FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

DEPARTMENT OF ECONOMICS

The association between socioeconomic factors, alcohol use and alcohol-related outcomes in South Africa

Hemish Govera

3065709

A research assignment submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Economics, Economic and Management Sciences Faculty, University of the Western Cape

Supervisor: Professor Amiena Bayat

2021

ABSTRACT

This thesis researched the relationship between alcohol consumption, socioeconomic characteristics and alcohol-related harms such as subjective health status, chronic health conditions and mental health status in South Africa. The study sought to determine if the alcohol harm paradox (AHP) exists in the country. The AHP is the empirical finding that socioeconomically disadvantaged individuals tend to suffer more alcohol-related harms compared to individuals who are socioeconomically advantaged, despite reporting similar or lower levels of alcohol consumption on average. The research presented the contextual background to alcohol consumption in the country that helped form the current drinking culture, which includes the harmful drinking culture fomented by the apartheid system in the townships and farms of South Africa. The study also reviewed the effectiveness of current alcohol policies and legislation in addressing alcohol-related harms in the South African society.

For the analysis, the study employed data from Wave 1 (2008) to Wave 4 (2014/15) of the National Income Dynamics Study (NIDS). The thesis explored the following health outcomes: subjective health status, chronic health conditions and mental health status. Explanatory variables in the study included alcohol quantity consumed on a drinking occasion, frequency of alcohol consumption in a typical week, weekly alcohol consumption volume, socioeconomic status (SES) variables such as education, employment status, occupation, neighbourhood disadvantage, as well as sociodemographic variables such as age, gender and population group. The study utilised multivariate logistic regression to analyse the likelihood of socioeconomic and sociodemographic factors having a modifier impact on drinking behaviour and related health problems. The conceptual model involved a systems approach that offers a community perspective of alcohol consumption as part of several complex systems that interact to determine overall consumption and related harms in the population.

The research results established a high prevalence of alcohol consumption among the study participants. The study also confirmed the existence of the AHP in South Africa across subjective health status, chronic health conditions and mental health status. In the study, participants with lower SES had higher alcohol-related harms even though they reported lower or similar alcohol use to high SES individuals. In general, the significant predictors of depression among alcohol

consumers were being female gender, African, lower level of educational attainment, higher age, lower income and being unemployed. In addition, the African and coloured population groups had a greater proportion of those reporting poor health status, typically consuming larger amounts of alcohol compared to those who reported good, self-rated health status. Although white males drank more they reported good health status. The same trend was evident across income groups with a higher proportion of poor participants reporting lower health categories compared to those not poor.

The transition analysis revealed that more participants made the transition to a lower health status category compared to those who made a transition to a higher status during the period under review. The finding supports the AHP and could indicate the detrimental health effects of alcohol consumption over time. The study also found that those with comparatively fewer drinking frequencies were significantly more likely to self-report good health status. The study also established the high financial and social costs of alcohol consumption that outweigh the industry's contribution to South Africa's economy. The current legislation and policy framework is not adequate in addressing the impact of alcohol-related harms on society. Neither is it integrated to effectively support interventions aimed at reducing alcohol-related harms. There is need for a strategy that comprehensively addresses the enduring consequences of alcohol use rooted in the apartheid era.

DECLARATION

I declare that *The association between socioeconomic factors, alcohol use and alcohol-related outcomes in South Africa* is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

UNIVERSITY *of the*
WESTERN CAPE

Signature: H. Govera

Date: 30 November 2021

iii

ACKNOWLEDGEMENTS

I would like to thank everyone who assisted me through the journey of completing this study.

I extend my utmost gratitude to the Almighty God for all the blessings and wisdom.

My supervisor – Professor Bayat – I'm forever grateful for the guidance, patience, advice and having more faith in me and this project than I did, thank you!

I also sincerely thank the entire staff at the University of the Western Cape for the ongoing support that made this achievement possible.

Lastly, I thank my family and friends for their constant encouragement and support without which I could not have succeeded.

"To God be the Glory"

TABLE OF CONTENTS

LIST OF FIGURES

UNIVERSITY *of the*

WESTERN CAPE

LIST OF TABLES

LIST OF ABBREVIATIONS

AHP	Alcohol Harm Paradox
AUDADIS-IV	Alcohol Use Disorders and Associated Disabilities Interview Schedule - IV
AUDIT	Alcohol Use Disorder Identification Test
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CRA	Comparative Risk Assessment
DALYs	Disability-Adjusted Life Years
DTI	Department of Trade and Industry
DTIC	Department of Trade, Industry and Competition
FAS	Fetal Alcohol Syndrome
FASD	Fetal Alcohol Spectrum Disorder
GDP	Gross Domestic Product
GENACIS	Gender, Alcohol and Culture: An International Study
HALS	Health and Lifestyle Survey
ICD	International Classification of Diseases
MSL	Maximum Simulated Likelihood
MVP	Multivariate Probit Model
NIDS	National Income Dynamics Study
NLA	National Liquor Authority
OR	Odds Ratio
PBC	Perceived Behavioural Control
RRR	Relative Risk Ratios
SABSSM	South African National HIV Prevalence, Incidence, Behaviour and Communication Survey (South African HIV Behavioural, Sero-Status and Media Impact Survey)
SACENDU	South African Community Epidemiology Network on Drug Use
SAH	Self-Assessed Health
SASCO	South African Standard Classification of Occupations
SDS	Significant Depressive Symptoms

