH (N=108)



4.6 Conclusion

An analysis of the results showed that Age (p=0.042), Transport mode (p=0.030), Transport cost (p=0.001), Transport ownership (p=0.041), Distance (p=0.032) and Waiting times (p=0.025) have statistically significant influence on self-referral.

A further analysis of the data in terms of appropriateness, showed that some deliveries were appropriate for CHBH in that 15.74% were within a 5km distance from CHBH, 52.78% had no local MOU, 22.22% were of the high-risk age-groups (<20 years and >35 years), 2,78% had previous surgery, and 12.04% had medical conditions for which they were on treatment.

CHAPTER 5

DISCUSSION

5.1 Introduction

This study explored key determinants of self-referral to CHBH by 108 pregnant women who delivered at the hospital during the period 28 October and 3 November 2013.

This chapter discusses the major findings of the study using the study specific objectives as the framework for the discussion and comparing these with similar studies conducted in this study area.

5.2 Discussion

The Guidelines for Maternity Care in South Africa (Department of Health, 2015) regard the age groups 15-19 and 35 years and above, to be high-risk and the age group 20-34 as low-risk. It is expected that all low-risk pregnant women should deliver at a local MOU, and that high-risk pregnancies be referred to higher levels of care.

This study showed that the low-risk category constituted more than three quarters (77.77%) of the women in the study and they should therefore have delivered at their local MOUs. This compares well with the findings of Magoro (2015) who also found that the age group 21-30 years was the largest (54.7%) of the other age groups among self-referrals to Dilokong Hospital. In a similar study, Mashishi (2012) found that about two thirds (65%) of the women who delivered at Dilokong Hospital were of the low-risk age group. The reasons for self-referral by this low-risk age group (20-34), may be attributed to the perception that CHBH does offer good quality care that includes respect, good communication and personalized care by healthcare professionals (especially doctors) who combine their clinical knowledge and skills with good interpersonal and cultural competence (Floyd et al., 2014:168). In addition, unavailability of MOUs closest to their places residence thus making the hospital easily accessible, free transport to CHBH, as well as the fact that the hospital is well-equipped and has adequate supplies of medication, might have influenced this low-risk group to self-

refer. This is confirmed by D'Ambruoso, Abbey and Hussein (2005:1) in their categorization of components of care perceived by pregnant women (conceptual framework), where they regard drugs, equipment, supplies and transport as enabling factors that influence the decision of pregnant women to choose a delivery facility.

Regarding the high-risk category, the study showed that 14.81% of the women were 15-19 years old and 7.40% were above the age of 35 years. Both these groups were high risk (Department of Health, 2015) and were therefore appropriate for delivery at the hospital.

The current unemployment rate in South Africa is 26.5% affecting mainly the 15-34 years' age group. Young black women make up 37.5% of this unemployed group (StatsSA, 2016). The transformation of the healthcare system in 1994 resulted in the abolishment of the user fees for all pregnant women, children under six years of age and people living with disabilities (Department of Health, 2015). In this study, CHBH is a public health facility that renders free high-quality maternal care that makes it easy for unemployed pregnant women to choose it for delivery. The study found that the majority (70.37%) of participants were unemployed. This is confirmed by Mashishi (2012) who found that 87% of the women who delivered at Dilokong Hospital were unemployed. Mthethwa (2006) also found that the majority (45%) of women who delivered at a hospital were unemployed.

The Department of Health (2014) requires that a community health center (CHC) be within 5km for the majority (90%) of the population it serves. In this study, 15.74% of the self-referred women resided within 5km from CHBH which they found easily accessible. In a similar study, Mashishi (2012) found that 16.2% of the women who delivered at a hospital lived within a 5km distance.

The study showed that more than half (52,78%) of the 108 women did not have local MOUs thus qualifying them as appropriate self-referrals to CHBH. The Department of Health (2014), directs that there be one Community Health Centre (CHC) for every 60 000 to 140 000 population. This study

found that there are only five MOUs in the whole of Soweto for a population of 1.25 million implying that Soweto should have a minimum of nine CHCs for its population. An additional four MOUs are required to reduce the number of pregnant women who self-refer to CHBH. Mashishi (2012) confirmed shortage of CHCs in her study in the Greater Tubatse Local Municipality where the furthest clinic that refers to Dilokong Hospital for high-risk pregnancies is as far as 80km away.

