**Gordon Institute of Business Science**

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# Factors that influence the non-urgent use of hospital emergency departments

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# ABSTRACT

The changing role of emergency departments (ED) as providers of non-urgent care has been labelled inappropriate and a burden to healthcare systems. This has resulted in the development of intervention strategies aimed at diverting these non-urgent patients away from the ED to primary care providers who are able to effectively manage these conditions at a lower cost. The failure of diversion strategies thus far, highlights a gap in the understanding of the factors that influence these patients to seek non-urgent care in the ED.

This study was designed with the aim to understand the patients' perspective in the decision to seek non-urgent care in the ED as well as to establish whether this phenomenon is in any way related to what time of day or week these visits occur. The study was purely quantitative in nature and employed a self-administered questionnaire that was completed by 113 respondents in an ED of a private hospital in Johannesburg, South Africa.

The results showed that non-urgent ED use is mainly a result of an interplay between the inadequate access to primary care and the convenience of the ED. The patient's perception of urgency was also found to influence this behaviour, as was the effect of medical insurance in shielding patients from realising the full cost of care in the ED. The study also distinctly pointed out differences in the factors that influence non-urgent ED use at different times of the day as well as on different days of the week.

**KEYWORDS:** Hospital emergency departments; primary healthcare providers; non-urgent healthcare services; medical insurance

# DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Seipati Nthabiseng Legoete                                  Date

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# GLOSSARY OF TERMS

The following definitions are relevant within the context of the study:

**ED:** Emergency Department, the plural form is EDs

**GP:** General Practitioner, the plural form is GPs

**Primary Care Provider:** this term has the same meaning and is used interchangeably with **General Practitioner**

**Medical Insurance:** is used interchangeably and has the same meaning as medical scheme and health insurance

**SATS:** South African Triage Scale

# 1 INTRODUCTION AND OBJECTIVES

## 1.1. Introduction

The utilisation of emergency departments (EDs) by patients with non-urgent medical conditions is an unresolved problem and a burden for healthcare systems (Uscher-Pines, Pines, Kellermann, Gillen & Mehrotra, 2013). The costs of treating these non-urgent conditions are usually higher in the ED than the same treatment provided by a general practitioner, who has been acclaimed to be more than able to manage patients with non-urgent medical conditions (Tsai, Liang & Pearson, 2010; Dover, 2010; Uscher-Pines *et al*, 2013). Non-urgent patients have been said to also put a strain on resources, which results in competition with patients who have a greater need for urgent medical attention (Dover, 2010). This phenomenon has led to widespread interest in developing interventions to discourage non-urgent ED visits (Uscher-Pines *et al*, 2013).

## 1.2. Purpose of the Study

The purpose of this study was to investigate the factors that influence the non-urgent use of emergency departments. The study was conducted in the South African private healthcare sector, which is largely financed through medical schemes (Department of Health, 2011; Council of Medical Schemes, 2015). To that end, the study was conducted on individuals who are members of a medical scheme*,* who utilise emergency departments for non-urgent medical conditions.

## 1.3. Background and Context of Study

### 1.4.1   Definition of non-urgent ED use

Uscher Pines *et al* (2013) define non-urgent ED visits as visits for conditions that are unlikely to have an adverse outcome if treatment is delayed for several hours. Lee, Lau & Hazlett et *al* (2000) add that non-urgent utilisation refers to attendance at the ED by patients whose conditions are neither accidents nor emergencies, and do not require any hospital treatment.

 A study conducted by Durand, Palazzolo & Tanti-Hardouin (2012:5) found that ED

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professionals often define non-urgent visits according to medical criteria and usually see them as minor medical problems that are non-acute and certainly not life threatening. Durand *et al* (2012:6) further adds that for medical professionals, the concept of non-urgency is in opposition to the concept of vital urgency and that patients characterised as non-urgent are most often defined as "those who could have been treated by a general practitioner".

Lee *et al* (2010) and Bruni, Mami & Ugolini (2014) referred to ED attenders requiring non-urgent treatment as inappropriate users of hospital services. This is contrary to the finding of Durand *et al* (2012) who made a distinction between non-urgent and inappropriate use. The term non-urgent mainly refers to the level of severity of the medical problem whereas in contrast, the term inappropriate additionally refers to the social and psychological conditions of the patient that determine when they choose to visit the ED (Durand *et al*, 2012). Even though the non-urgent use of EDs is a worldwide problem, no uniform definition exists of what a non-urgent attendee or condition is (Tsai *et al*, 2010; Durand *et al*, 2012; Uscher-Pines *et al*, 2013).  In their systematic review of studies done on the subject, Uscher Pines *et al* (2013) found that no two studies used the same definition of non-urgent visits.

1.4.2    Triage as a measure of non-urgency

The term **triage** is derived from the French word *trier* meaning *to sort* and it was originally used to describe the sorting of agricultural products. Today triage is almost exclusively used in specific healthcare contexts. Triage is a critical and central task in the ED and it is widely viewed as the rating of clinical urgency that is necessary to identify the order in which patients should receive care in the ED when demand is high.  Many hospitals use a triage system in order to meet this high demand with limited resources. The aim of triage is therefore to improve the quality of emergency care (Aacharya *et al,* 2011).

Triage is performed by an experienced nurse in the ED. Nurses are the first medical contact for patients attending the ED. It is a complex decision making process and several scales have been designed as decision support systems to guide the nurse. Triage decisions are based on both the patient's vital signs (blood pressure, heart rate, respiratory rate, oxygen saturation in blood, temperature, level of consciousness) and their chief complaint (Farrohknia, Castren, Ehrenberg *et al*,

2011). Triage scales aim to optimise the patient's waiting time based on the severity of their medical condition in order to reduce the negative impact of a prolonged delay before treatment (Farrohknia *et al*, 2011).

Emergency departments in South Africa use the South African Triage Scale (SATS), which was formulated by the South African Triage Working Group (Western Cape Department of Health, 2012). The SATS has four priority levels and the aim is to have each priority level managed within the target time for treatment.

Table 1 shows the South African Triage Scale. For this research study, only patients rated green were investigated.

**Table 1**: <u>South African Triage Scale</u>

| Priority Level | Rating | Target time to treatment |
|---|---|---|
| Red | Emergent | Immediate |
| Orange | Very Urgent | < 10 minutes |
| Yellow | Urgent | < 1 hour |
| Green | Non-Urgent | < 4 hours |

Source: Western Cape Department of Health (2012)


## 1.4.  Problem Statement


1.4.1.  <u>Research problem</u>

The purpose of the study was to investigate the reasons for the non-urgent use of EDs by medically insured patients in the South African private health sector.


1.4.2.  <u>Sub-problems</u>

The <u>first sub-problem</u> was to identify the key factors that influence the non-urgent use of EDs.

The <u>second sub-problem</u> was to determine the relative importance of the factors that influence the non-urgent use of EDs.

Finally, the <u>third sub-problem</u> was to investigate whether any significant differences existed between non-urgent users based on when the visits occurred i.e. time of day or day of week.

## 1.5. Significance of the Study

Given its explanatory nature, the study extends the general body of knowledge on the non-urgent use of EDs. There is consensus in the literature that a general practitioner could safely treat a significant proportion of patients who present to the ED with medical problems that are classified as non-urgent, at a significantly lower cost (Tsai *et al*, 2010; Dover, 2010; Uscher-Pines *et al*, 2013). The bulk of intervention strategies to discourage non-urgent visits have thus far focused on encouraging GPs to provide care in the evenings and weekends. However, despite these efforts, non urgent visits have continued to rise, indicating that interventions have not adequately addressed the underlying reasons that result in these patients visiting EDs (Uscher-Pines *et al*, 2013).

There has been less focus on the experience and perceptions of patients, which is important if one considers the fact that these visits are patient initiated (Dover, 2010). There needs to be an effort made to better understand the fundamentals of patients' decision making which will enable better and more effective diversion strategies to be developed (Durand *et al*, 2012).

Durand *et al* (2012) and Uscher-Pines *et al* (2013) assert that patients behave as rational consumers when choosing to visit the ED. Patients are fully informed about all the alternative healthcare structures, treatments and services that are available to them, and are able to use this information to make their own choice when selecting providers. For patients, the ED is the most suitable place as well as the most efficient provider that can fulfil their medical needs among all healthcare resources available. This is particularly important when one considers patients who work during business hours and may therefore have difficulty going to primary care providers who often do not possess the numerous advantages of an ED such as being accessible 24 hours a day and offering a full range of medical services (Durand *et al*, 2012, Uscher-Pines *et al*, 2013). Solutions proposed to reduce the number of non-urgent ED patients have as a result been largely irrelevant because they have not considered the patients' experience and choice.

Previous studies have found that patients with medical insurance utilised the ED more than those without (Carret, Fassal & Domingues, 2009; Durand *et al*, 2012). This has resulted in intervention strategies that have led to the implementation of financial disincentives such as higher co-payments. These have unfortunately had the negative consequence of making patients who face a higher share of the cost of the ED, less likely to seek care for a true emergency (Uscher-Pines *et al*, 2013).

The need to address this phenomenon is motivated by the notion that non-urgent ED use is inappropriate and an unnecessary burden to healthcare systems, as well as the higher costs of services in the ED relative to a primary healthcare provider (Tsai *et al*, 2010). The cost of an ED visit for a non-urgent condition has been estimated by experts, to be two to five times greater than the cost of receiving care in the primary care setting for the same condition (New England Healthcare Institute, 2010).

## Context of the South African Healthcare Sector

South Africa (SA) has a dual healthcare system that is characterised by a public and a private sector. The private sector has the majority of financial and human resources, and is funded primarily through medical schemes which have a membership that represents a mere 16% of the population This has led to the South African health system being labelled as inequitable, irrational and unfair (Department of Health, 2011). Medical schemes in SA primarily benefit those who are employed and are subsidised by their employers (Department of Health, 2011; Ataguba, 2012). Many companies offer a total package to their employee and deduct the full amount of medical scheme contributions from their salary and pay the remainder as cash (Ataguba, 2012). It is therefore not surprising that medical scheme members are concentrated in the economic hubs of the country, with the highest concentration based in the Gauteng province.

According to the Department of Health (2011), healthcare expenditure by the private sector in SA is excessive and unjustifiable relative to the number of people that it covers. These exorbitant private sector costs have been linked to a combination of high service tariffs, provider induced utilisation of services, as well as the misallocation of resources to satisfy demand for services without consideration of the cost-effectiveness or the clinical necessity of those services (Ruff, Mazimba, Hendrie & Broomberg, 2011) Containment of private healthcare costs has therefore been identified as one of the critical elements to address in order to reform the currently

inequitable SA health sector (Department of Health, 2011).

The cost effectiveness of GP services was evidenced by the 2015 annual report of the Council for Medical Schemes. In the report, an observation is made that medical schemes that have a higher proportion of benefits paid to GPs tend to have lower costs as a result of a consequential lower proportion of fees being paid to hospitals, thus emphasising the need to re- establish and promote the role of the GP (Council for Medical Schemes, 2015). EDs are situated within hospitals and the higher cost of treating non-urgent conditions by EDs has been attributed to the fact that emergency personnel perform more investigations, prescribe more drugs and have a higher hospital admission rate than GPs treating comparable non-urgent cases (Dover, 2010).

The research was conducted with the intention that the results thereof would support the development of effective strategies focused on decreasing non-urgent usage, and furthermore, to support more methods focused on containing the costs associated with non-urgent ED use.

## 1.6. Delimitations

The study investigated the factors that influence the non-urgent use of ED in the private healthcare sector. It did not attempted to investigate the factors that influence the non-urgent use of EDs in the public sector.

The study was also limited to patients who are beneficiaries of medical schemes and did not consider patients who fall into self-funding categories.

## 1.7. Overview of Subsequent Chapters

The following chapters will be included in this report:

**Chapter 2: Literature Review** – This chapter gives an overview of recent academic perspective on the characteristics of EDs, with particular emphasis on the consequences of non-urgent ED of such services. Supply and demand side factors that influence such usage behaviours are described in this chapter.

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**Chapter 3: Research Questions** – This chapter states the research questions that guide the primary investigations for the study.

**Chapter 4: Research Methodology** – This chapter outlines the research methodology used to gather primary data, including the type of analysis used to analyse the data collected. The rationale for the instrument design choices made in the study is also presented in this chapter.

**Chapter 5: Research Results** – This chapter details the results from the primary investigations.

**Chapter 6: Discussion of Results** – The results of the research study are interpreted and discussed in this chapter, and related back to the motivating research questions.

**Chapter 7: Conclusions and Recommendations** – A summary of the previous chapters, recommendations to all relevant stakeholders and suggestions for future research are presented in this chapter.

# 2  LITERATURE REVIEW

## 2.1. Introduction

EDs are medical treatment facilities designed to provide focused and episodic care to patients who suffer from acute injuries and illnesses. They also accommodate patients with underlying chronic medical conditions who are experiencing sporadic flare ups which require urgent medical attention (Moineddin, Meany, Agha, Zagorski & Glazier, 2011). According to Asplin, Magid, Rhodes, Solberg, Lurie & Camargo (2003), the management of seriously ill and injured patients is the most valuable and indispensable role of the ED in the healthcare system. EDs are being used with increasing frequency. The challenge however is that a large portion of this increase is attributed to non-urgent or inappropriate visits. This has led to them handling many cases that could be alternatively attended by a GP (Sempere-Selva, Peiro, Sendra-Pina, Martinez-Espin & Lopez-Aguilera, 2001). Asplin *et a*l (2003) argue that the ED provides a significant amount of unscheduled care as a result of inadequate capacity for this care in other parts of the healthcare system. Howard, Davis, Anderson et al (2005) also found that the failure of the primary healthcare system to provide timely and effective access to care has a great impact on the use of the ED.

## 2.2. Consequences of non-urgent ED use

### 2.2.1.  Overcrowding

According to Dover (2010), non-urgent visits are a problem because patients compete for ED resources with patients who have a greater need for acute hospital care. Non-urgent ED use makes it difficult to guarantee access to resources for truly emergent cases and may cause unnecessary congestion of the ED, resulting in a delay in the treatment of seriously ill patients (Dover, 2010). Durand *et al* (2012) claim that the misuse of EDs by patients has contributed significantly to the demand growth for ED services. This in many instances, leads to overcrowding which becomes a major barrier to receiving timely emergency care because patients often face long waiting times to be treated (Asplin *et al,* 2003). The counter argument is that the adoption of triage has mitigated this challenge. EDs around the globe follow a triage system in order to cope with or manage overcrowding. The goal of triage is to improve the emergency care and to prioritise medical conditions according to clinical urgency (Aacharya *et a*l, 2011).

Beyond simply dictating the amount of time that the patient can wait for treatment, the Western Cape Department of Health (2012) recommends that these patients should be streamed to different areas within the facility. The streaming process entails directing emergent cases to the resuscitation area, very urgent and urgent cases to high care, and the non-urgent to a minor area. Each of these different areas is manned by dedicated staff and thereby allows the ED to effectively manage its resources. Streaming allows the higher acuity patients to be seen urgently to circumvent life-threatening consequences while the non-acuity patients are attended to, as appropriate, before they are released (Western Cape Department of Health, 2012).