SEP	Socioeconomic Position
SES	Socioeconomic Status
TB	Tuberculosis
TPB	Theory of Planned Behaviour
UK	United Kingdom
WCG	Western Cape Government
WHO	World Health Organisation

UNIVERSITY *of the*
WESTERN CAPE

CHAPTER ONE: INTRODUCTION

1.1   Introduction and background

International literature has documented a clear and persistent socioeconomic gradient in alcohol- related harm (Bellis et al., 2016). This has given rise to the alcohol harm paradox (hereafter 'AHP' or 'the paradox') where individuals of low socioeconomic status (SES) consume alcohol at similar or even lower levels compared to individuals with high SES but tend to experience disproportionately greater alcohol-attributable harm (Bloomfield, 2020; Boyd, Bambra, Purshouse & Holmes, 2021). The same socioeconomic gradient has been consistently found across several outcomes, including alcohol-related morbidity, alcohol dependence and mortality (Boyd, Bambra, Purshouse & Holmes, 2021; Jones, Bates, McCoy and Bellis, 2015). The paradox has been reported in the UK, other European countries and even in Sweden, which is widely considered more equitable on social and health indicators compared to the UK (Jones, McCoy, Bates, Bellis & Sumnall, 2015). A systematic review by Boyd, Bambra, Purshouse and Holmes (2021) synthesised a host of studies that provided evidence of the AHP occurring in many countries and regions, including the Americas, Australia, Finland, New Zealand, France, Denmark, Canada, Norway and the Netherlands. Despite the international evidence on the effect of alcohol in socioeconomic health inequalities, the precise mechanisms and pathways underpinning the AHP remain unclear (Boyd, Bambra, Purshouse & Holmes, 2021; Jones, Bates, McCoy and Bellis, 2015).

To date, research has focused primarily on the AHP in more affluent countries (Bellis et al., 2016). High income inequalities in developing countries and the growth in alcohol consumption necessitates research on the AHP in developing countries given that the health costs of high alcohol consumption could be considerable (Bellis et al., 2016). This is particularly relevant to South Africa with the country's history of colonialism and apartheid that engineered an unequal distribution of income and healthcare services along ethnic lines (Deghaye, McKenzie & Chirawu, 2014). South Africa has a history of institutional racism where 'non-whites'[1] were excluded from resources and power, with the white minority favoured in terms of every advantage of status,

---

[1] Because of apartheid, the low and high SES populations tend to reflect a demographic profile that parallels apartheid historically, wherein most of the wealthier people are white and most of the poorer people are not white. People who were not considered 'white' were classified in terms of apartheid legislation in racial terminology that changed over time, such as non-European, non- white, African, Bantu, natives, coloured, Asiatics, Indian. All these terms were deeply politicised and rejected by those being classified. In attempting to deal with this legacy, the post-apartheid democratic state chose to retain the terms African, Coloured, Indian and white (and Black as a term encompassing African, Coloured and Indian) for specific purposes, such as legislation dealing with affirmative action and reconstruction, policy planning and statistics-gathering and analysis. In current nomenclature, the term 'population group' is preferred to 'race'. While the author considers these terms as spurious, unscientific, insulting and backward, it is conceded that such ethnic labelling is still needed when researching and describing the reality of present-day South Africa. The adoption of these terms in this research in no way implies acceptance of racial identity or racism.

4

including land ownership, employment, education and healthcare. During apartheid, education, legislation and even religion were used to perpetuate a cycle of inequalities that persists today (Deghaye et al., 2014). As a consequence of their historic systematic marginalisation and disenfranchisement, black people bear a higher burden of social and health problems (London, 2003). According to London (1999), the legacy of apartheid has deep-rooted social impacts on the marginalised in an already unequal society. The socioeconomic gradient extends to alcohol consumption associated with the historical institutionalisation of massive alcohol consumption (London, 1999).

Excessive alcohol consumption has been established as a norm in South Africa with high risk factors for an assortment of alcohol-related harms in the country (Morojele & Ramsoomar, 2016). Alcohol consumers in South Africa consume relatively high volumes of alcohol whilst engaging in risky consumption behaviour (WCG, 2016). The World Health Organisation (WHO) ranked South Africa as the highest per capita alcohol consumer in the continent (WHO, 2013). The lifetime prevalence of alcohol use was estimated at 30% (Peltzer & Ramlagan, 2009). Fieldgate et al. (2013) estimated this proportion at 35%. Though the lifetime prevalence of alcohol consumption is high, it is less than the global average of 45% (WHO, 2013). The average amount of alcohol consumed by a typical South African alcohol drinker annually was approximately 20ℓ per adult in 2005, which is one the highest in the world (Parry, 2005). The proportion of alcohol consumers has remained consistent over the years with estimates of 35% in 2005 (Fieldgate et al., 2013) and 33,1% in 2014/15 (Vellios & Van Walbeek, 2018). In 2005, the prevalence of binge drinking among alcohol drinkers was 45,4% against the global average of only 11,5%, with the distribution by gender being 41,2% for females and 48,1% for males (Fieldgate et al., 2013). The prevalence of risky alcohol use remained high and in 2014/15, 43,0% of alcohol drinkers reported binge drinking, representing 48,2% of male and 32,4% of female alcohol drinkers (Vellios & Van Walbeek, 2018). Harrison (2020) found that low SES individuals experience a high burden of alcohol-related mortality.

