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Assessment of referrals to a district hospital maternity unit in South Africa

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CHAPTER 1

INTRODUCTION

1.1 Background

Prior to 1994 the health care system in South Africa was fragmented and the emphasis was on more centralized and hospital-based curative services rather than primary care, preventative and promotion services, and community-based care. After 1994, the new government introduced a unified national health system that was based on the Africa National Congress (ANC) national health plan for South Africa; and in line with international standards that consider the primary health care (PHC) approach to the delivery of health services (WHO, 1978). The government adopted the PHC approach, defined the different levels of care, from primary up to tertiary level, and developed referral systems to improve communities' access to health care services and appropriate utilization of different levels of care (ANC, 1994).

At the primary care level, community health centers and some fixed clinics were designated to provide 24 hour comprehensive primary care services, while most fixed clinics, mobile clinics, and gateways clinics render 8 hours health care services. The number of available primary care facilities was increased to bring services closer to where people live to ensure people attain their right to access health care (Republic of South Africa, 1996). Primary care facilities were designed to be the entry point to the rest of the health care system because patients who need a higher level of care could attend a primary care facility and still have access to higher levels of care by means of the referral

system. In this way, the referral system should improve accessibility of health services at the correct level of care, reduce the inappropriate utilization of services at higher levels of care, and reduce inappropriately high workloads at higher levels of care as patients are managed at appropriate levels (Sanders, Kravitz, Lewin & Mckee, 1998). However the inequitable distribution of human resources especially health professionals between levels of care and rural and urban areas has negative impact for improving effectiveness and efficiency of health care services (Sanders et al. 1998, Mudyarabikwa & Mbengwa, 2006; Wibulpolprasert & Pengpaibon, 2003).

One of the key factors of good maternal health services is a well organized referral system whereby clinics manage common and low risk conditions and hospitals provide services for more difficult clinical conditions. A well organized referral system states clear protocols for management of conditions, referral pathways between levels of care, and transport and responsibilities for each level of care (Department of Health, 2007).

For maternity services, the levels of maternity care specified by the National Department of Health (NDOH) in South Africa are clinic, community health center (CHCs), district hospital, provincial hospital and then central hospital in each Province. These levels of care are relevant for all services, and so referral pathways for maternity services follow these levels of care (Department of Health, 2006). The guidelines for maternity care in South Africa identify the types of service that should be provided at the different levels of care, define referral pathways regarding which conditions to refer to the next level, and provide guidance on appropriate management of pregnant women at each level of care.

The guidelines were developed to particularly guide midwives and doctors to provide obstetric, surgical and anaesthetic services for patients at clinics, community health centers and district hospitals, where there is limited access to specialist services. The guidelines are important to ensure appropriate care is provided at each level of care and efficient use of resources (Department of Health, 2007). Compliance with the guidelines is expected to in part prevent unacceptably high maternal and peri-natal mortality rates, and help to achieve Millennium Development Goal 5 by 2015 (WHO, 2007).

Limpopo province has adopted these guidelines for maternal care at the district (district municipality) and sub-district (local municipality) levels. The Greater Tubatse Local Municipality, where this research is located, is one of the five local municipalities (sub-districts) of the Greater Sekhukhune District in Limpopo Province. It has a population of 270,122 (approximately 28% of the total population of the Greater Sekhukhune District) served by 17 clinics, 2 CHCs, 2 gateway clinics and 2 district hospitals. All these services are operated by Provincial Government. Dilokong Hospital is one of the two district hospitals in the Greater Tubatse Local Municipality. The maternity unit at Dilokong hospital had 36 beds and a bed occupancy rate of 96% in the 2007/08 financial year, which resulted in allocation of an additional 10 beds in 2008/09, increasing the beds to 46. In the 2007/ 2008 financial year, 518 deliveries took place at the clinics and community health centers, 3797 deliveries at the Dilokong Hospital, and 2681 deliveries at the Mecklenburg hospital (Department of Health, 2008).

The seventeen fixed clinics in Greater Tubatse Local Municipality are providing 24 hours services by using a standby system where after 4 pm health professionals are called only when there is patient to attend to, while the two CHCs are functioning 24hrs with health professionals on duty through day and night shifts. The hospital gateway clinics are designated to render 8hrs health services. All maternity patients in the Greater Tubatse Local Municipality are expected to attend antenatal care at primary care level (fixed or mobile clinics and CHCs). Women in labour are expected to report to these PHC facilities and if the condition needs a higher level of care, the patient should be referred to a district hospital and then to provincial and central hospital if required. The clinics are supposed to refer women to CHCs, but they are currently referring directly to the district hospitals due to a shortage of CHCs in the sub-district and no doctors at CHCs. There is one emergency medical service (EMS) station, situated at Dilokong hospital with three EMS vehicles for transferring patients from clinics to the hospitals. Thirty EMS officers are allocated and seven officers are on duty per shift. The furthest clinic that refers to Dilokong is 80km from the hospital where the EMS station is situated.

1.2 Problem statement

In 2008 94% of recorded deliveries in the Greater Tubatse Local Municipality were at a health care facility (Department of Health, 2008). More mothers delivered at hospital level than at primary care level (at the clinics and CHCs they were attending for antenatal care), and 88% of mothers who attended antenatal care at clinics and CHCs delivered at hospital level and only 8% at PHC level (Department of Health, 2008). Hospital information data shows that almost 49% of deliveries at the Dilokong Hospital were low

risk pregnancies that were supposed to be delivered at clinics and CHCs and 51% were high risk pregnancies that required hospital delivery. The practice of women with low risk pregnancies delivering at an inappropriate level of care (hospital rather than PHC level) needs to be investigated because it potentially affects the workload of the maternity care staff at the hospital, impacts on resources utilization, and is an inefficient use of hospital resources (Murray & Pearson. 2006).

However, no formal study has been done to assess appropriateness of deliveries at hospital level in the Greater Tubatse Local Municipality. This study thus examines this issue by assessing deliveries at one of the two district hospitals in the Greater Tubatse Local Municipality. The study measures the proportion of all women who delivered at Dilokong hospital that are self referred and those referred from PHC level, and determines the appropriateness of these referrals for delivery at district hospital level. The research seeks to verify the reportedly high (49%) rate of inappropriate deliveries.

1.3 Justification for the study

The study is expected to provide information on the proportion of women who deliver at the hospital level that are self-referred; and extent of inappropriate use of the hospital maternity unit for deliveries that should have taken place at primary care level. The results of the study will assist decision makers about the functioning of the referral system. The hospital will use the results to understand to what extent its maternity care resources are being in/appropriately utilized; and, together with the district and sub-district managers, use the data to plan the allocation or re-allocation of staff and resources

to meet needs for delivery services; and to design strategies for improving the referral system in the health district.

1.4 Literature review

The World Health Organization (WHO) identifies maternal health as one of its priorities, which is also Millennium Development Goal 5 (WHO, 2007). Ensuring good maternal health outcomes often requires a mix of services including antenatal care, obstetric services for low-risk deliveries, services for high-risk deliveries and emergency obstetric care, and postnatal care. Defined referral pathways and guidelines are required to ensure women the right care at the right level of care when they need it, especially where maternal care resources for higher levels of care are limited.

1.4.1. Non-compliance with referral pathways

Referral pathways and guidelines are however not always adhered to. In a study on patient referral systems in the Republic of Honduras, Omah, Melendez, Uehara & Ohi (1998) found that patients consult any level of care without being first referred by the facilities providing lower level of care, resulting in the under-utilization of peripheral facilities and over-utilization of hospitals. For example, 61% of referrals at national hospital level were referred directly from primary level health centers, by-passing area and regional hospitals, and 84% of referrals at regional hospitals were referred directly from health centers.

