

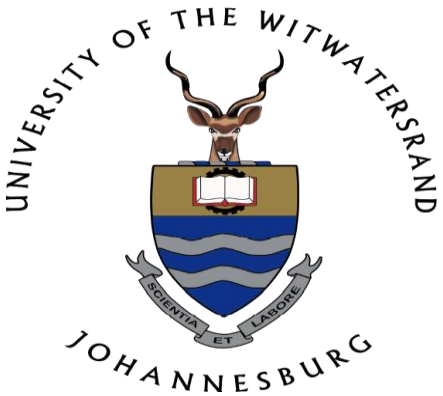
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Factors affecting health-care seeking behaviour, and assessment of the population's perception of the major health problems in Gauteng province, South Africa 2013

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UNIVERSITY OF THE WITWATERSRAND

JOHANNESBURG

SCHOOL OF PUBLIC HEALTH

TITLE: FACTORS AFFECTING HEALTH-CARE SEEKING BEHAVIOUR, AND ASSESSMENT OF THE POPULATION'S PERCEPTION OF THE MAJOR HEALTH PROBLEMS IN GAUTENG PROVINCE, SOUTH AFRICA 2013.

By

ADMAS ABERA ABAEREI

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the degree of Master of Science in Epidemiology.

Johannesburg, June 2016

DECLARATION

I, Admas Abera Abaerei, declare that this Research Report is my own, unaided work. It is being submitted for the Degree of Master of Science in Epidemiology in the field of population-based field epidemiology at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Admas A Abaerei

June 13, 2016.

DEDICATION

I would like to dedicate this work to my family and friends who have been sources of constant support and encouragements throughout this work. Without them it wouldn't have been possible.

ABSTRACT

Background: More than a billion people, mainly in low- and middle-income countries (LMICs), are unable to access needed health care services for a variety of reasons. Possible factors influencing health-care seeking behaviour are socio-demographic and economic factors such as age, sex, ethnicity, religion, education and employment; and income and expenditure levels, and other cultural or political factors. There are limited studies on health-care seeking behaviour especially of vulnerable populations such as immigrants in South Africa.

Aim of the study: To assess factors associated with health care seeking behaviour, and to assess the population's perception of major health problems and its determinants in Gauteng Province, South Africa in 2013.

Methods: We conducted secondary data analysis of data from a Quality of Life (QoL) survey carried out by Gauteng City-Region Observatory (GCRO) to determine factors associated with health care seeking behaviour and perception of major health problems among adults living in Gauteng province. We used Coarsened Exact matching (CEM) to improve estimation of causal effects. A multiple logistic regression model was used to identify factors associated with health care seeking behaviour and multinomial logistic regression was employed to determine factors associated with perception of major health problems.

Results: From a total of 27 490 participants interviewed, a total of 26 318 (95.7%) participants reported usually utilizing health care services while the remaining 4.3% reported not having sought health care services of any type, when they needed. In addition 141 (0.5%) reported having visited traditional healers when they are ill. Higher odds of reported health care seeking was associated with being white compared to being African (Odds Ratio (OR) =2.28 95% CI: 1.84 - 2.74; p<*0.001*); with having medical insurance compared to not having any (OR=5.41 95% CI: 4.06 - 7.23; p<*0.001*). In contrast, lower odds of seeking health care was associated with being an immigrant compared to being a citizen of Republic of South Africa (OR=0.61 95% CI: 0.53 - 0.70; p<*0.001*) and being employed compared to being unemployed (OR=0.84 95% CI: 0.72 - 0.97; p=*0.02*). the perception of major health problems was significantly associated with age, sex, population group and educational status.

Conclusion: Age and sex of participants, population group, immigration status and presence/absence of health insurance were associated with health care seeking behaviour. There is a need to improve the quality of public health care services and perception towards them as improved

health care quality increases the choice of health care provider relative to either going to traditional healers or self-treatment. Furthermore, health education and health promotion campaigns should focus on creating continuous awareness especially about chronic diseases and their risk factors.

ACKNOWLEDGEMENT

I would like to acknowledge and express my sincere gratitude to my supervisors Dr. Jabulani Ncayiyana and Professor Jonathan Levin for their continuous guidance and expertise throughout the research project.

I would also like to express my deepest gratitude to INDEPTH NETWORK for providing me with the necessary financial support to study this masters program. My acknowledgement extends to my lecturers at University of the Witwatersrand, division of Epidemiology and Biostatistics for their mentoring and support throughout my masters program. Special thanks to Dr. Eustatius Musenge for his expert help during analysis of this research project.

Last but not least, I would like to thank Gauteng City-Region Observatory (GCRO) for providing me with the data to conduct this research project.

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ACRONYMS

AIDS	Acquired Immuno-deficiency Syndrome
ART	Anti-Retroviral Therapy
CEM	Coarsened Exact Matching
C.I.	Confidence Interval
EA	Enumerator Area
EM	Exact Matching
GCRO	Gauteng City-Region observatory
HIV	Human Immuno-deficiency Virus
ID	Infectious Diseases
IQR	Interquartile range
LMICs	Low- and Middle- Income Countries
NCDs	Non-Communicable Diseases
NHI	National Health Insurance
NHS	National Health Service
OR	Odds Ratio
PHC	Primary Health care
PSM	Propensity Score Matching
QoL	Quality of Life
SAL	Small Area levels
TB	Tuberculosis

USA United States of America

WHO World Health Organization

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND

Ward, Mertens and Thomas (1997) defined health-care seeking behaviour as any remedial actions that are undertaken by individuals to rectify perceived ill health for the purpose of finding appropriate interventions (Ward et al. 1997). Health seeking behaviour is commonly conceived as the ways in which people behave in relation to their health. It has also been conceived as the use or utilization of health care services which is an end-point of the process of seeking care. In the present study, health-care seeking behaviour refers to the notion of utilization of health-care services rather than the ways in which people behave in relation to their health.

More than a billion people, mainly in low- and middle-income countries (LMICs), are unable to access needed health-care services for a variety of reasons (WHO, 2010). Possible factors influencing health-care seeking behaviour are demographic factors such as age, sex, ethnicity, religion, education and employment and income, and other cultural and political factors (Shaikh & Hatcher 2005). Therefore, utilization of health-care services, public or private, depends on the factors, cultural beliefs and practices and most importantly the health system itself (Shaikh & Hatcher 2005). Immigration status, accessibility, availability, affordability and quality of health care are also other important determinants that influence health seeking behaviour (Dias et al. 2011; Asch et al. 2006).

South Africa is currently experiencing an epidemiological transition. This transition refers to the so-called quadruple burden of disease, which poses a great challenge for designing various health care policies and programs. This quadruple burden refers to an increased burden of chronic diseases, continued burden of poverty related diseases and an increase in infectious diseases associated with HIV/AIDS (Bradshaw 2003).

In South Africa health-care varies from the most basic primary health care to high level health care services. However, the public sector is under-resourced in places, while the private sector serves mostly people with high income who tend to be members of health insurances which approximately accounts for only 18% of the total population (Chuma et al. 2007).

With an increasing complexity of health problems, chronic diseases are not only being associated with persons of high status; nor are infectious diseases only prevalent among persons of low status. Nevertheless, infectious diseases are primarily prevalent among the poor community which is attributed to their living style and exposure to an unclean environment, as well as limited access to health care. Hence, the association between factors and health status is becoming more complex (Myer et al. 2004).

It is very important to quantify the degree to which sick individuals are seeking care from public and private health care facilities, and self-treatment from drug stores or seeking cures from traditional healers. For instance, successful adherence to ART programs will be influenced by the ways in which ill people interact with health care systems, in designing an anti-retroviral therapy (ART) delivery program (Case et al. 2005).

According to Derose et al. "Immigrants are a group often considered as a 'vulnerable population' – that is a group at increased risk for poor physical, psychological and social health outcomes and inadequate health care" (Derose et al. 2007). Addressing the health care needs of an immigrant population requires understanding of their health seeking behaviour and their perception towards the health care system itself. However, it sometimes becomes challenging due to heterogeneity of this group and presence of illegal immigrants (Derose et al. 2007).

1.2. LITERATURE REVIEW

1.2.1. Health-care seeking behaviour

A number of studies suggest that people living in developing countries especially in Sub-Saharan African countries, and those from poor families, those of a lower educational status and immigrants generally have a lower health-care utilization (Thompson et al. 2003; Goldman & Heuveline 2000; Kristiansson et al. 2008).

A study conducted in USA to identify people who are at greater risk for receiving poor quality health-care services, found that household income was significantly associated with the type of health care facilities visited, participants with annual family incomes that falls under upper class (which was defined as families with >$50,000 per annum) had quality-of-care scores that were higher than those with incomes that fall in poorer class (families with <$15,000) (Asch et al. 2006).

Health seeking behaviour was poor among immigrants living in different countries (Dias et al. 2011; Biswas et al. 2011). A study conducted among immigrants in Portugal 2011, indicated that 77% of the participants reported having used the National Health Services (NHS) at least once in the previous 6 months. Of these, visiting primary health care services and hospital were reported by 49.5% and 32.5%, respectively. Only 6.2% reported having sought health-care from private medical services and 1% from mobile units; 5% reported not having used any health service and 5.8% did not know or did not remember which service they have used (Dias et al. 2011).

The major types of health care sought in different settings of developing countries are government primary health care, self-treatment by purchasing drugs and use of traditional healers while private and tertiary health care services were used by people with a higher household income and with higher status (Jowett et al. 2004; Susanna et al. 2003). For instance a study in Thailand showed that for out-patient care, use of traditional healers and self-treatment using drugs from pharmacies was still the most common care seeking method among respondents (42%) including those who were entitled to free health care. Use of public health facilities and private health facilities were also reported as first choice by 32.8% and 17.9%, respectively (Suraratdecha et al. 2005).

A study done in Nairobi, Kenya indicated that children belonging to households with the lowest monthly expenditure were 20-30% less likely to be taken to health facilities. Another study which

assessed places of seeking health care indicated that public health care facilities and private health care facilities were visited by 32% and 35% of respondents, respectively. The same study also found that 18% sought treatment either from a shop or a drug store, 2% either treated themselves or sought care from traditional healers(Taffa & Chepngeno 2005).

