Open Access Research Article

An analysis of the relative importance of healthcare services indicators in South Africa: Utilities Analysis Approach

Shenaaz Gani

College of Accounting Sciences, University of South Africa, South Africa.

***Corresponding author's e-mail: shenaazgani2009@gmail.com**
DOI: 10.35898/ghmj-72983

ABSTRACT

Background: There is a wide gap in healthcare access between the poor and the rich in South Africa. The government has implemented several policies to address this gap; nonetheless the complaints about poor healthcare delivery exist.

Aims: The objective of this study is to examine the relative importance of healthcare service indicators in Tshwane Municipality, South Africa.

Methods: This research uses a utility approach to analyse the relative importance of healthcare service indicators in the context of the Tshwane Municipality in South Africa. The study applies conjoint analysis to better understand healthcare users' preferences for several factors such as service range, waiting time for medications and consultations, waiting time for elective operations, and location. Questionnaire was administered on 280 respondents, comprising the following: Black – 130, Whites – 70, Indians – 40, and Coloured – 40. The data was collected from both public and private healthcare users, and the results were compared using an independent t-test.

Results: The study found that there were no statistically significant variations in the mean utilities of public and private healthcare users. The finding suggests that healthcare users' preferences, whether they utilize public or private services, are largely comparable and can be addressed by utilizing unified techniques. The result also demonstrates the most favoured levels for each metric, providing insights into patient preferences and their social impacts. The study further highlights various healthcare preferences of users.

Conclusion: This finding emphasises that healthcare users have unique expectations, requiring personalised healthcare delivery. The findings have several recommendations for policymakers and healthcare practitioners to improve service delivery and patient satisfaction.

Keywords: *Healthcare service indicators; Relative importance; Utility approach; South Africa; Healthcare users' preference.*

Received: 01 May 2024, **Reviewed:** 03 June 2024, **Revised:** 12 July 2024, **Accepted:** 21 July 2024.

1. Introduction

Healthcare is vital to the well-being of society; hence the quality and availability of healthcare services has a significant impact on the overall health and prosperity of citizens and the economic activities of a country (Fei, Lu & Feng, 2020). Understanding which healthcare service indicators matter most to users is, therefore essential for optimising resource allocation and decision-making, especially in the Tshwane Municipality, which is a diverse and dynamic region in South Africa. Healthcare delivery in Tshwane is a complex enterprise which is affected by many factors such as demographic trends, disease prevalence, economic conditions, and policy interventions (Poirier, Grépin & Grignon, 2020, Biddle, Wahedi & Bozorgmehr, 2020, Torkayesh et al., 2021).

Given the crucial role of healthcare in a society, policymakers, healthcare providers, and other stakeholders need evidence-based assessments of various healthcare indicators (Bergvall et al., 2011, Mühlbacher & Johnson, 2016, Helter et al., 2022). The evidence will help them to prioritise and allocate resources effectively and address the diverse health needs of the population (Ramsaran-Fowdar, 2008, Horan et al., 2023). Despite acknowledging the significance of healthcare service indicators, there is a dearth of studies that focuses on how these indicators are valued by users in South Africa. Majority of the prior studies have focused of general or international context, paying little attention in addressing the specific needs and preferences of the local citizens. This gap limits the abilities of policymakers and healthcare professionals to make informed decisions which reflect the unique characteristics of the healthcare landscape in the Tshwane Municipality.

This study aims to fill this gap by using the Raw Utilities Approach to examine the relative importance of healthcare service indicators in Tshwane Municipality. The Raw Utility Approach is a model that evaluates how much each indicator contributes to the overall healthcare service package. By examining these factors, the study aims to provide insights into the strengths and weaknesses of the current healthcare system in the Tshwane Municipality. The findings will provide evidence to healthcare providers, policy makers and healthcare practitioners to design effective and patient-centred healthcare services. The evidence will further help to improve resource allocation to meet the various needs of healthcare users.

2. Literature Review

Healthcare in South Africa

The primary health policy reform in South Africa aims to address inequity and provide equal access to quality healthcare services for the entire population. This is in response to the significant divide between the public and private health systems, which has been debated in the country for the past two decades (Ataguba, Day & McIntyre, 2015). While low-income countries spend relatively less on health (US $32 per capita in 2010), South Africa, classified as a middle-income country, spends US $645 per capita, significantly exceeding the WHO's recommended amount for low-income countries (World Bank, 2012). However, despite this higher expenditure, health and health outcomes distribution remains unequal (Ataguba et al., 2015).

South Africa's total health expenditure accounted for 8.9% of its GDP in 2018, slightly higher than the OECD average of 8.8%. Although South Africa's health spending aligns with OECD countries, it may not be adequate, considering its developmental status. Wealthier countries with higher GDP per capita tend to spend more on health, and in nearly all OECD countries, health is mainly funded by the public sector. However, South Africa differs, with only 48% of health funding coming from public resources (OECD 2014). Despite exceeding the spending required for a middle-income country, the South African health system's performance remains poor (Mayosi et al. 2012). This is evident in the significant inequities in healthcare access, which show disparities in benefits between the richest and poorest segments of the population (Ataguba & McIntyre 2012).

The South African government has been striving to improve equity and healthcare quality for years, with various plans and agreements to address inequality resulting from the apartheid system. However, concerns remain about the progressive deterioration of healthcare quality and the constitutional guarantee of access to healthcare for all citizens (NDoH 2013b). The proposed NHI scheme aims to bridge existing health inequalities and provide equal access to affordable, quality health care for all citizens, regardless of socioeconomic status. However, the Gini index indicates that inequality in South Africa is growing rather than decreasing (The Economist 2012, World Bank 2019). National Health Insurance (NHI) concept in South Africa dates back to 1944. Still, significant progress was only made after the World Health Report of 2010 identified it as a means to achieve the Millennium Development Goals (MDGs) (WHO 2010). Various organisations and governments worldwide have been focused on developing affordable national health systems following the commitments made in the Millennium Declaration in 2000 (Goodwin 2008).

South African National Health Insurance (NHI)

National Health Insurance (NHI) is a comprehensive financing approach aimed at ensuring universal access to a complete package of health services for all South African citizens, regardless of social, economic, or other factors influencing their status (McIntyre & Van den Heever 2007:73). As a mandatory scheme, NHI aims to cover the entire population and is organised into three key areas of health services: primary health care, hospital and specialised services, and emergency medical services, as outlined in the White Paper on NHI (DOH 2015). At the heart of NHI lies primary health care (PHC), a critical component in achieving Universal Health Coverage (UHC). However, it is essential to note that the South African government's definition of PHC slightly differ from the global definition (National Consultative Health Forum [NCHF] 2012). PHC forms the bedrock of the NHI and encompasses various essential services such as health promotion, disease prevention, curative (acute and chronic) clinical services, rehabilitation, and palliative care.

The vision for PHC under the NHI entails establishing multidisciplinary first-contact points and integrating networks of practices in the private sector and community clinics. The aspiration is to adhere to the "ideal clinic" model, embodying attributes that ensure optimal service delivery. These ideal clinics are characterised by punctuality, dignified patient treatment, adherence to Batho Pele principles, high hygiene standards, reasonable waiting times, comprehensive and quality services, community collaboration, and promotion of health and socioeconomic development (President Jacob Zuma – RSA 2014). However, as South Africa embarks on stage 2 of NHI implementation with the release of the White Paper, achieving equitable access to high-quality health care remains a significant challenge (Mayosi et al. 2012). The vast disparity in funding between the public and private sectors makes it unlikely to attain equitable healthcare delivery levels similar to the private sector (Mayosi et al. 2012). The costs associated with providing health care of a quality comparable to the private sector pose a considerable financial burden, as evident from the projected budget shortfall for the NHI scheme.

Projections indicate that NHI would require approximately R1,180 billion to provide coverage for the entire South African population, while the current total government spending for 2018/2019 amounts to R208.8 billion (National Treasury 2020:2). When combined with the private sector's total healthcare expenditure of R225 billion, the current total health spend amounts to R434 billion, highlighting a significant shortfall of R746 billion (StatsSA 2018). This shortfall would necessitate more personal income taxpayers, adding strain to the proposed NHI. Presently, the burden of healthcare expenditure falls on only around 4 million principal members of private medical schemes, along with approximately 7.1 million PAYE personal income taxpayers (Council for Medical Schemes 2018:144, National Treasury 2019:34). The remaining 87.8% of the population, about 50.9 million people, do not contribute directly to healthcare expenditure but rely on the R208.8 billion healthcare budget, presenting a substantial and imminent challenge to the successful implementation of NHI.

The NHI represents a transformative health policy in South Africa, aiming to offer all citizens universal access to high-quality health services. The emphasis on primary health care as the foundation is crucial in delivering essential health services and ensuring equitable coverage. However, substantial funding and resource allocation challenges must be carefully addressed to guarantee NHI's successful and sustainable implementation.

3. Methods

The research methodology applied to this study was rankings-based conjoint analysis. The conjoint analysis question was designed to incorporate the rankings-based conjoint analysis technique, where each question differed for each respondent based on the choices made in a set of questions. Residents who were eighteen years and older from the four different population groups in South Africa, namely Black/African, White, Coloured and Indian and living in the Tshwane metropolitan area formed part of the population. The survey had two specific inclusion rules: prospective respondents should be 18 years and older, and should be responsible for their medical costs, levies and decisions. These two rules were implemented to ensure identified respondents could answer the questionnaire. The sample frame for this study comprised respondents who were 18 years or older and responsible for their own medical costs, levies and decisions. The sample frame was established through several sources, such as StatsSA, which provides census figures on the population of South Africa. A *non-probability sampling* approach was employed by this study as there was no specific probability of an individual forming part of the sample and the selection relied on the subjective judgement of the researcher.

When applying conjoint analysis in health care, it is challenging to determine sample sizes and researchers look for guidance from other studies. It was found that sample sizes range from 100 to 300 respondents (Orme 2010:39, Morgan-Davies & Waterhouse 2010:388). Considering the statistical requirements for this research project, a sample minimum of 200 would have been deemed acceptable, however, based on the calculation performed using a sample size calculator by Select Statistical Services (available at https://select-statistics.co.uk/calculators/sample-size-calculator-population-proportion/), the required sample size would be 281 based on n = 2 300 785.

A disproportionate distribution of the target population was made to ensure that the statistical requirements were adhered to. To ensure a minimum of forty respondents in each category, the distribution as presented in Table 1 was applied.

Table 1. Respondents per population group

Population Group	**Number of respondents**
Black/African	130
White	70
Indian	40
Coloured	40
Total	**280**

Questionnaire Design and Administration

The questions were presented to the respondents with three scenarios based on nine healthcare indicators. The first scenario was populated based on the respondents' selection in a set of questions (healthcare indicators) and scenarios 2 and 3 were pre-populated and randomly allocated to each respondent. Respondents were asked to first rate each scenario on a scale of 1 to 10, where 1 is "not acceptable" and 10 is "highly acceptable". After that the respondents were asked to select which of the three scenarios they would choose. The healthcare indicators and the three scenarios populated are provided in table 2.

Table 2. Best Options for Healthcare Scenarios

Indicators	Definition	Scenario 1	Scenario 2	Scenario 3
Range of services	Range of services offered	Full range of services	Broader but not comprehensive	Limited range of services
Waiting time (general) medications	Time willing to wait for medication after general consultation	Medication to be given immediately	Collect after one day	Collect after a week
Waiting time (chronic) medication	For chronic medication, time willing to wait in the queue every month to collect your medication	No wait	Two hours	Four hours
Waiting time (general) consultation	Waiting time for: A general consultation (non-life-threatening)	No wait	Two hours	Four hours
Waiting time (casualty) consultation	Waiting time for: A visit to casualty	No wait	Two hours	Four hours
Choice of treatment	Prefer to be informed and consulted by	Doctor	Doctor	Nurse
Waiting time – elective procedure	Waiting for an elective medical procedure such as a hip replacement	One week	One month	Six months
Location	Location preferred for the first appointment	Consultancy room	Hospital	Clinic
Waiting time – specialist	Waiting time for an appointment with a specialist	Four weeks	Eight weeks	Four months

Data Analysis Method

The study applied conjoint analysis to examine healthcare users' preferences for several healthcare service indicators such as service range, waiting time for medications and consultations, waiting time for elective operations, and location. The first level of analysis was inferential analysis, which analysed the raw utilities or part-worths of each healthcare indicator. In analysing raw utilities, each indicator was isolated to determine its importance in the overall picture. The utilities in their original form are called "raw" utilities since they came directly from performing a regression analysis as applied by the Sawtooth Software for the conjoint analysis model. Conjoint utilities or part-worths were scaled to an arbitrary additive constant within each indicator and are interval data. The arbitrary origin of the scaling within each indicator was due to the nature of the experimental designs in conjoint analysis and the dummy coding in the design mix (Orme 2010:78). Sawtooth Software incorporates a rescaling method on the utilities so that each indicator has an average range of 100. To characterise the relative importance of each indicator, the study determined how much of a difference each utility made in the overall product or service, in this case, healthcare services. The percentage calculated represented how important that indicator was to the overall package.

4. Results

Raw utilities

Based on the raw utilities data, each indicator's importance is shown in Table 3. The table highlights that the utility with the overwhelming importance is the waiting time for chronic medication at 24.7%, followed by the waiting time for a visit to a casualty at 12.9% and the location for the first appointment at 11.1%.

Table 3: Relative indicator importance in the utilities

Healthcare Indicators	Importance percentage
Waiting time (chronic) medication	24.7%
Waiting time (casualty) consultation	12.9%
Location	11.1%
Consulted by (Choice of treatment)	10.4%
Waiting time (general) medications	9.4%
Range of services	9.3%
Waiting time (general) consultation	8.5%
Waiting time – specialist	7.6%
Waiting time – elective procedure	6.1%

Relative Importance of Utilities

At this point of the analysis, it is necessary to determine whether indicators' relative importance differs between public and private healthcare users – via an independent t-test. The results are interpreted based on a 5% level of significance. Table 4 shows whether the importance differs between public and private healthcare users.

Table 4: Relative importance of utilities: private versus public Healthcare users

	t-test	Sig. (2-tailed)	Result
Relative importance – Range of Service	0.721	0.472	Insignificant differences
Relative importance – Waiting Time (gen) – medication	-1.174	0.241	Insignificant differences
Relative importance – Waiting Time (chronic) – medication	0.101	0.919	Insignificant differences
Relative importance - Waiting Time (gen) – consultation	0.203	0.840	Insignificant differences
Relative importance – Waiting Time (casualty) – consultation	-0.299	0.765	Insignificant differences
Relative importance – Consulted By	-0.006	0.995	Insignificant differences
Relative importance – Waiting Time – elective procedure	0.056	0.955	Insignificant differences
Relative importance – Location	1.227	0.221	Insignificant differences
Relative importance – Waiting Time – specialist	-0.316	0.752	Insignificant differences

Based on the results in Table 4, there are no statistically significant differences in the mean utilities of public and private healthcare users. This is based on all p-values being greater than 0.05. Consequently, separate analysis for public and private healthcare users is not necessary. The conjoint analysis question specifically addresses healthcare usage and not whether there are differences within the sample, and for this reason, it would have only been required to do a separate analysis for public or private healthcare and would not be warranted for the other demographic groups identified in the descriptive analysis.

Continuing with the analysis of the raw utilities, as shown in Table 3, the relative importance of an indicator is essentially its share of importance in the overall package. The relative importance for each indicator, as seen in Table 3 is derived through the average utility values seen in Table 5. These values show

the average utility value for each level tested within the indicator. The relative indicator importance is the difference between the highest and lowest utility level of the indicator, as seen in Table 5. The average utilities highlight the importance of each indicator under the different levels. Essentially, the importance percentage shown in Table 5 is the average of the three levels shown in this table.

Table 5: Average utility values

Indicator	Level	Average Utility
Range of Services	Limited	-25.98
	Broader	-20.31
	Comprehensive	46.29
Waiting time (general) medication	One week	8.80
	One day	-45.42
	Immediately	36.62
Waiting time (chronic) medication	Four hours	-138.98
	Two hours	77.53
	Immediately	61.44
Waiting time (general) consultation	Four hours	34.57
	Two hours	-20.70
	Immediately	-13.88
Waiting time (casualty) – consultation	Four hours	-59.96
	Two hours	4.57
	Immediately	55.40
Consulted by (Choice of treatment)	Doctor	31.28
	Nurse	-52.33
	Indifferent	21.05
Waiting time – elective procedure	Six months	21.54
	One month	3.23
	One week	-24.77
Location	Hospital	-8.56
	Clinic	52.66
	Consultancy rooms	-44.10
Waiting time – specialist	Four months	20.22
	Eight weeks	12.93
	Four weeks	-33.16

Table 5 shows the average utility values for each of the indicators. This utility scale runs from -100 to 100 for all the indicators except for "waiting time for a general consultation", which is given on a scale of -200 to 200, with the average or mean utility (mu) being 0. The positive figures shown in this table would indicate the more desirable level of the indicator and negative figures would indicate a less desirable level of the indicator. A positive utility would indicate that the healthcare user is happy or satisfied with this level of the indicator as opposed to a negative utility which would suggest that the healthcare user is unhappy with the level of the indicator.

Based on the analysis conducted in the descriptive analysis, a valid assumption would be that healthcare respondents would seek to maximise their personal gain. The boxplot analysis highlighted that, indicators such as range of services, waiting time for medication after a general consultation, waiting time for chronic medication, waiting time for a consultation in casualty and to be consulted by a doctor showed that the respondents wanted the absolute best option and were not willing to compromise. For other indicators such as the waiting time to see a specialist, the location of healthcare service, the waiting time

for an elective medical procedure and the waiting time for a general consultation, respondents showed strategic reasoning whereby they were reasonable and rational in their expectation of healthcare services. These choices can be understood through the social interpersonal ontology which has a bearing on the social construction of reality. Healthcare respondents had an informed preference, which influenced their choices and behaviours, so they demonstrated patience or rational thinking for some choices.

Figure 2 presents a visual of each of the indicators in a boxplot to show the data distribution or the skewness through displaying the data quartiles (or percentiles) and averages. A boxplot helps the reader understand which indicator level is most preferred. A normal distribution would be depicted when the median is in the middle of the box and the whiskers are about the same on both sides of the box, indicating that there is symmetry and it is a normal distribution. When the median is closer to the bottom of the box, and the whisker is shorter on the lower end of the box, then the distribution is positively skewed (skewed right). A negatively skewed distribution would be depicted when the median is closer to the top of the box. The whisker is shorter on the upper end of the box, skewed left, helping the reader visually understand whether the preferences are mesokurtic, platykurtic or leptokurtic.

The boxplot shows clearly that the mean utility for a "comprehensive" range of services is 46.29, therefore, this distribution would be skewed right, indicating a positive skew (platykurtic distribution) for this level. This would indicate that the respondents' views were extreme regarding this utility. The other two levels, namely "broader" and "limited", have a negative utility as seen on the boxplot, indicating that the respondents were unhappy with this option. It is very clear from this visual that respondents felt very strongly that this utility was necessary. However, the platykurtic distribution indicates strong outliers and healthcare respondents identified wanting comprehensive health care. The indicator "waiting time for medication after a general consultation" has a positive average utility of 36.62 (per Table 5) to receive the medication "immediately" and a positive average utility of 8.80 to receive the medication after "one week", however, this option is negatively skewed (leptokurtic). The respondents would thus be the happiest to receive the medication immediately. A negative average utility was recorded to collect the medication in "one day", which is strange, considering that they were not as averse to collecting after one week. However, it is necessary to understand the real living experience of the healthcare respondents. It could be argued that it would be more difficult to take two consecutive days off from work, as opposed to one day this week and one day the following week.

The "waiting time for chronic medication" in the boxplot highlights that respondents have a 61.44 average utility for receiving the medication immediately and a 77.53 average utility for receiving the medication after two hours. The option to receive the medication immediately is positively skewed to the right and the option to receive the medication after two hours is skewed to the left, negatively skewed (leptokurtic). The four-hour option received a negative utility, which indicates that the respondents were strongly against this option. Given that the respondents selected the second-best option, namely two hours, they were being reasonable in their expectations, understanding that the medication could not be immediately available, and a short waiting period was acceptable. However, the two-hour wait appears to be all they were prepared to accept. This phenomenon can be explained by "group think", where healthcare users waiting for their medication, every month communicate and exaggerate their experiences. The respondents, therefore, demonstrated a complete aversion to waiting for their chronic medication.

Further, it needs to be understood from this response that individuals respond differently in a situation where they are in pain (such as waiting for medication after a general consultation or a visit to casualty) and waiting for medication when they are not so overrun with pain (such as the waiting time for their chronic medication). The evidence presented through this boxplot indicates that the healthcare respondents were much more demanding in this expectation, which, if compared to the boxplot for "range of services", it is clear to identify the difference in distribution. It should also be noted that this boxplot is the only one with a range of 200 to -200, highlighting strong outliers

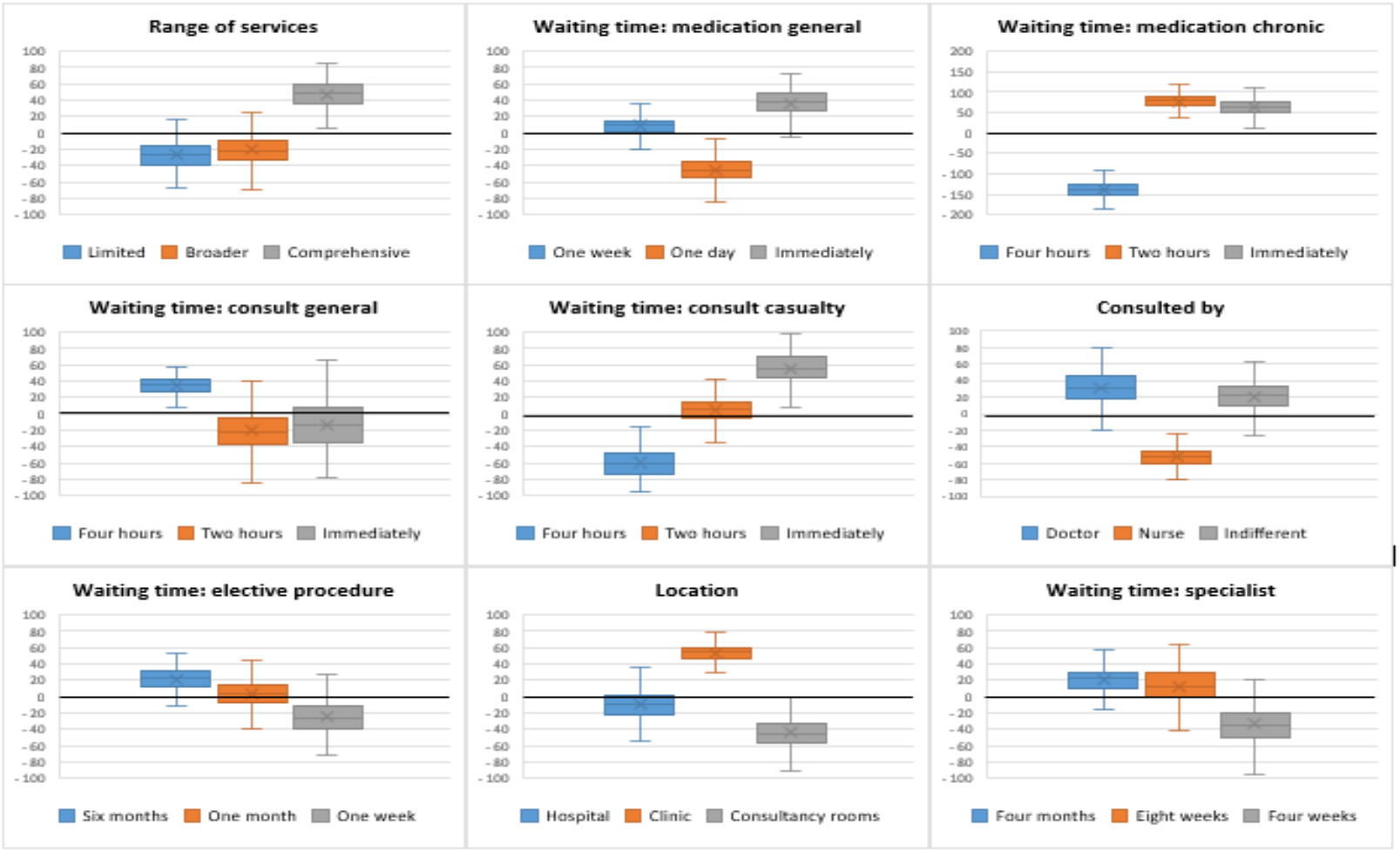

Figure 2: Boxplot for each indicator

The results for "waiting time for a general consultation" again indicate that the respondents were reasonable in their expectations, given that the "four hours" option has a positive average utility of 34.57 and is positively skewed to the right as opposed to the "two hours" option with a negative average utility of -20.70 and the "immediately" option which has a negative average utility of -13.88 and is skewed to the left. The "immediately" option had a wide range of utility levels. Hence, some respondents had a positive utility for this option. Still, the respondents were clear in their expectation of being consulted within four hours, given the much more concentrated view (the box), and this expectation indicated that they were reasonable in their expectations. This also supports the argument above that the healthcare respondents appeared much more willing to wait for their medication when they were not in pain. The social context influences this choice, which is evident in their social construction of reality. Furthermore, the general others encountered in this situation would all be there under different circumstances. They would all be absorbed with their plight and not significantly influenced by their interactions.

For "waiting time for a visit to casualty" the "immediately" option has an average utility of 55.40, the "two hours" option has an average utility of 4.57, and the "four hours" option has an average utility of -59.96. The respondents expected to be attended to immediately if they visited casualty. The understanding is that a visit to casualty would normally indicate an urgency or emergency, which explains their expectation to be attended to immediately. The difference between their reasoning in "waiting time for a general consultation" would be the impact of the urgency or emergency, and therefore, they were not prepared to wait. When analysing the utilities for the indicator "consulted by", the option of the "doctor" has the highest average utility with 31.28 and the option of the "nurse" has a negative average utility of -52.33. The "indifference" average utility is 21.05 but is positively skewed to the right. Therefore, it is easy to conclude that the respondents would prefer to be attended to by a doctor and felt very strongly about being attended to by a nurse. The preference speaks to the stigma which people have regarding treatment by a nurse. They feel a doctor delivers the best treatment and this is evident from the boxplot.

The distribution of utilities for "waiting time for an elective procedure" is seen in Figure 2. The boxplot depicts that the "six months" option has an average utility of 21.54 and is positively skewed to the right. The "one month" option has an average utility of 3.23 and is also positively skewed to the right. The third option "one week" has a negative average utility of -24.77 and is skewed to the left. It is clear from this depiction that respondents were again demonstrating their rationality in their choices. They were not unreasonable and selected the "six months" option, considering it is an elective procedure and the health system would have to accommodate more pressing issues before an elective procedure. The "location for the first visit" has three options, the "clinic" option has an average utility of 52.66 and is positively skewed to the right, the "hospital" option has an average utility of -8.56 and is negatively skewed to the left, and the "consultancy rooms" option has an average utility of -44.10.

The respondents were clear in their choice: they did not want to be treated at a consulting room and were opposed to being treated at a hospital. Their overall choice was to be treated at a clinic. This choice makes sense, given that it is less tedious to travel to a clinic and the process would be more streamlined. Again, the respondents demonstrated rational thinking that is socially informed.

The "waiting time to see a specialist" is visually depicted with the option with the highest average utility, the "four months" option with 20.22, and it is positively skewed to the right. The "eight weeks" option has an average utility of 12.93 and is also positively skewed to the right. The third option, "four weeks", has a negative average utility of -33.16 and is skewed to the left. The overall preference by the respondents would be a four-month wait. This choice represents the longest waiting time of the three options and again indicates healthcare users who were being reasonable or rational in their expectations from an NHI. It also indicates that healthcare users understand that quality consultants or specialists, in this case, generally have longer waiting times.

5. Discussion

This section of the analysis examined the raw utilities to determine each indicator's relative importance and how much of a difference each utility makes in the overall product mix or service basket, in this case, healthcare services. The average relative indicator importance in the unconstrained utilities was first presented, showing the general indicator of importance being the "waiting time for chronic medication" with 24.7%. The average relative indicator importance was calculated based on the average utilities, therefore, to take the analysis a step further, the average utilities for the various option levels within each indicator were then analysed to highlight the importance of each indicator under the different levels. Each indicator was analysed to determine which of the levels was most preferred by the healthcare respondents. This finding aligns with previous studies that emphasise waiting times as a significant determinant of patient satisfaction. For instance, authors such as Alarcon-Ruiz et al. (2019) and McIntyre and Chow (2020) and also identified waiting times as a major concern for patients in healthcare settings, echoing the results of this study.

The boxplot analysis also highlighted very significantly that the healthcare respondents were not as homogenous a group as identified under the descriptive analysis. There are very strong outliers at the top and the bottom of the boxplots, which would indicate a significant amount of diversity in the respondents' views. Despite having concluded through the descriptive analysis that the population group represents a more homogenous population than was envisaged at the start of the analysis, the inferential analysis contradicted this conclusion. Although the study has established that healthcare users had a specific preference, the boxplots indicated that although there is an average, the views of the respondents when analysing each indicator showed that there was a range in the spread of the views of the healthcare respondents. Unlike the more homogeneous population identified in Umar et al. (2023), which concluded that waiting times were uniformly problematic, this study's analysis shows a more nuanced picture with significant variations in patient views, suggesting that the patient population in Tshwane is more heterogeneous than previously thought. Given that the descriptive data analysis concluded that the population group was homogenous and the analysis of the raw indicators applying the boxplots showed that the population did indeed consist of substantial outliers, leading the research to conclude that the population was indeed more heterogenous than what the descriptive analysis revealed.

The study findings have several important implications for healthcare policymakers, providers, and stakeholders. The study highlights the relative importance of various healthcare service indicators from the perspective of the users. Policymakers can use this information to design services that prioritise aspects deemed most crucial by patients, such as reducing waiting times for medication and consultations. A service design approach focused on patients can lead to higher patient satisfaction and improved healthcare outcomes.

The study further found no significant differences between public and private healthcare users' preferences, suggesting that an integrated strategy can be employed for both groups to improve their service experience. Interestingly, this result contrasts with the findings of Al-Neyadi (2018), which identified differences in preferences between these two groups. The study supports the concept of unified strategies, which can improve healthcare services across both sectors. This will encourage collaboration between public and private providers. This view aligns with the opinion of Cutler et al. (2019), which emphasises that integrated approaches can improve the overall healthcare delivery.

The findings suggest the need for continuous monitoring and evaluation of healthcare services. By regularly assessing patient preferences and satisfaction, healthcare providers and policymakers will obtain valuable feedback for ongoing quality improvement. Over time, healthcare providers can adapt their services to meet changing patient preferences and expectations. This finding aligns with Cutler et al. (2019), who recommended ongoing quality improvement based on patient feedback.

6. Conclusion

The Tshwane Municipality in South Africa faces various challenges in providing quality and patient-centered healthcare to its diverse and growing population. Various attempts have been made by policymakers and healthcare providers to address these challenges but healthcare users still complain of poor service delivery. As

a result, this research used a utility approach to analyse the relative importance of healthcare service indicators in the context of the Tshwane Municipality. The study employed a conjoint analysis to understand healthcare users' preferences for several healthcare indicators and factors such as service range, waiting time for medications and consultations, waiting time for elective operations, and location. The study distributed questionnaires to 280 respondents, comprising the following: Black – 130, Whites – 70, Indians – 40, and Coloured – 40. The data was collected from both public and private healthcare users, and the results were compared using an independent t-test to determine whether any of the observed differences were statistically significant.

The findings revealed a broad range of preferences among healthcare users. The most important healthcare indicators to users were prescription wait times and access to comprehensive services. These results indicate that reducing waiting times and expanding available services could enhance healthcare users' satisfaction. However, the study uncovered significant outliers among the users' preferences, which emphasises the diverse needs and expectations of healthcare users. Moreover, the study highlighted how social perceptions and stigma influence patient preferences, with a notable preference for doctors over nurses. This evidence suggests the need for interventions to improve the attitudes of all healthcare professionals. The evidence further demonstrated that there were no significant differences in preferences between public and private healthcare users, suggesting that similar strategies could be effective for both public and private healthcare users.

In conclusion, this study improves the understanding of the relative importance of healthcare service indicators in the Tshwane Municipality. Policymakers and healthcare providers can make informed decisions to improve service quality, accessibility, and overall patient satisfaction. The study recommends a further study that employs market simulator to explore potential service combinations and their likely acceptance by the community.

Conflict of Interest

There is no conflict of interest. Nothing to disclosure.

References

Alanazi, A. S., Shah, S., Abbas, G., Hussain, M., Saleem, A., Khurram, H., ... & Alzarea, S. I. (2023). Assessing patient satisfaction with community pharmacy services: a large regional study at Punjab, Pakistan. Patient preference and adherence, 13-22. https://doi.org/10.2147/PPA.S389053

Alarcon-Ruiz, C. A., Heredia, P., & Taype-Rondan, A. (2019). Association of waiting and consultation time with patient satisfaction: secondary-data analysis of a national survey in Peruvian ambulatory care facilities. BMC health services research, 19, 1-9. https://doi.org/10.1186/s12913-019-4288-6

Al-Harajin, R. S., Al-Subaie, S. A., & Elzubair, A. G. (2019). The association between waiting time and patient satisfaction in outpatient clinics: Findings from a tertiary care hospital in Saudi Arabia. Journal of family and community medicine, 26(1), 17-22. https://doi.org/10.4103/jfcm.JFCM_14_18

Al-Neyadi, H. S., Abdallah, S., & Malik, M. (2018). Measuring patient's satisfaction of healthcare services in the UAE hospitals: Using SERVQUAL. International Journal of Healthcare Management, 11(2), 96-105. https://doi.org/10.1080/20479700.2016.1266804

Ataguba, J.E. & McIntyre, D. (2012). Paying for and receiving benefits from health services in South Africa: Is the health system equitable? Health Policy and Planning, 27(1), i35-i45. https://doi.org/10.1093/heapol/czs005

Ataguba, J.E., Day, C. & McIntyre, D. (2015). Explaining the role of social determinants of health-on-health inequality in South Africa. Global Health Action, 8(1). https://doi.org/10.3402/gha.v8.28865

Bergvall, N., Brinck, P., Eek, D., Gustavsson, A., Wimo, A., Winblad, B., & Jönsson, L. (2011). Relative importance of patient disease indicators on informal care and caregiver burden in Alzheimer's disease. International Psychogeriatrics, 23(1), 73-85. https://doi.org/10.1017/S1041610210000785

Biddle, L., Wahedi, K., & Bozorgmehr, K. (2020). Health system resilience: a literature review of empirical research. Health policy and planning, 35(8), 1084-1109. https://doi.org/10.1093/heapol/czaa032

Council for Medical Schemes. (2018). Annual report 2018. Available from: https://www.medicalschemes.com/files/Annual%20Reports/CMSAR2018_19.pdf [Accessed 24 April 2019].

Cutler, D., Skinner, J. S., Stern, A. D., & Wennberg, D. (2019). Physician beliefs and patient preferences: a new look at regional variation in health care spending. American Economic Journal: Economic Policy, 11(1), 192-221. https://doi.org/10.1257/pol.20150421

Department of Health. (2015). White paper: National health insurance policy: Towards universal health coverage. Pretoria: Government Printer.

Fei, L., Lu, J., & Feng, Y. (2020). An extended best-worst multi-criteria decision-making method by belief functions and its applications in hospital service evaluation. Computers & Industrial Engineering, 142, 106355. https://doi.org/10.1016/j.cie.2020.106355

Fischhoff, B., Goitein, B., & Shapira, Z. (2021). The experienced utility of expected utility approaches. In Expectations and actions (pp. 315-339). Routledge. https://doi.org/10.4324/9781003150879-18

Goodwin, N. 2008. National health systems: Overview. London, UK: Elsevier Inc. https://doi.org/10.1016/B978-012373960-5.00311-7

Gray, E. J., & Evangelou, E. (2023). A design utility approach for preferentially sampled spatial data. Journal of the Royal Statistical Society Series C: Applied Statistics, 1-23. https://doi.org/10.1093/jrsssc/qlad040

Helter, T. M., Kaltenboeck, A., Baumgartner, J., Mayrhofer, F., Heinze, G., Sönnichsen, A., ... & Simon, J. (2022). Does the relative importance of the OxCAP-MH's capability items differ according to mental ill-health experience?. Health and Quality of Life Outcomes, 20(1), 99. https://doi.org/10.1186/s12955-022-02009-6

Horan, M. R., Srivastava, D. K., Bhakta, N., Ehrhardt, M. J., Brinkman, T. M., Baker, J. N., ... & Huang, I. C. (2023). Determinants of health-related quality-of-life in adult survivors of childhood cancer: integrating personal and societal values through a health utility approach. Eclinicalmedicine, 58. https://doi.org/10.1016/j.eclinm.2023.101921

Mayosi, B.M., Lawn, J.E., Van Niekerk, A., Bradshaw, D., Karim, S.S.A., Coovadia, H.M. & Lancet South Africa Team (2012). Health in South Africa: Changes and challenges since 2009. The Lancet, 380(9858), 2029-2043. https://doi.org/10.1016/S0140-6736(12)61814-5

McIntyre, D., & Chow, C. K. (2020). Waiting time as an indicator for health services under strain: a narrative review. Inquiry: The Journal of Health Care Organization, Provision, and Financing, 57, 1-15. https://doi.org/10.1177/0046958020910305

McIntyre, D & Van den Heever, A. (2007). Social or national health insurance. In: Harrison, S, Bhana, R & Ntuli, A. eds. South African Health Review. Durban, SA: Health Systems Trust. 71-85.

Mitropoulos, P., Vasileiou, K., & Mitropoulos, I. (2018). Understanding quality and satisfaction in public hospital services: A nationwide inpatient survey in Greece. Journal of Retailing and Consumer Services, 40, 270-275. https://doi.org/10.1016/j.jretconser.2017.03.004

Morgan-Davies, C. & Waterhouse, T. (2010). Future of the hills of Scotland: Stakeholders' preferences for policy priorities. Land Use Policy, 27(2), 387-398. https://doi.org/10.1016/j.landusepol.2009.05.002

Mühlbacher, A. & Johnson, F. R. (2016). Choice experiments to quantify preferences for health and healthcare: state of the practice. Applied health economics and health policy, 14, 253-266. https://doi.org/10.1007/s40258-016-0232-7

National Consultative Health Forum (NCHF) (2012). Lessons for South Africa. National Health Insurance Conference Report, Gallagher Convention Centre, Johannesburg, 7 to 8 December.

National Department of Health (2020). National Health Insurance. Pretoria: Government Printer.

National Department of Health. (2013). Regulating the quality of health services: Benchmarking of approaches, institutions and systems. Towards the establishment of an Office of Health Standards Compliance (OHSC). Available from: http://www.dnaeconomics.com/assets/Usealexconstantinoudnaeconomicscom/OHSC-Regulating-the-Quality-of-Health-Services.pdf [Accessed 4 April 2018].

National Treasury (2020). Estimates of national expenditure 2020. Available from: http://www.treasury.gov.za/documents/National%20Budget/2020/ene/FullENE.pdf [Accessed 8 October 2018].

National Treasury (2019). Budget review 2019. Available from: http://www.treasury.gov.za/documents/national%20budget/2019/review/FullBR.pdf [Accessed 15 September 2018].

Organisation for Economic Co-operation and Development (2014). OECD Health Statistics 2014: How does South Africa compare? Available from: http://www.oecd.org/els/health-systems/Briefing-Note-SOUTH-AFRICA-2014.pdf [Accessed 27 June 2016].

Orme, B. K. (2010). Getting started with conjoint analysis: Strategies for product design and pricing research. Madison, Wisconsin: Research Publishers. 39-50.

Poirier, M. J., Grépin, K. A., & Grignon, M. (2020). Approaches and alternatives to the wealth index to measure socioeconomic status using survey data: a critical interpretive synthesis. Social Indicators Research, 148(1), 1-46. https://doi.org/10.1007/s11205-019-02187-9

Rangasamy, L. (2021). Healthcare price changes and expenditures in South Africa: Some implications for economic policy. Development Southern Africa, 38(4), 607-621. https://doi.org/10.1080/0376835X.2021.1907176

Republic of South Africa (2014). President Jacob Zuma: Launch of Operation Phakisa 2. Available from: https://www.gov.za/address-president-zuma-launch-operation-phakisa-2-ideal-clinic-realisation-and-maintenance-sefako [Accessed 13 August 2019].

Statistics South Africa (2018). Mid-year population estimates 2018. Pretoria: Statistics South Africa.

The Economist (2012). Sad South Africa: Cry, the beloved country. Available from: http://www.economist.com/news/leaders/21564846-south-africa-sliding-downhill-while-much-rest-continent-clawing-its-way-up [Accessed 18 October 2014].

Torkayesh, A. E., Pamucar, D., Ecer, F., & Chatterjee, P. (2021). An integrated BWM-LBWA- CoCoSo framework for evaluation of healthcare sectors in Eastern Europe. Socio- Economic Planning Sciences, 78, 101052. https://doi.org/10.1016/j.seps.2021.101052

Umar, M. I., Adehi, M. U., & Auwal, M. A. (2023). A Systematic Review of Multi-Server Queueing System: A Case of Lengthy Wait Times in Hospital Medical Outpatient Department (OPD). African Journal of Advances in Science and Technology Research, 12(1), 01-17.

World Bank (2019). Data: Gini index. Available from: http://data.worldbank.org/indicator [Accessed 12 March 2015].

World Bank (2012). World development indicators 2012. Washington, DC: World Bank. Available from: https://openknowledge.worldbank.org/handle/10986/6014 [Accessed 23 March 2013].

World Health Organization (2010). World health report: Health systems financing - The path to universal coverage. Geneva: World Health Organization.

Cite this article as:
Gani, S. (2024). An analysis of the relative importance of healthcare services indicators in South Africa: Utilities Analysis Approach. *GHMJ (Global Health Management Journal)*, *7*(2), 66–79. https://doi.org/10.35898/ghmj-72983