An effective and efficient functional referral system between the primary, secondary, and tertiary levels of care in the public health system is an important element of a successful Safe Motherhood programme (Murray and Pearson, 2006:2205). The referral chain within this system emphasises the crucial role that transport plays in moving the pregnant woman from home to a health facility (Hussein et al., 2012:e1001264). According to the guidelines for maternity care in South Africa (Department of Health, 2015), every health district should have dedicated obstetric ambulances on a 24-hourly basis. In the JHB Metro Health District every MOU had its own obstetric ambulance for emergency patient transfers to the next level of care. In this study about a third (37.04%) of the participants used an ambulance for transportation to CHBH for delivery, with many women resorting to using private cars (37.96%) and taxis (15.74%) which are costly. An analysis of all the socio-demographic factors in this study, revealed that indeed transport is a key determinant of self-referral. In her study, Mashishi (2012) also confirmed the existence of inefficiencies in the ambulance service in relation to the referral chain.

Availability of staff, facility arrangement and capacity are components of quality and important predictors of utilization of maternal services by women. Quality of care often takes precedence over concerns about distance and cost among pregnant women (Onah, Ikeako & Iloabachie, 2006:1870). In this study, more than a third (37.04%) of the women considered good service that CHBH renders, as a major reason for their self-referral, so important that they did not mind bypassing their local MOUs in favour of the hospital (Sharan et al., 2010).

Every pregnant woman has the right to high quality maternal healhtcare, inclusive of dignified, respectful healthcare before, during and after delivery, the right to be free from violence and being discrinated against (WHO, 2014). This study found that approximately one quarter (27.78%) of the women based their decision to self-refer on the availability of doctors at the hospital instead of the MOUs where there are midwives only. The study also found that about a quarter of the participants (24.07%) indicated that the CHBH staff were friendly and caring compared to those at the MOUs. Floyd et al. (2014) confirmed that previous experience of obstetric healthcare as well as perceptions of the delivery facility and associated staff attitudes, have an influence on the decision on the choice of facility for delivery.

Women with high-risk pregnancies require specialist care to ensure that their pregnancies are uneventful and that they deliver healthy babies. This study found that among the 108 self-referred women, the majority (75%) did not have high risk pregnancies, implying that they were inappropriate for delivery at CHBH and could therefore safely deliver at their local MOUs. Only 25% were appropriate referrals in that they had high-risk pregnancies based on obstetric risk factors. Dlakavu (2012) also found that 77% of self-referred women did not have antenatal risk factors when compared to hospital-referred women.

5.3 Study Limitations

The study initially sought to focus on the Triage Unit at CHBH whereby all pregnant women who presented in labour at the CHBH Maternity Unit would be triaged and those identified to be low risk pregnant women would be referred to their local MOUs for delivery. However, at the time of data collection, the triage unit was already closed. This resulted in the study population changing from all pregnant women who presented in labour at CHBH Maternity Unit, to all self-referred women in the post-natal ward who had already delivered. A convenience sampling was done whereby all self-referred women who had already delivered during a set period were identified and invited to participate in the study. The researcher acknowledged the risk of selection bias when this sampling method was to

be used. The resultant sample size was 108 which was small for purposes of generalizability. A further limitation of the study was the short period that was allocated to data collection.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study showed that the referral system for maternity care within the Johannesburg Metro Health District is not fully functional and does not have adequate numbers of MOUs for the Soweto population, resulting in high numbers of pregnant women delivering at CHBH. Most self-referrals were inappropriate for CHBH in terms of distance to the health facility, availability of local MOUs, transport cost, and perceived quality of care at the health facility. The age of the woman, transport, distance and waiting times at the service point are key determinants of self-referral.

6.2 Recommendations

The following recommendations are made to improve the functionality of the maternal referral system and reduce the high number of inappropriate referrals at CHBH:

An assessment of the maternal referral system in the Johannesburg Metro Health District should be undertaken by the JHB Metro District, the CHBH and Emergency Medical Services (EMS) management teams to identify gaps in the system, focusing on the community and all levels of care within the system.

