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Healthcare satisfaction and healthcare utilisation in South Africa

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2021
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MASTER OF ECONOMIC SCIENCE (CCA11)

Healthcare satisfaction and healthcare utilisation in South Africa

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Research Paper Code: ECON7008A (50% of the Masters' Program)

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Submission Date: 25 March 2021

Word Count: 15 786

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ACKNOWLEDGEMENTS

I would like to give very special thanks to my supervisor, Prof Booysen for his guidance, knowledge, and patience throughout this analysis. I am very grateful for his support.

I would also like to extend my gratitude to my friend and colleague, Emmanuel for his huge part in helping me with executing commands in Stata programming.

This work would not be possible without the never-ending support and inspiration from my father, mother, Tashinga and Thelma throughout my academic career, I thank them for carrying me this far.

I would also like to express my sincere gratitude to my friends Lombe and Kgomotso, for their sacrifices and support so I could work on this paper, especially during a challenging year (2020). I would also like to extend my sincere gratitude to all my friends and colleagues who cheered me on, during this work.

Finally, I want to dedicate this work to my late uncle Phenias.

ABSTRACT

Background: In trying to assess the performance and delivery of quality healthcare services in South Africa, this study examines the association between healthcare satisfaction (a commonly used opinion-based proxy to evaluate the quality of healthcare services), and healthcare utilisation in the public and private healthcare sectors. In addition, the study investigates how experiences of unmet health needs are associated with perceived healthcare satisfaction.

Objectives: The analysis has four main objectives which are, determining the level of overall satisfaction with healthcare services in South Africa. Identify the services attributes/features associated with dissatisfaction with healthcare services. Explore sectorial differences in satisfaction levels between the public health sector and private health sector, and to assess the association between unmet health need and healthcare satisfaction.

Methodology: The analysis uses weighted cross-sectional data from the South African National Health and Nutrition Examination Survey (SANHANES) (2011/2012). The dataset includes information for 14,938 participants. The study estimates the association between healthcare satisfaction and healthcare utilisation using the following quantitative approaches. First, univariate analysis is conducted, followed by bivariate analysis using the Analysis of Variance (ANOVA) approach. Next, Multivariate Ordinary Least Squares (OLS) and multivariate Probit regression techniques are employed to assess these associations, followed by the application of Inverse Probability Weighted Regression Adjustment (IPWRA) treatment effects models.

Results: The level of overall satisfaction with healthcare was 72%. Satisfaction levels between private sector care and public sector care, from the ATET results, showed private sector care had higher levels of satisfaction for both inpatient (96.7%) and outpatient care (90.6%) than public sector care with (60.3%) and (89.6%) for inpatient and outpatient care, respectively. Long waiting times, lack of involvement in decision making and availability of medication were the top three sources of dissatisfaction with healthcare service. There was no significant correlation between experiences of unmet health need with satisfaction with healthcare services.

Conclusion: The levels of overall satisfaction levels of with healthcare services, for user and non-users combined were quite high. The satisfaction levels were even higher for participants who used health services for inpatient or outpatient care, during the past 12 months. The study identified underlying key factors that influenced satisfaction outcomes, and choice of health sector used, for different individuals, such as race, access to medical insurance, struggles with affording healthcare costs and differences in levels of wealth. White participants, participants with access to medical insurance, less struggles with paying healthcare costs and being the wealthiest, all experienced higher satisfaction levels. There is need to work towards improving the provision of quality healthcare especially in the public health sector (specifically inpatient care facilities) to bridge the gap the two main health sectors, so that everyone can have access to good quality health care.

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Section 1: INTRODUCTION

South Africa is one of the well-advanced economies in Africa and arguably has the best healthcare system in the continent according to Health Care Index, provided by the World Health Organisation (WHO). Despite this, the South African healthcare system is marred by a number of serious problems, evident by the ranking of out of 195 countries in the world, according to the results of Lancet Healthcare Access and Quality Index (2017) provided by Businesstech. Evidence from Coyne and Hilsenrath (2001), showed that the majority of the South Africans depend on publicly provided health services and at the same time most income groups are now using privately financed health care, creating a class system in access of quality health care, hence further creating a divide on the quality of healthcare provided between the two health sectors and consequently experiencing different outcomes in satisfaction across sectors, income groups and race. The on-going problems of inequalities in access to quality healthcare among different income and population groups have been documented by Myburgh et al. (2005) and Jacobsen and Hasumi (2014).On a macro-level, technical incompetence especially in the public sector, across the decentralised provincial health departments have resulted in underperforming leadership to provide quality public health delivery systems according to Ngobeni et al. (2020), further broadening the gap in the performance of the two health sectors.

The Institute of Medicine defines high quality care as 'safe, timely, efficient, equitable and patient centred'. Numerous studies have used patient satisfaction as a subjective proxy to assess the quality of healthcare services and performance (Gill & White 2009). Hasumi and Jacobsen (2014) and Jacobsen and Hasumi (2014) have documented patterns of patient satisfaction in South Africa with the aid of a nationally representative data, including the divide in patient satisfaction experienced in the public and private healthcare sectors. Bridging the gap in satisfaction levels between the two sectors health systems is very important for a better overall competitive and efficient healthcare system.

This study seeks to explore the association between healthcare satisfaction (overall satisfaction level among healthcare users and non-users) and healthcare utilisation in South Africa. Secondly, the study reveals the health service attributes/features that are linked with dissatisfaction with healthcare services. Thirdly, examine the differences in satisfaction levels between public and private healthcare sectors. Finally, the study investigates the association of participants unmet health need with perceived healthcare satisfaction. Notably to distinguish itself from previous satisfaction studies, this study employs, the Inverse Probability Weighting Regression Adjustment (IPWRA) treatment effects approach along with other quantitative techniques, of which the justification of each technique is provided in the methodology section.

1.1 DEFINITIONS OF KEY TERMS

Healthcare satisfaction - extends beyond patient satisfaction to cover overall satisfaction with healthcare services, which includes the opinions of participants who used and those who did not use healthcare services during the past 12 months.

Healthcare utilisation – encompasses use of different healthcare services for either inpatient care (over-night stay at a health facility) or outpatient care (over the counter medication or home care). Healthcare services majorly public and private sector care and to a lesser extent, other providers.

Unmet health need – In this study, is defined as the inability or failure of satisfying a particular health problem, in other words the participant did not receive healthcare when they needed it.

1.2 STUDY OBJECTIVES

This analysis seeks to answer the following questions:

1) What is the level of satisfaction with healthcare services?
2) What are the main service attributes/features that contribute to dissatisfaction with healthcare services?
3) Does satisfaction differ between public and private healthcare sectors?
4) Is unmet need associated with dissatisfaction with healthcare services?

1.3 STUDY HYPOTHESES

H1: Patients are more satisfied with private than public healthcare services.

H2: Unmet health need is negatively associated with healthcare satisfaction.

To address the mentioned objectives and test the above hypotheses, the study uses numerous quantitative methods, more of which is explained under the methodology section. The paper, first reviews the literature on healthcare satisfaction and healthcare utilisation, followed by a detailed description of different quantitative approaches in the methodology section. Then computation and analysis of results in relation to the research questions and hypotheses, followed by the discussion section on the implications of the findings and how they relate to other satisfaction and utilisation studies and finally the conclusion.

Section 2: LITERATURE REVIEW

Satisfaction studies have commonly documented satisfaction outcomes only for participants who have used healthcare during a specific time period. This study carries a nationwide analysis on satisfaction levels for participants who used and participants who did not use healthcare services (as a result of either no intention or unmet health need) to provide overall satisfaction levels with healthcare services in South Africa. The study noticeably applies a 'doubly robust' IPWRA treatment effects approach in estimating levels of satisfaction, this allowed subgrouping of participants who used different health sectors and those who did not, to assess the differences in satisfaction across sub-groups. Applying the IPWRA technique distinguishes this study from previous nationwide studies carried out in South Africa which use models such as the logistic regression model, as is shown by some of the literature.

To begin, Myburgh et al. (2005) assessed patient satisfaction with healthcare providers in South Africa using a country wide 1998 survey with 3820 households. The main motivation of the study was to identify inequalities in health status and healthcare provision throughout the entire population post-apartheid era, thus their analysis centred on the influences of race and socioeconomic status (SES) on patient satisfaction. The results from logistic odds ratios revealed the significance of race and socioeconomic in predicting patient satisfaction outcomes. Both White and high SES were more likely to be satisfied with healthcare services compared with Black and low SES as a result of discriminatory health practices, such differences in the treatment received due to the influence of race or wealth class on patient-healthcare provider relationship and the way different clients expect to be attended to by healthcare providers.

In support of Myburgh et. al (2005), Jacobsen and Hasumi (2014) used the 2010 national General Household Survey (GHS) and applied the weighted logistic analysis to generate up-to date satisfaction rates with healthcare services in South Africa with hugely increased number of households (22,959) and individuals (95,00). Their study also placed strong emphasis on differences in patient satisfaction rates between different racial/ethnic groups and households income levels. The findings highlighted

disparities in satisfaction were largely explained by differences in rates of use of private care providers between race and income groups. In overall, 88,5% of the participants were satisfied with healthcare services from their most recent visit. Despite the high satisfaction rate reported, a research by Hasumi and Jacobsen (2014) documented waiting time, availability of drugs, rude staff as common challenges reported by patients in South Africa.

Other studies within the country have focused on satisfaction with a particular type of care or region, for instance Mayeye et al. (2010) carried a non-experimental descriptive cross-sectional survey that focused on adolescent satisfaction with reproductive primary healthcare services in Mdantsane Township, Eastern Cape province. The sample was only limited to teenagers within ages of 16 to 19 years old. Nonetheless, participants were generally dissatisfied with the reproductive health services. Major issues included accessibility to reproductive healthcare services and the quality of the services. The study did not detail evidence on how dynamics of utilisation are related to satisfaction with reproductive health services. Even, though their study focused on adolescent satisfaction, it was relevant in revealing one dimension of healthcare satisfaction and the issues that extend to other forms of care that need addressing.

Another study by Abaerei et al. (2017), narrowed their analysis to solely determine factors associated with healthcare utilisation in the Gauteng Province in South Africa. The study used data from the Quality-of-Life survey for Gauteng 2013 and applied he multiple logistic regression method to determine factors associated with health-care utilisation. The rate of healthcare services utilisation was 95.7%, though a sizeable number of participants 75% were less impressed with the quality of public health services and therefore utilised them less. Nteta et al. (2010) further narrowed their study to utilisation trends of primary healthcare services specific to Tshwane region of Gauteng province in South Africa. The data used was collected from three Community Health Care Centres in Tshwane and descriptive statistics were used to examine the data. In general, participants were satisfied with the services provided, but pointed out the need to improve the quality of public healthcare services in Gauteng Province.

Within the African continent, most healthcare satisfaction studies focused on a particular health facility or region in the country. Khamis and Njau (2014) recently analysed patients' level of satisfaction with the quality of healthcare solely from using the out-patient facility at Mwananyamala hospital in Dar es Salaam, Tanzania. The t-test was used to derive the patients satisfaction level. This study was limited to one hospital and overall most patients were dissatisfied with the quality of care, with patients unimpressed with the communication skills of the staff at the facility, low levels of politeness and active listening, availability of essential drugs.

In Ghana, Odonkor et al. (2019) determined the level of satisfaction with healthcare delivery limited to patients in Accra. Major findings were that, about 70% of the patients were satisfied, 29.3% were moderately satisfied and 1.2% were not satisfied at all. 51.8% of the male participants felt there were treated with no respect, while 87.8% of female respondents perceived respectful treatment. Similarly, Bamidele et al. (2011) also lessened their patient satisfaction analysis to a specific clinic in Gaborane, Botswana. Despite the study targeting one clinic, participants were well satisfied with services provided and the quality of care. Participants rated the services they received from doctors very high. Results obtained in these African countries, could not be generalised to other regions of the countries.

Globally, Owusu-Frimpong et al. (2010), measured patient satisfaction with treatment from public and private healthcare sectors in London, UK. Their study highlighted a huge rate of dissatisfaction with service climate factors (such as getting attention from doctors, time taken to get an appointment, access to core treatment and opening hours) among public as opposed to private, healthcare users. In general, private care users were better-off in obtaining medical care, however the authors acknowledged the small sample size of the study.

While the study by Khamis and Njau (2014) for Tanzania gave insights on satisfaction with out-patient care, Ashrafun and Uddin (2011) investigated factors that determine satisfaction with inpatient hospital care in Bangladesh, specifically surgical care with, urinary, cardiovascular, respiratory and ophthalmology disease at one hospital. The results from Ordinary Least Squares regression models suggested doctors' treatment services and behaviour of nurses as influential predictors of patient satisfaction. However the hospital was advised to improve the cleanliness and maintain an orderly

environment. Nguyen and Nguyen (2014) also examined factors that influence inpatient satisfaction in an effort to generate satisfaction scores to make comparison between hospitals and work towards providing better healthcare services. The major factors were old age and better perceived healthcare status at admission. Women were found to be less satisfied than men. Contrary, to the findings in Vietnam, in Scotland, Jenkinson et al. (2002) when assessing patients' experiences and satisfaction with care, discovered age and overall self-assessed health as weakly linked to satisfaction. However close to 90% of the participants showed that they were satisfied during their stay at a healthcare facility. Inpatient satisfaction forms one part of healthcare satisfaction, therefore it is important to reveal the issues patients face when they need inpatient care.

In Vietnam, the relationship between healthcare service quality and patient satisfaction, with public hospitals was explored using a qualitative approach through interviewing participants to examine their opinions on service quality (Nguyen & Nguyen 2014). A number of respondents raised issues such as, lack of medical equipment, cleanliness of public hospitals, shortage of water at facilities and lack of better equipment for emergency rooms to mention a few.

A study by Anand and Sinha (2010), in India used the data gathered from the National Family Health Survey of 2002-2003 with the aim of establishing utilisation determinants of women's reproductive health services. The results from logistic regression analyses showed that factors such as waiting time, availability of doctors, cleanliness, privacy and affordability increased the probability of private care facilities, while availability of medicine and treatment effectiveness increased chances of using public services. The mentioned factors were also linked to be attributes that affect healthcare satisfaction in some studies. Highlighting possibly a positive association between healthcare satisfaction and healthcare utilisation.

In determining the association between satisfaction and unmet health need, Leung et al. (2009) explored the role of patients' inclusion in treatment, satisfaction with health use and unmet needs for patients with psoriatic arthritis. The study did not highlight any association between satisfaction and unmet health need, but instead, expressed the number of patients who reported unmet health needs, not as a result of dissatisfaction with health care. Inclusion in decision making was essential in

ensuring that patients are more responsive to treatment strategies and as such there was a negative association between inclusion and satisfaction with care. Clignet et al. (2018) study on patient satisfaction in patients with Late Life Depression (LLD), showed weak association between satisfaction and unmet health needs, in that for some health needs some patients were more dissatisfied than others. The patients ultimately managed to received care for needs, but not in the most satisfying way, therefore not completely unmet health need. Jackson et al. (2001) cited unmet expectations (not unmet health need) with care as contributing factor to patient dissatisfaction.

Some studies have linked unmet health need as a result of lack of service availability, problems of access and affordability and not as a result of dissatisfaction with health service, for example in Canada Chen and Hou (2002) highlighted unmet health need as a result of mainly lack of service (availability) or long waiting times at facility, a view supported by Sanmartin et al. (2002). Therefore there is little evidence on the correlation between satisfaction and unmet health need.

In light of the literature presented, most studies focused on regional satisfaction trends, with exception of a few. While others targeted satisfaction for particular types of care. There is a lack of concrete evidence to establish the correlation between satisfaction and unmet health need. Therefore, this study also contributes to the existing body of knowledge on healthcare satisfaction and utilisation studies, by carrying-out a nation-wide analysis by, critically analysing satisfaction patterns with inpatient and outpatient care, carrying out satisfaction and utilisation comparisons on the two main health sectors particularly applying the IPWRA treatment effects technique and investigating the service attributes/features participants are most dissatisfied with. Finally the study, determines the level overall satisfaction (users plus non-users input) with healthcare provision and how overall satisfaction is associated with unmet health need. The different quantitative methods are thoroughly explained in the methodology section below.

Section 3: METHODOLOGY

3.1 STUDY DESIGN

The study uses weighted cross-sectional data obtained from the South African National Health and Nutrition Examination Survey (SANHANES), 2011/2012. This study acknowledges that the data is not the most recent, however it is still very relevant to carry out the study. More specifically, it collects relatively detailed information on satisfaction with health services as well as information on healthcare utilisation which is not the case in other widely used nationally representative surveys.

3.2 SAMPLE SIZE

The study had 14,938 individual male and female participants who were 15 years and older across all the provinces in South Africa.

