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EVALUATION OF THE CASUALTY DEPARTMENT AT POLOKWANE MANKWENG HOSPITAL COMPLEX IN THE LIMPOPO PROVINCE

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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

MAY 2014

DECLARATION

I, Morongwa Caroline Mohapi declare that this research report is my own work. It is being submitted for the Masters in Public Health in the field of hospital management at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this University or any other University.



Johannesburg

DEDICATIONS

This research report is dedicated to my family, in particular my late parents, mother-in-law, Mosima; my husband Tsietsi; my three sons, Tebogo, Thato and Thabiso.

ACKNOWLEDGEMENTS

I thank God Almighty for the wisdom, everlasting love, protection and strength to overcome all obstacles.

My supervisor Dr. Debashis Basu for his enormous critical reading, valued advice, intellectual guidance and motivation throughout the study.

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- Lastly my employer, Department of Health and Social Development, for the financial assistance and study period offered.

ABSTRACT

BACKGROUND: One of the key challenges facing the Limpopo Department of Health and Social Development in the area of Casualty Care is the lack of trained personnel and the inappropriate referral and utilisation of these services. There has been no known study conducted in this area in the South African context and therefore this study was undertaken to evaluate the services rendered within the Casualty Department at the Polokwane Mankweng Hospital Complex with specific reference to material and human resources as well as efficiency of the unit.

AIM: To evaluate the Hospital Casualty Department in the Polokwane Mankweng Hospital Complex in terms of caseload, influencing factors and implications on resource utilisation during a one year study period.

METHODOLOGY: A cross sectional study design was employed in this study. A retrospective record review was done and information was extracted from various sources of hospital information systems. No primary data was collected for this study. The setting of this study was the Casualty Departments at Polokwane Mankweng Hospital Complex. The two hospitals constituting this complex are situated 30 km apart in Polokwane and Turfloop respectively. Data was collected on various variables that are relevant to the functioning of, and resource utilisation in the Casualty Unit of this Complex. Variables including that of caseload, patient profiles, service costs and workload on human resources were measured.

RESULTS: This study based on retrospective review of records of 250 patients' records selected by a simple random sample from a cohort of 14,113 patients who attended the Casualty Department of the Polokwane Mankweng Hospital Complex during one year study period. One fifth of the patients were referred from other health facilities and more than 60% of the patients were discharged after receiving treatment which implied that these patients could be managed at a regional or district hospital. More patients with medical aid bypassed the referral system. Almost half of the patients arrived after-hours (from 18h00 to 6h00).

This is the first study in the Limpopo Province which looked at the direct cost per patient at the Casualty Department. In 2008/09, overall expenditure was

R 10,321,401.42 (including R 954,168.45 for pharmacy products, other consumables R 177,261.16 and Laboratory tests R 1,866,233.25). Overall the Department accounts for an estimated R 7,323,804 in personnel annual expenditure of the hospital. Unit personnel cost per patient was estimated at R518.94 (70.96% of total recurrent cost), while the unit costs for the Pharmaceuticals, Stores and Laboratory tests were; R67.23 (9.24%), R12.56 (1.72%) and R132.24 (18.08%) per patient respectively. Overall the combined unit cost was estimated at R731.34 per single emergency care patient excluding the capital costs.

CONCLUSION: The results of the study will be used to guide the allocation of appropriate resources, and to highlight the need to implement an effective referral system, which will assist in reducing the workload.

PUBLICATION ARISING FROM THIS STUDY

Mohapi MC, Basu D. 2012. PHC re-engineering may relieve overburdened tertiary hospitals in South Africa. S Afr Med J, 102(2):79-80.

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GLOSSARY OF TERMS

Decentralise: Shifting of power, authority and functions away from the centre (Department of Health 2001).

District Hospital: Provides first level of care. It also provides support to the surrounding clinics and Community Health Centres.

Emergency care: It is care for patients with life threatening conditions that require immediate medical intervention. It is provided for a medical, surgical, or psychiatric condition that requires immediate care in order to save a life.

Emergency Department: Also termed 'Casualty Department' is a hospital or primary care department that provides initial treatment to patients with a broad spectrum of illnesses and injuries, some of which may be life-threatening and require immediate attention.

Regional Hospital: Provides secondary level of care. In the case of Limpopo Province a large number of patients are seen at this facility.

Tertiary Hospital: A health care facility in which all first, second and third level emergency patients are received and managed.

LIST OF ABBREVIATIONS

CEO	Chief Executive Officer
CMO	Chief Medical Officer
CO	Casualty Officer
DOA	Dead on Arrival
DHS	District Health System
DHIS	District Health Information System
ED	Emergency Department
EMS	Emergency Medical Services
HOD	Head of the Department
HOJD	Head of Joint Department
HPTD	Health Professional Training Development
NTSG	National Treasury Service Grant
PMHC	Polokwane Mankweng Hospital Complex
RHT	Refuse Hospital Treatment
SD	Standard deviation
WHO	World Health Organization

CHAPTER 1
INTRODUCTION

The purpose of this study was to determine the case load of the Hospital Casualty Department of the Polokwane Hospital campus and the factors influencing that case load during one year period and its implications on the resource utilisation.

1.1 BACKGROUND

Polokwane Mankweng Hospital Complex is a designated central hospital (Department of Health, 2011a). It delivers tertiary care as well as dealing with some secondary and primary health care cases. Approximately 65% of the cases managed by the hospital complex (such as foreign body removal, genito urinary and, respiratory infections, skin diseases could be dealt with in primary or secondary care facilities (Limpopo Department of Health and Social Development, 2009). The Complex has 559 level 3 beds, 372 level 1 and 2 beds, and 85 Step down beds bringing the total number of beds to 1016. A large number of posts were vacant for specialists (24%), medical officers (41%) and professional nurses (63%), clearly indicating need for the hospital to scrutinise this issue in order to ensure optimal use of its human resources (Limpopo Department of Health and Social Development, 2013).

During 2006/2007, the number of casualty consultations at the Complex reached a total of 25 368 for Polokwane Hospital and 16 400 for Mankweng Hospital respectively (Limpopo Department of Health and Social Development, 2009). The enormity of this patient load of the emergency department indicates that it is an area worthy of investigation.

This situation has a bearing on the resources allocated for health care services. The province has five regional hospitals which are referring health care users directly to the Complex. There are also thirty district hospitals most of which, due to the proximity between them and regional hospitals, prefer to transfer patients directly to the Complex.

Table 1.1 Performance indicators for Polokwane Mankweng Hospital Complex

	Polokwane	Mankweng
Admissions and births	21 891	25 056
Patient days	129 618	121 929
Average length of stay: ALOS	6.39	6.30
Bed occupancy rate %	79.1	70.8
OPD visits	118 187	84 333
Emergency consultations	25 368	16 400
Theatre cases (major)	4 177	4 417
Patient Day Equivalents (PDE)	178 910	155 506
Cost per PDE in Rand	1 747	1 152

Source: Limpopo Department of Health and Social Development, 2009)

The Complex is currently receiving patients from the entire Province even though the community should be aware of the fact that patients should first go to PHC, Community Health Centres and district hospitals.

The large number of patients visit /present in hospital casualty after hours. This is done due to the fact that they know they cannot be turned away as it is their 'right' to access service at the institution of their choice.

1.2 STATEMENT OF THE PROBLEM

Polokwane-Mankweng Tertiary Hospital Complex is experiencing an influx of level one and level two patients leading to an increased case load in the Hospital's Casualty Department. A review of the Hospital Information System indicates that the Complex attends to numerous patients that should not be seen at this service level. Kobusingye, Hyder, Bishai, et al (2005) illuminated the problems inherent in using tertiary institutions for the provision of 'basic services' and postulated that this would likely to create problems not only for the casualty department, but for the health care system as a whole.