In a study done in South Africa, those with the lowest income mostly visited primary health care (PHC) facilities while those in the richest category were three times more likely to use tertiary medical care. The study also indicated that use of private out-patient services was high among those with better educational level, Indians/Asians and Whites, and among the medically insured (Harris et al. 2011).

Traditional healers are often the first and the commonest form of care for most infectious and chronic diseases in many developing countries. Although western medical practices are generally accepted throughout Africa and other developing countries, they have not replaced but rather augmented the existing health practices. (Nxumalo et al. 2011; Sudhinaraset et al. 2013) According to Case *et al.* traditional healers were consulted by almost half of all ill people in the sample. Modern health care facilities were also visited by almost all of those who consulted traditional healers (Case *et al.* 2005).

1.2.2. Factors affecting health-care seeking behaviour

According to Ahmed (2005) the health care utilization model, originally proposed by Andersen in 1995, factors which influence health care seeking behaviour can broadly classified into three categories namely predisposing factors (age, gender, education, ethnicity, religion, occupation, employment, knowledge and previous experience), enabling factors (household poverty, perceived illness, out-of-pocket expenditure, accessibility, affordability and quality of health care services, and medical insurance) and need factors (perceived severity, help from peers etc).

Most studies suggested that those with better education are more likely to seek care than those with lower education status (Ahmed et al. 2000), while some studies indicated mixed results on education (Meyer-Weitz et al. 2000). In a study done in Ethiopia, household heads with primary education are 1.6 times (95% CI: 1.07 - 2.46; p=0.02) more likely to take their children to health centres (which potentially offer a higher quality of care) rather than to health posts for Acute Respiratory Infections (ARI) / pneumonia, compared to household heads with no formal education. There was strong

evidence that households with better income are more likely to access hospitals as opposed to health posts (Taffa & Chepngeno 2005).

According to Ghosh *et al.*, dissatisfaction with the health care services, along with lack of accountability and humaneness of the health care providers was put forward as a cause for not seeking health care by 62.3% of the participants. Lack of accessibility, availability, and affordability of the health care services provided was also a cause, according to 57.1% of the mothers. According to 36% of the mothers, inconvenience of transport facilities, religious misinterpretations, socioeconomic constraints, and women's restricted movements played a role (Ghosh *et al.* 2013).

In a study that was carried out in Spain in which health-care utilization was defined as having sought medical advice in the preceding month or having received a home medical visit in the last year, there was no evidence of a difference in utilization between women and men after adjusting for variables measuring health-care need (Anon 2006).

A study conducted in Zambia on health care behaviour and utilization of traditional healers showed that in general, level of education did not seem to be a very important factor in health care seeking behaviour. Use of traditional healers was high for all levels of education. And after analysis of health care seeking behaviour for specific problems and adjusting for potential confounders, level of education did make a difference (Stekelenburg et al. 2005). However, the sample size in the higher education category was very small so the study did not have much power to detect significant effects of higher education on health care seeking.

In most developing countries different barriers prevent individuals from visiting health care services (Osubor *et al.* 2006). A study in South Africa revealed that about a quarter of rural participants were of the opinion that they had sufficient access to health care. Of those who had not visited health care services, the reasons given for not having accessed health care services include poor quality of health care services, lack of transport, inaccessibility of health care facilities and financial constraints.

Problems with health services included provision and availability of necessary medications, shortage of qualified staff, service hours and capacity of services (ability to accommodate all the patients within a reasonable time) (Hoeven *et al.* 2012). Different factors affect where an individual usually seeks health care. In a study done in South Africa, a statistically significant difference was found in those who sought care at private sector by province in South Africa. Provincial data showed that

around 69% and 26% sought health care at private sector in Western Cape and Gauteng, respectively (Shisana *et al.* 2014).

Health insurance plays a crucial part in improving health care seeking of a population by offering a potential to increase additional funds for essential public health services and increasing access to people of low status through risk sharing (Sepehri *et al.* 2008). Several studies have indicated that insured individuals are more likely to seek health care compared to uninsured individuals when health care services are needed (Sepehri *et al.* 2008; Jowett *et al.* 2004).

1.2.3. Factors influencing population perception of health problems

According to Fischhoff, "many health risks are the result of deliberate decisions by individuals consciously trying to make the best choices for themselves and for those important to them. Some of these choices are personal. They include decisions such as whether to wear bicycle helmets and seatbelts, whether to buy and use condoms, and how to select and cook food. Other choices involve societal issues. They include such decisions as whether to protest the siting of hazardous waste incinerators and half-way houses, whether to vote for fluoridation and 'green' candidates, and whether to support sex education in schools" (Fischhoff 2011).

Critical scrutiny of public health care and other health interventions arises from, among other things, how individuals assess their state of health and their perception of health problems. In some cases an individual's perception of health related problems may not accord with what is known in medical science (Sen 2002; Wilson *et al.* 2004).

There is evidence that people with a higher educational status and better health status are in a better position to perceive their own health problems and the community's as a whole compared to the people in relatively disadvantaged states where there is less awareness of health problems (Bakeera *et al.* 2009; Waweru *et al.* 2003; Tessema *et al.* 2002).

In a study carried out in South Africa, HIV/AIDS was mentioned as the disease with the highest burden in both urban and rural areas. Between urban and rural populations, a significant difference was found in terms of their rating of how chronic diseases such as diabetes, tuberculosis, cancer and heart problems impact on daily life. Non-communicable diseases were more likely to be rated as having the highest impact by urban populations whereas communicable diseases such as TB were

rated as health problems with biggest impact by participants in rural communities (Hoeven *et al.* 2012).

A qualitative study conducted in Kenya found that participants believe that infectious diseases such as malaria, typhoid and fever are best treated by biomedicine and treatment was sought from health care facilities for such illnesses. *"For hospital it is like coughing, malaria, typhoid, eyes paining, and things like that"*. While some psychiatric and mental health symptoms such as hallucination or anxiety, and epilepsy appeared to be uniquely suited to traditional healing *"To have something draw your blood until you become white, or epilepsy, is when we take the child to a traditional healer to treat them*" (Sharkawy et al. 2006).

An individual's perception of his or her own health status is an indicator of the health outcome due to the fact that some individuals with an existing disease may have a perception of being healthy while individuals without any confirmed illness/disease may perceive themselves as being unhealthy, hence affecting their health care seeking behaviour (Baert & Norre 2009).

1.2.4. Summary of the literature review

Most literature consistently found a significant association between socio-demographic factors and health care seeking behaviour and perception of health problems (Bourne 2009; Svendsen *et al.* 2013; Kristiansson *et al.* 2008). However, there are some mixed results with educational status (Muriithi 2013; Meyer-Weitz *et al.* 2000). Studies indicated that medical insurance and immigration status are important determinants as to whether an individual seeks health care (Dias et al. 2011; Jowett *et al.* 2004). Studies have also suggested that understanding how an individual perceives his/her own health and his/her surroundings is essential in order to design effective health programs and plans (Wilson et al. 2004; Baert & Norre 2009).

1.3. PROBLEM STATEMENT

In many countries around the world, equity of access to health care is a central objective of many health care systems. However, populations with lower educational level, of a lower status or of female gender are less likely than those with better education, of a higher status or men, respectively, to access higher and/or private medical care. (Adamson & Ben-Shlomo 2003)

In South Africa, like in many other countries around the globe, access to health care for all has been constitutionally enshrined; yet considerable inequities in access to health care remain due to various reasons (Myer *et al.* 2004; Bradshaw 2003). Several policies have been introduced aimed at improving the accessibility of public health care services particularly to those who are unable to access private medical care. However, several studies have suggested that the effectiveness of these policies in terms of increasing health care utilization levels among people of less advantaged groups may have been affected by stagnant health budgets, poor quality of health services seen in the public sector (Gilson & McIntyre 2007; Coovadia et al. 2009).

Even-though there are changes on health care policies to reduce the inequity in access to health care in South Africa after 1994, there are concerns that expected outcomes are not met yet. For example, utilization levels of public health care facilities remain relatively low. However, few studies have been conducted on the utilization of health care facilities and factors affecting it, to monitor and evaluate the effects of these policy changes and to determine whether new policies have improved access of individuals with lower status, particularly relatively poor households, to health care (Whitehead *et al.* 2001).

1.4. JUSTIFICATION OF THE STUDY

Studies on determinants of health care seeking behaviour and peoples' perception on the health system and the health problems facing them are important elements in designing health care policies and programs. In that way, challenges with timely diagnosis and effective and appropriate treatment can be identified and evidence based interventions can be implemented.

Early detection of signs and symptoms of diseases, visiting health facilities timely and compliance with effective treatment can reduce morbidity and thereby mortality (Hausmann-Muela et al. 2003). In addition, the ways in which sick people interact with the country's health care system can

determine the degree to which populations adhere to the health care programs of the country (Case *et al.* 2005).

Even though there are studies on health-care seeking in developed countries there are limited studies in South Africa. The present study also covers a very large area with a sufficient sample size and host of important variables that will help in explaining the complex health-care seeking behaviour. Thus understanding the factors affecting health-care seeking behaviour and perception is crucial as further studies could provide insights on how to improve the health-care utilization of the population.

Furthermore, the National Health Insurance (NHI) in South Africa is high on the policy agenda, which in its notion is universal access to health care for all. However, for its success and sustainability it is crucial to understand the perception and the health care seeking behaviour of the users so that it can achieve its goal.

Therefore this study aims to fill the gap on factors affecting health-care seeking behaviour and perception of the population in Gauteng province, South Africa.

1.5. RESEARCH QUESTION, AIM AND OBJECTIVES OF THE STUDY

1.5.1. Research question

What is the health-care seeking behaviour and what are the factors affecting the health-care seeking behaviour, and what is the populations' perception of major community health problems in Gauteng Province in 2013?

1.5.2. Aims of the study

Aim 1: To assess health-care seeking behaviour and factors affecting health-care seeking behaviour amongst adults in Gauteng, South Africa in 2013.

Aim 2: To assess the population's perception of major health problems and associated factors amongst adults in Gauteng in 2013.

1.5.3. Objectives

Objective 1: To assess health-care seeking behaviour of the population in Gauteng in 2013.

Objective 2: To determine factors affecting health-care seeking behaviour of the population in Gauteng in 2013.

Objective 3: To assess the population's perception of major health problems facing the community in Gauteng in 2013.

Objective 4: To identify factors associated with the perception of major health problems in Gauteng in 2013.

