

**REFERRAL PATTERN FOR MATERNITY PATIENTS IN THE NKHENSANI
DISTRICT HOSPITAL IN GIYANI SUB-DISTRICT**

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DECLARATION

I, Agrey Ernest Mboweni, declare that this research report is my own work. It is being submitted for the degree of Master of Public Health (Hospital Management) at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or for any examination at this or any other university.

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January 2012

DEDICATION

I would like to dedicate my research to my late parents William and Somisa Mboweni who brought me up and guided me under strict supervision to attend school. Secondly I would like to acknowledge the support showed by my wife Madumelana and children during the four years, where I had to leave home for school for a week or more and she took care of the family. I would also like to dedicate my research to Ministry of Health for the vision it demonstrated by developing hospital Chief Executive Officers.

I would like to further dedicate my work to the head of Public Health Masters Programme Dr Debashis Basu who showed dedication, passion and commitment to inspire me as a student, which instilled hope and confidence. I would wish to extend a word of gratitude to my supervisor Dr Ruxana Jina who displayed sense of humour and diligence to serve with passion throughout, and lastly I would like to bow before the almighty for having given me courage and strength to comprehend and perform my work.

ABSTRACT

Background

Nkhensani Hospital is a level 1 district hospital which provides comprehensive and integrated health care for the Giyani sub–district population, which is estimated to be 270 000. The major services provided are casualty, medicine, paediatrics, maternity and surgery. The hospital is experiencing challenges in the maternity ward which is admitting more patients than the 47 allocated beds. Monthly, an average of 400 women are admitted for delivery from clinics. The causes are suspected to be due to a number of different factors like shortage of staff at the clinics, poor referral system, poor services at clinics and health centres, poor facilities, and pregnant woman not attending antenatal care and bypassing lower levels of care.

Aim

To describe the pattern and appropriateness of referrals in patients attending the maternity ward at the Nkhensani Hospital.

Methodology

A retrospective study was used to review and assess the patient records for the study (January to December 2009). Information was obtained from the Hospital Information System and secondary data from patients records will be used to assess the referral pattern in Nkhensani Hospital's maternity ward.

Results

The data showed that the patients admitted had a mean age of 26 years, with a range from 15 to 45 years. Patients were admitted for various reasons, which when categorised were found to have 57% of inappropriate referrals. Similarly 68% of referrals were found to have low risk pregnancies. About 85% of the deliveries were normal vaginal deliveries. Of the patients who attended the facility, 57% were referred from clinics, 19% from community health centres, 1% from general practitioners and 23% as self referrals. The source of referral was not found to be

associated with appropriate reasons for delivery, risk category, length of stay or mode of delivery.

Conclusion

The research showed that the referral pattern in the maternity ward from clinics and health centres as well as self referrals indicated that policies were not being adhered to, which led to an over utilisation of the maternity ward in Nkhensani Hospital under Giyani sub-district.

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GLOSSARY OF TERMS

- *Appropriate referrals* was based on the reasons given for referral and categorized using the conditions that were considered to be high risk in the National Guidelines for Maternity Care in South Africa (National Department of Health, 2002) (Annexure A).
- *Diagnosis* is the detection or identification of a disease or medical condition.
- *District hospital* is a level 1 health institution providing primary health care at the hospital level.
- *High risk patients* fall into a category of admitted pregnant women who have a high chance of complications and who cannot be treated at clinics or health centres by midwives only, without the presence of a doctor (National Department of Health, 2000).
- *Inappropriate referrals* was based on the reasons given for referral and categorized using the conditions that were not considered to be high risk in the National Guidelines for Maternity Care in South Africa (National Department of Health, 2002) (Annexure A).
- *Low risk patients* fall into a category of patients who could deliver either at a clinic or health centre by midwives (National Department of Health, 2000).
- *Maternity ward* is the admission point for pregnant women (patients) in Nkhensani Hospital.
- *Maternity patient* is a pregnant woman who was admitted and delivered in maternity ward. This does not include patients admitted for gynaecological problems.
- *Patient's records* means medical documents about the patient's admission history and health profile.
- *Referral Pattern* is the manner in which pregnant women visit the hospital from homes, clinics and health centres for delivery.
- *Socio-economic classification of patients* is based on national standards. A patient is classified as H0 (non-paying patients) if they are unemployed, H1 if they earn less than R36 000 per annum as an individual or less than R50 000 per annum as a household based on a means test, and H2 if they earn less than R72 000 per

annum as an individual or less than R100 000 per annum as a household based on a means test. H1 and H2 patients are partially subsidised (Gilbert J, 2002).

CHAPTER 1

INTRODUCTION, BACKGROUND AND LITERATURE REVIEW

1. INTRODUCTION

1.1 BACKGROUND

Nkhensani Hospital is a level 1 hospital, with 378 beds. The hospital is in Limpopo province in the Mopani district, situated in the Greater Giyani Municipality. The population in the catchment area is estimated to be 270 000. The hospital is a referral point for 23 clinics and 2 health centres. It is currently 47 years old and is under a revitalization programme, through which it will be rebuilt. The maternity ward is allocated 47 beds, where according to previous statistics an average of 329 women are admitted for deliveries monthly, of which 289 on average have normal deliveries¹.

The challenge in Nkhensani Hospital is that the bed utilization rate is above 100% in the maternity ward. It appears that the referral system is not functioning according to the norms and standards as set out in the Primary Health Care Package of South Africa (National Department of Health, 2000). For example, it is noted that clinics and health centres refer patients of low risk instead of high risk or complicated conditions which are beyond midwives scope of performance. Women who are not attending antenatal care programmes also by-pass clinics and health centres and come directly to the hospital for maternity care. This compromises the quality of patient care as available professional staff like nurses and doctors are overstretched attending to normal deliveries which could be attended to at the clinics and health centres, at the expense of high risk conditions which are life threatening. The referral

¹ Personal communication with Information Officer at Nkhensani Hospital, Ms. Portia Ndlovu.

policy says that patients should only be referred to the next level of care when their needs falls beyond the scope of clinic staff competence.

1.2 JUSTIFICATION OF THE STUDY

The study will assist in assessing the proportion of referrals from health facilities and further establish whether clinics refer patients with conditions that are within their scope of practice.

The study will therefore establish and guide whether the referral policy needs to be strengthened or whether resources in the hospital needs to be increased.

1.3 RESEARCH QUESTION

What is the current referral pattern for patients admitted to the maternity ward in the Nkhensani Hospital? Does the referral pattern indicate adherence to the current National Guidelines for Maternity Care in South Africa (National Department of Health, 2002)?

2. LITERATURE REVIEW

2.1. Risk classification in pregnancy

All pregnant women do not require similar care as there are some who are classified as having low risk pregnancies, which constitutes 60% of pregnant women. The second category includes women who have an increased chance of medical and obstetric problems during pregnancy and puerperium. This category constitutes 40% of the total pregnant women, and is regarded as high risk pregnancies. Within the high risk category, approximately half of the women have a high chance of complicating during pregnancy, labour and puerperium (Perinatal Education Programme, 2005). Conditions that are considered to be high risk during antenatal

care, labour or the puerperium are clearly stipulated in the national Guidelines for Maternity Care in South Africa: a manual for clinics, community health centres and district hospitals (National Department of Health, 2002). Such conditions include being a primigravida aged 35 years and older during antenatal care or having suspected fetal distress during labour. The complete list of conditions has been included in Appendix A.

2.2. Overview of national and international referral systems for maternity care

In South Africa, some consideration has been given to whether all pregnant women should deliver in a hospital (Perinatal Education Programme 2005). The Perinatal Education Programme is of the opinion that low risk pregnancies need only primary perinatal care, which could be provided at clinics and even at home. They further say that high risk or intermediate risk need more than primary care. The above position, as stated, adds to the widely held view that pregnant women could deliver at clinics, health centres or hospitals through a referral system, depending on their condition.

It is thus clear that the provision of integrated cost-effective care through health networks requires well established referral routes. It is widely accepted that substantial reductions in maternal mortality and severe morbidity are impossible without an effective referral system for complicated cases. Early detection of complications and the ability to refer the patient to receive appropriate care can reduce neonatal deaths as well (World Health Organization 1994; Kusiako 2000).

The World Health Organization, United Nations Children's Fund (UNICEF) and other institutions have done a considerable amount of work in defining obstetric care. In Lusaka, the policy is that all complicated cases should be referred to the university teaching hospital, while health centres deal with uncomplicated cases only. Blood transfusions, instrumental deliveries and caesarean section deliveries are conducted at the referral centre only (UNICEF/WHO/UNFPA, 1997). This is similar to the South African referral system where complicated cases are referred to the next level of

care if it is outside the clinic or health centre competencies (National Department of Health, 2000). The next level of care is the district hospital, followed by secondary and tertiary hospitals respectively.