1.3 JUSTIFICATION FOR THE STUDY

A problem that pervades throughout the health care system in South Africa is that several inappropriate referrals are dealt with by the tertiary institutions. This includes both formal and 'self-referrals', such as patients who arrive at hospitals on their own accord and anticipate service delivery.

The problem of people attempting to "bypass the system with vertical approaches" (Tanner, 2005, p.403) is not localised only in South Africa, but also in several developing health care systems globally. This study was planned in this context with the aim to determine the functioning of the current system in the Casualty Department in central/ tertiary hospitals in order to determine the scope of this problem on a local level. A central/ tertiary hospital is expected to deal with all diseases and clinical profiles and therefore this study would help to determine whether there is a need to expand resource allocation in certain areas.

1.4 RESEARCH QUESTION

What is the case load, factors influencing and how much did it cost the department?

1.5 OBJECTIVES

1.5.1 BROAD OBJECTIVE

To determine the case load, influencing factors and resource utilisation of the Hospital Casualty Department at the Polokwane Hospital campus during a one year study period (April 2008 – March 2009).

1.5.2 OBJECTIVES

1. To determine the case load by demographic profile, socio-economic status and clinical profile.
2.Determine the influencing factors to the case load.
3.To determine resource utilization both human and consumables. consumables

1.6 SIGNIFICANCE OF THE STUDY

The research can be used by both provincial and national departments to determine the costs related to the operation of a hospital casualty department and make decisions accordingly to improve resource allocation.

CHAPTER 2
LITERATURE REVIEW

In this chapter, relevant reports into the Hospital casualty with particular reference to case load, and resource utilisation are discussed. In addition to published literature, information from various unpublished sources is also reviewed.

2.1 INTRODUCTION

Compared internationally, South Africa and the United States of America are the only two major economies that have not yet adopted a full national health care system. The South African Department of Health has made several strides in this direction, but the system is still facing inequalities in terms of distribution of services. The thriving private sector also enables those who can afford it, to buy better health care than the poor who, in actual fact, comprises the majority of South African citizens.

In the United States of America, the only component of the health system that functions as a socialist system (where services are provided regardless of people's ability to pay for it), is in the emergency room or casualty department (Committee on Paediatric Emergency Medicine, 2004). However, there is a very strong debate between opponents and supporters of a socialist health care system in the USA. The supporters pointed out "that health is a basic human right and that the socialist system ensures that all members of the population have equal access to the same level of health care, regardless of their social or economic background". The opponents of socialist health care system are concerned about the nationalization of any industry would oppose a free market economy, and effectively create a monopoly which, in turn, leads to a lowering of standards due to a lack of competition. On the other hand, in a free market economy, doctors who are not paid a fixed salary often make use of unnecessary procedures to boost their income (Loewy, 1997; Klein, 2009). However, a more expensive system does not guarantee better health outcomes. The health outcome in the USA is not always the best in the

world, although it consumes 16% of the country's gross national expenditure. (Economist ed, 2009).

In terms of South African Constitution, no one may be refused emergency medical treatment (Republic of South Africa, 1996). However, public sector emergency units are under enormous pressure with large patient numbers, understaffing and poor resources (Gottschalk, Wood, DeVries, et al, 2006; Rauf, Blitz, Geyser, et al, 2008).

2.2 EMERGENCY CARE

Emergency care has been expanded to a global phenomenon. At present there are in excess of 30 journals related to the topic and it is recognized as a medical speciality in 46 countries worldwide. It has following components (Anderson, Petrino, Halpern et al, 2006):

- Before arrival at the Hospital casualty: accessing care, care in the community, care during transportation, and care on arrival at the receiving facility.
- Upon arrival at the receiving facility's casualty department: the process has the following components: triage, resuscitation and stabilization, establishment of a preliminary diagnosis, and providing treatment, observation and consultation, communication of results and documentation of care, and making provisions for follow-up care.

Burden of patients in the Hospital casualty has been increasing exponentially throughout the world. Quinn (2008) showed that the demand for emergency admission has risen from 79.6 to 92.6 out of every 1000 people seen in the casualty departments in the United Kingdom. The situation may not be different in South Africa. However, there is no longitudinal data available to prove that. The Committee on Paediatric Emergency Medicine (2004, p.878) claimed that the overcrowding of casualty departments was not only due to the inappropriate use by people with "*non-emergent problems*" but also due to increasing burden of diseases (Matteson, Weitzen, Lafontaine et al, 2008,

p.270). In the USA, Matteson, et al, (2008) reported that up to 90% of casualty departments were working to full capacity, or even above their capacity. Casualty departments are simply not keeping up with the demand, a trend that is also prevalent in South Africa, with departments shrinking in terms of resources, whilst the demand keeps growing (Lubell and Vesely 2008). Matteson et al, (2008, p.269) also mentioned inadequate inpatient capacity and patient "boarding" as problems facing casualty departments. "*This problem cannot be addressed in isolation as patients cannot be moved due to the capacity of other departments that are either full or understaffed themselves'' (USA Today ed, 2008a).* At Polokwane Hospital Casualty Department, the inpatient capacity is also inadequate.

As the entry point for most patients into the Hospital, the Casualty Departments are the most logical places to begin addressing patient flow in a hospital. A number of intervention measures have been used to improve patient flow in the Hospital Casualty such as triaging and training of staff.

Bruijns, Wallis, Burch (2008) demonstrated that use of the triaging system could dramatically reduce the waiting time of patients attending a busy public hospital casualty in South Africa. Jensen and Crane (2008) pointed out that the triage should be viewed as a *function* and not a *place* and it should not become a hindrance to the normal patient flow. They also emphasized the fact that patients should not occupy beds unless it is of medical significance. They used the term "bed-turns" (p.106) to refer to amount of time spent per person on a bed, which is often hindered by availability of emergency theatre time. One strategy put forward to address this issue is that of scheduling elective surgeries on weekends (USA Today ed, 2008b). However, the probability of hospitals convincing surgeons to operate on Saturday and Sunday is still a far-off prospect in South Africa.

The challenges and opportunities for development of Hospital Casualty are often centred on appropriate training and recruitment (Anderson et al, 2006). However, this training should not only be focussed on educating more emergency care workers, but also include an advocacy drive to educate

others with regard to the role and functions of the casualty care department.

One of the strategies used in the USA to address non-critical emergencies is the establishment of independent emergency rooms for trauma where the waiting time was significantly reduced and patients are treated in a more pleasant environment (Andrews, 2008). This kind of interventions to address the situation become more important as most injuries seen in the casualty department involve cuts, bruises and grazes (Malcolm, 1996). The total annual call burden for trauma in South Africa is quite high mainly due interpersonal violence or vehicular collision (Hardcastle, Finlayson, van Heerden, et al, 2013), which justifies creating similar model in South Africa. Currently, this type of model exists in the Charlotte Maxeke Johannesburg Academic Hospital and Inkosi Albert Luthuli Hospital in South Africa.

Regular monitoring and evaluation also helps to improve quality and safety in the casualty departments (Lubell and Vesely, 2008). Some of the indicators used to monitor a hospital casualty include the number of patients seen and the severity of their illnesses, the time of arrival, the time to manage them in the casualty (Mabe and Lengacher, 1998).

Optimisation of resources for a hospital casualty is vital for efficient and effective functioning of a hospital casualty. The increase in the number of patients seeking treatment and the decrease in the number of nurses trained to render services is a global phenomenon leading to a chronic shortage of human resources in emergency departments (Sinreich and Marmor 2004). However, it is often difficult to determine the human resource need for a casualty due to seasonal variations in patient load. Lipley (2004) attempted to address this issue by linking the staff to patient volume and patient waiting times in a Polokwane/ Mankweng Hospital complex. Burgess (2007) measured shift duration in hospital casualties to determine the human resource needs of a casualty department.