CHAPTER TWO

METHODS

Overview of the chapter

In this chapter a brief description of the study area (Gauteng province) is provided. A brief description of the primary research in which the data were collected is given. The study design employed to answer the research question and the data collection procedures which include selection of sample population, data collection instruments and study setting is also discussed. Then data processing, management and statistical analysis techniques used to answer the research question are also discussed. Ethical considerations conclude the chapter.

The primary research

The Gauteng City-Region Observatory (GCRO) '2013 QUALITY OF LIFE SURVEY' which is carried out every two years, tracks quality of life, circumstances, attitudes towards service delivery (including health care services), health related issues and many other dynamics in the region. GCRO is a partnership between University of Johannesburg, the University of the Witwatersrand and Gauteng Provincial government.

The survey was started in 2009 which is the first Quality of Life survey in the area. The second QoL survey was completed in 2011 with a sample size of 16,729. The third 2013 QoL survey represents provincial/local sphere partnership and provides data to ward level. It has a large sample size of 27000 respondents, probably the largest survey of social attitudes undertaken in Gauteng. The surveys are important in themselves, and the data have been extensively used in various presentations, academic publications and Gauteng city-region reviews.

The survey covers a wide range of issues, including health, access to and satisfaction with health care services, the economy, migration, employment, education and many other issues. Health related issues assessed in this survey include types of health-care utilization, the major health related problems facing the communities and perception towards health care service delivery.

For this research we extracted data on health outcomes and attitudes together with a number of socio-demographic covariates to determine factors associated with health-care seeking behaviour and perception towards health problems (Geospace International, 2014).

2.1. Study design

The primary research, the 2013 quality of life survey, used a cross-sectional study design. This study is a secondary data analysis of data from the original study.

2.2. Study setting

Study participants were selected from Gauteng province, South Africa in 2013. Gauteng province is one of the nine provinces found in South Africa. It covers a total area of 18,178 km^2 and it has an estimated population of 12,272,263 (Census, 2011). While it is the smallest province, it has the largest population, and by far the highest population density – 675 people per km^2. It has only 1.4% of the total South Africa's land area, but it the most densely populated province. The province is essentially two big cities, with 97% of its population living in urban areas. The most important economic sectors are financial and business sectors, logistics and communication and mining.

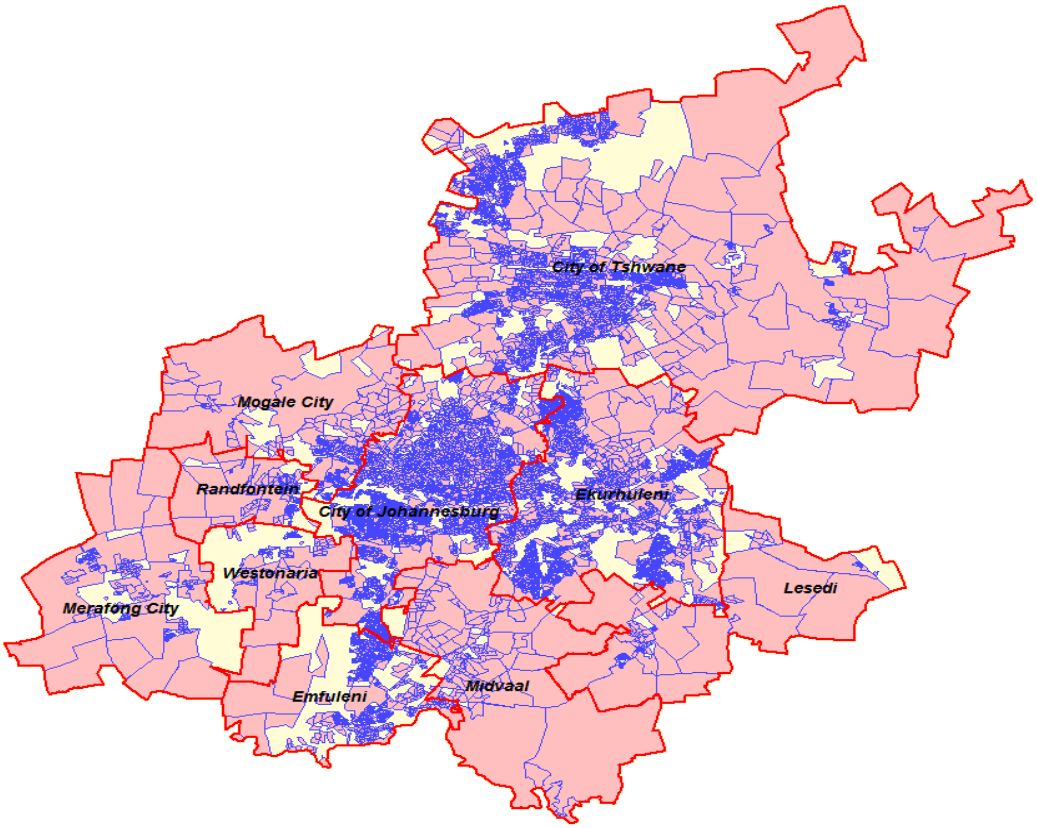


Figure 2.1.: Map of Gauteng province

2.3. Study population

The study population consists of all people residing permanently in Gauteng province who were aged 18 years or older in 2013. Those who were temporary visitors to Gauteng province were excluded from the study.

2.4. Study sample and Sampling technique

The sampling technique employed was simple random sampling to select the Small Area Layers (SALs). Gauteng province consists of 10 municipalities and it is subdivided into 508 wards. Within these wards there are (SALs) which were derived from the Population Census Enumerator Area polygons (EA). SALs codes and geography were derived from the statistics South Africa information (Statistics South Africa 2012). The reason for using SALs was that it enabled the researchers to devolve the sample selection to a much lower level while also ensuring optimum population coverage within each ward. Sampling was done at several stages. First, SALs were selected from each ward by using simple random sampling method then a minimum number of interviews for each ward were 30 and 60 interviews for those falling in district municipalities and Metropolitan Municipalities, respectively. The end result was out of the 508 Wards, 26387 successful interviews had to be completed and these interviews were distributed across 16400 SALs out of a total of 17840 SALs.

Stand selection

If a successful interview could not be conducted at the first stand, the fieldworker would move in a random direction down a street to the fourth stand from the previous attempted (on the opposite side of the street, if possible) and would carry on in this fashion until the required number of successful interviews were done.

Dwelling selection

Dwellings were selected per stand using the dice method. Two dice were provided to each fieldworker. If more than one dwelling occupied a stand, a dice was used to determine the dwelling to be attempted. If more than 6 dwellings occupied a stand, a method of attrition was used, dividing the number of dwellings into subsets of 11 or less and selecting a subset using the dice method and

then further narrowing down the amount of dwellings into further subsets until a final subset of 11 or less was reached which could be selected using a final dice throw.

Flats and hostels were done much the same way, with each flat or hostel room treated as a dwelling. Floors or subsets of flats or rooms were then used to narrow down the selection. Once a dwelling was selected, the next step was selecting a household.

Household selection

If a dwelling contained more than one household, the dice method was again used to determine the household from which the respondent should be chosen. The standard definition of a household being a group of persons that live and eat together for a minimum of four nights a week was applied.

Respondent selection

The number of eligible respondents was identified in the selected household. These were persons older than 18 years of age (except in the case of child-headed households) who were not visitors to the household.

The NEXT birthday method was used to select the respondent, meaning the eligible respondent whose birthday was next after contact was made with the household was the selected respondent. If the person was not available, the respondent was contacted via telephone or other means to make an appointment for an interview.

Three attempts were made to obtain an appointment and interview the respondent. If the respondent was still not available after three attempts or appointments were not honored, another stand was selected using the specified methodology and attempted.

2.5. Data Collection

In the primary research, data was collected using a digital data collection instrument using an open source system called Formhub and administered on a tablet device. Detailed information about the Formhub data collection system can be found at www.formhub.org. The questionnaire was provided by the GCRO. Once a questionnaire was administered in the field, it was uploaded using internet connectivity to a cloud server from where it could be accessed and downloaded online. Approximately 120 of these devices were used in the field.

2.6. Measurements and Data source

The relevant data was extracted from the 2013 QoL survey done by University of the Witwatersrand, university of Johannesburg and Gauteng provincial government, acting through Gauteng City-Region observatory (GCRO). The data holder from GCRO provided us with the entire data set and we extracted the relevant data for the present study by dropping all the variables which were unnecessary for this particular study.

Information collected included demographic and socioeconomic variables age (continuous variable), gender, population group (African, White, Coloured and Indian/Asian), educational level ("no formal education", "primary", "secondary" and "tertiary and above"), employment status ("employed", "unemployed"), household- income (lower, middle and upper class), Immigration status (South African and Immigrant), Satisfaction about standard of living (very satisfied/satisfied, neutral, dissatisfied/very dissatisfied) and satisfaction towards health care services that the government provides. Medical insurance (medical aid, hospital plan and no insurance), distance from public transport, reasons for not using health-care services (distance/ accessibility, availability, cost, quality of care and other cultural factors).

The main outcome variable i.e. health-care seeking behaviour was assessed with a question which says "what type of health care the participants seek?" 'Public health facilities', 'private health facilities', 'other private/public facilities', 'traditional healers' and 'did not seek health care services'. Those who sought care from private, public and other private or public health facilities were grouped into 'sought health care' and those who went to traditional healers and those who did not seek care were grouped into 'did not seek health care'. Moreover, health-care seeking behaviour in the present study refers to allopathic/modern health services since traditional healers are not included.

The other outcome variable, perception of major health problems was measured by "what are the major health problems the community is facing?" It was re-categorized into three categories; 'Infectious diseases including malnutrition' (malaria, Tuberculosis, HIV/AIDS, measles, cholera, diarrhoea and malnutrition), 'chronic diseases' (Diabetes (sugar), heart diseases, high blood pressure and cancer) and Alcohol/drug abuse.

2.7. Variables

Outcome variables

Health seeking behaviour – a binary variable (Sought health care / did not seek health care)

Perception of major health problems – categorized into three levels (infectious diseases including malnutrition, chronic diseases and drug/alcohol abuse).

Explanatory variables

Age, gender, population group, place of residence, level of education, medical insurance, employment status, total household income and immigration status.

Distance from public transport, accessibility, affordability, and quality of health care services. Satisfaction about standard of living and satisfaction on health care services that the government provides are also other explanatory variables.