However, the referral system can be abused either by hospitals referring complicated cases to lower levels of care, or clinics and health centres referring a large number of uncomplicated cases to hospitals. Utilization review according to Restuccia, Payne and Lenhart (1987) is a clinical technique developed in the United States, which seeks to answer two questions in the patient episode. Firstly, it considers whether the admission was necessary, and secondly could the patient be cared for outside of the hospital? The utilization review was adopted in the United States as a means of improving efficiency in bed utilization (Inglis et al, 1995). Similarly in the United Kingdom, researchers spent some time studying whether patients occupying beds could not be best cared for elsewhere (Namdaran, Bumet & Munroe, 1992).

In the Brisbane area in Queensland, Australia, there is a shared care model, where pregnant women choose to be cared for by a specific general practitioner (GP), or hospital doctor or midwife. The booking starts from 16 weeks to 36 weeks, and 41 weeks for post term cases. The women are cared for in maternity ward and assisted in giving birth. Only patients who have a complication which may require a caesarean section are referred to an obstetrician. Women are then down referred to the GP after a week post delivery (Queensland Government, 2009).

In London, during the provision of antenatal care, at 36 weeks of the program, discussions about the choice of the place of birth are held with pregnant women. Women who have medical or obstetric problems are advised to give birth at the hospital because emergency facilities are available. Women who opt to deliver at home are first risk assessed. The system is more or less similar to South Africa, but advanced because homebirth or delivery is still an option which is supported by the health system, unlike in South Africa where the focus is on clinics, health centres

and hospitals respectively. The UK model relieves pressure from the above facilities while still maintaining quality of care (Read, Brown & Veuger, undated).

According to Koblinsky, Campbell & Heichelheim (1999), China and Brazil improved maternal care by applying the service of Traditional Birth Attendants, after which maternal mortality and morbidity were drastically reduced. Referrals to hospitals only occurred for complicated obstetric cases. The above scenario strengthened the success of the referral system, where quality improved as only high risk cases were referred (De Brouwere, Van Lerberghe, 2001).

It is clear that the organisation of maternity services in many countries is comparable to the South African referral system where midwives in clinics and health centres are expected to deliver low risk cases and hospitals to deliver complicated risk cases, which might require a caesarean section. Developing countries could reduce abuse or over-utilization of resources by developing a clear communication strategy with specified roles for different levels like clinics, health centres and hospitals. The system could benefit Nkhensani Hospital and its community, by saving resources for use in high risk cases (Stefanini, 1994). Japan's system however differs from developing countries, as it provides a choice for pregnant women between midwifery care and standard obstetric care, while in developing countries the emphasis is on primary care as entry point before receiving obstetric interventions in district hospitals like Nkhensani Hospital (Suzuki, Satomi and Miyaka, 2009).

2.3. The functioning of the referral system for maternity care

The referral system is affected by a number of factors for its success and failure. Distances to facilities, costs, staff attitudes and quality of care contribute to a referral system being followed or violated. According to Jahn and De Brouwere (2001) about 50% of maternity referrals globally are self-referrals, 30% are institutional while only 5% are emergency referrals.

Murray et al (2001) identified factors which could act as impediments to an effective referral system. These include inadequately resourced referral centres and trained personnel, and the lack of designated transport, protocols to identify complications or compliance to set protocols, poor teamwork between referral centres, and lack of incentives, unified recording systems and good patient information. In South Africa the Perinatal Education Programme (2005) advises that nursing staff at hospitals and clinics should rotate to have a common understanding of the different referral points.

Problems with the referral system are reported in developing and developed countries. In Lusaka, Zambia a study conducted by Valley, Ahmed and Murray (2005) indicated that 23 clinics refer to one university teaching hospital for a population of 1.5 million. The limited space at the single hospital might deny women with complications a chance to access obstetric care and timely intervention to serve the mother and child. This could possibly be due to poor planning or unavailability of additional services.

The City of Houston Department of Health and Human Services, Harris County Public Health & Environmental Services and Harris County Hospital District (2008) developed referral guidelines for high risk maternity patients, to control the high number of low risk referrals which were starting to restrict them in attending to high risk cases. The guideline explicitly stated that such irregular referrals would not be attended to.

2.4. Self-referrals

In addition to the above-mentioned problems, patients often bypass lower levels of care and access hospitals directly. This could occur for various reasons, such as patients' preferences, or due to poor referral systems or quality of care at clinics and health centres. In Ghana, Ridge Regional Hospital has a high bed occupancy which is always greater than 70%. This was attributed to a poor referral system, resulting

in more patients being admitted as self referrals (Ministry of Health, 2007). Kruk et al (2009) revealed that in Tanzania pregnant women also bypassed certain health centres due to the poor quality of care. It was suggested that investing in these facilities could improve the situation.

Infrastructural problems could also be a contributing factor for patients by-passing clinics, like in Zambia and Ghana, where candles have to be used to deliver babies and in certain instances patients are told to bring lanterns along for delivery. Poor infrastructure reduces the communities' confidence in facilities like clinics and health centres, and people decide to proceed straight to hospitals (Houweling et al, 2007). The position in Tanzania, Zambia and Ghana reflects a similar pattern to one seen in South Africa where large numbers of patients are seen at the hospital, bypassing or inappropriately referred from lower levels of care.

3. STUDY OBJECTIVES

3.1 BROAD OBJECTIVE

To describe the referral pattern for patients attending the maternity ward at the Nkhensani Hospital in 2009.

3.2 SPECIFIC OBJECTIVES

1. To describe the profile of maternity admissions to the maternity ward of Nkhensani Hospital in 2009.
2. To determine the proportion of women who were referred from the different sources of referral (clinics, community health centres, private doctors and self referrals) to the maternity ward of Nkhensani Hospital in 2009.
3. To describe the profile of maternity admissions referred from the different sources of referral to the maternity ward of Nkhensani Hospital in 2009.

4. To describe the risk categories of women referred by the different sources of referral to the maternity ward of Nkhensani Hospital in 2009.

CHAPTER 2

RESEARCH METHODOLOGY

1. SETTING AND SCOPE OF THE STUDY

The study was conducted in the maternity ward of the Nkhensani Hospital. The study only focussed on primary level referrals coming to the hospital, and did not include upward referrals from Nkhensani Hospital to secondary and tertiary hospitals, or downward referrals from Nkhensani Hospital to primary levels facilities.

2. STUDY PERIOD

The period for this study was January to December 2009.

3. STUDY DESIGN

This was a cross-sectional study that consisted of a retrospective review of the patients' records.

5. STUDY POPULATION

The study population for this study were all of the patient records of maternity patients who were attended to and admitted in the hospital during study period. Only patients who were referred into the hospital from lower levels of care were included in the study. If a selected record belonged to a patient who was referred from a higher level of care was selected, this record was excluded and the next record was reviewed.

5. STUDY SAMPLE

Information was first obtained from the health information system on all patients who attended the maternity ward during the study period. Thereafter patients' records for a randomly chosen month of each quarter during 2009 were reviewed.

5.1. SAMPLING FRAMEWORK

Based on previous data, it was approximated that 3 600 women delivered between January to December 2009. This was equivalent to 300 women per month.

A month from each quarter of 2009 was first randomly selected. The admission register for the selected month then provided the sampling framework for that month. Systematic sampling was used so that at least 30 records were selected for each of the months to achieve a total sample size of approximately 120 patients' records to be reviewed.

For the first quarter, the month of February was randomly selected and every eight record was selected for the data collection. In the second quarter, April was randomly selected and every eighteenth record was selected. In the third quarter, every thirteenth record was selected in the month of August, while every fourteenth record was selected in November for the fourth quarter.

The rationale for this is due to the high number of patient's records. The inclusion of each and every month would have been time consuming and costly.

5.2. MOTIVATION FOR SAMPLING

The reason is that the population size is big, and would be difficult to analyze which would require more time. Sampling was cost effective, and would still be

representative of the population. Based on a sample size calculation for a descriptive study, with an assumption that 60% of the patients would be inappropriately referred with the worst possible percentage being 70%, a sample size of 92 records would be required for a confidence interval of 95%.

6. MEASUREMENT

6.1. DATA COLLECTION TOOLS

Data collection tools were used to collect data from the health information system (Appendix B) and patients' records (Annexure C). The second tool was used to collect information on the variables listed in Table 4.1.