Sanders, et al (1998) found similar problems in their study to assess the functionality of the pyramid referral system in Zimbabwe. The pyramid referral system implies referral of patients from PHC facilities to district hospitals for secondary level general inpatients services, then to provincial hospitals for tertiary level general specialist services and lastly to quaternary level hospitals for specialist and sub-specialist services. They found that inappropriate referrals, self-referrals and inappropriate utilization of health facilities were major challenges. For example, 58% of patients treated at the quaternary level had conditions that could have been treated at lower levels of care, and a significant amount of inappropriate patients at quaternary hospital were self-referred, highlighting inappropriate utilization of specialist services.

1.4.2. Factors related to non-use of referral pathways for maternity services

As Omah et al, (1998) found in their study, knowledge of the referral system by health providers and health users plays a very important role in compliance and effectiveness of referral systems, and so does geographical access to care. According to Mthetwa (2006), various factors influence use or non-use of referral pathways and in/appropriate use of maternity care services. These are categorized as patient-related factors, health systems related factors, and health professional related factors.

- **Patients related factors**

Patients play an important role in the choice of their delivery site. However, levels of care and referral pathways have been developed to ensure appropriate use of health facilities,

so patients are required to attend defined facilities – and not just any – as the first contact with the health care system. Since the Constitution of the South Africa (Republic of South Africa, 1996) states that the right to health care is a fundamental right, patients may feel it is their right to choose and decide which health care facilities to attend.

A study to determine the factors determining the underutilization of maternity obstetric units in Sedibeng District South Africa found that patient's lifestyle, preferred choice for epidural or caesarean deliveries, demographic factors (age, race, and gender), cultural factors (belief in witchcraft and reliance on recommendation for place of delivery by traditional healers), socio-psychological factors, social class and economic status play a role in the selection of delivery place (Mthetwa, 2006). Other factors such as poor understanding of the referral system and lack of confidence in the ability of health providers at PHC level to manage complications also contribute to patients' by-passing lower levels of care (Majoko, Nylstrom, Munjanja & Lindmark. 2005; Mthetwa, 2006).

Sometimes non-compliance with referral guidelines is observed as patients refusing to go to a higher level of care when referred by a health provider. Patients' own perception or lack of understanding of the reason for referral is an important factor. For example, as shown in a study in Guthu district, Zimbabwe where 31% of antenatal women referred to hospital for assessment by a medical practitioner due to high parity did not go when referred (Majoka et al., 2005). Similarly, a study to monitor the effectiveness of the maternal referral system in Rufiji district, Tanzania shows that only just over a third of women referred from primary health care facilities complied with referral advice and the majority of women (63%) did not comply because they did not perceive demographic

risk factors such as young age (less 20years), grand multipara and primigravida as serious (Pembe, Carlstedt, Urasar, Lindmark, Nylstrom & Darj, 2010).

Sometimes, family members decide the place of delivery for women and decide whether to comply with referral advice. For example, a study in India shows that some families refuse to comply with referral advice for specific maternal complications (such as anaemia, antepartum haemorrhage, twin pregnancy, abortion complications and post partum haemorrhage) and usually negotiate with the midwife for the women to be managed at the health centers instead of being transferred to the hospital (Iyengar & Iyengar, 2009). It was also shown in the study in Tanzania that pregnant women and their relatives may refuse a referral for first pregnancy, multigravida pregnancy, young age, abnormal lie or presentation, and twin pregnancy when they saw that other women with the same problems delivered more safely (without complications) at the hospital after being referred (Pembe, Urasar, Darj, Carlstedt & Olsson, 2008). They perceive that if the woman delivered normally after being referred to the hospital, it shows that she would deliver without complications at CHC or clinic.

- **Health systems related factors**

Various health system factors contribute to high levels of inappropriate self-referral to higher levels of care. The severe shortage of health providers, especially doctors at primary care level facilities; lack of material resources at primary care level; and lack of infrastructure (such as level 1 and 2 hospitals) are important factors that contribute to patients' non-compliance with the referral system and by-passing lower levels of care

(Omaha et al., 1998; Sharan, Ahmed, Naimoli, Ghebrehiwe & Rogo, 2010; Mthetwa 2006). For example, non-availability of level one and two hospitals in two major cities in Honduras led to the use of the level three hospitals as the first health care point due to its geographical accessibility (Omaha et al., 1998). In Namibia inaccessibility of health facilities with appropriate levels of care in some regions contributed to high levels of self-referrals to the more geographically accessible Windhoek national hospital (Low et al., 2001). In addition, despite availability of drugs and equipment and a reasonably good quality of care at health centers in Eritrea, patients referred themselves directly to hospitals instead of going to the health centers because of a shortage of doctors at health centers (Sharan et al., 2001). In South Africa, level three hospitals are better-resourced and more attractive to patients than level two maternity hospitals (Mthetwa, 2006).

The low user fees charged at higher levels of service delivery also contribute to self referrals, by-passing of lower levels of care, and inappropriate use of higher levels of care. This was shown in research by Low, de Coeyere & Shivute, (2001) in Namibia, and Omaha et al (1998) in Honduras where low user fees at peripheral facilities and the absence of a by-pass fee were related to overuse of the hospital by self-referred patients.

- **Health profession factors**

Inappropriate utilization of higher level facilities can also be due to inappropriate referrals to hospital by health professionals at lower levels of care. Primary care level health care workers' understanding of referral terminology and their knowledge of the impact of referral pathways on the provision of health service affects the rate of

inappropriate referrals to higher levels of care. For example, in Honduras health professionals were referring patients directly from health centers to regional and national hospitals instead of referring them to health centers with physicians because of their lack of understanding of the referral system (Omaha et al., 1998).

Health workers' poor understanding of referral systems and guidelines may also lead to non-referral of high risk patients to higher levels of care. For example, Majoko et al (2005) show that health providers in Zimbabwe sometimes fail to refer women with high risk pregnancies to the next level of care: a total of 1077 multiparous women had previous pregnancy complications and were eligible for referral but only 41% were referred. The researchers concluded that the nurse/midwife should be involved when reviewing the indications for antenatal referrals as this may prevent a disregard of some of the referral indications (Majoko et al. 2005).

But it is not only about health worker knowledge and perceptions, as sometimes the reasons are mixed. As Pasquier, Rabilloud & Janody (2005) found, appropriate referrals are dependent on the willingness of health professionals at referring facilities to abide with the referral system and availability of resources at receiving facilities. In their study, the referral of women with high risk and intermediate risk pregnancies to level three and two respectively could not work as clinicians at the referring facilities (level two and one hospitals) were not willing to transfer women due to concerns about losing their competences, and level three facilities refused to receive intermediate risk pregnancies due to lack of resources.

The relationship between patients and health care practitioners is also important because it may influence women's choice of facility for delivery (Mthetwa, 2006). For example, in a study in Honduras, one of the health centers had a referral rate of 8% (referral rate was calculated as a number of 'received referral' patients with proper referral forms divided by the total number of outpatient visits) which was higher than other health centers. This was due to the favourable relationship between the health professionals and the community volunteers (Omaha, et al. 1998). As the South African Saving Mothers Report highlights, a hostile reception from staff at health facilities is an important barrier to accessing maternal health care (Department of Health, 2006). As Pembe et al (2008) show in Tanzania, respondents reported that referral hospitals provide more satisfactory services than the health centers because hospital health workers are kinder and willing to listen and explain health problems, and respondents liked the cleanliness of the hospital.

