June 23, 2021

ERASMUS UNIVERSITEIT ROTTERDAM

Associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and self-rated health among South African people.

Thesis – Research report

Rua Elarbab
Erasmus Universiteit Rotterdam
MSC Health Economics, Policy & Law
Student ID.: 544817
Supervisor: Prof.dr. A.P. Nieboer
Reading committee: Dr. MJ Poleij
Total words: 12.059

Preface

After five months of work on this thesis, the time has come to compose this note of thanks as a final touch to my master's thesis. This thesis is nearing completion of the Erasmus University of Rotterdam's Master of Health Economics, Policy, and Law program. As the rise in chronically ill and frail older people is accompanied by widening socio-economic, ethnic, and geographical inequality in health, and I am fascinated by the interaction between individuals, culture, society, and health, I have chosen the topic of this study to address the association between these environmental and social factors with self-rated health (abbreviated as SRH). SRH is consistent with objective health and is used as a broad indicator of population health. This study focuses in particular on the association between social cohesion, social capital and SRH, as both have emerged as an important explanation of SRH. In this study social cohesion is perceived as trust and safety in the local population and outside the neighbourhood such as trust in co-workers and strangers). Social capital refers to personal relationships and the idea that individuals can obtain support, through direct and indirect ties when they are (very) satisfied with their personal relationship.

By selecting this topic as my masters' thesis and not having carried out such specific scientific research before, it was quite challenging for me to extract and prepare the data for analysis. Now that I've completed this trajectory, I'm proud of the hurdles I've overcome, as well as the knowledge and experience I have acquired from this research, all of which will contribute to the first step in my future profession. All this would not have been possible without my supervisors' guidance and support, so I would like to thank Prof. dr. A.P. Nieboer for her guidance, feedback, and support throughout the process. Last but not least, I'd like to express my gratitude to my family and friends for their unwavering support and encouragement, not just during this part of my journey but throughout my entire school career.

Rua Elarbab

Reeuwijk, June 2021

Summary

Background

The relationship between social cohesion, social capital, and self-rated health (SRH) has been under researched in many developing countries, including South Africa. South Africa has poor health indicators when compared to other countries at similar levels of development. The country has a history of colonialism and apartheid that has contributed to the social disintegration and destruction of social capital. Recent studies have highlighted the importance of social cohesion and social capital for health and quality of life (QoL), so it is valuable to study their relationship with SRH, specifically among the elderly in South Africa. This paper, therefore, examines the associations between social cohesion, social capital, socio-economic status, ethnicity, and geographical location on the one hand, and SRH on the other hand, among men and women 50 years and older, who participated in the WHO's SAGE study and reside in South Africa. The objective of this thesis is to examine the extent to which social cohesion, social capital, socio-economic status, ethnicity, and geographical location are associated with SRH of adults (50+) in South Africa using nationally representative data.

Methods

For this nationally representative cross-sectional study, wave 1 data from the World Health Organization's (WHO) Study on global AGEing (SAGE) and adult health in South Africa were examined with the use of SAGE Research Methods Datasets. This cross-sectional study included 3.840 participants 50 years of age or older (mean age 62.7 years (SD, 0.95) and residing in South Africa. First, a bivariate analysis was conducted to identify the association between social cohesion, social capital, socio-economic status, ethnicity, geographical location and SRH. Second, a multivariate logistic regression was used to evaluate associations of social cohesion, social capital, socio-economic status, ethnicity, and geographical location with SRH while adjusting for background characteristics.

Results

Results from the bivariate analysis showed that people living in rural locations were more likely to report poorer SRH compared to those who live in urban areas. In terms of ethnicity, African/Blacks appear to have poorer SRH compared with Whites, Coloured, and Indian/Asian people. Non-single adults, adults in the higher income quintile and adults with a higher education level were more likely to have good SRH. Greater SRH was also associated with high social cohesion and social capital among individuals. Furthermore, being a woman and higher age were associated with a lower SRH. In the multivariate logistic regression analyses being older, higher income, social cohesion and social capital were associated with good SRH.

Discussion

This study emphasizes the importance of social cohesion and social capital and higher income to promote SRH in South Africa. Government policymakers should consequently intensify efforts aimed at improving living circumstances, income level, educational status, social cohesion and social capital among the elderly in the country. Especially African/Black people, those living in rural areas, and with lower levels of education are requiring more attention and effort. Prioritizing community interventions in the country and developing a comprehensive welfare strategy could make a positive contribution to achieving better SRH.

Table of contents

Chapter 1: Introduction

South Africa is a developing country located on the African continent's southern tip. It has nine provinces, namely: Eastern Cape, Free State, Gauteng, Kwa Zulu Natal, Limpopo, Mpumalanga, North West, Northern Cape, and Western Cape, each with its own legislature and provincial administration and a distinctive climate, language, economy, and population (Chola & Alaba, 2013). The population of South Africa is equivalent to more than 60 million people (OECD iLibrary | Country Statistical Profile: South Africa 2021/1, 2021), and consists of various groups, including Black Africans, Coloured people, Whites, Indians, and Asians, with varied cultures and belief systems (Coovadia et al., 2009). South Africa's population was estimated to be 58.4 million people in 2019, with Black Africans accounting for the majority (around 47.4 million). Coloured people numbered 5.80 million individuals, Whites 4.444 million, and Indian or Asian people around 1.45 million people (Statista, 2020).

Life expectancy has increased from 54 years in 2005 to approximately 64 in 2020. This increase is considered a major achievement (OECD iLibrary | Country Statistical Profile: South Africa 2021/1, 2021). The proportion of the population aged 50 and over accounted for 9.433 in 2019 (Statista, 2021), and is predicted to account for 19% of the population in 2030 (Xavier Gómez-Olivé et al., 2010). Despite the fact that South Africa is considered a upper middle income country in terms of its economy (The World Bank, 2021), its health status, is worse than that in many lower-income countries (Coovadia et al., 2009). South Africa is facing multiple health challenges (WHO, 2016). A lack of access to basic necessities of life, the emerging epidemic of (non-)infectious diseases, maternal and child health problems, as well as changes in age structure have a major effect on South Africa’s population health (Mayosi & Benatar, 2014; Whiteside & Sunter, 2000; WHO, 2021). Health deteriorates as the population is experiencing the so-called colliding epidemics: HIV and tuberculosis; chronic illness and mental health (Coovadia et al., 2009). Between 1997 and 2010, almost 3 million people died as a result of the HIV epidemic, which gave a crude death rate of 12.3 per 1,000 people (Bradshaw et al., 2016).However, death under-registration has long been a concern in South Africa (Kabudula et al., 2014). Despite hints of reducing mortality in recent years, levels remain higher than the surveillance system's baseline set in 1992 (Kabudula et al., 2014).

Physical environmental factors, i.e., neighbourhood characteristics, have been found to affect individual health status. Variations in economic and social conditions that contribute to poor health can be attributed not only to individual and family characteristics (composition effects) but also to socioeconomic differences within a neighbourhood (contextual neighbourhoods-related effects) (Cramm et al. 2012). In South Africa, insufficient health care services for the increasing population and persisting socio-economic inequalities between races, exacerbate inequalities in health and lead to poor health outcomes (Mayosi et al., 2012). The burden of major categories of illness and disability is found to be higher in the lower socioeconomic groups (Ataguba et al., 2011). Health inequalities have been extensively reported with the poor suffering more from ill-health than the rich (Ataguba et al., 2011). A lower level of education is often related to poorer health status, while those with a higher level of education report better health. The influence of socioeconomic neighbourhood’s effects on individual health status is probably greater among racial and ethnic minorities, living in socioeconomically deprived neighbourhoods, which are related to the greatest barriers to quality health care services and higher morbidity (Deneulin & Townsend, 2007; Chandola & Jenkinson, 2000; Cramm et al., 2012; Omotoso & Koch, 2017). People who live in deprived

neighbourhoods and who have to deal with poverty, (infectious) diseases, and the like, are even more burdened with negative neighbourhood effects that exacerbate the problems of concentrated deprivation and social exclusion (Cramm et al., 2012; Cramm et al., 2011; Cramm & Nieboer, 2011; Kawachi et al., 2008).

In addition to physical environmental factors, there are social environmental factors, such as social cohesion and social capital, that seem to contribute to poor health status in South Africa. As a result of high racial and gender discrimination, geographical disparities, extreme violence, problems of interpersonal trust between ethnic groups, and a lack of public trust in governmental institutions (Hooghe, 2007; Aerni & Bernauer, 2006; Benatar, 2013), South Africa has shown signs of poor social cohesion which have inexorably affected health and health services use (Coovadia et al., 2009; National Planning Commission, 2012). Socially cohesive neighbourhoods are characterized by trust and safety (Rios et al., 2012) and are expected to support health (Erdem et al., 2015) and lead to better health outcomes as well as fewer health expenditures (Lippman et al., 2018). The colonial and apartheid legacy that South Africa has, has contributed to the social disintegration and destruction of social capital (Lau & Ataguba, 2015). Social capital represents resources that individuals can access (Cramm et al., 2013). People with great social capital are at lower risk for poor health outcomes because of their great access to instrumental aid, information, and emotional support (Kawachi et al., 1999). These resources may decrease the existing high burden on health services and society as a whole while the demand for social support for these individuals in their communities will increase (Xavier et al., 2010; Kawachi et al., 2008). Further, if social capital and neighbourhood social cohesion conditions are poor, then obtaining support may be more difficult, especially for elderly people who live alone (Cramm et al., 2013).

Maintaining and enhancing health should be a government policy and programmatic priority. Improving population health requires a broad range of actions that affect individual health, including improvements in the economic and social situation of older people.

As studies consistently report a high positive correlation between health and self-rated health (abbreviated as SRH) (Dolan et al., 2008 & Hoorn, 2007) and SRH is an indicator of how people perceive their health, it is considered a reliable predictor of objective health and mortality. In light of the above findings, this research examines the associations between social cohesion, social capital, socio-economic status, ethnicity, and geographical location, and SRH among South African's elderly. The objective of this thesis is to examine the extent to which social cohesion, social capital, socio-economic status, ethnicity, and geographical location are associated with SRH of adults (50+) in South Africa using nationally representative data.

This research provides an answer to the following question: What is the influence of social cohesion, social capital, socio-economic status, ethnicity, and geographical location on SRH among adults (50+) in South Africa?

Relevance

The relationship between social cohesion and SRH has been documented in many developed countries but to a lesser extent in developing countries (Olamijuwon et al., 2018). In African countries, including South Africa, the correlation between social cohesion and SRH remains under-researched; only one study revealed an association between social cohesion and SRH among adults (18 years or older) in South Africa (Olamijuwon et al., 2018). This study showed that between 2008 and 2011 social cohesion strengthened, but the pattern after that is less evident (Olamijuwon et al., 2018). This lack of information poses a serious challenge to the extension of the positive effects of social cohesion on population health as suggested by this study.