Table 1: List of variables and tools

Objectives	Variables
1. To describe the profile of maternity admissions to the maternity ward of Nkhensani Hospital in 2009.	<u>Socio-demographic profile</u> Age Race Socio-economic classification (H0/ H1/ H2) <u>Clinical profile</u> Gestational age Mode of delivery Diagnosis (ICD-10) Final outcome (Mother and Baby) <u>Reasons for referral</u>
2. To determine the proportion of women who were referred from the different sources of referral (clinics, community health centres, private	Proportion of women who were referred from the different sources of referral (clinics, community health centres, private doctors and self referrals)

doctors and self referrals) to the maternity ward of Nkhensani Hospital in 2009.	
3. To describe the profile of maternity admissions referred from the different sources of referral to the maternity ward of Nkhensani Hospital in 2009.	All variables as listed in objective 1, but by referral source.
4. To describe the risk categories of women referred by the different sources of referral to the maternity ward of Nkhensani Hospital in 2009.	Risk category (low risk/high risk) of women referred by the different sources of referral

6.2. DATA COLLECTION

Data will be collected from the data sources mentioned above by the researcher and entered into MS excel spread sheets. The data was coded and the patients' identifications (such as patients' names and numbers) were excluded for maintaining confidentiality.

7. DATA CLEANING AND ANALYSIS

Information from the data collection tools were captured onto an MS Excel spreadsheet and these were checked for obvious errors and cleaned. A new variable was generated for appropriate/inappropriate referrals. This was based on the reasons given for referral and categorized using the national guidelines for maternity care in South Africa (National Department of Health, 2002).

The spreadsheets were then imported into EPI-Info software version 3.5.1. for analysis.

Descriptive statistics was used for reporting.

- For objective 1, the profile of women for each of the quarters was calculated using the following statistical tests:

- Continuous variable with normal distribution, such as age: The means and standard deviations were calculated for the different sources of referral.

- Continuous variable without normal distribution, such gestational age and length of stay: The median and inter-quartile range was calculated for the different sources of referral.

- Categorical variables such as race: Frequencies and proportions were calculated for the different sources of referral.

- For objective 2, the frequency and proportion of women who were referred from the different sources of referral (clinics, community health centres, private doctors and self referrals) to the maternity ward of Nkhensani Hospital in 2009 were calculated.

- For objective 3, the profile of women who were referred from the different sources of referral was calculated using the following statistical tests:

- Continuous variable with normal distribution, such as age: The means and standard deviations were calculated for the different sources of referral.

- Continuous variable without normal distribution, such gestational age and length of stay: The median and inter-quartile range was calculated for the different sources of referral.

- Categorical variables such as race: Frequencies and proportions were calculated for the different sources of referral.

- For objective 4, the frequency and proportion of risk categories for women who were referred from the different sources of referral to the maternity ward of Nkhensani Hospital in 2009 was calculated.

To test for differences across the quarters and referral sources, test for associations were done. The ANOVA tests were conducted with continuous variables with normal distributions while the Kruskal-Wallis test was conducted for variables with skewed data. Chi-square tests, or Fischer Exact tests where appropriate, were conducted for categorical variables to test for changes across the quarters or referral sources. A p-value of 0.05 was considered to be significant.

8. ETHICAL CONSIDERATION

Permission was sought from the hospital to conduct the study. Data collected in the data collection tools was kept anonymous. Patients' confidentiality was respected. During the review of the records, only the necessary data was collected and no patient identifiers were used. In this way there was no way of linking the data to patient records.

The research was only conducted after approval was obtained from the Wits University Human Research Ethics Committee (Medical). No patient interviews or interventions were conducted as part of this study. The study only comprised of record reviews.

CHAPTER 3

RESULTS

3.1. OVERVIEW

According to the District Health Information System records, the total number of patients admitted during the study period was 13 638, while 4 884 patients were admitted in the maternity ward. The vast majority of admissions in the maternity ward were for obstetric reasons (deliveries). Only about 5 – 6 patients per month were admitted for gynaecological problems².

Table 2: Total number of admissions in the hospital and in the maternity ward in 2009

Month	Total number of admissions (both male and female)	Total number of admissions in the maternity ward (% of total admissions)
January	747	289 (38.7%)
February	1 108	267 (24.1%)
March	1 355	499 (36.8%)
April	1 185	561 (47.3%)
May	1 823	367 (20.1%)
June	929	378 (40.7%)
July	952	346 (36.3%)
August	1 012	398 (39.3%)
September	1 241	466 (37.6%)
October	1 084	375 (34.6%)
November	1 026	429 (41.8%)
December	1 176	509 (43.3%)
TOTAL	13 638	4 884 (35.8%)

² Personal communication with Information Officer at Nkensani Hospital, Ms. Portia Ndlovu.

3.2. PROFILE OF SAMPLE

For this part of the analysis, 120 clinical records were reviewed and the data is presented here. For the first quarter 30 records from patients admitted in February and one from a patient in January was selected. For the second quarter 30 records from patients admitted in April were selected. For the third quarter 29 records from patients admitted in August were selected. Finally in the fourth quarter, 30 records from patients admitted in November were selected. In August only 29 records were reviewed by error as the researcher thought that 30 records had been reviewed.

3.2.1. SOCIO-DEMOGRAPHIC PROFILE

3.2.1.1. Age

The mean age of the women admitted at Nkhensani Hospital's maternity ward was 25.5 (\pm 7.5) years. The median age was 24 years; the range was between 15 years and 45 years. The p value was 0.4179 which is not significant in the distribution of mean ages of women admitted over the four quarters of the year.

Table 3: Age of patients admitted in the maternity ward in 2009

	Total	Q1	Q2	Q3	Q4	p value
Age (in years)						
Mean (SD)	25.5 (7.5)	25.9 (7.8)	25.6 (7.7)	23.6 (7.3)	26.9 (7.4)	0.4179
Median	24.0	24.0	23.0	22.0	25.0	
Range	15.0 – 45.0	15.0 – 40.0	16.0 – 45.0	15.0 – 40.0	15.0 – 43.0	

3.2.1.2. Race

The race distribution as per the data of the four quarters revealed the over-dominance of African women admitted in the hospital's maternity ward at 119, which is 99.2% compared to 1 Indian woman which was 0.8%.

Table 4: Race of patients admitted in the maternity ward in 2009

	N	%
African	119	99.2%
Indian	1	0.8%

3.2.1.3. Socio-economic classification (H0/ H1/ H2)

All 120 patients were classified to be at the socioeconomic status of H0.

3.2.2. Clinical profile**3.2.2.1. Gestational age**

The mean for gestational age was 37.8 (± 1.4) weeks, and the median was 38.0 weeks, whilst the gestational age ranged from 27.0 weeks to 40.0 weeks. The p value was 0.6957 which was not significant for the mean gestational age distribution across the four quarters.

Table 5: Gestational age of patients admitted in the maternity ward in 2009

	Total	Q1	Q2	Q3	Q4	p value
Gestational age (in weeks)						
Mean (SD)	37.8 (1.4)	37.9 (0.8)	38.1 (0.9)	37.3 (2.4)	37.9 (1.1)	0.6957
Median	38.0	38.0	38.0	38.0	38.0	
Range	27.0 – 40.0	37.0 – 40.0	37.0 – 40.0	27.0 – 40.0	36.0 – 40.0	

3.2.2.2. Diagnosis

Most of the patients had the final recorded diagnosis as spontaneous vertex delivery (85.8%), compared to caesarean section deliveries at 9.5%, spontaneous breech deliveries at 2.5 % and the last being the multiple deliveries which all was by

caesarean section at 2.5%. The percentage of spontaneous vaginal deliveries increased from 74.2% in the first quarter to 100% in the last quarter but the p value indicates that this increase was not statistically significant.

Table 6: Diagnosis (ICD-10) of patients admitted in the maternity ward in 2009

	Total n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	p value
Spontaneous vertex delivery	103 (85.8%)	23 (74.2%)	24 (80.0%)	26 (89.7%)	30 (100.0%)	0.1356
Spontaneous breech delivery	3 (2.5%)	1 (3.2%)	2 (6.7%)	0 (0.0%)	0 (0.0%)	
Delivery by caesarean section, unspecified	11 (9.2%)	5 (16.1%)	4 (13.3%)	2 (6.9%)	0 (0.0%)	
Multiple delivery, all by caesarean section	3 (2.5%)	2 (6.5%)	0 (0.0%)	1 (3.4%)	0 (0.0%)	

* Fisher Exact test done

3.2.2.3. Mode of delivery

Table 7 illustrates the mode of delivery of the patients admitted in the maternity ward. The data reflects a difference on the figures per quarters. Overall, the vast majority of women had normal vaginal deliveries (84.2%), followed by caesarean section deliveries at 13.3% and breech deliveries at 2.5%. It was not recorded whether the breech deliveries were by normal vaginal delivery or caesarean section and therefore these were captured separately.