1.4.1. Effectiveness of referral pathways for maternity services

Referral pathways can support decentralized service provision if health services capacity is improved and essential resources are made available. For example, a study in Malawi shows that a well equipped district hospital, availability of functional ambulances and availability of functional short-wave radio linking all health centers and district hospitals improved the ability of the district referral system to handle obstetric emergencies in a country with limited resources (Kongnyuy, Mlava & van den Broek, 2008).

In Zambia, Mackeith, Chinganya, Ahmed & Murray (2003) showed that there was an increase in number of deliveries at satellite clinics in Lusaka after the introduction of a project to upgrade and extend existing health centers, introduce partographs to monitor progress of labour, provide emergency transport and radio communication, and allocate nurse-midwives to run satellite maternity units at health centers. The study shows that a decentralised maternity care system was achieved as deliveries at peripheral facilities increased from 2 000 to 15 000 in 1988, and 32 000 in 1998, of which 63% took place at public clinics, and 24% at the central University Teaching Hospital (UTH). Similarly, in a study to monitor the effectiveness of district maternity referral systems in Lusaka, Murray et al (2001) show that there was improvement in decentralized provision of deliveries because before introduction of the referral system (1982) 2 000 women delivered in 3 peripheral public clinics and 24 000 at UTH, while after the intervention (1998) about three-quarters of deliveries took place at midwife-run services and much fewer gave birth in UTH.

Referral pathways and guidelines that are accompanied by resources can function well and improve outcomes. For example, in rural Mali, the national maternity referral system to improve communication and transport between community health centers and district health centers – which was implemented after provision of training and equipment for clinical management of obstetric emergencies – increased obstetric emergency coverage and reduced the risk of maternal mortality, more so among referred than self-referred women (Fournier, Dumont, Tourigny, Dunkley & Drame, 2009). Further, in Luanda a network of nine peripheral birth units managed by midwives and with referral links to

two central hospitals was established, after the peripheral units were provided with equipment, radio communication and ambulances for quick referral of patients with obstetric emergencies (Strand, de Campos, Paulsson, de Oliveira & Berstrom, 2009). An audit to evaluate the efficacy of the referral network shows that process indicators such as waiting time and quality of partograms improved, and so did the caesarian section rate and maternal mortality – but only for referrals that could be traced to the referral site. The same study results showed that there was non-compliance with referral advice by the women because the 3 peripheral birth units recorded 398 and 429 referrals in 1996 and 1999, respectively while only 157 and 92 women could be traced at the hospitals to which these women had been referred (Strand et al. 2009).

1.5 Study aim and objectives

1.5.1 Aim

The study aim was to describe referrals to the maternity unit at Dilokong District Hospital in 2008, assess the proportion of self referrals, and determine the appropriateness of deliveries at the maternity unit. The data from the study will assist to assess the extent of bypassing of delivery services at primary health care facilities in the Dikolong hospital catchment area.

1.5.2 Specific objectives

The study objectives refer to all women who delivered at Dilokong hospital maternity unit in 2008. The study objectives were:

1. To describe the profile for all women delivered at the Dilokong Hospital Maternity Unit in 2008, in terms of:
    - The demographic profile
    - The obstetrical profile
    - Access to the Dilokong Hospital in terms of distance.

2. To determine the referral type for all women who delivered at Dilokong hospital:
    - The proportion of self referred women
    - The proportion referred by a public sector health professional or private practitioner.

3. To determine for both self-referred and referred by a health professional, the proportion that were appropriate referrals for the Dikolong hospital level of care and the proportion of inappropriate referrals.

4. To compare the profiles of self-referred and health profession-referred women.

5. To compare the profiles of appropriate and inappropriate deliveries at Dilokong hospital.

CHAPTER 2

RESEARCH METHODOLOGY

This chapter provides a detailed description of the research design, study setting, study population, and sampling method. It also describes the variables that were measured for each objective, and the methods that were used for data collection, data processing, and analysis. The ethical considerations are also highlighted.

2.1. Study design

This was a descriptive cross sectional study using a retrospective review of hospital records for mothers who delivered in the maternity unit of Dilokong hospital during January to December 2008.

2.2. Study setting

The study was conducted in the maternity unit at the Dilokong hospital. The maternity unit has 36 beds with a labour unit, nursery and post natal ward. Fifty six posts have been allocated according to staff establishment and forty one of these posts were filled. The unit has a manager, and is staffed by thirteen professional nurses (two of them have advanced diploma in midwifery and neonatal care), eight enrolled nurses, eighteen nursing auxiliary nurses, and a chief medical officer. Rotation of medical officers was sometimes done, but the rotation of nurses was minimal.

Pregnant women were admitted directly to the maternity ward without starting in casualty. The patients were registered at a central patient administration office and their maternity records kept in a central patient record room situated at the out patient department (OPD). According to protocol**,** pregnant women are supposed to deliver at Greater Tubatse local municipality PHC facilities; and only those with high risk pregnancies or complications referred to Dilokong hospital.

2.3. Study population

The study population was all the hospital records of all women who delivered in the maternity unit at the Dilokong Hospital from 1st January to 31st December 2008.

2.4. Sampling

The list of all women who delivered at Dilokong hospital from 1st January to 31st December 2008 was the sampling frame. The list was compiled from deliveries registered in the maternity case register. The hospital registered three thousand seven hundred and ninety seven deliveries in 2008. The sample frame was listed from 201 representing the first delivery in the maternity register until 3997. Assuming a 50% prevalence of inappropriate deliveries, at a confidence level of 95% with 5% significant level, a minimum sample size of 384 was required. Systematic sampling was used for the selection of patient records. Every 10th record was systematically selected to participate in this study. The starting point number was chosen randomly and the sampling interval of ten was based on a required sample size of 384 patient records as minimum for the study. Four hundred patient records were sampled and included in the study. Missing

records were replaced by selecting records from the list starting from the beginning of the list, and as before, the 10th record was selected. This second round of selection continued until 400 folders were selected.

The registration or hospital numbers of the entries sampled from the maternity case register were extracted from the register and used to retrieve the individual patient records from the record room. The record manager assisted with accessing records from the record room. The clerical staff used the list of registration numbers to retrieve the required four hundred records.

2.5. Measurement

The maternity records were reviewed and the variables required for the study were extracted from the records and captured on a data extraction sheet (Appendix A). The variables that were measured for each study objective are listed in the Table below.

Objective	**Variable**	**Definition of variable**
Objective 1	Socio-demographic profile	Age Marital status Employment status

	Obstetrical profile	- Parity, gravidity; - Admission diagnosis - Whether attended antenatal clinic (ANC) - Where attended ANC - Gestational age at 1st ANC visit - Number of ANC visits; - Complications during pregnancy (medical and obstetric).
	Access	- Distance from clinic closest to woman's area of residence to Dilokong hospital (kilometers) - Mode of transportation to Dilokong – walking, public transport (taxi), private vehicle, or ambulance.
Objective 2	Referral type	Whether self referred or referred by health professional (public sector or private practitioner).
Objective 3	Appropriateness of referrals	Appropriate to deliver at Dilokong refers to: o Pregnancies that were high risk at the time of referral to Dilokong. These were defined as all the pregnant women with: - previous and/or current medical illness (asthma, heart diseases, tuberculosis, diabetes, hypertension, anaemia); - history of a previous and/or current caesarian section; - obstetric complications identified before delivery

		○ All women who live within 5km of the hospital (because the hospital was their designated site for delivery). Inappropriate to deliver at Dilokong refers to: ○ Pregnancies that were low risk at the time of referral to Dilokong. They were defined as pregnant women with no previous or current medical or obstetric complications during pregnancy.