Besides, no study to date has explicitly examined associations of social cohesion, social capital, socioeconomic status (SES), ethnicity, and geographical location with SRH in a national sample of older adults in South Africa. These associations are of great scientific and societal relevance, they must adequately be assessed since these factors could have a significant and detrimental effect on the entire population (e.g., negative impact on economic growth and strain on the provision of services for older adults). Moreover, the evidence of sociodemographic characteristics and social environmental factors and their effect on SRH will provide insight for important government policy decisions and can be particularly useful for the prioritization of limited resources and targeting of public health interventions (according to elderly's needs) in order to promote SRH for a larger number of people. There is a need to develop sustainable policies for improving access to adequate health care and healthy ageing (by focusing on lifestyle and environmental influences to which people are exposed throughout their lives) at the local and national levels, to integrate health in all policy areas, and to tackle health inequities at the core of South African policies (WHO, 2018). Policymakers may then have the opportunity to develop a comprehensive welfare strategy for the elderly and provide high-quality services tailored to their requirements.

Also, understanding ethnic health disparities and the prognosis of possible mortalities may aid in the development of more effective measures to promote health among different populations. The scarcity of resources and rising costs of healthcare have put pressure on the health system's sustainability, equity, and quality of care, as well as the demand for an effective and equitable allocation of resources. Policymakers may undertake measures to prioritize health gains in communities with poorer health, less access to health services, higher socioeconomic inequality, or a higher risk of medical-related catastrophic expenditure or impoverishment. Further, this study may contribute to the already existing literature in providing a study with considerable statistical power due to its large number of participants (3.840) using a large nationwide database.

Reader's guide

Chapter 1 of this thesis describes the problem analysis, purpose, and research question. Subsequently, chapter 2 represents current theoretical knowledge for answering the research question. Chapter 3 contains the strategy for answering the research question as well as a description of the study population. The findings of the analyses performed are reported in chapter 4. Finally, chapter 5 will conclude and describes the associations between social cohesion, social capital, socio-economic status, ethnicity, and geographical location and SRH among adults (50+) in South Africa and evaluates important findings in light of relevant literature and their implications, as well as the thesis's strengths and shortcomings. In the appendix, the validated Social Cohesion Scale used for this study can be found.

Chapter 2: Theoretical framework

Self-rated health

Health status can be assessed objectively (by medical professionals based on objective indicators) and in a subjective manner (as experienced by individuals themselves) (Idler & Benyamini, 1997; CBS, 2016). Self-rated health (abbreviated as SRH) is consistent with objective health and serves as a global measure of health status in the general population (Wu et al., 2013; Albrecht, 1994) that consists of a single question asking respondents to rate their overall health (Bowling, 2005). According to research, SRH, categorized as good or poor, is a strong morbidity and mortality indicator (Waller, 2015; Idler, 1997) and is closely related to well-being and quality of life. Individual's perception of what constitutes (good) health is influenced by their own norms and values (Tetteh et al., 2019; Bowling, 2005). Those who report higher levels of SRH live longer than their counterparts (Diener, 2006; Cramm et al., 2012). High levels of SRH are probably both a cause and an effect of good health (Diener & Biswas-Diener, 2002). A negative health assessment can influence the immune system in such a way that individuals become more vulnerable to potential future illnesses and reduce the chance of successful recovery (Idler, 1997).

Moreover, SRH is a dynamic evaluation, judging trajectory rather than just indicating the current level of health; people may reflect on their physical and mental functioning in the past and their expectations for the future; they may be judging various aspects of health such as a deterioration in their actual health status or a perceived increase in susceptibility to disease; or people may include evaluations of vague symptoms or disease in the preclinical stage in assessing overall health; or they may indicate a valuation of external recourses available to them, both in the present as well as in the future, of coping with future illness when making assessments of their current health (Idler, 1997). SRH refers not only to physical and mental health (as a result of biological factors) but also to social environments. In the latter case, SRH reflects the presence of social-environmental resources, like healthy food, safe housing, a good work environment, decent schools, supportive social networks, and access to health care, that can help prevent or buffer exposure to health risks for serious illness and premature death (Marmot, 1998; Casper, 2001). Social resources such as social support and social integration are coping mechanisms that have an indirect impact on mortality through SRH (Folkman & Lazarus, 1984; De Vries et al., 2013). Furthermore, sex, age, regional location (urban vs. rural), marital status, education (Tetteh et al., 2019), income, and social capital are, according to many researchers, significant factors related to psychological well-being in old age and potential indicators of SRH (Cramm et al., 2012).

Social cohesion

Cohesive communities can be characterized by trust and safety between and within groups, which have emerged as an important explanation of SRH (Kawachi & Berkman, 2000; Sartorius, 2003). Trust and safety are seen as a foundation for social order, as they encourage (health) behaviour and foster collaborative, caring social relationships, both of which have an impact on health (Flin & Burns, 2004). Furthermore, trust is considered an essential part of effective communication and the basic principle for making all relationships coherent. Many types of social cohesion may cross neighbourhood, municipality, or even country borders, while others are expressly limited to particular geographic areas (e.g., interaction with neighbours, perceptions of shared norms in one’s municipality, or trust in fellow countrymen) (Kawachi & Berkman, 2000). Social cohesion is essentially concerned with the question, "Who

is related to whom, where, and how?". Even though there is no one universal definition, social cohesion has been conceptualized to include trust among inhabitants/strangers and coworkers and perceived safety which is expected to influence SRH (Larsen, 2014; Kawachi & Berkman, 2000). In this research social cohesion means that individuals, with different social, ethnic, cultural, and geographical backgrounds, are interdependent and have the opportunity to live together in a community where a sense of mutual trust, belonging, solidarity, and safety are present. Social cohesion facilitates access to health information and services which is also positively associated with SRH. Furthermore, it is well-established that neighbourhood social cohesion has a negative relationship with mortality and violence (Chuang et al., 2013). Social cohesion is very likely to manifests itself, through trust and safety, in connections and participation in the community. Perceived neighbourhood safety is associated with good psychological health regardless of physical functioning which ultimately will contribute to good SRH (Chuang et al., 2013).

Social capital

Social capital is becoming more widely recognized as "a collection of cooperative relationships between social actors that facilitate collective actions" (Requena 2003). In the literature social capital has been linked to actions of actors within the network, e.g., patterns of civic participation, socializing, and networking) domains that act as resources for individuals and facilitate collective action (Villalonga-Olives & Kawachi, 2015). In this research social capital refers to relationships among individuals and the idea that individuals can obtain support, through direct and indirect ties such as from family, friends, and neighbours, whereby people care for and watch over each other. Social networks, both informal and formal, and interdependence between individuals are essential components of the social capital of individuals, a resource created when individuals work together for mutual benefit (Cattell, 2001). Among the elderly, personal relationships are crucial and necessary as they are more likely to be alone and lose touch with their peers as a result of disease and illness. Furthermore, as people grow older, their circle of acquaintances shrinks, and when they lose their own partner, they may experience emotions of social isolation, alienation, and loneliness (Ghazi et al., 2017).

Access to social capital would enhance SRH among individuals as social networks represent resources (such as information or instrumental assistance) that individuals can access through their network connections to create externalities of production (Villalonga-Olives & Kawachi, 2015; Ramlagan et al., 2013). These resources can provide social support, self-esteem, identity, and perceptions of control (Villalonga-Olives & Kawachi, 2015), and refers to norms of reciprocity (return on investments), public engagement, and trustworthiness that arise from them (Cramm et al., 2013). According to various research, an individual with high social capital is someone who is connected to others and can provide valuable assistance in the form of information, influence, or instrumental assistance which provides relief when negative life events strike (Villalonga-Olives & Kawachi, 2015). People who have polite, supportive, and trustworthy networks show higher levels of SRH than those who are more solitary since social capital protects them from the negative consequences of unemployment and poverty (Cramm et al., 2013). As there is a strong relationship between greater social capital and higher life satisfaction, the social capital of individuals is linked with better SRH outcomes. Higher levels of SRH are obtained via psychosocial processes such as the provision of support from neighbours and the enhancement of self-esteem and mutual respect.

Functional (e.g., financial, emotional, personal & health-related assistance) and structural (e.g., size of these supports) support are positively related to SRH as they produce

certain goods which may prevent worries about the future and can mitigate adverse health effects (Hooghe, 2007). If such conditions are poor, then receiving support may be more difficult, particularly for the elderly (Cramm et al., 2013). Social capital can be considered an important predicting factor of SRH of older adults in the community (Cramm et al., 2013; Easterlin, 2000) as it results in higher degrees of social organization, including the provision of instrumental support (e.g., support in times of sickness and help with transportation, buying groceries and medicines, picking up mail, throwing away garbage, and managing the financial situation) which may lead to higher levels of SRH (Cramm et al., 2013). Given that older adults have a more stable living situation and spend a large portion of their leisure time at home, it is reasonable to assume that their neighbours and the local environment have an effect on them (Mohnen et al., 2011).

Socio-demographic factors

According to the population health model, health outcomes may differ by ethnicity, socioeconomic status, region, and gender (Kindig & Stoddart, 2003). It is also found that age, sex, marital status, income, education, ethnicity, and geographical location (urban vs. rural), are possible indicators of external resources which act as buffers, allowing people to achieve better SRH-levels and contribute significantly to the disparities in good SRH (Erdem et al., 2015; Nieboer & Lindenberg, 2002; Nieboer et al., 2005). Many scientists differ in their opinion regarding the effects of sociodemographic characteristics on health, thinking that cultural values are intrinsically tied to these elements. Factors that are crucial for health in one culture may be less essential in another because people in various cultures have different norms/values/perceptions (Momtaz et al., 2011).

Age

Age is a significant predictor of health, especially among the elderly. Research found that with increasing age health deteriorates, as a result, SRH lowers as well. A possible explanation for the detrimental effect of aging on health may be a decline in physical health, immune system deterioration with greater susceptibility to chronic medical conditions, life pressures, widowhood, a decline in family ties and social involvement, and changes in living arrangements (Wilhoite, 1994; Bennett, 2005).

Sex

As for gender, empirical research suggests that elderly women have a longer life expectancy but poorer health status, than males for a variety of reasons. First, women are more prone to spend a significant portion of their additional years dealing with illness and disabilities, they also have a higher vulnerability to stressors and distress (McDonough & Walters, 2001). Second, when compared to their elder male counterparts, women are more likely to be widowed and to have higher rates of morbidity (especially chronic conditions) (McDonough & Walters, 2001). Third, with increasing age, women are more likely to live in poverty than older men since they have fewer socioeconomic resources as a result of gender segregation in the labor market and women's less stable employment. According to social theory, the origin of poor health lies in women's limited access to the material and social conditions of life that promote health (McDonough & Walters, 2001). Finally, the access to economic and emotional resources by men and women may be different as a result of their social network characteristics which will lead to differences in health between the sexes (Pinquart & Sorensen, 2001).

In South African society these gender inequities exist also, with women having lower health than men as women are overrepresented among those living with and dying from HIV/AIDS (Doyel & Hoffman, 2009). In recent years, the death rate among South African women aged 18-60 has risen dramatically. Approximately half of these deaths are caused by HIV, 16% by infections and maternal causes, and 24% by the rising prevalence of non-communicable diseases. These chronic issues aren't necessarily fatal, but they can be a significant source of illness and disability. Breast and cervical cancer among women (incidence of breast cancer is much higher in White women who live in more affluent populations while cancer of the cervix is a more common problem among Black women, particularly in rural areas (Denny, 2010). Also, cardiovascular disease and mental health issues are amongst the most common chronic diseases in women, which are particularly challenging for poorer women and those in older age groups.