### 2.2.2. Cost

The cost of services provided by EDs is a major concern and it is postulated that almost half of all visits to EDs for non-urgent conditions are triple the cost of a visit to the GP for the same medical condition (Williams, 1996). There is no conclusive consensus on this issue as other studies estimate the cost of a non-urgent ED visit to be two to five times greater than the cost of receiving care from the GP (Tsai *et al*, 2010; Durand *et al*, 2012, Uscher-Pines *et al*, 2013).

The main explanation for the high costs imposed by the non-urgent use of EDs is higher hospital admission rates of ED doctors versus primary care providers. This is based on the assumption that ED doctors are more likely to admit patients with uncertain diagnoses as they are trained to assume the worst, especially with patients with whom they do not have an on-going relationship (Schuur *et al*, 2013). As a direct consequence of this, ED doctors are more likely to administer excessive diagnostic tests and prescribe more drugs, thus further inflating the costs associated with non-urgent ED use (Carret, Fassa & Kawachi, 2007).

### 2.2.3. Fragmented Care

According to Dover (2010), the types of consultations provided by ED doctors are generally not appropriate for non-urgent conditions. This is because the healthcare delivery model in the ED is episodic and problem focused and cannot guarantee any sort of on-going primary care. This sporadic nature of ED care lacks the benefits of continuity of care delivered by the GP, particularly for patients suffering from chronic conditions (Dover, 2010). In their study, Durand *et al* (2012) found that most patients do not fully understand their medical condition after an ED consultation and often do

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not recall their discharge instructions.

The healthcare system and healthcare technology infrastructure in the ED are poorly equipped to share patient visit information efficiently. As a result, care in the ED is poorly coordinated with care that occurs elsewhere in the system (Durand *et al*, 2013; Bruni *et al,* 2014). Furthermore, Durand *et al* (2012) found that non-urgent ED visits caused frustration among ED staff as it gave them the impression that they were no longer at liberty to practice the type of clinical medicine that they had been trained for.

## 2.3. Factors that influence non-urgent use of EDs

Following a systematic review of studies that investigated the factors that influenced the non-urgent use of EDs, Uscher-Pines *et al* (2013) came to the conclusion that the key limitation to most of the studies was the lack of a robust framework on what drives the non-urgent use of EDs.

Off the back of their review, Uscher-Pines *et al* (2013) created a theoretical model of the decision-making process and comprehensive list of factors that influence a patient's decision to visit the ED. According to the model, the decision to visit is influenced by an array of causal and associated factors. The causal factors act as independent predictors while the associated factors influence ED use via one of the causal pathways (Uscher-Pines *et al*, 2013). Table 2 depicts a comprehensive list of all causal and associated factors that influence the non-urgent use of EDs extracted from multiple previous research studies in this field, adapted from the findings of Uscher-Pines *et al* (2013).

**Table 2**: List of factors that influence the non-urgent use of EDs

| Causal Factors | | Associated Factors | |
|---|---|---|---|
| I. | Access/Availability | VII. | Age/Gender/Race |
| II. | Convenience | VIII. | Income/Occupation/Education |
| III. | Perceived Severity | IX. | Health Insurance |
| IV. | Beliefs and Knowledge about Alternatives | X. | Social Support |
| | | XI. | Health Status Personality |
| V. | Advice or Referral | XII. | Previous Healthcare Experiences |
| VI. | Cost | XIII. | Culture and Community Norms |

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The objective of this research study was to enable the development of robust intervention strategies for diverting non-urgent patients from the ED; it was therefore appropriate to include only those factors that could be controlled. As a result, three causal factors were included in the study, namely: lack of access/availability, convenience and perception of urgency. The distinction between the causal and associated factors is important, as almost all current intervention strategies to decrease non-urgent use tend to focus on causal pathways (Uscher-Pines *et al,* 2013). Given the peculiar structure of the healthcare industry in South Africa, the effect of medical insurance was considered relevant within the context of this study even though it is an associated and not a causal pathway. The remainder of this section explores these controllable causal factors and the effect of medical insurance in greater detail.

2.3.1   Causal Factors

Tsai *et al* (2010) observed that causal factors that influence problematic effects of non-urgent use of the ED are interplay between push factors (supply) and pull factors (demand). The supply side refers to the supply of human and physical capital well as other resources required to deliver health services, whereas the demand side refers to the populations' pattern of usage and demand (Ruff *et al*, 2011).

**Lack of Access to a GP – Supply Side Factor**

According to Starfield, Shi & Macinko (2005:458), primary care is "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community". The measure of a good primary healthcare system is in its ability to provide first contact access for each new need, provide comprehensive treatment for most health needs and co-ordinate care when it must be sought elsewhere (Starfield *et al*, 2005). GPs are the main providers of primary healthcare in the SA private health sector (Department of Health, 2011).

Scott (2000) states that the main role of primary care is to gate-keep hospital services, including ED services and that this is the main characteristic that gives general practice a unique and pivotal position in the healthcare system. However, this gatekeeping role that GPs play is effective only when general practice is the first and only point of contact for individuals for all types of non-urgent medical conditions.

Furthermore, it has been suggested that effective gatekeeping reduces healthcare costs and unnecessary medical treatment (Scott, 2000).

The other distinctive feature of general practice is that the GP-patient relationship is usually long term and more likely to be characterised by repeat transactions, typically referred to as continuity of care (Scott, 2000). This improves the GP-patient relationship, increases treatment adherence, follow up and facilitates health education, which have all been shown to decrease the inappropriate use of EDs, hospital admissions and the number of additional investigations and tests requested (Carret, Fassa & Kawachi, 2007).

There is consensus in the literature that a significant fraction of non-urgent conditions can be effectively treated by GPs and that high rates of non-urgent ED visits are an indication of poor primary healthcare access (Tsai *et al,* 2010; Dover, 2010; Uscher-Pines *et al,* 2013; Bruni *et al,* 2014). The unavailability of after hours services and full appointment schedules make it difficult for patients to arrange a consultation timeously with the GP (Schuur *et al*, 2012). This results in patients having to wait for treatment which in many instances has an opportunity cost of forgone work or leisure time, as well as the deterioration of the medical condition (Hoel & Sather, 2003).

The relative price of healthcare is not only dependent on the monetary price, but also on the time costs associated with access to and utilisation of available services (Zweifel & Manning, 2000). Durand *et al* (2012) observed that patients working during regular business hours had difficulty in obtaining an appointment with their GP before or after their workday and did not want to take the day off to visit their GP even when they were able to make an appointment.

According to Scott (2000), the decision to seek medical care and visit the GP is but one of the many alternatives in the choice set when the patient requires non-urgent healthcare, since they can choose between a visit to the GP or to other providers such as EDs. The relative ease of access to these substitute providers (time costs and distance) affects the demand for GP services. The closure of GP practices at night is one of the reasons for high ED attendances and extending GP hours up to 12 hours a day has been noted to reduce non-urgent ED visits (Bruni *et al,* 2014).

Discrete choice experiments (DCEs) have been carried out in an attempt to understand patient's preferences for primary care services. According to Lagarde,

Erens & Muys (2015), DCEs are a quantitative method for eliciting stated preference that draw on the theory of demand, which posits that goods or services can be described by their essential characteristics and that their value to an individual can be derived from a combination of these attributes. DCEs have become a popular method in health economics to determine the driving factors behind preferences that cannot be observed in real life, either due to lack of data or because some of the service characteristics of interest are yet to be introduced (Lagarde, Erens & Muys, 2015).

Lagarde *et al* (2015) found that in choosing a practice, patients felt strongly about proximity of the practice, extended opening hours and the ability to obtain an appointment with a GP relatively quickly. Bruni *et al* (2014) found that the underlying reasons for non-urgent ED attendance included frustrations with scheduling appointments with the GP as well as lengthy waiting times.

The failure of supply side interventions to reduce non-urgent ED visits indicated the need to explore and investigate other factors that are contributing to non-urgent ED use (Uscher-Pines *et al*, 2013). As noted by Dover (2010), non-urgent ED consultations are patient initiated and it was therefore important to consider the patient's perspective.

**Convenience – Demand Side Factor**

The convenience of the ED is one of the key reasons that explain the demand for its non-urgent use (Tsai *et al*, 2010). Uscher-Pines *et al* (2013:5) define convenience as "the ease with which a patient can seek care, including travel, time and location".

A systematic review of the literature by Uscher-Pines *et al* (2013) found that convenience factors play a significant role in influencing the non-urgent use of EDs. The ED's indigenous characteristics largely account for this convenience because patients value the fact that the ED is open 24 hours a day and that it can carry out comprehensive evaluation in a single visit (Tsai *et al*, 2010).  This access to technical facilities and the opportunity to receive comprehensive care in a single place is an attractive attribute of the ED that allows it to offer more consumer surplus to the patient relative to a GP facility (Lega & Mengoni, 2008; Durand *et al*, 2012).

According to Besanko, Dranove, Shanley & Shaefer (2013, 297), consumers will purchase a product only if the product's consumer surplus is positive. Consumer

surplus is the difference between the benefit that the consumer expects to pay for the product (*B*) and the product's actual monetary price (*P*) (Safiullin, Ismagilova, Gallyamova & Safiullin, 2013; Besanko *et al*, 2013). Besanko *et al* (2013:298) add that given a choice between two or more competing products, the consumer will purchase the one for which consumer surplus (*B-P*) is the largest and that competition amongst firms in a market can be thought of as a process whereby firms, through their prices and product attributes, submit consumer surplus bids to consumers.

Convenience can therefore be regarded as the ED's point of difference. According to Anderson, Narus & van Rossum (2006), points of difference are attributes that render the supplier's offering either superior or inferior to the consumer's next best alternative and add that a favourable point of difference strategy is one which recognises that the customer has an alternative. Durand *et al* (2012) assert that patients choose the ED as discerning health consumers who know the health care system and are generally very well informed about the services available to them, and are thus able to translate their assessments into favourable choices. Thus, the relative ease of access to EDs and the convenience that this access offers individuals affects the demand for GP services (Scott, 2000).

Lee, Lau, Hazlett, Kam, Wong & Chow (2000) observed that a higher proportion of those utilising EDs for non-urgent conditions had a family doctor. As most GPs work in office based solo practices, there is a general perception amongst patients requiring treatment for perceived acute problems that their medical condition is not suited for GP office practices lacking supportive diagnostic facilities such basic laboratory and imaging capabilities (Lee *et al*, 2000; Schuur, Arjun & Venkatesh, 2012; Bruni *et a*l, 2014). Carret, Fassa & Kawachi (2007) assert that patients frequently underestimate the importance of continuous care and often lack the knowledge that their decision to seek ED services may result in the excessive use of medicines and diagnostic tests. Their decision to seek care in the ED instead of their GP is driven by the belief that ED services are able to solve complex health problems. Moreover, the need for ED facilities is related to the need for reassurance, which is often achieved through the convenient access to varied investigations such as x-ray tests and CT-scans (Durand *et al*, 2012).

**Perception of Urgency – Demand Side Factor**

Uscher-Pines *et al* (2013) observed that the vast majority of non-urgent patients, being 80% in their study, professed their condition to be urgent and needing of immediate care. Perceived severity refers to the patient's perception of their illness, which is a function of both personal beliefs and knowledge of what an emergency is (Uscher-Pines *et al*, 2013). The perception of urgency is especially magnified in patients who have no previous experience of their symptoms. These patients are more likely to not only misrepresent their condition but also to think that the ED is the most appropriate source of care (Lee *et al*, 2000).

Information asymmetry between healthcare providers and patients is one of the many sources of distortions in healthcare markets and doctors are said to work at an advantage in relation to their patients because of their superior medical knowledge (McGuire, 2000; Dranove & Satterthwaite, 2000; Wells, Ross & Detsky, 2007). Information asymmetry between ED health professionals and non-urgent ED patients is evidenced by the fact that both parties do not have a uniform view as to what constitutes an emergency. ED staff use triage, which is a complex decision making process based on both the patient's vital signs and their chief complaint (Farrohknia, *et al*, 2011). Patients on the other hand often perceive pain and discomfort as an emergency and view the ED as being the most appropriate place to alleviate the anxiety created by these symptoms and receive reassurance from a professional (Durand *et al, 2012*). Dover (2010) articulates it differently and says that ED physicians rate urgency strictly from a medical perspective whereas patients take other factors into consideration such as social factors and emphasises that patients are unable to judge how urgent their symptoms really are because they do no have a good understanding of medical conditions.

Alyasin & Douglas (2014) observed that over two-thirds of patients who were given a non-urgent triage scoring believed their condition to be more serious than that given by the triage personnel. On the other hand, Afilalo, Marinovich, Afilalo, Colacone, Leger, Unger & Giquere  (2004) found that the patient's perception of urgency had less to do with the level of medical urgency and more to do with the fact that the ED was the most accessible option at that time.

Information asymmetry exists in the patient-doctor relationship because patients are unable to assess the quality of health services even after a consultation. This is because patients often do not know their initial health status and are therefore unable

to tell what contribution the medical care made to their utility and wellbeing (De Jaegher & Jegers, 2000). Goods to which this special information asymmetry applies are known as credence goods and result in the consumer having to look for other indicators of quality. Dover (2010) and Tsai *et al* (2010) observed that patients rated the quality of care in the ED to be superior to that provided by their primary care provider, raising the question as to how quality was assessed in these instances.

*Signalling theory* provides a useful framework that describes behaviour when two parties have access to different information and where one party, the sender, has the benefit of choosing what and how to communicate, or signal this information, and the other party, the receiver, is at liberty to interpret the signal (Connely, Certo, Ireland & Reutzel, 2011). According to Stiglitz (2002), the two types of information where asymmetry is important are information about quality and information about intent. Quality refers to the underlying and therefore unobservable ability of the signaller to meet the needs or demands of the receiver observing the signal. The signalling timeline includes two primary actors, the signaller and the receiver, as well as the signal itself (Connely *et al*, 2011).

In the context of the non-urgent use of the ED, the *signaller* is the ED, the *signal is* the fact that it is labelled an **emergency** department, as well as the fact that the ED is situated within a hospital, and thus has access to other facilities such as radiological services, laboratory services and a myriad of other specialist services. The *receiver* is the patient. The effectiveness of signalling is determined in part by the characteristics of the receiver and the process will consequently not work if the receiver is unaware of the signal or does not know how to interpret it (Connely *et al*, 2011).

**Figure 1**: <u>Signalling timeline in the context of ED services</u>



Source: adapted from Connely *et al* (2011)

Schuur *et al* (2012) observed that patients often perceive the care in the ED as

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thorough and of a superior quality, and further attributes this to the fact that emergency physicians are trained to assume the worst and are most likely to admit patients with uncertain diagnoses, thereby perpetuating the perception of urgency in the mind of the patient. The irony is that the typical long term GP-patient relationship is designed to assist the patient with this assessment about the quality of care available from secondary care providers since they are able to aggregate the experience of all their referred patients which reduces the costs of information transmission to the patient (Scott, 2000).

### 2.3.2 Associated Factors

As mentioned previously, associated factors are distinct from causal factors in that causal factors act as independent predictors while the associated factors influence ED use via one of the causal pathways (Uscher-Pines *et al*, 2013). The effect of medical insurance was considered relevant within the context of this exploratory study, due to the structure of the South African healthcare sector.