2.6. Data processing and analysis

The collected data were entered in a Microsoft excel spread sheet. Cleaning was done by re-checking for omissions, incorrect information, duplication and relevance of the data during capturing, Ten percentage of data entered in MS excel spread sheet was re-checked in detail for accuracy and errors. The researcher personally captured and cleaned the data. The cleaned data were then transferred to Stata version 10 for analysis (StataCorp, 2007).

Descriptive statistics were used to summarise all the data. All the numerical continuous data such as age, parity and gravidity were summarized by using mean and standard deviation. All categorical data such as marital status, employment status, type of referrals, appropriateness of referrals, and means of transport to access the hospital were summarized using proportions. Distance to Dilokong hospital was measured as the distance in kilometers from the nearest clinic serving the village where the mother

resided to the hospital. The distance in kilometers (continuous data) was categorized and then summarized using proportions.

The t-test was used to assess differences in age, parity and gravidity between self-referred and health professional-referred women. Differences in categorical variables (marital status, employment status, access to hospital) between self-referred and health professional-referred women as well as between appropriate and inappropriate referrals were done by using the chi-square test.

2.7. Ethical considerations

The research proposal was approved by the University of Witwatersrand Human Research Ethic Committee (Medical) and an ethical clearance certificate was issued giving permission to conduct the research (Appendix B). The Department of Health and Social Development in the Limpopo Province and Dilokong hospital management also gave their permission to conduct the research. Data extraction sheets were treated with confidentiality by allocating study numbers instead of patient's names. The list linking patient's records to study numbers was accessed by the research only and was kept under lock and key.

CHAPTER 3

RESULTS

This chapter presents the results of the study conducted to assess appropriateness of referrals to the Dilokong hospital maternity unit. Dilokong hospital registered 3797 deliveries in 2008 and the records of sample of 400 women who delivered in the maternity unit from 1st January to 31st December 2008 were reviewed. This chapter presents the demographic profile, obstetrical profile and access to Dilokong hospital for the 400 women in the study. It also presents the proportion of women who were self-referred to the hospital for delivery, and those referred by a health professional. Data on the extent of appropriateness of these two types of referrals to Dilokong hospital for delivery are also presented; as well as the factors that are associated with appropriate and inappropriate referrals to Dilokong hospital.

3.1. Socio- demographic profile

3.1.1. Age distribution

Table 1 shows the age distribution of the sample of 400 women who delivered at the Dilokong hospital maternity unit during 2008. As the table shows, about a quarter of the women was teenagers, and almost half was in their 20's. The age of mothers ranged between 15 and 45 years with the median age of 24 years (IQR: 19-30).

Table 1: Age distribution of women who delivered at Dilokong hospital in 2008

Age Category	**No**	**%**
15-19	104	26
20-24	107	27
25-29	88	22
30-34	64	16
35-39	29	7
40- 45	8	2
Total	**400**	**100**

3.1.2. Social profile

The majority of mothers (77.9%) were single, 87% were not employed, and very few of the women were scholars (Table 2). Access to health facility (distance to Dilokong hospital and transportation method) showed that less than a fifth of the women lived within 5km of Dilokong hospital, and just over half had traveled between 6 and 20km to the hospital to deliver. The data also show that 6.5% mothers traveled a distance longer than 51km.

As table 2 also shows, the transportation method was not indicated in the records for most women. For the 96 women for whom transport method data were available, the majority got to the hospital with an ambulance. There was a tendency for paramedics to take mothers from home to the hospital instead of taking them to the nearest clinic or CHC.

Table 2: Marital status, employment status, and access to hospital

Variable	**No***	**%**
Marital status		
- Single	310	77.9
- Married	86	21.6
- Widowed	2	.5
Total	**398**	**100**
Employment status		
- Unemployed	320	87.0
- Employed	26	7.1
- Other (scholar)	22	5.9
Total	**368**	**100**
Distance to Dilokong		
- <5km	65	16.2
- 6 – 20km	207	51.8
- 21 – 35km	86	21.5
- 36 – 50km	16	4.0
- >51km	26	6.5
Total	**400**	**100**
Transportation method		
- Walking	2	2%
- Taxi	6	6%
- Private vehicle	24	25%
- Ambulance	64	67%
Total	**96**	**100**

*Totals did not add up to 400 for all variables because of missing data for some variables

3.2. Obstetrical profile

3.2.1. Parity and Gravidity

The parity and gravidity of mothers is shown in Table 3. Parity ranged between 0 and 7, with the median of 1 (IQR: 0-1). The majority of women had a parity of less than 2 (Table 3). The median gravidity was 2 with IQR of 1 to 3 and over half of mothers had more than 2 pregnancies (Table 3). Data were not available for 4 mothers as they did not attend ante-natal clinic, and since they reported at the hospital in advanced labour their ante natal information was not captured in the maternity case records.

Table 3: Distribution of parity and gravidity

Variable	**No.**	**%**
Parity		
0 – 1	279	70.4%
2 -3	95	24.0%
4 - 5	17	4.3%
6 -7	5	1.3%
Total	**396**	**100**
Gravidity		
Primigravida	165	41.7%
Multipara 2-5	220	55.6%
Grand multipara 6-11	11	2.7%
Total	**396**	**100**

3.2.2. Previous and current medical condition

Very few of the mothers who delivered at Dilokong hospital had a medical condition in the current or previous pregnancy (Table 4). The few medical conditions that were seen are shown in Table 4. The 'other' category included mental ill health, mental retardation, epilepsy, urinary tract infection and fractured pelvis due to motor vehicle accident.

Table 4: Medical conditions in previous and current pregnancy

Medical condition	**In previous pregnancy**		**In current pregnancy**	
	No	**%**	**No**	**%**
Asthma	3	27.3	3	25.0
TB	2	18.2	2	16.7
Hypertension	1	9.0	-	-
Others	5	45.5	7	58.3
Total	**11**	**100**	**12**	**100**

3.2.4. Admission diagnosis

Table 5 below shows the obstetric diagnosis on admission to Dilokong hospital for 104 of the 400 women – for the rest (296), no admission diagnosis was recorded as they were admitted due to labour pains. One-quarter of these 104 mothers had previous caesarian section and this was the most common obstetric condition recorded. Anaemia and pregnancy induced hypertension were the second most common admission diagnoses and the rest are indicated in Table 5.

Table 5: Admission diagnosis

Admission diagnosis	**Number of women**	**(%)**
Previous caesarian section	26	25%
Anaemia	20	19%
Pregnancy induced hypertension	17	16%
Prolonged stage of labour *	14	13%
Malpresentation **	6	6%
Multiple pregnancy	6	6%
Premature labour	4	4%
Abortion	3	3%
Others***	8	8%
Total	**104**	**100%**

* Includes prolonged labour (8) and obstructed labour (6)
** Includes breech presentation (5) and face presentation (1)
*** Includes urinary tract (4) mental ill health (2) fractured pelvis (1) and post maturity (1)

3.3. Referral to Dilokong hospital

3.3.1. Types of referrals to Dilokong

Among the 400 women who delivered at Dilokong hospital, 333 (85%) were self-referred and 61 (15%) were referred by a public sector or private health professional (Figure 1). Data for referral type were not available for six women, and so this result was summarised for 394 women. Only five of the 61 women referred by a health professional were referred by a private practitioner. Among the 61 health professional referrals,

eighteen were from the Dilokong gateway clinic, a primary care clinic situated at the hospital that is open 8 hours a day and does not render delivery services.