Women are also more likely than men to suffer from depression and anxiety disorders. The HIV epidemic is considered a major cause of depression in affected individuals (mostly women) as well as those who look after those who are (Doyel & Hoffman, 2009). Severe depression is the second leading cause of years lost due to disability among South African women, after HIV, according to the Medical Research Council. Low socioeconomic status, unemployment, and a lack of education and decision-making autonomy are factors that cause depression in women, in particular in rural Black women, who make up half of South Africa's poorest population (Doyel & Hoffman, 2009).

Marital status

In addition, findings show that marital status is a strong predictor of SRH in old age. Compared to widowed or divorced individuals, married people have additional sources of self-esteem and are suffering less from loneliness, which positively contributes to health and SRH. Besides that, scholars argue that marriage provides security and, especially in traditional societies, is a powerful source of social and financial support for couples to deal with life stress. Another possible explanation is that married people have a better chance of benefiting from a supportive intimate relationship, which encourages commitment between spouses that results in a higher level of health (Dickerson, 2007).

Socio-economic status (SES)

Socio-economic status (SES), conceptualized as education and income, accounts for a major portion of population health and SRH, and is considered as an essential predictor of socio-economic disparity in a community (Pampel et al., 2010; Galobardes et al., 2007). When Himanshu et al. (2019) compared data on SRH, he discovered that SRH was most highly associated with wealth (includes income and all accumulated material resources) and access to basic education. Hence, it is evident that wealth and wealth-related factors are closely linked to SRH around the world.

A meta-analysis of global SRH (Marks et al., 2006) found that countries with high Gross Domestic Product (GDP) report higher levels of SRH compared to countries with low GDP, such as South Africa (Blanchflower & Oswald, 2004). Income has been found to be a strong predictor of quality of life and higher health levels (Momtaz et al., 2011; Flinterman et al., 2019). High-income individuals are having a much lower risk of low SRH outcomes than low-income individuals (Fahey et al., 2005; Keck & Krause, 2007) since they are able to substitute one resource for another, while low-income individuals always experience poor SRH levels due to a lack of services (Cramm et al., 2012). People with higher income levels are said to be able

to easily meet their basic needs, such as food, housing, and health, and hence achieve a higher level of SRH (Fuentes & Rojas, 2001).

In 2011, the GDP in South Africa was estimated at $375 billion U.S. dollars but this has declined to about $351 billion in 2019 as foreign exchange reserves increased from $3 billion to nearly $50 billion, resulting in a diversified economy with an increasing and substantial middle class (The World Bank, 2021). In addition, the World Bank's most recent estimate of South Africa's Gini-coefficient of income inequality in 2014 was 63.1, making it one of the world's highest (Harmse, 2014). Wilkinson suggested that income disparity within a country or community is an important indicator of its health. Using data from the Health and Lifestyle Survey, with which the relationship between income and morbidity is estimated, Wilkinson has argued that health responds better to changes in income among the poor. He also argues that redistribution of wealth to this group would result in considerable improvements in health which would not be offset by negative effects on the better off (Wilkinson, 1992). Finally, a legacy of exclusion, as well as the nature of economic growth, which is not pro-poor and does not generate enough jobs, contribute to high wealth disparity (The World Bank, 2021).

Further, previous findings reveal a positive link between educational attainment and a variety of health indicators, including happiness, quality of life, wellbeing, and perceived health (Kubzansky et al., 1998; Murrell et al., 2003). It is suggested that more education leads to better health, a higher income, and better job opportunities (Silles, 2009). There is also evidence that older people with a greater degree of education feel less lonely, have less anxiety, and have higher SRH than those with a lower degree of education. Those with lower education are more likely to report worse SRH as they suffer from more diseases, such as psychological stress and depression (Erdem et al., 2015). Education, after all, allows people to become more conscious of the health consequences of their actions and to build stronger self-management (Lynch & von Hippel, 2016).

Geographical location

Among elderly people, several researchers have discovered many differences between rural and urban areas in terms of well-being, quality of life, life satisfaction, happiness, and mental health, particularly in poor countries (Bergdahl et al., 2007; Dong & Simon, 2009; Kovess-Masfety et al., 2005; Mansfield et al., 1988; Sabbah et al., 2003). The geographical location (urban/rural, deprived/non-deprived) influence SRH as it plays an important role in determining the lifestyles, nature, and level of access to health, social services, social support, economic status, and environmental and occupational conditions (Galea, 2005; Smith, Humphreys & Wilson, 2008; Dussault & Franceschini, 2006). Individuals appear to report higher levels of SRH when their neighbourhood is less deprived (Verhaeghe & Tampubolon, 2012). It is found that urban location is associated with a better lifestyle, better access to health services, higher income and education level, and better occupational conditions (Phaswana-Mafuya & Peltzer, 2013, Galea, 2005; Smith et al., 2008; Dussault & Franceschini, 2006). In rural South Africa, elderly are overrepresented which, during the period 2000 to 2010, resulted in a 2.6-fold increase in the total number of chronic diseases and disabilities requiring long-term care. In rural areas women frequently take on caring tasks (nursing and taking care of grandchildren). Also the family's only source of income often only is a social pension (Xavier Gómez-Olivé et al., 2010).

Ethnicity

Ethnic groups differ in their self-perceptions of health, their conceptualization of what constitutes health, and the determinants that factor into their self-assessments of health. Research reveals that differences in the definition of 'Health' are often related to group referents and lifetime experiences (Damron-Rodriguez et al., 2005). In a study of elderly with chronic illness, Blacks tended to focus more on the presence or absence of conditions and health problems, whereas Whites focused more on physical functioning (Silverman et., 2000). As a result of South Africa's long history of colonization and apartheid regulations, even after democracy (post-apartheid), a racially stratified society exists in which discrimination, disparities in income levels, and differential access to health care and educational level are found (Charasse-Pouélé & Fournier, 2006). Black African communities experience discrimination and unequal distribution of resources, such as water supply and sanitation, as well as lower resources and understaffing of hospitals and clinics in comparison to White communities (Franchi & Swart, 2003; James & Lever, 2000). According to research, Black Africans reported higher levels of ill health and mental health problems than Whites (Williams et al., 2008). The country has a huge inequality in racial health, as evidenced by exposure to various health risk factors and differences in morbidity and mortality among South African racial groups. In 2019 the most common conditions in elderly were Hypertension, Diabetes, Asthma, chronic lung disease (emphysema, bronchitis, COPD), Depression, and Angina (Chang et al., 2019). Regarding chronic conditions, there are ethnic health disparities between Whites (edentulism), Coloureds (arthritis, hypertension, stroke and/or angina, edentulism and low vision), Blacks (HIV, asthma, lung diseases, and depression) and Indians or Asians (arthritis and diabetes) (Phaswana-Mafuya & Peltzer, 2018). Disability-activities of daily living (ADLs) and lower cognitive functioning were observed at a higher proportion among older Blacks, functional disability is mostly reported by Indians or Asians, and the highest cognitive functioning is found in Whites followed by Coloured (Phaswana-Mafuya & Peltzer, 2018).

The health pessimism hypothesis (operationalized as "a considerable disparity between subjective and objective health status) may play a role in the assessment of African/Blacks of their health (Boardman, 2004). According to Boardman, Black older individuals are more pessimistic about their health than Whites and have a negative perception of their health. Even when the health state of the Black and White elderly is similar this negative perception persists (Boardman, 2004). This idea of health pessimism is highly likely to lead to a need for medical attention on a regular basis (Boardman, 2004). Lifetime experiences, according to social science research, result in a poorer health assessment. For example, in everyday life, Black people face interpersonal abuse from others, which is likely to contribute to increased health pessimism (Boardman, 2004). It is also found that being Black and having a lower socioeconomic position are linked to a poorer reported health status and a higher mortality rate. The fact that Black Africans have lower levels of health literacy may contribute to their poor health (Phaswana-Mafuya & Peltzer, 2018).

In addition various studies conducted in South Africa show that Whites exhibited higher SRH compared to Blacks, Coloured and Indian/Asian (Phaswana-Mafuya & Peltzer, 2018). Life expectancy was also about 50% higher for White adult women compared to Black African women. Fletcher et al. (2010) concluded that non-White employees are more likely to work in harsher working conditions, have lower incomes, and work more hours. Physically demanding work for Black men has a major negative influence on their health and results in poorer (self-rated) health. In addition, in ethnically diverse neighbourhoods, solidarity and trust are lower, mutual help and cooperation are rarer and friends are fewer. Growing ethnic and cultural diversity poses a threat to social connections in society (Gijsberts et al., 2012), and is expected

to negatively impact SRH. In addition, it appears that blacks are overrepresented in the lowest income quintile while Whites who live in metropolitan areas are overrepresented in the highest income quintile.

Based on theory and previous research this paper hypothesises that even after controlling for other social determinants of health (e.g. marital status, gender, age, etc.). Higher levels of social cohesion and social capital, higher education and income level, urban location, and belonging to an ethnicity group other than African/Black are associated with good SRH in South Africa.

The composition of concepts that are used in this study is represented by the conceptual model (figure 1) below.

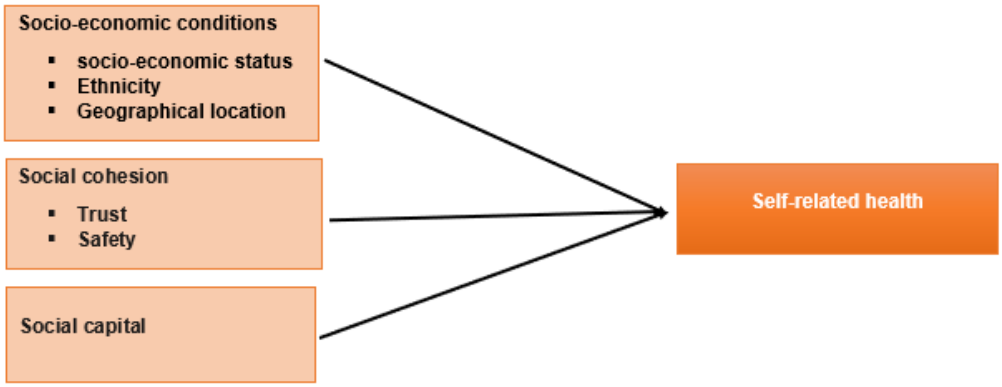

Figure 1. Conceptual model

Chapter 3: Research method

Participants and Sampling

In this study, the relationship between social cohesion, social capital, socio-economic status, ethnicity, and geographical location, and SRH among 50 years and older men and women in South Africa is investigated with the use of SAGE Research Methods Datasets. The current study used cross-sectional data, obtained from WHO's SAGE study, from South African participants in wave 1 of the World Health Organization's (WHO) Study on Global AGEing and Adult Health (SAGE). The wave 1 survey was conducted between 2007 and 2010 (WHO, 2011). SAGE gathers data from nationally representative samples, based on cluster sampling design with a known probability to generate estimates based on general population parameters of individuals aged ≥ 50 years, with a smaller cohort of persons aged 18 to 49 for comparison purposes, in six low- and middle-income countries (China, Ghana, India, Mexico, the Russian Federation, and South Africa). In all countries, standardized SAGE survey instruments with five key sections were used: 1) household questionnaire; 2) person questionnaire; 3) proxy questionnaire; 4) verbal autopsy questionnaire; and 5) appendices like showcards (WHO, 2021). Only individual level surveys and dataset were used for the current analysis. Access to the dataset has been requested by filling a data inquiry form, which contains a brief overview of this research. After the Sage Staff assessed the feasibility of the analysis access has been granted. The inclusion criteria included individuals which are 50 years of age or older who participated in the study and reside in South Africa. The study sample comprised 3.840 participants. All analyses were performed using IBM SPSS Statistics v26.