To address all underlying causes of the dysfunctionality of the referral system within communities, the Re-Engineering of Primary Health Care (RPHC) must be strengthened. All community health workers (CHW) within the Ward-Based Outreach Teams (WBOT) should be trained on the guidelines specifying the referral pathway to ensure that maternal, perinatal and family health education to pregnant women and the importance of adhering to the referral pathway for delivery at the appropriate level of care, are understood and complied with.

To address the non-availability of local MOUs and reduce the high number of self-referrals to CHBH, it is recommended that additional MOUs and a district hospital be erected for the Soweto area. For improving the quality of

services within these facilities, compliance with the national norms and standards for health establishments should be improved, with specific focus on the six key priority areas of cleanliness, staff attitudes, waiting times, availability of medicines, patient safety and security and infection prevention and control. Healthcare personnel should be up-skilled through training with special emphasis on the referral pathway. Appropriate referral protocols should be developed and communicated to all role players within the referral chain.

In respect of CHBH, hospital management must ensure that obstetric out- and in-reach programmes are undertaken by specialist obstetricians to both local MOUs and the district hospital. At district level, the obstetrician within the District Clinical Specialist Team (DCST), should play a vital role in ensuring that the out-reach and in-reach programme functions smoothly.

Lastly, working together with communities and hospital management, the EMS team should ensure that there is a dedicated and reliable emergency transport system to transport pregnant women from home to the appropriate level of care for delivery. In this regard, it must be ensured that both EMS and facility personnel are trained on the referral pathway.

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Annexure 1: Chi-Square Goodness of Fit by variable

Biographical characteristics				
Characteristic	Category	Frequency (N=108)	Chi-square GOF	p-value
1. Participants Address	JHB Metro Sub Region D1-D2	86	319,3	<.0001
	JHB Metro Sub-Region G	17		
	JHB Metro Sub-Region ABEF	1		
	Outside JHB Metro District	1		
	Outside Gauteng	3		
2. Admission Day	Friday	18	13,9	0,0313
	Saturday	28		
	Sunday	13		
	Monday	11		
	Tuesday	13		
	Wednesday	13		
	Thursday	12		
3. Age in years	15-19	16	49.33	<.0001
	20-24	29		
	25-29	32		
	30-34	23		
	35-39	5		
	40-45	3		
4. Race	African	107	104,0	<.0001
	Coloured	1		
5. Marital Status	Single	88	189,7	<.0001
	Married	17		
	Divorced	1		
	Co-habiting	2		
6. Education	No formal	2	92,1	<.0001
	Primary	5		
	Grade 7-10	56		
	Grade 11-12	31		
	Tertiary –E	14		
7. Occupation	Unemployed	76	130,1	<.0001
	Housewife	2		
	Formal employment	25		
	Informal employment	5		
8. Head of Family	Husband	15	61,7	<.0001
	Boyfriend	25		

	Own Father	10		
	Own Mother	37		
	Father-in-law	1		
	Mother-in-law	3		
Access to maternity services				
9. Household type	Own house	62	105,2	<.0001
	Rental	21		
	RDP	8		
	Informal	16		
	Other Specify	1		
10. Mode of transport	Car	41	27,9	<.0001
	Taxi	17		
	Ambulance	40		
	Walked	10		
11. Transport Cost (Rand)	R41- R100	44	29,6	<.0001
	R1-R40	10		
	Free	54		
12. Ownership of Transport	Yes	43	19,4	<.0001
	No	65		
13. Means of Communication	Mobile	76	17,9	<.0001
	Landline	32		
14. Travelling Time (minutes)	5-24 min	72	66,5	<.0001
	25-30 min	33		
	31-60 min	3		
15. Availability of MOU Services at local facility	Yes	51	51,4	<.0001
	No	56		
	Unsure	1		
16. Any advice about MOU to use for delivery	Yes	80	25,0	<.0001
	No	28		
17. Number of times delivered at CHBH	Never	95	145,4	<.0001
	Once	9		
	Twice or more	4		
Antenatal Care Received				
18. Number of ANC visits at local MOU	No visit	5	72,1	<.0001
	One visit	6		