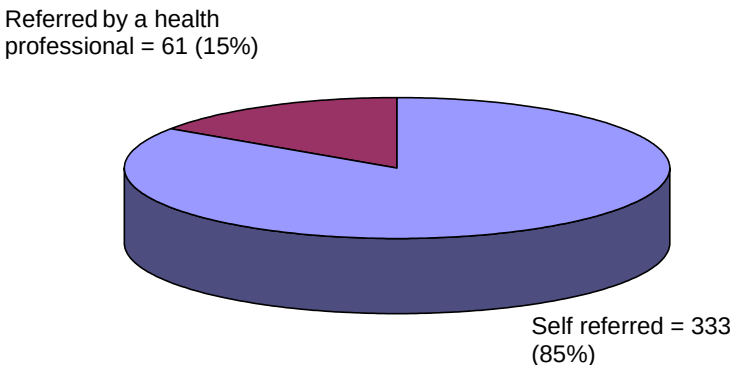


Figure 1: Types of referrals to Dilokong maternity unit in 2008 (n=394)

Some mothers were referred by clinics that render 24 hour services and therefore are expected to provide deliveries after hours. The followings were indicated in the records as reasons for referral from: 3 women were referred as there was no registered midwife when the mother reported labour, 1 woman was due to lack of delivery packs to deliver the mother and for 3 women reasons for referral were not mentioned.

3.3.2. Appropriateness of referrals to Dilokong hospital

To assess appropriateness of referrals, pregnancies were first categorized as either high or low risk, based on the data in the records. Appropriate deliveries were high risk pregnancies and women who stay within 5km from the hospital (regardless of whether they were high or low risk clinically) because the gateway clinic did not provide intrapartum services. Inappropriate deliveries were all low risk pregnancies.

The distribution of appropriate (includes high risk women during pregnancy, intra-partum and women who stay within the 5km of the hospital) and inappropriate is shown in Figure 2. The majority of the 391 women with data (57%) were supposed to deliver at PHC facilities as they did not have any condition that needed hospital delivery or were not staying at a distance within 5km from the hospital. A total of 168 women (43%) were categorized as having high risk pregnancies and a few stayed within 5km of the hospital, meaning they were appropriate to deliver at this level of care

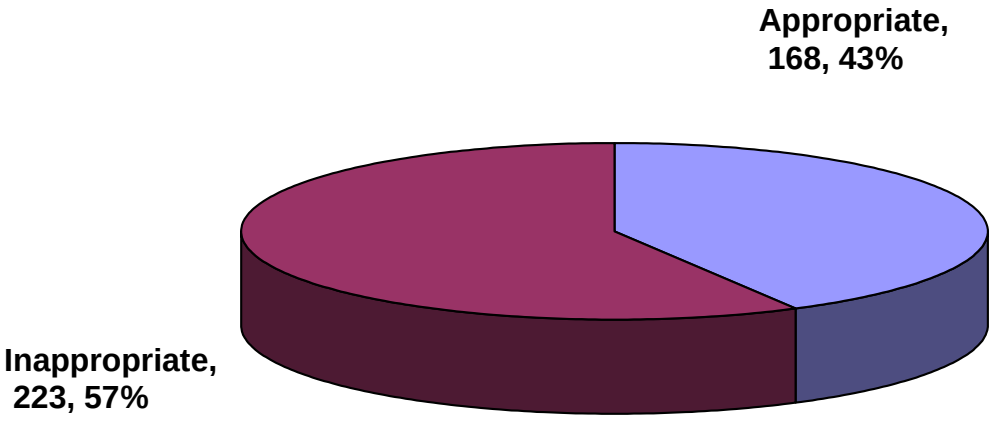


Figure 2: Appropriate and inappropriate deliveries at Dilokong hospital (n=391)

The proportion of each referral type that was appropriate to deliver at the Dilokong hospital level of care was assessed. Data for this analysis was available for 328 self-referred and 61 health worker-referred women. Table 6 shows the proportion of self referrals and referrals by a health practitioner that were appropriate for delivery at Dilokong hospital. Among the 328 self-referrals, only 121 (37%) were appropriate for delivery at the hospital level of care. The majority (74%) of referrals by a public sector

health professional or private practitioner were appropriate for delivery at the hospital level of care.

Table 6: Appropriateness of referrals to Dilokong hospital for delivery (n=389)

Referral type	**Appropriate to deliver at Dilokong**		**Inappropriate to deliver at Dilokong**	
	No	**%**	**No**	**%**
Self- referred (n=328)	121	37	207	63
Referred by a health professional (n=61)	45	74	16	26
Total	**166**	**43**	**223**	**57**

3.3.3. Socio-demographic factors associated with referrals to Dilokong

A comparison was made of the age, parity and gravidity of appropriate and inappropriate referrals to Dilokong. The results show no statistically significant difference in these variables between the groups (Table 7 & 8).

Table 7: Comparison of demographic and obstetric profile between appropriate and inappropriate referrals

Variable	**Appropriate referrals (n=168)**		**Inappropriate referrals (n=223)**	
	Mean	**SD**	**Mean**	**SD**
Age	26	6.70	25	6.27
Parity	1	1.49	1	1.20
Gravidity	2	1.63	2	1.22

Table 8: Comparison of demographic and obstetric profile between self-referred and health professional-referred women

Variable	**Self-referred (n=333)**		**Referred by health professional (n=61)**	
	Mean	**SD**	**Mean**	**SD**
Age	25	6.40	24	6.66
Parity	1	1.30	1	1.40
Gravidity	2	1.37	2	1.64

Analysis was also done to compare the marital status, employment status, and access variables between self-referred and health professional referred women (Table 9). There were no significant differences in marital status, employment status and mode of transportation between self-referred and health worker referred women. There was a statistically significant difference between these two groups of women regarding distance to facility. Self-referred women lived significantly closer to Dilokong hospital than health practitioner referred women; and health practitioner-referred women were more likely to access the hospital in an ambulance than through other means of transportation.

Table 9: Comparison of social profile of self-referrals and health provider-referrals*

Variable	**Self-referred** No. (%)	**Referred by health professional** No. (%)	**p-value**
Marital status	(n =333)	(n = 61)	0.335
- single	259 (84.6)	49 (15.4)	
- married	73 (86.9)	11 (13.1)	
- widowed	1 (50.0)	1 (50.0)	
Employment status	(n = 312)	(n = 52)	0.911
- employed	23 (88.5)	3 (11.5)	
- unemployed	270 (85.4)	47 (14.6)	
- scholar	19 (86.4)	3 (13.6)	
Distance to Dilokong	(n = 333)	(n = 61)	0.000
- <5km	61 (92.4)	5 (7.6)	
- 6 – 20km	183 (90.1)	20 (9.9)	
- 21 - 35km	62 (74.7)	21 (25.3)	
- 36 – 50km	11 (68.8)	5 (31.2)	
- > 51km	16 (61.5)	10(38.5)	
Transport method	(n = 70)	(n = 26)	0.162
- Walking	1 (50.0)	1 (50.0)	
- Public transport	6 (100)	-	
- Private vehicle	20 (83.3)	4 (16.7)	
- Ambulance	43 (67.2)	21 (32.8)	

*Missing information was excluded and percentages were compared between the two groups. The denominators differ in all variables due to the missing information

Table 10 presents the social profile of deliveries that were appropriate and inappropriate for the Dilokong hospital level of care. The results show no statistically significant difference in marital status, employment status and transportation method between these two groups. There was a statistically significant difference in distance to facility. The

women who were appropriate for delivery at the hospital level of care lived significantly closer to Dilokong hospital than inappropriate referrals.