3.3 ETHICAL CONSIDERATION

No real names were used, instead participants were identified by their individual questionnaire number, visiting point number (for those who visited a healthcare facility during the past 12 months) and unique household identifier for households.

3.4 DATA COLLECTION

This study uses secondary data originally collected by authors Labadarios, Shisana, Simbayi, Rehle (2012). The survey questionnaire had 6 sections: Section A to F. However, for this analysis the study made use of data obtained from Section A and F only. Section A helped this analysis by providing biographic information of the respondent such as age, gender, nationality and race, while Section F obtained information on healthcare utilisation and level of satisfaction with health services see APPENDIX A: SURVEY QUESTIONNAIRE SECTION F.

3.5 DATA ANALYSIS

The analysis used a data file in Stata, then multiple techniques were used to generate useful results for this analysis. These techniques were:

- Univariate/Descriptive analysis.
- Bi-Variate analysis.
- Regression analysis including Multivariate Ordinary Least Squares (OLS) and Multivariate Probit regression analysis.
- Treatment effects: Inverse Probability Weighting Regression Analysis (IPWRA) estimating Average Treatment Effects (ATE) and Average Treatment Effects on the Treated (ATET).

Each approach is explained in more detail, in the next subsections, respectively. The different analytical techniques would help answer the questions (objectives) set out in the introduction section.

3.5.1 UNI-VARIATE ANALYSIS

Like most quantitative analysis, the study began by firstly describing socio-demographic characteristics of the weighted sample (to account for sample imbalances i.e. missing observations). These characteristics were Age, Gender, Race, Nationality, Province, and Residence. Age determined how old the individual/participant was. Gender, whether the respondent was male or female. Race, the racial background of the respondent. Foreign, whether a respondent was of South African nationality or not. Province, the geographical location of the respondent. Residence, whether the respondent lived in a rural or urban settlement. These socio-demographic features would be used throughout the analysis as Control variables.

To do so, the study used the [tab] and [sum] Stata commands to generate the proportions e.g. (number of males and females for Gender) and mean values for these characteristics. These features would be used throughout the whole analysis as control variables.

Secondly, the study determined healthcare utilisation patterns at individual level and household level. This was to establish the percentage of individuals and households that either used or not used healthcare services and the type of health sector used during the past 12 months, for inpatient care or outpatient care. Key issues such as household unmet health need and other factors that could potentially influence the choice of healthcare sector used were also analysed descriptively e.g. access to

medical insurance and affordability. Healthcare services were mainly public sector and private sector care.

After utilisation analysis, the study drew percentages of participants satisfied with inpatient and outpatient care, for public sector, private sector and wealth quintile based on service attributes. Participants rated each service attribute on a five-point Likert scale were: (1) very bad, (2) bad, (3) moderate, (4) good; (5) very good. Comparisons in satisfaction with each service attribute were between healthcare sectors, between inpatient and outpatient care, and between different wealth quintiles. The percentage for overall satisfaction with each service attribute was the sum of participants who rated either (4) or (5) for that particular service attribute and dissatisfaction was sum of (1) or (2). These service attributes were:

a) Waiting time before being attended to
b) How participants were treated respectfully
c) The way healthcare providers explained things to participants.
d) Their involvement in decision making with respect to treatment needs.
e) The extent to which healthcare services ensured a client could talk privately to providers.
f) The ease for participants, to see preferred healthcare provider.
g) Overall cleanliness of healthcare facility
h) Availability of medication in the facility
i) Availability of medical tests or diagnostics in the health facility

These service attributes were also used in Bi-variate analysis. Thereafter, participants were asked to give their overall satisfaction with:

- Inpatient care
- Outpatient care
- How healthcare services were provided in their respective areas and
- Overall rating on provision of healthcare services.

The Likert scale for overall satisfaction analysis was coded as: (1) very dissatisfied, (2) dissatisfied, (3) neither satisfied nor dissatisfied, (4) satisfied, (5) very satisfied. Overall satisfaction with inpatient care and outpatient care was only for

healthcare users while overall satisfaction with healthcare services and overall rating of healthcare services included both users and non-users.

3.5.2 BI-VARIATE ANALYSIS

The study used the one-way Analysis of Variance (ANOVA) in the form of:

- ***oneway Y X [aw=weight], mean.*** Where Y is a binary satisfaction dependent variable, (yes = satisfied and no = not satisfied), regressed on X a single independent variable, giving the mean values of Y. [aw=weight] is the weighting.

This was in order to determine the following Bi-variate relationships/comparisons:

i. AT INDIVIDUAL LEVEL

i. The level of satisfaction with inpatient care, then outpatient care, between healthcare sectors (public and private), on each of the service attributes for inpatient and outpatient care. In order to see how individuals rate the service attributes for different healthcare sectors, on either care inpatient care or outpatient care.
ii. The level of satisfaction with inpatient care, then outpatient care, for individuals in different wealth quintiles, also on every service attribute for inpatient and outpatient care. In other words, to analyse how the rating on service attributes differ across different levels of wealth for either inpatient or outpatient care.
iii. The level of overall satisfaction with inpatient and outpatient care according to the healthcare sector used, in order to make direct comparisons on which healthcare sector provides the best inpatient care or outpatient care.
iv. The level of overall satisfaction with inpatient and outpatient care, according to individual's wealth quintiles, (5 wealth quintiles) explained on Table 3.5.1 below on regression analysis. Examining differences in satisfaction per wealth class.
v. The level of overall satisfaction with healthcare services and overall rating of healthcare services, between users and non-users of healthcare services during the past 12 months. In other words, how would users and non-users rate healthcare services.

ii. AT HOUSEHOLD LEVEL

i. The level of overall satisfaction and overall rating of healthcare services according to the health facility used, i.e. how would satisfaction and rating compare between (public and private care).

ii. The level of overall satisfaction and overall rating of healthcare services according to household wealth quintile, i.e. differences in satisfaction and rating levels across wealth classes.

KEY Formula used in this section of the analysis was:

1. Satisfaction Gap/Difference = (Satisfaction level in health sector A – Satisfaction level in health sector B)

The results generated from the above formula were inserted in tables in the bi-variate analysis of results section.

Then regression analysis was used in order to determine if there is an association between a specific dependent and independent variable/s.

3.5.3 MULTIPLE ORDINARY LEAST SQUARES (OLS) REGRESSION MODEL

The Multiple OLS regression model is the benchmark for any casual relationships in data analysis; therefore it is a common starting point to make inferences but is not the most suitable approach for cross sectional data analysis, with many categorical variables.

The OLS regression model was in the form:

- $y_i = x^{I}_i\beta + u_i$, ***[pw=weight].*** Where y_i represent continuous satisfaction dependent variable/s. x^I is a proxy all for explanatory variables in the model, including the healthcare sector used and the explanatory variables are either dummy or continuous variables. [pw=weight] is the weighting. The estimation observes the following assumptions.

Assumptions of the Multiple OLS: According to Gujarati and Porter (2004, p.97-98)**:**

1) The regression model is linear in parameters and correctly specified.

2) Independent variables are uncorrelated with the disturbance term.
3) Mean value for the error term is zero.
4) Homoscedasticity: The residual term has a constant variance for any given value of the independent variable.
5) No autocorrelation exists between error terms.
6) No or little multicollinearity relationship exist between two independent variables.
7) The error term follows the normal distribution with mean zero and homoscedastic variance, for hypothesis testing.

The Multiple OLS estimated two regression models:

i. Satisfaction with inpatient care.
ii. Satisfaction with outpatient care.

The dependent and independent variables used for these two models are explained in detail in Table 3.5.1.

3.5.4 THE MULTIPLE PROBIT REGRESSION MODEL

The Probit regression model was employed/preferred for the analysis because the data was cross-sectional in nature with many binary/multi-categorical dependent and independent variables. Secondly, due to the fairly large sample size the Probit model was adopted over the Logit model to generate better estimates, however the results generated in either model are very similar.

The Probit regression model was defined as:

- ***Probit [EY] = $X^{I}\beta$ [pw=weight].*** Where ***EY*** was the expected value of ***Y*** i.e., expected probability of satisfaction, $\mathbf{X^{I}}$ represents all explanatory variables in the model. ***X*** enters the model as either dummy or continuous variables.

The Probit model estimated four regressions based on:

i. Satisfaction with inpatient care.
ii. Satisfaction with outpatient care.
iii. Overall satisfaction with healthcare services.
iv. Overall rating of the healthcare services.

The regressions are explained in depth below. The dependent and independent variables used in the estimation are also explained in detail in Table 3.5.1.

Table 3.5.1: OLS and Probit Regression variables

REGRESSION MODEL	
OLS	**Probit**
(1) Dependent Variable/s	**(1) Dependent Variable/s**
Inpatient satisfaction (continuous) Outpatient satisfaction (continuous)	Inpatient satisfaction (binary) • 1 if satisfied. • 0 otherwise Outpatient satisfaction (binary) • 1 if satisfied. • 0 otherwise Overall satisfaction (binary) • 1 if satisfied. • 0 otherwise Overall rating • 1 if highly rated. • 0 otherwise
(2) Independent Variables	**(2) Independent Variables**
(a) Control Variables	**(a) Control Variables**
Age	Age
Gender • Male (Base category) • Female	Gender • Male (Base category) • Female
Race • Black (Base) • White • Coloured • Indian	Race • Black (Base) • White • Coloured • Indian
Foreign • No (Base) • Yes	Foreign • No (Base) • Yes
Province • Western Cape (Base) • Eastern Cape • Northern Cape • Free State • Kwazulu Natal • North West • Gauteng • Mpumalanga • Limpopo	Province • Western Cape (Base) • Eastern Cape • Northern Cape • Free State • Kwazulu Natal • North West • Gauteng • Mpumalanga • Limpopo

Residence • Urban formal (Base) • Urban informal • Rural informal (tribal) • Rural formal (farms)	Residence • Urban formal (Base) • Urban informal • Rural informal (tribal) • Rural formal (farms)
(b) Treatment Indicators	**(b) Treatment Indicators**
For inpatient and outpatient care	**For inpatient and outpatient care**
Public and Private (Binary) • Public care (Base) • Private care	Public and Private • Public care (Base) • Private care
	For overall satisfaction and overall rating
	Private and Public use • None (Base) • Public care • Private care • Both public and private
(c) Other Covariates	**(c) Other Covariates**
Wealth quintile • Quintile 1 (Base) • Quintile 2 • Quintile 3 • Quintile 4 • Quintile 5	Wealth quintile • Quintile 1 (Base) • Quintile 2 • Quintile 3 • Quintile 4 • Quintile 5
For inpatient and outpatient care	**For inpatient and outpatient care**
Insurance • No (Base) • Yes	Insurance • No (Base) • Yes
Free Hospitalisation • No (Base) • Yes	Free Hospitalisation • No (Base) • Yes
Time	Time
Outpatient worker • Doctor (Base) • Nurse/midwife • Other	Outpatient worker • Doctor (Base) • Nurse/midwife • Other
	Variables for Overall satisfaction & Overall rating
	Household unmet need (KEY Variable) • No (Base) • Yes
	Household insurance • No (Base) • Yes
	Household affordability • No (Base)

- Yes

i. MEASURES for ESTIMATING OLS and PROBIT REGRESSION MODELS

BASE CATEGORIES

Base categories are highlighted on the table, the purpose for these is to compare the outcome of the other participants in that category to the base, e.g. if base is Male, what are the satisfaction outcomes for females compared to males. Base group are also known as the control or comparison group.

DEPENDENT VARIABLES

Multiple OLS regression model: The continuous dependent variables (inpatient satisfaction and outpatient satisfaction) used for estimating the Multivariate OLS inpatient satisfaction and outpatient satisfaction were continuous standardised composite functions with means of zero and expressed in standard deviations from the mean derived from satisfaction with individual service attributes using Multiple Correspondence Analysis (MCA) (i.e. they were constructed using the satisfaction scores on the individual service level attributes).

Multiple Probit regression model: The binary dependent variables for estimating the Probit model as illustrated on the table were quite straight forward. They determined whether a participant was satisfied or not with inpatient healthcare, outpatient healthcare and overall healthcare services.

INDEPENDENT VARIABLES

Control variables - are the same as explained in univariate analysis methodology.

Treatment indicator – Highlighted the type of healthcare facilities used by participants, therefore were very important in determining the association between healthcare satisfaction and healthcare utilisation and all of the comparisons in levels of satisfaction were generated on this basis.

Multiple OLS regression model: Estimating inpatient and outpatient satisfaction.

Treatment indicator was (public and private use), a binary independent variable which determined whether a respondent used public sector care or private sector

care. The goal was to determine if there were differences in satisfaction levels for participants who used public sector care versus private sector care, for either inpatient care or outpatient care. Therefore assisting in answering Hypothesis 1:

- Patients are more satisfied with private sector care than with public sector care.

Multiple Probit regression model: Estimating inpatient and outpatient satisfaction, used the same treatment indicator in OLS.
Probit regression model: Estimating overall satisfaction, overall rating and household unmet need. The treatment assisted in determining overall satisfaction with healthcare. The treatment indicator was:

i. Private and public sector care use vs (no use of healthcare services)

OTHER COVARIATES

Other covariates for all the models – The wealth quintile variable was used in all the regression equations in both OLS and Probit. It was created using an MCA index, based on the following variables: housing type, water and sanitation services, and ownership of 13 household assets (Gordon, Booysen and Mbonigaba, 2020). According to O'Donnell et al. (2008) the wealth index was deemed to be a more consistent measure of socio-economic status (SES) in developing countries as compared to income. The variable had five levels to it, wealth quintile (one) (base category), was the poorest wealth class, wealth quintile (five) was the wealthiest, (two, three and four) represented the lower middle wealth class, middle wealth class, and upper middle wealth class, respectively.

Other covariates for inpatient and outpatient satisfaction models - For both OLS and Probit were insurance (whether a respondent had access to medical insurance or not), free hospitalisation (whether a respondent received free care), and time (the amount of time taken to get to a healthcare facility). Outpatient worker showed the healthcare personnel visited only for outpatient care, in both OLS and Probit outpatient regression models.

Other covariates for overall satisfaction and overall rating models - Household unmet need (whether a participant managed to receive/not receive healthcare when they needed it). This was a very important variable as it helped in answering Hypothesis 2:

- Experiences of unmet healthcare need is negatively associated with healthcare satisfaction.

Household insurance and household affordability determined whether households had access to medical insurance or not, and whether they struggled with paying for medical care, respectively.

NOTE: All significant explanatory variables were analysed while holding the influence of all the other explanatory variables constant.

3.5.5 TREATMENT EFFECTS

The treatment effects estimates potential-outcome means (POMs), average treatment effects (ATEs), and average treatment effects on the treated (ATETs) from using cross-sectional data. Thus the treatment effects model was employed to generate average percentages of respondents who were satisfied with healthcare services. The study used a "doubly robust" estimators in IPWRA to estimate treatment effects. This was the most suitable approach to estimate the potential satisfaction outcomes, if some of the individuals used healthcare, while others did not (Control or comparison group) ATET or the satisfaction outcomes if all respondents used healthcare versus if all respondents did not use (Counterfactual), during the same time period under similar conditions.

The IPWRA treatment estimation combine elements of regression adjustment (RA) and inverse probability weighting (IPW), in order to be more robust to misspecification Huber, (2015). The IPWRA estimators are highly efficient, as they emerge from a robust-correction approach on missing-data analysis Huber, (2015), i.e. they account for missing data problem in the sample. The treatment effects estimated ATE and ATET using the Probit functional form for the outcome model and the Probit function for binary treatments and Multinomial logit function for multilevel treatments by default.

i. DEFINITION OF CONCEPTS

Average Treatment Effects (ATE) – Estimate the potential outcome (average) if all participants in the sample received treatment versus the outcome if all the same participants did not receive treatment in a cross-sectional data setting (i.e. at one point in time). Thus it compares levels of satisfaction between if all the participants in the sample used healthcare services, to satisfaction levels if all participants did not

healthcare care services(control group). But the ATE does not simply take the difference in the two potential outcomes as the average treatment effect. The ATE conditions covariates that may be related to the potential outcome and treatment, so that any remaining influences on the treatment are not related to potential outcomes Huber, (2015).

In real it is very unrealistic as one cannot observe the same subject in treatment state and without treatment during the same time frame, therefore a missing-data problem Huber, 2015, but (ATE) is very useful as it provides a conceptual framework on which treatment effects analysis can be based on.

Average Treatment Effects on the Treated (ATET) – Estimate the actual outcome between participants in the sample who receive treatment versus the outcomes of participants who do not receive treatment (i.e. the control group), during the same time period. The control group is selected based on the characteristics of the treatment group. Then the average satisfaction for the treated group is compared to the average satisfaction level of the untreated group and the difference is average treatment effect on the treated, i.e. mean difference among subjects that actually receive the treatment. The two groups need to not to be an exact match on individual characteristics.