	Two visits	15		
	Three to Four Visits	52		
	Five visits and more	30		
19. Verification by ANC Card	Yes	107	104,0	<.0001
	No	1	104,0	
20. Number of ANC visits at CHBH	No	107	104,0	<.0001
	Yes	1		
21. Risks identified during ANC visits	Previous C/S	3	96,3	<.0001
	None	105		
Past History				
22. Admission of family at CHBH	None	73	112,3	<.0001
	Once	23		
	Twice	9		
	Three and above	3		
23. Treatment received at GOPD of CHBH	None	78	136,7	<.0001
	Once	22		
	Twice	6		
	Three and above	2		
Obstetric Risk Factors				
24. Previous miscarriages	Yes	7	81,8	<.0001
	No	101		
25. Birth defects	Yes	4	92,6	<.0001
	No	104		
26. Medical conditions	Yes	13	62,3	<.0001
	No	95		
27. Medication for medical condition	Yes	13	62,3	<.0001
	No	95		
Pregnancy Outcome				
28. Delivery Method	Normal Vaginal Delivery (NVD)	108	0	.
29. Baby's Sex	Male	58	0,9	0,3314
	Female	50		
30. Birth Weight	Normal (2.5 - 4.1 kg)	108	0	.
31. Baby Alive or Dead at birth	Alive	108	0	.
32. Baby's current health status	Alive	108	0	.

33. Post-delivery problems	None	108	0	.
Service Delivery Experience				
34. Waiting times - doctor	<30 min	58	51,3	<.0001
	31 – 60 min	25		
	61 - 120 min	12		
	> 120 min	13		
35. Waiting times - nurse	<30 min	77	124,7	<.0001
	31 – 60 min	14		
	61 - 120 min	6		
	> 120 min	11		
36. Attending HCP	Doctor	83	31,1	<.0001
	Nurse	25		
37. Explanation of procedure done	Yes	80	25,0	<.0001
	No	28		
38. Any question to ask HCP	Yes	52	0,1	0,7003
	No	56		
39. Any chance given to ask question	Yes	70	9,5	0,0021
	No	38		
40. What participant liked about care received at CHBH	Availability of doctors	15	30,6	<.0001
	Skilled Staff	27		
	Friendly and Caring Staff	63		
	Short waiting time	3		
41. Anything uncomfortable at CHBH during admission period	Yes	3	96,3	<.0001
	No	105		
42. Any gift to HCP in exchange of treatment	Yes	2	100,1	<.0001
	No	106		
Choice of Facility				
43. Reasons for choosing CHBH	Availability of Doctors	30	38.26	<.0001
	Well-equipped facility	15		
	Skilled staff	10		
	Good Service	40		
	Caring Staff	13		

44. Was participant referred to CHBH	No	108	.	.
45. Will participant recommend CHBH to others	Yes	108	.	.
46. Was participant influenced to choose CHBH for delivery	Yes	46	2,4	0,1237
	No	62		
47. HCP of Choice	Doctor	96	65,3	<.0001
	Nurse	12		
48. Any concerns during pregnancy	Yes	81	27,0	<.0001
	No	27		
49. Any possible problems experienced during delivery	Stillbirth	38	39,4	<.0001
	Bleeding	22		
	Prolonged labour	7		
	Tired Baby	12		
	Injury to mother	7		
	Injury to baby	22		
50. Concerns about children while admitted for delivery	Yes	19	90.74	<0001
	No	89		
51. What do you think is the difference between the care you receive from the staff at CHBH and at an MOU?	Availability of Doctors	29	13.61	0.0087
	Skilled staff	21		
	Friendly attitude	26		
	Shorter waiting time	9		
	Good Service	23		