2.8. Data processing, management and analysis

2.8.1. Data processing and management

The primary data collected by GCRO was entered and stored in SPSS format. The SPSS data was then converted to STATA file using a user defined STATA module called "*usespss*". STATA 13™ was used for further data cleaning, management and analysis.

The data was cleaned and checked for duplicates, missing and inconsistent data. All variables that were not necessary for this study were dropped. For the purpose of this analysis some grouping, coding and recoding was done.

Age was categorized into 10 year age groups (18-29.9, 30-39.9, 40-49.9, 50-59.9 and above 60). Educational status was categorized into "no formal education", grades 1-8 "primary" , grades 9-12 "secondary" and above grade 12 "tertiary and above". Total household income was categorized into 'lower class' (< R6400 per month), 'middle class' (R6400 – R51200 per month) and 'upper class' (> 51200 per month). Medical insurance was categorized into 'medically insured' for participants with either medical aid or hospital plan and 'medically not insured' for participants without any of the above.

2.8.2. Data analysis

Exploratory analysis, frequency tables, graphical displays were done for both independent and dependent variables to have insight into the data.

Descriptive analysis was performed to describe the health-care seeking behaviour of the community and types of health care services utilized by socio-demographic characteristics of study participants using proportions together with 95% confidence intervals (C.I.). Associations with socio-demographic variables were assessed using t-tests for continuous variables and chi-square tests for categorical variables at 5% significance level. Continuous variables were presented as mean ± standard deviation and categorical variables as proportions (percentage).

A crude comparison of likelihood of individuals to seek health care services and perception towards health problems would ignore the fact that there may be other characteristics of individuals that are driving health care seeking behaviour and/or perception towards health problems, such as age, sex educational status, household income and employment status. In order to account for this, we employed a type of matching called coarsened exact matching (CEM). CEM has been discussed in detail (Blackwell *et al.* 2009) and has been previously used to analayse health service utilization (Gotsadze *et al.* 2015).

Matching is a method of controlling for some or all of the confounding influence of pretreatment control variables in observational data. The key goal of matching is to remove observations from the data so that the remaining data have a better balance between the treated and the control groups (Agostino 1998; Austin 2011). Similar to propensity score matching (PSM) and exact matching (EM), CEM is designed to improve the estimation of causal effects via a powerful method of matching that is widely applicable in observational data by reducing the imbalance in covariates between the treated and control groups. However, unlike the above methods of matching CEM compares observations from the treatment and non-treatment groups that are *approximately similar*. In addition to CEM's robustness to measurement errors and retaining most observations for analysis compared to other types of matching (PSM & EM), it also possesses other advantages such as requiring fewer assumptions, very fast computationally and its simplicity to understand and use (Blackwell *et al.* 2009).

The central motivation of coarsened exact matching is while both PSM and EM provide perfect balance; most data will be lost as the number of the covariates to do the matching increases and it typically produces few matches. Let us consider a sample *n* drawn randomly from a population of *N,* where $n < N$. Then Ti = 1 is denoted for an individual who receives the treatment i.e. it is the 'treatment group' and Ti = 0 when an individual does not receive the treatment i.e. it is the 'control group'. The outcome variable denoted as Y where $Y_i(1)$ is the outcome for an observation who receives treatment. Conversely $Y_i(0)$ will be the outcome for an individual who does not receive the treatment. Hence for each observation the observed outcome is $Yi = TiYi(1)+(1-Ti)Yi(0)$. However $Y_i(0)$ which is the potential outcome for those who does not receive treatment is unobserved if *i* receives treatment and $Y_i(1)$which is the potential outcome for those who receives treatment is unobserved if *i* does not receive treatment or the controls (Blackwell *et al.* 2009).

In our study, the dichotomous variable presence or absence of medical insurance was used as a treatment variable to carry-out the matching as it is an important factor that determines whether an individual seeks health-care or not. Thus the treatment cases are medically insured individuals and the non-treatment controls are medically non-insured individuals.

According to the Ahmed (2005) the health care utilization model, originally proposed by Andersen in 1995, factors which influence health care utilization can be individuals' predisposing factors (age, gender, education, ethnicity, religion, occupation, employment, knowledge and previous experience), enabling factors (household poverty, perceived illness, out-of-pocket expenditure, availability, affordability and quality of health care services, and medical insurance) and need factors (perceived severity, help from peers etc). Drawing from this model, the pre-treatment variables used for CEM include i) age (18-30, 31-40, 41-50, 51-60 and above 60 years), ii) gender (male/female), iii) population group (African, White, Coloured and Indian/Asian), iv) educational status ("No formal education", "primary", "Secondary" and "tertiary and above), v) employment status (employed/unemployed), vi) place of residence and vii) total house-hold income (lower/middle/upper class, immigration status (born in SA/immigrant), and satisfaction on health-care services the government provides and self-perceived satisfaction on standard of living satisfied/neutral/dissatisfied).

The data were coarsened on the above mentioned covariates using the automated coarsening type which is CEM's automatic binning algorithm. As a result, from a the total 27,490 observations

around 26,318 observations were matched thus retained for further analysis and the remaining 1172 observations were pruned because they were not comparable. Furthermore, the imbalance command gives us information on the quality of the matched data by comparing the imbalances found before and after the matching. For our study there was a substantial reduction in the imbalance in all of the covariates (most of the imbalances were reduced to zero after matching) not only in the means but also in the 25%, 75% and in the marginal distributions. Hence, we can conclude that the matching was successful. The STATA '*cem*' command also generates weights (which are stored in cem_weights) for use in the regression models that we fitted using the original un-coarsened data.

Factors affecting health care seeking behaviour

After matching, multiple logistic regression models were fitted to identify factors associated with health seeking behaviour which takes two values (sought health-care or not sought health-care) adjusting for potential confounders and checked for interaction terms. For the logistic regression models the variables age, employment status, gender, population group, medical insurance, educational status, immigration status, total house-hold income, place of residence and self-perceived satisfaction on standard of living were considered as candidate explanatory variables.

Stepwise logistic regression was used to select variables that should be included in the final reduced model looking for potential confounders and interaction terms. Both the forward and the backward likelihood ratio methods gave the exact same variables in the final parsimonious model. . Total house-hold income, place of residence and self-perceived satisfaction on standard of living were found not to be statistically significant. Age of participants, sex, population group, employment status, medical insurance, immigration status, and satisfaction with health-care services the government provides were found to be significantly associated with health-care seeking behaviour. Furthermore, the p-value from Hosmer and Lemeshow goodness-of-fit test was equal 0.23 which indicates that there is no evidence of lack of fit of the final model.

First all the variables with liberal p-value of ≤ 0.10 in the univariable analysis were included in the multivariable analysis. Then backward elimination using a likelihood ratio test was used i.e. any variable that did not improve the fit of the model significantly, was eliminated from the multivariable model. One variable at a time was eliminated if found non-significant.

Perception on major health problems and associated factors

Similarly, descriptive analysis was done to describe the perception of the people on major community health problems by socio-demographic characteristics of the study participants. Categorical variables were compared between levels of the socio-demographic factor using a chi-square test at the 5% significance level. Similarly continuous variables were also compared between levels of socio-demographic factor using *t*-test at 5% significance level and presented as mean ± standard deviation.

Then after the coarsened exact matching multinomial regression model was fitted to identify factors affecting perception of participants (P) on major health problems which has three different levels with no natural ordering found between them (infectious diseases including malnutrition (ID), Non-communicable diseases (NCDs) and drug/alcohol abuse (DA)).

We used a multinomial model to simultaneously fit two binomial logistic regression models for the logit of non-communicable diseases versus infectious diseases (NCDs versus ID), and logit of Drug/alcohol abuse versus Infectious Diseases (DA versus ID) simultaneously.

It can be denoted as: $log\left(\frac{\text{pr(P=NCD)}}{\text{pr}\,(P=ID)}\right) = \beta_{0\,NCD} + \beta_{1\,NCD}X_1 + \beta_{2\,NCD}X_2 + \ldots\ldots \beta_{Z\,NCD}X_Z$

$$: log\left(\frac{\text{pr(P=DA)}}{pr\,(P=ID)}\right) = \beta_{0\,DA} + \beta_{1\,DA}X_1 + \beta_{2\,DA}X_2 + \ldots\ldots \beta_{Z\,DA}X_Z$$

Where; $X_1 \ldots X_z$ are the number of explanatory variables

In the univariable analysis the variables with joint p-value of ≤0.10 were included in the multi-variable model. Then using maximum likelihood ratio method variables that did not improve the fit of the model were eliminated from the model one at a time.

2.9. Ethical considerations

For the original study, ethical approval was obtained from local ethics committee and Human Research Ethics Committee of University of the Witwatersrand. All participants provided informed consent before data collection. This study was approved by school of public health assessor groups and by faculty of health sciences, University of the Witwatersrand. Ethical clearance was sought from and granted by Human Research Ethics Committee of University of the Witwatersrand. The

ethical clearance was granted on 14/10/2015 with reference number of 14/49 and clearance certificate number of M150962.

A data sharing agreement form was signed with the data holder keeping confidentiality of the study participants and stating the data will only be used for research purpose. To protect the confidentially of participants, the dataset was sent in an anonymised format, making it impossible to identify any participant. In addition only I, the investigator have access to the dataset and the data was stored in a password protected computer.

CHAPTER THREE

RESULTS

3.1. Socio-demographic characteristics by health care sought

Of the total population of 27,490 interviewed, 15,655 (57%) were females and the mean age was 39.4 ± 15.4 (Table 3.1). The majority of the study participants were African by population group 23,059 (84%) and around 8887 (32%) reside in the city of Johannesburg. Data on educational status showed that most participants 16,044 (59%) had secondary education while only 585 (2%) had no formal education. More than half of participants were unemployed 15,815 (58%) and most participants 21,458 (78%) had no medical insurance. Around 16,224 (59%) had a total household income which falls under "lower class" (lower class was defined in this study as families with total household income of less than R6400 per month); while only 1.3% fall under "upper class" which was defined those who have a total household income of more than R51200 per month. Sixty two percent responded that they were satisfied with their standard of living. Among those using government health care services, 8826 (32%) of study participants were either unsatisfied or very unsatisfied with the health care services that the government provides.

Table 3.1: Baseline characteristics of study participants by health-care seeking behaviour in Gauteng province, South Africa 2013.