A range of studies worldwide has linked alcohol consumption to adverse health consequences. These include mortality, chronic morbidity and poor mental health outcomes for example depression and anxiety (Bell & Britton, 2014; Boden & Fergusson, 2011; Dawson, Grant & Ruan, 2005; Dowdall, Ward & Lund, 2017; Katikireddi et al., 2017; Kehoe, et al., 2012; Peltzer & Pengpid, 2015). Connections between alcohol use, mental health problems and mental well-being have also been established in the literature (Mäkelä, Raitasalo & Wahlbeck, 2015). Mäkelä, Raitasalo & Wahlbeck (2015) argue that alcohol use is closely linked to poor mental health outcomes with childhood environment, socioeconomic factors and lifestyle acting as interacting

5

determinants. Frohlich et al. (2018) theorised high comorbidity between depression and alcohol use disorders. Alcohol use and depression each poses major health challenges and where they interact, they result in a perpetual cycle of harmful outcomes (Bellos et al., 2013; Corrigall & Matzopoulos, 2013; Moussavi et al., 2007; Rotheram-Borus et al., 2015). Causal linkages between the two variables, where exposure to one increases the risk of the other occurring, have been described in the literature (Boden & Fergusson, 2011).

South Africa has high prevalence of depressive symptoms (Ardington & Case, 2010). The all-time proportion of adults reporting symptoms of common mental disorders in South Africa is estimated at 30% (Corrigall & Matzopoulos, 2013; Weich, Macharia & Gabriels, 2019). The South African Stress and Health Survey (SASH) conducted between 2002 and 2004 found the lifetime prevalence of any psychiatric disorder at 30,3%. Mungai and Bayat (2019) calculated the proportion of depressed South African adults and found 33,15% in 2008, 22,31% in 2010, 24,43% in 2012 and 26,05% in 2014/15. Despite the decline between 2008 and 2010, the prevalence of depressive symptoms has reflected a generally upward trend since 2010. The disparity in mental health outcomes across the socioeconomic gradient could be due to the propensity of poverty to increase the prevalence, intensity and duration of depressive symptoms (Bateman, 2015).

A significant body of literature associates alcohol use with poorer health outcomes, compared to abstinence. Binge-drinking and heavy drinking patterns elevate the risk of poor health outcomes (Sakurai et al., 1999; Shield, Parry & Rehm, 2013; Stranges et al., 2006; Williams et al., 2010). According to Kehoe et al. (2012), the average volume of alcohol consumption is a significant predictor of the risk of alcohol-attributable diseases such as cancer, pancreatitis and cirrhosis of the liver. Furthermore, certain diseases and injuries such as ischemic heart disease and injuries (unintentional and intentional) were found to be dependent on drinking patterns (Kehoe et al., 2012).

A critical focus in alcohol research is the modifier impact of socioeconomic determinants in both alcohol use and the adverse alcohol-related outcomes. The association between SES and the effects of alcohol consumption is complex (Walsh, 2016). SES is considered an important factor in influencing alcohol-related outcomes (Collins, 2016). The negative association between SES and alcohol-related harm that encompasses the AHP is established in the literature (Beard et al., 2015; Trangenstein et al., 2018). In some empirical findings, low SES people experienced higher rates of alcohol-related health problems despite no significant differences in the levels of alcohol consumption by SES (Bellis et al., 2016). In other findings, low SES individuals who engage in moderate drinking were found to have a higher risk of alcohol-related harm compared to high SES individuals who engage in heavy drinking (Katikireddi et al., 2017). This socioeconomic gradient extends to alcohol-related

6

mortality (Bellis et al., 2016). By extension, similar levels of alcohol consumption in disadvantaged communities relative to more affluent neighbourhoods are related to higher levels of adverse alcohol-related outcomes after accounting for possible confounders (Bellis et al., 2016).

In light of the AHP, alcohol consumption has the potential to exacerbate health inequalities in the local context. This is compounded by the contextual structural inequalities that are deep-rooted in the history of apartheid in the country. In South Africa, health inequalities have been shaped by the unique historical, social and political contexts. During the apartheid era, healthcare, the educational system and the labour market were segregated along ethnic lines in a system that disenfranchised black people. Inequalities in the country are multidimensional across earnings, income, assets, employment, health, education, social mobility and access to basic services and infrastructure. A combination of sociodemographic and socioeconomic status factors drives inequalities in the country, which include income, population group, gender, geographical area and geo-location (Van Rensburg & Fourie, 1994).

In South Africa, possible explanations for the AHP include the persistently high levels of income- related health inequalities in the country. Low individual or area-level SES are associated with more likelihood of mortality or exposure to an array of diseases, including COVID-19 (Nwosu & Oyenubi, 2021). This is largely attributable to the oppressive and discriminatory measures that were implemented during apartheid which favoured the healthcare of the white population. These measures went far beyond merely accessing a healthcare facility. Despite their numerical majority, the government spent far less on the healthcare of black people. It actively limited the number of black health professionals produced by the universities and colleges and ensured that the hospitals and clinics serving black communities that these few black professionals worked in were poorly resourced.