Table 7: Mode of delivery of patients admitted in the maternity ward in 2009

	Total n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	p value
Normal vaginal deliveries	101 (84.2%)	23 (74.2%)	24 (80.0%)	25 (86.2%)	29 (96.7%)	0.1813
Caesarean section deliveries	16 (13.3%)	7 (22.6%)	4 (13.3%)	4 (13.8%)	1 (3.3%)	
Breech deliveries	3 (2.5%)	1 (3.2%)	2 (6.7%)	0 (0.0%)	0 (0.0%)	

* Fisher Exact test done

3.2.2.4. Length of stay of mothers and their babies

Table 8 illustrates the length of stay for the mother and baby after delivery in the maternity ward. The comparison of mean per quarters based on data collected revealed that third quarter was the highest on the days the mothers stayed with 2.2 days, and followed by second and fourth quarters with 1.8 days. The first quarter was the lowest with 1.4 days. The average length of stay across the quarters therefore does not differ significantly as indicated by the p value. It is also evident that the change in the mean length of stay for mothers is not due to actual changes but due to skewed data as the median length of stay remained the same throughout the quarters.

The median for all quarters was 1 day; the range for length of stay was 0 days to 11 days.

Similarly, for the baby's length of stay the overall mean was 1.7 days and the median was similar to that of mothers at 1 day for all quarters and the overall figure. The

range as well was similar to that of mothers as it ranged between 0 days to 11 days. There was a significant increase in the length of stay of babies (p value 0.0115).

Table 8: Length of stay of patients and their babies admitted in the maternity ward in 2009

	Total	Q1	Q2	Q3	Q4	p value
LOS for mom (in days) (N=120)						
Mean (SD)	1.8 (1.7)	1.4 (1.4)	1.8 (2.1)	2.2 (1.6)	1.8 (1.6)	0.1373
Median	1.0	1.0	1.0	1.0	1.0	
Range	0.0 – 11.0	0.0 – 7.0	0.0 – 11.0	1.0 – 6.0	0.0 – 6.0	
LOS for baby (in days) (N=117)						
Mean (SD)	1.7 (1.6)	1.1 (0.9)	1.6 (2.0)	2.2 (1.6)	1.8 (1.6)	0.0115
Median	1.0	1.0	1.0	1.0	1.0	
Range	0.0 – 11.0	0.0 – 4.0	0.0 – 11.0	1.0 – 6.0	0.0 – 6.0	

* Kruskal-Wallis test

3.2.2.5. Final outcome of mother and baby

All 120 mothers and 119 babies were discharged and well, while there was one macerated stillbirth.

3.2.2.6. Reason for referral

The reasons for referral were many as per data collected, but there were conditions which were more prevalent than others. The reason for the majority of patients being referred was because they were in labour at 33.9% (n = 39), followed by those who had delayed progress of labour at 11.3% (n = 13). The third reason recorded for patients being referred was having a big abdomen with 11 patients which was 9.6%.

Six patients (5.2%) each were referred with hypertensive disorders and previous Caesarean section deliveries. The majority of cases for referral were due to patients being in labour.

The following reasons for referral were considered to be “appropriate” and categorized as such: antepartum haemorrhage, breech presentation, delayed labour, elderly primip, epileptic, grand multipara, hypertensive disorder, low haemoglobin, meconium liquor, postterm, preterm, previous caesarean section delivery, mother RH negative and twin pregnancy. The following reasons were categorized to be “inappropriate” referrals: abdominal pain, big abdomen, difficult patient, draining liquor, in labour, having no O & G services, underage mother, vaginal warts.

Based on this 57.4% (n = 66) of the referrals were therefore considered to be inappropriate, while 42.6% (n = 49) were considered to be appropriate. This did not differ significantly across the quarters (p value 0.1710).

Table 9: Reason for referral of patients admitted in the maternity ward in 2009

	N	%
In labour	39	33.9%
Delayed labour	13	11.3%
Big abdomen	11	9.6%
Hypertensive disorder	6	5.2%
Previous CS	6	5.2%
Grand multipara	5	4.3%
Low HB	4	3.5%
No O & G	4	3.5%
Draining liquor	3	2.6%
Meconium	3	2.6%
Underage	3	2.6%
Abdominal Pain	2	1.7%
Breech	2	1.7%
Difficult patient	2	1.7%
Postterm	2	1.7%
Preterm	2	1.7%
Twins	2	1.7%
Elderly primup	1	0.9%
Epileptic	1	0.9%
Antepartum haemorrhage	1	0.9%
Born Before Arrival	1	0.9%
RH negative	1	0.9%
Vaginal warts	1	0.9%

Table 10: Appropriateness of referral for patients admitted in the maternity ward in 2009

	Total n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	p value
Appropriate	49 (42.6%)	13 (41.9%)	8 (27.6%)	14 (51.9%)	14 (51.9%)	0.1710
Inappropriate	66 (57.4%)	18 (58.1%)	22 (73.3%)	13 (48.1%)	13 (48.1%)	

3.2.2.7. Risk category

Table 11 illustrates the percentage women categorised into risk categories for delivery during the four quarters in the period under study. The low risk category revealed that second quarter was the highest with 22 patients, which was 73% compared to fourth quarter with 21 patients which was 70%. Over two thirds of the women were categorised as low risk (67.5%) and the p value at 0.6069 indicates that this did not significantly change over the four quarters.

Table 11: Risk category of patients admitted in the maternity ward in 2009

	Total n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	p value
Low	81 (67.5%)	18 (58.1%)	22 (73.3%)	20 (69.0%)	21 (70.0%)	0.6069
High	39 (32.5%)	13 (41.9%)	8 (26.7%)	9 (31.0%)	9 (30.0%)	

3.3. REFERRAL SOURCE

Table 12 illustrate the referrals from all health care service areas. The grand total for all quarters show that 68 patients were referred from clinics, which translates into 56.7%, while 23 (19.2%) of all patients were referred from community health centres. General Practitioners only had 1 patient referred in all quarters, which was fourth quarter. Overall, 28 (23.3%) of the patients were self-referred. The p value at 0.0991 indicates that the pattern of referrals did not differ significantly across the four quarters.

Table 12: Referral source of patients admitted in the maternity ward in 2009

	Total n (%)	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	p value
Clinic	68 (56.7%)	18 (58.1%)	19 (63.3%)	17 (58.6%)	14 (46.7%)	0.0991
CHC	23 (19.2%)	1 (3.2%)	6 (20.0%)	8 (27.6%)	8 (26.7%)	
GP	1 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.3%)	
Self	28 (23.3%)	12 (38.7%)	5 (16.7%)	4 (13.8%)	7 (23.3%)	

* Fischer Exact test done

3.4. PROFILE OF MATERNITY ADMISSIONS FROM DIFFERENT REFERRAL SOURCES

For this analysis, the one patient who was referred from a private practitioner was excluded.

3.4.1. DEMOGRAPHIC PROFILE BY REFERRAL SOURCE

3.4.1.1. Age of patients by referral source

The mean age for the source of referrals which were clinics, community health centres and self referrals did not differ significantly based on a p value of 0.3528.

Table 13: Age of patients admitted in the maternity ward in 2009 by referral source

	Total	Clinic	CHC	Self-referred	p value
Age (in years)					0.3528
Mean (SD)	25.5 (7.5)	25.1 (7.4)	27.4 (8.0)	24.6 (7.4)	
Median	24.0	23.0	28.0	22.5	
Range	15.0 – 45.0	15.0 – 40.0	15.0 – 45.0	15 – 43.0	

3.4.2. CLINICAL PROFILE BY REFERRAL SOURCE

3.4.2.1. Gestational age of patients by referral source

The mean for gestational age in weeks were not significantly different for all of the referral sources based on the p value of 0.8076.

Table 14: Gestational age of patients admitted in the maternity ward in 2009 by referral source

	Total	Clinic	CHC	Self-referred	p value
Gestational age (in weeks)					
Mean (SD)	37.8 (1.4)	37.7 (1.7)	38.0 (1.0)	37.9 (1.0)	0.8076
Median	38.0	38.0	38.0	38.0	
Range	27.0 – 40.0	27.0 – 40.0	36.0 – 40.0	36.0 – 40.0	

3.4.2.2. Diagnosis of patients by referral source

The p value for this analysis at 0.7482 indicates that there is no significant difference in final diagnosis by referral source.

Table 15: Diagnosis of patients admitted in the maternity ward in 2009 by referral source

	Total n (%)	Clinic N (%)	CHC n (%)	Self-referred n (%)	p value
Spontaneous vertex delivery	102 (85.7%)	57 (83.8%)	20 (87.0%)	25 (89.3%)	0.7482
Spontaneous breech delivery	3 (2.5%)	2 (2.9%)	1 (4.3%)	0 (0.0%)	
Delivery by caesarean section, unspecified	11 (9.2%)	6 (8.8%)	2 (8.7%)	3 (10.7%)	
Multiple delivery, all by caesarean section	3 (2.5%)	3 (4.4%)	0 (0.0%)	0 (0.0%)	

* Fisher Exact test done

3.4.2.3. Mode of delivery by referral source

Over 80% of all deliveries were by normal vaginal delivery and this was not statistically significantly different across the referral sources based on the p value of 0.7041.