Characteristics	Category	Sought health care [n = 26,318]	Did not seek health care [n = 1174]	Total [n = 27,490]
Overall		26,318 (95.7%)	1174 (4.3%)	27,490 (100%)
Age (mean ± SD)		39.9 ± 15.4	34.7 ± 13.2	39.4 ± 15.4
Gender	Male	11,017 (93.1%)	818 (6.9%)	11,835 (43.1%)
	Female	15,299 (97.7%)	356 (2.3%)	15,655 (56.9%)
Population group	African	21,969 (95.3%)	1,090 (4.7%)	23,059 (83.9%)
	White	2,893 (98.8%)	33 (1.2%)	2926 (10.6%)
	Coloured	876 (98.0%)	18 (2.0%)	894 (3.3%)
	Indian/Asian	484 (96.6%)	17 (3.4%)	501 (1.8%)
	Others	94 (85.5%)	16 (14.5%)	110 (0.4%)

Level of education	No formal	557 (95.2%)	28 (4.8%)	585 (2.1%)
	Primary	5,022 (95.9%)	214 (4.1%)	5236 (19.0%)
	Secondary	15,326 (95.5%)	718 (4.5%)	16,044 (58.4%)
	Tertiary+	*5,110 (96.4%)*	183 (3.6%)	5293 (19.3%)
	Unspecified	301 (90.7%)	31 (9.3%)	332 (1.2%)
Municipality	Johannesburg	8491 (95.5%)	396 (4.5%)	8887 (32.3%)
	Tshwane	6298 (95.2%)	323 (4.8%)	6621 (25.8%)
	Emfuleni	1385 (96.3%)	54 (3.8%)	1439 (5.2%)
	Lesedi	380 (97.2%)	11 (2.8%)	391 (1.4%)
	Merafong City	817 (97.1%)	24 (2.9%)	841 (3.1%)
	Midvaal	411 (97.9%)	9 (2.1%)	420 (1.5%)
	Mogale city	1016 (94.9%)	54 (5.1%)	1056 (3.8%)
	Randfontein	686 (96.3%)	26 (3.7%)	712 (2.6%)
	Ekurhuleni	6182 (96.1%)	253 (3.9%)	6435 (22.2%)
	Westonaria	498 (96.3%)	19 (3.7%)	517 (1.9%)
Employment status	Employed	11,094 (95.0%)	581 (5.0%)	11,675 (42.5%)
	Unemployed	15,222 (96.3%)	593 (3.7%)	15815 (57.5%)
Total Income	Lower class	15522 (95.7%)	702 (4.3%)	16,224 (59.0%)
	Middle class	3866 (97.4%)	103 (2.6%)	3,969 (14.4%)
	Upper class	355 (97.8%)	8 (2.2%)	363 (1.3%)
	Refusal	6573 (94.8%)	361 (5.2%)	6,934 (25.2%)
Self-perceived satisfaction with living standard	Satisfied	16,441 (95.7%)	715 (4.3%)	17,156 (62.4%)
	Neutral	2232 (96.2%)	88 (3.8%)	2320 (8.4%)
	Unsatisfied	7643 (95.1%)	371 (4.9%)	8014 (29.2%)
Satisfaction with Government health care	Satisfied	11,815 (98.3%)	201 (1.7%)	12,016 (43.7%)
	Neutral	2614 (95.8%)	115 (4.2%)	2729 (9.9%)
	Unsatisfied	8645 (97.9%)	181 (2.1%)	8826 (32.1%)
Migration status	South African	14,879 (97.1%)	438 (2.9%)	15,317 (55.7%)
	Immigrant	11,437 (93.9%)	736 (6.1%)	12,173 (44.3%)
Medical Insurance	Yes	5977 (99.1%)	55 (0.9%)	6,032 (21.9%)
	No	20,339 (94.7%)	1119 (5.3%)	21,458 (78.1%)

3.2. Types of health care seeking

The types of health care services sought are presented in Table 3.2, broken down by the socio-demographic characteristics of the participants. Overall, 26,318 (95.7%) participants reported usually going to health care services while the rest (4.3%) reported not having sought health care services of any type, when they needed. More females than males (97.7% and 93.1%, respectively) sought health care. Among the total participants (1174) who did not seek care 1090 (93%) were black Africans, 718 (61%) had secondary education, 396 (34%) were from the city of Johannesburg, 181 (37%) were unsatisfied with the health care service the government provides, 736 (63%) were immigrants from other countries and almost all (95%) had no medical insurance.

When asked about usual place of health care services, 65.4% of participants usually used public health care facilities; around 24% usually used private health care facilities; 0.5% usually went to traditional healers and 3.8% did not visit any type of health care services when they needed. Among those who visited private health care services, men visited more frequently than women (28.8% vs 21.4%; $p<0.001$); Whites visited more frequently than Africans, Coloured and Indian/Asian (79.8% vs 16.1%, 32.0% and 64.1%, respectively $p<0.001$) and those with medical insurance visited more frequently than those without any medical insurance (82.1% vs 8.1%; $p<0.001$).

Table 3.2: Baseline characteristics of study population by type of health care used, in Gauteng 2013.

Predictors	Private health care facilities	Public health care facilities	Use public and private facilities	Traditional healers	No health care
Overall	6691 (24.3%)	17,978 (65.4%)	1647(6.0%)	141 (0.5%)	1033 (3.8%)
Age	41.4 ± 15.4	39.4 ± 15.4	40.0 ± 15.0	39.0 ± 12.8	34.2 ± 13.1
Gender					
Male	3407 (28.8%)	6868 (58.0%)	742 (6.3%)	86 (0.7%)	732 (6.2%)
Female	3284 (21.4%)	11,110 (71.0%)	905 (5.8%)	55 (0.4%)	301 (1.9%)
Population group					
African	3718 (16.1%)	16,869(73.2%)	1382 (6.0%)	140 (0.6%)	950 (4.1%)
White	2334 (79.8%)	415 (14.2%)	144 (5.0%)	0	33 (1.1%)
Coloured	285 (32.0%)	506 (56.6%)	85 (9.5%)	0	18 (2.0%)
Indian/Asian	321 (64.1%)	134 (26.8%)	29 (6.0%)	0	17 (3.4%)
Others	33 (30.0%)	54 (50.0%)	7 (6.4%)	1 (0.9%)	15 (13.6%)
Level of education					
No formal	40 (6.8%)	497 (85.0%)	20 (3.4%)	8 (1.4%)	20 (3.4%)
Primary	381 (7.3%)	4391 (83.9%)	250 (4.8%)	39 (0.7%)	175 (3.3%)
Secondary	*2989 (18.6%)*	*11,375 (71.0%)*	*962 (6.0%)*	74 (10.5 %)	644 (4.0 %)
Tertiary	2650 (57.3%)	1418 (30.7%)	382 (8.3%)	14 (0.3)	159 (3.4%)
postgraduate	581 (86.7%)	60 (9.0%)	19 (2.8%)	1 (0.2%)	9 (1.3%)
Unspecified	50 (15.1%)	237 (71.4%)	14 (4.2%)	5 (1.5%)	26 (7.8%)
Employment status					
Unemployed	4111 (35.2%)	6103 (52.3%)	880 (7.5%)	62 (0.5%)	519 (4.5%)
Employed	2580 (16.3%)	11,875 (75.1%)	767 (4.9%)	79 (0.5%)	514 (3.3%)
Medical Insurance					
Yes	4954 (82.1%)	538 (8.9%)	485 (8.0%)	4 (0.1%)	51 (0.85%)
No	1737 (8.1%)	17440 (81.3%)	1162 (5.4%)	137(0.6%)	982 (4.6%)

Of the respondents who usually used traditional healers as their preferred health service when they were ill, 140 (99.2%) were Africans by population group, 86 (61%) were males, 74 (52%) had secondary education; 62 (44%) were unemployed and 137 (97%) had no medical insurance. Of the total 1033 who did not use any type of health-care services, 732 (71%) were males; 950(92%) were black Africans by population group; 644(62%) had secondary education; 519 (50.2%) were unemployed and 982 (95%) had no medical insurance.

When asked about reasons for not using public health care services approximately 77% of participants reported quality of care at public health care services as the main reason (Figure 3.1). Around 6.4% reported inaccessibility and 4.6% reported unavailability of public health care services close to their residence.

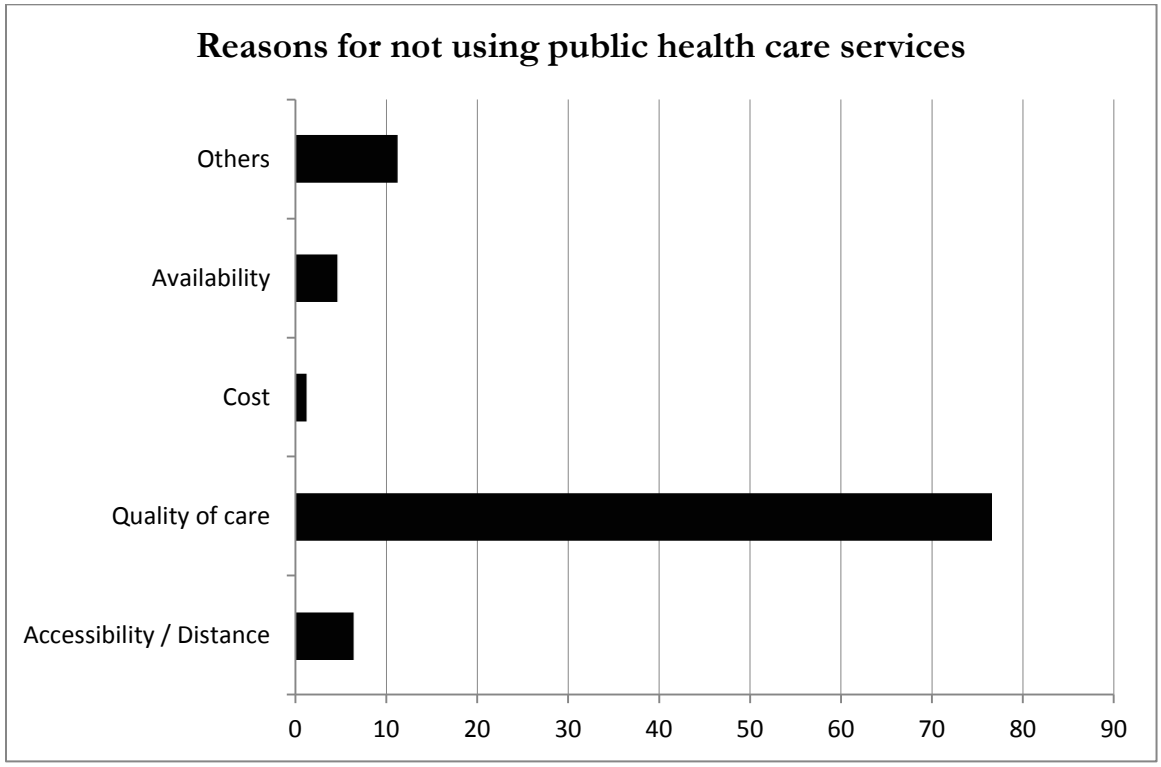


Figure 3.1.: Reasons for not using public health care services in Gauteng province, South Africa 2013.