**Effects of Medical Insurance**

Medical insurance reduces the relative price of healthcare, by shielding the patient from the full price effects of seeking medical services. If the convenience of the ED adds to the perceived benefit and willingness to pay for the ED service, then medical insurance reduces the price, thereby maximising the consumer surplus (Zweifel & Manning, 2000).

According to Cutler & Zeckhauser (2000), medical insurance plays a central role in the healthcare arena. The reason for this is that while individuals know about the need for medical services, the exact amount they will need to spend on medical care is to a significant degree uncertain. Insurance therefore enables risk averse individuals to guard against the potential of requiring a substantial amount of medical care by insuring against the possibility of medical illness. Furthermore, annual consumption is therefore reduced only by the annual premium, which represents the average cost of care.

Medical insurers typically mediate between individuals and their healthcare providers (Cutler & Zeckhauser, 2000). Governments or employers pay insurers and recover these costs from the consumer via increased taxes or lower wages.

**Figure 2**: <u>Economic flows amongst key stakeholders in medical insurance</u>
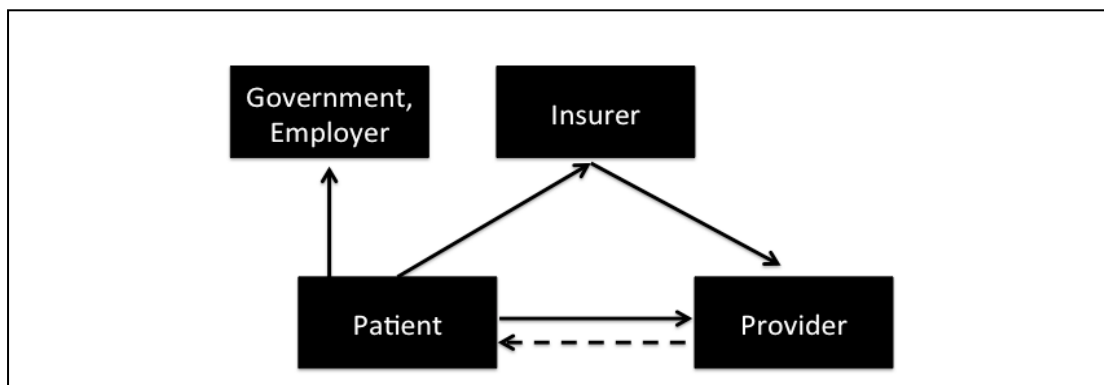


Source: Cutler & Zeckhauser (2000)

**Principal Agent Theory (PAT)** focuses primarily on the relationship between the principal and the agent and how the two can achieve behaviour that is goal-aligned. The principal needs to guard themselves against agents who might pursue goals that are contrary to that of the principal (Fernandes, Muller, Wickramasinghe *et al*, 2013). PAT suggests that rational individuals will favour alternatives that maximise their own utility and its popularity is attributed to the curiosity with how rational self-interested individuals behave in bilateral relations where each individual has imperfect information about the other individual's efforts and interests (Cuevas-Rodriguez, Gomez-Mejia & Wiseman, 2012).

Agency theory therefore analyses this relationship that develops in this economic exchange when the principal concedes authority to the agent to act in his or her name and it generally assumes that the risk appetite of principals and agents are not the same. The former are said to be risk neutral whereas the latter are often classified as risk averse (Cuevas-Rodriguez et al, 2012; Foss & Stea, 2014). The concept of agency has become widely accepted in health-economics and healthcare markets seem to fit into the typical agency relationship (Cutler & Zeckhauser, 2000). The interaction between medical insurance (principal) and the patient/consumer (agent) is the principal agent relationship that is explored in this research study.

In the insurer-consumer relationship, consumers have incentives that are not easily monitored and enforced by the insurer. These incentives can result in individuals behaving in a way that will induce an insurance payment (Schannsberg, 2014). As observed by Manning & Marquis (1996), the choice of health insurance policy and

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the amount of health services purchased are based on maximising the utility of the consumer. Medical insurance helps the insured consumer to access costly healthcare services (Nguyen, 2012). Zweifel & Manning (2000) assert that insurance is important because it alters the monetary price of medical care and the opportunity cost of time in the event of illness. Insurance results in significant cost sharing, which decreases the out of pocket price paid by the consumer and results in the consumer purchasing care that they would not have purchased if they had to pay its full marginal cost (Manning & Marquis, 1996; Jeon & Kwon, 2013).

Cutler & Zeckhauser (2000) refer to the incentive to consume more as a result of insurance as **moral hazard.** It is a term that economists have borrowed from the insurance industry and it describes the increased risk (hazard) the insurer faces because of the presence of insurance itself (Ellis & McGuire, 1993; Rowel & Connelly, 2012). According to Zwefel & Manning (2000), moral hazard is the change in health behaviour and healthcare consumption caused by medical insurance. Van Dijk, Van den Berg, Verheij *et al* (2013) specifically reference e*x post* moral hazard, which results from the fact that insured people demand more healthcare than the uninsured. Ex post moral hazard comes into play once the health loss has already occurred by reducing the net money price of medical care (Zweifel & Manning, 2000).

In a systematic review of non-urgent use of the ED, Carret et al (2009) found that those who paid the full price of the service used the ED 60% less than those who did not pay the full marginal cost. It has been argued that moral hazard causes a negative externality to the extent that it causes the insurer to increase premiums for everyone (Zweifel & Manning, 2000). Durand *et al* (2012) found that insured patients in the ED do not realise the full marginal cost of care in the ED because they often do not pay at the time of consultation. They are often treated first and receive the invoice later in the event of their insurance not paying, and are therefore unaware of the magnitude of the costs of the ED service at the time of consumption.

## 2.4. Summary of factors Included in this study

Given the objective of this explanatory research study, only factors that can be controlled were included for consideration, and the effect of medical insurance was relevant to this research study given the unique South African healthcare context. The four factors included are 1) lack of access to a GP, 2) convenience, 3) perceived

urgency, and 4) the effect of medical insurance in ED usage.

The final choice of factors for further investigation include both casual and associated factors, as well as demand- and supply-side factors in respect of causal factors. Table 3 illustrates that these factors have been a subject of multiple previous research studies investigating the non-urgent utilization of ED services across the globe.

**Table 3**: Identified factors in non-urgent usage of EDs

| Factor | Research Study (Literature Source) | |
|---|---|---|
| **Lack of access to GP** | Cuyler & Newhouse (2000) | Dover (2010) |
| | Zweifel & Manning (2000) | Durand et al (2012) |
| | Hoel & Sather (2003) | Schuur et al (2012) |
| | Starfield *et al* (2005) | Uscher-Pines et al (2013) |
| | Carret et al (2007) | Bruni et al (2014) |
| | Chiraghi-Sohi et al (2008) | Lagarde et al (2015) |
| | Tsai et al (2010) | Fung et al (2015) |
| **Convenience** | Lee et al (2000) | Tsai et al (2010) |
| | Scott (2000) | Durand et al (2012) |
| | Howard et al (2005) | Besanko et al (2013) |
| | Anderson et al (2006) | Safiullin et al (2013) |
| | Lega et al (2008) | Uscher-Pines et al (2013) |
| | Carret et al (2009) | |
| **Perception of Urgency** | McGuire (2000) | Tsai et al (2010) |
| | Lee et al (2000) | Connely et al (2011) |
| | Dranove & Satterthwaite (2000) | Farrohknia et al (2011) |
| | Stiglitz (2000) | Durand et al (2012) |
| | Afilalo (2004) | Schuur et al (2012) |
| | Ross & Detsky (2007) | Uscher-Pines et al (2013) |
| | Dover (2010) | Alyasin & Douglas (2014) |
| **Effect of Medical Insurance** | Ellis & Mcguire (1993) | Nguyen (2012) |
| | Manning & Marquis (1996) | Rowel & Connelly (2012) |
| | Zweifel & Manning (2000) | Fernandes et al (2013) |
| | Cutler & Zeckhauser (2000) | Jeon & Wong (2013) |
| | Carret et al (2009) | Van Dijk et al (2013) |
| | Neuman & Neuman (2009) | Foss & Stea (2014) |
| | Cuevos-Rodriguez et al (2012) | Schannsberg (2014) |

## 2.5. Conclusion

This chapter set out to examine scholarly perspective on some of the issues that characterise the inappropriate use of EDs by patients and highlighted key theory that has been identified to assist in explicating behaviour. The discussion highlighted the fact that there are cross discipline influences that should be recognised and examined for one to expand prevailing understanding. The following chapter uses this foundation and outlines three research questions that emerged as relevant to pursue in this study.

# 3  RESEARCH QUESTIONS

## 3.1.  Introduction

The literature review detailed in the previous chapter was used to help isolate a clear research problem area. This chapter advances this discourse by posing clear researchable questions.

The primary research objectives for this study were shaped to address two main objectives identified through the literature review process, being:

a)  To understand the relative importance of the factors that influence the non-urgent use of EDs; and

b)  To establish whether differences in these factors exists between patients that present at different times (i.e. time of day and day of week).

## 3.2.  Research Question 1

***What is the relative importance of the factors that influence the non-urgent use of ED?***

Various studies have looked at factors that influence the non-urgent use of EDs as independent factors but none has looked at the relative importance of these factors as depicted by the consumer.

The factors that have been identified by the literature review conducted are:
*   Lack of access to a GP
*   Convenience
*   Perception of urgency
*   Effect of medical insurance

**Lack of access to GP**

Difficulties in accessing primary healthcare (i.e. difficulty in setting appointment, longer waiting periods and shorter business hours) are associated with non-urgent use of the ED. This inability to provide care in a timely manner forces the ED to assume many of the responsibilities traditionally reserved for GPs (Carret *et al*, 2009; Dover, 2010).

**Convenience**

A systematic review of the literature found that convenience factors play a significant role in influencing the non-urgent use of EDs. Patients value the fact that the ED is open 24 hours a day, can provide unscheduled care and that it can carry out comprehensive evaluation in a single visit under one roof (Lega *et al,* 2008, Tsai *et al*, 2010; Uscher-Pines *et al*, 2013)

**Perception of urgency**

Information asymmetry is evidenced in the non-urgent users of ED by the fact that the vast majority of non-urgent patients perceived their condition to be urgent and needing of immediate care. Over two-thirds of patients who were given a non-urgent triage scoring believed their conditions to be more serious than that given by the triage personnel (Uscher *et al*, 2013; Alyasin & Douglas, 2014).

**Effect of medical insurance**

The probability of healthcare utilisation is higher for people with health insurance. In particular, health insurance has an impact on the consumer initiation of healthcare utilisation (Jeon & Wong, 2013).

## 3.3. Research Question 2

***Are there significant differences in the factors in patients that visit the ED during working hours (08h00-17h00) and those that visit after hours (after 17h00)?***

## 3.4. Research Question 3

***Are there any significant differences in factors that drive utilisation in patients that visit the ED during the week (Monday-Friday) versus those that visit it on the weekend (Saturday and Sunday)?***

There is limited understanding of the factors of the non-urgent ED use that directly addresses this question. However, Bruni et al (2014) found that patients who utilised the ED for non-urgent conditions after hours were driven by lack of access to a GP at that particular point in time and that extending GP hours resulted in a reduction in the non-urgent use of the ED. In the context of this study, research questions 2 and 3 seek to explore ED usage from the patient's perspective, in acknowledgement that ED visits are patient-initiated. Prior research in this field has largely overlooked the patient's perspective.

# 4 RESEARCH METHODOLOGY

## 4.1. Introduction

The research methodology employed in this study is presented in this chapter. This chapter covers the description of the research design and population, the sampling methodology used, the administration of the instrument and the data collection process. The validity and reliability of the instrument are also discussed. Finally, the data analysis techniques used to address the research questions are presented, including the description of how the analysis outputs are interpreted.

## 4.2. Research Approach

According to Creswell (2014), research approaches are plans and procedures for research that usually begin as broad assumptions but get refined to detailed methods of data collection, analysis and interpretation in the research process. The decision regarding which research approach to use is informed by the philosophical assumptions that the researcher brings to the study (Cresswell, 2014). Quantitative research is a research approach that tests objective theories. The approach is typically carried out by examining the relationship among variables, which can be measured on instruments that enable numbered data to be analysed statistically (Creswell, 2014). Martin & Bridgmon (2012) confirm that studying and measuring how variables change is what distinguishes quantitative research from other types of research.

The primary research objectives for this study were shaped to address two main objectives identified through the literature review process, being:

a) To understand the relative importance of the factors that influence the non-urgent use of EDs; and
b) To establish whether differences in these factors exists between patients that present at different times (i.e. time of day and day of week).

## 4.3. Survey Design

By studying a sample of a population, a survey design is able to provide a quantitative or measurable description of trends, attitudes or opinions of a population.

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The researcher is thus able to generalise or draws inferences to the population from the sample results (Fowler, 2013; Creswell, 2014). Fowler (2013) adds that surveys seek to introduce efficiency to the research process by collecting information from a representative fraction of the population rather than from every member of affected the population. Surveys are tools used to collect information that is used to describe, compare, or explain individual and societal knowledge, feelings, values, preferences, and behaviour and are popular because they allow the collection of data about the same things from a large number of people in a cost effective manner (Fink, 2009; Saunders & Lewis, 2012).

This research study employed a cross-sectional study design and the sampling was conducted from 08h00 on Monday, 7 September 2015, until 22h00 on Sunday, 13 September 2015. Due to limitations in time and resources, it was not possible to conduct this study 24 hours a day. However, in order to address the research question 2, after work hours sampling was conducted from 17h00 until 22h00.

Participants were surveyed at only one period in time thereby affording all participants the same probability of selection and as such the study design excluded patients who were at the ED for a follow up consultation. The reason for this was that this was seen to be a provider initiated, rather than a patient initiated consultation. In addition, another reason for the exclusion was that even though the patient was rated non-urgent at follow up, it could not be established with any degree of accuracy what the rating was at the original consultation.

## 4.4. Research Population

The population in this study was all medical scheme beneficiaries who utilise private ED facilities for non-urgent conditions. Mediclinic Sandton was the sampling frame. This is a private hospital that is situated in the northern part of Johannesburg. According to Fowler (2013), a sample frame refers to the set of people that has a chance of being selected. Therefore statistically speaking, a sample can only represent the population included in the sample frame.

Fowler (2013) adds that researchers should use the following three characteristics to evaluate their sampling frames:
a) How accurately the sampling frame covers the target population, referred to

as comprehensiveness;

b)  Whether or not the probability of selection can be calculated for each person; and

c)  The rate at which members of the target population can be found among those in the frame is referred to as the efficiency of the sample frame.

The sampling frame that was selected fulfilled all three of the above criteria.

## 4.5.  Sampling Methodology

Triage was used to define non-urgency. Triage is a critical and central task in the ED and it is widely viewed as the rating of patients' clinical urgency. (Aacharya *et al,* 2011). A 5-step approach to as recommended by the Western Cape Department of Health (2012) is used at the facility to triage ED attendees.

