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# The appraisal of factors affecting waiting times and recommendations for improvement at out-patient department (OPD) of Kopanong Hospital

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# THE APPRAISAL OF FACTORS AFFECTING WAITING TIMES AND RECOMMENDATIONS FOR IMPROVEMENT AT OUT-PATIENT DEPARTMENT (OPD) OF KOPANONG HOSPITAL

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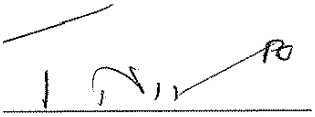
A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Public Health in the field of Hospital Management

**April, 2012**

**DECLARATION**

I, Thomas M Nhlapo, declare that this research report is my own work. It is being submitted for the degree of Master Public Health in the field of Hospital Management at the University of the Witwatersrand, Johannesburg. It has not been submitted before any degree or for any examination at this or any other University.



20 April 2012

## DEDICATION

This research is dedicated to my family.

**ACKNOWLEDGEMENT**

Sincere thanks are extended to all my colleagues in the Kopanong Hospital, who contributed to the successful completion of this study. The assistance of the following deserves a special acknowledgement:

- My Supervisor Dr D. Basu
- The Head of Department of Health-Gauteng Department of Health and Social Development for allowing me to conduct the investigation;

**ABSTRACT**

Background: Long waiting times and the quality of care are sometimes compromised by the ineffective systems caused among others by the bottlenecks at the reception and the treatment areas. The Hospital management of the Kopanong Hospital was concerned about the long queues and waiting times in the Hospital's out-patient department. Therefore, the Hospital management would like to reduce the long queues and the length of the waiting times. The information from the customer care system showed that the average waiting times in the out-patient department was about five hours and that much of this time was spent at reception area waiting for files. However no study was done to systematically measure the waiting time in the OPD and the factors that might have influence on it. This study was planned in this setting to assist the Hospital management in setting the baseline that could be used in benchmarking for monitoring the situation.

Aims: To evaluate factors affecting waiting times at the Out-patient department (OPD) of Kopanong Hospital

Methodology: The setting of this study was Kopanong Hospital, in the Sedibeng District in the Gauteng Province. This was a cross-sectional study that looked at broad issues pertaining to the waiting time at the Out-patient Department of Kopanong Hospital, a district hospital in a the rural district in the Gauteng Province during three-year study period. The OPD has three sections: General OPD, Paediatric OPD and Antenatal Clinic (ANC). The MS excel software based data extraction tool was designed to obtain data from Hospital Information System.

Results: The majority of the patients came from poor socio-economic class and had no medical aid. Therefore, these patients are dependent on public health facilities for their health care and would not be able to pay for their health care. The majority of the patients were self referred except ANC. This might be due to a well-functioning referral system for maternity patients in the District. The majority of the patients attended the General OPD and Paediatric OPD for

medical reasons. The analysis of data showed that the patients spent a significant amount of time in the system before they were seen by the nurses and doctors. However, they were also spending a significant amount of time in the Pharmacy. The reasons for efficient record keeping for ANC and Paediatric OPD patients might be due to the fact patients caries their own cards (ANC cards and Road to Health cards). Similar system should be introduced for General OPD patients. Further study is necessary to identify the cause for delay in the Pharmacy.

Conclusion: This study was the first of its kind to be done in this Hospital and the Sedibeng Health District. The study identified the areas where patients spent time in the OPD. This would assist the Hospital Management to develop appropriate measures to reduce waiting time in the Hospital OPD. In addition, further study is necessary at the PHC facilities in the District to identify reasons for high self-referral.

**TABLE OF CONTENT**

DECLARATION ..... ii
DEDICATION ..... iii
ACKNOWLEDGEMENT ..... iv
ABSTRACT ..... v
TABLE OF CONTENT ..... vii
LIST OF FIGURES ..... x
LIST OF TABLES ..... xi
GLOSSARY OF TERMS ..... xii
LIST OF ABBREVIATIONS ..... xiii
CHAPTER 1 ..... 1
INTRODUCTION ..... 1
1.1 INTRODUCTION ..... 1
1.2 STATEMENT OF THE PROBLEM ..... 2
1.3 JUSTIFICATION FOR THE STUDY ..... 3
1.4 RESEARCH QUESTION ..... 3
1.5 STUDY OBJECTIVES ..... 4
1.5.1 BROAD OBJECTIVE ..... 4
1.5.2 SPECIFIC OBJECTIVES ..... 4
1.6 SUBSEQUENT CHAPTERS ..... 4
CHAPTER 2 ..... 6
LITERATURE REVIEW ..... 6
2.1 INTRODUCTION ..... 6
2.2 HOSPITAL OPD WAITING TIME ..... 7
2.3 FACTORS INFLUENCING HOSPITAL OPD WAITING TIME ..... 8
2.4 INTERVENTION FOR REDUCTION OF HOSPITAL OPD WAITING TIME 11
CHAPTER 3 ..... 12
METHODOLOGY ..... 12
3.1 STUDY DESIGN ..... 12

3.2 STUDY SETTING ..... 12
3.3 STUDY SCOPE ..... 14
3.4 STUDY PERIOD ..... 14
3.5 STUDY POPULATION AND SAMPLING ..... 14
3.6 DATA MANAGEMENT ..... 17
3.6.1 VARIABLES ..... 17
3.6.2 DATA COLLECTION ..... 18
3.6.3 DATA ANALYSIS ..... 18
3.7 PILOT STUDY ..... 19
3.8 ETHICAL CONSIDERATIONS ..... 19
CHAPTER 4 ..... 20
RESULTS ..... 20
4.1 STUDY POPULATION ..... 20
4.2 PROFILE OF PATIENTS ..... 20
4.2.1 HOSPITAL CLASSIFICATION ..... 20
4.2.2 SOCIAL WELFARE GRANTS ..... 21
4.2.3 MEDICAL AID ..... 22
4.3 REFERRAL ..... 23
4.4 REASONS FOR ATTENDING OPD ..... 24
4.5 TURN-AROUND TIME ..... 25
CHAPTER 5 ..... 31
DISCUSSIONS ..... 31
5.1 INTRODUCTION ..... 31
5.2 PROFILE OF PATIENTS ..... 31
5.3 TURN AROUND TIME ..... 32
CHAPTER 6 ..... 35
CONCLUSIONS AND RECOMMENDATIONS ..... 35
6.1 CONCLUSIONS RELATED TO THE AIMS OF THE STUDY ..... 35
6.1.1 DESCRIPTION OF THE PROFILE OF PATIENTS ATTENDING THESE DESIGNATED UNITS ..... 35

6.1.2 EFFICIENCY OF THE DESIGNATED UNITS IN TERMS OF TURN-AROUND TIME....36
6.2 LIMITATIONS OF THE STUDY....36
6.3 RECOMMENDATIONS....36
6.3.1 FOLLOW-UP....36
6.3.2 FUTURE RESEARCH....37
6.4 SUMMARY AND CONCLUSIONS....37
REFERENCES....38
APPENDICES....42
APPENDIX A: ETHICS CLEARANCE CERTIFICATE AND LETTERS OF APPROVAL....43
APPENDIX B: DATA COLLECTION INSTRUMENTS....44

## LIST OF FIGURES

Figure 1.1 Flow-diagram for Out-patient Departments.....3
Figure 3.1 Sedibeng District.....13
Figure 3.2 Sampling frame.....16
Figure 3.3 Flow-diagram for Out-patient Departments.....18

## LIST OF TABLES

Table 4.1 Study population ..... 20
Table 4.2 Hospital classification for General OPD patients ..... 21
Table 4.3 Social-welfare grant for General OPD patients ..... 21
Table 4.4 Social-welfare grant for Paediatric OPD patients ..... 22
Table 4.5 Social-welfare grant for ANC patients ..... 22
Table 4.6 Medical aid status for General OPD patients ..... 22
Table 4.7 Medical aid status of Paediatric OPD patients ..... 23
Table 4.8 Medical aid status of ANC patients ..... 23
Table 4.9 Referral status for General OPD patients ..... 24
Table 4.10 Referral status for ANC patients ..... 24
Table 4.11 Reasons for attending General OPD ..... 25
Table 4.12 Reasons for attending Paediatric OPD ..... 25
Table 4.13 Time spent in the General OPD ..... 26
Table 4.14 Comparative analysis between referred and self-referred patients in terms of time spent in the General OPD ..... 27
Table 4.15 Time spent in the Paediatric OPD ..... 28
Table 4.16 Time spent in the ANC ..... 29
Table 4.17 Comparative analysis between referred and self-referred patients in terms of time spent in the ANC ..... 30

## GLOSSARY OF TERMS

District Hospital: A District Hospital provides three important roles within a district health system: (a) Provision of support to primary health care clinics and community services, in terms of clinical care and public health expertise (b) Provision of first level hospital care for the district and (c) Accepting the referral from clinics and/or community health centers, and be responsible for referring patients to secondary and/ or tertiary hospitals (Department of Health, 2002).