2.3 EMERGENCY CARE IN AFRICA

Emergency care in Africa and more specifically, in Sub-Saharan Africa, is severely challenged by the lack of experienced and trained personnel. Binam, Malongte, Beyiha, et al (2002) reported a lack of appropriately medically trained person to take care of life-threatening medical situations in many hospitals in Africa. These authors emphasized that the need to focus efforts on training in order to expand the current human resource pool. However, the problem is not only the lack of trained personnel, but also a lack of equipment. For example, whereas, most of the European and U.S. Casualty departments have their own radiology facilities and laboratories, in most of the casualty departments in Africa are still mostly dependent on the hospital facilities which, in some cases, are simply inadequate.

2.4 EMERGENCY CARE IN SOUTH AFRICA

The South African constitution protects the basic human right of receiving emergency medical care (South Africa, 1996), but it is difficult to determine exactly how far this definition reaches. In the past, the emergency care centres were managed by doctors with a surgical background, or sometimes it was run without the help of senior medical personnel. At present, there is a serious thrust in the country to improve the emergency care centres, specifically in view of hosting major events like the World cup and similar international events (Limpopo Department of Health and Social Development, 2009). The Colleges of Medicine of South Africa has long been offering a Diploma in Emergency care for medical doctors and recently started a specialist examination for Emergency Medicine (The Colleges of Medicine of South Africa, 2013).

One of the challenges facing the development of this field is the lack of trained personnel as well as facilities being utilized for patients who are not in need of emergency care. This is especially the case in the more rural areas where ambulance services are used in cases where alternative transport could be utilized, but simply is not available (Limpopo Department of Health and Social

Development, 2009). It was reported that in 2007 up to 60% of all calls for emergency ambulances fell in this category (Tshabalala-Msimang, 2007).

Another problem facing the system in South Africa is the inequalities existing not only between rich and poor, but also between richer and poorer provinces and richer and poorer districts within those provinces (Department of Health, 2001).

2.5 EMERGENCY CARE IN LIMPOPO PROVINCE

Emergency care in Limpopo is always a challenge. The Province has 40 hospitals for an area of 125,755 km^2, in comparison to 32 hospitals in the Gauteng Province (18,178 km^2). At present, the percentage of PHC facilities providing 24-hour services has decreased from 77% to 74% resulting in proportionally increased the pressure on hospitals to deliver these services (Limpopo Department of Health and Social Development, 2009).

Limpopo Department of Health and Social Development, (2009) designed an expansion and optimization plan for emergency medical services, but the response time of these services are still not on target. Some of the other challenges that the department is currently facing are the patient waiting times that need to be reduced and the referral system that needs improvement. However, this would require a functional health information system that provide accurate base line indicators of current performance of hospital casualties (Lipley, 2004), which often is lacking in most public health facilities in Limpopo Province.

After 1990 South Africa put a complete transformation of the health care system in place. The health care system was restructured to a “district health system” delivering health care according to the primary health care approach (Department of Health, 2001). Hopefully, this would have a positive impact on the emergency care in South Africa.

CHAPTER 3
METHODOLOGY

The study design, study setting, study population, sampling method, sample size, pilot study, data collection, data analysis, and ethical considerations are outlined in this chapter.

3.1 STUDY DESIGN

This was a cross-sectional study conducted in Polokwane/Mankweng Hospital Complex for a period of twelve months between April 2008 and March 2009.

3.2 STUDY SETTING

The study was conducted at the Casualty Department of Polokwane Hospital. The Hospital is a tertiary, referral and teaching hospital for the University of Limpopo (MEDUNSA Campus). The Hospital has 17 specialities, 500 beds and the Casualty Department is a 24-hour service. The Hospital is situated in the Capricorn District of Limpopo Province (Figure 3.1).

Limpopo Province shares boarders with Mpumalanga in the east, Gauteng Province in the south, North-West Province in the west, Mozambique in north-east, Zimbabwe in the north, and Botswana in the north-west. It is one of the poorest provinces in South Africa. The Province has five districts, namely: Capricorn, Mopani, Sekhukhune, Vhembe and Waterberg. The Polokwane and Mankweng hospitals are situated in the Capricorn District and together they form a complex that serves as the only central and tertiary hospital in the Province.



Figure 3.1 Limpopo Province

3.3 SCOPE OF THE STUDY

The study was retrospective record review sub-divided into two phases. The first phase was a review of patients' files who consulted at the Casualty Department of the Hospital. The second phase of the study was to determine resources used (such as personnel and consumables) in the Casualty Department of the same Hospital.

3.4 STUDY POPULATION AND SAMPLING

The population of the study was a random sample taken from files of patients seen at Polokwane Hospital casualty during the study period. The population size was 14113 patients. On average,1176 patients were seen per month. It was found that a sample size of 246 patient files (approximated to 250) was required for the study based on: (1) the sampling error of 5%, (2) confidence level of 95%, (3) the population size of 15 000 (i.e. total number of patients seen at the hospital casualty department in 2009, Table 3.1) and (4) assumed that 10-20% of patients seen were referred. The patient files for this study were systematically selected from 14,113 by selecting every 50th record. If a file was missing, the next file was selected.

.

3.5 VARIABLES

Variables used in this study are listed in Table 3.1.

Table 3.1 Variables used in the study

Objective	Variables	
1	Socio-demographic profile	Age Ethnicity Disability Employment status Medical aid
	Clinical profile	Clinical diagnosis Clinical outcome
	Referral	Referral Arrival time
2	Material resources	Cost of items supplied to casualty department
	Human resources	Number of staff per category Number of staff on-duty per shift

Cost estimate

The unit cost per patient was calculated using the top-down approach to configure the patient estimates below. The top-down costing starts at the top with total expenditures and then divides these by a measure of total throughout (patient headcount, etc.) to give an "average" cost per patient (in this case, per visit).

One main limitation of this method is that no adjustments are made for differences in patient characteristics or needs that are likely to affect resource utilisation, rendering it less accurate. However, it does offer reliable mean estimates, and it is easier to carry out for a number of reasons (less data intensive, fewer research skills needed, data collected from routine sources)

and thus more popular.

The following were included while calculating cost: Personnel costs (annual gross salaries) for the Casualty departmental staff; Consumables (pharmaceuticals) consumed by the patients over a period of one year (2008/09 Financial year); and Laboratory tests done on the patients over a period of one year. The following were excluded: X-ray costs for the patients, other indirect or overheads (buildings, equipment, phone, and electricity); Support staff and OPD patient registration, filing etc. and indirect costs to patients (such as administration, transport costs, drug purchases etc.).

The researcher had assumed the following during the calculation:

- The bulk of the patient costs was comprised of the cost of personnel, laboratory tests and consumables, hence estimating final unit costs close to true costs;
- The expenditure data provided was accurate and up to date;
- The patient data captured by Information department was accurate and reliable.

3.6 DATA COLLECTION

The data for phase one (i.e. patient files) was collected by a trained research assistant (a retired nurse by profession). This data included the following variables: consultation date, arrival time at casualty, patient medical record, age, gender, race, employment status, diagnosis, medical aid, referring institution, patient outcome (Appendix B).

The information for phase two of the study was obtained from the Departments of Finance and Human Resource, and the Pharmacy. This information was used to determine the costs for services rendered at the Casualty Department during the study period (Appendix B).

3.7 DATA ANALYSIS

The collected data for the study was captured using Microsoft Excel and analysed with NCSS software (NCSS, 2007).

Following descriptive statistics were used to present the data:

- Categorical variables: Frequency and percentages.
- Continuous variables: Mean and standard deviation.

Following analytical statistics were used to analyse the data:

- Categorical variables: Chi-square test
- Continuous variables: Student t-test.

The p-value of less than 0.05 was considered significant.

3.8 PILOT STUDY

The three instruments used for this study were validated and used at the Job Shimankana Tabane Hospital at Bojanala District North West (M090560) (Mokatsane, 2009). The tools are attached as Appendix B.