- **Step 1**: Look for emergency signs and ask for presenting complaint
- **Step 2**: Look for very urgent or urgent signs
- **Step 3**: Measure the Vital signs and calculate the triage early warning signs
- **Step 4**: Check key additional investigations
- **Step 5**: Assign Final Triage Priority Level

All ED attendees with medical insurance, who presented to Mediclinic Sandton within the stipulated study times and triaged as non-urgent were sampled. Even though the sample size was not predetermined, a minimum sample size of 30 was set. The central limit theorem states that "when many probability samples are drawn from a population, increasing the sample size will increase the possibility of the distribution of sample means approaching the normal curve and the overall mean of the sample means approaching the population mean" (Blaikie, 2003:165).  Blaikie (2003) claims that according to this theory, a sample size can be as small as 30, as long as the population distribution on critical variables is not unusual.

**Specific Exclusions**

In designing the primary investigation strategy, exclusions were made partly to facilitate ease of data gathering and at a micro level, to help isolate the relevant universe of members who were best suited to the phenomena. The following exclusions were applied:

- Public hospitals in Gauteng;

- All other private hospitals in Gauteng;

- Patients who were not members of a medical scheme;

- Patients who were younger than 18 years; and

- Patients who were at the ED for a follow up consultation that was recommended by the ED doctor.


## 4.6. Data Collection and Validity of Measuring Instrument

Leedy & Ormrod (2013) state that primary data are often the most valid and illuminating data to use. The design of the measuring instrument (survey) was guided by an extensive literature review and refined following consultations with industry experts. The survey was self-administered and anonymous as no patient names were recorded. Fowler (2013) states that the advantage of self-administered surveys is that it makes the collection of sensitive data more valid because the respondent does not have to share answers with an interviewer.

The validity of the measuring instrument is a measure of whether the "instrument actually measures what it set out to measure" (Fowler, 2013:12). To ensure validity, Fowler (2013) recommends the use of closed ended questions for self-administered surveys, which should ideally be questions that can be answered simply by either clicking, checking a box or circling the appropriate response from a set provided by the researcher. On the other hand, this places more of a burden on the reading and writing skills of the respondent. The ease of response is a priority to maximise returns (Fowler, 2013).

The survey questionnaire had 23 questions organised into 6 sections namely:
- Demographics;
- Lack of access to primary healthcare/GP;
- Perception of urgency;
- Convenience of the ED;
- Effect of medical insurance;
- Time of day and day of week.

A 5-point Likert scale was used to measure the opinions and beliefs of respondents to the survey questions that required them. The Likert scale was coded as follows:

1 = Strongly Disagree

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2 = Disagree

3 =Neutral (neither Agree nor Disagree)

4 = Agree

5 = Strongly Agree

## 4.7. Piloting of Survey Instrument

Saunders & Lewis (2012) recommends pilot testing a survey with a small group of respondents who are similar to those who will be used in the actual research in order to confirm that your actual respondents will understand the meaning of the questions and are able to follow the instruction on the questionnaire. Another reason for pre-testing the survey instrument was to estimate the time taken to complete the survey questionnaire. To this end, the survey instrument was piloted on a convenience sample of respondents, whom the researcher identified to be insured and had received treatment in the ED for a non-urgent condition in the previous 6 months. Feedback from the pre-test exercises was then used to improve the overall presentation of the survey, which included:

- Shortening of the survey in order to reduce survey abandonment and non completion bias; and
- Removing acronyms that were said to cause confusion.

The final version of the survey questionnaire used in the study is included in Appendix 1.

## 4.8. Administration of Survey

Patients who met the inclusion criteria were requested to complete the survey at reception, after they had received treatment and discharged from the ED. This was to ensure that the research did not interfere with the medical management and flow of the ED. The purpose of the study was explained and the patients were also informed that the research was voluntary, anonymous and self-administered. They were however also informed that they would be given assistance if required. By and large, the researcher managed this process with limited support from the hospital staff. The hospital management had been engaged prior to conducting the study in order to

give consent for the study to be conducted at their facility. After consent was granted, reception staff were briefed on the purpose of the study and advised on how to approach patients to enable them to assist with survey administration when the principal investigator was either on a break or busy with another respondent.

The process flow of non-urgent patients at Mediclinic Sandton is described below:
- Patient arrives at reception;
- Nurse conducts triage;
- Patient waits in waiting room;
- ED doctor examines patient (may include blood tests and X-rays); and
- Patient returns to the reception.

The survey instrument was administered only after the non-urgent patients returned to the reception area, after their medical condition had been attended to.

## 4.9. Reliability

Reliability refers to the capacity and ability of a measure to produce consistent results (Blaikie, 2003). According to Field (2013), reliability means that a measure should consistently reflect the construct that it is measuring. In other words, a person should get a similar score on a questionnaire if they complete it at different points in time. Chronbach's alpha was used as a measure of scale reliability. The value of Chronbach's alpha should range between 0 and 1. Field (2013) states that the value of alpha will increase as the number of items on a scale increase. He cautions that it is possible to get large values because of many items on a scale, and not because the scale is reliable.

## 4.10. Data Analysis

### 4.10.1. Descriptive statistics

Descriptive statistics were used to analyse the data and to understand the distribution of responses. Saunders & Lewis (2012) define descriptive data as data that are grouped into sets (categories) that have no obvious rank order. The mode and median were used as measures of central tendency for all descriptive data as most of the data was not evenly distributed, and this rendered the mean inaccurate as a measure of central tendency.

### 4.10.2. Analysis techniques employed

**Exploratory Factor Analysis**

According to Field (2013), exploratory factor analysis is a statistical technique that is used to identify clusters of variables. The technique achieves this by deriving a mathematical model from which factors are estimated and therefore aids in reducing the data set to a more manageable size while retaining as much of the information as possible. Field (2013:667) adds that factor analysis "attempts to achieve parsimony by explaining the maximum amount of common variance in a correlation matrix using the smallest number of explanatory constructs". These are known as factors or latent variables and they represent cluster variables that correlate highly with each other.

**Kaiser-Meyer-Olkin measure**

The level of sampling adequacy was measured using the _Kaiser-Meyer-Olkin_ measure of sampling adequacy. The KMO can be calculated for individual and multiple variables, and represents the ratio of the squared correlations between variables to the squared partial correlation between variables (Field, 2013). The KMO statistic varies between 0 and 1, with a value close to 1 indicating that patterns of correlations are relatively compact and that factor analysis will yield distinct and reliable factors (Field, 2013).

**Bartlett's test of sphericity**

_Bartlett's test of sphericity_ was also performed in order to objectively test whether correlations were adequate. This tests the null hypothesis that the original correlation matrix in an identity matrix and is required to be significant ($p <0.001$) to prove that

the correlation matrix is significantly different from an identity matrix (Field 2013).

## Principal Component Analysis

Principal component analysis (PCA) is a useful statistical technique for finding patterns in a data set (Smith, 2012). This analysis works by identifying patterns in data and then expressing the data in a way that highlights similarities and differences. The other advantage of PCA is that once the patterns have been found in the data, they can be compressed by reducing the number of dimensions while retaining critical information (Field, 2013).

*Factor extraction*: In PCA, not all factors are retained. The process of deciding how many factors to keep is called extraction. Eigenvalues are used to extract the data. Eigenvalues are values that inform us about the dimensions of data and show the distribution of the variances of a matrix. They therefore measure how much variance a factor can explain. In PCA, only factors with an eigenvalue of 1 or more should be extracted and the factors and their eigenvalues are plotted on a graph known as a scree plot. This process makes the relative importance of each factor more apparent (Field, 2013).

## Mann-Whitney test

The Mann-Whitney test was used to analyse whether there were statistically significant differences between respondent groups that utilized the ED at different times (i.e. time of day and day of week). Field (2013) states that the Mann-Whitney test is a non-parametric or an assumption free test. Non-parametric tests make fewer assumptions than their parametric counterparts. This was the appropriate test because the goal was to test the hypothesis that two groups of users would differ from each other on some variable. The test works by ranking the data. This process results in high scores being represented by large ranks and low scores being represented by small ranks. The analysis is then carried out on the ranks rather than the actual data and eliminates the effect of outliers (Field, 2013).

Field (2013) adds that ranking the data is a useful way to reduce the impact of outliers or skewed distributions but has the disadvantage that some information about the magnitude of differences between scores may be lost. A two tailed test was run as the hypothesis was non-directional, and the significance level was therefore set at $p \le 0.05$.

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## 4.11. Conclusion

This chapter served to give a detailed account of the primary data gathering strategy employed in executing this study. The next chapter advances the paper by laying out the results that were captured during the primary data gathering exercise.

# 5 RESEARCH RESULTS

## 5.1. Introduction

This chapter presents the research results. In the first section, the response rate and success of the questionnaire are described. The second section presents the descriptive data for all variables. In the third and final section, the results of the exploratory factor analysis as well as the statistical tests conducted to respond to the research questions are detailed.

## 5.2. Response Rate and Reliability of the Survey Questionnaire

The success of the questionnaire as a data-collecting instrument is measured by the response rate and the quality of the replies. 113 responses were received out of 194 respondents that fit the study criteria. All responses received were complete and this translated into a 58% response rate.

The Chronbach alpha test was conducted to analyse the internal consistency and reliability of the questionnaire. The objective was to establish whether the survey consistently measured what it intended to measure.

**Table 4**: Frequency table of ED usage descriptors

| Factor | Number of Items | Reliability statistics- Chronbach alpha |
|---|---|---|
| Access to Primary Healthcare | 4 | .663 |
| Convenience | 4 | .877 |
| Perception of urgency | 4 | .716 |
| Effect of Medical Insurance | 4 | .364 |

The convenience construct had the highest Chronbach alpha score of 0.877, followed by perception of urgency with a score of 0.716 and then access to a GP score of 0.663. The effect of medical insurance had the lowest Chronbach alpha score of 0.364.

## 5.3. Demographic profile of respondents

The structured questionnaire as a quantitative data-gathering tool creates a useful opportunity for capturing descriptive insight into useful demographic profiling of sampled respondents. This data is nominal in nature, and in this instance demographic data was collected, counted and classified with multiple categories of interest emerging. These are detailed below, highlighting aggregating profile characteristics.

### 5.3.1. Gender

There was an almost equal distribution of males and females. 49.6% (n = 57) of respondents were male and 50.4% (n = 56) were female.

**Figure 3**: Breakdown of respondents according to gender
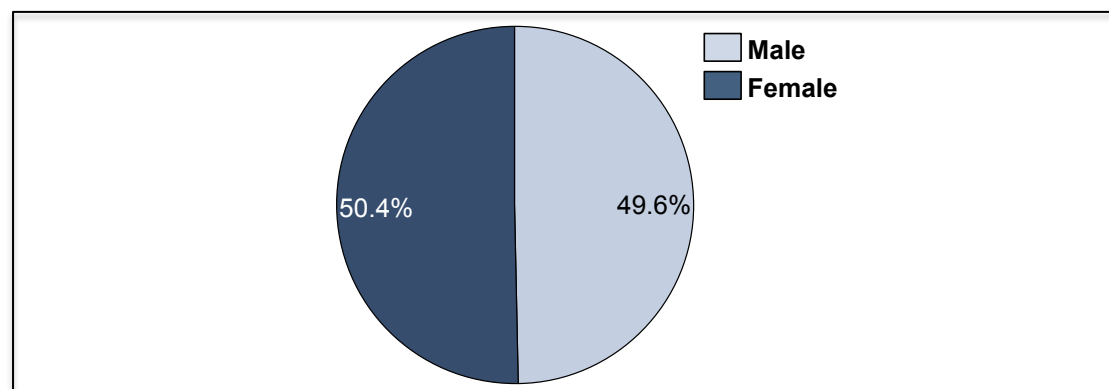


### 5.3.2. Age

The majority of the respondents (41.6%, n = 47) were in the 26-35 year old age groups followed by the 36-60 year old age group (33.6%, n = 38). 21.1% (n = 24) were in the 18-25 year old age group, while only 3.5% (n = 4) of the respondents were over 61 years old.

**Figure 4**: Breakdown of respondents according to age group
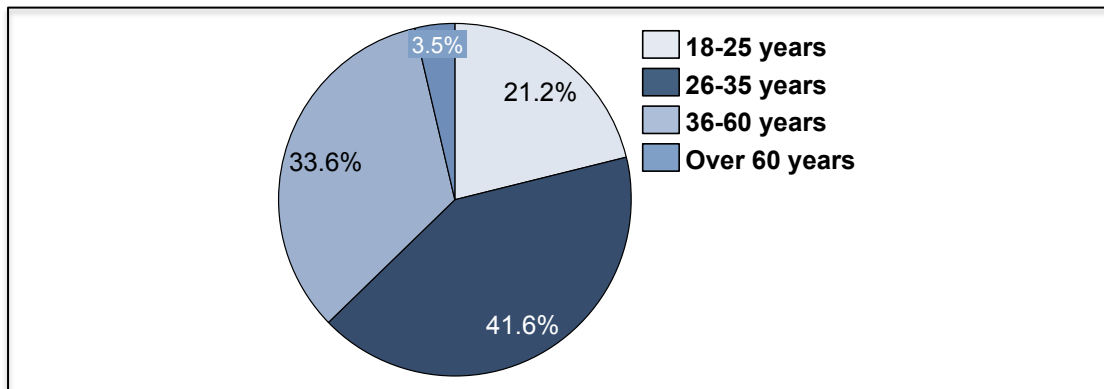


## 5.3.3. Race

46.0% (n = 52) of the respondents were white, 36,3% (n = 41) black, 8.8% (n = 10) were coloured, 8.0 % (n = 9) were Indian and 0.9% (n = 1) classified themselves as Asian/other.

**Figure 5**: Breakdown of respondents according to race
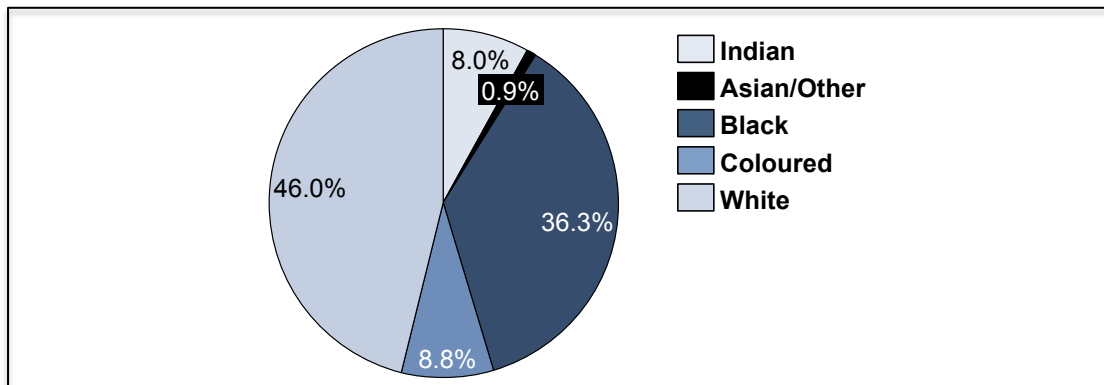


The mode was used as the measure of central tendency. The survey respondents comprised of more males than females. The average age was the 26-35 year old age group and the predominant race group was white.