Annexure 2 Chi-square tests for independence

Variable	Chisq	df	p-value	OR	95%CI
Age Distribution:	93.16	2	0.042		
15-19 vs 20-34				0.44	(0.15; 0.58)
15-19 vs 35-45				0.07	(0.15; 0.07)
20-34 vs 35-45				0.51	(0.58; 0.07)
Transport Mode:	8.9	3	0.030		
Car vs Walked				0.37	(0.10; 1.38)
Taxi vs Walked				0.15	(0.03; 0.81)
Ambulance vs Walked				0.14	(0.04; 0.54)
Transport Cost:	13.8	2	0.001		
R41-R100 vs Free				4.30	(1.86; 10.2)
R1-R40 vs Free				1.60	(0,54; 4.78)
Own Car:	6.4	2	0.041		
Yes vs No				2.70	(0.87; 8.50)
Distance to CHBH:	48.08	2	0.032		
<5km vs 6-20km				0.43	(0.16; 0.58)
<5km vs >20km				0.10	(0.16; 0.26)
6-20km vs >20km				0.32	(0.58; 0.25)
Waiting time for nurse:	5,0	1	0.0252		
				1.68	(0.79; 3.61)
	5,0	1	0.0252		

APPENDICES

Appendix 1: Data Collection Tool (Questionnaire)

Research Title: An exploratory study of the key determinants of self-referral by women in labour to Chris Hani Baragwanath Hospital in Johannesburg Metro District, South Africa			
Research Site: Chris Hani Baragwanath Maternity Hospital			
Interviewer:			
Participant ID Number:			
No	**Variable**	**Description**	**Response**
Biographical Data			
1	Participant Address	JHB Metro Sub-district (Region D1-D2)	
		JHB Metro Sub-district (Region G)	
		JHB Metro Sub-district (Region ABEF)	
		Outside JHB Metro District	
2	Admission Day	Friday	
		Monday	
		Saturday	
		Thursday	
		Tuesday	
		Wednesday	
3	Age in years	<20	
		20-24	
		25-29	
		30-34	
		35-39	
		>40	
		<20	
4	Race	African	
		Coloured	
5	Marital Status	Single	
		Married	
		Divorced	
		Co-habiting	
6	Education	No formal	
		Primary	
		Grade 7-10	
		Grade 11-12	
		Tertiary –E	
7	Occupation	Unemployed	
		Housewife	
		Formal employment	
		Informal employment	
8	Head of Family/ Household	Husband	
		Boyfriend	
		Own Father	

		Own Mother	
		Father-in-law	
		Mother-in-law	
		Other (Self)	
Access to maternity services			
9	The house you live in, is it:	Own	
		Rental	
		RDP	
		Informal	
		Other (Specify)	
10	What transport did you use to CHBH?	Car	
		Taxi	
		Ambulance	
		Other (Walk)	
11	How much did you pay for transport to CHBH?	R41- R100	
		R1-R40	
		R0 (Free)	
12	Do you or your husband/partner own a specific means of transport?	Yes	
		No	
13	Do you own a specific means of communication?	Mobile	
		Landline	
14	How far is CHBH from your home?	<5km	
		6 – 20km	
		21 – 35km	
		>36km	
15	How long did it take you to reach CHBH?	5-24 min	
		25-30 min	
		31-60 min	
16	Does the health facility nearest to your home offer maternal delivery services?	Yes	
		No	
		Unsure	
17	If you attended ANC at a clinic, were you told which MOU to deliver at?	Yes	
		No	
18	How many times have you delivered in this hospital?	0	
		1	
		≥ 2	
Antenatal Care Received			
19	How many times did you attend ANC during this pregnancy?	No visit	
		One visit	
		Two visits	
		Three to Four Visits	
		Five visits and more	
20	Verification by ANC Card	Yes	
		No	
21	Did you attend ANC in this hospital?	No	