3.3. Factors associated with health-care seeking behaviour

The results of the final logistic regression are presented in Table 3.3. Higher odds of reported seeking health care was associated with being female (OR = 2.18 95% CI: 1.88 - 2.53; p<0.001), i.e. females are approximately twice as likely to seek health care compared to males. Similarly, as age increases the odds of health care seeking also increases (OR = 1.22 95% CI: 1.09 - 1.34; p<0.001) i.e. for a ten year increase in age the odds of seeking health care increases by 22%.

Higher odds of reported health care seeking was also associated with being white compared to being African (OR = 2.28 95% CI: 1.84 - 2.74; p<0.001); with having medical insurance compared to not having any (OR = 5.41 95% CI: 4.06 - 7.23; p<0.001). In contrast, lower odds of seeking health care was associated with being an immigrant compared to being a citizen of Republic of South Africa (OR = 0.61 95% CI: 0.53 - 0.70; p<0.001) and being employed compared to being unemployed (OR = 0.84 95% CI: 0.72-0.97 p=0.02).

Table 3.3: Stepwise logistic regression[1] assessing factors associated with health care seeking behaviour in Gauteng province South Africa 2013.

Predictors	Health-care seeking behaviour			
	Un-matched OR[2] (95% CI)	P-value	Adjusted OR[3] (95% CI)	P-value
Age_ten[4]	1.19 (1.08,1.33)	<0.001	1.22 (1.09, 1.34)	<0.001
Gender				
Male	1		1	
Female	2.64 (2.31,3.02)	<0.001	2.18 (1.88, 2.53)	<0.001
Population group				
African	1		1	
White	3.75 (2.65, 5.32)	<0.001	2.24 (1.84. 2.74)	<0001
Coloured	2.09 (1.30, 3.34)	0.002	1.46 (1.13, 1.89)	0.004
Indian/Asian	1.55 (0.89, 2.70)	0.123	0.72 (0.57, 0.92)	0.009
Others	0.81 (0.25, 2.60)	0.730	1.38 (0.48, 3.91)	0.550
Employment status				
Unemployed	1		1	
Employed	0.79 (0.69, 0.90)	<0.001	0.84 (0.72, 0.97)	0.020
Medical Insurance				
No	1		1	
Yes	5.13 (3.90, 6.74)	<0.001	5.41 (4.06, 7.23)	<0.001
Migration Status				
Born in SA	1		1	
Immigrant	0.57 (0.50, 0.65)	<0.001	0.61 (0.53, 0.70)	<0.001

Notes: [1] Hosmer and Lemeshow test P-value = 0.23; [2]Un-matched OR is an estimate before CEM was carried out. [3]Matched OR is after the data was matched using CEM; [4]To have a better interpretation of the age effect on health care seeking, we looked at a 10 year increase rather than one-year age increase i.e. age_ten was used as explanatory variable (age_ten = age/10).

Abbreviations: CEM – Coarsened Exact Matching OR – Odds Ratio CI – Confidence Interval

3.4. Perception of major health problems

Descriptive analysis

Overall, 8946 (34.0%) and 5600 (21.3%) perceive infectious diseases and non-communicable diseases, respectively, as the most important public health problem in the community (Table 3.4). Data on specific health problems showed that around 8047(29.3%) perceived HIV/AIDS as the most important health problem facing the community followed by drug/alcohol abuse 7954 (28.9%). However, Tuberculosis (TB) and obesity in general were only considered by just 1128(4.1%) and 90(0.7%) of participants, respectively.

There were no significant gender differences in perception of health problems. Among participants with no formal education, drug/ alcohol abuse was perceived as the most important health problem by 25.6%, while for participants with tertiary or higher education non-communicable diseases were perceived to be the most important problem (25.5%). Around 32% of black Africans and approximately 37% of White populations perceive HIV/AIDS and chronic diseases, respectively, as the most important health problems facing the community.

Table 3.4: Socio-demographic characteristics of participants by perception of major health problems in Gauteng province, South Africa 2013.

Characteristics	Perception of major health problems			
	Infectious Diseases[1] [n = 8946]	NCDs[2] [n = 5600]	Drug/Alcohol abuse [n = 7592]	Others[3] [n = 4180]
Overall	8946 (34.0%)	5600 (21.3%)	7592 (28.9%)	4180 (15.9%)
Age (mean ± SD)	37.9 ± 14.3	45.7 ± 16.9	38.9 ± 15.1	40.2 ± 14.9
Gender				
Male	3477 (32.5%)	2038 (19.1%)	3267 (30.6%)	1903 (17.8%)
Female	5469 (35.0%)	3562 (22.8%)	4325 (27.8%)	2277 (14.6%)
Population group				
African	8331 (37.9%)	4168 (19.0%)	6589 (30.0%)	2873 (13.1%)
White	318 (11.0%)	1097 (37.6%)	446 (15.3%)	1060 (36.3%)
Coloured	224 (25.1%)	158 (17.7%)	411 (46.0%)	101 (11.3%)
Indian/Asian	63 (13.4%)	163 (33.8%)	127 (26.3%)	129 (26.8%)
Level of education				
No formal	150 (25.6%)	157 (26.8%)	172 (29.4%)	89 (15.2%)
Primary	1611 (30.8%)	1270 (24.3%)	1496 (28.6%)	587 (11.2%)
Secondary	*5032 (31.4%)*	2883 (18.0%)	*4982 (31.1%)*	2345 (14.6%)
Tertiary and above	1173 (22.2%)	1349 (25.5)	1223 (23.1%)	1356 (25.6%)
Employment status				
Employed	3467 (31.8%)	2281 (21.0%)	2802 (25.7%)	1813 (11.7%)
Unemployed	5479 (35.6%)	3319 (21.5%)	4790 (311%)	2367 (21.7%)
Migration status				
South African	3862 (35.0%)	2176 (19.7%)	2993 (27.1%)	2009 (18.2%)
Immigrant	5084 (33.3%)	3424 (22.4%)	4599 (30.1%)	2171 (14.2%)
Medical Insurance				
Yes	1306 (21.7%)	1703 (28.2%)	1373 (22.8%)	1649 (27.3%)
No	76400 (37.7%)	3897 (19.2%)	6219 (30.7%)	2531 (12.5%)

Notes: [1] Includes HIV/AIDS, TB, malaria, measles, cholera, diarrhea and malnutrition; [2] NCDs include Cancer, High blood pressure, heart diseases, Diabetes and obesity; [3] includes teenage pregnancy, crime, water, air and noise pollution, unemployment.

Abbreviations: TB – Tuberculosis; NCDs – Non-communicable diseases; SD- standard deviation.

3.5. Factors associated with the perception of major health problems

For the multinomial logistic regression the variables age, employment status, gender, population group, medical insurance, educational status, immigration status, and self-perceived satisfaction with standard of living were considered. Employment status, immigration status, place of residence, perception on standard of living were found to be non significant. Age, sex, population group and educational status were found to be significantly associated with perception of major health problems.

The estimates of OR along with 95% C.I and the associated p-values for the final sets of predictors of perception of major health problems (Infectious Diseases, Non-Communicable Diseases and Drug/alcohol abuse) from the multinomial analysis are given in Table 3.5.

In the multinomial analysis, perceiving NCDs as major health problem was associated with: Age (OR = 1.30 95% C.I.: 1.28 - 1.34; p<0.001), gender female compared to male (OR = 1.22 95% C.I.: 1.14 - 1.31; p<0.001). Compared to Whites, Africans, Indians/Asians and Coloureds are less likely to perceive NCDs as a bigger health problem than infectious diseases; African compared to Whites (OR = 0.21 95% C.I.: 0.17 - 0.23; p=0.007), being Coloured compared to White (OR = 0.27 95% C.I.: 0.21 - 0.34; p<0.001) and educational status; primary compared to tertiary & above (OR = 0.60 95% C.I.: 0.46 - 0.77; p<0.001).

In multinomial analysis perceiving drug / alcohol abuse as major health problem facing the community is associated with; age (OR = 1.05 95% C.I.: 1.02 - 1.07; p<0.001), gender female compared to male (OR = 0.86 95% C.I.: 0.81 - 0.91; p<0.001) and population group; being African compared to being White (OR = 0.61 95% C.I.: 0.52 - 0.71; p=0.007), being Coloured compared to being White (OR = 1.34 95% C.I.: 1.10 - 1.70; p=0.005) and being Indian/Asian compared to White (OR = 1.45 95% C.I.: 1.06 - 2.07; p=0.022).

Table 3.5: Odds ratio and associated P-values from the final multinomial model assessing perception on major health problems in Gauteng province South Africa 2013.

	Multinomial model[1]		
Predictors	Comparison	OR (95% C.I)	P-value
For Non-Communicable Diseases			
Age_ten[2]	Ten year increase in age	1.30 (1.28, 1.34)	<0.001
Gender	Female compared to male	1.22 (1.14, 1.31)	<0.001
Population group	African compared to Whites	0.21 (0.17, 0.23)	0.007
	Coloured compared to Whites	0.27 (0.21, 0.34)	<0.001
	Indian/Asian compared to Whites	0.91 (0.67, 1.23)	0.55
Educational status	No formal education compared to Tertiary & above	0.72 (0.52, 1.01)	0.056
	Primary compared to Tertiary & above	0.60 (0.46, 0.77)	<0.001
	Secondary compared to Tertiary & above	0.60 (0.46, 0.76)	<0.001
For Drug / alcohol Abuse			
Age_ten[2]	Ten year increase in age	1.05 (1.02, 1.07)	<0.001
Gender	Female compared to male	0.86 (0.81, 0.91)	<0.001
Population group	African compared to Whites	0.61 (0.52, 0.71)	<0.001
	Coloured compared to Whites	1.34 (1.10, 1.70)	0.005
	Indian/Asian compared to Whites	1.45 (1.06, 2.07)	0.022

Notes: [1] Multinomial logistic regression fits two binomial models of NCDs versus Infectious diseases, and Drug/alcohol abuse versus Infectious diseases simultaneously. [2]To have a better interpretation of the age effect on perception of health problems, we looked at a 10 year increase rather than one-year age increase i.e. age_ten was used as explanatory variable (age_ten = age/10).