3.9 ETHICAL CONSIDERATIONS

The Post-graduate assessment committee of the Faculty of Health Sciences approved the research protocol (Appendix A). Permission for conducting research and accessing documents was obtained from the Head of the Department of the Limpopo Provincial Department of Health and Social Development (Appendix A). Consent was also obtained from the facility where the study was conducted. The study was approved by the University of the Witwatersrand Human Research Committee (Medical) (Appendix A). Confidentiality and anonymity were maintained at all times during collection, capturing, and reporting of the information. Patients' names were not captured according to any identifiable system but a study number was assigned to each file by the researcher.

CHAPTER 4
RESULTS

In the previous chapter the methodology of the study was outlined. In this chapter, the results and the interpretation of the results are presented. The chapter is subdivided into sections. The first section comprises the findings from patient medical records that were reviewed. The second section depicts the findings from information collected from the Finance Department, the Human Resources Department and the Pharmacy.

4.1 DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

A total of 14 113 attended the Casualty Department during the year 2008/9. A random sample of 250 patients' files was selected for the study. The demographic profiles of these patients are described below.

4.1.1 GENDER

About 108 (43%) of the participants were female, 137 (53%) were male and only 5 (2%) did not specify their gender.

4.1.2 AGE

The distribution of age (in years) during the study period is presented in Figure 4.1. Of the 250 patients, 73 (29%) were in the age group 25-34 years, followed by 50 (20%) in the age group 35-44 years and 40 (16%) in the age group 15-24 years. There were 11 (4%) patients in the age 65 years and above. The mean age for females was 29 years ± 15.4 and for males, it was 35 years ± 18.5. There was a statistically significant difference observed between the mean age of males and females (t-test, $p<0.01$). The study results revealed that overall, male patients were older than female patients.

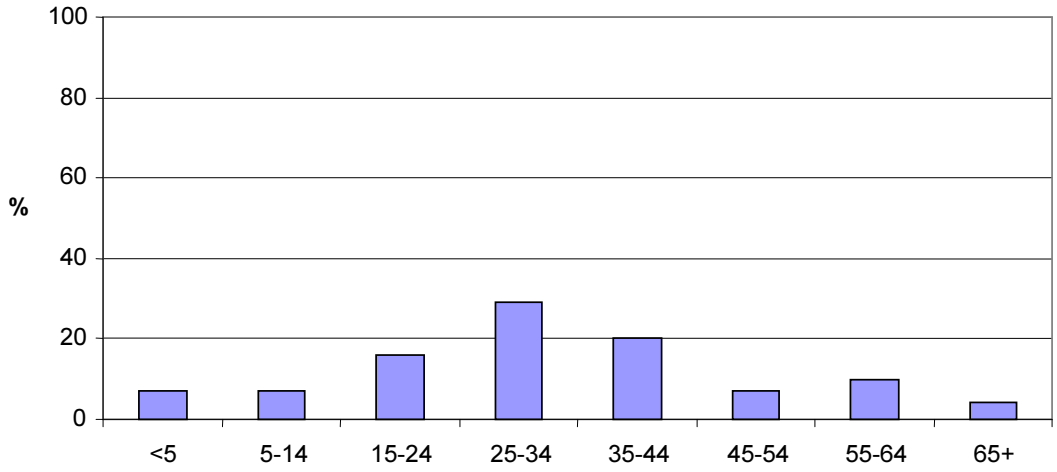


Figure 4.1 Age distribution of the subjects

4.1.3 ETHNICITY

The majority (n=224, 90%) of the patients in this study were black followed by 21(8%) white and only 5 (2%) were of other races.

4.1.4 EMPLOYMENT AND MEDICAL AID STATUS

120 (48%) of the patients were employed and 130 (52%) were unemployed. The majority of them (246, 98%) had no medical aid.

4.2 CLINICAL PROFILE OF PATIENTS

4.2.1 CLINICAL DIAGNOSIS

Figure 4.2 shows the conditions that lead patients to seek medical attention during the study period. Of these, injuries (i.e. intentional and unintentional) were the commonest cause of attendance at the Casualty (35%).

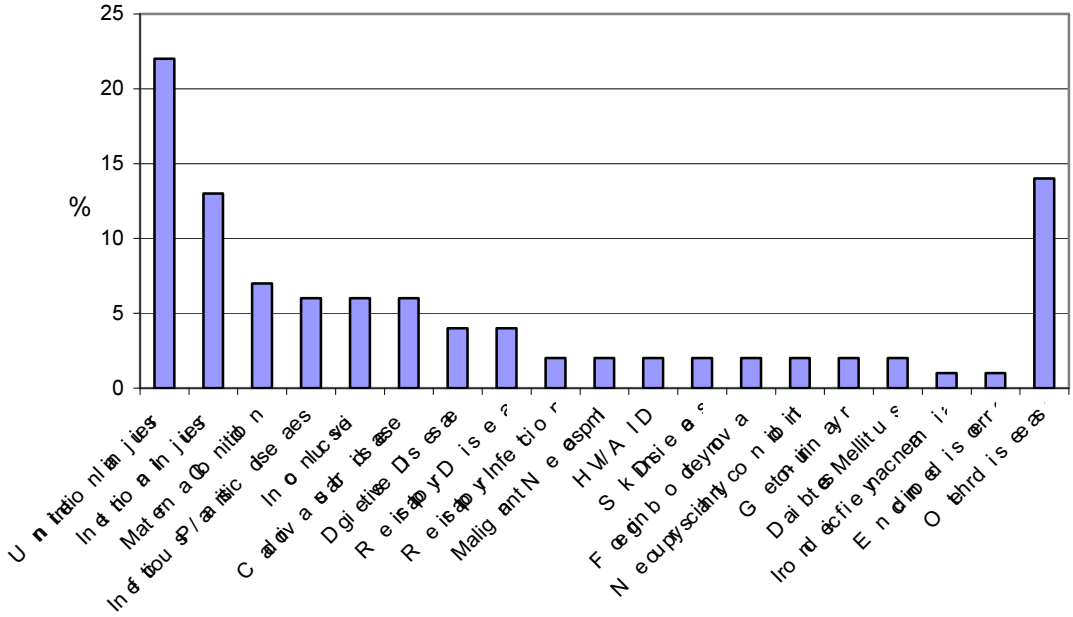


Figure 4.2 Category of diseases or injuries seen at casualty

Of the patients with intentional injuries, the majority (21, 63%) were due to assault, 9 (27%) were stab wounds and 3 (10%) were gunshots. More than 30% of unintentional injuries were due to road traffic accidents.

The common obstetric and gynaecological conditions that lead patients to seek medical attention during the study period were pregnancy related conditions (18), which includes evacuations (10), this is a gynaecological procedure done to treat incomplete abortion, and ectopic pregnancies (4).

Table 4.1 shows the distribution of disease categories by gender seen in the Casualty Department during the study period. The finding of this study indicates that injuries were more common among male patients than female patients.

Table 4.1 Distribution of disease categories by gender

	Female n (%)	Male n (%)
Unintentional injuries	15 (13%)	37 (28%)
Intentional injuries	9 (9%)	22 (16%)
Maternal Condition	18 (16%)	0
Infectious/Parasitic disease	6 (6%)	6 (5%)
Inconclusive	6 (6%)	8 (6%)
Cardiovascular disease	4 (4%)	10 (8%)
Digestive Disease	4 (4%)	5 (4%)
Respiratory Disease	4 (4%)	5 (4%)
Respiratory Infection	2 (2%)	4 (3%)
Malignant Neoplasm	4 (4%)	3 (2%)
HIV/AIDS	5 (5%)	1 (1%)
Skin Disease	3 (3%)	3 (2%)
Foreign body removal	3 (3%)	3 (2%)
Neuropsychiatry condition	1 (1%)	3 (2%)
Genito-urinary	3 (3%)	1 (1%)
Diabetes Mellitus	1 (1%)	3 (2%)
Iron deficiency anaemia	2 (2%)	1 (1%)
Endocrine disorder	0	3 (2%)
Other diseases	17 (15%)	17 (13%)
Total	**108 (100%)**	**133 (100%)**

Of the 5 patients the gender was not specified, two were diagnosed with respiratory disease and three had other diseases.