Measurements

In this study, social cohesion is perceived as trust and safety in the local population and outside the neighbourhood such as trust in co-workers and strangers. Social capital refers to interpersonal interactions/relationships and the concept of individual support. Personal relationships have been used as an indicator of social capital based on the assumption that if people are (very) satisfied with personal relationships they can expect to receive help when needed.

A Spearmen correlation will be used to determine the magnitude to which social cohesion, social capital, socio-economic status, ethnicity (African/Black, Whites, Coloured, and Indian/Asian), and geographical location, and SRH are related and the direction to which the variables tend to change together (Prematunga, 2012). The Spearman correlation determines if two continuous or ordinal variables have a monotonic relationship, variables in a monotonic relationship tend to change at the same time, but not always at the same rate. The most variables used in this research have a nominal measurement level. The Spearman correlation coefficient, denoted by rho, varies between −1.00 and +1.00 and is considered to be useful to minimize the effects of extreme scores/ outliners, by ranking the data, and to deal with abnormality (and if the sample is small) (Field, 2013).

Further, the association between social cohesion, social capital, socio-economic status, ethnicity, and geographical location, and SRH (dichotomized) will be evaluated through a multivariate logistic regression model by the Odds Ratio (95% CI), B coefficients, and p-value. This multivariate logistic regression analysis is an appropriate approach for this study because it allows to relate a dichotomous outcome variable to one or more predictors and to determine the degree to which different independent variables (predictors measured at interval or ratio level) are linearly related to the independent variable SRH.

Dependent variable

The outcome variable, SRH, is categorical and is dichotomized. By asking respondents to rate their perceived general health on a five-point scale SRH is measured. A single-item measure of subjective health—"In general, how would you rate your current health status?"—is used to assess self-ratings of health. The five response categories are ranged as 'Very good' (1), 'Good' (2), 'Moderate' (3), 'Bad' (4), and 'Very bad' (5), and are recommended by the World Health Organization (WHO) and the European Network for the Calculation of Health Expectancies (Euro-PEVES) 2 group (Robine & Jagger, 2003). As SRH is usually dichotomized, SRH in this research will be categorized as "Good" (very good, good, and moderate) and "Poor" (bad and very bad) (Lau & Ataguba, 2015; Chola & Alaba, 2013).

Independent variables

The independent variables are social cohesion, social capital, socio-economic status, ethnicity, and geographical location (urban, rural).

Social cohesion

Social cohesion is operationalized by using five questions about trust and safety developed by WHO SAGE and validated (Martínez-Martínez et al., 2020) as a social cohesion indicator: neighbourly trust, trust in co-workers, trust in strangers, perceived safety from crime and violence while staying alone at home, perceived safety while walking alone down the streets after dark (details are shown in table A1 of the Appendix). Respondents were asked to rank their degree of trust/safety on a five-point scale in the original survey. All responses are inverse coded for ease of analysis in the study. In other words, each response based on a five-point scale for trust items is ranged from 1 denoting "to a very small extent" to 5 "to a very large extent". For safety items responses ranged from "not safe at all" to "completely safe". At least three out of five questions should be answered to calculate a mean scale score. The higher the score, the more social cohesion there is.

The Cronbach's alpha (α) value of the social cohesion scale was 0.72, which suggests good reliability.

Social capital

To investigate the level of satisfaction with personal relationships in elderly, the question "How pleased are you with your personal relationships?" is used to assess social capital. Very satisfied (1), satisfied (2), neutral (3), dissatisfied (4) very dissatisfied (5), don't know (8), and not applicable were the options available to the respondents. The answers are reverse coded for the ease of the analyses. In other words, responses are ranged from 1 denoting "very dissatisfied" to 5 "Very satisfied". This assumes the higher the score on the question, the better the social capital. The replies "don't know" and "not applicable" are classified as "system missing values".

Socio-economic status

Socio-economic status (SES), conceptualised as education and income, is used in the analyses. The educational levels of individuals are dichotomized as lower (finished primary school or less; 0 (no formal education, less than primary school completed and primary school completed)) and higher (completed secondary school or more; 1 (secondary school completed, high school (or equivalent) completed, college/university completed, postgraduate degree completed)).

The Bayesian post estimation method was used to generate raw income estimates of respondents based on income indicators such as various dwelling characteristics (e.g., type of floor), a set of household ownership of durable goods (e.g., land and jewelry), and access to services (improved water, electricity, sanitation, and cooking fuel). The estimated household's income is measured by means of permanent income quintile (typically 5 quintiles). The first quintile group represents 20% of the population with the lowest income (an income less than or equal to the first cut-off value), while the fifth quintile group represents 20% of the population with the highest income (an income more than or equal to the first cut-off value) (an income greater than the fourth cut-off value) (Eurostat, 2021; Investopedia, 2020).

For the analysis five dummies are created, in the logistic regression permanent income quintile 5 is set as a reference group. Income quintiles 1, 2, 3, and 4 are incorporated in the model to estimate the difference in association with SRH compared to quintile 5. The results will be interpreted as the higher the income, the better/poorer the SRH (depending on the correlation coefficient and odds ratio).

Ethnicity

Ethnicity is divided into 4 sub-groups. The ethnic backgrounds are ranged as 'African/Black' (1), 'Whites' (2), 'Coloured' (3), and 'Indian/Asian' (4). For the regression analysis dummies are created for each ethnicity group. Whites have been taken as a reference category, African/Black', Coloured, and Indian/Asian have been added to the regression analysis to estimate the difference in association with SRH compare to Whites. The categories ''Other'' and ''Don't know' are regarded as missing values.

Geographical location

The geographical location is indicated as 'Urban' (1), 'Rural' (2), and 'Don't know' (8). For the analysis of the place of residence a dichotomous format is used: those living in urban areas are coded as (0) as opposed to those living in rural areas (1). The category 'Don't know' is regarded as system missing.

Data analysis

First of all, descriptive statistics are used to describe the means, standard deviations (SDs), numbers, and percentages. As the outcome variable is dichotomous a logistic regression is performed to determine the strength of associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location, and SRH by estimating odds ratios (ORs) with 95 percent confidence intervals (CIs). Social cohesion, social capital, and socio-demographic factors were entered into the multivariate logistic regression model simultaneously while adjusting for key individual background characteristics.

The following co-variables are added to the regression:

- **Age:** in the descriptive table, age is shown as a categorical variable (in 6 groups; (50 thru 59=1) (60 thru 69=2) (70 thru 79=3) (80 thru 89=4) (90 thru 99=5) (100 thru 120=6)) whereas in the bivariate and multivariate analysis age is included as a continuous variable.
- **Sex:** sex was coded in a binary format, males (coded as 0) as compared to females (coded as 1).
- **Marital status: marital status** was coded (1= Never married, 2= Currently married, 3= Cohabitating, 4= Separated/divorced, 5= Widowed, 8= Don't know, 9= Not applicable). For the analysis marital status is dichotomized as non-single (1) (including 'currently married 'and' cohabiting') and single (0) (including 'never married', 'separated/divorced'

and ‘widowed’). The categories ‘’Not applicable’’ and ‘’Don’t know’ are regarded as system missing values.

The covariates are incorporated into the regression to control for differences between individuals. In all analyses, statistical adjustments are applied for the socio-demographic factors to investigate the unbiased relationship between social cohesion, social capital, socio-economic status, ethnicity, geographical location (exposures), and SRH (outcome). The significance level will be set at $p < 0.05$. All statistical analyses will be conducted using IBM SPSS Statistics (version 26, IBM).

The dataset contains a total of 3.840 observations. Unfortunately, missing data is a common occurrence in large (observational) datasets, especially when surveys are used. This issue may arise as a result of incomplete questionnaires, equipment failure, privacy-sensitive issues, etc. Since the collected Sage Datasets include missing values, these should be dealt with appropriately. Preliminary exploratory data analysis was performed to appraise for missing values, detect outliers, and check for normality. For the calculation of the Spearman correlation matrix, pairwise deletion was chosen. In the findings section, the number of respondents (n (%)) for each variable used in the correlation is presented. For the logistics regression the standard setting ’listwise’ deletion is applied, in this case, SPSS discards all data for a case that has one or more missing values (n= 3036 (79.1%)).

Validity and reliability

To guarantee the validity of this research, social cohesion and social capital are operationalized as described and also the methods of analysis used in order to measure the associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and SRH. The use of well-validated measurement instruments, and applying the widely used 5-point Likert scale of social cohesion, further increases the validity of this research. The reliability of this study has been assured by the large sample size, the positive reliability test of the social cohesive scale questions and the careful and consistent way the research is conducted. Besides, results are generalizable for 50+ elderly because they are nationally representative data and possibly can be transferred (external validity) to comparable countries. In addition, this research can be repeated as it provides insight into how the research data were obtained and processed. The study is expected to produce the same results using the same available data and method.

The variance inflation factor (VIF) which indicates whether a predictor has a strong linear relationship with the other predictor(s), is calculated among independent variables to determine the severity of multicollinearity. Multicollinearity is a problem as it makes it impossible to isolate the individual predictor when two or more predictors are highly correlated. The value of multicollinearity (VIF) varies between 1.040 (IVF for social cohesion) and 4.546 (African/Black) in the model. All covariates' VIF scores did not exceed the acceptable value of 10, indicating that there were no issues with multicollinearity among the independent variables in the analyses (Field, 2013). Finally, the Nagelkerke R2 was calculated to determine how well the model fits the data (Field, 2013).

Chapter 4: Results

The characteristics of the study participants are shown in Table 1. The study included 3.840 participants with an average age (SD) of 62.7 (9.71) years. The participants are ranged in age from 50 to 113 years old, women made up more than half of the participants (57.4%). The majority of participants were non-single (53.3%) and had lower educational levels (71.7%). African/Black people made up the majority of the participants (62.3%), followed by coloured people (19.9%). Furthermore, urban areas accounted for more than half of the population (66.7%). The mean social cohesion scale score was 2.29 (0.77), and 70% of the participants are satisfied with their personal relationships (69.6%). Finally, about 83.6% of the respondents reported good SRH, only 16.4% reported poor SRH.