Some researchers have pointed out that race-based spatial segregation persists to this day with the black population largely confined to under-resourced residential areas (Hundenborn, Leibbrandt & Woolard, 2018; Nwosu & Oyenubi, 2021; Statistics South Africa, 2019). Structural inequalities in health are also a result of the geographical area and geographical conditions where people reside (Van Rensburg & Fourie, 1994). For example, there are higher concentrations of health personnel and facilities in urban and metropolitan areas compared to rural homelands. Health services in rural areas are relatively under-resourced and under-serviced compared to urban and metropolitan areas. This results in resource allocation distortions such as resource overprovision in urban areas and overuse in non-urban areas. According to Van Rensburg and Fourie (1994), health inequalities are further aggravated by widespread poverty and lack, especially in rural and traditional

7

areas due to poorly developed infrastructure and geographical inaccessibility. The existing inequities caused by the apartheid legacy remain (Ataguba & Alaba, 2012).

In unpacking the AHP in South Africa, an important factor to consider is the social environment where drinking occurs. This could be one of the pathways to explain how alcohol use disproportionately affects health and health outcomes across different SES groups. High SES individuals are likely to drink in social environments such as work-related events or with friends. Yet, low SES individuals are likely to drink alcohol in 'unsafe settings' that encourage high-risk drinking and expose individuals to the more adverse effects of alcohol consumption. Neighbourhood disadvantage has been associated with increased psychological distress which drives individuals to binge-drink as a form of self-medication (Walsh, 2016). In addition, growing up in a disadvantaged neighbourhood can increase exposure to alcohol from a young age and inculcate values that 'tolerate' and even encourage early alcohol consumption. As a result, low SES people will likely suffer from alcohol dependency and consequently more adverse alcohol- related outcomes. By contrast, high SES individuals may see alcoholism as something to be frowned upon, adding another protective layer against adverse alcohol-related outcomes (Walsh, 2016).

Despite the economic contributions of the alcohol industry, the far-reaching impact of alcohol consumption and the associated adverse consequences make it a target for regulatory and policy intervention. Current alcohol regulation encompasses laws from the national, provincial and local spheres of government (WCG, 2016). The main focus of legislation is to address demand and supply drivers through regulating the licensing and enforcement of the production, distribution and the trading of alcohol. Parry, Burnhams and London (2012) argued that the public health burden from hazardous and harmful alcohol consumption in South Africa warrants drastic action from the authorities, such as the complete banning of alcohol advertising in line with WHO's strategy.

The major regulatory elements employed in the country to influence the level of alcohol consumption include restrictions on trading hours, price manipulation through taxes and restrictions on marketing (Casswell et al., 2018). In South Africa, alcohol products are subject to specific excise taxes, paid by the manufacturer, the aim of which is to manipulate the price of alcohol. According to economists, increasing the price of alcohol in this way is expected to reduce the level of its consumption and the related adverse outcomes (Chaloupka, Grossman & Saffer, 2002). There have also been proposals to restrict the exposure to alcohol advertising from children, in

8

keeping with the recommendations of the WHO (WHO, 2010)[2]. Other proposals mooted are to introduce minimum unit pricing, regulate the concentration of outlets, regulate the days and hours of trading and implement a tracking system for liquor products. It has been argued that the current regulatory efforts, being largely unsuccessful, don't adequately consider the full impact of alcohol-related harms on the society or fully address the adverse outcomes (WCG, 2016).

1.2   Problem Statement

The association of alcohol consumption with adverse health outcomes, with socioeconomic status acting as the mediating, interacting or modifying effect, is extensively established in the literature, especially in regard to developed countries. These studies also identified seeming discrepancies between levels of alcohol consumption and the distribution of adverse alcohol-attributable outcomes across social groups. Somewhat counter-intuitively, research findings associate lower SES with adverse health outcomes or higher mortality than higher SES individuals, which contributes to health inequalities. This result has been dubbed the 'alcohol harm paradox' (Lewer et al., 2016).

Many studies have confirmed the existence of the AHP in various industrialised countries. Jones, Bates, McCoy and Bellis (2015) conducted a systematic review of evidence from industrialised countries, including Hungary, Italy, Spain, Denmark, Sweden, Poland, Germany, Finland, South Korea, UK, France, USA, Norway and Brazil. The study found association between low SES and higher risk of head and neck cancers and stroke, hypertension and liver disease. Erskine et al. (2010) researched the differences in alcohol-related mortality in the United Kingdom, with respect to SES, urban-rural location and age. The authors found a clear relationship between alcohol- related mortality and socioeconomic disadvantage, with increasingly higher rates in more disadvantaged areas.