Table 10: Comparison of social profile between appropriate and inappropriate referrals*

Variable	**Appropriate** No. (%)	**Inappropriate** No. (%)	**p-value**
Marital status	**(n = 168)**	**(n = 222)**	0.256
- single	129 (42.4)	175 (57.6)	
- married	37 (44.0)	47 (56.0)	
- widowed	2 (100)	-	
Employment status	**(n = 159)**	**(n = 203)**	0.913
- employed	10 (40.0)	15 (60.0)	
- unemployed	139 (44.1)	176 (55.9)	
- scholar	10 (45.5)	12 (54.5)	
Distance to Dilokong	**(n = 168)**	**(n=222)**	0.000
- <5km	68 (100)	-	
- 6 – 20km	55 (27.9)	140 (72.1)	
- 21 - 35km	30 (35.7)	54 (64.3)	
- 36 – 50km	5 (31.3)	11 (68.7)	
- > 51km	10 (38.5)	16 (61.5)	
Transportation method	**(n = 43)**	**(n = 50)**	0.450
- Walking	2 (100)	-	
- Public transport	2 (40.)	3 (60)	
- Private vehicle	10 (41.8)	14 (58.2)	
- Ambulance	29 (46.8)	33 (53.2)	

*Missing information was excluded and percentages were compared between the two groups. The denominators differ in all variables due to the missing information

CHAPTER 4

DISCUSSION

This study assessed the extent to which referrals to Dilokong District hospital maternity unit were appropriate for delivery at this level of care. The study shows that the majority of mothers who delivered at this hospital during 2008 were self-referred and 57% of women inappropriately delivered at this hospital level of care. This chapter discusses the main findings of this study in the context of the literature.

4.1. Socio-demographic and clinical profile

About a quarter of mothers delivering at Dilokong were teenagers, just fewer than 10% were aged 35 years or older, and two-fifths were primiparous and – all considered to be at high risk of maternal and perinatal morbidity and mortality and often expected to deliver at the hospital level (Mthetwa, 2006; Department of Health, 2007). Most women traveled more than 5km to get to the hospital despite that they were single and were unemployed – this is similar to the profile of public sector users (Mthetwa, 2006). Only less than 12 of women in the study had previous or current medical conditions that could increase risk of maternal mortality.

4.2. Types of referrals to Dilokong maternity unit

The study reveals that among 394 women who delivered at Dilokong hospital, the majority (85%) were self-referred – which means they did not start at a PHC facility, but went without a referral directly to the hospital for delivery. The majority (85%) of

mothers used Dilokong hospital as their first contact with the health care system, even though many lived closer to a clinic or CHC. Where data were available, the study shows that self-referred women mostly used an ambulance (67%) to get to the hospital and that paramedics often took then directly from home to the hospital, by-passing a clinic or CHC. This is similar to the Sedibeng study in SA as the paramedics were by-passing midwifery obstetric unit (MOU) and took them to the hospital (Mthetwa, 2006). Similar studies on the maternity referral systems in Africa also show that 68% to 82% of users of hospital childbirth facilities are not referred by a health care provider but self-referred (Murray et al., 2005).

The high proportion of self-referred women observed in this study could potentially result in over-utilisation of hospital maternity services. This may also indicate under-utilisation of PHC facilities for intra-partum care, despite the high overall utilization of PHC facilities for ante-natal care services (Department of Health, 2008). The high number of self-referrals may highlight women's lack of confidence in PHC facilities to manage emergency obstetric complications (Majoko, et al., 2005). Direct self-referral of women to hospital for delivery may however also be due to a relative lack of 24-hours CHC facilities that could perform deliveries after hours in this Local Municipality. There are only 2 such facilities in this Local Municipality, serving a population of 270 122 (Department of Health, 2008).

Women's experiences and perceptions at PHC facilities may also have influenced women's choices. For example, if the pregnant woman goes to the clinic and she is

referred to the hospital due to lack of a registered midwife or delivery packs, she may inform other women about this matter, who may decide not to go to the clinic when in labour but to directly go to the hospital for delivery. In future the same women may prefer to go directly to the hospital for delivery for fear of having the same experience. In this setting, women's perception may have played a role in choosing the place of birth, and may have prompted women to choose to deliver further away from their locality. For example, the women may fear lack of confidentiality if they are cared for by nurses from their village (Mthetwa, 2006).

4.3. Appropriateness of referrals to Dilokong maternity unit

The study suggests that there may be a problem of non-compliance with the referral system for maternity services in the Greater Tubatse Local Municipality – mostly by users of the service and to a less extent by health care providers. Non-compliance may be related to user factors and health system factors.

Among 328 women who were self-referred to deliver at Dilokong, the majority (63%) were inappropriate for a hospital delivery with CI of 95%. These women did not have any medical or obstetrical indication for delivery at the hospital level and so they were supposed to deliver at PHC facilities according to the maternity guidelines (Department of Health, 2007). Among the health professional referrals, two-thirds were appropriate for the level of care. This suggests that in most cases the health care professionals who refer women to Dilokong – most of whom are public sector health workers –

appropriately assess pregnant mothers for high risk conditions and refer them appropriately.

Evidence from studies conducted in Zambia and Honduras also show non-compliance with the referral system by health care providers in these settings (Murray, et al., 2006; Omaha, et al., 1998). Reasons for poor health worker compliance with guidelines could be lack of resources such as registered midwives and materials for intra-partum care at PHC level, and a possible lack of skills for screening emergency obstetric complications at PHC level (MacKeith, et al. 2003 & Gupta, Mavalanka & Trivedi, 2009).

In Zimbabwe, research shows that non-compliance with defined indications for referral are not due to failure by health providers to detect abnormalities but could be due to patients' low compliance with referral advice (Majoko, et al., 2005). This is because sometimes patients do not understand the reasons behind the referral or they do not perceive the risk to be serious, for example high parity, anaemia abortion complications, twin pregnancy and even post partum haemorrhage (Majoko, et al. 2005, Iyengar, et al. 2009, Jahn & Brouwere, & Omaha, et al. 1998).

The purpose of a referral system is for efficient functioning of health services and for cost effective health management where the PHC and hospital levels should share the load of patient care. However the practices observed in this study – which are also seen in other developing countries – defy this (Jahn et al., 1990; Gupta et al., 2009). This may be due to reasons mentioned above as well as a shortage of PHC facilities. There were two CHCs in the Local Municipality during the period of the study and both of them did not

have advanced midwives and no daily visit by medical officers as specified by the guidelines for maternity care in South Africa (Department of Health, 2007). This suggests that a shortage of staff, lack of skill and lack of confidence by the midwife to monitor the woman in labour may contribute to a high level of inappropriate referrals to the hospital level for delivery.

Another factor that may contribute to high number of inappropriate self-referrals is the availability of free maternal health services at all levels of care in the South African health system (Republic of South Africa, 1994 & National Health Act, 2003). Women may interpret the policy as if it allows them to use any level of care without being referred however it is not the intention of this policy**.** Similarly, in Gujart, India, the referral system in government facilities is not adhered to because a patient is free to go to any higher health facility for care (Gupta et al., 2009).

There are currently no mechanisms in place to make sure that the patients and the health care providers adhere to referral guidelines in this study setting. Therefore, poor compliance with referral systems could continue and potentially lead to patient overload at hospital level and may be less work at the PHC facilities (Murray et al 2006, Mthetwa, 2006 && Omaha, et al., 1998). This defeats the aim for decentralization to improve accessibility, efficiency, and effectiveness of heath services. Thus there is a need to implement mechanisms that can improve and maintain compliance with the referral system in order to improve appropriate use of maternal health services in the Local Municipality.