4.2.2 CLINICAL OUTCOME

The clinical outcome of the patients is illustrated in Figure 4.3.

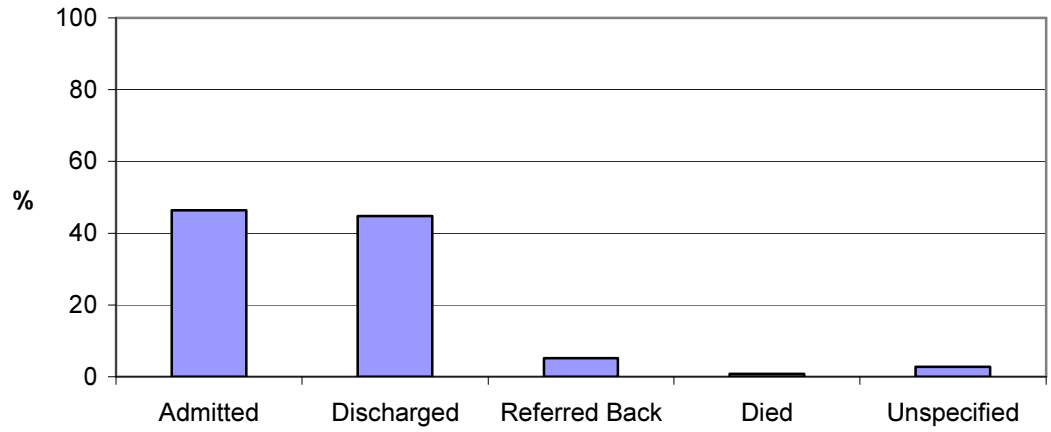


Figure 4.3 Clinical outcomes of patients

The results of this study indicates that 116 (46%) patients were admitted in the hospital, 112 (45%) were discharged, 13 (5%) were transferred back to the referring hospital. Two (1%) patients died during the study period, of which one died on arrival (Figure 4.3).

Of the 51 patients referred, 30 (59%) were admitted, 9 (18%) discharged, and 8 (16%) were transferred back to the referring hospital. Of the 199 patients not referred, 86 (43%) were admitted, and 103 (52%) discharged.

4.3 REFERRAL SYSTEM

4.3.1 REFERRAL

Fifty one (20%) patients in this study were referred from other facilities in the Province. Of the referred patients, 28 (55%) were from district hospitals, 15 (30%) from regional hospitals, two (4%) were transfers from a tertiary hospital. About six (12%) were referred by police and private doctors. The results of this study revealed that 80% of the patients were not referred by formal sources (regional and district hospitals).

4.3.2 MODE OF TRANSPORT

The majority (42, 82%) of the referred patients used an ambulance as mode of transport to the hospital, followed by six (12%) of the patients who used public transport and three (6%) were transported in a police vehicle. About 168 (86%) of the non-referred patients used private transport to the hospital, whereas 11 (6%) used ambulances and 17 (9%) used public transport (Figure 4.4).

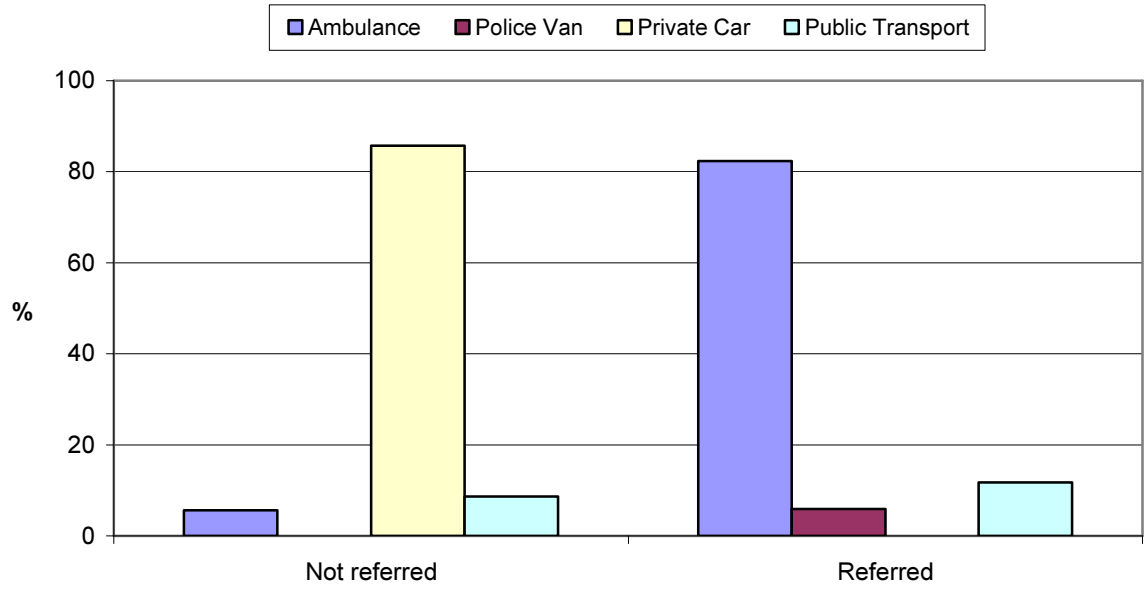


Figure 4.4 Mode of transport used by patients

4.3.3 ARRIVAL TIME

Figure 4.5 illustrates the arrival time of patients in the Casualty Department. The majority (77, 32%) of the patients arrived in the casualty department between 18h01 and 23h59, followed by 77 (31%) who arrived between 12h01 and 18h00. About 62 (25%) arrived between 06h01 and 12h00 and only 32 (13%) arrived between 24h00 and 6h00.

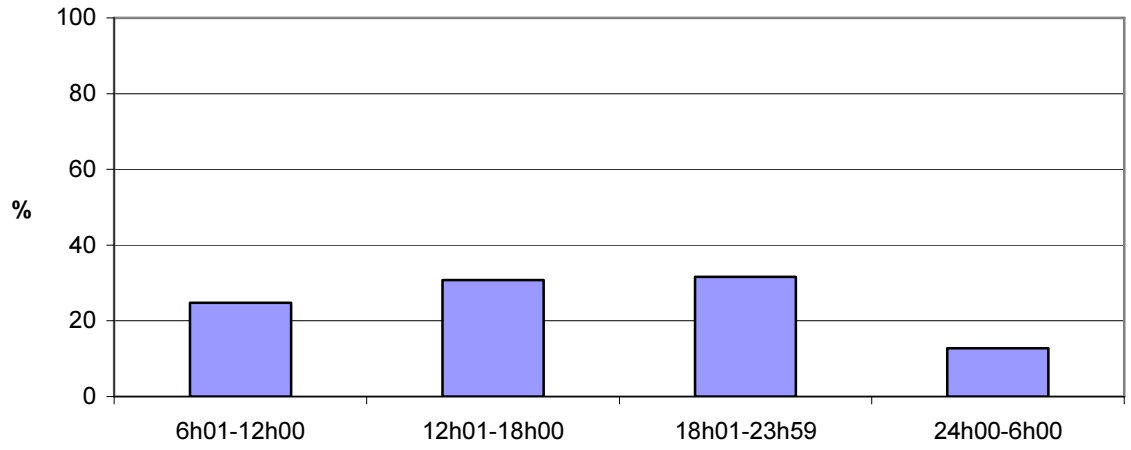


Figure 4.5 Patient arrival time in the Casualty Department

4.3.4 ASSOCIATION BETWEEN REFERRALS AND SOCIO-DEMOGRAPHIC PROFILE

Table 4.2 shows the relationship between referred and non-referred patients with regards to selected demographic information. The findings of this study indicated that there were statistically significant differences with regard to gender ($p<0.001$), ethnicity ($p<0.01$), patients having medical aid ($p<0.001$), and patient outcome ($p=0.03$). More male patients were referred in comparison to female. A statistical significance difference was observed in relation to patient having a medical aid, though only four patients with medical aid were referred ($p<0.05$). No significant difference was observed with regard to age ($p=0.82$), and employment status ($p=0.51$).