As long as the sample is large enough, the treated group and the untreated group would be balanced. In observational studies in this case, cross-sectional study, the ATE and ATET are not necessarily the same.

Outcome model – Estimates the potential outcome of satisfaction (satisfied or not satisfied).

Treatment model – Estimates the probability of treatment assignment (treated or untreated).

Estimations of treatment effects in IPRWA requires either the outcome model or treatment model to be correctly specified.

ii. ASSUMPTIONS Huber, 2015

1) The Conditional Mean Independence (CMI), the treatment does not affect the conditional mean of each potential outcome, after accounting for the covariates.

2) The overlap assumption states that the probability for each participant of receiving either treatment level be positive.

3) The independent and identically distributed (i.i.d.) sample from the population. When using a sample, this means the potential outcomes and treatment status of one participant is unrelated to the potential outcomes and treatment statuses of all the other individuals in the sample.

iii. MODEL

teffects IPWRA model:

- ***teffects IPWRA (x1 x', probit) (treat x2 w, probit) [pw=weight], vce(robust).*** Where **(x1)** is the dependent variable (satisfaction) in the outcome model, **(x')** is a set of explanatory variables in the outcome model. **(x2)** is the dependent variable in which determines the type of healthcare sector used in the treatment model, **(w)** is a set of covariates variables in the treatment model. Outcome model and treatment model are both probit models. **Vce(robust)** for robust standard errors.

Table 3.5.2: teffects in-and outpatient variables

Inpatient satisfaction and Outpatient satisfaction	
Outcome Model	**Treatment Model**
Dependent Variables	**Dependent/Treatment Variables**
Inpatient satisfaction (binary)	Public private inpatient
Inpatient satisfaction (continuous)	Public private outpatient
Outpatient satisfaction (binary)	
Outpatient satisfaction(continuous)	
Independent Variables	**Independent Variables**
Control variables (6)	Control variables (6)
Medical Insurance	Medical insurance
Free hospitalisation	Free hospitalisation
Time	Time
Wealth quintile	Wealth quintile
Outpatient worker (only for outpatient models)	

Table 3.5.3: teffects overall satisfaction and overall rating variable

Overall satisfaction and Overall rating	
Outcome Model	**Treatment model**
Dependent variables	**Dependent/Treatment variable**
Overall satisfaction	Private public care use
Overall rating	
Independent variables	**Independent variables**
Control variables (6)	Control variables (6)
Household unmet need	Household unmet need
Household medical insurance	Household medical insurance
Household affordability	Household affordability
Wealth quintile	Wealth quintile

iv. MEASURES

All the variables in Table 3.5.2 and Table 3.5.3 above have been explained in the regression section of the methodology, and control (6) is the list of all control variables stated in univariate section, (refer to Table 3.5.1 for full detail).

To conclude this section, all statistical tests were performed at 0.01 and 0.05 level of significance.

Section 4: RESULTS

4.1 DESCRIPTIVE ANALYSIS

4.1.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS

The study sample consisted of 14,938 participants, of whom 46% were males, while 54% females. The average age for participants was almost 37 years old. Most of the participants were African, making up 78% of the sample, followed by 10% white, coloured were 9%, 3% Indian and other races had a proportion less than 1%. Participants came from four geographical settings. More than half 55% of the respondents were located in urban formal setting, followed by 28% from rural informal, urban informal and rural formal had 9% and 8% respectively. Shown in Figure 8.2:1 Gender, Figure 8.2:2 Race and Figure 8.2:3 Geographical Location.

4.1.2 INDIVIDUAL HEALTHCARE UTILISATION

Healthcare utilisation was defined as the use of healthcare services during the past 12 months. A combined sum of 54.44% participants used healthcare facilities for their healthcare needs, while 45.56% did not use healthcare facilities, during the past 12 months. Use of healthcare facilities was mainly divided into two sectors, public and private care. From the 54.44% healthcare users, 42.19% of the healthcare users, used public sector care, 29.87% used private sector care and 28.94% used both (public and private sector care) for their healthcare needs.

Healthcare needs were either inpatient care needs (admission into a healthcare facility) or outpatient care needs (over the counter care or home care). In relation to the full sample, 31.43% of the participants received either inpatient or outpatient care during the past 12 months, split such that 9.74% of the participants needed inpatient care while 24.89% received outpatient care, which suggests that some individuals needed both inpatient and outpatient care during the past 12 months. Among respondents who strictly needed inpatient care, 71.17% of them used public sector care facilities, while 28.83% used private sector care facilities. For participants who

strictly needed outpatient care, most of them used public sector health facilities 64.36% whereas 35.64% used private care facilities.

Table 4.1.1: Healthcare Utilisation (Inpatient and Outpatient)

Healthcare sector used during past 12 months	Inpatient utilisation	Outpatient utilisation	Overall utilisation by health sector
Public care	71.17%	64.36%	42.19%
Private care	28.83%	35.64%	29.87%
Public and private care	n/a	n/a	28.83%

4.1.3 INDIVIDUAL AFFORDABILITY AND OTHER UTILISATION ASPECTS

Aspects of care directly associated with an individual's choice of healthcare sector included the method they used to settle medical bills, the actual medical bill structure. Most participants who needed either inpatient care or outpatient care used free care (free hospitalisation) 47.06% and 57.68% respectively. Only 24.39% of the participants used medical insurance to pay for inpatient care while 19.78% did so for outpatient care.

Table 4.1.2: Healthcare payment method

Payment method	Inpatient mean	Outpatient mean
Insurance	24.39%	19.78%
Self	11.58%	15.80%
Family	10.72%	7.06%
Care is free	47.06%	57.68%
Other	6.25%	0.37%

Healthcare costs were split into four defined categories namely, healthcare provider fees, medicines, medical tests and transport. Inpatient healthcare provider fees were the highest expenses paid averaging close to R1,500, the rest of healthcare cost were less than R250. (Figure 4.1:1) shows a side-by-side comparison between inpatient and outpatient care mean amounts of money paid for the respective expenses.

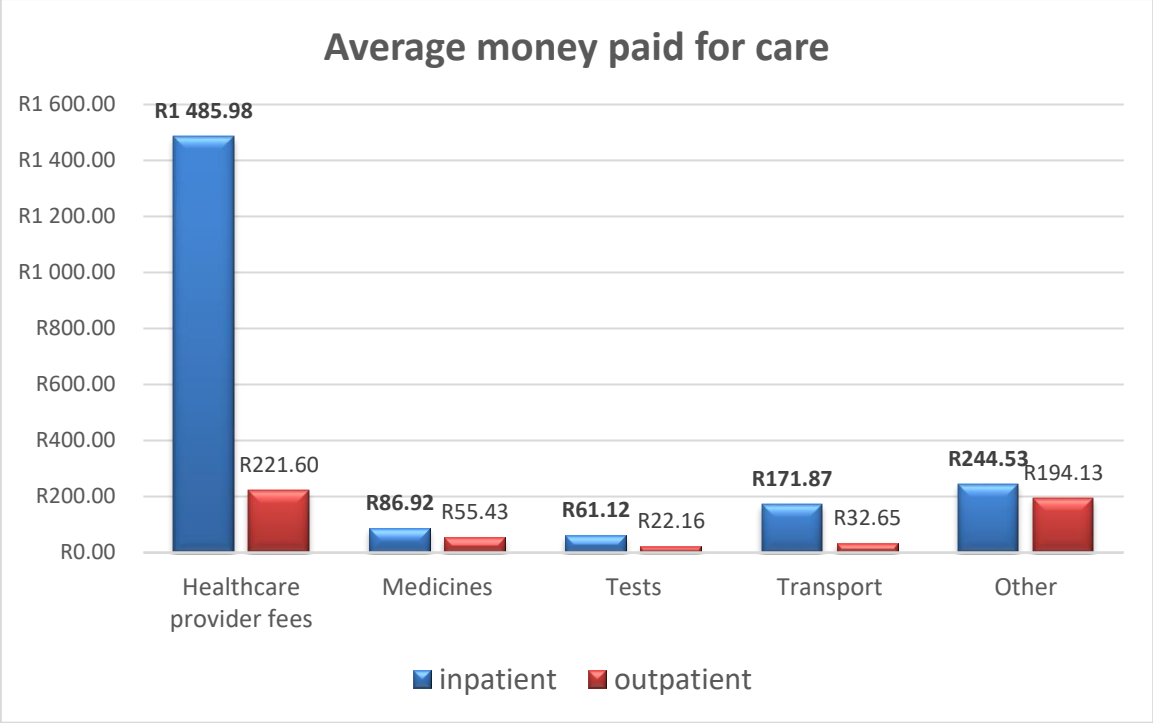

Figure 4.1:1: Healthcare fees, by type of care needed

Participants who needed outpatient care frequently used a public clinic (40%), private doctor's office (26%) and a public hospital (23%), while private clinic (5%), private hospital (4%) and other facilities summed up to (2%) were the least used, as shown in Table 4.1.3 below. These findings revealed that most participants used public facilities to get outpatient care healthcare. For inpatient care (over-night-stay) it was public hospitals and private hospitals used, therefore accounting for public sector care and private sector care, respectively.

Table 4.1.3: Outpatient care facility used

Healthcare facility	Percentage of Participants
Public clinic	40%
Private doctor's office	26%
Public hospital	23%
Private clinic	5%
Private hospital	4%
Other healthcare facilities	2%

Doctors or specialists were the most visited healthcare personnel for outpatient care, with 53%. Nurses or midwives assisted (41%) and only 6% of the participants consulted other medical personnel.

4.1.4 HOUSEHOLD UTILISATION

This section focuses patterns of household utilisation of healthcare services. Emphasis was placed on issues like the type of healthcare facility the household used, if they could afford paying for healthcare expenses, whether or not the household had access to medical insurance, and, finally, if all the household's healthcare needs were met when they needed care.

In depth, as expressed on Table 4.1.4, public sector care was the most common healthcare facility utilised by households with 68.33% households. Private care followed in second with 28.65%. Some households used both public and private care facilities, this portion only amounted to about 1% of the household sample, while the remaining households preferred to use other healthcare facilities (1.98%).

Table 4.1.4: Healthcare facility used by household

Healthcare Facility	Proportion
Public	68.33%
Private	28.65%
Public and Private	1.04%
other	1.98%

4.1.5 HOUSEHOLD AFFORDABILITY AND UNMET HEALTH NEED

The ability to afford healthcare costs could have influenced the choice of health sector households used. 23.85% of the households had access to medical insurance, while 76.15% did not have access to medical insurance. However, most households could afford healthcare by other means 72.83%, while 27.17% had challenges affording healthcare during the past 12 months. The challenges resulted in 21% of the households failing to receive healthcare when they needed it (Unmet health need).

4.1.6 HEALTHCARE SATISFACTION

i. SATISFACTION IN- AND OUTPATIENT CARE

After reporting on healthcare use, participants rated their satisfaction experience from using healthcare facilities for of inpatient and outpatient care, based on service attributes listed in the methodology section. The next sub-sections provide a more detailed analysis on the satisfaction levels for each of the healthcare service attributes.

ii. INPATIENT SATISFACTION, BY SERVICE ATTRIBUTES

Table 4.1.5 shows the portion of participants who gave their feedback on each of the service attribute from (1) 'very bad' to (5) 'very good', then an overall percentage of participants satisfied with each service attribute. The main highlight from this analysis was that participants were least satisfied with the amount of waiting time to be assisted. Even though this attribute had a high proportion of participants who were satisfied (79.43%), however in comparison with the rest of the satisfaction variables it had the least overall satisfaction. Furthermore, waiting time had relatively high number of participants who rated it (1) very bad; (2) bad and (3) moderate compared to other service attribute. The service attribute participants were most satisfied with, was the availability of medical test at the healthcare facility (89.31%). The rest of the service attributes had above (85%) overall satisfaction. In general, a rating of (4) good had consistently the most participants selecting it for all service attributes. A deeper breakdown is provided below.

Table 4.1.5: Inpatient satisfaction, by service attributes

Satisfaction attributes	**SATISFACTION DISTRIBUTION**					**Overall satisfied proportion**
	very bad (1)	bad (2)	moderate (3)	good (4)	very good (5)	
Waiting time	4.01%	5.68%	10.88%	45.64%	33.80	79.43%
Respect	1.56%	2.02%	7.85%	49.98%	38.59%	88.57%
Clarification	1.80%	3.03%	7.08%	50.78%	37.30%	88.07%
Inclusion	2%	4.56%	8.08%	51.86%	33.50%	85.36%
Privacy	1.17%	2.50%	8.96%	50.88%	35.96%	86.83%

Ease to see preferred provider	0.35%	3.14%	9.79%	51.44%	35.28%	86.71%
Cleanliness	0.33%	2.81%	7.79%	47.53%	41.54%	89.06%
Avail of medication	0.60%	2.16%	8.93%	49.49%	38.82%	88.32%
Avail of medical test	0.30%	3.14%	7.26%	51.19%	38.12%	89.31%

***NOTE:** The full list of satisfaction questions (attributes) is in APPENDIX A: SURVEY QUESTIONNAIRE SECTION F.

iii. OUTPATIENT SATISFACTION, BY SERVICE ATTRIBUTES

Likewise, participants were least satisfied with the amount of time they waited before being attended to, with only 69.94% of the respondents satisfied for outpatient care. This was quite a distance from rest of the service attributes which had above (83%) of the respondents being satisfied. In synch with inpatient care, waiting time for outpatient care also had majority of participants rating it (1) very bad; (2) bad and (3) moderate, but was also least selected on good and very good for all the service attributes. Most participants who received outpatient care, most appreciated the cleanliness of healthcare facilities (89.34%). Likewise, a rating of good (4) was most commonly selected across all service attributes. Table 4.1.6 gives a detailed insight.

Table 4.1.6: Outpatient satisfaction, by service attributes

Satisfaction attributes	**SATISFACTION DISTRIBUTION**					**Overall satisfied proportion**
	very bad (1)	bad (2)	moderate (3)	good (4)	very good (5)	
Waiting time	5.12%	11.93%	13.01%	46.75%	23.19%	69.94%
Respect	1.12%	3.10%	9.17%	58.67%	27.95%	86.62%
Clarification	0.95%	3.13%	8.90%	58.84%	28.18%	87.03%
Inclusion	1.06%	3.88%	11.53%	58.56%	24.98%	83.54%
Privacy	1.03%	2.40%	8.10%	60.92%	27.55%	88.47%
Ease to see preferred provider	0.80%	2.93%	11.50%	58.73%	26.04%	84.77%
Cleanliness	0.68%	1.91%	8.07%	57.09%	32.25%	89.34%
Avail of medication	1.51%	4.84%	9.28%	55.70%	28.68%	84.38%

Avail of diagnostics	1.91%	4.40%	10.92%	55.71%	27.79%	83.49%

***NOTE:** The full list of satisfaction questions (attributes) is in APPENDIX A: SURVEY QUESTIONNAIRE SECTION F.

As illustrated in Table 4.1.7, 85.82% of the respondents who used healthcare services were satisfied with inpatient care, while outpatient care had 86.85% satisfied healthcare users, during the past 12 months. However, 72% of the full sample of respondents (users and non-users) were satisfied with overall provision of healthcare services in their respective areas, to support this result, about 70% highly rated the delivery of these healthcare services, ((4) good or (5) very good).

Table 4.1.7: Overall satisfaction

Combined Satisfaction	SATISFACTION DISTRIBUTION					Overall Satisfied Proportion
	very dissatisfied (1)	dissatisfied (2)	neither (3)	satisfied (4)	very satisfied (5)	
Inpatient Care Overall Satisfaction	1.66%	3.49%	9.02%	43.94%	41.89%	85.82%
Outpatient Care Overall Satisfaction	1.27%	5.61%	6.26%	50.80%	36.05%	86.85%
Overall Satisfaction with Healthcare	3.86%	10.64%	13.49%	46.90%	25.11%	72.01%
Overall Rating of Healthcare	4.73%	9.33%	15.79%	46.36%	23.78%	70.14%

4.2 BIVARIATE RESULTS

4.2.1 SATISFACTION WITH IN-PATIENT CARE, BY HEALTHCARE SECTOR

Table 4.2.1 shows percentages of respondents who were satisfied with each of the service attributes between public and private care, while receiving inpatient care. The goal was to establish sectorial differences on the levels of satisfaction with service

attributes. From the table it can be immediately noticed that private care had consistently a higher number of respondents satisfied on every service attribute than public care. Satisfaction among respondents using private care ranged between (93%) and (99%) for all service attributes, while the satisfaction levels of those using public care mostly ranged between (73%) and (87%) on the same service attributes.