Table 1

Characteristics of the study population (n= 3.840)

Characteristics	n	%	Mean (SD)	Range
Age	3.840		62.73 (9.71)	50-113
Missing n(%)	0 (0%)			
50-59	1695	44.1		
60-69	1232	32.1		
70-79	662	17.2		
80-89	227	5.9		
90-99	21	0.5		
100-120	3	0.1		
Sex	3.840			
Missing n(%)	0 (0%)			
Female	2203	57.4		
Male	1637	42.6		
Marital status	3.769			
Missing n(%)	71 (1.8%)			
Non single	2007	53.3		
Single	1762	46.7		
Education level	3.780			
Missing n(%)	60 (1.6%)			
Lower	2708	71.6		
Higher	1072	28.4		
Ethnic background	3.293			
Missing n(%)	547 (14.2%)			
African/Black	2053	62.3		
White	269	8.2		
Coloured	655	19.9		
Indian/Asian	307	9.3		
Other	8	0.2		

Areas of residence	3.837			
Missing n(%)	3 (0.1%)			
Urban	2561	66.7		
Rural	1276	33.3		
Income level	3.821			3.06 (1.42)
Missing n(%)	19 (0.5)			
Quintile 1 (lowest)	729	19.1		
Quintile 2	753	19.7		
Quintile 3	731	19.1		
Quintile 4	792	20.7		
Quintile 5 (highest)	816	21.4		
Social cohesion	3.622 (94.3)		2.29 (0.77)	
Missing n (%)	218 (5.7)			
Social capital	3.626		3.90 (0.67)	
Missing n (%)	214 (5.6)			
Very satisfied	453 (12.5)			
Satisfied	2540 (70.0)			
Neutral	457 (12.6)			
Dissatisfied	162 (4.5)			
Very dissatisfied	14 (0.4)			
Self-rated health	3.758			
Missing n (%)	82 (2.1)			
Good	3141	83.6		
Poor	617	16.4		

In Table 2 associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location, and SRH are shown.

Table 2

Associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location, and SRH of South African elderly.

	Spearman's rho	**Sig. (2-tailed)**	**Sample size (%***)**
Gender (women)	-.009	.592	3.758 (100%)
Age in years	-.068**	.000	3.758 (100%)
Marital status (non single)	.049**	.003	3.688 (98.1%)
Education level (high)	.089**	.000	3.702 (98.5%)
Geographical location (rural)	-.035*	.030	3.755 (99.9%)
White	069**	.000	3.260 (86.7%)
African/Black	-.042*	.017	3.260 (86.7%)
Coloured	.019	.283	3.260 (86.7%)
Indian/Asian	-.022	.206	3.260 (86.9%)
Permanent income quintile	.101**	.000	3.740 (99.5%)
Social cohesion mean scale	.075**	.000	3.616 (96.2%)
Social capital	.228**	.000	3.620 (96.3%)

Notes: *. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

*** . Percentages are derived from a total of 3.758 (valid SRH scores).

As reported in Table 2, there is no association between gender and SRH (r= -0.009, p > 0.05), implying that women and men have similar SRH. Age was negatively associated with SRH (r= -0.068, p < 0.01), indicating that the higher one's age is, the lower the SRH.

Having a partner is associated with better SRH (r= 0.049, p < 0.01), as compared to being single. Education has a positive association with SRH (r= 0.089, p < 0.01), this means that older people with higher education are more likely to rate their health more positively compared to those with lower education. Rural residence is associated with poor SRH compared to an urban location (r= -0.035, p < 0.05). When it comes to ethnicity, being White is correlated with good SRH outcomes (r= 0.069, p < 0.01), while African/Black is associated with poor SRH outcomes (r= -0.042, p < 0.05). Further, there is no association between being Coloured or Indian/Asian and SRH.

Income is positively associated with SRH (r= -0.075, p < 0.01), older people with the highest income report better SRH than those with a lower income. Social cohesion has a positive correlation with SRH (r= 0.075, p< 0.01). This suggests that the more social cohesion, the better the SRH.

Social capital also has a positive correlation with SRH (r= 0. 228, p < 0.01). This means that the more satisfied individuals are with their personal relationships, the higher the SRH.

Table 3 reports the multivariate logistic regression analyses.

Table 3

Logistic regression results for relationships between social cohesion, social capital, socio-economic status, ethnicity, geographical location, and self-rated health among South African elderly.

	Unstandardized coefficients ***			**Standardized coefficients**
	B	**S.E.**	**Sig.**	**OR (95% CI)**
Independent variables				
Gender (women)	.103	.115	.370	1.109 (.885-1.388)
Age in years	-.019	.005	.000	.981** (.971-.992)
Marital status (non single)	.096	.116	.404	1.101 (.878-1.381)
Education level (higher)	.225	.142	.113	1.253 (.948-1.656)
Geographical location (rural)	.050	.116	.664	1.052 (.838-1.320)
African/Black	-.133	.279	.634	.876 (.507-1.512)
Coloured	-.173	.290	.552	.841 (.477-1.486)
Indian/Asian	-.598	.300	.047	.550* (.305-.991)
Q1	-.636	.204	.002	.529** (.355-.789)
Q2	-.368	.201	.067	.692 (.466-1.027)
Q3	-.632	.191	.001	.532** (.365-.773)
Q4	-.383	.189	.042	.682* (.471-.987)
Social cohesion mean scale	.168	.069	.016	1.183** (1.032-1.355)
Social capital	.804	.071	.000	2.234** (1.942-2.570)
Constant	-.169	.577	.770	.845
R2	.115 (Nagelkerke)			
n included in the analysis (%)	3036 (79.1%)			
Missing n (%)	804 (20.9%)			

Notes: * p ≤ .05 . ** p ≤ .01 (two tailed). SE, standard error; OR, odds ratio; CI, confidence interval. *** , continuous variable. Reference groups: man, single, lower education, urban residence, White, first highest quintile (Q5). Odds scores (OR) above indicate a positive relationship with self-rated health, below 1 a negative relationship with self-rated health.

Table 3 demonstrates the associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and SRH in analyses controlled for key background characteristics (age, sex, and marital status).

In this multivariate logistic analyse only background characteristics age and income were significantly associated with SRH. Higher age was associated with lower odds of reporting good SRH (OR = 0.98; 95% CI, 0.971-0.992; $p < 0.01$). With respect to permanent income, high income makes it more likely to report good SRH. Further, the table shows as compared to the highest income quintile (Q5), the first, third and fourth quintile are associated significantly with low SRH. Compared to Whites, individuals with ethnic background Indian/Asians are 0.55 less likely to report good SRH (OR = .550; 95% CI, .305-.991; $p < 0.05$). The other background characteristics, gender, marital status, education, ethnicity (African/Black and Coloured), and geographical area did not influence SRH significantly in the multivariate analysis. As for social cohesion, the odds of having a good SRH increases by factor 1.18 when social cohesion is high (OR = 1.183; 95% CI, 1.032-1.355; $p < 0.01$). Regarding social capital, the odds of having good SRH increase by factor 2.23 when individuals are (very)satisfied about their personal relationships (OR = 2.234, 95% CI, 1.942-2.570; $p < 0.01$).

Chapter 5: Discussion and conclusion

Discussion

Previous studies have linked social cohesion and social capital to various quality of life and health outcomes, but not yet specifically among older adults in South Africa. In this study, the associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and self-rated health among South African people (50+) is examined using cross-sectional data, obtained from WHO's SAGE study in wave 1 (conducted between 2007-2010) of the World Health Organization's (WHO) Study on Global AGEing and Adult Health (SAGE). The research question was: *What is the influence of social cohesion, socio-economic status, ethnicity, and geographical location on self-rated health among adults (50+) in South Africa?*

Bivariate associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and self-rated health

In the bivariate analyses the correlations show that all socio-demographic variables (age, marital status, education level, geographical location, ethnicity groups White and African/Black, and permanent income quintile) are significantly associated with SRH, except for gender and being Coloured or Indian/Asian. Gender and being Coloured or Indian/Asian were not significantly associated with SRH in the bivariate analyses. This result indicates that urban location, lower age, being non single, being White, being in a higher income quintile and having a higher education level were all positively associated with higher SRH, which is in line with previous research.

Apparently a decline in health is associated with being older and being single. Wilhoite (1994) and Bennett (2005) argue that a decline in physical health and immune system causes health problems. Dickerson (2007) indicates that being single decrease people's psychological well-being and health outcomes, as singles suffer more from loneliness and life stress and have fewer (financial) resources compared to non singles.

According to Murrell et al. (2003) higher education is associated with a better quality of life (less health risks and health problems), well-being and perceived health. Fahey et al. (2005) and Keck & Krause (2007) claim that high-income individuals have a much lower risk of low SRH since they are easily able to meet their basic needs, substitute one resource for another and have better access to (health) services. Also in line with the findings of this study, Galea (2005), Humphreys & Wilson (2008), Phaswana-Mafuya & Peltzer (2013), and Dussault & Franceschini (2006) found that urban location positively contributes to a better lifestyle and better access to health and social services. Also social support, economic status, and environmental and occupational conditions are better in less deprived area's.

As expected, the results also show that being African/Black is associated with poor SRH, which is in line with research in South Africa (Williams et al., 2008) and America, which both found that older Whites rate their health status higher than older Blacks as Blacks experience differences in health as a result of differences in education and/or income, persisting racial discrimination, less access to health facilities and less qualitative health care. However, as Boardman (2004) argued, it cannot be ruled out that the health pessimism hypothesis, caused by cultural or psychosocial background, plays a role in the assessment of African/Black's health.

Surprisingly, in this study, the correlation between gender and SRH was not significantly associated with SRH, implying there is no support for a difference between men

and women in SRH in the current study. This finding contrasts with research of McDonough & Walters (2001) and Doyel & Hoffman (2009) reporting that women are more likely to report poorer health compared to men. Macintyre, Hunt & Sweeting (1996) state that the lack of a gender discrepancy in self-reported health status puts into question the widely held idea that women have greater exposure to poor health than men. This highlights the importance of using a variety of health-status metrics since self-ratings of health are indicators of health status. These findings raise concerns about a gender based, generalized health response to life's ups and downs, and point to the need of more theoretical and empirical research on "gendered" experiences and their links to SRH.

According to Charasse-Pouélé & Fornier (2006), gender is a significant determinant for Africans, but not for Whites, as African Black women are suffering most from discrimination. However, McDonough & Walters (2001) found that health disparities between men and women had a negligible impact on SRH. According to Idler, Hudson & Leventhal (1999), one possible explanation for the overrating of SRH in women could be that female respondents are more likely to indicate ratings based on social activities and connections, as well as psychological, emotional, and spiritual traits, rather than biological criteria. To obtain a more accurate assessment of health in future research, it may be beneficial to set criteria for self-assessments of health, ranging from limited biomedical to the most global (include functioning, health behaviours, ability to engage in social activities, social relationships, psychological/emotional/spiritual, etc.) criteria in order to address the disparity between the two assessments. Given respondent's self-assessments and medical history, it's feasible to see if they overestimate or underestimate their health.