Table 16: Mode of delivery of patients admitted in the maternity ward in 2009 by referral source

	Total n (%)	Clinic n (%)	CHC n (%)	Self-referred n (%)	p value
Normal vaginal deliveries	100 (84.0%)	55 (80.9%)	20 (87.0%)	25 (89.3%)	0.7041
Caesarean section deliveries	16 (13.4%)	11 (16.2%)	2 (8.7%)	3 (10.7%)	
Breech deliveries	3 (2.5%)	2 (2.9%)	1 (4.3%)	0 (0.0%)	

* Fisher Exact test done

3.4.2.4. Length of mothers and their babies by referral source

The p value the mothers' mean LOS was not significant at 0.0872.

The median mothers' length of stay for all referral sources was 1.0 day. The comparison between the mean and median indicates that there was skewness in terms of the distribution of lengths of stay.

The mean for babies' length of stay was 1.7 days, meaning that their length of stay was in the same bracket with that of the mothers. The p value 0.0388 was significant indicating that there was a significantly difference in mean length of stay for babies across the referral sources. The median for the babies' length of stay for all referring sources was 1 day which is similar to the median of mothers which was also 1 day for all sources of referrals.

Table 17: Length of stay of patients and their babies admitted in the maternity ward in 2009 by referral source

	Total	Clinic	CHC	Self-referred	p value
LOS for mom (in days) (N=120)					
Mean (SD)	1.8 (1.7)	1.6 (1.3)	2.7 (2.7)	1.4 (1.2)	0.0872
Median	1	1.0	1.0	1.0	
Range	0.0 – 11.0	0.0 – 7.0	0.0 – 11.0	1.0 – 4.0	
LOS for baby (in days) (N=117)					
Mean (SD)	1.7 (1.6)	1.4 (1.1)	2.7 (2.7)	1.4 (1.2)	0.0388
Median	1	1.0	1.0	1.0	
Range	0.0 – 11.0	0.0 – 5.0	0.0 – 11.0	1.0 – 4.0	

* Kruskal-Wallis test

3.2.4.5. Reason for referral by referral source

Almost half of all referrals (49.3%) from clinics were inappropriate while about a third (33.3%) of referrals from community health centres were inappropriate. In terms of self-referrals, all of the patients were considered to be inappropriate in terms of reason given for referral.

Table 18: Reason for referral of patients admitted in the maternity ward in 2009

	Total n (%)	Clinic n (%)	CHC n (%)	Self-referred n (%)	p value
Appropriate	49 (42.6%)	34 (50.7%)	14 (66.7%)	0 (0.0%)	0.0000
Inappropriate	66 (57.4%)	33 (49.3%)	7 (33.3%)	26 (100.0%)	

* Fisher Exact test done

3.4.2.6. Risk category of patients by referral source

The community health centres referred more low risks cases (65.2%) than the clinics (64.7%), while three quarters (75.0%) of self referred patients were considered to be of low risk. These differences were however not found to statistically significantly different.

Table 19: Risk category of patients admitted in the maternity ward in 2009 by referral source

	Total n (%)	Clinic n (%)	CHC n (%)	Self-referred n (%)	p value
Low	81 (67.2%)	44 (64.7%)	15 (65.2%)	21 (75.0%)	0.6047
High	39 (32.8%)	24 (35.3%)	8 (34.8%)	7 (25.0%)	

CHAPTER 4

DISCUSSION

4.1. OVERVIEW

This chapter presents a discussion of the findings of this study, in view of the study objectives and current literature. In total 4 884 patients were admitted to the maternity ward of the hospital, comprising of 35.8% of all admissions in the hospital for the year. This however varied quite significantly between months from 20.1% of total admissions in May to 43.3% of total admissions in December. This indicates that for certain months almost half of the admissions in the hospitals were as a result of maternity admissions. The high statistics in maternity admissions could be attributed to factors like rural based women who saw the hospital as the most accessible facility for birth delivery (National Department of Health, 2000). Another reason might be clinics which only offer services during the day, and refer patients to the hospital to relieve themselves from monitoring progression of mothers before knocking off³.

According to Jahn et. al (2000), referral systems in obstetrics are about developing pathways, timing and urgency. The referral source can be the patient themselves or institutional for antenatal, delivery or postnatal care. Referrals can be for elective or emergency reasons. An study done in Nepal and Burkina Faso reported emergency referrals rates of 0.4% to 0.7%, where self-referrals were the most common, institutional referrals less so and emergency referrals very rare (Jahn et.al, 2000). Furthermore, Jahn & De Brouwere (2001) cite a German article by Falkenhorst and Jahn, that was published in 1997, which reported that at a teaching hospital in Ghana 82% of patients were self-referrals and 2% emergency referrals. The cited

³ Personal communication with the Assistant Manager of the Maternity Unit in Nkensani Hospital, Mrs. Irene Mashimbye.

scenarios above could be compared with the findings at Nkhensani Hospital's Maternity Ward to a larger extent, and in many rural district hospitals in South Africa.

4.2. DEMOGRAPHICS

4.2.1. Age

The mean age of women in this study was 25.5 years, indicating that this was a young group of women, indicative of women who are in their reproductive years of life. However, the ages of women ranged from 15 years to 45 years. This is quite broad and includes adolescent pregnancies and elderly women who are pregnant. This age range is reflective of the facility level, which is a level 1 referral facility for maternity patients. These high risk groups of the young and elderly pregnant women would preferably be seen and delivered at a hospital due to potential complications that they face. The age factor could be supported by the Guidelines for Maternity Care in South Africa (National Department of Health, 2002), which states that clinics are expected to refer high risk pregnancies, amongst which are included complications of pregnancies arising from teenage pregnancies and elderly women above forty to district hospitals like Nkhensani Hospital. According to Ashraf, Mustanzid and Khanom (2007) teenagers have 2-5 times greater risk of dying during pregnancy than women at the age of 20-25 years, and therefore are potentially more likely to be referred with complications that would be in need of higher levels of care.

4.2.2. Ethnicity

The results on ethnicity indicated a skewed distribution of women who were admitted. Black women dominated with the figure of 119 which is 99.2%, compared to 1 Indian woman which translated into 0.8%. The dominance of black women signals the demographic spread of the population in the catchment's area, which comprises of a majority of people in the black ethnic group in the area of Giyani. The

findings also reflect the fact that the few people in the white ethnic group are not utilizing Nkhensani Hospital.

4.2.3. Socio-economic classification

The study found that all patients were from the poorest socioeconomic group. However, this may be due to a clerking error. It has been noted that as maternity services are free of charge in the public sector (National Department of Health, 2002), and such patients may be classified to be “non-paying” H0 patients by the clerks. As a result, it is not clear what the actual socio-economic status is of the patients who are admitted in the maternity unit of the hospital. According to the Australian State of Public Hospitals Report (Australian Government Department of Health and Ageing, 2009) uncomplicated patients were expected to pay 3,462 dollars in Australia, and that differed with the South African policy of free maternity care service. The socio-economic profile of women with uncomplicated pregnancies would therefore differ significantly in Australia from that of South Africa, where even the poorest women have access to full maternity care.

4.3. CLINICAL

4.3.1. Gestational age

The mean gestational age was 38 (37.8) weeks with a wide range of 22 to 40 weeks. As with the age range, this is indicative of the level of facility, as complicated preterm deliveries would have to be managed at the hospital and therefore possibly referred in. Gestation is the pregnancy period from the last day of menstruation of the expecting mother. It is the time during which the fetus grows and develops inside the mother’s womb, and for a normal pregnancy should be 38-42 weeks (Perinatal Education Programme, 2005). A labour is considered preterm if a patient goes into labour before 34 completed weeks (Unauthored, 1990).

4.3.2. Diagnosis and mode of delivery

The mode of delivery information and diagnosis data indicates that the vast majority of patients were delivered by normal vaginal delivery (85 – 86%). This excludes spontaneous breech deliveries. The vast majority of these patients could therefore have delivered at a lower level of care, depending on other factors and medical conditions. Caesarean section deliveries and breech deliveries only constituted 11.7% – 13.3% and 2.5% of all deliveries respectively. The failure of labour to progress or fetal pelvic disproportion, are two common reasons for requiring emergency caesarean section deliveries (Perinatal Education Programme, 2005). No assisted deliveries, such as vacuum or forcep delivery, were reported in this sample.

This data also brought forth a problem with quality of data. According to the mode of delivery data, there were 101 (84.2%) vaginal deliveries and 16 (13.3%) caesarean section deliveries. However, according to the recorded diagnosis on discharge there were 103 (85.8%) vaginal deliveries and 14 (11.7%) caesarean section deliveries.