Satisfaction with waiting time at the health facility had the largest gap, between private sector care and public sector care 20.57% that is (93.65% minus 73.08%). Satisfaction with both cleanliness and availability of medication had the smallest differences in satisfaction between private sector care and public sector care, only (10.44%). Satisfaction gaps/difference between the two health sectors on every service attribute were generated using (Private care satisfaction minus public care satisfaction). The rest of the differences in satisfaction levels with service attributes for private and public sector care are highlighted on the table These tests were highly significant at 1% level as shown by the p-values. The following two tables provide the actual number of satisfied respondents and the actual mean scores on the Likert scale, respectively.

Table 4.2.1: Inpatient satisfaction, by healthcare sector

Inpatient Care Satisfaction with	HEALTH FACILITY			Statistics	
	Public care	Private care	Satisfaction gap	F-Statistic	p-value
Waiting time	73.08%	93.65%	20.57%	51.28	0.000
Respectful treatment	85.25%	97.35%	12.10%	28.49	0.000
Clear explanation of things	84.98%	96.66%	11.68%	25.79	0.000
Involvement in decision making	82.22%	93.10%	10.88%	18.18	0.000
Privacy when talking to healthcare providers	82.86%	96.75%	13.89%	33.26	0.000
Ease to see preferred healthcare provider	83.32%	95.88%	12.56%	27.02	0.000
Cleanliness of health facility	86.25%	96.69%	10.44%	22.04	0.000
Availability of medication in health facility	85.40%	95.84%	10.44%	20.60	0.000

Availability of tests in health facility	85.49%	98.75%	13.26%	36.26	0.000

Table 4.2.2: Average inpatient satisfaction scores, by healthcare sector

Inpatient Care Satisfaction with	HEALTH FACILITY			Statistics	
	Public care	Private care	Satisfaction Gap	F-Statistic	p-value
Waiting time	3.77	4.51	0.74	111.47	0.000
Respectful treatment	4.05	4.65	0.60	119.25	0.000
Clear explanation of things	4.02	4.61	0.59	105.79	0.000
Involvement in decision making	3.95	4.48	0.53	73.61	0.000
Privacy when talking to healthcare providers	3.98	4.65	0.67	127.08	0.000
Ease to see preferred healthcare provider	4.03	4.56	0.53	103.81	0.000
Cleanliness of health facility	4.13	4.62	0.49	91.37	0.000
Availability of medication in health facility	4.09	4.60	0.51	95.22	0.000
Availability of tests in health facility	4.06	4.65	0.59	131.58	0.000

4.2.2 SATISFACTION WITH IN-PATIENT CARE, BY WEALTH QUINTILE

Similarly, the same service attributes were used to determine the percentage of participants satisfied with each service attribute but according to the participant's level of household wealth. Ranking of wealth quintiles was determined using head-to-head comparisons of services attributes across all wealth quintiles, and the wealth quintile that had a higher satisfaction level on most of the attributes was ranked ahead of the other. On average, participants from wealth class five were the most satisfied compared to their counterparts from other wealth quintiles. More than 90% of the participants from quintile five were satisfied with each service attribute except for the cleanliness of health facility which had 88.59%. Wealth quintile one was second, with participants satisfied with most of the service attributes compare to

wealth quintiles two, three and four. Then in wealth quintile four was in third, then wealth quintile two and wealth quintile three. More head-to-head comparisons of satisfaction levels with service attributes for wealth quintiles can be analysed on Table 4.2.3. However individuals who lied in the lower middle, middle and upper middle wealth quintiles, i.e. (two, three and four) were generally consistently less satisfied compared to participants in the highest and lowest wealth quintiles, five and one, respectively. Satisfaction with waiting time had the least average satisfaction level compared to other service attributes across all wealth quintiles, while satisfaction with the cleanliness of the health facility had highest average satisfaction level across all wealth quintiles. All these comparisons were statistically highly significant.

Table 4.2.3: Inpatient satisfaction, by wealth quintile

Inpatient Care Satisfaction with	HOUSEHOLD WEALTH					Statistics	
	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	F-Statistic	p-value
Waiting time	75.33%	71.43%	74.18%	77.57%	92.09%	8.27	0.000
Respectful treatment	87.91%	90.04%	83.04%	84.64%	95.55%	4.84	0.001
Clarity	85.33%	91.09%	81.17%	87.87%	93.20%	3.73	0.005
Inclusion in decisions	92.22%	83.39%	78.55%	83.45%	91.04%	4.41	0.002
Privacy	92.07%	80.76%	86.74%	83.10%	94.30%	5.48	0.000
Ease to see preferred provider	87.31%	83.14%	80.58%	86.73%	91.57%	2.72	0.029
Cleanliness of facility	93.50%	88.28%	82.51%	92.14%	88.59%	2.79	0.026
Avail of medication	88.10%	83.11%	81.66%	92.11%	91.97%	3.90	0.004
Avail of tests	94.88%	79.32%	84.54%	92.08%	92.48%	6.48	0.000

The corresponding average actual satisfaction scores on each service attribute, per wealth quintile.

Table 4.2.4: Average inpatient satisfaction scores, by wealth quintile

	HOUSEHOLD WEALTH QUINTILE	Statistics

Inpatient Care Satisfaction with	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	F-Statistic	p-value
Waiting time	3.76	3.80	3.79	3.93	4.42	16.30	0.000
Respectful treatment	4.04	4.15	4.03	4.11	4.56	18.15	0.000
Clarity	4.03	4.17	3.97	4.06	4.51	14.91	0.000
Inclusion in decisions	4.10	4.01	3.88	3.98	4.43	12.93	0.000
Privacy	4.10	4.01	3.99	4.03	4.53	18.47	0.000
Ease to see preferred provider	4.05	4.05	3.92	4.16	4.45	14.64	0.000
Cleanliness of facility	4.20	4.12	4.09	4.33	4.45	8.30	0.000
Avail of medication	4.08	4.04	4.08	4.26	4.49	13.49	0.000
Avail of tests	4.17	3.95	4.09	4.23	4.49	14.47	0.000

4.2.3 SATISFACTION WITH OUT-PATIENT CARE, BY HEALTHCARE SECTOR

Similarly, a bi-variate analysis was carried out to report if there were differences in satisfaction levels between healthcare sectors for participants receiving outpatient care. The same service attributes were used to determine the proportion of participants satisfied with public and private healthcare. Again, private care had consistently most of the participants satisfied with every satisfaction attribute, compared to public care. The percentage of participants satisfied with each service attribute, for private sector care ranged between 86% and 97% for all the service attributes, while public sector care ranged between 60% and 86% for the same service attributes.

Satisfaction with waiting time at the health facility had the largest gap, between private sector care and public sector care, 26.60% (86.92% minus 60.32%). Satisfaction with the cleanliness of the health facility had the smallest gap in satisfaction levels, (9.81%). Table 4.2.5 shows these numbers in detail, followed by the table with actual

mean scores. The results generated for outpatient care highlighted some consistencies compared to inpatient care results.

Table 4.2.5: Outpatient satisfaction, by healthcare sector

Outpatient Satisfaction	HEALTH SECTOR			Statistics	
	Public care	Private care	Satisfaction Gap	F-Statistic	p-value
Waiting time	60.32%	86.92%	26.60%	199.84	0.000
Respectful treatment	81.57%	96.07%	14.50%	104.43	0.000
Clear explanation of things	82.01%	96.16%	14.15%	101.59	0.000
Involvement in decision making	77.99%	93.40%	15.41%	98.27	0.000
Privacy when talking to healthcare providers	84.22%	96.05%	11.83%	77.22	0.000
Ease to see preferred healthcare provider	80.13%	93.13%	13.00%	73.75	0.000
Cleanliness of health facility	85.81%	95.62%	9.81%	56.61	0.000
Availability of medication in health facility	78.08%	96.66%	18.58%	155.26	0.000
Availability of diagnostics in health facility	77.02%	96.34%	19.32%	161.36	0.000

Table 4.2.6: Average outpatient satisfaction scores, by healthcare sector

Outpatient Satisfaction	HEALTH SECTOR			Statistics	
	Public care	Private care	Satisfaction gap	F-Statistic	p-value
Waiting time	3.43	4.22	0.79	318.71	0.000
Respectful treatment	3.92	4.42	0.50	262.22	0.000
Clear explanation of things	3.93	4.43	0.50	268.50	0.000
Involvement in decision making	3.86	4.33	0.47	219.91	0.000
Privacy when talking to healthcare providers	3.96	4.41	0.45	223.09	0.000

Ease to see preferred healthcare provider	3.90	4.37	0.47	235.17	0.000
Cleanliness of health facility	4.03	4.46	0.43	209.38	0.000
Availability of medication in health facility	3.84	4.45	0.61	329.91	0.000
Availability of diagnostics in health facility	3.84	4.43	0.59	324.79	0.000

4.2.4 SATISFACTION WITH OUT-PATIENT CARE, BY WEALTH QUINTILE

In the same manner as inpatient care, the service attributes that have been used throughout the analysis, were used to determine the level of satisfaction with each service attribute, across five wealth quintiles. The same ranking method used in inpatient care, was also used for outpatient care and according to that ranking method, wealth quintile five was first with more than 90% of the participants from quintile five satisfied with each service attribute, excluding waiting time (85.17%). In second was wealth quintile four, then wealth quintile one. Wealth quintile three and two ranked 4th and 5th respectively. Table 4.2.7 provides detailed head-to-head comparison of satisfaction levels with service attributes between wealth quintiles. Satisfaction with waiting time had the lowest average level of satisfaction compared to other service attributes across all wealth quintiles and satisfaction with cleanliness of the health facility had the highest average satisfaction level across all wealth quintiles. All the differences were statistically highly significant at 1% level.

Table 4.2.7: Outpatient satisfaction, by wealth quintile

Outpatient Satisfaction	HOUSEHOLD WEALTH QUINTILE					Statistics	
	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	F-Statistic	p-value
Waiting time	68.94%	61.72%	62.03%	71.60%	85.17%	22.61	0.000
Respectful treatment	84.88%	78.74%	84.26%	88.46%	94.48%	14.02	0.000
Clarity	84.71%	80.60%	84.94%	88.67%	95.24%	13.46	0.000
Inclusion in decisions	84.68%	77.33%	77.38%	82.48%	91.84%	12.75	0.000

Privacy	88.09%	83.22%	87.68%	88.03%	94.53%	7.86	0.000
Ease to see preferred provider	83.71%	78.97%	81.99%	84.91%	92.18%	9.25	0.000
Cleanliness of facility	85.89%	84.95%	88.74%	89.37%	95.14%	8.17	0.000
Avail of medication	82.29%	77.04%	76.68%	88.94%	94.85%	23.53	0.000
Avail of diagnostics	80.80%	78.07%	77.07%	86.33%	94.00%	18.28	0.000

Table 4.2.8 Average outpatient satisfaction scores, by wealth quintile

Outpatient Satisfaction	HOUSEHOLD WEALTH QUINTILE					Statistics	
	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	F-Statistic	p-value
Waiting time	3.59	3.50	3.48	3.72	4.19	37.69	0.000
Respectful treatment	3.94	3.97	3.98	4.13	4.41	35.32	0.000
Clarity	3.95	3.95	3.98	4.13	4.44	40.45	0.000
Inclusion in decisions	3.92	3.88	3.85	4.02	4.33	31.33	0.000
Privacy	3.99	4.01	4.01	4.10	4.41	30.07	0.000
Ease to see preferred provider	3.93	3.93	3.94	4.04	4.38	35.74	0.000
Cleanliness of facility	4.02	4.09	4.12	4.16	4.46	28.98	0.000
Avail of medication	3.88	3.90	3.84	4.13	4.43	44.94	0.000
Avail of diagnostics	3.90	3.90	3.83	4.11	4.44	48.43	0.000

4.2.5 OVERALL SATISFACTION WITH INPATIENT AND OUTPATIENT, BY HEALTHCARE SECTOR

Most participants were more satisfied with private sector care for both inpatient and outpatient care than with public sector care. Participants who received outpatient care from private health sector were more satisfied (96.69%) than those who received

outpatient care from public health sector (81.37%). Likewise, participants were more satisfaction from receiving inpatient care from private health sector (91.29%) than inpatient care from a public health sector (83.88%). Private care had (7.41%) more satisfaction for inpatient care and (15.32%) more satisfaction for outpatient care, compared to public care. The corresponding actual average scores were, inpatient care from, public sector care (4.08) and private sector care (4.56). For outpatient care from, public sector care (3.94) and private sector care (4.53). The results were highly significant at 1% level.

Table 4.2.9 Overall Satisfaction Inpatient and Outpatient, by health sector

Overall satisfaction	Public care	Private care	Satisfaction gap	F-statistic	p-value
Inpatient Care	83.88%	91.29%	7.41%	8.01	0.005
Outpatient Care	81.37%	96.69%	15.23%	116.69	0.000

4.2.6 OVERALL SATISFACTION WITH IN- AND OUT-PATIENT CARE, BY WEALTH QUINTILE

Table 4.2.10 presents the portion of participants who were overall satisfied from receiving inpatient care and outpatient care according to wealth level. For overall satisfaction with inpatient care, the ranking was such that participants from wealth quintile one (1st), quintile four (2nd), quintile five (3rd), quintile two (4th) and quintile three (5th). For outpatient care the order was, wealth quintile five (1st), quintile four (2nd), quintile one (3rd), quintile two (4th) and quintile three (5th). The middle wealth classes consistently ranked lowest for both inpatient and outpatient care, quintile two and three were 4th and 5th respectively. Nevertheless, the differences in satisfaction from receiving either inpatient or outpatient care were all within 10% points per each quintile. Average satisfaction levels between participants who received inpatient care and individuals who received inpatient care were very similar. The results were highly significant at 1% level. Overall inpatient care actual average scores were [4.14; 4.03; 3.96; 4.29 and 4.44] for wealth quintiles 1 to 5 respectively, while for outpatient care [4.00; 4.07; 3.98; 4.15 and 4.44].

Table 4.2.10 Overall Satisfaction with In- and Out-patient, by wealth quintile

Overall satisfaction	HOUSEHOLD WEALTH CLASS						Statistics	
	quintile 1	quintile 2	quintile 3	quintile 4	quintile 5	Mean satisfaction	F-Statistic	p-value
Overall inpatient satisfaction	91.48%	80.39%	79.42%	89.69%	86.72%	85.54%	3.41	0.009
Overall outpatient satisfaction	86.26%	82.71%	81.31%	88.38%	94.50%	86.63%	11.82	0.000

4.2.7 OVERALL SATISFACTION AND OVERALL RATING, BY HEALTH SECTOR

Comparing overall satisfaction between individuals who used healthcare services i.e. users of (public care only, private care only and (public and private) versus individuals who made no use of healthcare care services during the past 12 months, the results showed that healthcare users were more satisfied on every health sector, than non-users. Most participants were satisfied with the provision private care services (84.81%), while public care had 78.88% satisfied participants. Use of both public and private care had 74.92% level of overall satisfaction. However, 69.61% respondents were overall satisfied with the general provision of healthcare services despite not using them during the past 12-month period. The actual average scores for overall satisfaction were, no use (3.72), public care (3.76), private care (4.09), public and private care (3.80).

For overall rating, private sector care had the highest overall rating level with 82.78% of the participants. Users of both public and private sector care had 71.14% and use of public care had 71.06% overall rating for users. Non-users had 68.99% overall rating. The order was different from overall satisfaction results. Actual average scores were, no use (3.69), public care (3.73), private care (4.05), public and private care (3.75). The results for overall satisfaction and overall rating were highly significant at 1%.

Table 4.2.11: Overall satisfaction and overall rating, by all healthcare services

Sector of healthcare used in the past 12 months	Overall Satisfaction	Overall Rating

None	69.61%	68.99%
Public care only	73.88%	71.06%
Private care only	84.81%	82.78%
Public and private care	74.92%	71.14%
F-Statistic	38.60	30.06
p-value	0.000	0.000

At household level utilisation and satisfaction, the pattern was slightly different compared to individual utilisation level. Households who used both public and private sector care were the majority for both overall satisfaction and overall rating with 83.92% and 83.69% levels of satisfaction. Private sector care was second with 78.80% households reporting overall satisfaction and 76.92% for overall rating. Public sector care had 69.36% overall satisfied households and 67.36% households who highly rated the public health sector services. Households who used other healthcare facilities were the fewest with 66.31% overall satisfied with other facilities, while 65.94% of the participants gave a good overall rating for other healthcare facilities. The average satisfaction scores for overall satisfaction were, public care (3.70), private (4.10), public and private (4.16), other (3.68), while for overall rating, public care (3.67), private (3.96), public and private (4.09), other (3.64).