Table 4.2 Association between referrals and selected demographics

	Patient referred		p-value
	Yes	**No**	
Age (mean ± SD)	**32.2**±17.1	**33.9**±17.6	**0.8227**
Gender			
Female	14(29%)	94(49%)	<0.001
Male	34(71%)	99(51%)	
Ethnicity			
African	52(98%)	172(87%)	<0.01
Other	1(2%)	25(13%)	
Employment Status			
Employed	25(47%)	95(48%)	0.51
Unemployed	28(52%)	102(51%)	
Medical aid			
Yes	4(8%)	0(0%)	<0.001
No	49(92%)	197(100%)	
Patient outcome			
Admitted	30(59%)	86(43%)	0.03
No admitted	21(41%)	113(57%)	

*SD Standard deviation

4.3.5 ASSOCIATION BETWEEN REFERRALS AND ADMISSION STATUS

Of the referred patients, 32 (65.3%) were admitted and 17 (34.7%) were discharged and transferred back to the institutions that originally referred them. Of the patients not referred 93(43%) were admitted, 108 (53.7%) were discharged (Figure 4.6).

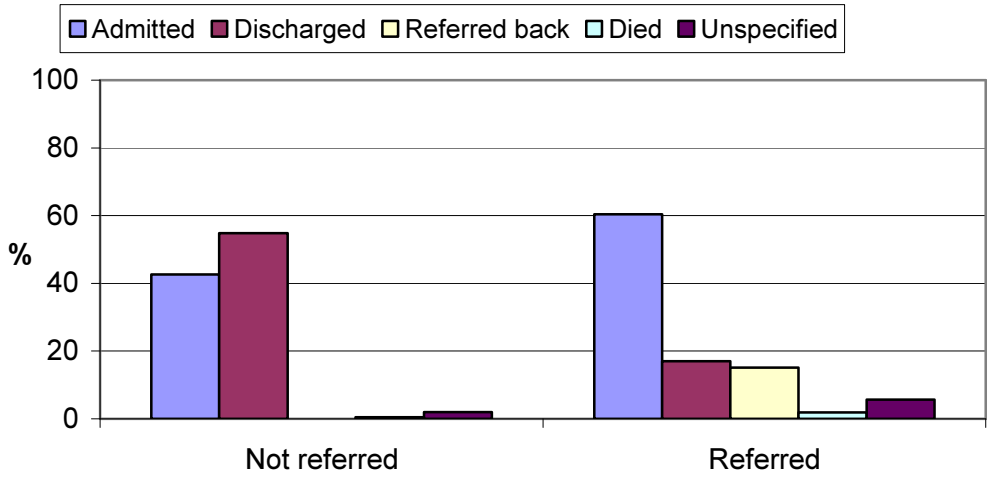


Figure 4.6 Patient outcomes by referral status

4.4 COST ESTIMATIONS

Tables 4.3 and 4.4 below provide an overview of the Casualty department's major expenditure items (cost drivers), namely; personnel and pharmaceuticals. These aggregate costs amounts are for an entire financial year, to enable better average cost estimations.

Table 4.3 outlines the range of estimated annual gross expenditure on pharmaceuticals by the Casualty Department. For the Financial Year 2008/09, the amount recorded was R 954,168.45 on pharmacy products (excluding other consumables). From the list of items, the main cost drivers among these included; Large Volume Parenterals (R 145,455.96); Biologicals (R 129,899.96); Bottles, Bags, Gloves (R 125,852.40); Surgical Catheters (R109,278.42) and Small Volume Parenterals (R 105,596.72) respectively. The other consumables (i.e. stores) amounted to R 177,261.16 expended over the financial year, thereby giving a total expenditure of R 1,131,429.61 (on consumables, excluding X-rays tests). The gross expenditure on Laboratory tests for the department was R 1,866,233.25 for the same period.

Table 4.3 Recurrent Costs

CATEGORY	ANNUAL
Pharmaceuticals	
Admin Set Equipment	R 49,902.52
Antibiotics	R 5,364.57
Bandages and Dressings	R 101,863.67
Biologicals	R 129,899.96
Bottles, Bags, Gloves	R 125,873.96
Capsules, Tablets	R 2,333.46
Dental Needles	R 1,395.22
Drops, Aesols and Inhalers	R 7,273.82
Family Planning	R 12.46
Large Volume Parenterals	R 146,520.26
Life Support	R 47,631.70
Liquids (Internal & External)	R 15,439.63
Sanitary Requirements	R 2,382.76
Semi Solids	R 10,222.69
Small Volume Parenterals	R 105,596.72
Stationery	R 727.45
Surgical Catheters	R 109,278.42
Surgical Instruments / Blades	R 21,529.63
Sutures	R 33,061.07
Syringes, Needles and Insulin	R 23,432.49
Test Trips and Tabs	R 11,952.20
Unavailable Tenders	R 2,473.80
Sub-Total (Pharmaceuticals)	**R 954,168.45**
Sub-Total (Stores)	**R 177,261.16**
TOTAL [CONSUMABLES]	**Rb1,131,429.61**
TOTAL (LABORATORY TESTS)	**R 1,866,233.25**

Source: Hospital records

Table 4.4 presents an overview of Polokwane Hospital's Casualty Department staff costs (salaries) on an aggregate basis. As above, the table presents the total annual personnel costs in the Casualty department. While the breakdown of costs per personnel category can be seen above, overall the Department accounts for an estimated R7, 323,804 in personnel annual expenditure of the hospital.

Table 4.4 Personnel Unit Costs (Salaries) for Casualty Staff

Category	NUMBER	MONTHLY	ANNUAL
Sub Specialty	1	R 53,583	R 642,996.00
Medical Officer (Grade 3)	1	R 48,333	R 579,996.00
Medical Officer (Grade 2)	2	R 40,416	R 969,984.00
Medical Officer(s)	2	R 34,833	R 835,992.00
Medical Intern	1	R 21,166	R 253,992.00
Operational Nurse Manager	1	R 21,333	R 255,996.00
General Nurse	1	R 12,583	R 150,996.00
Specialty Professional Nurse(s)	9	R 18,916	R 2,042,928.00
Enrolled Nurse(s)	7	R 8,166	R 685,944.00
Enrolled Nurse Assistant(s)	4	R 6,250	R 300,000.00
Ward Clerk(s)	4	R 6,250	R 300,000.00
Cleaner(s)	3	R 5,083	R 182,988.00
TOTAL			**R 7,323,804.00**

Source: Casualty Department

Table 4.5 below presents the estimated unit costs (average costs) per patient in the Casualty department of Polokwane hospital. The "unit cost estimate," in this report refers to an approximation of the itemised resources required to provide emergency care service to an individual patient at the hospital.

Table 4.5 Estimated Unit Costs Per Patient.

CATEGORY	TOTAL COST	PATIENTS	COST PER PATIENT
Capital			
Capital	N/A	14113	0.00
Recurrent			
Personnel	7,323,804.00	14113	518.94
Recurrent			
Consumables (Pharmaceuticals)	954,168.45	14113	67.61
Consumables (Stores)	177,261.16	14113	12.56
Sub-total (Consumables)	1,131,429.61	14113	80.17
Recurrent (Other)			
Lab Tests	1,866,233.25	14113	132.24
X-Rays	N/A	14113	0.00
Other	N/A	14113	0.00
Sub-total (Other Recurrent)	1,866,233.25	14113	132.24
GRAND TOTAL	**10,321,466.86**	**14113**	**731.34**

As mentioned above, the capital costs were not included, and only recurrent (running) costs are included. Based on the recorded headcount of 14,113 casualty patients for the year 2009, the unit personnel cost per patient was estimated at R518.94, while the unit costs for the Pharmaceuticals, Stores and Laboratory tests were; R67.23, R12.56 and R132.24 per patient respectively. Overall the combined unit cost was estimated at R731.34 per single emergency care patient.