Abbreviations: NCDs – Non-Communicable Diseases; C.I – Confidence interval; OR – Odds Ratio.

CHAPTER FOUR
DISCUSSION AND CONCLUSION

4.1. DISCUSSION

The findings from this study provide important insights into health care seeking behaviour and perception of major health problems from a population based survey. This study showed that a large proportion (95%) of study participants have usually sought health care either from public or private health facilities when needed. According to South African legislation access to health care services is universal and health care should be available to everyone regardless of ethnicity, situation and immigration status (Ngwena 2000). This largely contributed to utilization of health services among the population. Previous studies in different settings (Pronyk et al. 2001; Otwombe et al. 2015) showed lower proportions of health-care seeking. This might be explained partly by previous studies having assessed health-care seeking within a specified time period (in the last 12 months, in the last 6 months etc) while the current study assesses general health-care seeking when they needed health services for any type of illnesses. Private health-care services were most commonly visited by the richest, medically insured and Whites.

In our study 0.5% of participants usually visited traditional healers when they are ill. This finding is consistent with a study done in Nepal (Sreeramareddy et al. 2006) where 0.6% of participants visited traditional healers as their first choice. Another study in South Africa, however, showed that around half of adults reported to have visited traditional healers prior to death (Case *et al.* 2005). However, virtually all of these individuals also saw private or public health care services. The discrepancy may be explained partly by the fact that while our study assessed where an individual usually seeks treatment, this study assessed whether an individual visited a traditional healer regardless of whether the individual had visited other health care services. The other possible explanation for the discrepancy could be due to the fact that Gauteng differs from other provinces of South Africa; it has a lower proportion of Africans, generally a higher level of education and a far lower proportion of rural population than the rest of South Africa.

Our study also showed that there are race differences in health care seeking behaviour. Among participants who did not visit health services majority (93%) were black Africans compared to other

race groups. This finding is in line with previous study where there was a race difference in health seeking pattern (Harris *et al.* 2011).

It has been shown that gender difference in health care seeking where females were more likely to seek health care compared to males. This may be due to some maternal and child health services being free of charge and females being more self-conscious about their health than males. This finding is consistent with several previous studies (Dias *et al.* 2011; Otwombe *et al.* 2015). However a few studies suggested the opposite, a study in Vietnam indicated that women are less likely to visit health services compared to men (Thorson *et al.* 2000) which might be due to the difference in the study settings and difference in the year the studies were conducted. It is evident that through time as women empowerment and women education increases the probability of them seeking health care increases.

Education plays a crucial role in an individual's decision to visit and utilize health care services. In our study educational status did not seem to be a significant predictor of health seeking behaviour. However, previous studies indicated positive association between education and health care seeking (Ahmed *et al.* 2000; Muriithi 2013; Sreeramareddy *et al.* 2006; Taffa & Chepngeno 2005; Ghosh *et al.* 2013). This discrepancy may be due to the fact that study participants in our study are 18 and above years old and most of them had secondary education and above.

In this study quality of care was reported by the majority (76%) of participants as a reason not to visit public health care services. This reported reduced quality of care at public health care services may be due to the high volume of patients in these places. However there is a need for continued effort to improve the quality of public health care services to increase the health care utilization of the people in the country. This finding is consistent with previous studies (Ghosh *et al.* 2013; Harris *et al.* 2011) where the majority of respondents indicated poor quality of care in public health care services as a main reason not to visit them.

Understanding health care utilization and perception about health problems of immigrants in countries like South Africa where there is high proportion of immigrant populations is of great concern as it affects positive health outcome. Our study showed that immigration status is significantly associated with health care seeking behaviour in that immigrants are less likely to seek health care services compared to those who were born in South Africa. This is in line with previous studies in the US (Derose *et al.* 2007) and Canada (Campbell *et al.* 2014) where they

indicated that immigrants have poor access to both medical services and public health services and programs. The reasons put forward include legal status i.e. fear of detection by authorities if they are undocumented and other barriers such as inability to afford health insurance (Derose *et al.* 2007).

Health insurance protects populations especially the poor and other disadvantaged groups from accessing health care. Our study unsurprisingly showed that insured individuals are more likely to visit health care compared to un-insured individuals. Previous studies (Jowett *et al.* 2004; Harris *et al.* 2011) were consistent with this finding.

Data on perception of health problems indicated that majority of participants perceive infectious diseases as the most important health problem facing the community followed by drug or alcohol abuse and non-communicable diseases. HIV/AIDS was identified as the most important health problem by 29% of participants. This finding is line with a previous study in which HIV/AIDS was identified a disease with the biggest impact in both urban and rural areas (Hoeven *et al.* 2012).

In our study there was no significant difference in rating of health problems by place of residence. The same study found a significant difference between urban and rural areas on how they rate NCDs (diabetes, cancer and heart diseases) and infectious diseases. Participants in urban areas were more likely to rate NCDs with highest impact, whereas participants from rural areas were more likely to rate impact of TB as the most important (Hoeven *et al.* 2012). In our study there was no significant difference by place of residence. This may be due to the fact that Gauteng province is essentially an urban province which is composed of homogeneous group of populations.

4.1.1. Strengths and limitations of the study

The primary strength of this study is that it assesses predictors of health care seeking behaviour and perception of health problems from a very large population-based representative sample survey thereby maximizing the power of the study to detect significant associations and maximized the potential of the study to include vulnerable populations such as immigrants. A wide variety of socio-economic and demographic factors that can influence health care seeking behaviour of an individual are also assessed in this study. Moreover, the use of CEM to reduce the imbalance in covariates found in the groups being compared without losing many of the observations is also strength of the study. In addition, this is the first evaluation of immigrant health in South African context with the best available statistical methods.

It is also important to look at the limitations of our study. The primary data was collected to assess quality of life in Gauteng province, not specifically to answer my research question. As a result it misses some important health related information**.** Whether the interviewee him/her-self was suffering from specific health problem in the last 12 months and whether s/he sought health-care for the problem was not asked, as this reasonably gives us a valid assessment of health-care seeking behaviour rather than asking whether the participant generally seeks health-care. Specific types of health-care such as maternal and children health seeking were not assessed.

The question assessing the perception of major health problems does not include all possible health problems that the community might face. As a result it doesn't give the full picture of study participants' perception of health problems as it was assessed with just one question.

In addition, when conducting research on politically and ethically sensitive information there is a risk of social desirability bias as participants may withhold information that could pose risks for themselves and for the group they represent. For instance in our study, immigration status was self-reported and if the participant is illegal or undocumented migrant he or she might not tell the correct status because of fear of detection by authorities and the possible implications if they had been identified, which underestimates the number of immigrants found in the study area.

The other limitation was in the sampling methodology of the primary research in which our study had no control over. Dwellings were selected per stand using the dice method and if more than 6 dwellings occupied a stand, a method of attrition was used, dividing the number of dwellings into

subsets of 11 or less. However, this method is not optimal since the probability of a dwelling being selected depends on the number allocated to that dwelling. For instance, number 11 would only be chosen with throws of 6&5 or 5&6 (so the probability would be 2/36) while number 7 could be chosen with throws of 1&6, 6&1, 2&5, 5&2, 3&4 and 4&3 (so the probability would be 6/36). Hence not all dwellings had equal probability of being selected. In addition, if a respondent was not available after three attempts another respondent was substituted. Again this method is not optimal since it involves substitution and it is difficult to calculate the probability of selection (for sampling weights) if substitution is used. The better method would be picking a slightly larger sample than is required then those respondents who do not respond would simply be excluded (DHS uses this method).

Furthermore, although not assessed in this study, data on cultural background, ethnicity and religion could contribute useful information about the perception of health problems and health care seeking behaviour.

4.2. CONCLUSION

This study indicated that the majority of study participants sought healthcare for all types of illnesses and few respondents also reported traditional healers as a choice of health care. Age and sex of participants, population group, immigration status and presence/absence of health insurance were significantly associated with health seeking behaviour. While age, sex, population group, and educational status were factors significantly associated with perception of major health problems.

Our study showed that immigrants were less likely to seek health care compared to non-immigrants. This inequality in access to health care indicates the need to incorporate immigrant populations in decision making processes on various design and implementation of health care services both at the local and national level. Health education and health promotion campaigns should focus on creating continuous awareness on chronic diseases and their risk factors.

Increased health service quality increases the choice of health care provider relative to either going to traditional healers or self-treatment (Muriithi 2013). Our study found that over three quarters of respondents mentioned poor quality as a reason not to visit public health care services. This indicates the need to improve the quality of public health care services and the perception towards them. This includes provision of medication and facilities, in-service training for health professionals on patient handling and service provision, and capacity building. Last but not least, there should be multi-sectoral collaboration in improving health care access for vulnerable populations; those with lower socio-economic status and the immigrants (documented and undocumented).

REFERENCES

Adamson, J. & Ben-Shlomo, Y., 2003. Ethnicity, position and gender—do they affect reported health—care seeking behaviour? *Social science & Medicine,* 57(5), pp.895-904.

Agostino, R.B.D., 1998. Tutorial in biostatistics propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. *Statist. Med*, 17, pp.2265–2281.

Ahmed, S.M. et al., 2000. Gender, socioeconomic development and health-seeking behaviour in Bangladesh. *Social Science and Medicine*, 51(3), pp.361–371.

Redondo-Sendino, A. et al. 2006. Gender differences in the utilization of health-care services among the older adult population of Spain. *BMC Public Health,* 6(1), p.1.

Asch, S.M. et al., 2006. Who is at greatest risk for receiving poor-quality health care? *The New England journal of medicine*, 354(24), pp.2617–2619.