**Table 5**: Frequency table of demographic descriptors

| Demographic | Mean | Median | Mode | SD | Variance | Skewness |
|---|---|---|---|---|---|---|
| Gender | 1.5 | 2.00 | 2.00 | 0.502 | 0.252 | -0.018 |
| Age | 2.19 | 2.00 | 2.00 | 0.811 | 0.658 | 0.036 |
| Race | 3.84 | 4.00 | 5.0 | 1.254 | 1.564 | -0.724 |

## 5.4. Time of day completing the survey

51.3% (n = 58) of respondents completed the survey during working hours (08h00-17h00) whereas 48.7% (n = 53) completed it after-hours (17h00-22h00).

**Figure 6**: Breakdown of respondents according to time of day of presentation
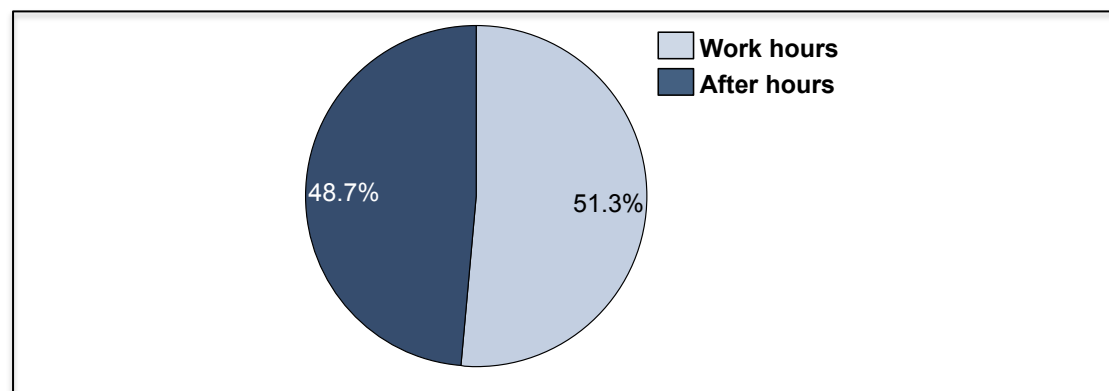


## 5.5. Day of week completing the survey

60.2% (n = 68) of respondents completed the survey on a weekday (Monday-Friday), while 39.8% (n =45) completed it on the weekend (Saturday and Sunday).

**Figure 7**: Breakdown of respondents according to day of week of presentation
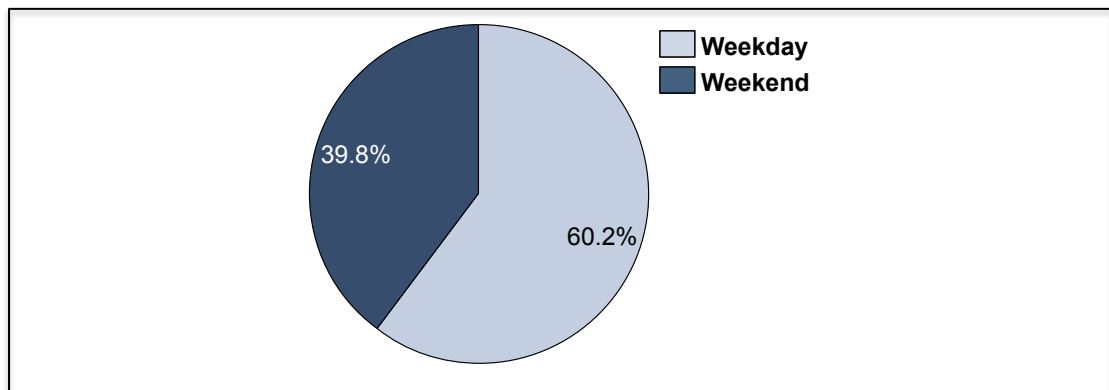


## 5.6. Factors that influence the non-urgent use of EDs

5.6.1. Lack of Access to Primary Healthcare/GP

Figure 8 depicts the survey responses from the construct that was named, lack of access to primary healthcare/GP.

**Figure 8**: Frequency of responses – Access to primary healthcare and GPs
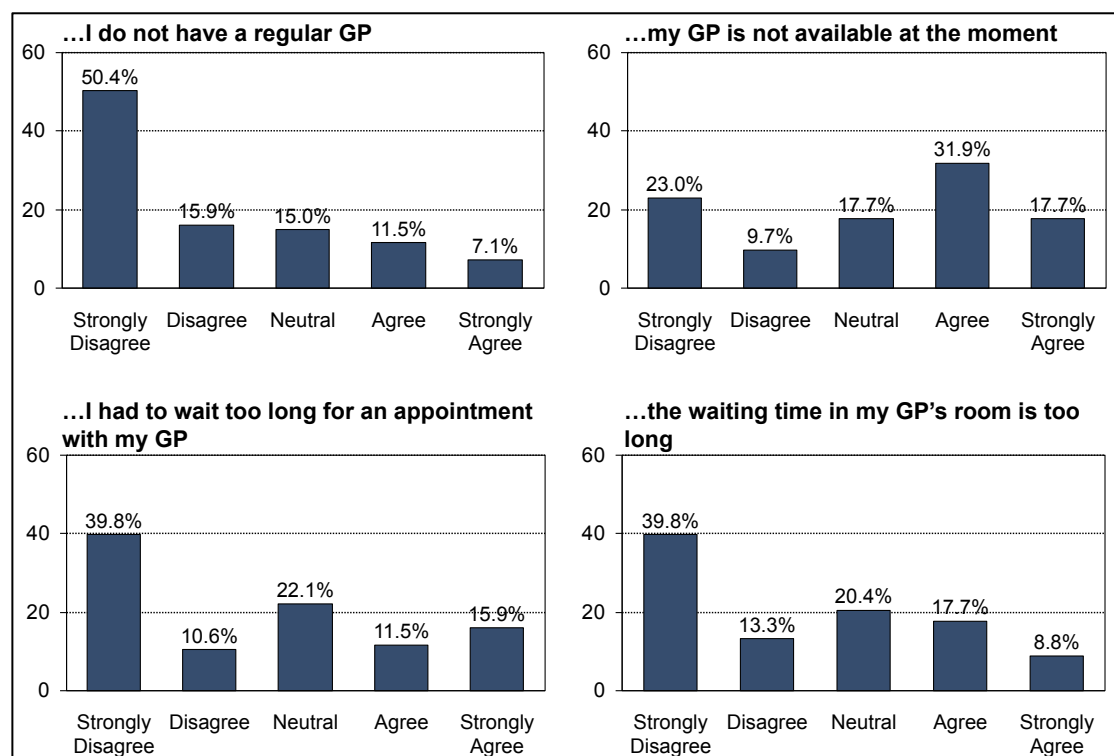


50.4% of respondents strongly disagreed with the statement that they came to the ED because they do not have a regular GP, 15.9% agreed, 15.0% were neutral, 11.5% agreed and only 7,1% strongly agreed.

23.0% of respondents strongly disagreed that the unavailability of their GP resulted in them presenting to the ED for their non-urgent medical condition. 9.7% disagreed with this statement, 17.7% were neutral, 31.9% agreed and 17.7% strongly agreed.

39.8% of patients strongly disagreed with the statement that they came to the ED because it takes too long to get an appointment with their GP. 10.6% of respondent agreed, 22.1% were neutral, 11.5% agreed and 15.9% strongly agreed with this statement.

39.8% of respondents strongly disagreed with the statement that the long waiting times in the GP rooms resulted in them visiting the ED. 13.3% disagreed with this statement, while 20.4% were neutral. 17.7% agreed and 8.8% strongly agreed with the statement.

Table 6 presents a summary of the descriptive statistics for this study construct. As a result of the skewness of the results, the median was used as the measure of central tendency.

**Table 6**: Summary of the descriptive statistics – Lack of access to a GP

|  | Mean | Median | Mode | SD | Variance | Skewness |
|---|---|---|---|---|---|---|
| **I came to the ED because I do not have a regular GP** | 2.09 | 1 | 1 | 1.327 | 1.760 | 0.886 |
| **I came to the ED because my GP is not available at the moment** | 3.13 | 3.00 | 4.00 | 1.431 | 2.409 | -3.17 |
| **I came to the ED because I had to wait too long for an appointment with my GP** | 2.53 | 2.00 | 1.00 | 1.5 | 2.251 | 0.408 |
| **I came to the ED because the waiting time in my GP's rooms is too long** | 2.42 | 2.00 | 1.00 | 1.394 | 1.943 | 0.410 |

The respondents strongly disagreed (median = 1) that not having a regular family doctor resulted in them visiting the ED. They also disagreed (median = 2) that the long waiting times in their GP's rooms and the difficulty in securing an appointment (median = 2) led them to seek medical care in the ED. There was however uncertainty with regards to the unavailability of the GP resulting in a visit to the ED, with the median response of 3 indicating neutrality towards this statement.

For this construct, the sampled respondents did not agree with any of the statements that made up this construct.

5.6.2. Convenience of the ED services

Figure 9 depicts the survey responses from the construct that was named, convenience of the ED services.

**Figure 9**: Frequency of responses – Convenience of ED services
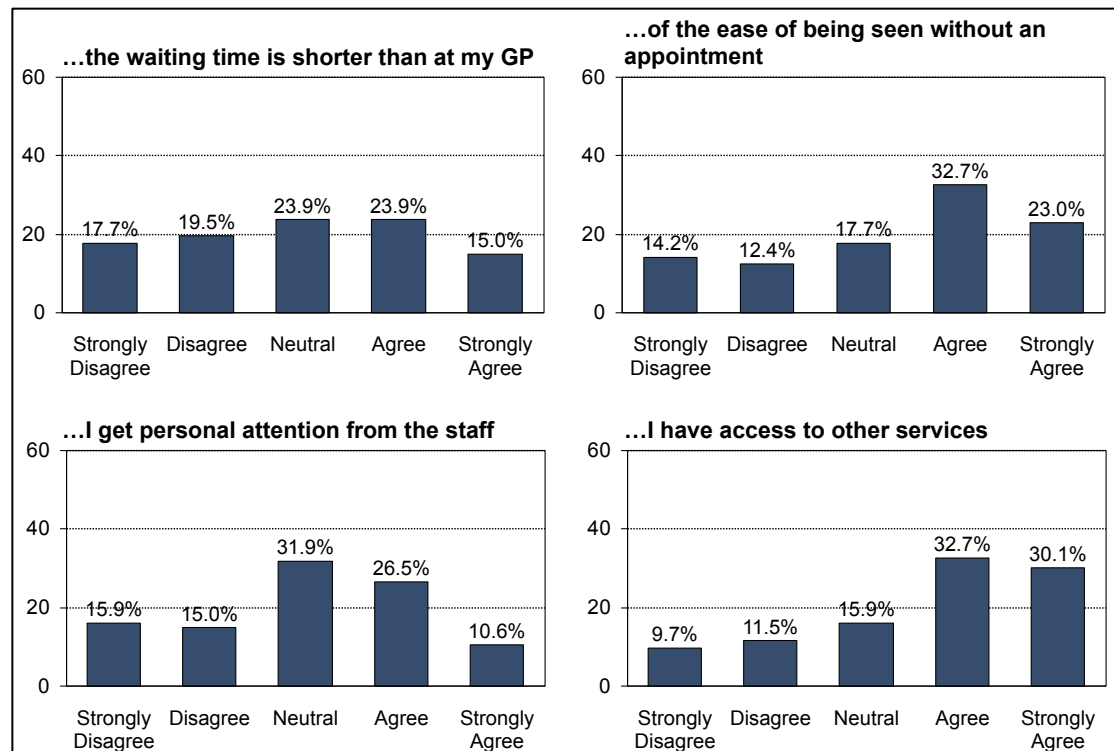


23.0% and 15.0% of respondents agreed and strongly agreed respectively that they were attracted to the ED because of the shorter waiting times relative to the GP. 23.9% of respondents were neutral, 19.5% disagree, while 17.7% strongly disagreed with this statement.

23.0% of respondent strongly agreed and 32.7% agreed that the ease of being seen without an appointment was responsible for their visit to the ED. 17.7% of the respondents were neutral, 12.4% disagreed and 14.2% strongly disagreed with the statement.

The bulk of the respondents (31.9%) were neutral to the statement that they came to the ED because they get personal attention from the staff. 10.6% and 26.5% strongly agreed and agreed respectively with this statement. However, 15.0% disagreed and 15.9% strongly disagreed with the statement.

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A clear majority of the respondents agreed (32.7% agreed and 30.1% strongly agreed) that the access to other specialist services was the reason why the chose the ED. 15.9% were neutral, 11.5% disagreed and only 9.7% strongly disagreed with this statement.

**Table 7**: Summary of the descriptive statistics – Convenience of ED services

|  | Mean | Median | Mode | SD | Variance | Skewness |
|---|---|---|---|---|---|---|
| I came to the ED because the waiting time is better/shorter than my GP | 2.99 | 3.00 | 3 | 1.326 | 1.759 | -.054 |
| I came to the ED because of the ease of being seen without an appointment | 3.38 | 4.00 | 4 | 1.345 | 1.809 | -.503 |
| I came to the ED because I get personal attention from the staff | 3.01 | 3.00 | 3 | 1.221 | 1.491 | -.197 |
| I came to the ED because I have access to other services such as x-rays | 3.62 | 4.00 | 4 | 1.291 | 1.666 | -.700 |

Table 9 shows that the respondents agreed that the ease of being seen without an appointment (median = 4) as well as the access to other services such as x-rays (median = 4) attracted them to the ED for their non-urgent medical condition. They were neutral (median = 3) to the statement that getting personal attention from staff was the pull towards ED services and also neutral with regards to the alleged shorter ED waiting times being a factor that resulted in their ED visit.

5.6.3.  Perception of urgency

Figure 10 depicts the survey responses from the construct that was named, perception of urgency.