Being Coloured or Indian/Asian had no significant association with SRH. The results from the bivariate analysis indicate that Coloured and White people are associated with good SRH, while being Indian/Asian is associated with poor SRH. This is in line with Phaswana-Mafuya & Peltzer (2018) research findings. This research, conducted in South Africa among racial or ethnic groups among older adults, revealed that Indians and Asians reported the highest prevalence of poor SRH compared to other groups. This study considerd disabilities and chronic diseases. Coloured on the other hand had a lower self-reported health than White people, but a higher rating than Indian/Asian and African black people. These results are in line with the thesis' results.

Multivariate associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location and self-rated health

Similarly, the multivariate analysis, in the form of a logistic regression, shows that age, being Indian/Asian, permanent income, social cohesion, and social capital had a significant association with SRH.

Given the odds ratio's, age, permanent income, social cohesion, and social capital had a significantly greater impact on self-reported health as compared to the other study variables and so emerge in the study as variables that are most relevant for having good SRH.

The finding that greater social cohesion (Chuang, Chuang & Yang, 2013) and social capital (Ramlagan et al., 2013) increases the odds of having good SRH, supports the theory that social cohesion and social capital enhance SRH. This research also confirms the findings of Feng et al. (2021) on social cohesion among middle-aged and older adults in China. Similarly, the finding that older people with greater social capital are more likely to report high SRH is in accordance with Cramm et al. (2013) research findings from the Netherlands. As well as in the research of Feng et al. (2021) Social cohesion in this study refers to trust and safety in the neighbourhood but possibly also outside the neighbourhood such as trust in co-

workers and strangers (as also operationalized by Feng et al. (2021)), while social capital refers to the level of satisfaction with personal relationships based on the assumption that if people are (very) satisfied with personal relationships, they expect to receive help when needed. These findings imply that the enhancement of older people's perceived safety and trust (vital elements of social cohesion) and satisfaction about their personal relationships boosts their SRH. Furthermore, the demand for social support may increase as the number of chronic illnesses rises.

Also, the results from the logistic regression demonstrate that older adults with higher incomes are more likely to report good SRH. This result is consistent with theory indicating that individuals with greater income have a lower risk of poor SRH outcomes than those with lower incomes, and that increasing income is associated with better health as those people have better access to services and can easily meet their basic needs, such as food, housing etc. (Fuentes & Rojas, 2001; Fahey et al., 2005; Keck & Krause, 2007). Wilkinson (1992) suggested that redistribution of wealth to people with low incomes could result in considerable improvements in health. This finding is especially important for policymakers who are trying to prioritize community interventions in the country. In addition to a better distribution of wealth, insurance coverage and reducing rigidities in the access of African/Blacks to facilities are beneficial in order to give these minorities the opportunity to enjoy the benefits of a better health.

For all other socio-demographic characteristics in the multivariate analysis, like gender, marital status, education level, ethnicity (except for Indian/Asian), and geographical location, there was no significant association with SRH. With gender not having a significant effect in the bivariate analysis either.

Given the known association, based on the studies of Dickerson (2007), Phaswana-Mafuya & Peltzer (2018), and Humphreys & Wilson (2008), being non single, higher education, White, and living in an urban location is associated with better SRH, it is surprising not to find these associations in the multivariate analyses. A very small difference in SRH between singles and non-singles is found in the study of DePaulo & Morris (2005). They claim that the majority of single people share their homes with others, such as children, roommates, friends, and relatives. have close and long-lasting relationships and sexual relationships and support. Furthermore, race is considered an important factor that defines the relationship between civil status and SRH. The ethnic groups who are non-single probably have lower SRH compared to singles of other ethnic groups.

Surprisingly the large and persistent associations between higher education and living in an urban or rural location and health have no significant effect in the multivariate analysis in this study either. It is possible that neighborhood services, social capital, and social cohesion, act as a buffer against the detrimental effects of having a lower education level or living in a rural location, and therefore compensate the impact of education and geographical location on SRH in older people. Besides, differences in effect on SRH between rural and urban areas may be mitigated by the availability to health services and working circumstances.

It's plausible that the influence of the other variables in the multivariate analysis mediated the effects of variables that were significant in the bivariate analyses and the influence of other variables in the model (i.e., conditional effect).

When income levels, social capital, social cohesion, and ethnicity group African/Back are included in the model, the effect of some variables becomes insignificant. In particular the effects of the co-variates (marital status, education level, ethnicity (except for Indian/Asian), and geographical location) have been corrected. An example of such an effect is that the

negative influence of being Black on SRH is dissipated when income level is entered into the model.

According to Kerkhofs & Lindeboom (1995), Groot (2003), and Murray et al. (2001) the problem of the so called ‘’scale of reference bias’’, ‘’state-dependent reporting bias’’ or "response category cut-point shift" frequently hampered the analysis of subjective measures of health between races as the question on SRH is answered relative to a certain reference group (other persons in a similar situation), situation (the current situation with (recent) experiences in the past) or sources of well-being with those of others (e.g., health problems, occupation, income) which is unobservable to the researcher. This indicates that subjective health status measures don't have to be tied to the underlying objective health status alone. For example, when elderly people with objective health impairment compare themselves to individuals of their own age who are in poorer condition, can cause them to give an excellent or good health estimation.

Strauss & Thomas (1998) believe that healthcare access, availability and utilization, individual income, work status, and cultural, economic, social, or gender expectations for health can cause major biases on SRH variables in terms of answer categories and cut-off points for health assessment. These biases can have significant implications for assessing and explaining health inequalities, as Lindeboom & Van Doorslaer (2004) pointed out. Charasse-Pouélé & Fournie (2006) claim that this topic may be of particular concern in South Africa, where racial discrimination has historically led to some people concealing their diseases.
To avoid this type of ‘’scale of reference bias’’, it is necessary to account for potential differences in cut-points between ethnicity groups when reporting SRH, therefore it is maybe helpful to explicitly ask people to compare their own health to that of people in comparable situations, etc. This will prevent people from answering subjective health questions in an idiosyncratic way.

Study strengths and limitations

This study has several strengths. First, the data analysed are from a large, representative sample from the elderly South African population. The source of the data is the well-known organization WHO SAGE. Second, although the study design was cross-sectional and causality (association does not imply causation) is not assessed and can’t be claimed, findings show that older adults may benefit most from high social cohesion, social capital, and income. Third, to minimise confounding bias, various potential confounders (e.g., socio-demographic characteristics) are included in the regression model, adjustment for covariates led to unbiased conclusions about the effects of social capital and cohesion on older adults’ SRH. Nevertheless, findings should be viewed in light of the study’s limitations. As this study is conducted in between 2007 and 2010 (old data) and the lack of privacy-sensitive information (like municipality and disease) the exact data does not accurately reflect the situation in South Africa at the moment. Also, as this study was the first to investigate the associations between social cohesion, social capital, socio-economic status, ethnicity, geographical location, and SRH among South African people, more research is needed to support the study findings and increase their generalisability to samples from other populations.

The variable SRH originally included “Good”, “Moderate”, and “Poor” as response categories in the database. In the analysis, SRH was dichotomized into two categories: good and poor, as has been done in previous studies. As a result of the moderate answering category being classified as good in this study, a far greater number of people assessed their health as good than poor. Although this is in line with previous research, this dichotomization can lead to a misleading and unreliable outcome.

Moreover, the operationalization of social capital is a limitation in this study. Social capital refers to relationships among individuals and the idea that individuals can obtain support, through direct and indirect ties such as from family, friends, and neighbours, whereby people care for and watch over each other. Questions concerning support/help, which seemed more suited for measuring social capital, were rarely responded (n=20). As this number does not present a solid picture, it was decided to look for another indicator for measuring social capital. For the analysis, satisfaction with personal relationship has been used as an indirect indicator of social capital, assuming that if one is (very) satisfied with his/her personal relationship, this person is very likely to receive physical, emotional and/or instrumental support when needed. It should be taken into account that the answers to this question are an illustration of the subjective experience with personal relationships. The assessment of a person's personal relationship is not merely determined by the frequency with which he or she receives support. Furthermore, a person can be content with certain parts of a personal relationship without enlisting or receiving the assistance of/from others. This may apply to elderly who live alone in a deprived neighbourhood, and experience feelings of social isolation, alienation, and loneliness. The important implication of this finding is that it is not simply a matter of ‘‘one size fits all”– being (very) satisfied about the personal relationship doesn’t always imply receiving support from others and vice versa.

For further research regarding social capital, it may be relevant to investigate how receiving assistance contributes to social capital and if social capital is related to social cohesion and health behaviours like smoking, physical activity, wellbeing (potential interdependencies), etc. Besides, for future studies it could be relevant to include objective indicators for health such as multimorbidity. Multimorbidity was not incorporated study and is, therefore, a limitation in the current study, it is therefore not clear whether or how chronic conditions affect SRH. Due to data limitations (too many missing values), multimorbidity could not be included in this study. According to Chang et al. (2019), people with chronic conditions have a higher risk of poor quality of life and poor health outcomes than those who do not have a chronic disease. They also claim that multimorbidity, which is more common in the elderly, is linked to greater mortality rates, health costs, higher frequency of service utilization, and poor SRH, physical functioning, and well-being. Therefore, further investigations into the burden of disease, and co-morbidities are needed.

In addition, future studies on SRH may find it intriguing to look into the association between Health Services Coverage, risk factors, health behaviours, Quality of Life, and SRH, as they all have the potential to influence health in some manner. Also because of the diverse races, cultural identities, languages, and ethnic ties that exist in South Africa, it may be interesting to investigate SRH outcomes in the different municipalities to detect deviations and to draw up an appropriate and effective approach. Furthermore language (as a result of the huge number of low educated elderly (71,6%) shown in the descriptive analysis) may play a role in the negative assessment of SRH. According to the Medical Research Council (2019), millions of South Africans, particularly in rural regions, cannot be considered literate (having passed grade 3 and being able to read and write simple sentences). In every population category, women outnumber males in terms of illiteracy. Nivel Research (2017) shows that people who have difficulty with reading and writing are more likely to be less healthy, feel less healthy, and to use healthcare more frequently compared to literate individuals. As a result, future research should look into the role of language in SRH evaluation.

Conclusion

Bivariate associations were found between being a male, White, younger, and non-single, living in urban areas, and having a high income and education level, social cohesion, and social capital, and good SRH. In the multivariate logistic regression analyses only being older, high income, social cohesion, and social capital were associated with good SRH. This study emphasizes the importance of high social cohesion, social capital, and income in promoting the elderly's health. Therefore, government policymakers must consequently intensify efforts aimed at improving living circumstances, income level, educational status, social cohesion, and social capital among the elderly in the country. Especially African/Black people, those living in rural areas, and with lower levels of education are requiring more attention and effort. Prioritizing community interventions in the country and developing a comprehensive welfare strategy could make a positive contribution in achieving better self-rated health.

References

Abdallah, S., Thompson, S., Michaelson, J., Marks, N., & Steuer, N. (2009). The Happy Planet Index 2.0: Why good lives don't have to cost the Earth.