Based on the empirical evidence from developed countries, the consensus is that socioeconomically disadvantaged persons are more prone to alcohol-related harms than their counterparts who are well off socioeconomically. However, the AHP has not been tested in developing countries in general and specifically not in the South African context. There is a dearth of studies exploring the association between alcohol-

---

[2] The South African government drafted the Control of Marketing of Alcoholic Beverages Bill in 2012 and it was approved by Cabinet for gazetting. The Bill aimed to restrict advertising, sponsorship and promotion of alcoholic beverages only to the points of sale, to protect children from being influenced to drink. In the face of opposition from the alcohol industry, the Bill was not gazetted for public comment or passed into law.

attributable disease, SES and alcohol use. Understanding the AHP is crucial for effective health policymaking and narrowing health inequalities in South Africa. South Africa has a highly unequal income distribution due to the effects of colonialism and apartheid (Probst, Parry & Rehm, 2018). According to Probst et al. (2018), SES differences in the country are intertwined with ethnicity with the average income of a white individual being 10 times that of a black individual. The observed SES differences in alcohol-related harm underscore the need to reduce such income differences. The current study will add to the understanding of the paradox and recommend policies aimed minimising the prevalence of alcohol-related health outcomes thus reducing overall inequalities in the country.

In light of the high burden of disease and economic costs resulting from the hazardous and harmful alcohol consumption in South Africa, it's been argued that current alcohol regulations don't sufficiently consider the broad impact of alcohol-related harms on society or address the adverse outcomes (WCG, 2016). New policy proposals are emerging advocating a broader public health approach that completely addresses the harmful use of alcohol (Parry et al., 2012). The planned approach suggests strategies such as a complete ban on alcohol marketing, along with other policy interventions, for instance increasing alcohol excise taxes, restricting alcohol availability through regulating the concentration of outlets that trade in alcohol, setting tighter controls on maximum limits of trading hours for alcohol trading and reducing the permissible blood alcohol concentration levels of drivers.

Despite the various studies documenting the AHP within developed countries, the mechanisms and pathways that create the paradox are unclear. Various hypotheses have been proposed to explain the AHP. These include the combined health challenges hypothesis and the drinking pattern hypothesis. An important indicator of health disparities is the socioeconomic gradient in alcohol-related outcomes. Hence, understanding the nature of the relationship between alcohol consumption, SES and alcohol-related outcomes is crucial for effective health policymaking. In ascertaining this relationship for South Africa, this research also aims to examine if the detrimental impacts of alcohol vary by SES, considering the alcohol consumption behaviour and other health-related outcomes in South Africa. The study will also investigate multiple dimensions of SES, particularly personal, household and area-level SES indicators.

1.3   Research question

This paper addresses the research question: What evidence of the AHP is there in South Africa wherein socioeconomic status disproportionately affects the relationship between alcohol consumption and subjective health, chronic health conditions and mental health in South Africa?

1.3.1   Objectives of the study

The study set six main objectives:

- Determine the association between SES and alcohol consumption in South Africa.
- Determine if the alcohol harm paradox exists in South Africa and, if so, explore the possible reasons for this correlation.
- Investigate the association between alcohol consumption, SES and subjective health status in South Africa and explore the possible reasons behind any correlation.
- Investigate the association between alcohol consumption, SES and chronic health conditions such as cancer, stroke, diabetes, asthma, tuberculosis, high blood pressure, heart problems and other diseases/disabilities in South Africa and explore the possible reasons behind any correlation.
- Investigate the association between alcohol consumption, SES and significant depressive symptoms in South Africa and explore the possible reasons behind any correlation.
- Review current alcohol regulations and policy interventions and provide recommendations based on the study findings to help reduce health inequalities in the country.

1.4   Significance of the study

To date, studies on AHP have focused primarily on evidence from developed countries with no special focus to understanding the broader implications for developing countries in general (Bellis et al., 2016). South Africa has persistently high, systematic socioeconomic inequalities in health and income that emerged from colonialism and apartheid (Deghaye et al., 2014). Studies looking at the relations between different patterns of alcohol consumption, SES and alcohol-related outcomes with a special focus on South Africa have been limited. The current study is the first study focusing on the domestic economy in this regard.

In addition, despite the extensive research on the AHP at both international and domestic levels, the mechanisms through which alcohol consumption results in health disparities are still not well understood (Bellis et al., 2016; Katikireddi et al., 2017). Much of the previous research on the causes of the AHP has been less informed by theory. The study attempts to fill this gap in the literature by testing theories and alternative approaches rooted

11

in psychology and economics to explain the AHP. It reviews the evidence from the National Income Dynamics Study (hereafter 'NIDS') study (see description in section 5.5) to explore the AHP and understand the socioeconomic differences in alcohol related-health consequences.

Moreover, most of the literature only considered drinking status versus abstinence and there hasn't been much focus on the effect of different patterns of alcohol consumption. In the majority of the studies, alcohol consumers are categorised based on average alcohol consumption in a methodology that tends to group individuals with similar consumption but very different drinking patterns. Along with average intake, drinking patterns have been theorised to be significant determinants in the relationship between alcohol consumption and health outcomes (Jose et al., 2000). In this regard, the present study aimed to examine how drinking patterns predict subjective health status, chronic health conditions and mental health status in the country. This study will contribute to the understanding of the links between alcohol consumption, drinking patterns, subjective health status, chronic health conditions and mental health status in the country.

The study objectives focus on understanding the processes and mechanisms behind the disparities in alcohol-related health harm across the socioeconomic gradient. While addressing the question of why low SES individuals are susceptible more alcohol-related health harms despite drinking similar or fewer quantities than their high SES counterparts, the research further augments or unpacks the AHP to consider aspects such as objective measures of subjective health status, the incidence of chronic health conditions and mental health status. This exploration of the AHP in South Africa will guide the development of effective public health programmes in the country.