4.3.3. Length of stay

As expected the average length of stay for mothers and babies were very similar with the median length of stay being 1 day. The range, as with age and gestational age, was relatively large ranging from 0 days to 11 days. This again is related to complicated patients who require longer management in the facility. Further analysis indicated that these included patients with preterm delivery, hypertensive conditions (maximum length of stay of 6 days), previous caesarean section deliveries (7 days), and one who had been referred for draining liquor (11 days).

The average length of stay is similar to what is reported in developed countries. The average length in the Melton Maternity Ward in the United Kingdom in 2009 was 1.2 days, where the women had to rest, be given advice and supported in baby care after giving birth (NHS Leicestershire County and Rutland Statement, 2010). In an

information pack provided to patients, the North West Private Hospital in Australia, states that the length of stay differs according to the mode of delivery, which for vaginal deliveries and caesarean section deliveries is 2 - 4 days and 3 - 5 days respectively (North West Private Hospital, undated). The National Management Guidelines in South Africa states that women can be discharged after 6 hours of delivery if they had a normal vaginal delivery and with some preconditions being met (National Department of Health, 2002).

4.3.4. Final maternal and perinatal outcome

All of the patients had good outcomes except one macerated stillbirth. Again this means that many of these patients could potentially have delivered at a lower level of care. It is fortunate that the high number of patients in the hospital have not resulted in poorer maternal and fetal outcomes. For the study period the perinatal mortality rate was 42.4/1000 live births and the maternal mortality ratio 119/100 000 live births⁴.

4.3.5. Reason for referral

Most of the patients were admitted as they were in labour (33.9%) while others were admitted due to complications, such as delayed labour, big abdomen, hypertensive disorder and previous caesarean section delivery. Four patients (3.5%) were referred because there were no obstetric and gynaecology services at the referring facility. According to Perinatal Education Programme (2005), primary or low risk condition should be attended in clinics, but complicated high risk or intermediate conditions need more than primary level of care which could be a district, secondary and tertiary hospital depending on the condition of the patient. Kusiako (2000) also state there is a need to utilize health centres and clinics for low risk cases, and hospitals for complicated cases. The above perspective is shared by the National

⁴ Personal communication with Information Officer at Nkensani Hospital, Ms. Portia Ndlovu.

Department of Health (2000) which states that maternity complications should be referred to the next level of care, which are district, secondary and tertiary hospitals respectively.

In this study, however, more than half (57.4%) of the patients were referred inappropriately to Nkensani Hospital. This was based on categorization of referrals based on the actual reason recorded in the clinical notes. The reasoning for categorizing the following conditions as appropriate referrals are explained in more detail. Conditions such as antepartum haemorrhage, breech presentation, delayed labour, elderly primip, epileptic, grand multipara, hypertensive disorder, low haemoglobin, meconium stained liquor, postterm, preterm, previous caesarean section delivery, mother RH negative and twin pregnancy are all conditions which require some intervention by a medical doctor or more advanced nurse. Some of the conditions (antepartum haemorrhage, breech presentation, delayed labour, epileptic, hypertensive disorder, meconium stained liquor, previous caesarean section delivery and twin pregnancy) may also have required some form of assisted delivery.

An explanation for considering the following conditions to be inappropriate referrals is provided below. Just being in labour was not considered to an adequate reason for referral as lower level facilities are meant to manage patients in labour. Similarly, all patients who are in labour would have abdominal pain and potentially be draining liquor if their membranes have ruptured. Draining liquor in a preterm pregnancy would be considered to be high risk but this was not recorded as such. A big abdomen and having a difficult patient was considered to be too vague and not an adequate reason for referral as patients can be soothed and managed at a lower levels of care. A patient with vaginal warts and underage mothers can be delivered at any level of service (National Department of Health, 2002). Only underage mothers who have some complication during the pregnancy or intrapartum should be referred to higher levels of care. Finally, the clinics that referred the four patients because they did not provide obstetrics and gynaecology services could have

referred the patients to the community health centres as opposed to referring them to Nkensani Hospital.

Thus, the majority of women who referred to the maternity ward were reported to have been in labour, which is a common condition that could have been attended to at clinics and Community health centres, as a low risk category which was not supposed to be referred (National Department of Health, 2002).

The second reason for referral according to findings was revealed to be delayed labour. There are three main causes of delayed labour; first is inadequate or ineffective contraction of uterus, secondly is abnormal size or positioning of the baby, and the third cause is abnormalities in the pelvis or the structure that support it (National Department of Health, 2002). Delayed labour could also be caused by the membranes not rupturing. Inadequate or ineffective contractions of uterus might require syntocinon to be applied to accelerate the process. Overall, delayed labour could lead to fetal distress which is detected through meconium-stained liquor and changes in fetal heart rate. The conditions as stated are a high risk which threatens the lives of both mother and child, therefore the referral of delayed labour would be deemed to be an appropriate referral under the circumstances.

The third reason for referral was revealed to have been the big abdomen; the condition is could be classified under high risk because it might have indicated the presence of twins, triplets or any multi-pregnancy or big baby. However, if multiple pregnancies were suspected, then this should have been recorded as the reason for referral. The use of the term “big abdomen” was considered to be too vague as an appropriate reason for referral.

The next two reasons for referral according to the findings were hypertensive disorders and having had a previous caesarean section delivery. The two conditions are combined under the fourth reason due to them contributing an equal percentage of 5.2% each respectively. Hypertensive disorder is referred to as pregnancy

induced hypertension; it could lead to preterm delivery, stillbirths and growth restricted fetuses or serious morbidity if not treated (National Department of Health, 2002). Hypertensive disorders in pregnancy are still one of the leading causes of maternal mortality and morbidity. The explanation confirms the appropriateness of the condition's referral from different sources as a high risk category. The previous caesarean section delivery could be highly complicated if vaginal delivery could be attempted. The condition could lead to serious rupture of the uterus which could cause haemorrhage. Previous caesarean section deliveries were therefore considered to be an appropriate referral as it is also a high risk condition.

Grand multipara is the fifth reason for referral. The condition is referred to as such due to the number of deliveries which a woman has undergone. Grand multipara is when a woman who has had six or more pregnancies resulting in viable fetuses. Roman et al (2004) state that grand multipara could cause prenatal risks during labour. Having had a high number of previous deliveries could lead to complications in the current pregnancy which could put the mother and child in high risk, therefore the referral was appropriate.

Having a low haemoglobin and having no obstetric and gynaecology services was found to be the sixth reason for referral. Low haemoglobin refers to possible anaemia. According to BabyCenter Medical Advocacy Board (2006), low haemoglobin during pregnancy could lead to dizziness and fainting (Unauthored, 1990a)

Having no obstetric and gynaecology services is mainly experienced in remote rural villages where access to sophisticated high technological services are difficult. This occurs particularly in clinics which do not offer 24 hour services, and so patients are sometimes referred during the day by nurses fearing that the patients will deliver late at night after they have knocked off. Given that there are two Community health centres which are open 24 hours a day for maternity services, and 90% of the clinics in the district are open for emergency maternity and other services, this was

considered to be an inappropriate referral. A patient of low risk could have been referred to another local clinic or community health centre for delivery as opposed to Nkensani Hospital.

Draining liquor, meconium-stained amniotic fluid, and the mother being underage are categorised as the sixth reason for referral at Nkhensani Hospital's Maternity Ward. According to the authors and editors of Primary Surgery (unauthored, 1990b) ruptured membranes which cause loss of amniotic fluid could, if preterm, cause intrauterine infection, chorioamnionitis, prelabour with a preterm delivery and maternal death. As the referrals to Nkensani Hospital did not stipulate that these were a premature rupture of labour or a preterm delivery, draining liquor was considered to be a normal process in term labour and not an appropriate reason for referral.

Meconium-stained liquor was rated at the same percentage with draining liquor. This condition indicates that the fetus is under stress, the baby could be affected by the fluid, and the condition requires close monitoring of the baby. The result of meconium aspiration could be a distressed fetus, weakness of the baby and potentially death. The condition could be categorised under appropriate referrals given the high risk nature of the condition.

According to National Guidelines for Maternity Care in South Africa (National Department of Health, 2002), pregnancy in a mother who is under age is not considered to be a risk factor requiring referral to hospital. The referral might be caused by the belief that teenagers might not have enough energy required to give birth during labour and also that the pelvis is too small to accommodate the size of the baby.

4.3.6. Risk category

Just over a third of the patients that were admitted to the hospital were categorised as high risk (32.5%). This is problematic as it indicates that more than two-thirds of patients (67.5%) who were admitted and delivered at the hospital could have been managed at a lower level of care. According to Guidelines for Maternity Care in South Africa (National Department of Health, 2002), a high risk pregnancy is when the mother has a medical condition which developed prior to the pregnancy, such as diabetes, developed during the pregnancy, such as preeclampsia, experienced during a previous pregnancy, like miscarriage, or has complications in the developing baby, such as premature labour as well as multiple pregnancy (twins or more). Other complications could also occur during the delivery process. Risk factors could include amongst others, young or old maternal age, being overweight or underweight, pre-existing health conditions such as high blood pressure, HIV or diabetes (Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2006).