ICD-10 code: The ICD-10 code (International Classification of Diseases and related health problems - 10th revision) is a coding system developed by the World Health Organization (WHO), that standardizes the written description of medical and health information into codes in a standardized format (WHO, 2010).

Referral system: It can be defined as any process in which health care providers at lower levels of the health system, who lack the skills, the facilities, or both to manage a given clinical condition, seek the assistance of providers who are better equipped or specially trained to guide them in managing or to take over responsibility for a particular episode of a clinical condition in a patient (Department of Health, 2002).

Referred maternity patients: Patients who were referred from the primary health care clinics and community health centers during antepartum, intraparum or postpartum period based on provincial and national guidelines (Department of Health, 2007a).

## LIST OF ABBREVIATIONS

| | |
|---|---|
| CHC | Community Health Centers |
| HR | Human resources |
| IQR | Inter quartile range |
| MGD | Millennium Development Goals |
| OPD | Out-patient department |
| OSD | Occupational Specific Dispensation |
| PHC | Primary Health Care |
| WHO | World Health Organization |

# CHAPTER 1
# INTRODUCTION

The purpose of this study was to evaluate factors affecting waiting times and made recommendations for improvement at the Out-patient department (OPD) of the Kopanong Hospital. This introductory chapter will cover the background to the study, statement of the problem, its aims and objectives and an outline of subsequent chapters.

## 1.1 INTRODUCTION

The patients at the hospital out-patient departments are obliged to wait disproportionately long time before they can get medical attention, treatment or advice by the professional health care workers. Interestingly, patients often spend significantly more time in waiting than actual consultation. Therefore, waiting times at the OPD are often used as one of the measures of to quality health care in hospitals and the demands for services. According to the Scotland's Statistical Publication Notice, measuring and regular reporting of waiting times highlights where there are delays in the system and enables monitoring of the effectiveness of NHS performance throughout the country (NHS Scotland, 2006). Although the hospitals in South Africa regularly collect this information, very few systematic studies have been published on this subject.

The main complaints (received through the internal complaints registers placed in hospitals OPD's, and through newsprints) in South Africa are long queues and waiting times in the reception areas and OPD's, shortage of doctors and nurses (Health 24, 2007)

It is for this reason that the ex-national Health Minister, Dr. M. Tshabalala-Msimang (20 October 2005) raised a concern about the long waiting times in the

Hospital and urged the hospital managers, especially the Hospital CEO's to reduce the long queues and waiting times and manage patients flow effectively.

Although the Patients' Right Charter and Batho- Pele Principles are silent on the waiting times it does however give patients right to complain about health services.

Recently, the Minister of Health Dr A Motshweledi highlighted the importance of measuring Hospital OPD waiting time in all public sector hospitals and asked the hospital chief executive officers to develop intervention measures to reduce waiting time in the Hospital OPD (Department of Health, 2011c)

## 1.2 STATEMENT OF THE PROBLEM

The Kopanong Hospital was always criticized for long queues and prolonged waiting times in the Out-patient Department. This affects patients' perception of quality of services delivered by this Hospital. The Hospital OPD staff suggested that the main bottlenecks happened at the OPD reception area and the OPD waiting areas. They found that patients arrived in large numbers between 06h00 and 07h00 and the normal starting time of the clinics was 07h00. That means patients arriving at 06h00 would spent one hour before they could be attended to. They spend one hour and more waiting to be given their files and again waiting for the vital signs to be taken by the nurses and finally be examined by the doctors (Figure 1.1). Even though the doctors arrive at 08h00, patients would not be ready because of delay at the reception area. As a result of that doctors have to wait for the first patient to arrive in the consultation rooms. On average 120 patients are seen per day at the Hospital OPD.

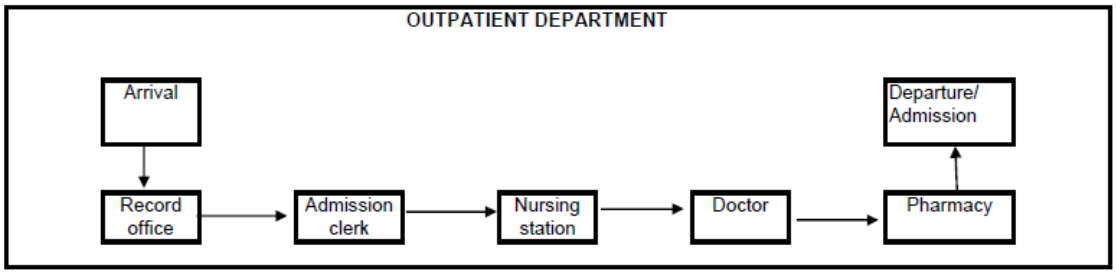



**Figure 1.1 Flow-diagram for Out-patient Departments**

This study focussed on the evaluation of the time spent in the hospital by out-patients and length of out-patient queues and identification of the factors which might influence waiting time in the Hospital OPD.

## 1.3 JUSTIFICATION FOR THE STUDY

Long waiting times and the quality of care are sometimes compromised by the ineffective systems caused among others by the bottlenecks at the reception and the treatment areas. The Hospital management of the Kopanong Hospital was concerned about the long queues and waiting times in the Hospital OPD. Therefore, the Hospital management would like to reduce long queues and length of the waiting times. The information from the customer care system showed that average waiting times in the Hospital OPD was about five hours and that much of this time was spent at reception area waiting for files. However no study was done to systematically measure waiting time in the Hospital OPD and the factors that might have influence on it. This study was planned in this setting to assist the Hospital management in setting the baseline that could be used in benchmarking for monitoring the situation.

## 1.4 RESEARCH QUESTION

What are the factors affecting the waiting times in the OPD of Kopanong Hospital and what could be done to improve this situation?

## 1.5 STUDY OBJECTIVES

### 1.5.1 BROAD OBJECTIVE

To evaluate factors affecting waiting times at the OPD of the Kopanong Hospital

### 1.5.2 SPECIFIC OBJECTIVES

1. To describe the profile of patients attending different sections of the Hospital OPD (General, Paediatric and Antenatal)

a) Economic condition
b) Reasons for attending (medical or surgical)
c) Referral status

2. To evaluate efficiency of the designated units:

a) Patients reporting time (arrival time) at the hospital
b) Time spent by patients in the Hospital

## 1.6 SUBSEQUENT CHAPTERS

So far, the background to the research has been discussed. Then, research question and objectives were defined in this first chapter. A brief outline of following chapters is described below.

**Chapter Two: Literature Review**: The purpose of the literature review is to review pertinent literature and to discuss concepts related to the OPD services with particular reference to waiting time in hospitals in South Africa and elsewhere.

**Chapter Three: Research Methodology:** The chapter describes the research methodology, study design, setting and scope and data management techniques used in this study.

**Chapter Four: Presentation of Results**: This chapter deals with an analysis of the data collected for this study relating to its aims and objectives.

**Chapter Five: Discussion**: The findings from the review of the literature are incorporated in this chapter with the results obtained from the analysis in order to address the aims and objectives of the study.

**Chapter Six: Conclusions and Recommendations:** This constitutes the last chapter of the report and derives conclusions from the research related to the objectives of this study, makes recommendations and advocates areas for future research in the field of waiting time in the OPD in a district hospital setting.

# CHAPTER 2
# LITERATURE REVIEW

In this chapter, relevant literatures into hospital out-patient services with particular reference to public hospitals are discussed. In addition to published literature, information from various unpublished sources is also reviewed.