The study also investigates a range of potential alternative explanations for the paradox and will add value by providing more understanding around the effect of alcohol consumption on health inequalities in the country and making recommendations following the study findings. The insights from the study will help shape public health policy and assist efforts to narrow health inequalities in South Africa.

1.5   Organisation of the research paper

This study is organised into seven chapters. Chapter 1 contains the research introduction, background, problem statement, research question and study objectives and highlights the significance of the research. Chapter 2 comprises the theoretical framework and theoretical literature review. The chapter reviews theories that have been put forward in the literature to explain the alcohol harm paradox. The study draws on economic and psychological theories of alcohol consumption that attempt to explain the AHP. Chapter 3 provides the empirical

12

literature review. It includes a discussion on alcohol consumption as an externality where personal alcohol consumption can result in indirect and intangible costs which are borne by the society. This ultimately contributes to high health spending, reduction in the general standard of living, and increased income inequality and poverty that disproportionately impact the poor compared to the more affluent. The empirical evidence from South Africa, other developing countries in general and developed countries is discussed. Chapter 4 provides the historical background of alcohol consumption research in the country. Chapter 5 presents the research methodology adopted, including a discussion of the theoretical basis of the research, the selection of the variables and the development of the empirical model. The chapter also presents the data sample, sampling techniques and methods of data analysis. Chapter 6 presents and discusses the empirical findings of the study. The chapter provides a review of the characteristics of the survey participants, based on self-reported health status, demographics, alcohol drinking behaviour, SES, province of residence as well as geo-location. The chapter also presents the trends, prevalence, distribution and dynamics of alcohol consumption and associated problems, based on the analysis. Lastly, Chapter 6 reviews the interaction between different patterns of alcohol use and subjective health status, chronic health conditions and mental health status. Chapter 7 summarises the findings, provides recommendations and concludes the study.
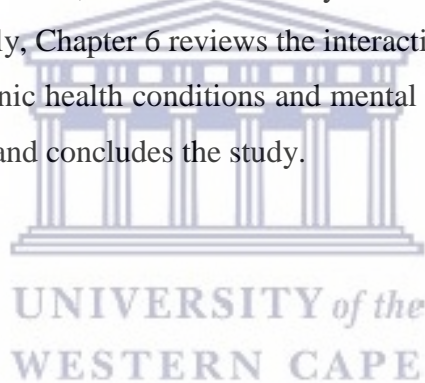
CHAPTER TWO: THEORETICAL LITERATURE

2.1 Introduction

Extant studies have predominantly considered individualised behavioural approaches to understanding the AHP. In addition, the majority of the studies on AHP have often lacked clear theoretical underpinnings (Boyd, Sexton, Angus, Meier, Purshouse & Holmes, 2021). The current study adopts an approach that draws from theoretical frameworks, perspectives and methods from the fields of psychology and economics to aid understanding the AHP. The theories help explore several interwoven causal mechanisms of the AHP, such as the uneven distribution of wealth and other resources, the psychosocial experience of lower SES, substance addiction, the role of learned behaviour and social networks, and the build-up of these experiences over time.

The first part of the chapter focuses on the main theories on the economic foundations of alcohol demand that provide the theoretical basis for the use of alcohol taxes and other price controls to reduce harmful consumption, especially among those of low SES who tend to suffer disproportionately from alcohol-related harms. The second part of the chapter presents theoretical frameworks from a psychological perspective, which helps to formulate a framework to examine how drinking behaviours form through interaction and observation of others in social contexts. This ties into the observed empirical correlation between socio-environmental influences and alcohol consumption behaviour (Collins, 2016).

In some empirical studies, attitudes regarding alcohol consumption were determined as important in predicting drinking quantity and frequency (LaBrie et al., 2007). The concept of planned behaviour helps predict how intention can translate into alcohol consumption behaviour. These insights are significant as they highlight the pathways through which psychological factors can co-produce inequalities in adverse alcohol-related health outcomes (Hart, 2015). The chapter then reviews the theoretical viewpoints that have been theorised to explain the link between alcohol consumption and adverse health outcomes. While alcohol consumption is an significant risk determinant of the burden of disease and social harm globally, empirical findings have established clear and insistent socioeconomic gradient in the risks of adverse health outcomes. This gradient persists despite no significant variances in alcohol consumption (Bellis et al., 2016; Bloomfield et al., 2006; Fone et al., 2013; Giskes et al., 2011; Grittner et al., 2012; Huckle, You & Casswell, 2010; Mäkelä, Herttua & Martikainen, 2015; Poikolainen, Paljärvi & Mäkelä, 2007; White, Matheson, Moineddin, Dunn & Glazier, 2011b). A review of the various theories that purport to explain the underlying mechanisms of the alcohol harm paradox concludes the chapter.