Table 4.2.12: Household satisfaction and rating, by healthcare facility

HEALTHCARE FACILITY	Overall Satisfaction with Healthcare Provision	Overall Rating of Healthcare Services
Public	69.36%	67.36%
Private	78.80%	76.92%
Public and private	83.92%	83.69%
Other	66.31%	65.94%
F-Statistic	45.76	44.90
p-value	0.000	0.000

4.2.8 HOUSEHOLD OVERALL SATISFACTION AND OVERALL RATING, BY WEALTH QUINTILE

Overall satisfaction with, and overall rating of, healthcare services, according to household wealth quintile, showed that households in wealth quintile five ranked (1st) for both level of overall satisfaction and overall rating, with (80.98%) and (80.48%) respectively. Household wealth quintile one was (2nd) with (71.84%) and (70.21%) overall satisfaction and overall rating, respectively. Then the rest of the order was wealth quintile two, four and three for overall satisfaction and quintile two, three and four for overall rating. It is clear most of the wealthiest households enjoyed the highest overall satisfaction and consequently highly rated the healthcare services, while middle- and low-class households were quite a distance from the top wealth quintile.

Table 4.2.13: Household overall satisfaction and overall rating, by wealth quintile

HOUSEHOLD QUINTILE	Overall Satisfaction with Healthcare Provision	Overall Rating of Healthcare Services
quintile 1	71.84%	70.21%
quintile 2	69.95%	67.72%
quintile 3	68.45%	67.69%
quintile 4	69.07%	65.04%
quintile 5	80.98%	80.48%
F-Statistic	37.98	49.76
p-value	0.000	0.000

The actual average satisfaction scores for overall satisfaction with healthcare per wealth quintile were, [3.73; 3.70; 3.68; 3.70 and 4.10] in ascending order. Overall rating of healthcare services had average satisfaction scores of [3.71; 3.67; 3.65; 3.62 and 4.09].

4.3 OLS REGRESSION ANALYSIS

4.3.1 SATISFACTION WITH INPATIENT CARE

The overall model was significant at 1% level of significance (p-value = 0.000) compared to the only intercept model. Using private care and being Coloured were the statistically significant covariates.

Holding all else constant, an individual who used the private sector for inpatient care scored 2.50 standard deviations higher on the index than they would if they had used public health sector for inpatient care, this was significant at 1% level (p-value = 0.000). Secondly, Coloured participants were 0.575 more satisfied with inpatient care than Black participants, significant at 5% level. All the other explanatory variables in the model were statistically insignificant. Refer to Table 4.3.1.

4.3.2 SATISFACTION WITH OUTPATIENT CARE

Like inpatient care, the OLS also estimated satisfaction with outpatient care using the same covariates relating to satisfaction with outpatient care. The whole model was also significant at the 1% level of significance. Using private care, being White, residing in Rural formal (farms), living in the Gauteng province, access to medical aid and participants from Wealth quintile 5 were all significant explanatory variables.

Firstly, participants who utilised private health sector for outpatient care scored 1.106 standard deviations higher on the index than those who used public sector for outpatient care. Results were significant at the 1% significance level. White participants were 1.004 more satisfied with outpatient care than their black counterparts, significant 1% level. Individuals who resided in rural formal (farms), were more satisfied with outpatient care, than those who lived urban formal areas. The difference in satisfaction was 0.580 which was significant at 1% level. Respondents from Gauteng province were 0.803 less satisfied with outpatient care compared to those from Western Cape province, also significant at 1%.

Having medical insurance meant an individual would experience an increase in satisfaction with outpatient care services of about 0.661 compared to those who without medical insurance. Finally, households from wealth quintile five, had 0.617

more satisfaction derived from outpatient care use, in comparison to those from wealth quintile 1, at 5% significance level.

Table 4.3.1: In-and outpatient care -OLS regression models

OLS VARIABLES	(1) INPATIENT CARE	(2) OUTPATIENT CARE
AGE	0.002	0.005
	(0.006)	(0.004)
GENDER (comparison = male)		
Female	0.183	0.099
	(0.231)	(0.135)
RACE (comparison = African)		
White	0.177	1.004***
	(0.440)	(0.304)
Coloured	0.575**	0.049
	(0.292)	(0.209)
Indian	-1.220	0.052
	(0.759)	(0.388)
FOREIGN (comparison = no)		
Yes	-0.743	1.482
	(1.038)	(0.937)
RESIDENCE (comparison = urban formal)		
Urban informal	0.181	-0.080
	(0.314)	(0.282)
Rural informal (tribal)	0.475	0.223
	(0.340)	(0.221)
Rural formal (Farms)	0.311	0.580***
	(0.362)	(0.198)
PROVINCE (comparison = Western Cape)		
Eastern Cape	-0.391	-0.336
	(0.357)	(0.253)
Northern Cape	-0.630*	-0.185
	(0.329)	(0.212)

Free State	0.292	0.451
	(0.520)	(0.371)
KwaZulu Natal	0.531	0.024
	(0.392)	(0.271)
North West	0.268	-0.052
	(0.509)	(0.340)
Gauteng	0.059	-0.803***
	(0.361)	(0.281)
Mpumalanga	0.671	-0.273
	(0.440)	(0.454)
Limpopo	-0.696	-0.275
	(0.483)	(0.304)
PUBLIC/PRIVATE CARE (comparison = public care)		
Private care	2.501***	1.106***
	(0.510)	(0.199)
MEDICAL INSURANCE (comparison = no)		
Yes	-0.581	0.661***
	(0.459)	(0.215)
FREE CARE (comparison = no)		
Yes	0.304	-0.374*
	(0.253)	(0.192)
TIME	0.000	0.012
	(0.022)	(0.015)
OUTPATIENT WORKER (comparison = Doctor)		
Nurse/midwife		0.021
		(0.165)
Other		0.042
		(0.291)
WEALTH QUINTILE (comparison = quintile 1)		
Wealth quintile 2	-0.115	0.131
	(0.324)	(0.224)
Wealth quintile 3	-0.286	0.023
	(0.335)	(0.225)

Wealth quintile 4	0.135	0.202
	(0.365)	(0.239)
Wealth quintile 5	0.530	0.617**
	(0.397)	(0.276)
Constant	-1.251**	-0.711*
	(0.511)	(0.369)
Observations	731	1,979
R-squared	0.230	0.228
F-value	0.000	0.000

***Note:** Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

From the Table 4.3.1 results, both models were significant at 1%. Notably, participants were significantly more satisfied with using private care facilities than public care facilities for both inpatient and outpatient care.

However, the models had a few differences to mention in regard to the statistical significance of individual covariates. In the inpatient OLS model, it is Coloured participants who were significantly more satisfied than Black participants, whereas for the outpatient OLS, White respondents were significantly more satisfied with care than the comparison group Black participants. The outpatient OLS model had more significant covariates than the inpatient OLS, including the addition of access to medical insurance and wealth quintile five in the outpatient OLS model.

4.4 MULTIVARIATE PROBIT REGRESSION MODELS

4.4.1 INPATIENT AND OUTPATIENT SATISFACTION

i. SATISFACTION WITH INPATIENT CARE

The Probit model was first used to predict whether the respondent would be more or less likely to be satisfied with inpatient care services (Table 4.4.1) . The overall model was significant at 5% level of significance (p-value = 0.029). Living in Limpopo province; and Wealth quintile two and three the significant explanatory variables in the model.

The probability of satisfaction for participants from Limpopo province was more likely to be less than that of participants from Western Cape province, at 5% significance level. Households classified in wealth quintiles two and three were less likely to be satisfied with inpatient care compared to those in wealth quintile 1, both at the 5% level of significance.

ii. SATISFACTION WITH OUTPATIENT CARE

Likewise, the Probit model estimated the probability of satisfaction among participants who received outpatient care. The model was significant at 1% significance level. Residing in Rural formal (farms); living in Northwest and Gauteng provinces; using Private care were all statistically significant explanatory variables.

Respondents who used private healthcare facilities for outpatient care, were more likely to be satisfied than those who used public healthcare facilities, this was highly significant, at 1% level of significance. Those who resided in rural formal (farms), were more likely to be satisfied with care than those who lived in urban formal areas, at the 5% level of significance.

Participants from both North West and Gauteng provinces were less likely to be satisfied with outpatient care compared to those from Western Cape province, the results were significant at 1% and 5% significance level, respectively. The rest of the variables made no significant influence in the model.

Table 4.4.1: In- and outpatient care – Probit regression models

PROBIT VARIABLES	(1) INPATIENT CARE	(2) OUTPATIENT CARE
AGE	-0.000	0.005*
	(0.004)	(0.003)
GENDER (comparison = male)		
Female	-0.144	0.021
	(0.200)	(0.109)
RACE (comparison = African)		
White	0.006	-0.035
	(0.343)	(0.271)
Coloured	-0.080	-0.158
	(0.275)	(0.211)

Indian	0.756*	0.241
	(0.408)	(0.265)
FOREIGN (comparison = no)		
Yes	0.094	-
	(0.578)	
RESIDENCE (comparison = urban formal)		
Urban informal	0.361	-0.087
	(0.256)	(0.177)
Rural informal (tribal)	0.051	0.262
	(0.230)	(0.165)
Rural formal (farms)	0.418	0.340**
	(0.282)	(0.167)
PROVINCE (comparison = Western Cape)		
Eastern Cape	0.009	-0.076
	(0.318)	(0.256)
Northern Cape	-0.108	0.091
	(0.318)	(0.201)
Free State	-0.072	-0.386
	(0.342)	(0.322)
KwaZulu Natal	-0.393	0.237
	(0.338)	(0.278)
North West	-0.363	-0.958***
	(0.347)	(0.260)
Gauteng	-0.581**	-0.603**
	(0.292)	(0.260)
Mpumalanga	0.074	-0.389
	(0.354)	(0.315)
Limpopo	-0.665**	-0.349
	(0.326)	(0.283)
PUBLIC/PRIVATE CARE (comparison = public care)		
Private care	0.684	0.767***
	(0.467)	(0.200)
MEDICAL INSURANCE (comparison = no)		
Yes	-0.680	0.185
	(0.429)	(0.235)
FREE CARE (comparison = no)		
Yes	0.028	-0.101

	(0.214)	(0.149)
TIME	0.013	0.029*
	(0.023)	(0.015)
OUTPATIENT WORKER (comparison = Doctor)		
Nurse/midwife		-0.035
		(0.122)
Other		-0.050
		(0.229)
WEALTH QUINTILE (comparison = quintile 1)		
Wealth quintile 2	-0.692**	0.051
	(0.274)	(0.152)
Wealth quintile 3	-0.539*	0.005
	(0.275)	(0.164)
Wealth quintile 4	-0.089	0.282
	(0.290)	(0.173)
Wealth quintile 5	-0.357	0.318
	(0.380)	(0.218)
Constant	1.698***	0.801**
	(0.409)	(0.318)
Observations	715	1,967
Pseudo R-squared	0.092	0.140
Chi2 test (p-value)	0.029	0.000

***Note:** Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The two models were significant at different levels, the inpatient satisfaction model was significant at 5% while outpatient was at 1%. The satisfaction with inpatient care Probit model, had fewer significant explanatory variables than the satisfaction with outpatient care model. While, Limpopo, Wealth quintile two and three; significantly influenced inpatient satisfaction with care, The outpatient model was notably influenced by, the type of healthcare facility (private care), Rural formal (farms); Northwest and Gauteng provinces.

4.4.2 OVERALL SATISFACTION WITH HEALTHCARE SERVICES

The overall model was highly significant at 1%. Participants who used both public and private care services, public care services alone, or private care services alone, during

the past 12 months, were more likely to be satisfied with the provision of healthcare services to their areas than those who made no use (base category) of healthcare services during the same period. The results were at the 5%, 1% and 1% significance level, respectively. Noticeably, household unmet health need had no significant influence on overall satisfaction with healthcare services, hence there was no statistical association could be established between unmet health need and overall satisfaction with care. Other significant covariates were being White; living in Eastern Cape; Free State; North West; Gauteng and Limpopo provinces; and access to health insurance.

White individuals were more likely to be satisfied with the provision of healthcare services in their areas than Black were in their areas. This was highly significant at 1% level. Respondents from Eastern Cape, Free State, North West, Gauteng and Limpopo were less likely satisfied with provision than the ones from Western Cape (base province), significant at 1%, 1%, 1%, 5% and 1% respectively.

Finally, households who had medical insurance were significantly (at 1% level), more likely to be satisfied with healthcare services provision compared to households without medical insurance.

Table 4.4.2: Overall satisfaction with healthcare services – probit model

PROBIT MODEL	**TREATMENT INDICATOR**
	(1)
OVERALL SATISFACTION	**Private and Public use**
TREATMENT VARIABLE	
PRIVATE PUBLIC USE (comparison = no use)	
Public care	0.203***
	(0.054)
Private care	0.248***
	(0.080)
Public and private care	0.143**
	(0.062)
EXPLANATORY VARIABLES	
AGE	0.008
	(0.001)

GENDER (comparison = male)	
Female	-0.005
	(0.043)
RACE (comparison = African)	
White	0.315***
	(0.117)
Coloured	-0.078
	(0.082)
Indian	0.021
	(0.129)
Other (dropped)	-
FOREIGN (comparison = no)	
Yes	-0.141
	(0.220)
RESIDENCE (comparison = urban formal)	
Urban informal	0.027
	(0.070)
Rural informal(tribal)	0.025
	(0.066)
Rural formal (farms)	0.143*
	(0.080)
PROVINCE (comparison = Western Cape)	
Eastern Cape	-0.265***
	(0.096)
Northern Cape	-0.163
	(0.104)
Free State	-0.392***
	(0.103)
KwaZulu Natal	-0.090
	(0.093)
North West	-0.795***
	(0.096)
Gauteng	-0.203**
	(0.096)
Mpumalanga	0.065
	(0.108)

Limpopo	-0.287***
	(0.105)
UNMET NEED (comparison = no)	
Yes	-0.075
	(0.065)
HOUSEHOLD INSURANCE (comparison = no)	
Yes	0.337***
	(0.073)
HOUSEHOLD AFFORDABILITY (comparison = no)	
Yes	-0.059
	(0.060)
WEALTH QUINTILE (comparison = quintile 1)	
Wealth quintile 2	-0.002
	(0.067)
Wealth quintile 3	-0.016
	(0.068)
Wealth quintile 4	-0.061
	(0.076)
Wealth quintile 5	0.010
	(0.101)
Constant	0.655***
	(0.111)
Observations	7,405
Pseudo R-Squared	0.050
Chi2 test (p-value)	0.000

***Note:** Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.4.3 OVERALL RATING OF HEALTHCARE SERVICES

Respondents public care alone or private care alone, during the past 12 months were significantly more likely to highly rate delivery of healthcare services in their areas than respondents who did not make use of health facilities during the same period. The findings were significant at, 5% and 1% level, respectively. Crucially, household unmet health need had no significant statistical influence on overall rating on delivery of

healthcare services, therefore there was no association between the two. White participants were more likely to rate the health services higher, compared to Black participants, at 1% level of significance.

Participants from the following provinces: Eastern Cape, Free State, and North West were less likely to highly rate the delivery of healthcare services in their respective provinces better/higher compared to participants from Western Cape, the significance levels in the order of provinces, were 5%, 1%, and 1% respectively.

Households, with medical insurance were more likely to highly rate health services compared to households without medical aid , at 1% significance level. Households who struggled affording medical costs were less likely to highly rate health services compared to those who could afford, also at 1% significance level.

Table 4.4.3: Overall rating of healthcare services – probit model

PROBIT MODEL	**TREATMENT INDICATOR**
	(1)
OVERALL RATING	**Private public use treatment**
TREATMENT VARIABLE	
PRIVATE PUBLIC USE (comparison = no use)	
Public care	0.128**
	(0.053)
Private care	0.251***
	(0.077)
Public and private care	0.107*
	(0.060)
EXPLANATORY VARIABLES	
AGE	-0.000
	(0.001)
GENDER (comparison = male)	
Female	0.006
	(0.043)
RACE (comparison = African)	
White	0.367***
	(0.113)
Coloured	-0.006

	(0.079)
Indian	-0.110
	(0.125)
Other	-
FOREIGN (comparison = no)	
Yes	-0.201
	(0.213)
RESIDENCE (comparison = urban formal)	
Urban informal	-0.007
	(0.069)
Rural informal(tribal)	0.114*
	(0.066)
Rural formal (farms)	0.120
	(0.077)
PROVINCE (comparison = Western Cape)	
Eastern Cape	-0.232**
	(0.092)
Northern Cape	-0.140
	(0.101)
Free State	-0.393***
	(0.101)
KwaZulu Natal	-0.065
	(0.090)
North West	-0.743***
	(0.094)
Gauteng	-0.076
	(0.093)
Mpumalanga	0.142
	(0.106)
Limpopo	-0.196*
	(0.103)
UNMET NEED (comparison = no)	
Yes	0.029
	(0.063)
HOUSEHOLD INSURANCE (comparison = no)	
Yes	0.251***

	(0.073)
HOUSEHOLD AFFORDABILITY (comparison = no)	
Yes	-0.169***
	(0.059)
WEALTH QUINTILE (comparison = quintile 1)	
Wealth quintile 2	-0.010
	(0.066)
Wealth quintile 3	0.050
	(0.067)
Wealth quintile 4	-0.100
	(0.075)
Wealth quintile 5	0.079
	(0.099)
Constant	0.581***
	(0.109)
Observations	7,353
Pseudo R-Squared	0.050
Chi2 test (p-value)	0.000

***Note:** Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.5 TREATMENT EFFECTS IPWRA RESULTS

4.5.1 SATISTISFCTION WITH INPATIENT CARE AND OUTPATIENT CARE

i. INPATIENT CARE

The IPWRA technique was used to estimate treatment effects for satisfaction with inpatient care, from utilising private and public care during the past 12 months. The dependent variable for the outcome was binary, determining whether participants were satisfied or not, the treatment dependent variable was also binary (private or public care) with public sector care as the control group. Results are reported in Table 4.5.1.