		Yes	
Past History			
22	How many times has any of your family members been admitted to CHBH?	None	
		Once	
		Twice	
		Three and above	
23	How many times did you attend CHBH out-patient department for care?	None	
		Once	
		Twice	
		Three and above	
Obstetric Risk Factors			
24	Did you have any previous miscarriages?	Yes	
		No	
25	Did you ever give birth to a baby with a birth defect?	Yes	
		No	
26	Did you have any severe bleeding requiring blood transfusion in any previous pregnancy?	Yes	
		No	
27	Did have any previous surgery like C/S, myomectomy, cervical surgery (If YES, please specify)	Yes	
		No	
28	Did you ever have an assisted delivery by vacuum, forceps or any obstetric manoeuvre?	Yes	
		No	
29	Do you suffer from any chronic medical condition for which you are taking medication? (If YES please specify)	Yes	
		No	
Current Pregnancy Outcome			
30	Date of delivery		
31	Baby's sex	Male	
		Female	
32	Delivery method	Normal Vaginal Delivery (NVD)	
		Caesarean Section (C/S)	
		Assisted Vaginal Delivery	
33	Baby's birth weight (Kg)	< 2.5	
		– 4.1	
		>4.1	
34	Baby alive or dead at birth	Alive	
		Dead	
35	Baby's current health status	Alive	
		Dead	
36	Post-delivery complications	Bleeding	
		Hypertension	
		Other	
Experience of maternal services			
37	How long did you wait before you were seen by the doctor?	< 30 min	
		31 - 60 min	

		61 - 120 min	
		> 120 min	
38	How long did you wait before you were seen by the doctor?	< 30 min	
		31 - 60 min	
		61 - 120 min	
		> 120 min	
39	Who examined you when you were admitted at CHBH?	Doctor	
		Nurse	
40	Did the Doctor/ Nurse explain what they were going to do after admission?	Yes	
		No	
41	Did you have any question to ask the attending doctor/ nurse?	Yes	
		No	
42	Were you given a chance to ask any question that you had for the attending doctor/ nurse?	Yes	
		No	
Choice of facility			
43	Why did you choose to deliver at CHBH?	Availability of Doctors	
		Well-equipped facility	
		Skilled staff	
		Good Service	
		Caring Staff	
44	Were you referred to deliver at CHBH?	Yes	
		No	
45	Will you advise any pregnant woman to deliver at CHBH?	Yes	
		No	
46	Did anyone influence you to choose CHBH for delivery?	Yes	
		No	
47	Who do you prefer to attend to you when you deliver your baby?	Doctor	
		Nurse	
48	Was there anything that you were concerned about during this pregnancy that you thought might need the attention of a doctor?	Yes	
		No	
49	What possible problems are experienced by pregnant women during delivery?	Stillbirth	
		Bleeding	
		Prolonged labour	
		Tired Baby	
		Injury to mother	
		Injury to baby	
50	Were you at all concerned about your children at home while you are admitted for delivery at CHBH?	Yes	
		No	
51	What do you think is the	Availability of Doctors	

	difference between the care you receive from the staff at CHBH and at an MOU?		
		Skilled staff	
		Friendly attitude	
		Shorter waiting time	
		Good Service	

Appendix 2: Informed Consent Form

INFORMATION AND CONSENT FORM

Research Title:

An exploratory study of the key determinants of self-referral by women in labour to Chris Hani Baragwanath Hospital in Johannesburg Metro District, South Africa

Participation Site:

Chris Hani Baragwanath Maternity Hospital and Johannesburg Health District Maternity Services.

The following information will describe this study and your role as participant. Please read it carefully. Feel free to ask any questions at any time.

This is a research study being conducted by the University of Cape Town and the Johannesburg District Health. The person responsible for conducting this study is Ms. Nonkqubela Carvie Kula from the University of Cape Town.

Explanation and Purpose of the Study:

Gauteng Department of Health would like to deliver the best quality care to pregnant women and their unborn babies. The health system tries to reach all pregnant women as close to their communities as possible. We have noticed that many women do not make use of their services based in their communities and spend a lot of money travelling to the hospital to deliver their babies. We are doing this research to find out why pregnant women do this so that we can find ways of improving the service. You are invited to participate in this study to help us understand the reasons why women come to Chris Hani Baragwanath Hospital to deliver their babies.

Procedure of study:

All self-referred women who delivered at Chris Hani Baragwanath Hospital will be interviewed. The researcher will spend about half an hour in the post-natal ward interviewing these mothers. The researcher will examine hospital records to find out if there any special health reasons that require pregnant women to deliver at Chris Hani Baragwanath Hospital.