Albrecht, G. L. (1994). Subjective health assessment. *Measuring health and medical outcomes*, 7-26.

Arndt, C., & Lewis, J. D. (2000). The macro implications of HIV/AIDS in South Africa: a preliminary assessment. *South African Journal of Economics*, *68*(5), 380-392.

Ataguba, J. E., Akazili, J., & McIntyre, D. (2011). Socioeconomic-related health inequality in South Africa: evidence from General Household Surveys. *International journal for equity in health*, *10*(1), 1-10.

Benatar, S. (2013). The challenges of health disparities in South Africa. SAMJ: South African Medical Journal, 103(3), 154-155.

Bergdahl, E., Allard, P., Lundman, B., & Gustafson, Y. (2007). Depression in the oldest old in urban and rural municipalities. *Aging and mental health*, *11*(5), 570-578.

Bernauer, T., & Aerni, P. (2006). Competition for public trust: causes and consequences of extending the transatlantic biotech conflict to developing countries. In *The International Politics of Genetically Modified Food* (pp. 138-154). Palgrave Macmillan, London.

Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. Journal of PublicEconomics,88, 1359–1386.

Boardman, J. D. (2004). Health pessimism among Black and white adults: the role of interpersonal and institutional maltreatment. *Social Science & Medicine*, *59*(12), 2523-2533.

Boardman, J. D. (2004). Health pessimism among black and white adults: the role of interpersonal and institutional maltreatment. *Social Science & Medicine*, *59*(12), 2523-2533.

Bowling, A. (2005). Just one question: If one question works, why ask several?.

Bradshaw, D., Msemburi, W., Dorrington, R., Pillay-van Wyk, V., Laubscher, R., & Groenewald, P. (2016). HIV/AIDS in South Africa: how many people died from the disease between 1997 and 2010?. *Aids*, *30*(5), 771-778.

Casper, M. (2001). A definition of "social environment". *American journal of public health*, *91*(3), 465-470.

Cattell, V. (2001). Poor people, poor places, and poor health: the mediating role of social networks and social capital. *Social science & medicine*, *52*(10), 1501-1516.

Centraal Bureau voor de Statistiek. (2020, October 20). *Gezondheidstoestand.* https://www.cbs.nl/nl-nl/onze-diensten/methoden/begrippen/gezondheidstoestand

Chandola, T., & Jenkinson, C. (2000). Validating self-rated health in different ethnic groups. *Ethnicity & health*, *5*(2), 151-159.

Chang, A. Y., Gómez-Olivé, F. X., Payne, C., Rohr, J. K., Manne-Goehler, J., Wade, A. N., ... & Salomon, J. A. (2019). Chronic multimorbidity among older adults in rural South Africa. *BMJ global health*, *4*(4), e001386.

Charasse-Pouélé, C., & Fournier, M. (2006). Health disparities between racial groups in South Africa: A decomposition analysis. *Social science & medicine*, *62*(11), 2897-2914.

Chola, L., & Alaba, O. (2013). Association of neighbourhood and individual social capital, neighbourhood economic deprivation and self-rated health in South Africa–a multi-level analysis. *PLoS One*, *8*(7), e71085.

Chuang, Y. C., Chuang, K. Y., & Yang, T. H. (2013). Social cohesion matters in health. *International journal for equity in health*, *12*(1), 1-12.

Coovadia, H., Jewkes, R., Barron, P., Sanders, D., & McIntyre, D. (2009). The health and health system of South Africa: historical roots of current public health challenges. *The Lancet*, *374*(9692), 817-834.

Cramm, J. M., & Nieboer, A. P. (2011). The influence of social capital and socio-economic conditions on self-rated health among residents of an economically and health-deprived South African township. *International Journal for Equity in Health*, *10*(1), 1-7.

Cramm, J. M., Koolman, X., Møller, V., & Nieboer, A. P. (2011). Socio-economic status and self-reported tuberculosis: a multilevel analysis in a low-income township in the Eastern Cape, South Africa. *Journal of Public Health in Africa*, *2*(2).

Cramm, J. M., Møller, V., & Nieboer, A. P. (2012). Individual-and neighbourhood-level indicators of subjective well-being in a small and poor Eastern Cape township: The effect of health, social capital, marital status, and income. Social indicators research, 105(3), 581-593. doi:10.1007/s11205-011-9790-0.

Cramm, J. M., Van Dijk, H. M., & Nieboer, A. P. (2013). The importance of neighborhood social cohesion and social capital for the well being of older adults in the community. *The Gerontologist*, *53*(1), 142-152.

Damron-Rodriguez, J., Frank, J., Enriquez-Haass, V., & Reuben, D. (2005). Definitions of health among diverse groups of elders: Implications for health promotion. *Generations*, *29*(2), 11-16.

Data for South Africa, Upper middle income | Data. (n.d.). The World Bank. Retrieved April 30, 2021, from https://data.worldbank.org/?locations=ZA-XT.

Deneulin, S., & Townsend, N. (2007). Public goods, global public goods and the common good. *International Journal of Social Economics*.

Denny, L. (2010). Cervical cancer in South Africa: an overview of current status and prevention strategies. *Continuing Medical Education*, *28*(2).

DePaulo, B. M., & Morris, W. L. (2005). Singles in society and in science. *Psychological Inquiry*, *16*(2-3), 57-83.

Dickerson, P. (2007, August). The impact of marital status and social support on psychological distress among African American women. In *annual meeting of the american sociological association*.

Diener, E. (2006). Guidelines for national indicators ofsubjective well-being and ill-being.Journal ofHappiness Studies,7, 397–404.

Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective well-being?. *Social indicators research*, *57*(2), 119-169.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of economic psychology*, *29*(1), 94-122.

Dong, X., Beck, T., & Simon, M. A. (2009). Loneliness and mistreatment of older Chinese women: does social support matter?. *Journal of women & aging*, *21*(4), 293-302.

Doyel, L., & Hoffman, M. (2009). The growing burden of chronic diseases among South African women. *Continuing Medical Education*, *27*(10).

Dussault, G., & Franceschini, M. C. (2006). Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce. *Human resources for health*, *4*(1), 1-16.

Easterlin , R. A. (2001). Income and happiness: Towards a unified theory. Economic Journal, 111, 465 – 484 . doi:10.1111/1468-0297.00646.

Ecob, R., & Smith, G. D. (1999). Income and health: what is the nature of the relationship?. *Social science & medicine*, *48*(5), 693-705.

Erdem, Ö., Prins, R. G., Voorham, T. A., Van Lenthe, F. J., & Burdorf, A. (2015). Structural neighbourhood conditions, social cohesion and psychological distress in the Netherlands. *The European Journal of Public Health*, *25*(6), 995-1001.

Eurostat. (n.d.). *Glossary:Income quintile group - Statistics Explained.* Eurostat, Statistics Explained. Retrieved March 18, 2021, from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Income_quintile_group.

Fahey, T., Whelan, C. T., & Maître, B. (2005). *First European quality of life survey: income inqualities and deprivation*. Office for Official Publications in the European Communities.

Feng, Z., Cramm, J. M., & Nieboer, A. P. (2021). Associations of Social Cohesion and Socioeconomic Status with Health Behaviours among Middle-Aged and Older Chinese People. *International Journal of Environmental Research and Public Health*, *18*(9), 4894.

Ferraro, K. F. (1993). Are black older adults health-pessimistic?. *Journal of Health and Social Behavior*, 201-214.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.

Flin, R., & Burns, C. (2004). The role of trust in safety management. *Human Factors and Aerospace Safety*, *4*(4), 277-287.

Flinterman, F., Bisscheroux, P., Dijkema, P., den Hertog, F., de Jong, M., Vermeer, A., & Vosjan, M. (2019). Positieve Gezondheid en gezondheidspercepties van mensen met een lage SES. *Tijdschrift voor gezondheidswetenschappen*, *97*(3), 96-105.

Franchi, V., & Swart, T. M. (2003). From apartheid to affirmative action: The use of 'racial'markers in past, present and future articulations of identity among South African students. *International Journal of Intercultural Relations*, *27*(2), 209-236.

Fuentes, N., & Rojas, M. (2001). Economic theory and subjective well-being: Mexico. *Social indicators research*, *53*(3), 289-314.

Galea, S., & Vlahov, D. (2005). Urban health: evidence, challenges, and directions. *Annu. Rev. Public Health*, *26*, 341-365.

Galobardes, B., Lynch, J., & Davey Smith, G. (2007). Measuring socioeconomic position in health research. British Medical Bulletin, 2007, 1–17.

Ghazi, H. F., Sutan, R., Elnajeh, M., Qader, M. A., & Baobaid, M. F. (2017). The importance of social participation and networking among elderly people: short review. *J. Manage. Sci*, *15*, 99-107.

Gijsberts, M., Van Der Meer, T., & Dagevos, J. (2012). 'Hunkering down'in multi-ethnic neighbourhoods? The effects of ethnic diversity on dimensions of social cohesion. *European Sociological Review*, *28*(4), 527-537.

Groot, W. (2003). Scale of reference bias and the evolution of health. *The European Journal of Health Economics, formerly: HEPAC*, *4*(3), 176-183.

Hamilton, C. V. (2001). *Beyond racism: race and inequality in Brazil, South Africa, and the United States*. Lynne Rienner Publishers.

Harmse, L. (2014). *South Africa's Gini coefficient: causes, consequences and possible responses* (Doctoral dissertation, University of Pretoria).

Himanshu, H., Arokiasamy, P., & Talukdar, B. (2019). Illustrative effects of social capital on health and quality of life among older adult in India: Results from WHO-SAGE India. *Archives of gerontology and geriatrics*, *82*, 15-21.

Hooghe, M. (2007). Social capital and diversity generalized trust, social cohesion and regimes of diversity. *Canadian Journal of Political Science/Revue canadienne de science politique*, 709-732.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. *Journal of health and social behavior*, 21-37.

Idler, E. L., Hudson, S. V., & Leventhal, H. (1999). The meanings of self-ratings of health: A qualitative and quantitative approach. *Research on aging*, *21*(3), 458-476.

Kabudula, C. W., Tollman, S., Mee, P., Ngobeni, S., Silaule, B., Gómez-Olivé, F. X., ... & Byass, P. (2014). Two decades of mortality change in rural northeast South Africa. *Global health action*, *7*(1), 25596.

Kagan, J. (2020, November 27). *Permanent Income Hypothesis.* Investopedia. https://www.investopedia.com/terms/p/permanent-income-hypothesis.asp.

Kawachi, I., & Berkman, L. (2000). Social cohesion, social capital, and health. *Social epidemiology*, *174*(7).

Kawachi, I., Kennedy, B. P., & Glass, R. (1999). Social capital and self-rated health: a contextual analysis. *American journal of public health*, *89*(8), 1187-1193.

Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health. In *Social capital and health* (pp. 1-26). Springer, New York, NY.

Keck, W., & Krause, P. (2007). How does European Union enlargement affect social cohesion?. In *Advancing quality of life in a turbulent world* (pp. 3-24). Springer, Dordrecht.