The Average Treatment Effects (ATE) results revealed no statistically significant difference in satisfaction levels if all participants had used private sector care compared to if all participants had used public sector care during the past 12 months.

The tebalance overidentification showed that we could not reject the null hypothesis that the IPWRA model balance the covariates (p > 0.994). However, the standardized weighted differences for all the covariates were not close to zero and the weighted variance ratios were not close to one, therefore not all of the covariates were equally balanced.

Meanwhile, the Average Treatment Effects on the Treated (ATET) results revealed that the actual mean satisfaction with inpatient care was 29.33% higher for participants who used private sector care, compared to the satisfaction levels of participants who used public sector care, in the control group who had 60.29% level of satisfaction during the past 12 months. The ATET results were highly significant at (1%) level.

The tebalance overidentification for ATET showed that we could not reject the null hypothesis that the IPWRA model balance the covariates (p > 0.680). The weighted standardized differences and the weighted variance ratios showed that only (Gender) and (Foreign) were balanced by the IPWRA treatment model and the rest were not.

When the outcome model was linear, the ATE results showed that if all participants had used private health sector for inpatient care have scored 1.859 standard deviations higher on the index than they would if they had used public health sector for inpatient care during the past 12 months. The level of satisfaction with public care was statistically significantly below the mean value of zero, which is highlighted by the negative coefficient for public care as highlighted on Table 4.5.2. The results were highly statistically significant at 1% level. The ATET model results showed that there was no significant difference in satisfaction levels between public and private care for inpatient care satisfaction outcomes.

ii. OUTPATIENT CARE

The ATE showed that the average satisfaction with outpatient care if all participants had used private health sector care would potentially be 9.47% higher than the average satisfaction level (85.05%) if the same participants had used public sector care during the past 12 months. Highly significant at 1%. Results are in Table 4.5.1.

The tebalance overidentification showed that we reject the null hypothesis that the IPWRA model balance the covariates (p > 0.000). However, the weighted

standardized differences for most covariate were close to zero and the variance ratios were close to one indicating that matching on propensity scores did balance the covariates. (Age), (Wealth quintile) and (Foreign) could not be balanced by this model.

The ATET showed the actual average satisfaction for participants who used private health sector for outpatient care would be 6.14% higher, compared to the level of satisfaction (90.60%) for participants who used public health sector, in the control group, during the past 12 months for outpatient care. The results were statistically significant at 1% level.

The tebalance overidentification showed that we could not reject the null hypothesis that the IPWRA treatment model balance the covariates ($p > 0.083$). The standardized differences were all close to zero and the variance ratios were close to one except for variables (Age) and (Foreign) indicating that the IPWRA treatment model balanced the covariates. The differences in weighted means were negligible.

The linear outcome model revealed that there was no statistically significant difference between satisfaction with public care and private care from both the ATE and ATET results.

Table 4.5.1: Overall Satisfaction (Inpatient and Outpatient) By Public and Private Care- IPWRA models

TREATMENT INDICATOR [PUBLIC PRIVATE]	OVERALL INPATIENT CARE SATISFACTION	OVERALL OUTPATIENT CARE SATISFACTION
POmean		
Public care	0.760***	0.851***
	(0.050)	(0.013)
Private care vs Public care	-0.148*	0.095***
	(0.081)	(0.028)
ATE		
Private care vs Public care	-0.148*	0.095***
	(0.081)	(0.028)
POmean		
Public care	0.603***	0.906***
	(0.073)	(0.021)
Private care vs public care	0.293***	0.061***
	(0.087)	(0.023)
ATET		
Private care vs Public care	0.293***	0.061***
	(0.087)	(0.023)

Observations	715	1,982
Estimator	IPWRA	IPWRA
Outcome Model	Probit	Probit
Treatment Model	Probit	Probit

*__Note:__ Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4.5.2: Composite index satisfaction (in- and outpatient care) - IPWRA

Treatment Indicator [Public private]	Composite index of satisfaction with inpatient care	Composite index of satisfaction with outpatient care
POmean		
public care	-0.835***	-0.240
	(0.288)	(0.153)
ATE		
private care vs public care	1.859***	0.829***
	(0.328)	(0.215)
POmean		
public care	-0.729***	0.468*
	(0.750)	(0.267)
ATET		
Private care vs public care	2.333***	0.980***
	(0.767)	(0.283)
Observations	731	1,979
Estimator	IPWRA	IPWRA
Outcome Model	Linear	Linear
Treatment Model	Probit	Probit

***Note:** Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.5.2 OVERALL SATISFACTION AND OVERALL DELIVERY

Estimating for overall satisfaction with the provision of healthcare services and overall rating on delivery of these services used the same covariates used in both the outcome and treatment models. The dependent variables in the treatment models were the same for both overall satisfaction and overall delivery. This section carried out analysis for ATE and ATET for overall satisfaction and overall rating on healthcare delivery according to use of all healthcare services. Levels of overall satisfaction and

overall delivery were generated for participants who used public sector care alone, private sector care alone and both public and private sector care during the past 12 months and the level of satisfaction for user participants was compared to the level of satisfaction for individuals who made no use of healthcare services during the same time period. Hence the treatment dependent variable had four levels.

i. OVERALL SATISFACTION WITH HEALTHCARE

The IPWRA treatment model estimated overall satisfaction with provision of healthcare services in their areas using the Probit model for the outcome model, while the treatment model had a multilevel dependent variable and therefore was estimated using the multinomial logit by default. Summary of results in Table 4.5.3.

The ATE showed that the average overall satisfaction with provision of healthcare services if all participants were to use public care only would be 4.44% higher than the average overall satisfaction level of 71.73 % that would occur if all participants would have made no use of healthcare services during the past 12 months, significant at 5% level. If all the respondents had used private care only the ATE showed their average overall satisfaction would potentially be 7.73% higher than that if all the participants had used no healthcare services, also significant at 5% level. However there was no statistically significant difference in satisfaction level if all participants had used both public and private health sector versus if all participants had not used healthcare services during the past 12 months. with healthcare provision.

Most of the weighted standardized differences were close to zero and the weighted variance ratios were close to one indicating that the IPWRA treatment model balanced almost all the covariates, except for (Foreign) were the weighted variance was considerably less than one for public care and private care.

The ATET showed the actual average percentage of participants satisfied with the provision of healthcare services was 5.60% higher for participants who used only public sector care only; 8.26% higher for participants who used private sector care only and 4.89% higher for participants who used both public and private sector care, than the actual mean satisfaction level of 69.27%, for participants who made no use of healthcare services in the control group, during the past 12 months. The findings were highly significant at 5%.

Again, most of the weighted standardized differences were close to zero and the weighted variance ratios were also almost close to one proving that IPWRA treatment model did balance most of the covariates. Covariate (Foreign) was the exception.

Table 4.5.3: Overall Satisfaction and Overall Delivery: Public and Private Care

[PRIVATE PUBLIC USE]	OVERALL SATISFACTION WITH HEALTHCARE SERVICES	OVERALL RATING OF HEALTHCARE SERVICES
POmean		
Private public use		
none	0.717***	0.706***
	(0.010)	(0.010)
ATE		
public care vs none	0.044**	0.017
	(0.020)	(0.021)
Private care vs none	0.076**	0.053*
	(0.030)	(0.032)
Public and private vs none	0.036*	0.021
	(0.019)	(0.020)
POmean		
Private public use		
none	0.693***	0.683***
	(0.012)	(0.012)
ATET		
public care vs none	0.056***	0.035**
	(0.017)	(0.018)
Private care vs none	0.083**	0.055
	(0.040)	(0.041)
Public and private care vs none	0.049**	0.035
	(0.021)	(0.022)
Observations	7,407	7,355
Estimator	IPWRA	IPWRA
Outcome Model	Probit	Probit
Treatment Model	Multinomial logit	Multinomial logit

*__Note:__ Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

ii. OVERALL RATING OF HEALTHCARE DELIVERY

The ATE results revealed that there were no statistically significant differences in rating the delivery of health services if all participants had used public sector care only, private sector care only or both public and private sector care versus if the same participants had made no use of healthcare services during the past 12 months.

The variable (Foreign) was the only one with a significantly less than one weighted variance ratio. The weighted standardized differences for the covariates were close to zero and their weighted variance ratios were close to one indicating that these covariates were balanced.

Similarly, the ATET showed no statistically significant differences in rating the delivery of health services between participants who actually used private care only, public care only and both public and private care all compared to participants who made no use of any healthcare services during the past 12 months.

(Foreign) variable was the only unbalanced covariate while the rest of the covariates were balanced. The weighted standardized differences for most covariates were close to zero and their weighted variance ratios were close.

Section 5: DISCUSSION

5.1 LEVELS OF SATISFACTION

The level of overall satisfaction with healthcare services results for all participants (i.e. users and non-users of healthcare services) during the past 12 months, according to the univariate analysis was 72%, while overall rating on delivery of healthcare services was 70%. These findings were quite different from the General Household Survey (GHS) by Jacobsen and Hasumi (2014) for South Africa were (88.5%) of the participants were (somewhat or very, satisfied) and Odonkor et. al. (2019) for Accra in Ghana were (98.8%) were also (somewhat or very, satisfied). The differences could be partly explained by the fact that the sample only consisted of healthcare users in South Africa and strictly patients from Accra not necessarily nationally representative.

However, the level of overall satisfaction for healthcare users only was significantly higher than the reported overall satisfaction level for all participants. This referred to participants who used healthcare services for either inpatient or outpatient care, during the past 12 months. The satisfaction results for healthcare users were similar to the findings from the GHS, both inpatient and outpatient care satisfaction were above 85%. Zastowny et al. (1989) demonstrated a positive association between healthcare use and satisfaction, were satisfaction was used as the outcome variable and this study concurs with the findings since healthcare users had a significantly higher level of overall satisfaction compared to non-users.

The study revealed no statistical association between healthcare satisfaction and unmet health need, therefore failed to accept H2: (Unmet health needs are negatively associated with overall satisfaction with care). Even though this study established no correlation between healthcare satisfaction and unmet health need, there was a potential endogeneity problem, for instance participants who experienced very poor service might have decided not to seek care at the next episode illness and hence would have reported unmet health need. This study could not statistically confirm such findings.

5.2 SERVICES ATTRIBUTES ASSOCIATED WITH DISSATISFACTION

Out of a total of nine satisfaction attributes, the study identified the four least rated attributes by healthcare users during the past 12 months. The results were obtained from the uni-variate and bi-variate analysis. Dissatisfaction represented participants who rated service attribute either (1) very bad or (2) bad for inpatient and outpatient care. In terms of overall satisfaction, the level of dissatisfaction was determined as (100% minus satisfied portion). Table 5.2.1 below gives a detailed breakdown on the three least preferred service attributes i.e. highest level of dissatisfaction per each type of care (in or outpatient), sector (public and private) and wealth category. However, in overall waiting time, inclusion in decisions and availability of medication were the three attributes with the least satisfaction.

Table 5.2.1: Main contributors to dissatisfaction

UNI-VARIATE RESULTS		**BI-VARIATE RESULTS**					
Inpatient care	**Outpatient care**	**Inpatient care**			**Outpatient care**		
		Public care	**Private care**	**Wealth quintile**	**Public care**	**Private care**	**Wealth quintile**
Waiting time	Waiting time	Waiting time	Inclusion in decisions	Waiting time	Waiting time	Waiting time	Waiting time
Inclusion in decisions	Avail of medication	Inclusion in decisions	Waiting time	Inclusion in decisions	Availability of tests	Ease to see Preferred provider	Avail of medication
Clarity on med condition	Avail of diagnostics	Talking privately	Avail of medication	Availability of tests	Inclusion in decisions	Inclusion in decisions	Avail of diagnostics

From the bivariate results, long waiting times was the attribute with the highest level of dissatisfaction among participants for both inpatient and outpatient care. The actual dissatisfaction rates were very similar to those in the GHS study, Hasumi and Jacobsen (2014). Numerous patient satisfaction and utilisation researches have verified long

waiting times, they were displeased with. In Botswana, Gaborane, Bamidele et al. (2010) participants were also highly dissatisfied with this feature. Anand and Sinha (2010), Ashrafun and Uddin (2011), Nunu and Munyewende (2017), Liu and Mao (2019), among many authors, have all documented long waiting times as the service attribute with the most level of dissatisfaction among healthcare users. In Bangladesh, the average waiting time for one to be admitted for inpatient care was 6.1 hours (Ashrafun & Uddin, 2011).

Patients' involvement in the decision-making process about their own medical condition was highlighted as significant for two main reasons, i.e. patients want to be informed about other treatment options and in general they want to be involved when there is a variety of treatment options, this was according to Guadagnoli and Ward (1998). A study by Beaver et al. (1996), showed that 20.0% of women diagnosed with breast cancer want to play active role in decision making, while 28.0% wanted a shared approach. Study by showed a high number of patients, dissatisfaction with not being fully included in decision making. The GHS (2010) highlighted availability of drugs as a major source of dissatisfaction. Medication should be a top priority, reason to use healthcare services in the first place.

On the other hand, cleanliness of the health facility was one of the top service attributes participants were most satisfied with for both inpatient care and outpatient care. A number of studies, patients most appreciated cleanliness such as in India and Chang and Chang (2013) emphasized on the importance of good hygienic facilities as key driver of improving the quality of care and hence should be taken seriously

5.3 PUBLIC VERSUS PRIVATE SECTOR CARE

Strictly focusing on participants who used either public or private sector care for inpatient or outpatient care needs during the past 12 months, the IPWRA model revealed significantly large differences in satisfaction levels between the two healthcare sectors. The ATET results demonstrated that satisfaction outcomes for participants who used private sector care where much higher than those who used public sector care for inpatient care, while for outpatient care, the difference in satisfaction levels was very close even though private care was still better. This study presented that more than 70% of the respondents used public sector care for inpatient

and outpatient health needs, respectively. Satisfaction levels with outpatient care was levels were quite high for both sectors.

The findings for ATET were generally similar overall to those from the GHS by Jacobsen and Hasumi (2014), participants who used private sector care were more satisfied (97.3%) than those who public sector care (84.6%). In addition, when comparing the level of satisfaction between the two sectors based on service attributes, the study revealed that private sector care had higher levels of satisfaction on all service attributes compared to public sector care from the bi-variate results.

Javed and Liu (2018), study also revealed patients are more likely to be satisfied from private health facilities in Pakistan. Likewise, Owuru-Frimpong et al. (2010) generated same results between public and private health services in London, U.K where private care users experienced higher satisfaction levels, compared to public care users, with service climate factors/attributes such as, time taken to get appointments, getting attention from doctors and opening hours. On top of that private care facilities were found to be responsive in emergencies (short notice), less difficulty to set-up appointments and more agreeable opening hours. These features are common for many healthcare systems across the world and can be extended as relevant to the South African health system. Another possible reason for lower satisfaction levels for public care services is the poor quality of public health services as noted before by Abaerei et. al. (2017) for Gauteng.

It is evident that in the South African context participants were indeed more satisfied with private sector care compared to public sector, even more so with inpatient care from private sector than from public sector. Therefore from this standpoint our results support Hypothesis 1 (Participants are more satisfied with private sector care than public sector care). Even though, the level of satisfaction is a good benchmark of the quality of healthcare, the scores alone, should not be used as the sole determinants of the quality of care, but rather incorporate some of the features such as patient-centeredness, equity and efficiency as defined by the Institute of medicine.

Most participants in the sample utilised public sector care for their health needs. Thus inefficiencies in health delivery are inevitable as highlighted earlier from the problems associated with public healthcare provincial analysis for Free State, by Malakoane et. al. (2020). A huge number of participants used public sector care for inpatient care

and outpatient care health needs. Hasumi and Jacobsen (2014) also had same results with very similar utilisation rates between the public and private health sectors, 73.6% and 26.4% respectively. In Ghana, public care facilities were also the most utilised compared to private care facilities (Awoke et al. 2017).