**Figure 10**: Frequency of responses – Perception of urgency
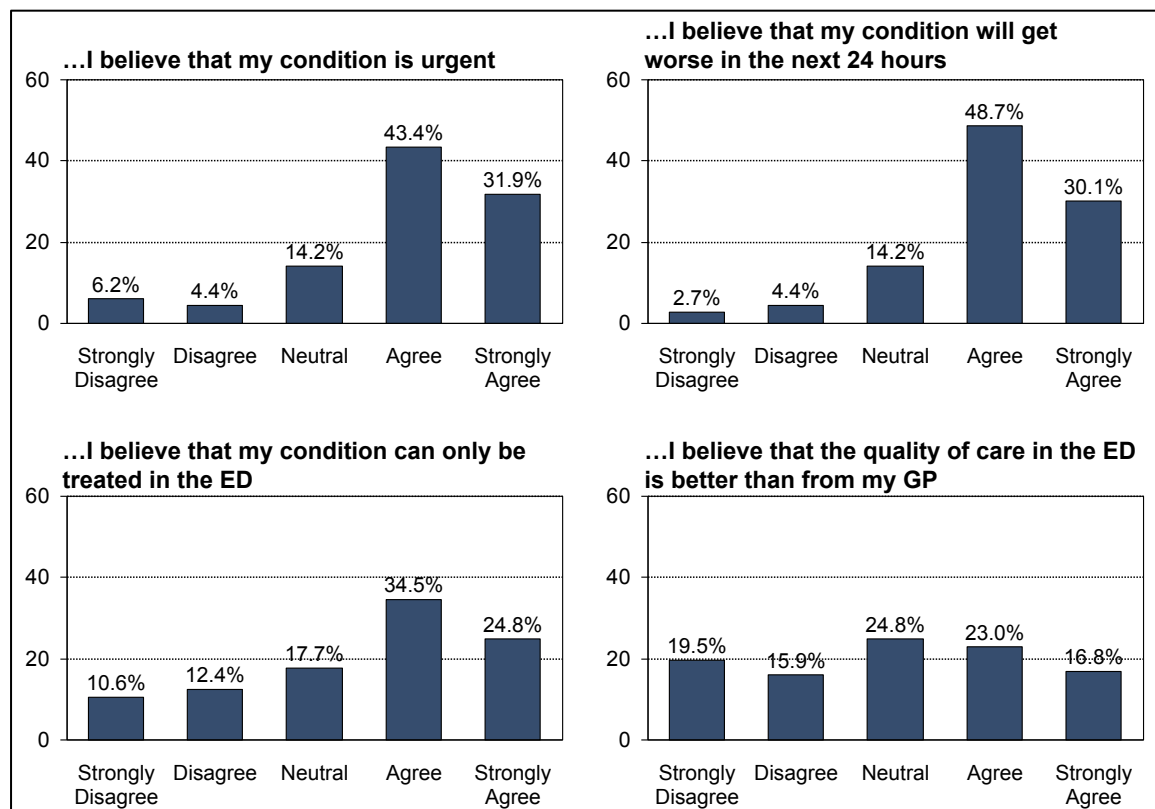


The majority of the respondent resonated (43.4% agreed and 31.9% strongly agreed) with the statement that they came to the ED because they believed that their condition was urgent. 14.2% were neutral and only 4.4% and 6.2% disagreed and strongly disagreed with this statement respectively.

48.7% agreed that they believed that their condition would get worse within 24 hours and 30.1% strongly agreed. 14.2% were neutral, 4.4% disagreed and 2.7% strongly disagreed with this statement.

34.5% and 24.8% of respondents respectively agreed and strongly agreed that they came to the ED because they believed that their condition was urgent. 17.7% were neutral to this statement, 12.4% disagreed and 10.6% strongly disagreed.

24.8% of respondents were neutral to whether they regarded the quality of the ED services to be superior to that provided the GP. 23% and 16.8% agreed and strongly agreed that it was. However, 15.9% of the respondents disagreed with this statement and 19.5% strongly disagreed.

**Table 8**: Summary of the descriptive statistics – Perception of urgency

| | Mean | Median | Mode | SD | Variance | Skewness |
|---|---|---|---|---|---|---|
| **I came to the ED because I believe that my condition is urgent** | 3.9 | 4.00 | 4 | 1.094 | 1.196 | -1.180 |
| **I came to the ED because I believe that my condition will get worse in the next 24 hours** | 3.99 | 4.00 | 4 | 0.931 | 0.866 | -1.133 |
| **I came to the ED because my condition can only be treated in the ED** | 3.5 | 4.00 | 4.00 | 1.283 | 1.645 | -0.604 |
| **I came to the ED because the quality of care in the ED is better than my GP** | 3.02 | 3.00 | 3. | 1.363 | 1.857 | -0.97 |

The respondents agreed that they believed that their condition was urgent (median = 4) and that it would get worse within 24 hours (median = 4). They also agreed that they believed that their condition could only be treated in the ED (median = 4). They were however uncertain that the quality of care in the ED was superior to that offered by the GP (median = 3).

### 5.6.4. Effect of medical insurance

Figure 11 depicts the survey responses from the construct that was named, effect of medical insurance.

47.8% of respondents agreed that their medical aid covers most or all of the costs in the ED and 29.2% strongly agreed. 12.4% were neutral to this statement, 9.7% disagreed and 0.9% strongly disagreed.

The majority of respondents (42.5%) were neutral or did not know whether it cost mote to have their current condition treated in the ED.  25.7% agreed that it did cost more and 10.6% strongly agreed.  11.5% disagreed and 9.7% strongly disagreed with this statement.

48.7% of respondents were neutral or did not know whether their GP could treat their current condition for less than the cost in the ED. 14.2% agreed and 11.5% strongly y agreed with this statement. 15.9% of respondents disagreed and 9.7% strongly disagreed.

**Figure 11**: <u>Frequency of responses – Effect of medical insurance</u>
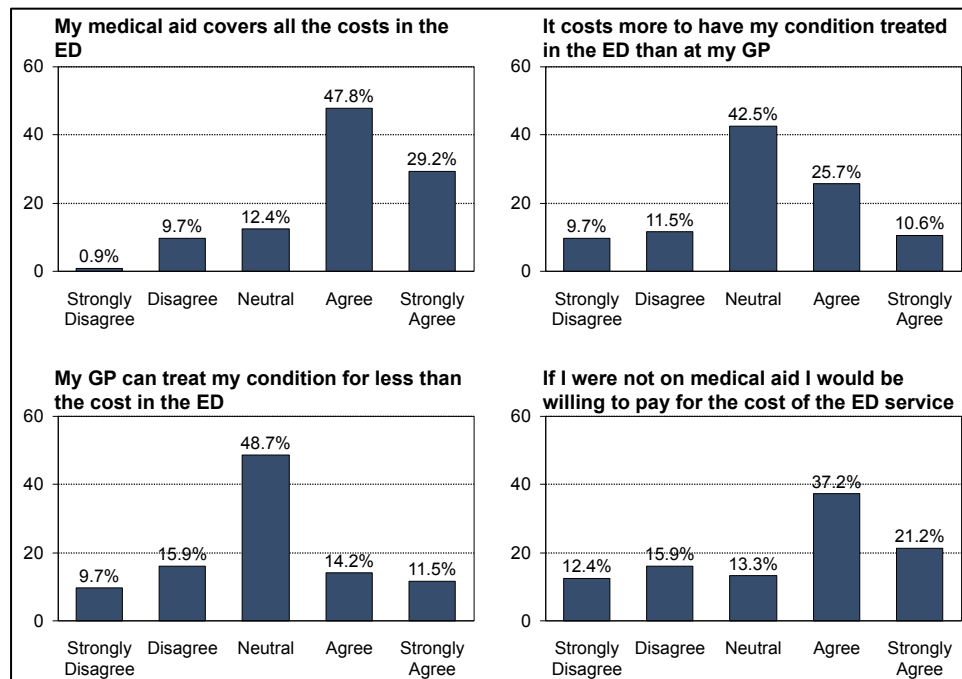


**Table 9:** <u>Summary of the descriptive statistics – Effect of medical insurance</u>

| | Mean | Median | Mode | SD | Variance | Skewness |
|---|---|---|---|---|---|---|
| **My medical aid covers most or all the cost of the ED** | 3.95 | 4.00 | 4 | 0.943 | 0.890 | -.867 |
| **It costs more to have my condition treated in the ED than it does in my GP's rooms** | 3.16 | 3.00 | 3 | 1.082 | 1.171 | 0.281 |
| **My GP can effectively treat my condition for less than the cost in the ED** | 3.02 | 3.00 | 3 | 1.077 | 1.160 | 0.052 |
| **If I were not on medical aid I would be willing to pay the full cost of the ED services** | 3.39 | 4.00 | 4 | 1.319 | 1.740 | -.516 |

The respondents agreed (median = 4) that their medical aid covered most or all of the costs in the ED and also agreed (median = 4) that they would be willing to pay for the cost of the ED if they were not on medical aid. The respondents also indicated that they did not know (median=3) whether it cost them more to have their condition treated in the ED instead of by their GP and also did not know (median =3) whether their GP was able to treat their condition for less than the cost in the ED.

## 5.7. Relative importance of factors influence non-urgent use of EDs

Exploratory factor analysis (EFA) and principal component analysis (PCA) populated all the survey questions (variables) and clustered them into factors. This was based on patterns in the data and continued to express the data in a manner that articulated its similarities and differences.

**Table 10**: Results of principal component analysis

| Total Variance Explained | | | | |
|---|---|---|---|---|
| **Factor** | Eigenvalue | Rotation Sums of Squared Loadings | | |
| | Total | Total | % Of Variance | Cumulative % |
| **1** | **5.165** | 4.551 | 20.685 | **20.685** |
| **2** | **2.428** | 2.522 | 11.462 | **32.147** |
| **3** | **1.853** | 1.757 | 7.985 | **40.132** |
| **4** | **1.644** | 1.737 | 7.897 | **48.029** |
| **5** | **1.533** | 1.591 | 7.234 | **55.263** |
| **6** | **1.236** | 1.376 | 6.252 | **61.515** |
| **7** | **1.029** | 1.355 | 6.157 | **67.672** |
| **8** | .921 | | | |
| **9** | .841 | | | |
| **10** | .741 | | | |
| **11** | .706 | | | |
| **12** | .605 | | | |
| **13** | .593 | | | |
| **14** | .515 | | | |
| **15** | .498 | | | |
| **16** | .423 | | | |
| **17** | .340 | | | |
| **18** | .281 | | | |
| **19** | .192 | | | |
| **20** | .180 | | | |
| **21** | .167 | | | |
| **22** | .108 | | | |

Table 12 shows that Factor 1 to 7 all had eigenvalues above 1 and were thus subject to further analysis. These factors collectively explained 67.672% of the non-urgent ED use behaviour.

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Table 13 shows the factors 1-7 and the variables that loaded onto them.

**Table 11**: <u>Factor 1-7 with variable loading</u>

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**Factor 1:**

- I came to the emergency department because I get personal attention.
- I came to the emergency department because of the ease of being seen without an appointment.
- I came to the emergency department because waiting time is shorter/better than my usual source of primary care
- I came to the emergency department because quality of medical care is better than my usual source of primary health care
- I came to the emergency department because of easy access to other services such as x-rays, blood tests and specialists.
- I came to the emergency department because waiting time in my family doctor rooms is too long.
- I came to the emergency department because I had to wait too long for an appointment with my family doctor/GP
- I came to the emergency department because I do not have a regular family doctor/GP

**Factor 2:**
- I came to the emergency department because I believe my condition is urgent.
- I came to the emergency department because I believe my condition will be worse in 24hours time
- On a scale of 1 -10 …
- I came to the emergency department because I believe my condition can only be treated in an emergency room.

**Factor 3:**
- My medical aid covers most or all…
- If I were not on medical aid I would.

**Factor 4:** My family doctor can effectively treat my current condition …
  a) It costs more to have my current condition treated…

**Factor 5:** Race
- Time of day I am completing the survey….
- I came to the emergency department because my family doctor is not available.

**Factor 6:**
- Time of week you are …
- Age

**Factor 7:**
- Gender
- I came to the emergency department because I don't have a regular family doctor/GP

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Figure 12 shows a scree plot, which is a graphical representation of all the eigenvalues.

**Figure 12**: Scree plot
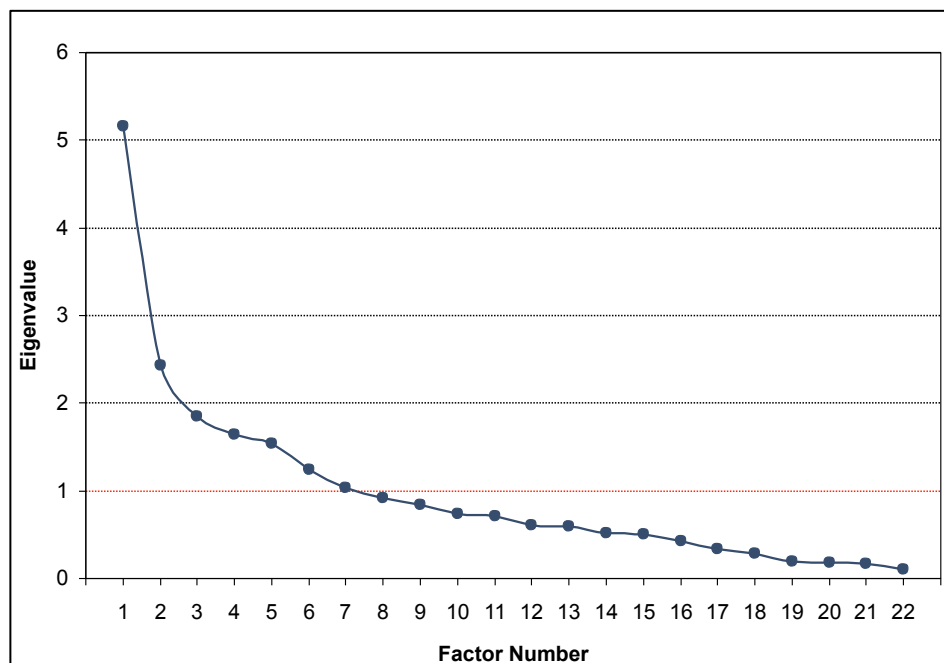


Statistically speaking 7 factors with eigenvalues > 1 were identified and could have been retained for further analysis. This study sought to understand the factors that could aid in the development of ED diversion strategies and it was this that informed the decision to not retain factor 5-7 in further analysis.

**Table 12**: Factors retained

| Factor | Initial eigenvalue | Variance | Cumulative percentage |
|---|---|---|---|
| Factor 1 | 5.165 | **20.685%** | 20.685% |
| Factor 2 | 2.428 | **11.462%** | 32.147% |
| Factor 3 | 1.853 | **7.985%** | 40.132% |
| Factor 4 | 1.644 | **7.897%** | 48.029% |

Furthermore, the 4 factors were renamed in order to capture the behaviour of the underlying variable. Factor 1 was a combination of the all the variables that were in the "lack of access to GP' and "convenience" sections of the questionnaire. This factor was appropriately renamed, "Interplay between lack of GP access and ED convenience". Factor 2 retained the original name, "perception of urgency".

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Factor 3 and 4 were originally grouped together on the questionnaire but factor analysis separated them. Factor 3 was named "effect of medical insurance" and factor 4 "knowledge of ED and GP costs".

**Table 13**: Correlation matrix for the retained four factors

| Factor | Lack of GP access and ED convenience | Perception of urgency | Medical Insurance | Knowledge of costs |
|---|---|---|---|---|
| **Lack of GP access and ED convenience** | .902 | .323 | -.105 | -.073 |
| **Perception of urgency** | -.250 | .795 | .347 | .356 |
| **Medical Insurance** | .188 | -.419 | .388 | .694 |
| **Knowledge of costs** | .217 | .026 | .666 | -.307 |

The correlation matrix shows that Lack of GP access and ED convenience has the strongest correlation with r = 0.902, followed by perception of urgency with r=0.795. These factors are independent. Medical insurance and knowledge of costs had the strongest correlations with each other with r = 0.694 and r = 0.666 respectively. These two factors are strongly related and therefore not independent factors

## 5.8. Differences between Groups – Hypothesis Testing

In order to answer the second and third research questions, the Mann-Whitney test was performed. This test works by ranking the data. Large rankings represent higher scores, while smaller ranks represent low scores.

5.8.1. Time of day of patient presentation to the ED

The following hypothesis was completed at a 5% level of significance:

$H_O$ – the means are equal
$H_A$ – the means are not equal

Mann Whitney Test was used to analyse the time of day usage. The full table of results is shown in Appendix 2. Significant differences were found between the two

groups on the following variables:

**I came to the ED because my GP is not available at the moment**

More patients in the 17h00-22h00 were in the ED because their GP was not available at the time of consultation than those who presented between 08h00-17h00. This was significant at a *p* value of 0.038.