## 2.1 INTRODUCTION

Since 1994, access to essential health care has been a basic right. There are additional rights that all individuals should enjoy when they seek assistance from a health worker or health service (South Africa, 2006). These rights are applicable to all health facilities in South Africa such as a public or private sector hospital, clinic or a private doctor. In November 1999, the Minister of Health launched the National Patients Rights Charter. This document was intended to inform the public what their rights and responsibilities as patients are. The document among others directs health managers to strengthen complaints procedures for clinic and hospitals (Department of Health, 1999).

The Batho- Pele (Putting people first) initiative aims to enhance the quality and accessibility of government services by improving efficiency and accountability to the recipients of public goods and services. Batho- Pele requires that eight service delivery principles be implemented (Department of Health, 1997). These principles are:

- regularly consult with customers
- set service standards
- increase access to services
- ensure higher level of courtesy
- provide more and better information about services
- increase openness and transparency about services
- remedy failures and mistakes

- give the best possible value for money.

In line with the Batho Pele Principle, the Office of Standard compliance (OSC) recently identified six priority areas for fast-tracking improvement in public health care sector: Improving staff values and attitudes; Waiting times; Cleanliness; Patient safety and security; Infection prevention and control; and Availability of medicines and supplies. Waiting time is thus becoming an important benchmark of health care in South Africa.

In UK, McKinnon, Crofts, Edwards, et al (1998) found that waiting times from referral to appointment and delays in clinics remained areas of concern despite introduction of the Patients' Charter. They suggested regular measurement of waiting time as a tool to identify bottleneck in the system.

## 2.2 HOSPITAL OPD WAITING TIME

Although the data on Hospital OPD waiting time was collected routinely by institutions in developed and developing countries, there are few published studies on that subject. The United Kingdom's Patients' Charter set clear standards that all patients who attend out-patients clinics should be seen within 30 minutes of their appointment time and patients must be informed of any delays (Worthington, Brahimi, 1993; Hart, 1995; Hart 1996).

In South Africa, there are no such standards available except that patients need to be told about the level and the quality of service they would receive (Department of Health, 1997). This might be due to various issues such as, weak appointment system, weak District Health System and the fact that majority of patients still prefer hospitals as first entry of health service as opposed to the clinics (Ntuli, 2007). An Investigation into Hospital Care Practices conducted in 1999 found that the average waiting times in out-patients and casualty ranges

from 3 to 6 hours before a patient could be examined by a doctor (Commission of Enquiry into Hospital Practices, 1999).

With the recent development of the Health Sector in South Africa such as impending introduction of National Health Insurance (South Africa, 2011), Primary health care re-engineering (Department of Health, 2011a), the situation may change dramatically. The Office of Standard Compliance (OSC) of the Department of Health is also expected to set up standards for waiting time. In 2011, the OSC set up two standards for waiting time: (a) Waiting times and queues are managed to improve patient satisfaction and care, and serious patients are attended to first and (b) Waiting lists are kept as short as possible. (Department of Health, 2011b). But they did not state what the maximum waiting time should be. In the current setting, this study might assist in determining what waiting time might be able to determine the waiting time in a district hospital setting.

## 2.3 FACTORS INFLUENCING HOSPITAL OPD WAITING TIME

There are number of factors which might affect waiting time at a Hospital OPD. These factors vary from country to country, within the country as well as between public and private sectors.

The Human resource (HR) capacity of a Hospital OPD is an important factor. The HR capacity must be consistent with the number and flow of patient in the Unit. The British Audit Commission (2003) looked at the general performance of hospital OPDs including key stages in the out-patients process, patient experience, demand and capacity, efficiency, management of out-patient. They found that the following factors might have an influence on the waiting time of an OPD: Lack of standards for waiting times; Pre-booking based on capacity of the Unit; No dedicated out-patient manager with management skills. They suggested the Hospital OPDs should regularly measure capacity and throughput in the

OPDs and should investigate the relationship between capacity and waiting times.

Working times of the doctors particularly the arrival time are also found to be an important factor. Bailey (1952) argued that in practice, the requirements that doctors kept fully occupied were usually regarded as an over-riding consideration and large queues of patients were often allowed to build up in order to avoid the possibility of the doctors ever having to wait for a patient.

Expertise of the medical doctors and other health professionals may also have an influence on the waiting time. In a study done at a Hospital in London, Terris, Leman, O'Connor, et al (2004) assessed the impact of initial patient consultation by senior clinicians and found that there was an overall reduction in the number of patients to be seen in the department and no patient waited more than four hours for initial clinical consultation after introduction of mandatory initial consultation by senior clinicians. They concluded that by using a senior clinical team for initial patient consultation, the numbers of patients waiting fell dramatically throughout the emergency department. This was similar to the findings of a study done in a Namibian Hospital, where Meguid, Amaambo and Mhata (1999) found that the utilisation of senior medical doctors had a significant effect on the efficiency of the work organisation in the out-patient department.

Segregation of patients in terms of acuteness may play a role on the waiting time (British Audit Commission, 2003). Choi, Wong and Lau (2006) looked into the effectiveness of triage on waiting times and processing time of an emergency department in a Hong Kong Hospital. They found that after the intervention, the average waiting time was reduced by 38% and average processing time by 23%. They concluded that the waiting time and processing time of the emergency department were greatly reduced by triage without extra manpower.

The level of care and clinical conditions of patients also influences waiting time. More complex clinical conditions require more consulting time. Doctors have to spend more time and to order more investigation for complex clinical conditions (Aharonson, Paul, Hedley, 1996). Commission of Enquiry into Hospital Practices, (1999) found the OPD consultation was particularly labour-intensive, where no electronic record keeping system was available.

Hospital Information System and organisation of hospital records play an important role. An Investigation into Hospital Care Practices in South Africa found that manual record keeping system and misplaced files were not uncommon in public hospitals in South Africa and often resulted in longer waiting period (Commission of Enquiry into Hospital Practices, 1999).

Organisation of the OPD may also have an impact on the waiting time. Small waiting rooms of the hospitals make difficult to manage the queue and increase dissatisfaction of patients (Bailey, 1952) which is similar to the findings of a study conducted in Taiwan (Huang, 1994). A study conducted at Johannesburg Hospital's Pharmacy found that poor design of the Hospital Pharmacy, dispensing and waiting area with a manual computerized queue management system resulting in increase in waiting time and patient dissatisfaction (Basu, Pillay, Naidoo, 2006).

Staff attitude and communication between staff and patients were also found to influence waiting time. In a study done in a Namibian hospital Meguid, et al., (1999), the service was not client-friendly and patients were often asked to come back on the following day resulting in a spiralling effect and longer queue in the Hospital OPD.

## 2.4 INTERVENTION FOR REDUCTION OF HOSPITAL OPD WAITING TIME

There were fewer studies reporting successful intervention resulting in reduction of waiting time in Hospital OPD. Aharonson, et al (1996) suggested use of computerized simulation modelling as a potential tool for clarifying processes occurring within such systems, improving clinic operation which could provide possible answers to problems identified and this would also allow evaluation of these solutions, without interfering with clinic routine. Huarng and Lee (1996) also developed computer simulation model to study how changes in the appointment system, staffing policies and service units would affect the observed bottleneck. However, no study was published for last fifteen years on this topic probably due to complexity of developing a computer simulation model which would depend on good quality data from electronic record keeping system and complex interaction among different variables.

In South Africa, Commission of Enquiry into Hospital Practices (1999) recommended setting targets for waiting times, appointment of out-patient manager, measures of capacity and throughput in out-patient department and to investigate the relationship between capacity and waiting times. Recently the OSC also suggested reduction in waiting time in hospital OPD as a key standard but did not provide any suggestion about the means to do that (Department of Health, 2011b).

Saine and Baker (2003) suggested use of prescheduled appointment method with a patient notification letter as the best way to manage OPD turn-around time. There is no such study done in South Africa which could provide best practices in this area.

# CHAPTER 3
# METHODOLOGY

The methodology for this study was selected on the basis of its aims and objectives. In this chapter the following were discussed: setting, scope, and study design and research tools.

## 3.1 STUDY DESIGN

This was a cross-sectional study based on a retrospective record review conducted at a district hospital in the Gauteng Province.

## 3.2 STUDY SETTING

The study setting was the Out-patient Department of the Kopanong Hospital, situated in the Sedibeng District. in the southern part of the Gauteng Province.