Kerkhofs, M., & Lindeboom, M. (1995). Subjective health measures and state dependent reporting errors. *Health economics*, *4*(3), 221-235.

Kindig, D., & Stoddart, G. (2003). What is population health?. *American journal of public health*, *93*(3), 380-383.

KNOEMA. (2020, March 13). *South Africa Elderly literacy rate, 1970–2020 - knoema.com.* https://knoema.com/atlas/South-Africa/topics/Education/Literacy/Elderly-literacy-rate.

Kovess-Masféty, V., Alonso, J., de Graaf, R., & Demyttenaere, K. (2005). A European approach to Rural—Urban differences in mental health: the ESEMeD 2000 comparative study. *The Canadian Journal of Psychiatry*, *50*(14), 926-936.

Kubzansky, L. D., Berkman, L. F., Glass, T. A., & Seeman, T. E. (1998). Is educational attainment associated with shared determinants of health in the elderly? Findings from the MacArthur Studies of Successful Aging. *Psychosomatic Medicine*, *60*(5), 578-585.

Larsen, C. A. (2014). Social cohesion: Definition, measurement and developments.

Lau, Y. K. (2014). *Investigating the relationship between social capital and self-rated health in South Africa* (Master's thesis, University of Cape Town).

Lau, Y. K., & Ataguba, J. E. (2015). Investigating the relationship between self-rated health and social capital in South Africa: a multilevel panel data analysis. *BMC public health*, *15*(1), 1-10.

Lindeboom, M., & Van Doorslaer, E. (2004). Cut-point shift and index shift in self-reported health. *Journal of health economics*, *23*(6), 1083-1099.

Lippman, S. A., Leslie, H. H., Neilands, T. B., Twine, R., Grignon, J. S., MacPhail, C., ... & Kahn, K. (2018). Context matters: community social cohesion and health behaviors in two South African areas. *Health & place*, *50*, 98-104.

Lynch, J. L., & von Hippel, P. T. (2016). An education gradient in health, a health gradient in education, or a confounded gradient in both?. *Social Science & Medicine*, *154*, 18-27.

Macintyre, S., Hunt, K., & Sweeting, H. (1996). Gender differences in health: are things really as simple as they seem?. *Social science & medicine*, *42*(4), 617-624.

Mansfield, P. K., Preston, D. B., & Crawford, C. O. (1988). Rural-urban differences in women's psychological well-being. *Health Care for Women International*, *9*(4), 289-304.

Martínez-Martínez, O. A., Ramírez-López, A., & Rodríguez-Brito, A. (2020). Validation of a multidimensional social cohesion scale: A case in urban areas of mexico. *Sociological Methods & Research*, *49*(3), 778-808.

Mayosi, B. M., & Benatar, S. R. (2014). Health and health care in South Africa—20 years after Mandela. *New England Journal of Medicine*, *371*(14), 1344-1353.

McDonough, P., & Walters, V. (2001). Gender and health: reassessing patterns and explanations. *Social science & medicine*, *52*(4), 547-559.

Mohnen, S. M., Groenewegen, P. P., Völker, B., & Flap, H. (2011). Neighborhood social capital and individual health. Social science & medicine, 72(5), 660-667.

Momtaz, Y. A., Ibrahim, R., Hamid, T. A., & Yahaya, N. (2011). Sociodemographic predictors of elderly's psychological well-being in Malaysia. *Aging & mental health*, *15*(4), 437-445.

Murray, C. J. L., Tandon, A., Salomon, J., & Mathers, C. D. (2001). Enhancing cross-population comparability of survey results. *World Health Organisation, GPE Discussion Paper*, (35).

Murrell, S. A., Salsman, N. L., & Meeks, S. (2003). Educational attainment, positive psychological mediators, and resources for health and vitality in older adults. *Journal of Aging and health*, *15*(4), 591-615.

National Planning Commission. (2012). National Development Plan 2030: Our future-make it work.

Nieboer, A., & Lindenberg, S. (2002). Substitution, buffers and subjective well-being: a hierarchical approach. In *The universality of subjective wellbeing indicators* (pp. 175-189). Springer, Dordrecht.

OECD Data. (2021, January 26). *OECD iLibrary | Country statistical profile: South Africa 2021/1.* OECD iLibrary. https://www.oecd-ilibrary.org/economics/country-statistical-profile-south-africa-2021-1_g2g9ec12-en

Olamijuwon, E. O., Odimegwu, C. O., & De Wet, N. (2018). Social cohesion and self-rated health among adults in South Africa: The moderating role of race. *Health & place*, *51*, 89-96

Omotoso, K., & Koch, S. F. (2017). South African trends in medical aid coverage and stated healthcare-seeking preferences: 2004–14. *Development Southern Africa*, *34*(5), 575-592.

Pampel, F. C., Krueger, P. M., & Denney, J. T. (2010). Socioeconomic disparities in health behaviors. *Annual review of sociology*, *36*, 349-370.

Phaswana-Mafuya, N., & Peltzer, K. (2018). Racial or ethnic health disparities among older adults in four population groups in South Africa. *Annals of global health*, *84*(1), 7.

Phaswana-Mafuya, N., & Peltzer, K. F. (2013, June 19). *South Africa - Study on Global Ageing and Adult Health-2007/8, Wave 1.* WHO Multi-Country Studies Data Archive. https://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/5/related-materials

Pinquart, M., & Sörensen, S. (2001). Gender differences in self-concept and psychological well-being in old age: A meta-analysis. *The Journals of Gerontology Series B: Psychological sciences and social sciences*, *56*(4), P195-P213.

Prematunga, R. K. (2012). Correlational analysis. Australian Critical Care, 25(3), 195-199.

Ramlagan, S., Peltzer, K., & Phaswana-Mafuya, N. (2013). Social capital and health among older adults in South Africa. *BMC geriatrics*, *13*(1), 1-11.

Requena, F. (2003). Social capital, satisfaction and quality of life in the workplace. *Social indicators research*, *61*(3), 331-360.

Robine, J. M., & Jagger, C. (2003). The Euro-REVES Group: Creating a coherent set of indicators to monitor health across Europe. *Eur J Public Health*, *13*(3 supplement), 6-14.

Sabbah, I., Drouby, N., Sabbah, S., Retel-Rude, N., & Mercier, M. (2003). Quality of life in rural and urban populations in Lebanon using SF-36 health survey. *Health and quality of life outcomes*, *1*(1), 1-14.

Sartorius, N. (2003). Social capital and mental health. *Current Opinion in Psychiatry*, *16*, S101-S105.

Silles, M. A. (2009). The causal effect of education on health: Evidence from the United Kingdom. *Economics of Education review*, *28*(1), 122-128.

Silverman, M., Smola, S., & Musa, D. (2000). The meaning of healthy and not healthy: Older African Americans and whites with chronic illness. *Journal of Cross-Cultural Gerontology*, *15*(2), 139-156.

Smith, K. B., Humphreys, J. S., & Wilson, M. G. (2008). Addressing the health disadvantage of rural populations: how does epidemiological evidence inform rural health policies and research?. *Australian journal of rural health*, *16*(2), 56-66.

Statista. (2021, March 23). *Total population of South Africa 2019, by ethnic groups.* https://www.statista.com/statistics/1116076/total-population-of-south-africa-by-population-group/.

Strauss, J., & Thomas, D. (1998). Health, nutrition, and economic development. *Journal of economic literature*, *36*(2), 766-817.

Tetteh, J., Kogi, R., Yawson, A. O., Mensah, G., Biritwum, R., & Yawson, A. E. (2019). Effect of self-rated health status on functioning difficulties among older adults in Ghana: Coarsened exact matching method of analysis of the World Health Organization's study on global AGEing and adult health, Wave 2. *Plos one*, *14*(11), e0224327.

The World Bank. (n.d.). *Gini index (World Bank estimate) | Data.* The World Bank Data. Retrieved March 2, 2021, from https://data.worldbank.org/indicator/SI.POV.GINI

van der Heide, I., & Rademakers, J. (2015). Laaggeletterdheid en gezondheid. *Stand van zaken. Utrecht: Nivel*.

Verhaeghe, P. P., & Tampubolon, G. (2012). Individual social capital, neighbourhood deprivation, and self-rated health in England. *Social science & medicine*, *75*(2), 349-357.

Villalonga-Olives, E., & Kawachi, I. (2015). The measurement of social capital. *Gaceta sanitaria*, *29*, 62-64.

Waller, G. (2015). Self-rated health in general practice: a plea for subjectivity.

White, A. G. (2012). A Global Projection of Subjective Well-being: A Challenge To Positive Psychology? Psychtalk 56.

Whiteside, A., & Sunter, C. (2000). *AIDS: the challenge for South Africa*. Human & Rosseau.

Wilhoite, C. A. (1994). *Depression and factors of psychological well-being in the elderly* (Doctoral dissertation, University of Illinois at Chicago, Health Sciences Center).

Wilkinson, R. G. (1992). Income distribution and life expectancy. *BMJ: British Medical Journal*, *304*(6820), 165.

Wilkinson, R. G., Marmot, M., & World Health Organization. (1998). *Social determinants of health: the solid facts* (No. EUR/ICP/CHVD 03 09 01). Copenhagen: WHO Regional Office for Europe.

Williams, D. R., Gonzalez, H. M., Williams, S., Mohammed, S. A., Moomal, H., & Stein, D. J. (2008). Perceived discrimination, race and health in South Africa. *Social science & medicine*, *67*(3), 441-452.

World Health Organization (WHO). (2018, February 5). *Ageing and health.* Retrieved April 12, 2021, from https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.

World Health Organization (WHO). (n.d.). *SAGE Waves.* WHO. Retrieved April 12, 2021, from https://www.who.int/data/data-collection-tools/study-on-global-ageing-and-adult-health/sage-waves.

World Health Organization. (2016). WHO Country Cooperation Strategy 2016-2020: South Africa.

Wu, S., Wang, R., Zhao, Y., Ma, X., Wu, M., Yan, X., & He, J. (2013). The relationship between self-rated health and objective health status: a population-based study. *BMC public health*, *13*(1), 1-9.

Xavier Gómez-Olivé, F., Thorogood, M., Clark, B. D., Kahn, K., & Tollman, S. M. (2010). Assessing health and well-being among older people in rural South Africa. *Global Health Action*, *3*(1), 2126.

Appendices

Tabel A1

Social Cohesion Scale.

How Much You Trust Different Groups of People . . .				
To a very small extent	To a small extent	Neither great nor small extent	To a great extent	To a very great extent
First, think about people in our neighbourhood. Generally speaking, would you say that you can trust them . . . ?				
1	2	3	4	5
Now, think about people whom you work with. Generally speaking, would you say that you can trust them . . . ?				
1	2	3	4	5
How about strangers? Generally speaking, would you say that you can trust them . . . ?				
1	2	3	4	5
Questions about Safety in the Area Where You Live.				
Not safe at all	Slightly safe	Moderately safe	Very safe	Completely safe
In general, how safe from crime and violence do you feel when you are alone at home?				
1	2	3	4	5
How safe do you feel when walking down your street alone after dark?				
1	2	3	4	5

Note: scale is obtained from Feng et al. (2021).