This is confirmed by the results of a study conducted in Zambia showing that the initiation of a decentralised system for delivery of maternity services at health centers managed by the midwives reduced the births at hospital level by more than 50% in 8 years, and increased the number of births at health centers from 2000 to 32 000 (MacKeith, et al. 2003). Lessons can be learned from the Zambia example about how to implement a proper referral system with allocation of resources and training, to similarly improve appropriate use of maternity services in the Local Municipality. Similarly, a study in India on emergency obstetric care and referral showed that equipping health centers with experienced trained nurse-midwives and daily medical visits reduce the referral of obstetric complications to hospital and significantly improve management of life-threatening complications in rural areas (Iyengar et al., 2009).

This study found no statistically significant differences in the demographic and social characteristics of appropriate and inappropriate referrals to Dilokong for delivery. More in-depth studies should be carried out to identify the factors contributing to self-referrals and by-passing of the PHC level and inappropriate referrals in this Local Municipality. Though almost all the PHC facilities provide 24 hours services, many women report directly at the hospital for delivery. It is important to accurately understand why women in this setting by-pass the PHC level and prefer hospital delivery and reasons for non-compliance with referral guidelines by some health providers. This information is needed to put in place measures to reduce inappropriate utilization of scarce hospital maternity care resources.

4.3. Limitations

There were some limitations of this study. Some mothers who deliver at the hospital did not attend ante-natal care during pregnancy and so data about ante-natal care was not available for some women. It was discovered during the study that midwives do not complete ante-natal details in the maternity case records for un-booked mothers and this limited the biographical information that could be collected from the mothers. Midwives do not record all the information collected during the ante ante-natal care and intra-partum periods – so there were some incomplete records.

The limitation in cross-sectional descriptive study is that the study is conducted at one point in time and this may not always give the same results. The validity of employment data could not be verified due to retrospective record review. Only hospital patient records were reviewed. This is a limitation because this did not allow us to comprehensively identify the problems of the referral network in the sub-district. The other limitation is that the PHC staff did not always give the health service related reasons for referring mothers for delivery at the hospital and that limited the study.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

According to the results of this study, the majority of women who deliver their babies at Dilokong hospital are self-referred, and this shows that the hospital maternity unit is used as the first point of entry into the health care system for delivery, instead of the PHC facilities. A high proportion of women with low risk pregnancies deliver their babies at Dilokong hospital maternity unit; which means the hospital renders the level of maternity care that is supposed to be given in PHC facilities in its catchment area.

A high proportion of health practitioner-referred women were appropriate referrals to deliver at the hospital. Indeed, this is encouraging because it shows that some health professionals have the ability to assess the women with high risk and refer appropriately. However, despite referral guidelines, there is non-compliance with the referral system in Greater Tubatse Local Municipality by women and some health professionals. By-passing of PHC facilities by emergency medical services contributes to non-compliance with the referral network in the sub-district. Other service issues such as the unavailability of midwives when women report in labour at CHC/clinics also seem to contribute to non-compliance with the referral network which leads to inappropriate and possibly over-utilization of Dilokong maternity unit.

Inappropriate and over-utilization of Dilokong maternity unit may affect the quality of patient care that may result in maternal and perinatal mortality, client dissatisfaction,

litigations and bad image of the hospital. These may potentially lead to inefficiency and poor hospital performance. The other effect is that hospital staff may become dissatisfied due to inappropriate self referrals that are should ideally deliver at PHC facilities.

The findings of the study show the need to develop mechanisms to monitor the compliance to the referral system to avoid inappropriate and potential over-utilization of hospital resources. Further studies are necessary to determine the factors contributing to inappropriate self-referrals and health-provider referrals in Greater Tubatse Local Municipality.

5. 2. Recommendations

Non-compliance with referral guidelines defies the effective functioning of health services and cost effective health management. The following recommendations are made to reduce inappropriate referrals to the Dilokong hospital maternity unit and improve appropriateness of maternity referrals in the Greater Tubatse Local Municipality. These will be presented to the hospital management, sub-district and district management, and Limpopo, Department of Health and Social development.

5.2.1. Improve compliance with referral system

The hospital management should have discussions with the PHC management, senior management of the District and EMS regarding the referral system and together they should develop mechanisms to improve referrals and monitor the compliance of the PHC staff with the referral system. Combined meetings should be held regularly to monitor the

compliance of the referral system. The hospital should also involve PHC staff in morbidity and mortality meetings. Though most referrals by health professionals were appropriate, this can be further improved, and so it is also imperative to conduct workshops for the midwives at PHC facilities on the importance of complying with the referral system.

The PHC staff should advise pregnant women on place of delivery and the reasons thereof to reduce self-referrals. This kind of information should also be publicized in communities, PHC facilities and hospital to raise awareness of the referral system and its purpose. This should emphasize the importance of transporting the mother to the local clinic for screening before taken to the hospital by both the community and the paramedics.

5.2.2. Ensure availability of resources and services

This research did not aim to determine reasons for high self-referrals, but the data suggest that a lack of resources at PHC level may contribute to the by-passing of PHC facilities. If this is the case, there is a dire need to strengthen the maternity health care services in PHC facilities as prescribed by the maternity guidelines. This should include ensuring a reasonable number of registered midwives to work at PHC facilities and that delivery packs are always available.

The hospital management should allocate doctors for clinic visits where women could be screened and to refer high risk women early for appropriate management. The hospital staff should give feedback to the PHC staff about the high risk women they referred.

5.3. Further research

There is a need to conduct further research on the following topics:-

- Factors contributing to self-referrals in Greater Tubatse Local Municipality.
- Factors contributing to inappropriate referrals from PHC to hospital level.
- Impact of self-referrals and inappropriate referrals on quality of maternal health care services in Dilokong hospital maternity unit.
- Knowledge and practices of the midwives about the referral guidelines in Greater Tubatse Local Municipality.

REFERENCES

ANC 1994. A National Health Plan for South Africa. Pretoria. http://www.anc.org.za/ancdocs/policy/health [accessed 11/01/2010]

Department of Health. 2006. Saving Mothers: Third report on Confidential Enquiries into Maternal Deaths in South Africa, 2002-2004. Pretoria.

Department of Health. 2007. Guidelines for maternity care in South Africa: A manual for clinics, community health centers and districts.

National Department of Health. 2008. District Health Information System Database.

Fournier, P., Dumont, A., Tourigny, C., Dunkley, G. & Drame, S. 2009. Improved access to comprehensive emergency obstetric care and its effect on institutional maternal mortality in rural Mali. *Bull World Health Organ,* 87, 30-38.

Gupta, M., Mavalanka, D. & Trivedi, P. 2009. A study of referral system for EmOC in Gujarat. Indian institute of management. Ahmedabad, India; WP No.2009-06-02: 2-35

Iyengar, K. & Iyengar, S.D. 2009. Emergency obstetric care and referral: experience of two mid-led health centers in rural Rajasthan, India. *Reproductive Health Matters*, 17, 9-20.

Jahn, A. & De Brouwere, V. Referral in pregnancy and childbirth: concepts and strategies. http:// www.uonn.org/uonn/pdf/Referral%2550in [accessed 20/11/2010]

Kongnyuy, E.J., Mlava, G. & van den Broek, N. 2008. Criteria-based audit to improve a district referral system in Malawi: A pilot study. *BMC Health Services Research*, 8, 190.

Low, A., de Coeyere D., & Shivute, N., et al. 2001. Patient referral patterns in Namibia: identification of potential to improve the efficiency of the health care system. *International Journal of Health Planning and Management*, 16, 243-257.