Sedibeng District

Sedibeng District is situated in the southern part of the Gauteng Province. The District is further divided into three sub-districts namely, Emfuleni, Midvaal, and Lesedi. The population of these three Sub-districts is 764,513, 83,426 and 75,975 respectively. There are three hospitals in the district, namely, Sebokeng, Kopanong and Heidelberg Hospitals. Sebokeng Hospital is the only regional hospital in the District and provides outreach services to Kopanong Hospital. The Hospital refers to Sebokeng and Chris Hani Baragwanath Hospitals.

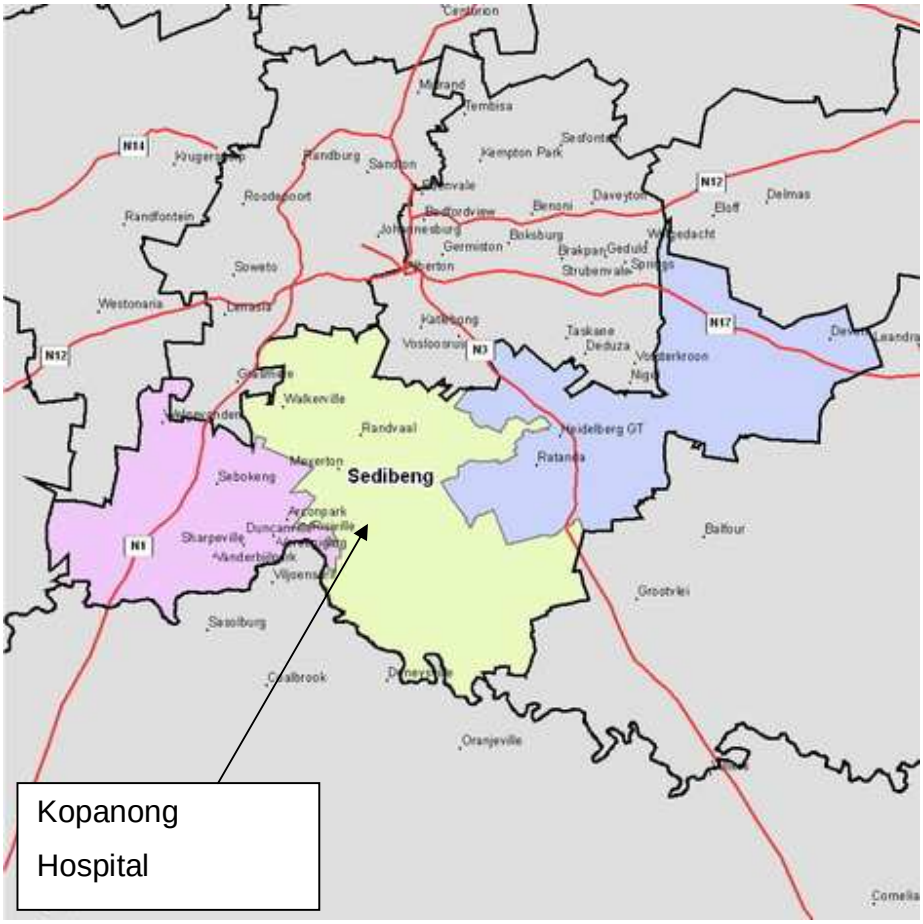



**Figure 3.1 Sedibeng District**

Kopanong Hospital

Kopanong Hospital is a provincial public hospital in Gauteng and is situated in Sedibeng District. Kopanong Hospital is a 248 bedded Level 1 District hospital. The Hospital is offering in-patients, casualty, out-patient services and other support services such as X-rays, physiotherapy, speech therapy, occupational therapy, dietetics, social work services and administration and support services. There are only two session specialists doctors for Paediatrics and Gynaecology and Obstetrics services.

The Out-patient department (OPD) is divided into various clinics including:

- General: Medicine (Diabetics, Hypertension, Psychiatric), Surgery (General surgery, Orthopaedics, Ear nose and Throat (ENT),
- Paediatrics; and
- Maternity (Antenatal).

These clinics are offered on daily basis. The clinics are running from Monday to Friday and on average the clinics attendance is about 52,000 per annum.

There are 31 clinics and four community health clinics (CHCs) in the District. The bulk of the clinics belong to the local government, while the four CHCs belong to the provincial government and interestingly all of these CHCs are in the Emfuleni Sub-district. These clinics refer their patients to Kopanong Hospital.

## 3.3 STUDY SCOPE

The study involved primary data collection prospectively from the Out-patient department of the Kopanong Hospital.

## 3.4 STUDY PERIOD

The study period was three years (2008-2010)

## 3.5 STUDY POPULATION AND SAMPLING

The study population was the patients who attended the OPD of the Kopanong Hospital during the study period. The Hospital OPD has three different sections: General (adult), Paediatric and Antenatal.

Approximately 52,000 patients are seen at the OPD every year. Based on that the sample size for the study was calculated using Statcalc (Epi-Info version 6) based on:

- a study population of 52,000
- expected prevalence of 50%, and
- worst acceptable result of 40%
- α of 0.05 and β of 0.8.

A sample size of 225 was required to achieve the above parameters. It was decided to double the sample size for design effect (clustered sample from three Units namely General OPD, Paediatrics OPD and ANC). So the effective sample size was 450 (150 per clinic). Details of the sampling framework are described below (Figure 3.2).

- It was decided to collect data during three-year period to compare the turn-around time among different years (50 per year per clinic).
- In addition, it was decided to collect the records of 50 patients per clinic from five randomly selected months (excluding January, April and December for public holidays).
- During these months, a day was randomly selected. On that day, 10 patients were selected systematically (every $10^{th}$ record) by the admission office clerk. Data collection sheet was attached to the file of these patients.

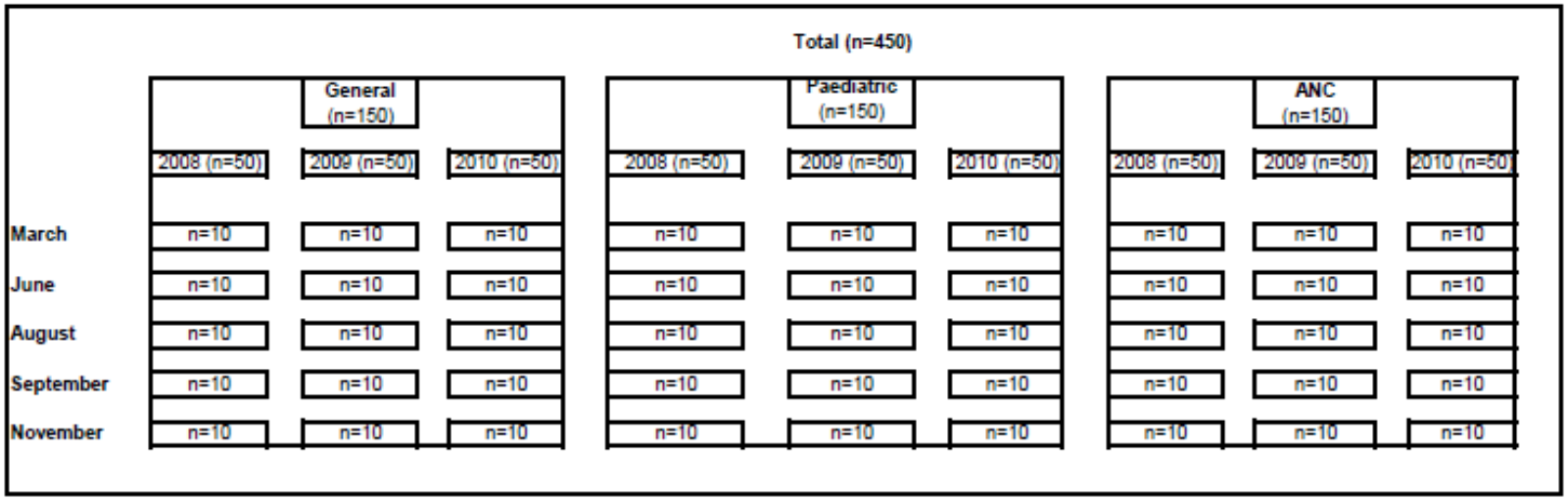



**Figure 3.2 Sampling frame**

## 3.6 DATA MANAGEMENT

### 3.6.1 VARIABLES

Following variables were measured during the study:

(a) Profile of patients

- Economic condition (Hospital classification, Medical Aid, and Social welfare grant)
- Clinical condition

(b) Referral Unit

- Clinics, Private Sectors, Other Government hospitals, self referral

(c) Efficiency (measured by time spent in the system)

The efficiency was measured by time spent in the system which includes:

- Time spent between record office and admission clerk
- Time spent between admission clerk and nursing station
- Time spent between nursing station and doctor
- Time spent between doctor and pharmacy
- Time spent between Clerk and Pharmacy
- Time spent between record office and Doctor

Some patients were sent by the doctors for Laboratory and/ or Radiological examination. These patients returned to the doctors with their results before going to Pharmacy (Figure 3.3).

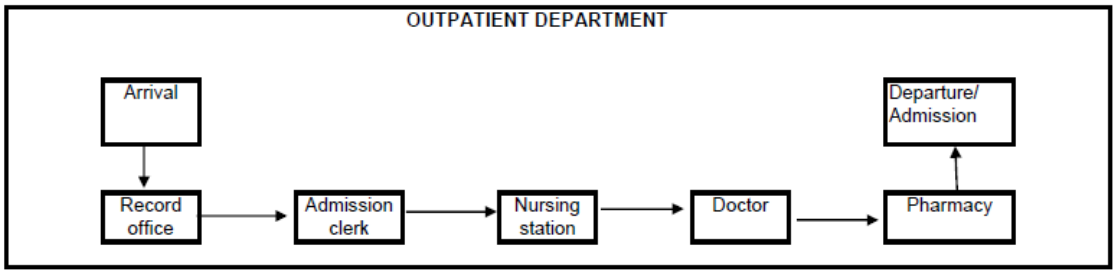



**Figure 3.3 Flow-diagram for Out-patient Departments**

### 3.6.2 DATA COLLECTION

A MS Excel based data-collection was designed for this study (Appendix B). This tool was attached to the selected patients' file on the days of data collection. These forms were submitted to the researcher on daily basis at the end of each shift.

### 3.6.3 DATA ANALYSIS

All data was captured in MS excel software. Subsequently, data was exported to NCSS software for analysis (NCSS, 2007).

The following descriptive statistics were reported:

- Continuous variables (normally distributed): mean and standard deviation;
- Continuous variables (not normally distributed): median and inter-quartile range, and
- Nominal and ordinal variables (such as ethnicity): proportions.

A comparative analysis was done using following statistical tests:

- Continuous variables with normal distribution: t-test
- Other continuous variables: Mann-Whitney's U test
- Nominal and ordinal variables: Chi-square test

The statistical significance was calculated at the 95% confidence level.

## 3.7 PILOT STUDY

No pilot study was done as the data to be used for this study was routinely collected.

## 3.8 ETHICAL CONSIDERATIONS

No intervention was done as a part of this study. The permission to conduct this study was obtained from the Gauteng Department of Health (Appendix A). The project was also approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand (Appendix A). Confidentiality and anonymity was maintained at all times in the processes of collection, capturing, and reporting of the information.

# CHAPTER 4
# RESULTS

The results obtained from the analysis of data were described in this chapter.

## 4.1 STUDY POPULATION

The study population consisted of 450 patients from three clinics recruited during a three-year period (Table 4.1).

**Table 4.1 Study population**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| General OPD | 150 | 50 | 50 | 50 |
| Paediatric OPD | 150 | 50 | 50 | 50 |
| ANC | 150 | 50 | 50 | 50 |
| Total | 450 | 150 | 150 | 150 |

## 4.2 PROFILE OF PATIENTS

### 4.2.1 HOSPITAL CLASSIFICATION

The Hospital classifications of the patients based on the means test are described below:

GENERAL OPD

Classification of patients showed that 95% patients accessing health care at the Hospital were getting free treatment (H0 and H1) (Table 4.2).

**Table 4.2 Hospital classification for General OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| H0 and H1 | 142 (95%) | 50 | 47 | 45 |
| H2 and Private | 8 (5%) | 0 | 3 | 5 |
| Total | 150 (100%) | 50 | 50 | 50 |

Paediatric OPD and ANC

All the patients in these two clinics are classified as H0.

### 4.2.2 SOCIAL WELFARE GRANTS

GENERAL OPD

A considerable number of patients reported that they were recipients of various social welfare grants (Table 4.3).

**Table 4.3 Social-welfare grant for General OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 42 (28%) | 18 | 20 | 4 |
| No | 108 (62%) | 32 | 30 | 46 |
| Total | 150 (100%) | 50 | 50 | 50 |

Paediatric OPD

A considerable number of patients who attended Paediatric OPD during the study period were also found to be recipients of various social welfare grants (Table 4.4).

**Table 4.4 Social-welfare grant for Paediatric OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 61 (41%) | 21 | 13 | 27 |
| No | 89 (59%) | 29 | 27 | 23 |
| Total | 150 (100%) | 50 | 50 | 50 |

ANC

In contrast to other OPDs, few patients attending the ANC were found to be recipients of Social welfare grants (Table 4.5).

**Table 4.5 Social-welfare grant for ANC patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 7 (5%) | 0 | 3 | 4 |
| No | 143 (95%) | 50 | 47 | 46 |
| Total | 150 (100%) | 50 | 50 | 50 |

### 4.2.3 MEDICAL AID

GENERAL OPD

Very few patients attending OPD had access to medical aid (Table 4.6)

**Table 4.6 Medical aid status for General OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 8 (5%) | 0 | 3 | 5 |
| No | 142 (95%) | 50 | 47 | 45 |
| Total | 150 (100%) | 50 | 50 | 50 |

Paediatric OPD

The situation is same in Paediatric OPD (Table 4.7).

**Table 4.7 Medical aid status of Paediatric OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 5 (3%) | 5 | 0 | 0 |
| No | 145 (97%) | 45 | 50 | 50 |
| Total | 150 (100%) | 50 | 50 | 50 |

ANC

Similarly, very few patients attending ANC had access to medical aid (Table 4.8).

**Table 4.8 Medical aid status of ANC patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 5 (3%) | 0 | 2 | 3 |
| No | 145 (97%) | 50 | 48 | 47 |
| Total | 150 (100%) | 50 | 50 | 50 |

## 4.3 REFERRAL

GENERAL OPD

The majority of the patients who attended General OPD were self-referred (Table 4.9). Among the referred patients (62), 46 (74%) were referred from Clinics and Community health centres, whereas 16 (26%) were referred from private doctors.

**Table 4.9 Referral status for General OPD patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Referred | 62 (41%) | 19 | 24 | 19 |
| Self-referred | 88 (59%) | 31 | 26 | 31 |
| Total | 150 (100%) | 50 | 50 | 50 |

Paediatric OPD

The situation was worse in Paediatric OPD. All the patients came to the Hospital OPD bypassing the Clinics and Community health centres in their areas.

ANC

In comparison to the other OPDs, a considerable number of patients were referred (62%) (Table 4.10). Among them, 74 (80%) were referred from the Clinics and Community health centres and the remaining 19 (20%) were referred by the private doctors from the surrounding areas.

**Table 4.10 Referral status for ANC patients**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Yes | 93 (62%) | 23 | 41 | 29 |
| No | 57 (38%) | 27 | 9 | 21 |
| Total | 150 (100%) | 50 | 50 | 50 |

## 4.4 REASONS FOR ATTENDING OPD

GENERAL OPD

The majority of the patients were attended the General OPD for Medical reasons (Table 4.11).

**Table 4.11 Reasons for attending General OPD**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Medical | 89 (59%) | 35 | 28 | 26 |
| Surgical | 61 (41%) | 15 | 22 | 24 |
| Total | 150 (100%) | 50 | 50 | 50 |

Paediatric OPD

Almost every patient attended the Paediatric OPD for Medical reasons (Table 4.12).

**Table 4.12 Reasons for attending Paediatric OPD**

| | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|
| Medical | 89 (97%) | 48 | 49 | 48 |
| Surgical | 5 (3%) | 2 | 1 | 2 |
| Total | 150 (100%) | 50 | 50 | 50 |

ANC

All the patients attended the ANC for Obstetric reasons for routine check-up.

## 4.5 TURN-AROUND TIME

The time spent in the Hospital during the study period is described in the Table 4.13. The time spent during the system is not normally distributed therefore described by median and inter-quartile range.

GENERAL OPD

The patients spent a significant amount of time in the system before they were seen by the nurses and doctors:

- Between Arrival to Record office: (Median: 20 min)
- Between Record office to Clerk: (Median: 5 min)
- Between Clerk to Nurse (Median: 20 min)
- They have spent significantly more time (a) between the nurse to the doctor (Median 38 min) and (b) between the Doctor and Pharmacy (Median 59 min).

**Table 4.13 Time spent in the General OPD**

| Time between | | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Arrival to Record and clerk (min) | Mean ± SD | 25 ± 16 | 24 ± 15 | 28 ± 19 | 24 ± 14 |
| | Median and IQR | 20 (15-30) | 20 (15-30) | 25 (15-34) | 20 (15-30) |
| | Minimum | 0 | 0 | 10 | 5 |
| | Maximum | 95 | 60 | 95 | 60 |
| Record and clerk (min) | Mean ± SD | 9 ± 8 | 16 ± 7 | 3 ± 4 | 8 ± 7 |
| | Median and IQR | 5 (2-14) | 14 (10-20) | 2 (1-3) | 5 (4-13) |
| | Minimum | 0 | 5 | 0 | 0 |
| | Maximum | 40 | 40 | 19 | 35 |
| Clerk and nurse (min) | Mean ± SD | 21 ± 11 | 21 ± 7 | 19 ± 12 | 24 ± 13 |
| | Median and IQR | 20 (15-24) | 20 (15-25) | 17 (13-20) | 20 (17-25) |
| | Minimum | 7 | 10 | 7 | 10 |
| | Maximum | 74 | 54 | 70 | 74 |
| Nurse and Doctor (min) | Mean ± SD | 38 ± 22 | 52 ± 22 | 26 ± 11 | 37 ± 22 |
| | Median and IQR | 31 (23-47) | 50 (40-65) | 25 (20-30) | 30 (23-42) |
| | Minimum | 5 | 10 | 5 | 14 |
| | Maximum | 125 | 125 | 61 | 120 |
| Doctor and Pharmacy(min) | Mean ± SD | 68 ± 39 | 71 ± 32 | 58 ± 40 | 73 ± 43 |
| | Median and IQR | 59 (45- 71) | 65 (55- 75) | 46 (38- 60) | 63 (55- 75) |
| | Minimum | 2 | 2 | 13 | 24 |
| | Maximum | 207 | 175 | 189 | 207 |
| Arrival and Pharmacy(min) | Mean ± SD | 161 ± 54 | 184 ± 47 | 134 ± 46 | 166 ± 56 |
| | Median and IQR | 150 (120- 184) | 180 (157- 203) | 120 (105- 145) | 150 (136- 175) |
| | Minimum | 70 | 105 | 105 | 93 |
| | Maximum | 342 | 203 | 203 | 342 |

A comparative analysis done between referred and self-referred patient. No difference was found between the two groups (Mann-Whitney's U test) (Table 4.14)

**Table 4.14 Comparative analysis between referred and self-referred patients in terms of time spent in the General OPD**

| Time between | | Total | Referred | Self-referred | P value |
|---|---|---|---|---|---|
| Arrival to Record (min) | Median and IQR | 20 (15-30) | 20 (15-30) | 20 (15-30) | 0.95 |
| Record and clerk (min) | Median and IQR | 5 (2-14) | 5 (2.5-14) | 5 (2-13) | 0.88 |
| Clerk and nurse (min) | Median and IQR | 20 (15-24) | 20 (15-24) | 19 (15-25) | 0.94 |
| Nurse and Doctor (min) | Median and IQR | 31 (23-47) | 31 (25-46) | 31 (20-50) | 0.64 |
| Doctor and Pharmacy(min) | Median and IQR | 59 (45- 71) | 59 (45-68) | 60 (45-76) | 0.38 |
| Arrival and Pharmacy(min) | Median and IQR | 150 (120- 184) | 150 (118-184) | 147 (120-185) | 0.97 |

<u>Paediatric OPD</u>

The patients spent significant amount of time in the system before they were seen by the nurses and doctors (Table 4.15):

- Between Arrival to Record office: (Median: 1 min)
- Between Record office to Clerk: (Median: 21 min)
- Between Clerk to Nurse (Median: 28 min)
- They have spent significantly more time (a) between the nurse to the doctor (Median 43 min) and (b) between the Doctor and Pharmacy (Median 71min).

**Table 4.15 Time spent in the Paediatric OPD**

| Time between | | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Arrival to Record (min) | Mean ± SD | 1 ± 5 | 1 ± 4 | 1 ± 5 | 1 ± 3 |
| | Median and IQR | 0 (0-0) | 0 (0-0) | 0 (0-0) | 0 (0-0) |
| | Minimum | 0 | 0 | 0 | 0 |
| | Maximum | 44 | 44 | 38 | 40 |
| Record and clerk (min) | Mean ± SD | 21 ± 19 | 10 ± 6 | 10 ± 6 | 42 ± 20 |
| | Median and IQR | 13 (9-30) | 10 (5-14) | 10 (5-13) | 37 (30-45) |
| | Minimum | 0 | 1 | 0 | 15 |
| | Maximum | 90 | 29 | 29 | 90 |
| Clerk and nurse (min) | Mean ± SD | 28 ± 13 | 28 ± 10 | 29 ± 11 | 25 ± 17 |
| | Median and IQR | 27 (15-34) | 30 (20-34) | 30 (20-37) | 22 (15-30) |
| | Minimum | 10 | 12 | 10 | 10 |
| | Maximum | 80 | 53 | 53 | 80 |
| Nurse and Doctor (min) | Mean ± SD | 43 ± 17 | 39 ± 13 | 36 ± 12 | 54 ± 19 |
| | Median and IQR | 40 (30-50) | 39 (30-45) | 34 (29-43) | 50 (40-65) |
| | Minimum | 10 | 10 | 12 | 23 |
| | Maximum | 104 | 75 | 75 | 104 |
| Doctor and Pharmacy (min) | Mean ± SD | 71 ± 48 | 61 ± 36 | 52 ± 30 | 100 ± 59 |
| | Median and IQR | 50 (41- 88) | 46 (40- 65) | 44 (37- 50) | 80 (55- 133) |
| | Minimum | 11 | 11 | 29 | 19 |
| | Maximum | 239 | 178 | 175 | 239 |
| Arrival and Pharmacy min) | Mean ± SD | 162 ± 65 | 138 ± 41 | 129 ± 37 | 221 ± 69 |
| | Median and IQR | 142 (115- 192) | 131 (114- 157) | 120 (107- 139) | 200 (165- 283) |
| | Minimum | 55 | 55 | 85 | 120 |
| | Maximum | 422 | 272 | 269 | 422 |

ANC

On arrival at the ANC, the patients went straight to the Record office. The study found no waiting time at the Record office, as the patients carry their ANC cards with them. The patients spent significant amount of time in the system before they were seen by the nurses and doctors (Table 4.16):

- Between Arrival to Record office: (Median: 1 min)
- Between Record office to Clerk: (Median: 10 min)
- Between Clerk to Nurse (Median: 24 min)
- They have spent significantly more time (a) between the nurse to the doctor (Median 21 min) and (b) between the Doctor and Pharmacy (Median 54 min).

**Table 4.16 Time spent in the ANC**

| Time between | | Total | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Arrival to Record (min) | Mean ± SD | 0 ± 0 | 0 ± 0 | 0 ± 0 | 0 ± 0 |
| | Median and IQR | 0 (0-0) | 0 (0-0) | 0 (0-0) | 0 (0-0) |
| | Minimum | 0 | 0 | 0 | 0 |
| | Maximum | 24 | 24 | 18 | 20 |
| Record and clerk (min) | Mean ± SD | 11 ± 8 | 8 ± 6 | 16 ± 9 | 8 ± 5 |
| | Median and IQR | 10 (5-12) | 6 (5-10) | 11 (10-21) | 9 (5-10) |
| | Minimum | 0 | 0 | 2 | 0 |
| | Maximum | 40 | 30 | 40 | 23 |
| Clerk and nurse (min) | Mean ± SD | 26 ± 11 | 27 ± 14 | 24 ± 12 | 26 ± 7 |
| | Median and IQR | 24 (20-30) | 24 (20-30) | 20 (16-30) | 25 (20-30) |
| | Minimum | 6 | 6 | 9 | 10 |
| | Maximum | 105 | 105 | 51 | 38 |
| Nurse and Doctor (min) | Mean ± SD | 24± 13 | 23 ± 13 | 29 ± 12 | 21 ± 14 |
| | Median and IQR | 21 (14-30) | 20 (13- 30) | 28 (20-35) | 16 (12-22) |
| | Minimum | 5 | 5 | 7 | 5 |
| | Maximum | 79 | 59 | 70 | 79 |
| Doctor and Pharmacy(min) | Mean ± SD | 54 ± 16 | 57 ± 10 | 52 ± 21 | 51 ± 16 |
| | Median and IQR | 54 (45- 60) | 56 (50- 60) | 49 (40- 60) | 55 (46-60) |
| | Minimum | 20 | 30 | 25 | 20 |
| | Maximum | 145 | 83 | 145 | 75 |
| Arrival and Pharmacy(min) | Mean ± SD | 114 ± 24 | 115 ± 25 | 121 ± 26 | 105 ± 18 |
| | Median and IQR | 113 (96- 126) | 112 (97- 126) | 120 (105- 136) | 102 (93-118) |
| | Minimum | 52 | 76 | 80 | 52 |
| | Maximum | 210 | 210 | 200 | 144 |

A comparative analysis done between referred and self-referred patient. No difference was found between the two groups (Mann-Whitney's U test) (Table 4.17).

**Table 4.17 Comparative analysis between referred and self-referred patients in terms of time spent in the ANC**

| Time between | | Total | Referred | Self-referred | P value |
|---|---|---|---|---|---|
| Arrival to Record (min) | Median and IQR | 0 (0-0) | 0 (0-0) | 0 (0-0) | N/A |
| Record and clerk (min) | Median and IQR | 10 (5-12) | 10 (5-14) | 8 (5-11) | 0.07 |
| Clerk and nurse (min) | Median and IQR | 24 (20-30) | 25 (20-30) | 23 (19-30) | 0.26 |
| Nurse and Doctor (min) | Median and IQR | 21 (14-30) | 20 (14-30) | 22 (15-30) | 0.32 |
| Doctor and Pharmacy(min) | Median and IQR | 54 (45- 60) | 55 (49-60) | 53 (45-60) | 0.78 |
| Arrival and Pharmacy(min) | Median and IQR | 113 (96- 126) | 113 (99-123) | 114 (94-129) | 0.70 |

# CHAPTER 5
# DISCUSSIONS

In this chapter, the results obtained from the analysis of the data were discussed and compared with those from other published studies.

## 5.1 INTRODUCTION

This study was done in order to evaluate factors affecting waiting times at the Out-patient department (OPD) of Kopanong Hospital, a district hospital in Sedibeng District in Gauteng Province during three-year study period (2008-2010). No study had been conducted at the level of a district hospital in the Gauteng Province to look at the influence of various factors on the waiting time at a district hospital OPD.

## 5.2 PROFILE OF PATIENTS

The majority of the patients came from poor socio-economic class. The majority of them were classified as H0 or H1 and had no medical aid. Therefore, these patients were dependent on public health facilities for their health care and would not be able to pay for their health care. A considerable number of patients attending General OPD and Paediatric OPD were recipients of Social Welfare Grant. Interestingly very few patients from ANC were recipients of Social Welfare grants.

There are 31 Clinics and 4 CHCs in the Sedibeng District which refer their patients to Kopanong Hospital and these patients utilise taxis to come to the Hospital. The travelling cost for a distance of about 20 Km by taxi would cost a patient an average of R10.00 per trip. The furthest point is about 45 km away from the Hospital for whom travelling to the Hospital is very costly and complex as they have to walk or hitchhike to the taxi or bus ranks. In spite of that, a

significant number of patients from General OPD were self-referred (55%), which is similar to findings of a study done in Free State (52%) (Mojaki, Basu, Letskokgohka, et al., 2010). However, not a single patient in Paediatric OPD was referred. This might be due to lack of Under-5 clinic in CHC facilities. In comparison, a considerable number of patients in ANC were referred. This shows well-functioning referral system for maternity patients in the District.

The CHCs are expected to offer 24 hours services and to accept referral from the PHC clinics. The CHCs are situated closer to the community and PHCs should refer to the CHCs instead of referring them to a district hospital like Kopanong Hospital. However, in reality, these CHCs do not offer 24 hour services resulting in all referred patients arriving at the Kopanong Hospital. A well-functioning PHC system would not only benefit patients but also a key to improvement of outpatient services in District hospitals. Reid and Todd (1989) found that patients (particularly socially disadvantaged--the poor, the unemployed and the retired) could get maximum benefit when health care is decentralized to clinics from hospitals.

The majority of the patients attended the General OPD for Medical reasons. Probably an outreach programme by Physician specialists from Regional Hospital (Sebokeng Hospital) and general physicians from Kopanong Hospital to the CHCs could add value to the services rendered to these patients. Similarly a Paediatric out-reach programme could add value to the care of the paediatric services offered at this Hospital.

## 5.3 TURN AROUND TIME

The analysis of data showed in the General OPD, the patients spent a significant amount of time in the system before they were seen by the nurses and doctors. However, they were also spending a significant amount of time in the Pharmacy (Median 59 min). The situation is similar in Paediatric OPD, where they spent a

significant amount of time in the Pharmacy (Median 71min). However, they also spent considerable time at the records office except ANC where patients carry their own ANC cards. Like Paediatric OPD, the patients in the ANC also spent significant amount of time in the Pharmacy (Median 54 min). However, the Paediatric patients spent less time at the records office. The reasons for efficient record keeping for ANC and Paediatric OPD patients might be due to the fact the Patients caries their own cards (ANC card and Road to Health Card). Similar system should be introduced for General OPD patients.

A comparative analysis between this study and study done by Mojaki (2009) found the turn-around time in this Hospital is lower than the hospital reported in his study (A district hospital of similar size in the Free State Province).

**Table 5.1 Time spent in the General OPD**

| | | This Study | | | Mojaki, et al (2009) |
|---|---|---|---|---|---|
| Time between | | General | Paediatrics | ANC | |
| Arr to Record and clerk (min) | Mean ± SD | 25 ± 16 | 1 ± 5 | 0 ± 0 | |
| | Median and IQR | 20 (15-30) | 0 (0-0) | 0 (0-0) | |
| | Minimum | 0 | 0 | 0 | |
| | Maximum | 95 | 44 | 0 | |
| Record and clerk (min) | Mean ± SD | 9 ± 8 | 21 ± 19 | 11 ± 8 | 62 ± 83 |
| | Median and IQR | 5 (2-14) | 13 (9-30) | 10 (5-12) | 45 (29-73) |
| | Minimum | 0 | 0 | 0 | 5 |
| | Maximum | 40 | 90 | 40 | 840 |
| Clerk and nurse (min) | Mean ± SD | 21 ± 11 | 28 ± 13 | 26 ± 11 | 117 ± 99 |
| | Median and IQR | 20 (15-24) | 27 (15-34) | 24 (20-30) | 102 (50-162) |
| | Minimum | 7 | 10 | 6 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| | Maximum | 74 | 80 | 105 | 775 |
| Nurse and Doctor (min) | Mean ± SD | 38 ± 22 | 43 ± 17 | 24± 13 | 187 ± 149 |
| | Median and IQR | 31 (23-47) | 40 (30-50) | 21 (14-30) | 165 (105-240) |
| | Minimum | 5 | 10 | 5 | 9 |
| | Maximum | 125 | 104 | 79 | 1265 |
| Doctor and Pharmacy(min) | Mean ± SD | 68 ± 39 | 71 ± 48 | 54 ± 16 | 236 ± 381 |
| | Median and IQR | 59 (45- 71) | 50 (41- 88) | 54 (45- 60) | 35 (25- 82.5) |
| | Minimum | 2 | 11 | 20 | 5 |
| | Maximum | 207 | 239 | 145 | 1635 |
| Arrival and Pharmacy(min) | Mean ± SD | 161 ± 54 | 162 ± 65 | 114 ± 24 | 351 ± 169 |
| | Median and IQR | 150 (120- 184) | 142 (115- 192) | 113 (96- 126) | 329 (256- 405) |
| | Minimum | 70 | 55 | 52 | 25 |
| | Maximum | 342 | 422 | 210 | 1432 |

Interestingly no difference was found between referred and self-referred patients in terms of the Turn-around time.