**I came to the ED because the waiting time in my GP's rooms is too long**

More patients who presented between 08h00-17h00 were in the ED due to long GP waiting times compared to those that presented between 17h00-22h00. This was significant at a *p* value of 0.46.

**I came to the ED because I believe that my condition can only be treated in the ED**

This result shows that patients in the 08h00-17h00 are more likely to be at the ED because they believe that their condition can only be treated in the ED and is significant at a p-value of 0.037.

**I came to the ED because the quality of care is better than my GP**

Patients who presented to the ED between 08h00-17h00 were more likely to be in the ED because they perceived the quality of care to be better than their usual source of care, than those who presented between 17h00-22h00. This result was significant at a p-value of 0.019.

**I came to the ED because the waiting time better than my GP**

The patients who presented between 08h00-17h00 were more likely to be in the ED because of the shorter waiting times in the ED versus their GP than those who presented between 17h00-22h00.

**I came to the ED because of the ease of being seen without an appointment**

The 08h00-17h00 group were more likely to be in the ED because they appreciated the ease at which they could get treatment without an appointment when compared to those that presented between 17h00-22h00. This result was significant at a *p*-value of 0.042

### 5.8.2. Day of week of patient presentation to the ED

The following hypothesis was completed at a 5% level of significance:

$H_O$ – the means are equal
$H_A$ – the means are not equal

The Mann Whitney Test was used to evaluate day of the week usage patterns of ED facilities. The full table of results is displayed in Appendix 3. A statistically significant difference was found between the respondents who presented on Monday-Friday and those who presented on Saturday and Sunday on the following variable:

**I came to the ED because I had to wait too long for an appointment with my GP**
The group that presented between Monday-Friday were drawn to the ED because of difficulty in getting an appointment with their GP when compared to the group that visited the ED on the weekend.

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# 6  DISCUSSION OF RESULTS

## 6.1  Introduction

In this chapter the results will be discussed and referenced to the research questions formulated in chapter 3. The extent to which the results resonate or differ with the literature review in chapter 2 is interrogated, with plausible reasons advanced.

## 6.2  Relative Importance of Factors that Influence the non-urgent use of EDs

The first research question was: what is the relative importance of factors that influence the non-urgent use of EDs

The results show that the interplay between lack of GP access and ED convenience was the most important factor that explained 20.685% of the behaviour. Perception of urgency was the second most important factor, which explained 11.462% of the behaviour. Effect of medical insurance and knowledge of ED and GP costs were the third and fourth most important factors in the study

### 6.2.1.  Interplay between lack of GP access and ED convenience

The fact that **lack of access to a GP** and **Convenience of the ED** loaded on the same factor proves the point made by Tsai *et al* (2010) that the non-urgent utilisation of EDs is an interplay between supply side and demand side factors. This explains why intervention strategies focused only on correcting the supply side factors have not significantly reduced the non-urgent use of EDs.

The results seem to indicate that the majority of respondents have a regular GP and this is inferred from the majority of responses that disagreed with the statement that they came to the ED because they do not have a regular GP. This supports the finding by Durand *et al* (2012) who postulated that most patients who utilise the ED for non-urgent conditions have a regular GP and that they choose the ED as discerning health consumers that know the health system and are informed about the services available to them.

It was not surprising that 62.8% of respondents agreed that they came to the ED because of access to other services such as x-rays, blood tests and specialists. These characteristics are indigenous to the ED and are responsible for the substitution patterns between the GP and ED services. According to Durand *et al* (2012) this is convenient for the patients because it spares them the complexities of making several appointments in different places and provides the patient with adequate reassurance using additional investigations.

The study results raise a concern with regards to the effectiveness of the gatekeeping role of the GP and also have implications regarding continuity of care. This means that these patients are losing out on the benefits of the long-term doctor patient relationship that is only offered by the GP and substituting it with the episodic consultations provided by the ED. The role of the GP is important in the healthcare system not only from a cost control point of view, but it also improves treatment adherence and facilitates health education (Carret *et al*, 2007).

6.2.2. <u>Perception of Urgency</u>

This was the second most important factor and confirmed the findings by Uscher-Pines et al (2013), that non-urgent patients believed that their condition was urgent and needing of immediate care

The fact that 75.3% of patients still believed that their condition was urgent even after contact with more than one healthcare provider is evidence of the presence of information asymmetry in the ED and supports the assertion by Alyasin & Douglas (2014) that over two-thirds of patients who were given a non-urgent triage scoring believed their conditions to be more serious than that given by the triage personnel.
Triage is a prospective determinant of non-urgency based on strict medical criteria. Patients on the other hand, usually base their own rating on their level of discomfort and anxiety. As McGuire (2000) Dranove & Satterthwaite (2000) and Wells *et al* (2007) noted, this is one of the many distortions of healthcare markets because doctors have superior medical knowledge that the patient does not possess.

### 6.2.3. Effect of Medical Insurance and knowledge of ED and GP costs

The effect of medical insurance and the patient's knowledge of ED costs will be discussed together as they are related to each other as depicted by the correlation matrix in chapter 5.

A majority of respondents confirmed that their medical aid covers most or all of the costs associated with the ED. These results therefore support the findings of Durand *et al* (2012) and Jeon & Wong (2013) that insured patients in the ED do not realise the full cost of care because they often do not pay at the time of consultation. This results in significant cost sharing and also decreases the out of pocket price paid by the consumer. This discovery also explains why 42% of respondents did not know whether or not it cost more to have their condition treated in the emergency department. Zweifel & Manning (2000) expressed that medical insurance reduces the relative price of healthcare by shielding the patient from the full price effects of seeking medical services. A cost analysis was beyond the scope of this study, but according to the New England Healthcare Institute (2010) experts in the field estimate that the cost of an ED visit for a non-urgent condition is two-five times greater than the cost of receiving care in the primary care setting for the same condition.

The results of this study however failed to show the following:

- That health insurance results in a change in health behaviour and healthcare consumption as suggested by Zweifel & Manning (2000). A majority of patients claimed that they would be willing to pay the full cost of ED services even if they were uninsured.

- That insured people demand more healthcare than the uninsured (Van Dijk, 2013).

- That consumers would not purchase this additional care if they had to pay its full cost at the margin (Jeon & Kwon, 2013). Conversely Most respondents agreed that they would be willing to pay for the services of the ED even if they were uninsured.

This was in part attributed to the fact that most of the respondents did not know the cost of ED services in the first instance. It also points to flaws in the research methodology. Given the nature and sensitivity of the question " If I were not on medical aid I would be willing to pay the full cost of services in the ED", patients might have felt compelled to respond in a "socially appropriate" manner, thereby introducing response bias.

## 6.3   Time of Day of ED Usage

The second research question was: Are there significant differences in the factors in patients that visit the ED during working hours (08h00-17h00) and those that visit after hours (after 17h00)?

Data was aggregated and split according to the time of day that the patients presented to the emergency department.  It was necessary to determine whether the utilisation of the ED was different at different times of the day when resources outside of the ED varied.

Table 16 show the significant differences that were found between the two groups.

**Table 15**: Statistical differences day and after hours ED patients

| During work hours (08h00-17h00) | After hours (17h00-22h00) |
|---|---|
| Waiting time in GP rooms too long | My GP is not available |
| ED waiting time shorter (convenient) | |
| Ease of being seen without appointment in the ED | |
| My condition can only be treated in the ED | |
| Quality of care in the ED better than my GP | |

The study results show that patients who visited the ED for non-urgent conditions after hours (17h00-22h00) did so because their GP was not available. Tsai *et al* (2010), Dover (2010), Uscher-Pines et al (2013) and Bruni et al (2014) found that high rates of non-urgent ED visits are an indication of poor primary healthcare access. The results in this study also indicate that in the context of the South African healthcare sector, poor access does not refer to people not having a GP but rather to the GP having limited capacity.

These results also support the findings of Durand *et al* (2012) that patients working

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during regular business hours have problems obtaining an appointment with their regular GP before or after their workday and do not want to take the day off to visit their GP even when they are able to make an appointment.

Medical schemes in SA primarily benefit those who are employed and are subsidised by their employers (Department of Health; McIntyre, 2010). It can therefore be inferred that the population of this study are employed and were unable to access their GP during working hours due to work commitments. This resonates with findings by Schuur *et al* (2012), who found that it is difficult for patients to arrange a sick visit with a GP in a timely fashion because schedules are often full and after hours service is unavailable.

Waiting for treatment is usually not a viable option for these patients as it often has an opportunity cost of foregone work and possible worsening of the medical condition (Hoel & Sather, 2003). The substitution of GP for ED services in the patient who visits the ED for a non-urgent condition after hours is therefore influenced more by supply side factors (i.e. lack of access of a GP) than demand side factors.

As Bruni *et al* (2014) stated; the closure of GP practices at night is one of the reasons for high ED attendances and extending GP hours up to 12 hours a day reduced non-urgent ED visits. This is however not always possible as most GP's work in a solo practice and do not have the capacity to provide care over an extended period of time  (Lee *et al*, 2000; Bruni *et al*, 2014). To date, the majority of intervention strategies have focused on extending GP hours and hence their accessibility.

The patient who utilises the ED during work hours on the other hand, has the luxury of choice. For this patient, the decision to seek medical care from the ED is but one of the many alternatives in the choice set when they require non-urgent healthcare. (Durand *et al*, 2012). What determines what provider they choose is the relative ease of access to the different providers, which includes time costs and distance (Cuyler & Newhouse, 2000).

The patient who utilises the ED for non-urgent conditions during work hours, does not appreciate the long waiting times at the GP rooms and is therefore attracted to the ED because of the relatively shorter waiting times as well as the ease with which they can be seen without an appointment. This is similar to the findings of the discrete choice experiment conducted by Lagarde *et al* (2015), which concluded that people feel strongly about the proximity of the practice as well as the ability to obtain

an appointment with a GP relatively quickly. Bruni *et al* (2014) also found that the underlying reasons for non-urgent ED attendance included frustrations with scheduling appointments with the GP as well as lengthy waiting times. On the other hand patients value that the ED is open 24 hours a day.

The fact that the daytime users chose the ED amongst other options indicates that the ED won the consumer surplus bid. The convenience of the ED allows it to offer more consumer surplus to the patient relative to the GP (Lega & Mengoni, 2008; Durand *et al*, 2012)

The day time user also regarded the quality of the ED services to be superior to that provided by the GP and therefore resonates with the findings of Dover (2010) and Tsai *et al* (2010) that patients rate the quality of care in the ED to be superior to that provided by their primary care provider.

This speaks to the effectiveness of the signal that the ED sends to the non-urgent user, because healthcare services are credence goods (Jaegher & Jegers, 2001). The *signal is* the fact that it is labelled an **emergency** department, and the fact that the ED is situated within a hospital and thus has access to other facilities such as radiological services, laboratory services and a myriad of other specialist services. The fact that ED services often result in the excessive use of medicines and diagnostic tests often perpetuates the patient's belief that ED services are able to solve complex health problems whereas the GP's rooms are perceived to not be well suited for acute conditions due to their lack of basic laboratory and imaging capabilities (Lee *et al*, 2000; Schuur *et al*, 2012; Bruni *et a*l, 2014).

These results therefore supports the finding of Schuur et al (2012), who observed that patients often perceive the care in the ED as thorough and of a superior quality, and attributes this to the fact that emergency physicians are trained to assume the worst and are most likely to admit patients with uncertain diagnoses.

## 6.4 Day of Week of ED Usage

The third research question was: Are there any significant differences in factors that drive utilisation in patients that visit the ED during the week (Monday-Friday) versus those that visit it on the weekend (Saturday and Sunday)?

The non-urgent use of the ED seems be higher on weekends (Saturday and Sunday) than it is on Weekdays (Monday-Friday). 68 patients were seen between Monday-Friday, which translates to 13 patients each day, while 45 patients were seen between Saturday and Sunday, 22 patients on each day. It was therefore surprising that there were no statistically significant differences between the two groups with regards to the lack of access to the GP, especially for the weekend group.

The only statistically significant difference was that patients who visited the GP between Monday and Friday did so because of the inconvenience and difficulty in making timely appointments with their GP.

# 7  CONCLUSION AND RECOMMENDATIONS

In this chapter, the major research findings are summarised with the limitations of the research taken into account. Recommendations are made based on the research results and ideas for future research are suggested.

## 7.1.  Summary of Major Research Results

The purpose of this research was to:

- Provide insights as to what factors influence the non-urgent use of EDs
- Utilise these insights to assist interested organisations to develop effective diversion strategies for non-urgent ED users

The findings support the literature study in revealing that there is an interplay between supply and demand factors. The theoretical model conceptualised by Uscher-Pines *et al* (2013) was used as a base and adapted to fit the context of this study. This model divided the factors that influence the non-urgent use of EDs, into causal factors and associated factors. The causal factors were said to be independent predictors while the associated factors influence ED use via one of the causal pathways. The context of this research was considered when the final decision was made with regard to the factors that would be investigated. Three causal factors were included (Lack of access to primary care, convenience of the ED and perception of urgency). Because the study was conducted on individuals with medical insurance, it was necessary to include the effect of medical insurance as an associated factor.

Secondly, in determining the relative importance of identified factors based on the survey results, principal factor analysis was used to identify clusters of variables and to rate the relative importance of the factors. The factors that influence the non-urgent use of EDs in order of importance are:

1. The interplay between lack of access to the GP and convenience of the ED
2. The perception of urgency
3. The effect of medical insurance
4. Knowledge of GP and ED costs

Investigations into time of day and day of the week choice drivers revealed that patients who visit the ED after hours are influenced by lack of access to and the availability of the GP whereas the convenience of the ED drives the behaviour in patients who choose to use the ED during work hours. Whilst on the other had, weekday usage was related to difficulty in setting timeous appointment with GPs. Both aspects highlight concerns related to the accessibility and convenience of GPs relative to EDs as an aggregating theme frustrating efforts to reduce inappropriate use of EDs.

## 7.2. Recommendations for business

Based on the research findings, a model was developed capturing the key recommendation themes that emerged. For intervention strategies to be effective, they need to be premised on 4 main pillars as illustrated in Figure 12.