MacKeith, N., Chinganya, O.J.M., Ahmed, Y. & Murray, S.F. 2003. Zambian women,s experiences of urban maternity care: Results from a community survey in Lusaka. *African Journal of Reproductive health*, 7, 92-102.

Majoko, F., Nylstrom, L., Munjanja, S.P. & Lindmark, G. 2005. Effectiveness of referral system for antenatal and intra-partum problems in Gutu district, Zimbabwe. *Journal of Obstetrics and Gynaecology*, 25, 656-661.

Mthetwa, R.B.2006. The factors determining the under-utilization of Maternity Obstetric Units within the Sedibeng District, unpublished mini thesis submitted in partial fulfillment of the requirements for the Master of Arts in the subject of Health Studies, University of South Africa.

Mudyarabikwa, O. & Mbengwa, A. 2006. Distribution of public sector health workers in Zimbabwe: A challenge for equity in health.

Murray, S.F., Davies, S., Phiri, R.K. & Ahmed, Y. 2001. Tools for monitoring the effectiveness of district maternity referral systems. *Health Policy &Planning*, *1*6, 353-361.

Murray, S.F. & Pearson, S.C. 2006. Maternity referral systems in developing countries: Current knowledge and future research needs. *Social Science & Medicine*, 62, 2205-2215.

Omaha, K., Melendez, V., Uehara, N. & Ohi, G. 1998. Study of a patient referral system in the Republic of Honduras. *Health Policy Plan*, 13, 433-445.

Pasquier, J., Rabilloud, M. & Janody, G., et al. 2005. Influence of perinatal care regionalization on the referral patterns of intermediate- and high-risk pregnancies. *European Journal of Obstetrics & Gynaecology and Reproductive Biology*, 120, 152-157.

Pembe, A.B., Urasar, D.P., Darj, E., Carlstedt, A. & Olsson, P. 2008. Qualitative study on maternal referrals in rural Tanzania: Decision making and acceptance of referral advice. *African Journal of Reproductive Health*, 12, 120-131.

Pembe, A.B., Carlstedt, A., Urasar, D.P., Lindmark, G., Nystrom, L. & Darj, E. 2010. Effectiveness of maternal referral system in a rural setting: a case study from Rufiji district, Tanzania. *BMC Health Services Research,* 10, 326

Sanders, D., Kravitz, J., Lewin, S. & Mckee, M. 1998. Zimbabwe's hospital referral system: does it work? *Health Policy Plan,* 34, 359-370.

Sharan, M., Ahmed, S., Naimoli, J.F., Ghebrehiwe, M. & Rogo K. 2010. Heath system readiness to meet demand for obstetric care in Eritrea: Implications for results-based financing (RBF). The World Bank

Strand, R.T., de Campos, P.A., Paulsson, G., de Oliveira, J. & Bergstrom, S. 2009. Audit of referral of obstetric emergencies in Angola: A tool for assessing quality of care. *African journal of reproductive health,* 13, 75-85.

Republic of South Africa. 1996. The Constitution of the Republic of South Africa. Act No 108 of 1996. Pretoria.

Republic of South Africa. 2003. National Health Act. Act No 61 of 2003. Pretoria.

Republic of South Africa. 1994. Free health services for pregnant women and children under the age of 6years. Government Notice 657, *Government Gazette,* 15817.

StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP.

Wibulpolprasert, S. & Pengpaibon, P. 2003. Integrated strategies to tackle the inequitable distribution of octors in Thailand: four decades of experience. *Human Resource for Health,* 1, 12.

WHO. 2007. Health in the Millennium Development Goals. http://www.who.int/mdg/goals/en/index.html [accessed 30/01/2009]

WHO. 1978. Declaration of Alma-Ata. International Conference on Primary Health Care. http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf [accessed 21/05/2011]

APPENDIX A:

DATA EXTRACTION SHEET:

SECTION A: DEMOGRAHIC DATA/PROFILE

RECORD NO: …….

1.1. Age.		
1.2. Marital status.		
Single	1	
Married	2	
Divorced	3	
Widowed	4	
Separated	5	
1.3.Employment status / Occupation		
Employed	1	
Unemployed	2	
Other (specify)	3	
Not indicated	4	

SECTION B: OBSTETRIC HISTORY

2.1. Is the mother booked?	Yes	No	
2.2. If yes, where did the mother attend ante-natal clinic?			
Clinic		1	
Dilokong Gateway clinic		2	
CHC		3	
Private practitioner		4	
2.3. Gestational age of the mother at first ANC visit			
2.4. Parity			

2.5. Gravidity		
2.6. No of ANC visits		

SECTION C: APPROPRIATENESS OF REFERRALS			
3.1. Medical illness	Previous	Current	
Asthma	1	1	
Heart disease	2	2	
TB	3	3	
Diabetes	4	4	
Hypertension	5	5	
Other	6	6	
None	7	7	
3.2. Obstetrical illness			
Pregnancy induced hypertension		1	
Ante-partum haemorrhage		2	
Prolonged stage of labour		3	
Prolapsed cord		4	
Previous C/section		5	
Other (specify)		6	
3.3. Any risk factor detected during pregnancy	Yes	No	
3.4. Any indication on ANC card for place of delivery	Yes	No	
Clinic		1	
Hospital		2	
3.5. Was the mother referred to medical practitioner during current pregnancy	Yes	No	
3.6. Was the mother attended by medical practitioner during current pregnancy	Yes	No	
3.7. Was the mother admitted at the hospital during current pregnancy	Yes	No	
3.8. Reason for admission			

SECTION D: REFERRAL TYPE

4.1. Is the mother referred from PHC facility?	Yes	No	
4.2. If yes, is she referred from clinic providing which services?	8rs	24hrs	
Name of the clinic			
4.3. Is the mother referred by private practitioner?	Yes	No	
4.4. What is the reason for referral?			
4.5. Time of referral			
4.6. Time of admission			
4.7. Is the mother self referred?	Yes	No	
If not indicated on record, write not indicated			

SECTION E: ACCESSIBILITY

5.1. Where does the mother stay?		
5.2.Indicate clinic situated at above village		
5.3. Distance from the clinic to the hospital (km)		
5.4. Method of transportation to Dilokong hospital		
Walking	1	
Taxi	2	
Private vehicle	3	
Ambulance	4	
Other (specify)	5	
Not specified	6	

APPENDIX B : AUTORISATION FROM HEALTH DEPARTMENT

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH AND SOCIAL DEVELOPMENT
SEKHUKHUNE DISTRICT

Enq: Mokoka M L
Tel: 015 633 2423
Fax: 015 633 7927

Date: 29 March 2010

To: The CEO (Dilokong Hospital
Mrs. Mashishi M M

RE: PERMISSION TO CONDUCT RESEARCH PROTOCOL

Permission is hereby granted for you to conduct research at Dilokong hospital.

Hoping that you will benefit at your time of conducting the research at the institution.

You are also reminded that the results of the research should be made available.

Regards

DISTRICT EXECUTIVE MANAGER

29/03/2010
DATE

Private Bag X 04
Chuenespoort 0745. Tel: 015 633 2300 . Fax 015 633 7927. Website: http/www.limpopo.gov.za
The heartland of southern Africa – development is about people

APPENDIX C : ETHICS CLEARANCE CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Ms Maria M Mashishi

CLEARANCE CERTIFICATE	**M10459**
PROJECT	Assessment of Referrals to a District Hospital Maternity Unit South Africa
INVESTIGATORS	Ms Maria M Mashishi.
DEPARTMENT	School of Public Health
DATE CONSIDERED	30/04/2010
DECISION OF THE COMMITTEE*	

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 03/05/2010 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr M Kwanga

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...