Participation and subject rights:

Participation in this study is entirely voluntary and you are free to refuse if you wish. You may also withdraw or discontinue from the study at any time during the interview and will not be penalized.

Personal information obtained from your participation in this study will be kept confidential and your name will not appear in any reports or other publications arising from this study. If you have any question, please do not hesitate to ask the researcher.

Insurance and compensation:

This study has been approved by the Faculty of Health Sciences Research Ethics Committee of the University of Cape Town.

There will be no compensation for participation in this study.

Additional information:

If you have any concerns about your rights as a research participant, please contact the secretary of the University of Cape Town Research Ethics Committee at the Faculty of Health Sciences on (021) 406 6492.

If at any time, you have questions about this study, please contact:

The Principal Investigator:
Nonkqubela Carvie Kula, Tel Number (011) 694 3822,

e-mail: Carvie.Kula@gauteng.gov.za

Mrs. T Tsotetsi from Provincial Government of Gauteng. Tel (011) 933 0000.

Consent statement:

I have read the above information, or it has been read to me. I have had the opportunity to ask questions which have been answered to my satisfaction. I hereby consent to participate voluntarily in this study.

Name: ……

Signature: …… Date: ……

Witness Name: …… Date: ……

If illiterate:

The content has been explained to me by the investigator or dedicated research assistant in my own language.

Signature/ Thumb Print……

Date: ……

Witness Name: ……

Signature: …….

Appendix 3: Ethical Clearance Certificate

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences
Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Ms S Arlefdien - Tel: [021]4066492 • Fax: [021]4066411
email: sumayah.arlefdien@uct.ac.za

24 August 2012

HREC REF: 432/2012

Mrs C Kula,
Child Health Unit
SCAH
3rd Floor, ICH Building, Room 3.16
Red Cross Children's Hospital

CC. Ms J Shea
Child health Unit
(SCAH) School of Child & Adolescent Health
Red Cross War Memorial Children's Hospital

Dear Mrs Kula,

PROJECT TITLE: **AN EXPLORATORY STUDY OF THE REASONS WHY PREGNANT WOMEN SELF-REFER TO CHRIS HANI BARAGWANATH HOSPITAL IN JOHANNESBURG METRO DISTRICT, SOUTH AFRICA**

Thank you for submitting your new study to the Faculty of Health Sciences Human Research Ethics Committee

It is a pleasure to inform you that the Ethics Committee has formally approved the above-mentioned study.

Approval is granted until 28 August 2013

Please submit an annual progress report (FHS016) if the research continues beyond the expiry date. Please submit a brief summary of findings if you complete the study within the approval period so that we can close our file (FHS010).

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

signature removed

PROFESSOR MARC BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.

The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Appendix 4: Department of Health Authorization

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

MEDICAL AVISORY COMMITTEE
CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL

PERMISSION TO CONDUCT RESEARCH

Date: 9th October 2012

TITLE OF PROJECT:

AN EXPLORATORY STUDY OF THE REASONS WHY PREGNANT WOMEN SELF-REFER TO CHRIS HANI BARAGWANATH HOSPITAL IN JOHANNESBURG METRO DISTRICT, SOUTH AFRICA

University: Cape Town

Principal Investigator: KULA, CARVIE [MISS]

Department: **Obstetrics and Gynaecology**

Supervisor (If relevant): Jawaya Shea, Child Health Unit, School of Child & Adolescent Health, University of Cape Town

Prof. E. Buchmann, University of the Witwatersrand

Permission Head Department (where research conducted) Yes

The Medical Advisory Committee recommends/ does not recommend that the said research be conducted at Chris Hani Baragwanath Hospital. The CEO /management of Chris Hani Baragwanath Academic Hospital is accordingly informed and subject to:-

- Permission having been granted by the Committee for Research on Human Subjects of the University of the Witwatersrand.
- the Hospital will not incur extra costs as a result of the research being conducted on its patients within the hospital
- the MAC will be informed of any serious adverse events as soon as they occur
- Permission is granted for the duration of the Ethics Committee approval.

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Recommended/Not Recommended

(On behalf of the MAC)

signature removed

Approved/Not Approved

Hospital Management

01/11/12