**Figure 13**: <u>Strategic intervention pillars</u>
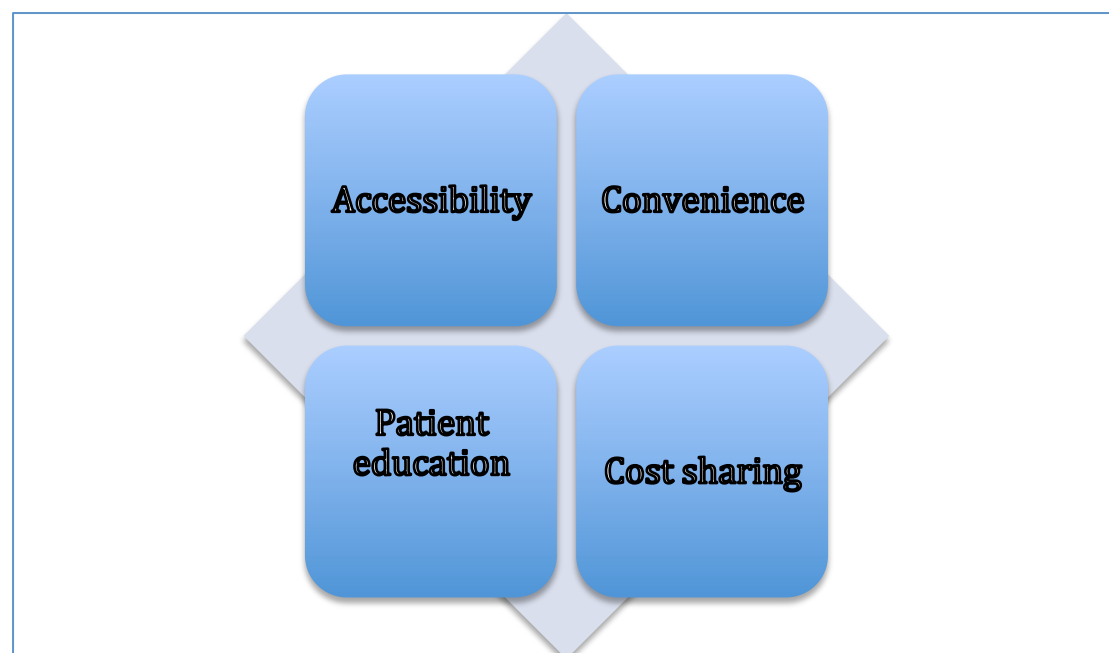


**<u>Accessibility</u>**

Increasing the availability of GP services remains a key element in the design of effective intervention strategies. The study has shown that the unavailability of GPs result in patients using the ED for non-urgent conditions after hours. This means that there are patients that could be diverted away from the ED just by improving the availability of GPs through the extension of working hours. This is however

impossible to do in solo GP practices that have limited capacity. The opportunity therefore is to encourage the establishment of more group practices that could enable the pooling of GP resources and make it possible to extend opening hours through the adoption of after hours call rosters, that will rotate practice doctors to ensure 24 hour availability.

The assumption was made that most medical scheme beneficiaries are employed and thus have time costs related to seeking GP care. Setting up new or enhancing existing GP practices within corporates will go a long way in addressing these opportunity costs

## Convenience

The results show that the patient who uses the ED during work hours, desires convenience. It is therefore not enough to just increase the availability of GP services.

Patients access the ED for non-urgent conditions during working hours because the waiting times are shorter and they don't need to make an appointment.

GP services therefore need to be match this efficiency in order to attract this patient. This can be achieved through the replications of ED operations by GPs. Nurses can be employed to perform tasks such as history taking and the measurement of vital signs so as to optimise the GP resource and minimise waiting times. Technology that allows patients to view appointment schedules of all the GPs in the area can be developed and employed. This will increase the choices that the patient has as well as the probability of securing a convenient appointment timeously.

## Patient education

The role of patient education is important and cements all the other elements in this model. Its role is not limited to education regarding what constitutes an emergency but extends to education on the options and resources in the healthcare system. This needs to be an on-going process as the results are likely to be long term

## Cost sharing

The study shows that patients did not know the cost of services and that is because their medical insurance covered most or all of the costs pertaining to their ED visit.

Insurers could consider co-payments for non-urgent conditions in the ED.

This is however risky as it has the potential of deterring patients with true emergency conditions from the ED. The recommendation is that this can only be implemented once access and convenience have been addressed so that patient choice is not

completely abolished.

## 7.3. Limitations of the study

The following possible limitations of the research were identified:

- Only one ED in Gauteng was sampled. This was purely as a result of inability to access other facilities timeously as permission to conduct a study in their facilities involved a process that was estimated to take 6 months. Access to other facilities in different geographic region would have enriched the data as it would have captured the differences in resources outside the ED

- Due to the sensitivity of the data, the study was not able to establish the extent of non-urgent use in the ED and was also not able to establish the cost implications of non-urgent ED use

- Due to limited resources, the study could only be conducted until 22h00.

- The factors that were selected for inclusion in the study only explained 48% of the behaviour.

## 7.4. Suggestions for Future Research

The study was only conducted on non-urgent ED users. Future research could investigate differences between non-urgent users of ED and those that choose to visit the GP.

The other suggestion is to investigate scientifically and intimately the effect of medical insurance. It would be of interest to compare the non-urgent utilisation of insured individuals to that of uninsured individuals

And lastly, to investigate the factors that influence the non-urgent use of EDs in the public sector where capacity is a pressing challenge. `

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# APPENDICIES

**Appendix 1: Survey Questionnaire**

<div style="background:blue; height:20px;"></div>

**26 Melville Road**
**Illovo**
**Johannesburg**
**2196**

GORDON INSTITUTE
OF BUSINESS SCIENCE
University of Pretoria

**Tel: (011) 771-4000**

Dear Participant

I am conducting research on what makes people utilise the emergency department for non-urgent medical conditions. To that end, you are asked to complete the following anonymous survey. This will help us better understand the needs of non-urgent patients and should not take up more than ten minutes of your time. Your participation is completely voluntary and you can withdraw at any time without penalty. All data will be kept confidential. By completing the survey you indicate that you voluntarily participate in this research. If you have any concerns, please do not hesitate to contact my supervisor or I. Our details are provided below.

Researcher Name: Nthabiseng Legoete
Email: nthabileg@yahoo.com
Phone: 0711944129

Research Supervisor: Mike Holland
Email: mholland@pricemetrics.co.za
Phone: 0824951283
**Section A: Demographics**
**(Please note that these questions are only for statistical purposes)**

Tell us about yourself (Tick in the box next to the appropriate option)

1. Gender

| Male | 1 | |
|---|---|---|
| Female | 2 | |

2. Age

| 18─25 years | 1 | |
|---|---|---|
| 25─35 years | 2 | |
| 35─60 years | 3 | |
| Above 60 | 4 | |

3. Race

| Indian | 1 | |
|---|---|---|
| Asian (other than Indian) | 2 | |

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| | | Black | 3 | |
| | | Coloured | 4 | |
| | | White | 5 | |

**Section B:  Access to Primary Healthcare/General Practitioner**

*Please indicate your level of agreement with each of the following statements by circling the appropriate block.*

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 4 | I came to the emergency department because I do not have a regular family doctor/General practitioner (GP) | 1 | 2 | 3 | 4 | 5 |
| 5 | I came to the emergency department because my family doctor/GP is not available at the moment | 1 | 2 | 3 | 4 | 5 |
| 6 | I came to the emergency department because I had to wait too long for an appointment with my family doctor/general practitioner. | 1 | 2 | 3 | 4 | 5 |
| 7 | I came to the emergency department because the waiting time in my family doctor/GP rooms is too long. | 1 | 2 | 3 | 4 | 5 |

**Section C: Perception of urgency**

8 On a scale of 1-10, with 1 being non-urgent and 10 being extremely urgent (i.e. a life or death situation) how would you rate the urgency of the problem that brought you to the emergency room today?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|

*Please indicate your level of agreement with each of the following statements by circling the appropriate block.*

| | | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 9 | I came to the emergency department because I believe that my condition is urgent | 1 | 2 | 3 | 4 | 5 |
| 10 | I came to the emergency department because I believe that my condition will worsen within the next 24 hours | 1 | 2 | 3 | 4 | 5 |
| 11 | I came to the emergency department because I believe that my condition can only be treated in the emergency department | 1 | 2 | 3 | 4 | 5 |
| 12 | I came to the emergency department because the quality of medical, care is better than my usual source of primary care/GP. | 1 | 2 | 3 | 4 | 5 |

**Section D: Convenience**

*Please indicate your level of agreement with each of the following statements by circling the appropriate block.*

|   |   | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 13 | I came to the emergency department because the waiting time is better/shorter than my usual source of primary care. | 1 | 2 | 3 | 4 | 5 |
| 14 | I came to the emergency department because of the ease of being seen without an appointment | 1 | 2 | 3 | 4 | 5 |
| 15 | I came to the emergency department because I get personal attention from the staff. | 1 | 2 | 3 | 4 | 5 |
| 16 | I came to the emergency department because I have easy access to other services such as x-rays, blood tests and specialists. | 1 | 2 | 3 | 4 | 5 |

**Section D: Effect of medical insurance/moral hazard**

*Please indicate your level of agreement with each of the following statements by circling the appropriate block.*

|   |   | Strongly Disagree | Disagree | Neither | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 17 | My medical aid covers most or all of the costs associated with the services in the emergency department. | 1 | 2 | 3 | 4 | 5 |
| 18 | It costs more to have my current condition treated in the emergency room than it does for the same condition in my usual source of primary care/GP | 1 | 2 | 3 | 4 | 5 |
| 19 | My family doctor/GP can effectively treat my current condition for less than the cost in the emergency department. | 1 | 2 | 3 | 4 | 5 |
| 20 | If I were not on medical aid, I would be willing to pay the full cost of having my current condition treated in the emergency department. | 1 | 2 | 3 | 4 | 5 |

**Section E: Other**

22. Time of day that I am completing this survey:

| 08h00-17h00 | 17h00-22h00 |
|---|---|

23. Please indicate the time of week that you are completing this survey:

| Weekday (Mon-Fri) | Weekend (Sat-Sun) |
|---|---|

-------------------------------------------THANK YOU FOR YOUR TIME---------------------------------

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## Appendix 2: Time of Day Mann Whitney Test

| Variable | Time of day | Number | Sum of Ranks | Significance |
|---|---|---|---|---|
| I came to the Ed because I do not have a regular family doctor/GP | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3519.50<br><br>2912.50 | 0.187 |
| I came to the ED because my GP is not available at the moment | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 2955.0<br><br>3486.0 | **0.038** |
| I came to the ED because I had to wait too long for an appointment with my GP | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3612.50<br><br>2828.50 | 0.066 |
| I came to the ED because the waiting time is too long | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3638.50<br><br>2802.50 | **0.046** |
| I came to the ED because I believe that my condition is urgent | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3503.0<br><br>2938.0 | 0.228 |
| I came to the ED because I believe that my condition can only be treated in the emergency department | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3656.50<br><br>2784.50 | **0.037** |
| I came to the ED because I believe that my condition will get worse within 24 hours | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3421.5<br><br>3019.5 | 0.473 |
| I came to the ED because the quality of medical care is better than my usual source of care | 08:00-17:00<br>17:00-22h00<br>Total | 58<br><br>55<br>113 | 3704.00<br><br>2737.00 | **0.019** |
| I came to the ED because the | 08:00- | | | |

| | | | | |
|---|---|---|---|---|
| waiting time is better than my usual source of care | 17:00 17:00-22h00 Total | 58 55 113 | 3709.5 2731.50 | **0.018** |
| I came to the emergency department because of the ease of being seen without an appointment | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3649.0 2792.0 | **0.042** |
| I came to the ED because I get personal attention from the staff | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3557.0 2884.0 | 0.137 |
| I came to the ED because I have easy access to other services such as x-rays | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3354.0 3087.0 | 0.775 |
| My medical aid covers most or all of the costs associated with the ED | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3319.5 3121.5 | 0.933 |
| If I were not on medical aid, I would be will to pay the full cost of ED services | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3258.5 3182.5 | 0.777 |
| It costs more to have my condition treated in the ED than in my GP's rooms | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3319.0 3122.0 | 0.937 |
| My GP can effectively treat my current condition for less than the cost in the ED | 08:00-17:00 17:00-22h00 Total | 58 55 113 | 3059.0 3382.0 | 0.129 |

## Appendix 3: Time of Week Mann Whitney Test

| Variable | Time of week | Number | Sum of ranks | Significance |
|---|---|---|---|---|
| I came to the ED because I do not have a regular GP | Mon-Frid | 68 | 3879.5 | 0,982 |
| | Sat and Sun | 45 | 2561.5 | |
| I came to the ED because my GP is not available at the moment | Mon-Frid | 68 | 3595.5 | 0.90 |
| | Sat and Sun | 45 | 2845.5 | |
| I came to the ED because I had to wait too long for an appointment with my GP | Mon-Frid | 68 | 4238 | **0.027** |
| | Sat and Sun | 45 | 2203 | |
| I came to the ED because the waiting time in my GP's rooms is too long | Mon-Frid | 68 | 3915.5 | 0.809 |
| | Sat and Sun | 45 | 2525.5 | |
| I came to the ED because I believe that my condition is urgent | Mon-Frid | 68 | 3680.0 | 0.221 |
| | Sat and Sun | 45 | 2761.0 | |
| I came to the ED because I believe that my condition can only be treated in the emergency department | Mon-Frid | 68 | 3894.0 | 0.913 |
| | Sat and Sun | 45 | 2547.0 | |
| I came to the ED because I believe that my condition will get worse within 24 hours | Mon-Frid | 68 | 3978.0 | 0.221 |
| | Sat and Sun | 45 | 2761.0 | |
| I came to the ED because the quality of medical care is better than my usual source of care | Mon-Frid | 68 | 3801.0 | 0.653 |
| | Sat and Sun | 45 | 2640.0 | |
| I came to the ED because the waiting time is better than my usual source of care | Mon-Frid | 68 | 3824.0 | 0.755 |
| | Sat and Sun | 45 | 2617.0 | |
| I came to the emergency department because of the ease of being seen without an appointment | Mon-Frid | 68 | 3860.0 | 0.925 |
| | Sat and Sun | 45 | 2580.0 | |
| I came to the ED because I get personal attention from the staff | Mon-Frid | 68 | 3820.0 | 0.735 |
| | Sat and Sun | 45 | 2621.0 | |
| I came to the ED because I have easy access to other services such as x-rays | Mon-Frid | 68 | 3748.0 | 0.437 |
| | Sat and Sun | 45 | 2693.0 | |
| My medical aid covers most or all of the costs associated with | Mon-Frid | 68 | 4090.0 | 0.176 |

| | | | | |
|---|---|---|---|---|
| the ED | Sat and Sun | 45 | 2350.0 | |
| If I were not on medical aid, I would be will to pay the full cost of ED services | Mon-Frid | 68 | 4063.50 | 0.254 |
| | Sat and Sun | 45 | 2377.50 | |
| It costs more to have my condition treated in the ED than in my GP's rooms | Mon-Frid | 68 | 3965.5 | 0.581 |
| | Sat and Sun | 45 | 2475.0 | |
| My GP can effectively treat my current condition for less than the cost in the ED | Mon-Frid | 68 | 4084.0 | 0.192 |
| | Sat and Sun | 45 | 2377.0 | |

## Appendix 4: Ethical Clearance

# UNIVERSITEIT VAN PRETORIA
# UNIVERSITY OF PRETORIA
# YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

27/08/2015

### Endorsement Notice

**Ethics Reference No.: Temp2015-01323**

**Title:** Factors that influence the non-urgent utilisation of emergency departments in the South African Private Healthcare Sector: An Economic Perspective

Dear Seipati Legoete

The **New Application** as supported by documents specified in your cover letter for your research received on the 19/08/2015, was approved, by the Faculty of Health Sciences Research Ethics Committee on the 26/08/2015.

Please note the following about your ethics approval:
- Please remember to use your protocol number (**Temp2015-01323**) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

**Ethics approval is subject to the following:**
- The ethics approval is conditional on the receipt of 6 monthly written Progress Reports, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharMed.
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

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