Predictably, the health care costs tend to be tilted greatly toward personnel costs, and it was not different for the Casualty department. In this study, the

personnel costs accounted for the largest component, at 70.96%, followed by laboratory tests (18.08%), Pharmaceuticals (9.24) and Stores (1.72%) respectively.

CHAPTER 5
DISCUSSION

In this chapter, the results obtained from the analysis of the data are discussed and compared with those from other published studies. Furthermore, in some instances the researcher attempted to explain the findings according to her own hypothesis. Although not every aspect of the findings is discussed in this chapter, selected topics from the study are covered.

5.1 INTRODUCTION

Polokwane Mankweng Hospital Complex as already mentioned earlier, are located quite a distance from each other. For the purpose of the study data was collected from Polokwane Campus. This study gave an estimate of the minimum cost for treating patients at the casualty department of this facility. It further profiled the leading causes of morbidly at the unit and recommended ways and means of improving the situation.

5.2 SOCIO-DEMOGRAPHIC PROFILE

Approximately half of the patients were between the age group 25 to 44 years. The study results revealed that overall more male patients were seen and these patients (male) were older than female. More male patients were referred in comparison to female.

5.3 CLINICAL PROFILE

Most patients, according to this study, were admitted in the casualty department due to injuries (25%), and maternal- and cardiovascular conditions (12%). Nkombua (2008) reported assault related injuries, motor vehicle accident related injuries, respiratory tract infections, and lacerations as the most common conditions seen in emergency departments. Siddiqui et al (2002) reported that the majority of patients in their study had respiratory tract

infections followed by burns, gastrointestinal tract problems and aches and pains.

More than 60% of the patients seen at the Casualty Department were discharged after receiving treatment. This could be an indication that a significant section of the patients probably did not need to visit the casualty department, but could have been treated at a lower level facility. Similarly this trend of non-emergent patients visiting the emergency department is described in studies in other parts of the world (Bezzina, Smith, Cromwell et al, 2005; Gentile, Vignally, Durand, et al, 2010; McGuigan and Watson, 2010). It is therefore necessary to institute appropriate measures to interface between the tertiary institution and other levels of care with the aim of providing seamless health care at affordable costs for patients and the system. If no steps are taken, Polokwane Hospital, and in particularly the Casualty Department would continue to be used inappropriately by patients as an alternative to other providers of health care, namely regional and district hospitals and other primary health care units. This would be at the expense of other patients who truly require care at a tertiary hospital.

Whether the extent to which patients presenting to the emergency department with minor cases contribute to delays and crowding is controversial. Wong, Morra, Caesar, et al (2010) described a similar trend in terms of a very high admission rate generated by the emergency (casualty) department which could lead to a crisis in terms of bed availability. This remained so despite availability of a triage system. It placed strain on the work force and the system itself resulting in an increased risk of mismanaging patients and possible litigation. It therefore follows that a casualty department that sees only cases strictly qualifying for its service would stand a fair chance to save lives and provide quality care to patients.

5.4 REFERRAL SYSTEM

Only 20% of the patients were referred from other health facilities. The rest of the patients were self-referrals. There was a peak in the patient load from

18h00 to 23h59 suggesting that people prefer to consult in the early hours of the evening after working hours. Given the tendency of patients to make use of their own transport it is clear that even unemployed people could be affected by their dependency on employed individuals to provide transport to and from the hospital outside of working hours. It is especially in the non-referred group where a private car is being utilized as method of transport. All these factors appear to indicate that the Casualty department at this Hospital was utilized out of convenience rather than real need.

Self-referred patients were appeared to be responsible for excessive use of casualty services. This study's findings supported the trends delineated in other studies describing the burden of non-emergent patients on the emergency departments who come without proper referral and often without visiting a primary care-giver first (Ning, Stein, Hsia, et al, 2010). There is a statistically significant difference between the patient outcomes for referred and non-referred cases clearly leaning towards a situation where the larger portion of self-referred cases was not in need of hospitalisation.

The distribution of patients according to their disease category also showed that a significant amount of people consulted for conditions not usually associated with the Casualty Department. When an analysis of the precise breakdown is done, it appears that woman in particular have less unintentional injuries. Still, the same proportion of them seems to consult after hours. Some of the consultations for conditions like skin-diseases could not be explained by any emergency situation.

Although this study was not able to quantify the degree of inappropriate referrals, it can be concluded that some of the patients could have received appropriate care at lesser cost at regional hospitals nearer to them. It is therefore necessary to build capacity of regional hospitals to deal with all patients that require secondary level of care. Capacity should be developed in terms of appropriate personnel (numbers and skills), equipment, budget and other material resources. In addition. patient should be educated about accessing health care at appropriate level of care for their illness/complaint.

There are a number of policies formulated recently to address some of the challenges mentioned above such as Green Paper on National Health Insurance (Department of Health, 2011b), Categorization of hospitals (Department of Health, 2011a). These policies would hopefully provide guidance on these issues.

5.5 COST

On average, average cost of treating one patient at the Polokwane Hospital the Casualty Department during the Financial Year 2008/09 was R731. This expenditure excludes X-rays, rent and other implicit costs. The calculated expenditure represents 40% of the total cost per inpatient at the same hospital (Lubinga, 2009).

Financing of public health care comes largely from provincial departments, as opposed to medical aid subsidiaries for private health system and it is government policy to allocate the majority of resources to primary health care. Therefore a lesser budget per capita was being made available to tertiary hospitals (McIntyre et al, 2007).

The 1995 expenditure review found that in 1992/3 financial year, acute care public hospitals in South Africa spent over 76% of total recurrent public health expenditure of which tertiary and other higher levels of care accounted for 44% thereof. This expenditure suggested that efforts should be made to save on unnecessary costs especially costs for tertiary health care services. The review further noted that health conditions could be managed at lower costs at appropriate levels of care including primary health care settings.

Indeed, the continued high expenditure at hospitals, especially those providing third level care, is likely to frustrate government efforts to channel more resources to primary health care as demanded by the district health care model.

This is likely to have negative impact (such as increase in waiting time) on the

quality of care of patients, especially at casualty departments, including that of Polokwane Hospital. This information suggests that efforts should be made to ensure that only patients who actually require services at tertiary hospitals receive it. This may mean re-engineering the district health system to manage patients at appropriate centres of health care such as regional and district hospitals, health centres and clinics.

The District (Capricorn) in which Polokwane Hospital is located has no accredited regional or tertiary hospital. This may be the cause for district hospitals to refer patients to Polokwane Hospital for second level care. This reason may not be limited to district hospitals, but patients may, for the same reason, refer themselves.

Clearly, if the situation is left unattended, resources at Polokwane/Mankweng Hospital Compex will be used for patients not qualifying for the use thereof. This would result in the role of the Hospital confused or blurred, inappropriate use of skills of professionals with consequent negative repercussions for the patients. Ultimately the total quality of care may be compromised. Patients who require emergency attention at this facility may be neglected.

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the results are assessed in relation to the aims of the study, so that conclusions can be drawn. The limitations of the study are analysed and recommendations are made with reference to the findings of the study. These recommendations focus on the management of patients soliciting care at casualty department in tertiary hospitals. Finally, ideas for further research are presented.

6.1 CONCLUSIONS RELATED TO THE OBJECTIVES OF THE STUDY

The broad objective of this study was to determine the case load, influencing factors and resource utilisation of the Hospital Casualty Department at the Polokwane Hospital campus during a one year study period (April 2008–March 2009).