2.2   Background

The nature of alcohol consumption is complex and drinking behaviours vary widely within populations. There are multi-disciplinary theoretical perspectives that attempt to explain alcohol consumption, how it relates to adverse health outcomes and that inform the government policies and programmes that aim to reduce alcohol-related harms. The main focus of this paper is the economic theories that model how consumers make alcohol consumption decisions. These are complemented by insights from theoretical perspectives based in psychology. These perspectives help to explain the pathways through which alcohol consumption interacts with social forces (such as related memories, application of gender norms in community spaces, and a limited access to private drinking environments) to co-produce inequalities in adverse alcohol-related health outcomes (Hart, 2015). The study also reviews theories aimed at explaining how the level of alcohol use causes high social costs as well as the theoretical underpinnings for the observed linkages between alcohol consumption and related outcomes.

Economic analysis addresses several issues that arise in studies on alcohol, including demand modelling and measurement, optimal taxation and the control of externalities in alcohol consumption. Economic theories model consumption decisions around an optimising choice that maximises the utility function subject to budget constraints (Perali, Piccoli & Wangen, 2015). In general, research investigating the association between alcohol consumption and its adverse consequences discovered that alcohol prices were one of the determinants of alcohol consumption, particularly among the youth (Chaloupka et al., 2002). The most important empirical conclusion from the studies is that an increase in the total price of alcohol tended to reduce alcohol consumption and this subsequently results in fewer alcohol-related problems (Cook & Moore, 2002). The findings concur with the consumer demand theory that views the demand for alcohol products in the same way as the demand for other products, which depends on the prices of all the products available to a utility-maximising consumer and their total expenditure (Chaloupka et al., 2002). The strong implication is that alcohol prices can be manipulated to reduce the quantity of alcohol consumption and subsequently its adverse consequences (Chaloupka et al., 2002; Cook & Moore, 2002).

Alcohol-related problems also manifest as alcohol use disorder, which is a chronic disease characterised by addiction to alcohol (Bellos et al., 2020). The economic models of addictive behaviour, including the rational choice theory, rational addictive theory and the bounded rational addiction model, build on the consumer demand theory to model the addictive behaviours in alcohol consumption. These models continue to assume utility maximisation in alcohol consumption, even in the consumer's decisions to consume harmfully addictive substances such as alcohol. The literature reports causal linkages between alcohol use disorders, alcohol-related

15

problems and SES with sociodemographic determinants such as age, gender and marital status (Bellos et al., 2020). This is significant in South Africa, given the background of substantial health impacts from excess alcohol consumption linked to the 'dop' system.

Economic theories and empirical models on their own provide little information and insights to prevent alcohol-related problems (Hilton & Bloss, 1993). Hilton and Bloss (1993) argued that economic theories need to be supplemented with other theoretical constructs to identify the kinds of broad-based efforts that prevent alcohol-related problems. The field of psychology provides "cognitive" theories based on psychological analyses of alcohol use and abuse and focuses on both the treatment and prevention of alcohol problems. Cognitive analyses attempt to explain the initiation of alcohol drinking and the course of alcohol use, including alcohol abuse or dependence. These include the social cognitive theory, the theory of planned behaviour (TPB) and the self-medication theory. The social cognitive theory considers both the socio-structural and personal determinants health. The theory considers the mutual interplay between self-regulatory and environmental determinants of health behaviour. The TPB is a framework to understand and predict health behaviours, including both the intentions to use alcohol and self-reported use of alcohol (McMillan & Conner, 2003). The self-medication theory asserts that people consume alcohol to deal with painful emotions or cope with negative feelings, which increases both alcohol consumption and associated alcohol-related problems (Frohlich et al., 2018). The self-medication theory can help explain how the motive for drinking alcohol differs in relation to the alcohol harm paradox whereby high SES individuals may drink alcohol for enjoyment and pleasure whereas low SES individuals may be more likely to consume alcohol to escape pain, worry, sadness, stress or anger that can be attributed to living in poverty (the researcher is aware of the oversimplification of motives here).

Many economic theories have been proposed to explain how alcohol consumption translates into problems. The single distribution and the collectivity of drinking cultures theories associates the impact of alcohol consumption with the distribution of alcohol consumption in the population. The single distribution theory asserts that there is a positive association between the availability of alcohol and the prevalence and severity of alcohol-related problems in that society (Skog, 1985). The collectivity of drinking cultures theory adds the influences of drinking behaviour to alcohol distribution as factors that tend to combine multiplicatively to determine alcohol consumption behaviours. In both theories, the impact of alcohol consumption on related problems is also determined by a variety of environmental influences. These include the community context and societal norms and culture (Collins, 2016). These factors function within various systems in the community to interact with and influence the incidence of adverse alcohol-related outcomes (Holder, 2006).

16

In addition to the environmental factors, the associations between alcohol consumption and harm are mediated by a variety of moderating factors, such as population group, education, income, occupation, gender and place of residence (Collins, 2016; Loring, 2014). SES is one of the many factors that impact alcohol use and related outcomes. Empirical findings have established a clear and persistent socioeconomic gradient in the risks of adverse health outcomes (the AHP). The AHP is the observed social gradient in alcohol consumption wherein people of lower SES incur the disproportionate impact of adverse alcohol-related consequences compared to those of higher SES (Collins, 2016; Loring, 2014). Various theories attempt to explain the underlying mechanisms of the paradox. The drinking pattern, reverse causality, drinking histories and combined health challenges theories argue that individual and household-level socioeconomic characteristics can explain the paradox. Area-level deprivation has also been suggested as a possible explanation for the paradox. Theories such as double jeopardy, relative deprivation and social inconsistency take into account the interactive effects of individual and neighbourhood characteristics. Methodological issues such as under-reported consumption have also been proposed as possible explanations for the paradox. Other theories consider age, gender and ethnicity as important determinants of alcohol-attributable harm in persons who consume alcohol.