Participants who had access to medical insurance were more likely to be satisfied with, overall healthcare including inpatient care, than uninsured respondents. Access to medical insurance enabled participants to use better and improved private healthcare services, which generally increase the level of satisfaction. In Accra Odonkor et al. (2019) results demonstrated a huge significant gap in the levels of satisfaction between holders of health insurance and non-holders. To add, Jang (2013) stated that the likelihood of satisfaction with health service was considerably greater when participants had health coverage. In contrast, households who struggled affording healthcare were significantly less likely satisfied with healthcare services and were more likely to get free care from public care facilities. In many utilisation studies, high user fees were associated with low demand for healthcare and consequently derived level of satisfaction, for instance in the Nyeri district in Kenya by Ndonga (2018).

White, Indian and Coloured participants were significantly more satisfied with healthcare services than Black African participants. Other population groups were highly likely to use private sector care while black African individuals were more likely associated with use of public sector care services for free. The influence of race on overall satisfaction with healthcare has been cited by a number of authors before. In the South African context, Myburgh et el. (2005) revealed that white and high socioeconomic status respondents were more likely to report excellent health service compared to Black and low socioeconomic respondents, respectively. Jacobsen and Hasumi (2014), and Hasumi and Jacobsen (2014), also revealed that satisfaction rates were lower for black South Africans and black Africans reported more problems with health service compared to other population groups, in the respective studies. The two studies also cited that the differences in satisfaction outcomes was due to use of different health facilities, private for white and public for blacks. Despite these previous studies using different national surveys (1998 versus 2010), the results suggested a persistent trend in satisfaction outcomes, there is need for an equity-driven healthcare system.

Respondents in wealth quintiles two, three and four were less likely to be satisfied with inpatient care compared to participants from wealth quintile one. Due to struggles in affording healthcare, respondents were highly likely to use of free care from public health facilities, hence were more satisfied from receiving any healthcare at all. The middle wealth quintiles struggled to cover medical costs as they might have wanted better care. The wealthiest individuals were more likely to use private sector care services, as also documented by Myburgh et el. (2005) and Hasumi and Jacobsen (2014).

There is need for overall improvement in public health delivery, especially with inpatient care facilities, to close the gap between two sectors and have a competitive healthcare system for all forms of care.

Section 6: CONCLUSION

The study achieved the goal of investigating healthcare satisfaction in relation to healthcare utilisation patterns for users and non-users of healthcare services in South Africa. Crucially the analysis showed higher levels of satisfaction with healthcare from using private sector care than from public sector care, the difference was even more so for participants who needed inpatient care. Even though the levels of satisfaction in this study were often high across different comparisons, this study hugely assisted in exposing some of the major problems within the South African health system.

Firstly, the sizeable gap in the satisfaction levels between the two main health sectors especially in delivering inpatient care, is reflective of the differences in performances and or efficient levels in providing the best health care. The high utilisation rates of the public health sector highlight the challenges that most South Africans face in accessing good quality health care as illustrated by lack of medical insurance for the majority of the population especially for black Africans compared to individuals from other population groups (White, Indian and Coloured). Affordability was also a significant concern for individuals in different wealth classes. Affordability and lack of medical insurance were two of the major factors to increase the probability of experiencing unmet health needs.

This study also revealed the service attributes that needed addressing, long waiting times, inclusion of patients in decisions and critically availability of medication, which some studies have highlighted as major factor for failure to get treatment.

Section 7: REFERENCES

Abera Abaerei, A., Ncayiyana, J. and Levin, J., 2017. Health-care utilization and associated factors in Gauteng province, South Africa. *Global health action*, *10*(1), 1-9.

Anand, S. and Sinha, R.K., 2010. Quality differentials and reproductive health service utilisation determinants in India. *International journal of health care quality assurance, 23(8),* 718-729.

Ashrafun, L. and Uddin, M.J., 2011. Factors determining inpatient satisfaction with hospital care in Bangladesh. *Asian social science*, *7*(6), 15-24.

Awoke, M.A., Negin, J., Moller, J., Farell, P., Yawson, A.E., Biritwum, R.B. and Kowal, P., 2017. Predictors of public and private healthcare utilization and associated health system responsiveness among older adults in Ghana. *Global health action*, *10*(1), 1-10.

Bamidele, A.R., Hoque, M.E. and Van Der Heever, H., 2011. Patient satisfaction with the quality of care in a primary health care setting in Botswana. *South African Family Practice*, *53*(2), 170-175.

Beaver, K., Luker, K.A., Owens, R.G., Leinster, S.J., Degner, L.F. and Sloan, J.A., 1996. Treatment decision making in women newly diagnosed with breast cancer. *Cancer nursing*, *19*(1), 8-19.

BUSINESSTECH 2017., *The quality of South Africa's healthcare vs the world*, viewed 10 February 2021, from https://businesstech.co.za/news/lifestyle/175981/the-quality-of-south-africas-healthcare-vs-the-world/

Chang, W.J. and Chang, Y.H., 2013. Patient satisfaction analysis: Identifying key drivers and enhancing service quality of dental care. *Journal of Dental Sciences*, *8*(3), 239-247.

Chen, J. and Hou, F., 2002. Unmet needs for health care. *Health Rep*, *13*(2), 23-34.

Clignet, F., Houtjes, W., van Straten, A., Cuijpers, P. and van Meijel, B., 2019. Unmet care needs, care provision and patient satisfaction in patients with a late life depression: A cross-sectional study. *Aging & mental health*, *23*(4), 491-497.

Cohen, G., 1996. Age and health status in a patient satisfaction survey. *Social science & medicine*, *42*(7), 1085-1093.

Coyne, J. and Hilsenrath, P., 2001. Health system performance in South Africa vs. France: World health report 2000. *Safundi: The Journal of South African and American Comparative Studies*, *2*(1), 1-13.

Gill, L. and White, L., 2009. A critical review of patient satisfaction. *Leadership in health services, 22(1),* 8-19.

Gujarati, D.N. and Porter, D.C., 1999. *Essentials of econometrics* (Vol. 2). Singapore: Irwin/McGraw-Hill.

Gordon, T., Booysen, F. and Mbonigaba, J., 2020. Socio-economic inequalities in the multiple dimensions of access to healthcare: the case of South Africa. *BMC public health*, *20*(1), 1-13.

Guadagnoli, E. and Ward, P., 1998. Patient participation in decision-making. *Social science & medicine*, *47*(3), 329-339.

Hasumi, T. and Jacobsen, K.H., 2014. Healthcare service problems reported in a national survey of South Africans. *International journal for quality in health care*, *26*(4), 482-489.

Huber, C. 2015. Introduction to treatment effects in Stata: Part 1. The Stata Blog: Not Elsewhere Classified. http://blog.stata.com/2015/07/07/introduction-to-treatment-effects-in-stata-part-1/.

Institute of Medicine. *Crossing the Quality chasm: A New Health System for the 21st Century.* Washington DC: National Academy Press; 2001

Jackson, J.L., Chamberlin, J. and Kroenke, K., 2001. Predictors of patient satisfaction. *Social science & medicine*, *52*(4), 609-620.

Jacobsen, K.H. and Hasumi, T., 2014. Satisfaction with healthcare services in South Africa: results of the national 2010 General Household Survey. *The Pan African Medical Journal*, *18*(172), 1-11.

Jang, J.Y., 2013. Dental health services patient satisfaction analysis. *Journal of the Korea Academia-Industrial cooperation Society*, *14*(12), 6395-6402.

Javed, S.A. and Liu, S., 2018. Evaluation of outpatient satisfaction and service quality of Pakistani healthcare projects. *Grey Systems: Theory and Application, 8*(4), 462-480.

Jenkinson, C., Coulter, A., Bruster, S., Richards, N. and Chandola, T., 2002. Patients' experiences and satisfaction with health care: results of a questionnaire study of specific aspects of care. *Quality and safety in health care*, *11*(4), 335-339.

Khamis, K. and Njau, B., 2014. Patients' level of satisfaction on quality of health care at Mwananyamala hospital in Dar es Salaam, Tanzania. *BMC health services research*, *14*(1), 1-8.

Leung, Y.Y., Tam, L.S., Lee, K.W., Leung, M.H., Kun, E.W. and Li, E.K., 2009. Involvement, satisfaction and unmet health care needs in patients with psoriatic arthritis. *Rheumatology*, *48*(1), 53-56.

Liu, J. and Mao, Y., 2019. Patient satisfaction with rural medical services: a cross-sectional survey in 11 Western provinces in China. *International journal of environmental research and public health*, *16*(20), 1-15.

Magnussen, J., 2009. The Scandinavian healthcare system. *Medical Solutions. Essay Series: Healthcare Systems–Scandinavia,* 63-68.

Malakoane, B., Heunis, J.C., Chikobvu, P., Kigozi, N.G. and Kruger, W.H., 2020. Public health system challenges in the Free State, South Africa: a situation appraisal to inform health system strengthening. *BMC health services research*, *20*(58), 1-14.

Mayeye, F.B., Lewis, H.A. and Oguntibeju, O.O., 2010. An assessment of adolescent satisfaction with reproductive primary healthcare services in the Eastern Cape Province, South Africa. *The West Indian medical journal, 59(*3), 274-279.

Myburgh, N.G., Solanki, G.C., Smith, M.J. and Lalloo, R., 2005. Patient satisfaction with health care providers in South Africa: the influences of race and socioeconomic status. *International Journal for Quality in Health Care*, *17*(6), 473-477.

Ndonga, S.N., 2018. *Determinants of delays in the payment of private health insurance claims in Kenya* (Doctoral dissertation, Strathmore University).

Ngobeni, V., Breitenbach, M.C. and Aye, G.C., 2020. Technical efficiency of provincial public healthcare in South Africa. *Cost Effectiveness and Resource Allocation*, *18*(1), 1-19.

Nguyen, T.C. and Nguyen, T.T.M., 2014. Service quality and its impact on patient satisfaction: an investigation in vietnamese public hospitals. *Journal of Emerging Economies and Islamic Research*, *2*(1), 66-78.

Nteta, T.P., Mokgatle-Nthabu, M. and Oguntibeju, O.O., 2010. Utilization of the primary health care services in the Tshwane Region of Gauteng Province, South Africa. *PloS one*, *5*(11), 1-8.

Nunu, W.N. and Munyewende, P.O., 2017. Patient satisfaction with nurse-delivery primary health care services in Free State and Gauteng provinces, South Africa: A comparative study. *African journal of primary health care & family medicine*, 9(1), 1-8.

O'Donnell O, van Doorslaer E, Wagstaff A. Lindelow M, Analyzing Health Equity Using Household Survey Data: A guide to techniques and their implementation. Geneva: The World Bank; 2008.

Odonkor, S.T., Frimpong, C., Duncan, E. and Odonkor, C., 2019. Trends in patients' overall satisfaction with healthcare delivery in Accra, Ghana. *African journal of primary health care & family medicine*, *11*(1), 1-6.

Owusu-Frimpong, N., Nwankwo, S. and Dason, B., 2010. Measuring service quality and patient satisfaction with access to public and private healthcare delivery. *International Journal of Public Sector Management*.

Sanmartin, C., Houle, C., Tremblay, S. and Berthelot, J.M., 2002. Changes in unmet health care needs. *Health Rep*, *13*(3), 15-21.

Yaya, S., Bishwajit, G., Ekholuenetale, M., Shah, V., Kadio, B. and Udenigwe, O., 2017. Urban-rural difference in satisfaction with primary healthcare services in Ghana. *BMC health services research*, *17*(1), 1-9.

Zastowny, T.R., Roghmann, K.J. and Cafferata, G.L., 1989. Patient satisfaction and the use of health services: explorations in causality. *Medical care, 27(7)*, 705-723.

Section 8: APPENDICES

8.1 APPENDIX A: SURVEY QUESTIONNAIRE SECTION F

NO.	Question and Filters	CODING Categories
1	When was the last time you received health care from a private doctor/hospital/clinic?	Years ago …… Months ago……. Don't know……...1 Never……..2
2	When was the last time you received health care from a public/hospital/clinic?	Years ago …… Months ago……. Don't know……...1 Never……..2
3	When was the last time you needed health care from (from a doctor or hospital)?	Years ago …… Months ago……. Don't know……...1 Never……..2
4	The last time you needed health care, did you get health care?	Yes……...……1 No……...…….2
	IN-PATIENT CARE	
5	During the last 12 months, how many different times were you a patient in a hospital for at least one night?	Once…….…1 Two-Three times…….…….2 Four-Five times……...…….3 More than Five times……...…….4 None……..……...5 Don't know…….…….6
	OUTPATIENT CARE	
6	Over the past 12 months, did you receive any health care that did not include an overnight stay in hospital?	Yes……...…...1 No……...……2
7	Over the past 12 months, how many times in total did you receive health care or consultation in an out-patient care situation?	Once…….…1 Two-Three times…….…….2 Four-Five times……...…….3 More than Five times……...…….4 None……..……...5 Don't know……...6
8	What was the (most recent) outpatient healthcare facility you visited in the past 12 months?	Private doctor's office……..1 Private clinic or health care facility…….2 Private hospital…….3 Public clinic or health care facility…..…4 Public hospital……...5 Charity or church run clinic……6 Charity or church run hospital……...7 Home visit……8 Other (Specify)……...9
	INPATIENT and OUTPATIENT CARE UTILISATION	
9	What type of hospital/facility was it?	Public hospital……..…...1 Private hospital……..…..2 Charity of church run hospital……...3 Old persons home…….....4 Other specify……...5
10	How did you get there?	Private vehicle……..…..1 Public transportation……...2 Taxi…….…….…3 Ambulance or emergency vehicle…….4 Bicycle…….……..5 Walked……..6 Don't know…….....7
11	About long did it take you to get there?	Hours……. Minutes……. Don't know……..1
12	Who paid for this hospitalization?	Medical aid…….…1 Respondent…….2 Spouse/partner…….…….3 Son/daughter…….…4 Other family…….……...5 Non-family member…….……6 Hospitalisation was free…….……..7 Other (Specify)…….……..8
13	**How much did you or your family pay?**	
13a	Health care provider fees	**R**
13b	Medicines	**R**
13c	Tests	**R**
13d	Transport	**R**
13e	Other (Specify)……	**R**
14	About how much in total did you or your family pay out-of-pocket for this hospitalisation?	**R** Don't know……....1
15		Very satisfied……...…5 Satisfied……...4

	Overall, how satisfied were you with the care you received during your last [hospital] stay? (Inpatient care only)	Neither satisfied nor dissatisfied…….....3 Dissatisfied……..2 Very dissatisfied……..1 Don't know……..0
	INPATIENT AND OUTPATIENT HEALTHCARE SATISFACTION rating	
16	The amount of time you waited before being attend to?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
17	Your experience of being treated respectfully?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
18	How clearly healthcare providers explained things to you?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
19	Your experience of being involved in making decisions of your treatment?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
20	The way the healthcare services ensured that you could talk privately to providers?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
21	The ease with which you could see a provider you were happy with?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
22	The cleanliness in the health facility?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
23	The availability of medication in the health facility?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
24	The availability of tests in the health facility? (Inpatient care only)	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
25	The availability of diagnostics in the health facility? (Outpatient care only)	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1
26	In general, how satisfied were you with how the health care services were run in your area?	Very satisfied……5 Satisfied……4 Neither satisfied nor dissatisfied……3 Dissatisfied……2 Very dissatisfied……1
27	How did you rate the way health care was provided in your area?	Very good……5 Good…….4 Moderate……3 Bad……2 Very bad…….....1