Austin, P.C., 2011. An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate behavioural research*, 46(3), pp.399–424.

Baert, K. & Norre, B. De, 2009. Perception of Health and Access to Health Care in the EU-25 in 2007. *Eurostat Statistics in Focus 24/2009*. Available at https://scholar.google.com/scholar?q=Baert%2C+K.+%26+Norre%2C+B.+De%2C+2009.+Perception+of+Health+and+Access+to+Health+Care+in+the+EU-25+in+2007.+Eurostat+Statistics+in+Focus+24%2F2009.+&btnG=&hl=en&as_sdt=0%2C5 [Accessed January 22, 2016]

Bakeera, S. et al., 2009. Community perceptions and factors influencing utilization of health services in Uganda. *International Journal for Equity in Health*, 8(1), p.25.

Biswas, D. et al., 2011. Access to healthcare and alternative health-seeking strategies among undocumented migrants in Denmark. *BMC Public Health*, 11(1), p.560.

Blackwell, M. et al., 2009. Cem: Coarsened exact matching in Stata. *Stata Journal*, 9(4), pp.524–546.

Bourne, P. a, 2009. Socio-demographic determinants of health care-seeking behaviour, self-reported illness and self-evaluated health status in Jamaica. *International Journal of Collaborative Research on Internal Medicine and Public Health (IJCRIMPH)*, 1(4), pp.101–130.

Bradshaw, D., 2003. Initial burden of disease estimates for South Africa, 2000. *SAMJ South African Medical Journal,* 93(9), pp.682-688.

Campbell, R.M. et al., 2014. A comparison of health access between permanent residents, undocumented immigrants and refugee claimants in Toronto, Canada. *Journal of immigrant and minority health / Center for Minority Public Health*, 16(1), pp.165–176.

Case, A., Menendez, A. & Ardington, C., 2005. *Health seeking behaviour in northern KwaZulu-Natal.* CSSR and SALDRU. Available at: http://www.opensaldru.uct.ac.za/handle/11090/665 [Accessed February 02, 2016].

Chuma, J., Gilson, L. & Molyneux, C., 2007. Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in Coastal Kenya: An equity analysis. *Tropical Medicine and International Health*, 12(5), pp.673–686.

Coovadia, H. et al., 2009. The health and health system of South Africa: historical roots of current public health challenges. *The Lancet,* 374(9692), pp.817-834.

Derose, K.P., Escarce, J.J. & Lurie, N., 2007. Immigrants And Health Care: Sources Of Vulnerability. *Health Affairs*, 26(5), pp.1258–1268.

Dias, S. et al., 2011. Healthcare-seeking patterns among immigrants in Portugal. *Health & Social Care in the Community*, 19(5), pp.514–521.

Fischhoff, B., Bostrom, A. & Quadrei, M.J., 2011. 8.9 Risk perception and communication. *Cardiovascular Diseases,* 3, p.49.

Ghosh, N. et al., 2013. Factors affecting the healthcare-seeking behaviour of mothers regarding their children in a rural community of Darjeeling district, West Bengal. *Int J Med Public Health*, 3(1), pp.12–16.

Gilson, L. & McIntyre, D., 2007. Post-apartheid challenges: household access and use of health care in South Africa. *International Journal of Health Services*, 37(4), 673-691.

Goldman, N. & Heuveline, P., 2000. Health-seeking behaviour for child illness in Guatemala. , 5(2), pp.145–155.

Gotsadze, G. et al., 2015. Healthcare utilization and expenditures for chronic and acute conditions in Georgia: Does benefit package design matter? *BMC Health Services Research,* 15(88), pp.1-10.

Harris, B. et al., 2011. Inequities in access to health care in South Africa. *Journal of public health policy*, 32 Suppl 1(S1), pp.S102–S123.

Hausmann-Muela, S., Ribera, J. & Nyamongo, I., 2003. Health-seeking behaviour and the health system response. *Disease Control Piroirities Project Working Paper No14*.

Hoeven, M. van der, Kruger, A. & Greeff, M., 2012. Differences in health care seeking behaviour between rural and urban communities in South Africa. *Int J Equity Health*, 11(1), p.31.

Jowett, M., Deolalikar, A. & Martinsson, P., 2004. Health insurance and treatment seeking behaviour: Evidence from a low-income country. *Health Economics*, 13(9), pp.845–857.

Kristiansson, C. et al., 2008. Antibiotic use and health-seeking behaviour in an underprivileged area of Perú. *Tropical medicine & international health : TM & IH*, 13(3), pp.434–441.

Meyer-Weitz, a et al., 2000. The determinants of health care seeking behaviour of adolescents attending STD clinics in South Africa. *Journal of adolescence*, 23(6), pp.741–752.

Muriithi, M.K., 2013. the Determinants of Health-Seeking Behaviour in a Nairobi Slum , Kenya. *European Scientific*, 9(8), pp.151–164.

Myer, L., Ehrlich, R.I. & Susser, E.S., 2004. Social epidemiology in South Africa. *Epidemiologic reviews*, 26(1), pp.112–123.

Ngwena, C., 2000. The Recognition of Access to Health Care as a Human Right in South Africa: Is It Enough? *Health and Human Rights*, 5(1), p.26.

Nxumalo, N. et al., 2011. Utilization of traditional healers in South Africa and costs to patients: findings from a national household survey. *Journal of public health policy*, 32 Suppl 1, pp.S124–S136.

Osubor, K.M., Fatusi, A.O. & Chiwuzie, J.C., 2006. Maternal health-seeking behaviour and associated factors in a rural Nigerian community. *Maternal and Child Health Journal*, 10(2), pp.159–169.

Otwombe, K. et al., 2015. Health-seeking behaviours by gender among adolescents in Soweto, South Africa. *Global health action*, 8, p.25670.

Pronyk, R.M. et al., 2001. Assessing health seeking behaviour among tuberculosis patients in rural South Africa. *The international journal of tuberculosis and lung disease : the official journal of the International Union against Tuberculosis and Lung Disease*, 5(7), pp.619–627.

Sen, A., 2002. Health: perception versus observation. *BMJ (Clinical research ed.)*, 324(7342), pp.860–861.

Sepehri, A. et al., 2008. Taking account of context: How important are household characteristics in explaining adult health-seeking behaviour? The case of Vietnam. *Health Policy and Planning*, 23(6), pp.397–407.

Shaikh, B.T. & Hatcher, J., 2005. Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. *Journal of public health (Oxford, England)*, 27(1), pp.49–54.

Sharkawy, G. El, Newton, C. & Hartley, S., 2006. Attitudes and practices of families and health care personnel toward children with epilepsy in Kilifi, Kenya. *Epilepsy & Behaviour,* 8(1), pp.201-212.

Shisana, O et al. & the SANHANES-1 Team 2014. *South African National Health and Nutrition Examination Survey (SANHANES-1)*: Edition. Cape Town: HSRC Press.

Sreeramareddy, C.T. et al., 2006. Care seeking behaviour for childhood illness--a questionnaire survey in western Nepal. *BMC international health and human rights*, 6, p.7.

Statistics South Africa, 2012. Census 2011.

Stekelenburg, J. et al., 2005. Health care seeking behaviour and utilisation of traditional healers in Kalabo, Zambia. *Health policy (Amsterdam, Netherlands)*, 71(1), pp.67–81.

Sudhinaraset, M. et al., 2013. What is the role of informal healthcare providers in developing countries? A systematic review. *PloS one*, 8(2), p.e54978.

Suraratdecha, C., Saithanu, S. & Tangcharoensathien, V., 2005. Is universal coverage a solution for disparities in health care?: Findings from three low-income provinces of Thailand. *Health Policy*, 73(3), pp.272-284.

Susanna, H., Joan, R. & Isaac, N., 2003. Health-seeking behaviour and the health system response. *Disease Control Priorities Project Working Paper*, (1).

Svendsen, R.P. et al., 2013. Associations between health care seeking and socioeconomic and demographic determinants among people reporting alarm symptoms of cancer: a population-based cross-sectional study. *Family Practice*, 30(6), pp.655–665.

Taffa, N. & Chepngeno, G., 2005. Determinants of health care seeking for childhood illnesses in Nairobi slums. *Tropical Medicine and International Health*, 10(3), pp.240–245.

Tessema, F., Asefa, M. & Ayele, F., 2002. Mothers' health services utilization and health care seeking behaviour during infant rearing: A longitudinal community based study, south west Ethiopia. *Ethiopian Journal of Health Development*, 16(4), pp.51–58.

Thompson, R., Miller, N. & Witter, S., 2003. Health-seeking behaviour and rural/urban variation in Kazakhstan. *Health economics*, 12(7), pp.553–564.

Thorson, a, Hoa, N.P. & Long, N.H., 2000. Health-seeking behaviour of individuals with a cough of more than 3 weeks. *The Lancet*, 356(9244), pp.1823–1824.

Ward, H., Mertens, T.E. & Thomas, C., 1997. Health Seeking Behaviour and the Control of Sexually Transmitted Disease. *Health Policy and Planning*, 12(1), pp.19–28.

Waweru, L.M. et al., 2003. Health Status and Health Seeking Behaviour of the Elderly Persons in Dagoretti Division, Nairobi. *Training*, 80(2), pp.63–67.

Whitehead, M., Dahlgren, G. & Evans, T., 2001. Equity and health sector reforms: can low-income countries escape the medical poverty trap? *The Lancet*, 358(9284), pp.833-836.

WHO, 2010. The world health report: health systems financing: the path to universal coverage: executive summary. Available at: http://apps.who.int/iris/handle/10665/70496 [Accessed January 11, 2016].

Wilson, K. et al., 2004. Linking perceptions of neighbourhood to health in Hamilton, Canada. *Journal of epidemiology and community health*, 58(3), pp.192–198.

Geospace International, 2014. GCRO THIRD QUALITY OF LIFE SURVEY. Field report.

R14/49 Mr Admas Abera Abaerei

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M150962

NAME: (Principal Investigator) Mr Admas Abera Abaerei

DEPARTMENT: School of Public Health

PROJECT TITLE: Factors Affecting Healthcare Seeking Behaviour, and Assessment of Population's Perception of Major Health Problems in Gauteng Province, South Africa 2013

DATE CONSIDERED: 02/10/2015

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Jabulani Ncayiyana

APPROVED BY: Professor P Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 14/10/2015

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004, 10th floor, Senate House/2nd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**.

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES