



EDWRG Working Paper Series
December 2023

**ECONOMIC DEVELOPMENT
AND WELL-BEING
RESEARCH GROUP**

Perceived unmet needs in healthcare as inequality indicators: Evidence from South Africa

Working Paper Number 05-23

Abieyuwa Ohonba, Frederich Kirsten, Bongiwe Mkhize

Cite this paper: Ohonba, A., Kirsten, F., & Mkhize, B. (2023). a Perceived unmet needs in healthcare as inequality indicators: Evidence from South Africa. *EDWRG Working Paper Number 05-23*.

Perceived unmet needs in healthcare as inequality indicators: Evidence from South Africa

ABIEYUWA OHONBA

School of Economics and Econometrics, University of Johannesburg.
Email: aohonba@uj.ac.za

FREDERICH KIRSTEN*

School of Economics and Econometrics, University of Johannesburg.
Email: fkirsten@uj.ac.za

BONGIWE MKHIZE

School of Economics and Econometrics, University of Johannesburg.
Email: bmkhize@uj.ac.za

Abstract

Unmet healthcare needs are significant public health concerns worldwide. In South Africa, this is especially prevalent with high healthcare inequities. Issues about availability, acceptability and accessibility are central to the healthcare inequities in South Africa. Yet, little information exists on how people in different sociodemographic groups perceive these issues and their perceptions about overall unmet healthcare needs. This study assesses the dynamics behind perceived unmet healthcare needs in South Africa. We use the International Social Survey Programme (ISSP) data from the 2010 Health and Healthcare module. For the empirical analysis, logistical regressions were used to assess the sociodemographic determinants behind perceived unmet healthcare needs among South Africans. In addition, a composite index was constructed based on the three main themes, while three separate logistic regressions were also conducted based on each of the three dimensions. Overall, the results show that income, race, age, and regional factors influence people's view of unmet healthcare needs in South Africa. The findings point to the fact that perceived issues about unmet healthcare needs are clustered around those most vulnerable in society. Driven mainly by availability issues, reasons like waiting lists or queues too long and living too far from healthcare facilities are some of the primary reasons why the vulnerable still feel their healthcare needs are unmet. The needs of the socioeconomically disadvantaged population should be addressed by the government so that they can endure the effects of crises when they occur. In addition, South African policymakers should concentrate on the socio-disadvantaged population when designing the National Health Insurance (NHI) system.

Keywords: Social determinants of health, public health, perceived unmet needs, health inequity, South Africa

*Corresponding author. School of Economics and Econometrics University of Johannesburg.
Address: 8 Hercules close, South Africa. Email: fkirsten@uj.ac.za

1. Introduction

Globally, providing quality healthcare is recognised as a fundamental public health concern. According to the World Health Organisation (WHO), about 24% of the world's population does not receive quality healthcare (WHO, 2020). Furthermore, between 5.7 and 8.4 million deaths each year are attributed to poor quality healthcare in low- and middle-income countries (LMICs). Achieving Universal Health Coverage (UHC) for the entire population, regardless of socioeconomic position, is the National Health Insurance (NHI)'s main goal (Department of Health, 2015). The UHC works to advance the provision of practical, affordable, and acceptable health care to all population groups. However, access to healthcare services is frequently assessed with usage metrics. These statistics do not reveal anything about people who do not use healthcare services or how easily those who do can obtain them. An alternative indication of access to care is frequently utilized in the form of self-perceived unmet healthcare needs. Examining the perceived unmet needs of the population in healthcare is vital since it does not rely on respondents using healthcare services, as opposed to metric measurements that are based on usage (Sibley and Glazier, 2009). Also understanding the dynamics behind perceived unmet needs are one way to gauge fair access to medical services, which are usually restricted by barriers relating to accessibility, availability, and acceptability (Fjaer et al., 2017; Njagi et al., 2020).

In recent years, there has been an increase in the amount of research being done on healthcare inequity. According to studies, there are more unmet healthcare needs among women, the young, rural dwellers, those with less education, the unemployed, people who have bad health, and individuals who do not have private insurance (Frorillo, 2020; Njagi et al., 2020; Allan & Ammi, 2021; Basar et al., 2021; Fjaer et al., 2017; Tadiri et al., 2021). In addition, these studies noted that affordability and longer wait times contributed to unmet healthcare needs. However, most of the study on universal unmet needs in healthcare has been done in developed nations like Canada, Europe, and the United States, with little research of a similar nature from a South African perspective.

The population of South Africa should have equitable access to medical treatment (Neely & Ponshunmugam, 2019). However, greater access to private health insurance has resulted in health inequities in the South African healthcare system between various sociodemographic groups. Private and public healthcare systems comprise the dual-structured South African health system (Maphumulo & Bhengu, 2019, Gordon et al., 2020; Benetar & Gill, 2021). While approximately 20% of the population uses resources from the private sector health care system, around 80% of the population accesses health care through public services and is treated by about 30% of the nation's doctors (Neely & Ponshunmugam, 2019; Gordon et al., 2020).

Although significant attempts have been made to remedy South Africa's inadequate health care system, several issues have been brought up by the public regarding public health, including, for example, lengthy waiting times caused by a lack of human resources (Maphumulo & Bhengu, 2019; Neely & Ponshunmugam, 2019). The unequal distribution of healthcare professionals between the public and private sectors is one of the biggest problems in South Africa's healthcare system (Maphumulo & Bhengu, 2019). Undertreatment of specific categories of people results in injustices in applying scientific knowledge to healthcare practice (Odeny, 2021). Health inequities, according to WHO, are socially determined and inhibit people from lower socioeconomic statuses from rising in society and reaching their full potential. Unresolved socioeconomic factors, linked to unmet needs, continue to be a significant challenge to obtaining universal access to healthcare.

There is often little South African research on unmet healthcare needs, such as the work of Burger and Christian (2018) looked at accessibility, acceptability, and affordability while examining the dynamics of healthcare access in South Africa post-apartheid. The results demonstrate that there are significant amounts of unmet demands that are connected to acceptability, particularly for vulnerable subgroups like the poor, rural residents, and black South Africans, while availability and affordability continue to be significant barriers. Gordon et al. (2020) evaluated the socioeconomic inequalities in South Africa's access to universal healthcare and found that affordability is the primary cause of unmet needs and healthcare inequality.

However, most research on unmet healthcare needs in South Africa has primarily concentrated on objective measures of unmet healthcare needs (Burger and Christian, 2018; Gordon et al., 2020) or focused on a specific region or core population group (Rucinski et al., 2018; van Rie, 2018; Hoffman et al., 2018; Hodgkinson et al., 2020; Harling et al., 2020). Investigating perceived unmet needs in healthcare is imperative for several reasons. Firstly, they pose significant moral and ethical dilemmas for the healthcare system. In South Africa, unmet healthcare needs are still a significant concern, with accessibility, availability, and acceptability issues leaning heavily towards those below the poverty line, rurally located individuals and Africans. Further insight into individuals' perceptions about their unmet healthcare needs might help understand why individuals most vulnerable in society might have unmet needs. Secondly, a closely allied concern is the nation's economic well-being, which is directly and indirectly tied to the health status of our general population and specific population groups. As a result, inadequate, inaccessible, and poor medical care further exacerbates increasing healthcare costs that broadly affect the overall quality of care experienced by all South Africans.

As a result, this study examines the degree of the overall subjective perception of unmet needs in South Africa due to the dynamics of accessibility, affordability, and acceptability, the related drivers of unmet needs, and the associated determinants of unmet needs in the South African health context. By understanding the dynamics behind perceived unmet healthcare needs, the study should provide useful information for policymakers on the perceived accessibility, availability, and acceptability barriers people feel from different sociodemographic groups feel about unmet healthcare needs and what is keeping them from satisfying their healthcare needs.

2. Methodology

2.1 Data description

This study uses a secondary analysis using an archived dataset from the International Social Survey Programme (ISSP) Health and Healthcare module collected in 2011. The ISSP dataset covers a host of public perceptions about health and healthcare and includes South Africa as one of the sampled countries (ISSP Research Group, 2015). Focusing only on South Africa, the dataset was reduced to a sample of 3,002 individuals. Subjects were drawn randomly from the electoral roll or the national registration list. Face-to-face interviews and postal surveys were the primary survey methods. The participant with youngest age was 16 years, and the oldest was 95 years.

Measuring perceived healthcare unmet needs, questions in the ISSP survey asked individuals about their reasons for not getting medical treatment during the past 12 months. These

reasons are grouped into three main themes, accessibility, availability, and acceptability, covering a different dimension of perceived unmet needs from local healthcare facilities. (Fjær et al. 2017). A detailed summary of the measures of perceived unmet needs can be found in table 1 below.

TABLE 1: MEASURES OF SUBJECTIVE PERCEPTIONS OF UNMET HEALTHCARE NEEDS.

ISSP code	Description
<i>Subjective perception of unmet needs</i>	
<i>Accessibility</i>	
V45	During the past 12 months, did it ever happen that you did not get the medical treatment you needed because you could not pay for it
<i>Acceptability</i>	
V46	During the past 12 months did it ever happen that you did not get the medical treatment you needed because you could not take the time off work or had other commitments
<i>Availability</i>	
V47	During the past 12 months did it ever happen that you did not get the medical treatment you needed because the treatment you needed was not available where you live or nearby
V48	During the past 12 months did it ever happen that you did not get the medical treatment you needed because the waiting list or queue was too long?

We follow Andersen's Health Behaviour Model (HBM) to assess the determinants behind this unmet healthcare need theme. The framework by Andersen was designed to understand better the determinants of healthcare use and the satisfaction of patients (Andersen, 1995). The HBM framework identifies four components towards the determinants behind healthcare use that we similarly used in this paper. These include contextual characteristics, need, predisposing characteristics and enabling resources. Firstly, for contextual characteristics, we use urban-rural and provincial variables to identify the geographical location of individuals. After that, the need component is measured using chronic disease and self-reported health as it relates to individuals' needs for healthcare services. Thirdly predisposing characteristics describe people's propensity to use healthcare services and are usually demographic factors (Sibley and Glazier, 2009). The demographic variables we include are gender, race, age, education status, and marital status. Lastly, enabling resources are individuals' resources that allow them to use healthcare. We use household income, occupation status, and whether an individual has private healthcare to assess the enabling resource component.

2.2 A measure of robustness

In addition to assessing the overall perceived unmet healthcare needs, we constructed a factor index to assess the robustness of the overall measure of unmet needs that captures the different dimensions into a single measure. Exploratory factor analysis was used to combine the themes of accessibility, acceptability, and availability to see if there are enough intercorrelations to conduct a factor analysis. The factor loadings in the appendix reflect the variance shared between the three themes. The loadings are low, so additional tests had to be performed to check the reliability and validity of the index. The Bartlett test of sphericity was performed, and the score of 0.00 (below the p-value of 0.05) suggests significant

intercorrelations among items to conduct factors analysis. The KMO test also reports enough overlap between items to conduct factor analysis since the KMO score of 0.579 was above the rule of thumb of 0.5.

3. Descriptive analysis

This section employs three econometric techniques namely: kernel density, Ordinary Least Squares (OLS) and the Blinder-Oaxaca decomposition method. Table 2 reports the descriptive statistics for perceived unmet needs. Overall, the percentage of the sample that felt they had unmet needs from healthcare facilities in the last 12 months was around 31%. For the whole sample, availability issues were the most significant contributor to overall unmet needs (25.63%), followed by accessibility issues (13.53%) and acceptability (7.34%).

Observing the overall unmet need for different regions shows that the North West had the highest perception of unmet needs (47.93%), followed by Free State (42.86%) and Kwa-Zulu Natal (36.43%). These provinces are also considered the most rural, with a large share of the population staying relatively far from the major public health facilities. We also observe that those living in rural areas perceive unmet needs more than those from urban areas.

Looking at the unmet needs by demographic group shows that Africans, females, those without education and unmarried had a larger share of individuals reporting unmet needs than other demographic groups. Since individuals in these groups tend to make up most of the most vulnerable in society, the results suggest that perceived unmet needs are unequally higher for those most vulnerable. We can confirm this if we observe the unmet needs among those with different levels of enabling resources. Those deep in poverty, the unemployed, and does not have good health coverage perceive the highest level of unmet needs. Almost half of those living in deep poverty conditions report unmet healthcare needs.

Observing the subtypes of unmet needs shows that availability account for most of the unmet needs in South Africa. The most relevant reason for individuals to perceive their healthcare needs were unmet was due to no appointments, the treatment needed was not available nearby, or the waiting list was too long. Again Africans, females, those living in rural areas, those with low or no education and in deep poverty have the highest perception of unmet needs, which supports the health inequity in South Africa, where those most vulnerable to society are also those who do not have available access to satisfy healthcare needs. It should be noted that acceptability is the lowest contributor (7.34%) to overall unmet needs. Meaning not having enough time available is not a significant hurdle for South Africans not meeting their healthcare needs

TABLE 2: MEASUREMENT ITEMS AND UNMET NEEDS (SOUTH AFRICA).

	Overall	Accessibility	Acceptability	Availability
Population	31.29	13.53	7.34	25.63
Province				
Western Cape	16.22	6.92	5.00	11.97
Eastern Cape	33.98	16.92	5.30	30.38
Northern Cape	20.95	9.82	5.56	21.82
Free State	42.86	23.38	16.43	39.13
Kwa-Zulu Natal	36.43	9.68	6.30	30.52
North West	47.92	21.33	6.62	42.11

Gauteng	28.73	16.53	8.87	18.38
Mpumalanga	29.33	16.56	7.84	19.61
Limpopo	25.65	8.29	7.69	22.51
Location				
Urban	25.98	11.84	7.93	19.86
Rural	39.45	16.13	6.43	34.47
Gender				
Male	29.45	12.2	8.15	22.08
Female	32.48	14.39	6.8	27.93
Race				
African	37.81	15.9	8.24	32.27
Coloured	27.03	13.22	7.54	18.73
Indian	16.67	6.28	5.77	10.63
White	14.8	7.06	3.54	12.2
Education level				
No education	44.76	16.04	4.59	42.59
Primary	32.76	15	6.11	27.41
Secondary	29.29	12.25	10.07	22.02
Tertiary	16.8	3.88	4.65	14.06
Marital status				
Married	26.54	11.02	6.63	22.28
Not married	33.96	14.67	7.20	27.38
Income group				
Below Poverty	42.64	22.74	4.76	37.69
Above Poverty	31.98	12.94	8.17	25.74
Occupation status				
Unemployed	34.59	15.38	5.64	28.36
Low skilled	33.26	15.06	7.86	29.59
Medium skilled	30.31	12.54	9.06	23.36
High skilled	19.53	6.92	7.72	15.12
Health coverage				
Well covered	19.94	7.53	8.98	15.59
Not well covered	39.43	16.51	6.89	32.98

4. Empirical results

This paper investigates the impact of affirmative action policies on the gender wage gap in South Africa by making use of the PALMS dataset for the years 1997 and 2015. Table 3 reports the logistic regression coefficients predicting the determinants of perceived unmet healthcare needs. Firstly, observing the impact of contextual characteristics reports that perceptions about unmet healthcare needs vary by province. All provinces except Northern Cape report higher unmet health care needs compared to Western Cape, the reference category. For Free State, North West, Eastern Cape, Gauteng, and Mpumalanga, issues about accessibility were the highest contributor to perceived unmet needs, while in Kwa-Zulu Natal, issues about availability were the highest contributor to unmet needs. These findings confirm the regional effect on perceived unmet needs consistent with the literature (Sibley and Glazier, 2009). However, there is no significant difference between perceived unmet needs for individuals from rural and urban areas, findings consistent with Chen and Hou

(2002). For South Africa, this might be surprising since the availability issue concerns how far individuals live from healthcare facilities. Since rural areas are located further from major healthcare facilities, we expected a significant impact on whether someone lives in a rural or urban area. Still, these findings may point to similar struggles within urban areas to meet their healthcare needs due to overpopulation, which strains healthcare facilities. Sibley and Glazier (2009) found a higher unmet need perception among urban residents than rural residents.

Observing the impact of the need component, proxied by chronic disease and health status, the results show that need is mainly insignificant in driving perceived unmet healthcare needs. However, for accessibility, those with good health status reported higher levels of unmet healthcare needs. These results are against the literature (Chen and Hou, 2002; Sibley and Glazier, 2009) and might indicate that unmet needs in South Africa expand further than just those in need of it. The concept of need through the lens of chronic disease is also difficult to measure since individuals might base perceived unmet needs on non-chronic healthcare needs.

South Africa also suffers healthcare inequity, with some demographic groups suffering more from not having their healthcare needs met than others. The third section in table 3 reports the impact of various demographic factors on perceived unmet healthcare needs. Race strongly predicts unmet healthcare needs, especially the different perceptions among Africans, Indians/Asians, and Whites. The sign of the coefficient for both Indians/Asians and Whites is negative, meaning they perceive lower unmet healthcare needs compared to Africans. These results align with other South African-based studies that focused on objective measures of unmet healthcare needs and confirm the significance of race in driving a division between unmet healthcare needs in South Africa (Burger and Christian, 2018). Furthermore, availability issues seem the most significant contributor to different perceptions among race groups. Age is also a significant and positive contribution to unmet healthcare perceptions. Older individuals are more likely to experience unmet healthcare needs. These results contrast other studies (Sibley and Glazier, 2009; Fjær et al., 2017) focused on developed European and North American countries. The findings in our study might suggest that the unequal healthcare system in South Africa negatively influences older individuals' perceptions of unmet healthcare needs, while in developed countries, universal access to healthcare benefits older individuals. Overall, the results provide fascinating insight into the heterogeneous factors influencing unmet healthcare needs between a developing country in Africa and countries in the developed North. Furthermore, other significant demographic factors in developed country studies are found to be insignificant in our analysis, including gender, marital status, and educational status.

Lastly, enabling resources are individuals' resources that allow them to use healthcare. Here income groups, occupational status and whether an individual is well-covered proxies the impact of enabling resources. The income group significantly influences perceived unmet healthcare needs, consistent with other studies (Fjær et al., 2017; Tadiri et al., 2021). Those below the poverty line tend to have higher perceptions about unmet healthcare needs, confirming that unmet healthcare needs are strongly clustered around those from low socioeconomic status groups and the most vulnerable in society. Occupation status is mainly insignificant, except for the acceptability model, where low-skilled individuals have significantly different unmet need perceptions compared to the unemployed reference category. Furthermore, whether individuals are well covered tends to influence their perceived unmet needs, driven by the perceptions of accessibility and availability.

Overall, the results show that income, race, age, and regional factors influence people's view of the unmet healthcare needs in South Africa. Since Africans and those from low economic positions also make up the highest share of those most vulnerable in a society reliant on public healthcare, the findings point to the fact that issues about unmet healthcare needs are clustered around those most vulnerable in society. Driven mainly by availability issues, reasons like waiting lists or queues too long and living too far from healthcare facilities are some of the primary reasons why the vulnerable still feel their healthcare needs are unmet. Furthermore, the significance of the geographical variable points to the heterogeneous perceptions among different regions in South Africa. These results are also supported by the robustness of using an index measure for perceived unmet healthcare needs (results in the appendix).

TABLE 3: LOGISTIC REGRESSION PREDICTING THE DETERMINANTS OF SUBJECTIVE UNMET NEEDS

VARIABLES	(1) Accessibility	(2) Acceptability	(3) Availability	(4) Overall
Eastern Cape	1.221** (0.581)	0.529 (0.628)	0.883** (0.394)	0.875** (0.363)
Northern Cape	0.659 (0.701)	-0.146 (0.868)	0.600 (0.466)	0.286 (0.451)
Free State	2.235*** (0.606)	1.409** (0.613)	1.754*** (0.424)	1.730*** (0.401)
Kwa-Zulu Natal	0.899 (0.564)	0.351 (0.545)	1.473*** (0.358)	1.505*** (0.327)
North West	1.937*** (0.632)	0.934 (0.733)	1.844*** (0.453)	1.843*** (0.434)
Gauteng	2.057*** (0.582)	1.025* (0.567)	0.824** (0.409)	1.263*** (0.365)
Mpumalanga	1.759*** (0.622)	1.160* (0.630)	0.741 (0.454)	1.127*** (0.406)
Limpopo	0.594 (0.620)	0.868 (0.590)	0.646 (0.400)	0.613* (0.369)
Rural	0.0884 (0.223)	0.137 (0.268)	0.0507 (0.169)	0.0338 (0.161)
Chronic disease	0.155 (0.240)	0.128 (0.309)	0.112 (0.190)	0.0847 (0.183)
Good health	0.659*** (0.223)	0.0843 (0.250)	0.227 (0.161)	0.198 (0.152)
Coloured	0.0903 (0.330)	-0.0650 (0.418)	-0.464* (0.267)	-0.251 (0.243)
Indian/Asian	-0.285 (0.494)	-0.192 (0.465)	-1.434*** (0.371)	-1.106*** (0.314)
White	0.158 (0.432)	-1.417** (0.584)	-0.931*** (0.345)	-0.899*** (0.319)
Female	0.0183 (0.194)	0.0997 (0.236)	0.192 (0.151)	0.0131 (0.142)
Age	-0.00141	0.00274	0.0137**	0.0101**

	(0.00677)	(0.00905)	(0.00532)	(0.00509)
Not married	0.245	-0.0744	0.0144	0.0620
	(0.213)	(0.256)	(0.160)	(0.153)
Primary education	0.211	1.319	0.186	0.187
	(0.453)	(1.045)	(0.328)	(0.323)
Secondary education	-0.0146	2.151**	0.292	0.372
	(0.499)	(1.067)	(0.365)	(0.356)
Tertiary education	-1.245	1.192	-0.209	-0.00965
	(0.885)	(1.178)	(0.517)	(0.482)
Above Poverty	-0.705***	-0.00518	-0.440**	-0.426**
	(0.226)	(0.364)	(0.197)	(0.192)
Low skilled	0.235	0.753**	0.196	0.122
	(0.245)	(0.324)	(0.189)	(0.183)
Medium skilled	0.306	0.719**	0.163	0.168
	(0.248)	(0.316)	(0.195)	(0.184)
High skilled	0.260	1.040**	0.137	0.0121
	(0.424)	(0.419)	(0.296)	(0.278)
Health coverage	-0.682***	0.243	-0.590***	-0.633***
	(0.242)	(0.257)	(0.179)	(0.167)
Constant	-3.289***	-5.544***	-2.469***	-2.015***
	(0.871)	(1.373)	(0.631)	(0.601)
Observations	1,190	1,176	1,164	1,148

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

This paper aimed to assess the determinants behind perceived unmet healthcare needs among South Africans. In a two-tiered healthcare system, where 80% of the population relies on state-funded, overcrowded public healthcare facilities, the other 20% use extensive, funded private healthcare facilities. This creates a vastly unequal healthcare system in South Africa that influences the ability of everyone to meet their healthcare needs. Since numerous studies have assessed the shortcomings of the current healthcare system and the dynamics behind health inequity in the country (Burger and Christian, 2018; Gordon et al., 2020; Rucinski et al., 2018; van Rie, 2018; Hoffman et al., 2018; Hodgkinson et al., 2020; Harling et al., 2020), little information exists about how individuals perceive their unmet healthcare needs and how this is driven by accessibility, availability, and acceptability factors. The results show regional, demographic and resource-enabling effects on perceived unmet healthcare needs in South Africa. For example, race, province, age and income group all tend to influence the overall unmet needs of South Africans. At the same time, other factors like gender, education and occupation status are insignificant in driving individuals towards different levels of perceived unmet healthcare needs.

Furthermore, the significance of race and income group points to the fact that unmet healthcare needs are superior for those most vulnerable in society, confirming the high level of healthcare inequity among South Africans. This study also shows availability as the most common reason for unmet needs. Therefore, South Africans perceive issues like waiting lists and not living close enough to a doctor as the main reason for high unmet healthcare needs. The issue of availability could be directly influenced by policy. Since the issue of availability is stronger among those from adverse backgrounds, policymakers in South Africa could

reduce health inequity by addressing some of these issues. Barriers to availability include too-lengthy waiting time, lack of services in a particular area, and lack of services when required. Policymakers could potentially alter these factors by increasing healthcare delivery through telephone advisory or decentralized healthcare services. Overall, these findings highlight the disparities that exist between various groups. Policymakers should intensify their efforts in reducing availability barriers like waiting lists and geographic issues for receiving healthcare, especially among those most vulnerable to society. The needs of the socioeconomically disadvantaged population should be addressed by the government so that they can endure the effects of crises when they occur. In addition, South Africa policymakers should concentrate on the socio-disadvantaged population when designing the NHI system.

References

- Allan I, Ammi M. Evolution of the determinants of unmet health care needs in a universal health care system: Canada, 2001–2014. *Health Economics, Policy, and Law*. 2020;16(4):400–23.
- Başar D, Dikmen FH, Öztürk S. The prevalence and determinants of unmet health care needs in Turkey. *Health Policy*. 2021;125(6):786–92.
- Benatar S, Gill S. Universal access to healthcare: The case of South Africa in the comparative global context of the late Anthropocene Era. *International Journal of Health Policy and Management*. 2020.
- Burger R, Christian C. Access to health care in post-apartheid South Africa: Availability, affordability, acceptability. *Health Economics, Policy and Law*. 2018;15(1):43–55.
- Department of Health. The White Paper on National Health Insurance: Towards Universal Health Coverage 2015. Available: White Paper on National Health Insurance (www.gov.za)
- Fiorillo D. Reasons for unmet needs for health care: The role of social capital and social support in some western E.U. countries. *International Journal of Health Economics and Management*. 2019;20(1):79–98.
- Fjær EL, Stornes P, Borisova LV, McNamara CL, Eikemo TA. Subjective perceptions of unmet need for health care in Europe among social groups: Findings from the European Social Survey (2014) Special module on the Social Determinants of Health. *European Journal of Public Health*. 2017;27(suppl_1):82–9.
- Gordon T, Booyesen F, Mbonigaba J. Socioeconomic inequalities in the multiple dimensions of access to healthcare: The case of South Africa. *BMC Public Health*. 2020;20(1).
- Harling G, Payne CF, Davies JI, Gomez-Olive FX, Kahn K, Manderson L, et al. Impairment in activities of daily living, care receipt, and unmet needs in a middle-aged and older rural South African population: Findings from the HAALSI study. *Journal of Aging and Health*. 2019;32(5-6):296–307.
- Hodkinson PW, Pigoga JL, Wallis L. Emergency healthcare needs in the Lavender Hill suburb of Cape Town, South Africa: A cross-sectional, community-based household survey. *BMJ Open*. 2020;10(1).
- Hoffman CM, Mbambazela N, Sithole P, Morr  SA, Dubbink JH, Railton J, et al. provision of sexually transmitted infection services in a mobile clinic reveals high unmet need in remote areas of South Africa: A cross-sectional study. *Sexually Transmitted Diseases*. 2019;46(3):206–12.
- ISSP Research Group. International Social Survey Programme: Health and Health Care - ISSP 2011. *GESIS Data Archive*, 2015 Cologne. ZA5800 Data file Version 3.0.0, <https://doi.org/10.4232/1.12252>.

- Maphumulo WT, Bhengu BR. Challenges of quality improvement in the healthcare of South Africa post-apartheid: A critical review. *Curationis* [Internet]. 2019 May 29;42(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6556866/>
- Neely AH, Ponshunmugam A. A qualitative approach to examining health care access in rural South Africa. *Social Science & Medicine*. 2019;230:214–21.
- Njagi P, Arsenijevic J, Groot W. Cost–the related unmet need for healthcare services in Kenya. *BMC Health Services Research*. 2020;20(1).
- Odeny B. Closing the health equity gap: A role for implementation science? *PLOS Medicine*. 2021;18(9).
- Rucinski KB, Powers KA, Schwartz SR, Pence BW, Chi BH, Black V, et al. Longitudinal patterns of unmet need for contraception among women living with HIV on antiretroviral therapy in South Africa. *PLOS ONE*. 2018;13(12).
- Scheffler E, Visagie S, Schneider M. The impact of health service variables on healthcare access in a low resourced urban setting in the Western Cape, South Africa. *African Journal of Primary Health Care & Family Medicine* [Internet]. 2015 Jun 19;7(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4656938/>
- Sibley LM, Glazier RH. Reasons for Self-Reported Unmet Healthcare Needs in Canada: A Population-Based Provincial Comparison. *Healthcare Policy* [Internet]. 2009 Aug 1;5(1):87–101. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2732657/>
- Tadiri CP, Gisinger T, Kautzky-Willer A, Kublickiene K, Herrero MT, Norris CM, et al. Determinants of perceived health and unmet healthcare needs in universal healthcare systems with high gender equality. *BMC Public Health*. 2021;21(1).
- Van Rie A, West NS, Schwartz SR, Mutanga L, Hanrahan CF, Ncayiyana J, et al. The unmet needs and health priorities of the urban poor: Generating the evidence base for urban community health worker programmes in South Africa. *South African Medical Journal*. 2018 Aug 28;108(9):734.
- WHO country cooperation strategy at a glance: South Africa [Internet]. www.who.int. [cited 2023 Feb 2]. Available from: <https://www.who.int/publications-detail-redirect/WHO-CCU-18.02-South-Africa>
- World Health Organization. Quality of care [Internet]. World Health Organization. 2022. Available from: https://www.who.int/health-topics/quality-of-care#tab=tab_1

Appendix A

TABLE 4: FACTOR LOADINGS

Variables	Loadings
Accessibility	0.5319
Acceptability	0.3562
Availability	0.5641

TABLE 5: INDEX MEASURE PREDICTING FACTORS OF UNMET NEEDS
(ROBUSTNESS MEASURE)

VARIABLES	index
Eastern Cape	0.176* (0.0898)
Northern Cape	0.0421 (0.105)
Free State	0.499*** (0.104)
Kwa-Zulu Natal	0.245*** (0.0775)
North West	0.495*** (0.116)
Gauteng	0.293*** (0.0890)
Mpumalanga	0.269** (0.105)
Limpopo	0.0920 (0.0903)
Rural	0.0200 (0.0473)
Chronic disease	0.0471 (0.0534)
Good health	0.104** (0.0436)
Coloured	-0.0765 (0.0670)
Indian/Asian	-0.214*** (0.0802)
White	-0.174** (0.0795)
Female	0.0141 (0.0397)
Age	0.00264* (0.00145)
Not married	0.0182 (0.0440)
Primary education	0.0854

	(0.0957)
Secondary education	0.138 (0.104)
Tertiary education	0.00264 (0.127)
Above Poverty	-0.148** (0.0588)
Health coverage	-0.126*** (0.0469)
Constant	-0.294* (0.165)
Observations	1,148
R-squared	0.093

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1