4.4. REFERRAL PATTERN

4.4.1. Referral Source

The referral pattern across all quarters differed, but not significantly. The clinics emerged as the main source of referrals with 56.7% of patients being referred to the hospital's maternity ward. The second source of referral which came after clinics was the self-referrals with 23% which was also less than half of clinic referrals. The community health centres were third at 19.2%, while the General Practitioners referred very few patients at 0.8%. The results reflected that there might have been proper referral from community health centres of probably high risk cases in at most, hence the lower figures compared to the clinics and self referrals. The highest number of referrals from clinics could be the results of different factors which could

be best analysed under risk category and reasons for referral. This will also apply to self-referred patients.

4.5. PROFILE OF MATERNITY ADMISSIONS FROM DIFFERENT REFERRAL SOURCES

4.5.1. Age of patients by referral source

The mean age for patients referred from Community health centres (27.4 years), clinics (25.1 years) and self referred (24.6 years) did not differ significantly. In addition, there was no notable difference in the age range for the different referral sources (15 – 40 years for referrals from clinics, 15 to 45 years for referrals from Community health centres and 15 – 43 years for self-referred patients). One would have expected that self-referred patients would be potentially low-risk patients that came to the district hospital as it was their nearest delivery facility, while more women in the extreme ages would have been referred from clinics and CHCs as they would have more complications. The study however did not find a significant difference in this analysis, indicating that there was essentially no difference in patients who were referred by facilities versus patients who came to the hospital themselves. The self-referred patients presented the youngest mean age at 24.6 years, although the difference between referral sources was insignificant.

4.5.2. Gestational age of patients by referral source

The mean gestational age of patients per referral source was almost the same at 37.7 weeks, 37.9 weeks and 38 weeks respectively from the clinics, Community health centres and self-referred patients. The range was between 27 and 40 weeks and a p value of 0.5766 indicates that this was insignificant. The maximum range of 40 weeks also suggested that majority of referred cases were probably normal deliveries which could have been attended to at clinics and Community health centres. The Self-referred cases could be an indication that these were mothers who

were not attending antenatal programmes or not adhering to protocols. The lower range of 27 weeks from the clinic indicates an appropriate referral for a preterm delivery/complication.

4.5.3. Diagnosis of patients and mode of delivery by referral source

The diagnosis and mode of delivery did not differ significantly across the three sources of referrals. Approximately 81% - 84% of the patients referred from clinics, 87% of the patient referred from Community health centres and 89% of self-referred patients had spontaneous vaginal deliveries. Caesarean section deliveries were conducted in 13% - 16% of patients referred from clinics, 9% of patients from referred from Community health centres and 11% of self-referred patients

The results indicate that the referral system was not functioning according to norms and standards set by the Department of Health (2000), that only high risk cases should be referred to the hospital from lower levels like clinics and Community health centres. Midwives are expected to deal with the spontaneous vertex deliveries as they should be competent to deal with normal deliveries. The situation indicates that scarce personnel like doctors and resources in hospitals are abused and reduced to deal with normal deliveries.

Patients with breech deliveries were only referred from clinics and Community health centres. The indication was that the condition was rare at 2.5% and as high risk case, was appropriately referred. A breech delivery is a delivery in which the fetus in a longitudinal lie with the buttocks or feet closet to the cervix (Fischer et al., 2011; unauthored, 1990b). This results in a difficult delivery and can lead to complications for both the mother and fetus.

Caesarean section deliveries are done as a result of impossible or dangerous conditions in performing vaginal deliveries and are therefore considered to be a high risk case and the referrals were appropriate. Caesarean Section deliveries

according to Hofmeyer & Hannah (2003) reduced perinatal/neonatal death as compared to vaginal deliveries. One would then expect that clinics and Community health centres would more likely refer such cases that required hospital intervention for delivery. However according to the percentage of mode of delivery by referral source this does not appear to be so.

Multiple deliveries, all by caesarean section had one referral source which was clinics. The case falls under the high risk category. The referrals could be presumed appropriate as such, the recorded low number of patients referred could be attributed to a rare condition where twins, triplets, or quadruples are conceived. Multiple deliveries has increased in the past 10-15 years in developing countries, such as England and Wales. Of concern is that higher neonatal mortality rates are reported for multiple pregnancies. For twins a neonatal mortality rate of seven times that of singletons is reported, and for triplets twenty times compared to singletons. Survivors also suffer from a higher rate of cerebral palsy (Doyle, 1996). The above cited supports the fact that multiple deliveries poses danger to the mother and child, and therefore is a high risk category and could be deemed appropriately referred.

Overall, the pattern of referrals indicates that there is non-conformity to the standards set by the Department of Health in the Republic of South Africa and other international community's, which promote appropriate referrals to higher levels like district hospitals, in this case Nkhensani Hospital, for high risk patients only. The percent of all referrals signals once more that less appropriate patients were referred to the maternity ward in Nkhensani Hospital. The ward spends more time dealing with low risk cases which in essence could be managed at clinics and Community health centres. Over eighty percent (87%) of deliveries were by normal vaginal deliveries compared to 13% of caesarean section deliveries, indicating how bad the state of the referral system is. The situation might be resulting in poor patient care, as instead of the midwives and doctors in the maternity ward focusing on high risk cases their attention was deviated to deal with patients with normal conditions

4.5.4. Length of stay by referral source

The other dimension revealed from the findings is the number of days stayed by self-referrals. For mothers there was a lower average length of stay for patients who were self-referred (1.4 days) as compared to mothers referred from clinics (1.6 days) and Community health centres (2.7 days). For the babies, the average length of stay for those whose mothers who were self-referred and for those who were referred from the clinic was 1.4 days, whereas babies of mothers who were referred from Community health centres had a significantly higher average length of stay of 2.7 days. Average length of stay can be affected by the mode of delivery (vaginal and caesarean section). Patients who have vaginal deliveries are admitted on average between 2 to 3 days, while patients who undergo caesarean section deliveries are admitted on average for 3 to 5 days respectively (Henderson, Stam & Pincombe, 2001).

This difference could be attributed to risk categories of self-referred mothers. The conditions of these women in labour were mostly normal and low risk category cases, and thus the possible reason why they stayed for fewer days in the hospital. The findings further indicated that more self-referred patients were in labour on admission. The mothers and babies' length of stay was mainly determined by the conditions of patient, the higher the risk of conditions like breech, previous caesarean section and others, the more days the patients would stay in the hospital, and the lower the risk of conditions, the fewer the number of days the patients would be admitted. As stated in the Australian State of Public Hospitals Report (Australian Government Department of Health and Ageing, 2009), the length of stay for women in maternity was 3.7 days, which was longer than that of Nkhensani Hospital maternity ward which was 2.7 days, however the difference is a marginal one, which could be insignificant as well. This could also be related to differences in policies, resources, and health systems/services between the countries.

4.5.5. Reason for referral by referral source

The results revealed how referral sources were abusing the referral system, and in the process weakening the objectives of the department of health, which is to take care of high risk conditions at level 1 district hospitals like in Nkhensani Hospital. The irregularity unfortunately depletes the inadequate resources and might have lead to poor quality health care. The referral of low risk conditions could have potentially contributed to staff turnover, and could have added unnecessary costs to Nkhensani Hospital as its budget was allocated to deal with high risk cases only.

When comparing appropriate versus inappropriate referrals between the different referral sources, it becomes clear that referral policies are not being strictly adhered to. Half of the patients referred from clinics and 67% of patients referred from CHCs were appropriately referred, and none of the self-referred patients were considered to be appropriate.

4.5.6. Risk category of patients by referral source

The low risk category referral pattern indicated that clinics referred more patients with 44 patients compared to 21 self-referred patients and 15 patients from Community health centres. Three quarters of self-referred patients were categorised to be low risk, whereas 64.7% of clinic patients were categorised as low risk and 65.2% of CHC patients were considered to be low risk. The data revealed the irregularities committed in the implementation of referral policy. Clinics and CHCs referred a high proportion of low risk patients which they are competent to handle.

According to City of Houston, Department of Health and Human Services (2008) risks are categorised into emergency and urgent referrals. Emergency referrals include preeclampsia, hypertension chronic, gastrointestinal disorders, heart diseases, ruptured membrane, infectious diseases, fetal heart tones, trauma, neurological disorder and other conditions of the same category. The second

category is urgent referrals which include primary genital herpes, urinary tract infections, diabetes screen, elevated, fetal lie-abnormal and others equal to the conditions mentioned under this category. According to the World Health Organization (1991), risks are conditions which are complicated and should be referred to the higher level of care, from family to clinic, health centre and district hospital, for surgical obstetrics, anaesthesia, medical treatment, replacement of blood, manual procedure, monitoring labour, or neonatal special care.