8.2 APPENDIX B: TABLES AND FIGURES

8.2.1 DESCRIPTIVE ANALYSIS TABLES AND FIGURES

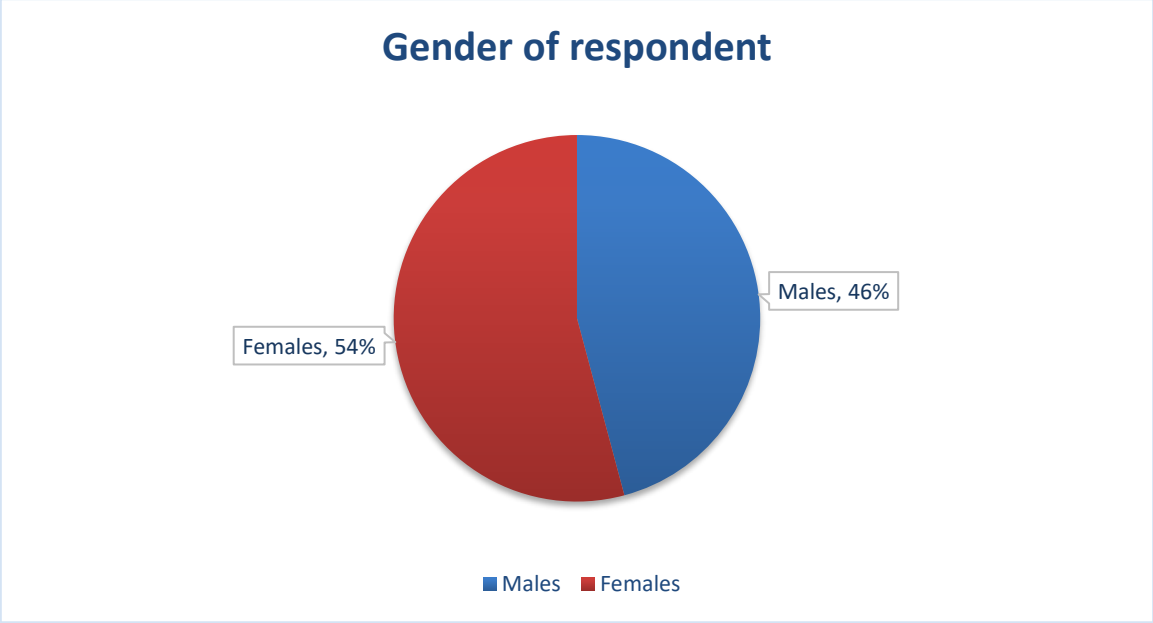

Figure 8.2:1: Gender

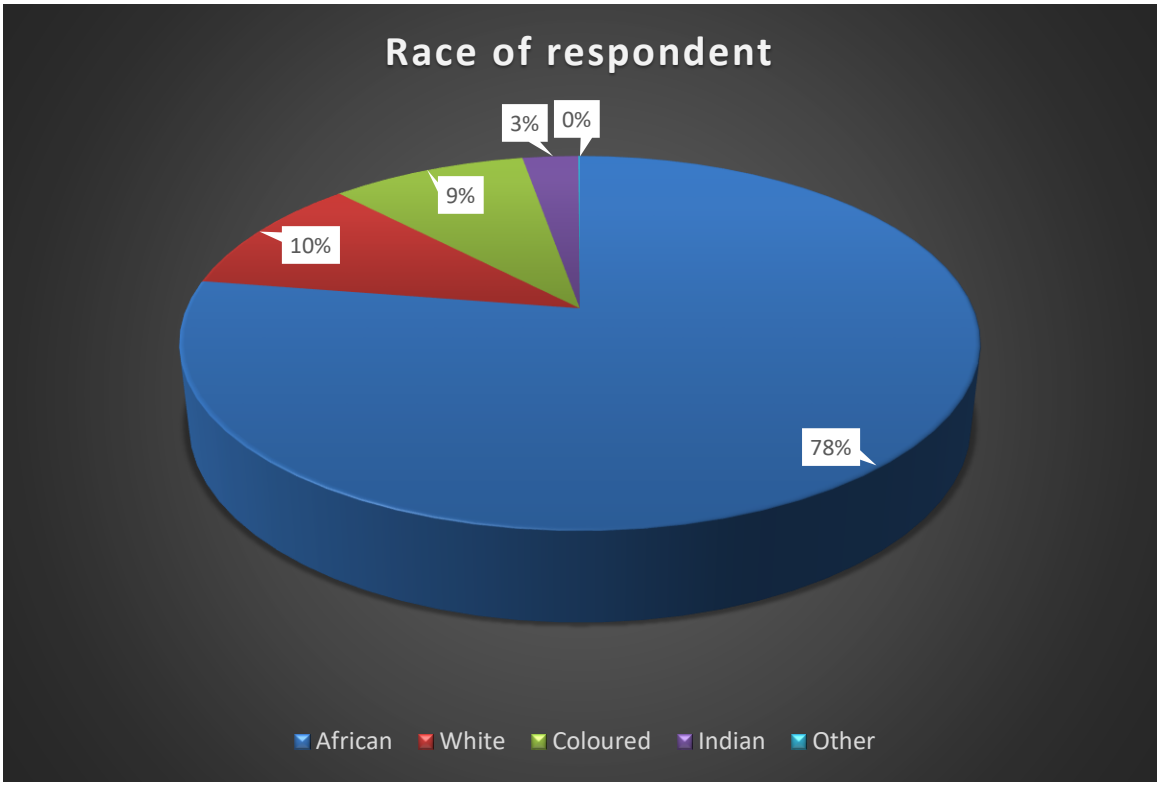

Figure 8.2:2: Race

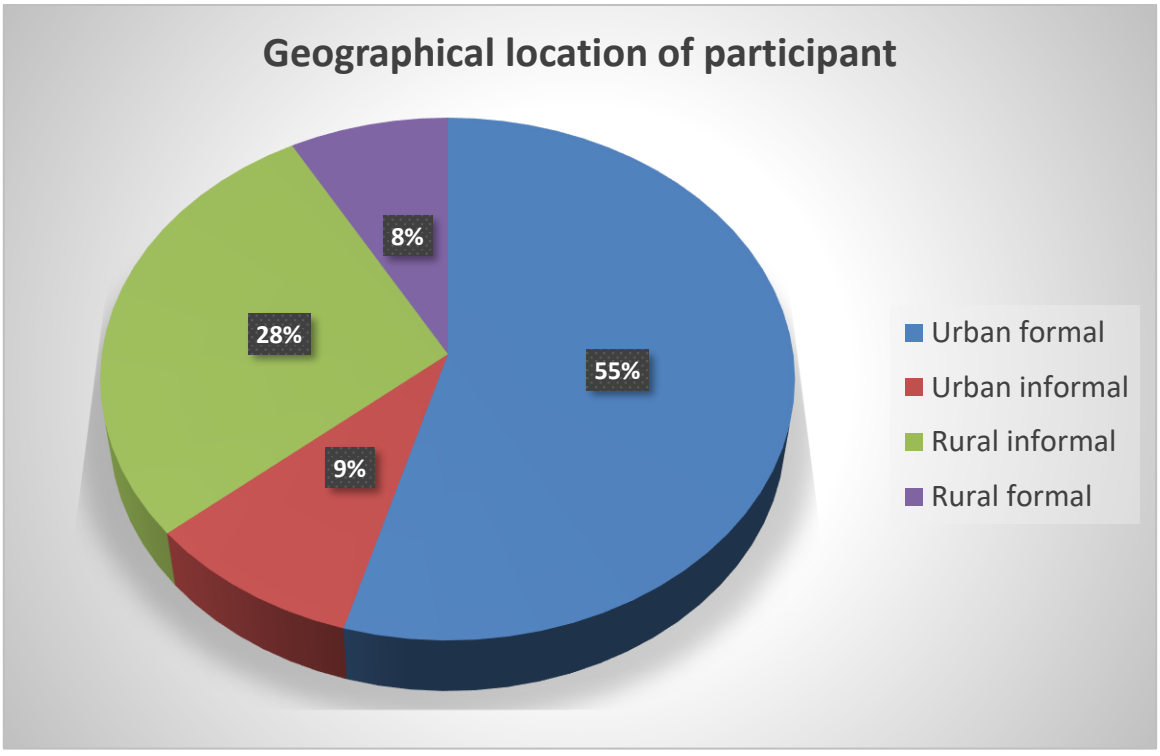

Figure 8.2:3: Geographical Location

Table 8.2.1: Healthcare Sector Used

Sector of healthcare used in the past 12 months	Percentage	
none	45.56%	
public care	23.40%	54.44% (Total)
private care	13.54%	
public and private care	17.50%	

Table 8.2.2: Inpatient Care Frequency

Inpatient-Number of times one was a patient	Percentage
Once	69.65%
Two or three times	19.59%
Four to five times	4.22%
More than five times	6.54%

Table 8.2.3: Transport to access to health facility

Methods	Inpatient care mean	Outpatient care mean
Private vehicle	46.37%	33.95%
Public transportation	11.35%	11.74%
Taxi	13.36%	18.48%
Ambulance or emergency vehicle	24.17%	4.86%
Bicycle	0.22%	0.34%
Walked	5.48%	31.47%

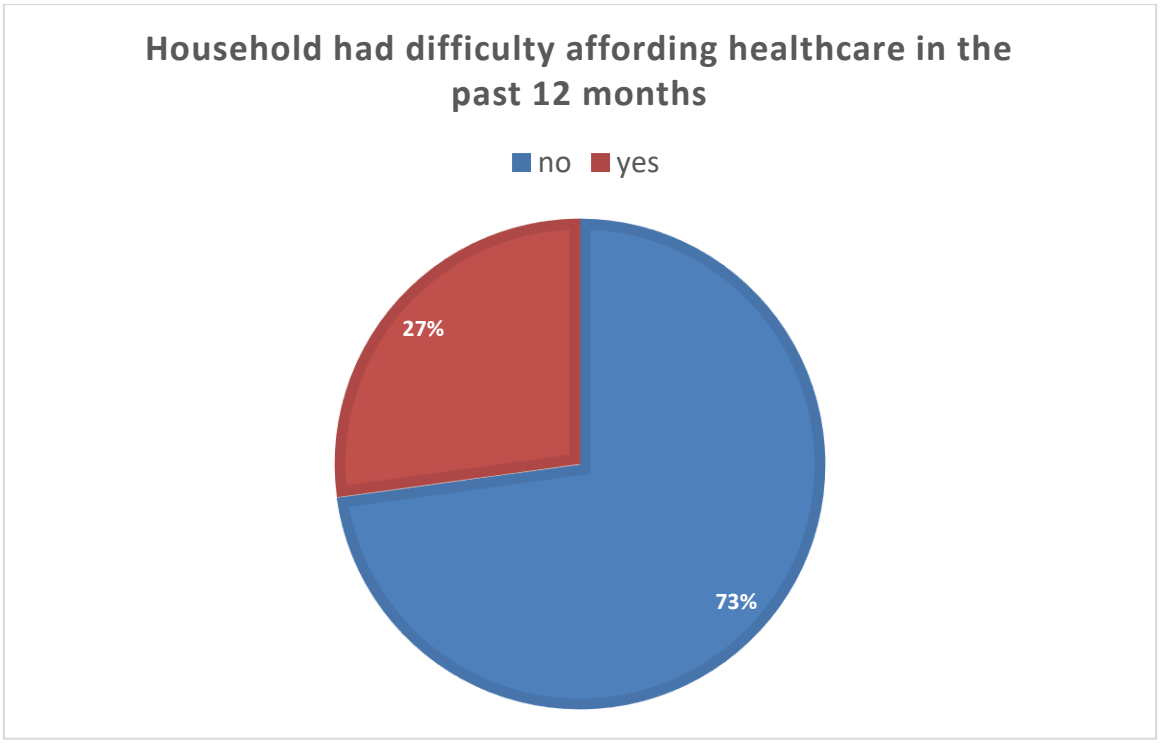

Figure 8.2:4: Household affordability

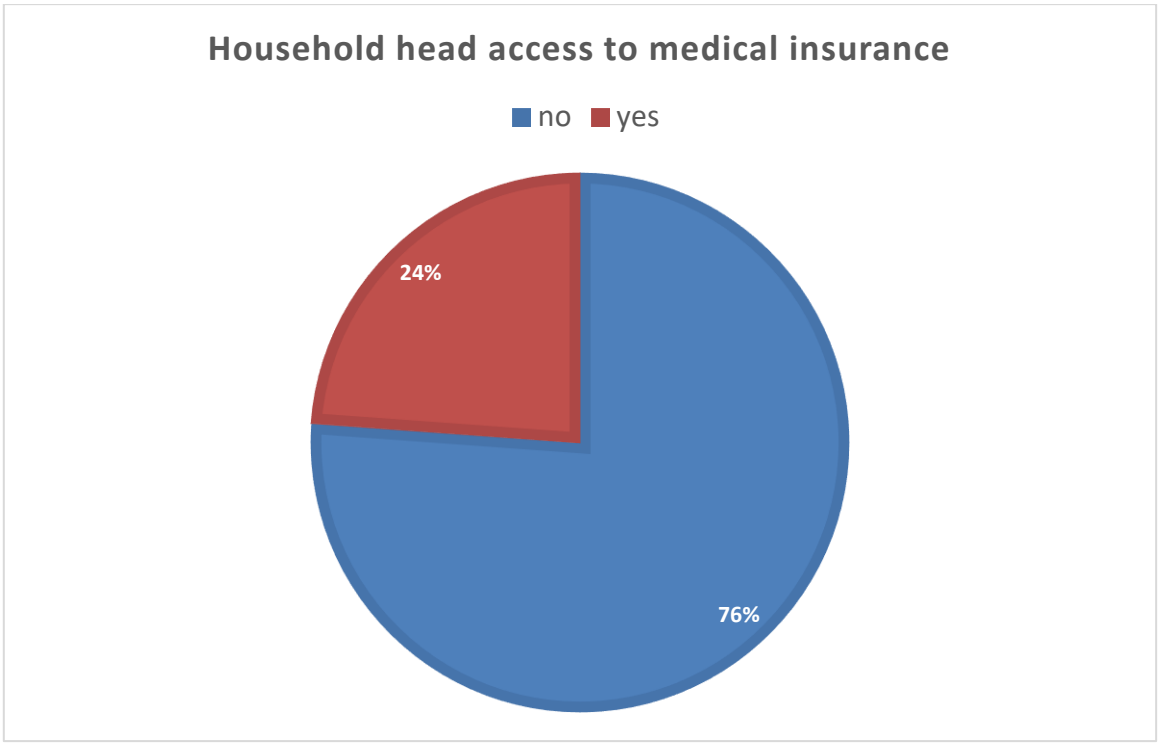

Figure 8.2:5: Access to medical insurance

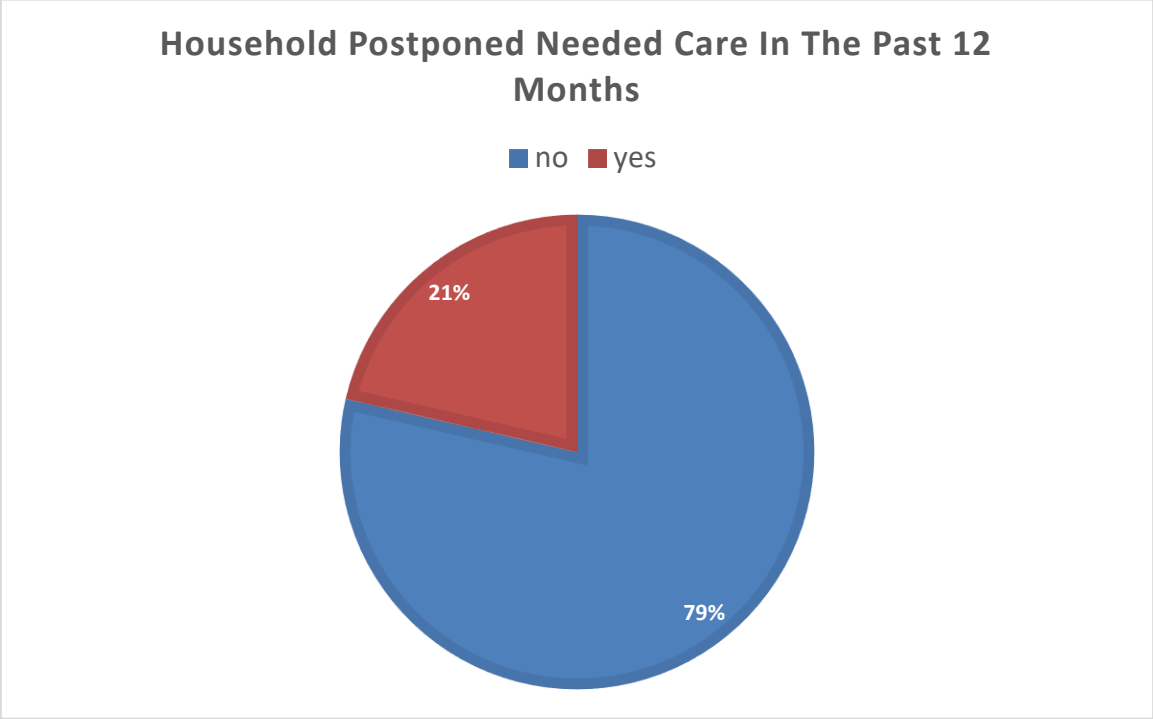

Figure 8.2:6: Household reported unmet need

8.2.2 BI-VARIATE ANALYSIS TABLES

Table 8.2.4: Overall satisfaction, by healthcare sector

Sector of healthcare used in the past 12 months	Percentage of respondents satisfied	Percentage of respondents satisfied
None	69.61%	68.99%
Public care	73.88%	71.06%
Private care	84.81%	82.78%
Public and private care	74.92%	71.14%
F-Statistic	38.60	30.06
p-value	0.000	0.000

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[i] **END OF DOCUMENT ***