# CHAPTER 6
# CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the results obtained from this study were assessed in relation to the aims and objectives of the study, so that appropriate conclusions can be drawn. The limitations of the study are listed. Based on the findings of the study, appropriate recommendations and suggestions for future research are included.

## 6.1 CONCLUSIONS RELATED TO THE AIMS OF THE STUDY

This was a cross-sectional study that looked at broad issues pertaining to the waiting time at the Out-patient Department of Kopanong Hospital, a district hospital in a the rural district in the Gauteng Province during three-year study period.

### 6.1.1 DESCRIPTION OF THE PROFILE OF PATIENTS ATTENDING THESE DESIGNATED UNITS

The majority of the patients came from poor socio-economic class and had no medical aid. Therefore, these patients are dependent on public health facilities for their health care and would not be able to pay for their health care.

The majority of the patients were self referred except ANC. This might be due to a well-functioning referral system for maternity patients in the District.

The majority of the patients attended the General OPD and Paediatric OPD for Medical reasons.

### 6.1.2 EFFICIENCY OF THE DESIGNATED UNITS IN TERMS OF TURN-AROUND TIME

The analysis of data showed, the patients spent a significant amount of time in the system before they were seen by the nurses and doctors. However, they were also spending a significant amount of time in the Pharmacy. The reasons for efficient record keeping for ANC and Paediatric OPD patients might be due to the fact the Patients caries their own cards (ANC card and Road to Health Card). Similar system should be introduced for General OPD patients. Further study is necessary to identify the cause for delay in the Pharmacy.

## 6.2 LIMITATIONS OF THE STUDY

The following limitations were experienced in conducting this study.

(a) The subject is hardly researched in the District Hospitals; therefore the literature related to the subject is scanty.

(b) The study was done for a small number of patients. However, these patients were randomly chosen and therefore should reflect the general trend of patients seen in the Hospital.

## 6.3 RECOMMENDATIONS

### 6.3.1 FOLLOW-UP

This project is the first systematic study to be done at the Kopanong Hospital. This study identified the areas where the patients spent time in the OPD. This would assist the Hospital management to develop corrective measures such as improved record keeping for General OPD patients and a detailed study in the Pharmacy.

The results of the study will be disseminated to the District Director, Regional Chief Director and the Kopanong Hospital's senior management and the Out-patient department personnel.

### 6.3.2 FUTURE RESEARCH

Based on findings of this study, the researcher would like to suggest following future studies:

(a) There is a need to conduct a similar study using a qualitative method, where patients can be engaged in the form of interviews.

(b) The workload and capacity of PHC clinics and Community health care clinics should be researched, to evaluate how they match the health needs and demand of the populations they serve.

## 6.4 SUMMARY AND CONCLUSIONS

This study was the first of its kind to be done in this Hospital and the Health District. The study identified the areas where patients spent time in the OPD. This would assist the Hospital Management to develop appropriate measures to reduce waiting time in the Hospital OPD. In addition, further study is necessary at the PHC facilities in the District to identify reasons for high self-referral.

## REFERENCES


Aharonson-Daniel L, Paul RJ, Hedley AJ. 1996. Management of queues in out-patient departments: the use of computer simulation, J Manag Med, 10 (6): 50-58.

Audit Commission. 2003. Minimising bureaucracy, maximizing impact on public services, Outpatients Review of National Findings. http://www.audit-commission.gov.uk/reports/NATIONAL-REPORT.asp?CategoryID=&p...6/15/2007 [accessed 20/08/2010]

Basu D, Pillay DN, Naidoo S. 2006. Reduction of waiting time at the Johannesburg Hospital Pharmacy. Johannesburg: Wits School of Public Health, University of Witwatersrand. http://www.web.wits.ac.za/Academic/Health/PublicHealth/Researchday/ResearchDay.htm...6/6/2007 [accessed 20/08/2010]

Bailey NTJ. 1952. A Study Of Queues And Appointment Systems In Hospital Out-Patient Departments, with Special Reference To Waiting Times, Department of Human Ecology, University of Cambridge.

Choi YF, Wong TW, Lau CC. 2006. Triage rapid initial assessment by doctor (TRIAD) improves waiting times and processing time of the emergency department, Emerg. Med J, 23 (4): 262-5.

Commission of Enquiry into Hospital Practices. 1999. Report by the Commission of inquiry into hospital care Practices. http://www.polity.org.za/polity/govdocs/commissions [accessed 20/08/2010]

Department of Health. 1997. White Paper on Batho-Pele. South African Government Gazette: Notice 1459. Pretoria: Department of Health.

Department of Health. 1999. National Patients Rights Charter. Pretoria: Department of Health. Pretoria: Department of Health.

Department of Health. 2011a. Primary health care re-engineering. Pretoria: Department of Health. Pretoria: Department of Health.

Department of Health. 2011b. The Office of Standard Compliance. Pretoria: Department of Health.

Department of Health. 2011c. Health Budget Vote Policy speech by Minister of Health Dr A Motsoaledi. <http://www.doh.gov.za/show.php?id=1890> [accessed 20/08/2011]

Duckett S, Kenny A. 2000. Hospital out- patient and emergency services in rural Victoria. Aust Health Rev. 23(4):115-25.

Edwards RH, Clague JE, Barlow J, Clarke M, Reed PG, Rada R. 1994: Operational research survey and computer simulation of waiting times in two medical out-patient clinic structures. Health Care Anal. 2(2):164-9.

Health 24. 2007. P1 Editorial: 'Bad Habits Sicken Gautengers' Health 24 22 Feb., 2004, p 13 http://www.health24.com/news/General_health/1-915,39386.asp [accessed 20/08/2010]

Hart M. 1995. Improving out-patient clinic waiting times: methodological and substantive issues. Int J Health Care Qual Assur. 8(6):14-22.

Hart, M. 1996. Improving the quality of health care in NHS hospitals: some policy considerations. Int J Health Care Qual Assur. 9(7): 28-38.

Huang, XM. 1994. Patient attitude towards waiting in an out-patient clinic and its applications. Health Serv Manage Res.7(1):2-8.

Huarng, F, Lee, MH. 1996. Using simulation in out -patient queues: case study, Int J Health Care Qual. Assur, 9(6):21-5.

McKinnon, K, Crofts, PD, Edwards, R, Campion PD, Edwards, RH.1998: The out-patient experience: results of a patient feedback survey, Int J Health Care Qual Assur Inc Leadership Health Serv. 11(4-5): 156-160.

Meguid T, Amaambo F, Mhata P. 1999: Flaws in the out-patient flow at a semi rural hospital in Northern Namibia. Trop Doct. 29(2):80-5.

Mojaki, E. 2009. Evaluation of referral system in Thaba Nchu Health Sub-district and Dr. J.S Moroka District Hospital. [research report]. Johannesburg: University of the Witwatersrand.

Mojaki ME, Basu D, Letskokgohka ME, M Govender M. 2010. Referral steps in district health system are side-stepped. S Afr Med J, 101( 2): 109.

Reid N, Todd CH. 1989: Travel to hospital: Accessibility of out-patient services in rural communities. Health Service. Management, 85(3): 129-33.
estimated

Saine PJ, Baker SM. 2003: What is the best way to schedule patient follow-up appointments? Jt. Comm. J Qual Saf,; 29(6): 309-15 .

Ntuli, A. 2007.Provincial Findings in Preparation for the South African Human Rights Commission: Public Enquiry into The Right to Have Access to Health Care Services: Synthesis Report.
http://www.equinetafrica.org/bibl/docs/NTUrights27062007.pdf

South Africa. 1996. Constitution of the Republic of South Africa. Act No. 108 of 1996. Pretoria: Government Printers.

South Africa. 2011. Green Paper on National Health Insurance. Pretoria: Department of Health.

Terris J, Leman P, O'Connor N, Wood R. 2004. Making an impact on emergency department flow: improving patient processing assisted by consultant at triage. Emerg Med J. 21(5): 537-41.

Worthington D, Brahimi M. 1993: Improving out-patient booking system, Int. J Health Care Qual Assur. 6(1): 18 -23.

# APPENDICES

## APPENDIX A: ETHICS CLEARANCE CERTIFICATE AND LETTERS OF APPROVAL

## APPENDIX B: DATA COLLECTION INSTRUMENTS