The trend of referrals in this study undermines the referral system as stated by the Department of Health (2000) and depletes the scarce resources which were meant for high risk cases. The low risk category transfers could be contributing to burn-out of staff, particularly midwives and doctors, and ultimately resignations⁵. The distribution pattern contradicts the objective of the referral system in South Africa, which promotes the referral of high risk conditions to hospitals from clinics and Community health centres. The reasons for clinics and Community health centres referring more low risk than high risk cases to the maternity ward in Nkhensani Hospital will require further investigation. The preference of patients who are self-referred to receive care at the hospital instead of the clinics and Community health centres could possibly be attributed to the mistrust of patients to these down referral sources. However, further research into the reasons for them bypassing the primary level facilities is needed.

⁵ Personal communication with Assistant Manager and Head of Maternity Ward at Nkhensani Hospital, Mrs. Irene Mashimbye

CHAPTER 5

5.1. CONCLUSION

This study focused on the referral pattern of patients admitted and delivered at Nkhensani Hospital; its aim sought to describe the pattern and appropriateness of referrals in patients attending the maternity ward. The specific objectives sought to determine the proportion of patients referred from different sources of referrals, describe the profile and risk category of the patients as well.

The majority of referrals came from self-referrals, clinics and followed by health centres. The pattern and the appropriateness of the patients admitted and delivered at maternity ward were slightly skewed, the majority of deliveries were found to be normal vaginal deliveries of low risk categories, could have been delivered at clinics and health centres respectively according to the National Department of Health Guidelines and other international sources including World Health Organisation. Clinics and Health Centres had midwives who are qualified to deal with low risk categories. High risk categories which required caesarean section were few (16%) compared to low risk which were 84%. The majority of patients admitted and delivered at maternity ward in Nkhensani Hospital were therefore inappropriate as per the results, which reflected that of all referrals 43% were appropriate compared to 57% which were inappropriate. The referral system is being abused and failing.

There is a need to improve adherence to the referral protocol by understanding the reasons why patients and health care providers bypass the system.

The referral system's main objective was to receive complicated conditions from lower level of care, which are high risk categories requiring the doctor's intervention. The results revealed a lack of understanding, communication or unwillingness on part of the midwives at clinics and Health Centres to refer appropriate patients to Nkhensani Hospital maternity ward.

5.2. RECOMMENDATIONS

The Hospital and Primary Health Care Management should jointly evaluate the referral system if its objectives and standards are well understood by midwives in lower level facilities and the hospital respectively, as well as the patients to reduce the self-referral rate which resulted in the majority of low risk category admissions. Proper communication is required. The joint monitoring and evaluation could be best done through committees, workshops, and communiqués through print and electronic media. The management system and process should be strengthened to enforce adherence to policy directive.

The reasons for non adherence by patients might be due to poor services in clinics and Health Centres, which might have resulted due to shortage of Nurses, poor infrastructure, shortage of medicine and drugs, staff attitudes and distances. The above, if addressed, could reduce self-referred patients. Education should be imparted in the communities through gatherings which should involve local leaders like traditional, religious, and councillors. The Communication between clinics, health centres and Nkhensani Hospital should be compulsory before referral.

Further research to find out why patients bypass lower levels of care is required.

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ANNEXURE A: Conditions that are considered to be high risk during antenatal care, labour or the puerperium

LIST OF PRE-EXISTING RISK FACTORS

High risk (antenatal care at hospital, delivery at hospital)

Primigravida aged 35 years or more
Previous infertility treatment
Previous myomectomy
Previous cervical or vaginal surgery including cerclage
Previous hysterotomy
Previous classical caesarean section
Previous perinatal death
Risk of genetic problems (in women booking before 20 weeks)*
Last baby preterm delivery at 7 months or less*
Last pregnancy pre-eclampsia before 7 months*
Three or more previous miscarriages*
Diabetes mellitus**
Chronic hypertension or renal disease
Currently symptomatic asthma
Epilepsy
Active tuberculosis
Heart disease**
Autoimmune disease**
History of venous thrombosis**
Psychiatric illness, including previous postpartum depression or psychosis
Thyroid disease or thyroidectomy**
Serious disease or deformity of the spine, pelvis or hip, and paraplegia**
Any other serious medical condition

**These risk factors may fall away as pregnancy advances*

***These risk factors may require specialist attention in a regional (level 2) or central (level 3) hospital.*

Intermediate risk (antenatal care at community health centre, delivery at hospital)

Previous postpartum haemorrhage requiring blood transfusion
Previous lower segment caesarean section
Parity ≥ 5

LIST OF RISK FACTORS THAT ARISE DURING ANTENATAL CARE

Requiring non-urgent referral to hospital

Anaemia

Uterus large for dates (>90th centile symphysis-fundal height)

Uterus small for dates (<10th centile symphysis-fundal height)

Symphysis-fundal height decreasing

No maternal weight gain in a woman <60 kg

Known or suspected multiple pregnancy

Breech or transverse lie from 36 weeks

Rhesus negative blood group with antibodies

Extensive vulval warts that may obstruct vaginal delivery

Pregnancy beyond 41 weeks

Abnormal glucose screening (GTT or random blood sugar)

Mild hypertension

Requiring urgent transfer to hospital, by ambulance if necessary

Reduced fetal movements from 28 weeks

Eclampsia or imminent eclampsia

Pre-eclampsia

Antepartum haemorrhage

Severe illness, e.g. with pyrexia, shortness of breath or abdominal pain

LIST OF RISK FACTORS THAT ARISE DURING ANTENATAL CARE

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Pre-eclampsia

Antepartum haemorrhage

Severe illness, e.g. with pyrexia, shortness of breath or abdominal pain

ANNEXURE B: Tool 1

Month	Number of admissions in hospital	Number of admissions in the maternity ward
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

ANNEXURE C: Tool 2

Please complete one per patient record

Date of admission	___ / ___ (dd / mm)
Source of referral	Clinic.....1 CHC.....2 Private doctor.....3 Self-referral.....4
Age	___ (in years)
Race	Black.....1 White.....2 Coloured.....3 Indian.....4
Socio-economic classification	H0.....1 H1.....2 H2.....3
Reasons for referral (as recorded in referral document)	
Risk category as defined by admission records	Low risk.....1 High risk.....2
Gestational age	___ (in weeks)
Mode of delivery	Normal vaginal delivery.....1 Caesarian section.....2 Assisted (vacuum/forceps) delivery.....3 Other (please record).....4
Final Diagnosis (ICD-10)	
Final outcome (Mother)	Discharged.....1 Transferred out (Referred up).....2 Referred down.....3 Death.....4
Date of final outcome (mother)	___ / ___ (dd / mm)
Final outcome (Baby)	Discharged.....1 Transferred out (Referred up).....2 Referred down.....3 Death.....4
Date of final outcome (baby)	___ / ___ (dd / mm)

ANNEXURE D: Approval letter from the hospital



Department of Health and Social Development

NKHENSANI HOSPITAL
TEL: 015 811 7300/FAX: 015 812 1451
Private Bag x9581
Giyani, 0826

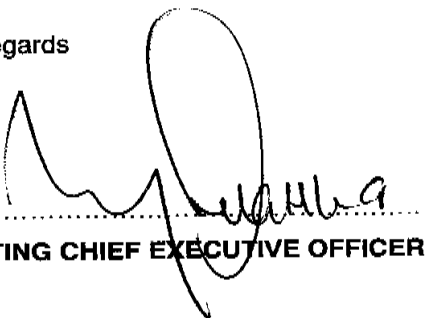
TO: MBOWENI AE

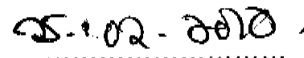
DATE: 03 FEBRUARY 2010

RE: APPLICATION TO COLLECT DATA AT MATERNITY WARD IN NKHENSANI HOSPITAL FOR THE PURPOSE OF COMPLETE STUDIES FOR REFERRAL PATTERN

1. This letter is to confirm that your request for permission to collect data at Nkhensani Hospital Maternity Ward for purpose of completing studies is granted.
2. The above will be communicated with the HOD.

Kind Regards


.....
ACTING CHIEF EXECUTIVE OFFICER


.....
DATE

HOSPITAL MOTTO: QUALITY CARE IS OUR PRIDE AND PRIORITY

ANNEXURE E: Ethics approval certificate

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

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mr Agrey E Mboweni

CLEARANCE CERTIFICATE

M10834

PROJECT

Referral Pattern for Maternity Patients Admitted
and Delivered at the Nkhensani District Hospital

INVESTIGATORS

Mr Agrey E Mboweni .

DEPARTMENT

School of Public Health

DATE CONSIDERED


27/08/2010

DECISION OF THE COMMITTEE*

Approved unconditionally

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

DATE 27/08/2010

CHAIRPERSON 
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr R Jina

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...