6.1.1 PROFILES OF THE PATIENTS ATTENDING THE HOSPITAL CASUALTY DEPARTMENT

More than fourteen thousand patients attended the casualty department during this period. The study revealed that more male patients were referred in comparison to female. Most patients were admitted in the Casualty department due to injuries (25%), and maternal- and cardiovascular conditions (12%). More than 60% of the patients seen at the Casualty Department were discharged after receiving treatment which implied that these patients could be managed at a regional or district hospital. The majority of the referred patients used an ambulance as mode of transport to the hospital whereas most of the non-referred patients used private transport to the hospital. Almost half of the patients arrived after-hours (18h01 to 6h00). This situation requires urgent intervention by the management in collaboration with the leadership of the department. The referral system need to be strengthened and where possible by-pass fees be implemented.

6.1.2 THE MATERIAL AND HUMAN RESOURCES USAGE IN THE HOSPITAL CASUALTY DEPARTMENT DURING THE STUDY PERIOD

For the Financial Year 2008/09, the amount recorded was R 954,168.45 on pharmacy products (excluding other consumables), besides other consumables (R 177,261.16). Total expenditure for the consumables was R 1,131,429.61. The gross expenditure on Laboratory tests for the Department was R 1,866,233.25 for the same period. Overall the department accounts for an estimated R 7,323,804 in personnel annual expenditure of the Hospital.

Based on the recorded headcount of 14 113 casualty patients for the year 2009, the unit personnel cost per patient was estimated at R 518.94 (70.96% of total recurrent cost), while the unit costs for the Pharmaceuticals, Stores and Laboratory tests were; R 67.23 (9.24%), R 12.56 (1.72%) and R 132.24 (18.08%) per patient respectively. Overall the combined unit cost was estimated at R 731.34 per single emergency care patient excluding the capital costs. The cost incurred could be utilised for critical secondary and tertiary patients instead of minor cases.

6.2 LIMITATIONS OF THE STUDY

The limitations of the study are as follows:

- The study was conducted in a tertiary facility in one of the rural provinces in the country and therefore the results may not be generalizable for other provinces.
- Some of the patient files were missing. In these cases, the next file was chosen.
- Indirect costs (such as electricity, space) were not included in calculating cost per patient.

6.3 RECOMMENDATIONS

This study found only 20% of the patients seen in the Casualty department of Polokwane Mankweng Hospital complex was referred. This might be due to lack of regional and district hospitals in the Capricorn District. This forces hospitals like Polokwane to treat level 1 and 2 patients which is an inappropriate use of resources. It is therefore recommended that the possibility of developing one district hospital into a regional hospital in order to relieve the tertiary hospital complex from the burden of level 2 patients. This will go a long way in saving the state resources and improving the care of patients across the board.

The calculated cost of treating patients at the casualty department has been underestimated because it excluded cost for x- rays, space, lighting, ventilation and many other implicit costs. A more in-depth study taking explicit and implicit cost into consideration is advised to provide a better frame of reference.

During the study, it was noted with concern that some of the patient information was not complete. There is a need to emphasise the importance of proper patients' record system. Poor records may lead to misdiagnosis which may ultimately compromise quality of care. The possibility of litigation is also likely which may ruin not only reputation of the Hospital but also of the provincial health services in general.

This study found that there is an ineffective referral system. This problem requires community awareness through the governance structures. There is a need to develop an all-inclusive referral policy developed. There should also be strengthening of capacity at all levels of care in the Limpopo Province.

6.4 CONCLUSION

This was cross-section study based on retrospective review of records of 250 patients selected by a simple random sample from a cohort of 14,113 patients

who attended the Casualty Department of the Polokwane Mankweng Hospital Complex during one year study period. The study found that 20% of the patients were referred from other health facilities and more than 60% of the patients were discharged after receiving treatment which implied that these patients could be managed at a regional or district hospital. Very few patients had medical aid. Almost half of the patients arrived after-hours 18h01 to 6h00.

This is the first study in the Limpopo Province which looked at the direct cost per patient at the Casualty Department. In 2008/09, overall expenditure pharmacy products, consumables and laboratory tests was R 10,321,401.42 and the combined unit cost was estimated at R731.34 per single emergency care patient excluding the capital costs.

The lessoned learned on the study will assist similar facilities in South Africa, to manage and improve on appropriate referral system.

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APPENDICES

APPENDIX A

LETTER OF PERMISSION FROM LIMPOPO DEPARTMENT OF HEALTH AND SOCIAL DEVELOPMENT

LETTER OF PERMISSION FROM POSTGRADUATE COMMITTEE

LETTER OF PERMISSION FROM THE ETHICS COMMITTEE

PHD 094(1

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH & SOCIAL DEVELOPMENT

POLOKWANE/MANKWENG HOSPITAL COMPLEX

CAMPUS: [X] PIETERSBURG [ ] MANKWENG

ENQUIRIES: DR MAPHANGA

TELEPHONE NO: (015) 287 5014

REFERENCE NO: S14/3

DATE: 27 NOVEMBER 2009

TO : MOHAPI M.C.

FROM : ACTING CEO PMHC

RE: ADMISSION TRENDAT AT CASUALTY DEPARTMENT OF POLOKWANE MANKWENG HOSPITAL COMPLEX

PMHC Hospital has no objection in approving the study "admission trend at Polokwane Mankweng Hospital Complex "

The study might add value to the Management of the facility.

Please report to the Clinical managers of the PMHC on / before the day of the study.

We hope that the study will not disturb the delivery of Health Services.

We wish you well on your research.

Regards,

Acting Chief Executive Officer : PMHC

POLOKWANE HOSPITAL CAMPUS
DEPARTMENT OF HEALTH & SOCIAL DEVELOPMENT
Cor. HOSPITAL & DORP STREET
PRIVATE BAG X9316
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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mrs Morongwa C Mohapi

CLEARANCE CERTIFICATE	**M091037**
PROJECT	Evaluation of the Casualty Department at Polokwane Mankweng Hospital Complex in the Limpopo Province
INVESTIGATORS	Mrs Morongwa C Mohapi.
DEPARTMENT	School of Public Health
DATE CONSIDERED	2009/10/30
DECISION OF THE COMMITTEE*	Approved unconditionally

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

DATE 2009/11/02 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Dr D Basu

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...
.....

Faculty of Health Sciences
Medical School, 7 York Road, Parktown, 2193
Fax: (011) 717-2119
Tel: (011) 717-2745

Reference: Ms Tania Van Leeve
E-mail: tania.vanleeve@wits.ac.za
19 April 2010
Person No: 0719126D
PAG

Ms MC Mohapi
P O Box 309
Modimolle
0510
South Africa

Dear Ms Mohapi

Master of Public Health (Hospital Management): Approval of Title

We have pleasure in advising that your proposal entitled "*Evaluation of the casualty Department at Polokwane Mankweng Complex in the Limpopo Province.*" has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX B
DATA COLLECTION TOOLS

PMHC HOSPITAL COMPLEX

Tool 1: PATIENT PROFILE AND DIAGNOSIS

Date	Patient no	Age	Ethnicity	Employment status	Initial diagnosis	Final diagnosis	Medical aid	ICD 10 code

PMHC HOSPITAL COMPLEX

TOOL 2: HUMAN RESOURCES

Staff category	Nr.	Month1 Aprl 08	Month2 May 08	Month3 Jun 08	Month4 Jul 08	Month5 Aug 08	Month6 Sep 08	Month7 Oct 08	Month8 Nov 08	Month9 Dec 08	Month10 Jan 09	Month11 Feb 09	Month12 Mar 09
Doctors													
Super Speciality													
Grade 3 Medical officer													
Grade 2 Medical officer													
Medical Officer													
Dr Intern													
Nurses													
Operational manager													
Nurse: Professional													
Nurse: Staff													
Nurse: Assistant													
Support													
Ward clerk													
Cleaner													
Porters													
Number of patients													
Nr of patients													

PMHC HOSPITAL COMPLEX

TOOL 3: COST

	Nr.	Month 1	Month 2	Month3	Month 4	Month5	Month6	Month 7	Month8	Month9	Month10	Month 11	Month12
Supplies to Casualties													
Pharmacy													
Finance													