Alcohol consumption has a substantial impact on public health and societal welfare (Anderson, Chisholm & Fuhr, 2009). This is a result of the relationship between alcohol consumption and adverse health outcomes and other impacts. From the perspective of the consumption externality theory, the alcohol consumption actions of an individual can directly influence the well-being of other individuals. External costs include the costs of treating health problems that are borne by the greater public. The presence of externalities in alcohol consumption provides justification for government intervention to address the externalities and correct the market failure through various mechanisms at its disposal. The public goods theory is centred on the public-goods nature of the public health system. The idea here is that the assets and services of public healthcare are a public good and therefore alcohol consumers cannot be excluded from them. In the context of alcohol consumption, healthcare spending on the disease burden of chronic diseases exerts a corrosive effect on the economy. The public goods and consumption externality theories help formulate policies and programmes to mitigate alcohol-related harm in society.

2.3 Theoretical frameworks for alcohol consumption

2.3.1 Economic theories of alcohol consumption

2.3.1.1 Consumer demand theory

Alcohol demand can be operationalised using the microeconomic demand curve analysis, which formally characterises the relationship between the demand for a product, an individual's income and the prices of all the other products. The demand system has three basic variables; goods prices, income (sum of all expenditures), and demand (quantities) (Huang, 2003). The consumer demand function can be represented by the equation below:

$$Q_i = f(P_1, P_2, \ldots, P_i \ldots P_n, N_c), \quad i = 1, 2, \ldots, n \tag{1}$$

Where P_i and Q_i are the price and quantity of the ith product out of the n total products that are available to the consumer. N_c is the total expenditure which is given by $N_c = (\Sigma P_i * Q_i)$. Based on the model and other things being equal, the quantity of the goods demanded increases with every fall in the price and decreases with every rise in the price. Economists have been able to demonstrate that alcohol is not an exception to this law of downward sloping demand (Chaloupka et al., 2002; Cook and Moore, 2002).

The model can form a basis to estimate the price elasticity of alcohol demand, which can guide tax policy. One implication from the theory is that an increase in the cost of alcohol products relative to other goods is assumed to reduce alcohol demand. The price elasticity of alcohol demand is an significant factor in determining alcohol demand. This implies that the prices of alcohol products can be manipulated to influence the per capita volumes of alcohol consumption and consequently incidences of alcohol abuse and related consequences. This is crucial given the empirical findings that the more an individual drinks, the greater the risk of alcohol-related harm. By the same token, the higher the national alcohol consumption per capita, the greater the likely burden of alcohol-related costs and damage for that society (Holder, 2006). Therefore, the prices of alcohol products can impact the consumption levels of alcohol and the health-related consequences and conversely, a policy approach that involves the use of alcohol taxes and other price controls has the potential to reduce negative alcohol outcomes. In South Africa, heavy drinking is common and it has been argued that introducing minimum pricing for alcohol would reduce harmful consumption, especially among consumers of low SES who tend to suffer disproportionately from alcohol-related harms (Van Walbeek & Chelwa, 2019). However, alcohol demand is associated with factors other than price, such as legal restrictions, norms and widespread distaste for alcohol. Also, it is doubtful that increasing prices will reduce consumption by those who are addicted.

2.3.1.2 Rational Choice theory

With respect to alcohol consumption, the rational choice theory asserts that individuals freely choose their alcohol consumption behaviour, motivated by the desire to avoid pain or pursue pleasure. The theory argues that

18

economic agents have both risk and time preferences such that, when deciding on an economic activity, they use mathematical analysis to derive their individual preferences (Krstić & Krstić, 2013). In this way, economic agents make decisions regarding their health. Economic agents can rationally weigh the utility benefits of a behaviour against the welfare losses of the behaviour (Cawley, 2004). For instance, one can decide to participate in risky drinking behaviour with acceptance of escalated risk of morbidity and mortality. In the theory, employment status can influence alcohol consumption. The more time a person spends on labour activities, the less likely for them to engage in leisure activities. If alcohol consumption can be assumed to be a leisure activity, the implication is that work commitments potentially reduce the likelihood of consuming alcohol (Cheah, 2015). One can infer from this that the unemployed have an elevated risk of alcohol abuse compared to the employed. This could explain the empirical findings of risky alcohol use being more prevalent among the unemployed (Henkel, 2011).

2.3.1.3 Rational Addiction theory

The rational addiction model is a rational economic model of tastes and addiction proposed by Becker and Murphy in 1988. The theory postulates that alcohol consumption depends on future as well as past consumption, with alcohol consumers acknowledging the addictive nature of their choices, taking into account the gains from the consumption activity while mindful of the risk of future addiction (Baltagi & Griffin, 2002). The model argues that addicts have stable preferences and base their consumption of the addictive good based on utility-maximising decisions. Addicts are also capable of considering the future consequences of their current consumption of the addictive good (Becker & Murphy, 1998).

In the rational addiction model, an addictive good is formally defined as a good characterised by adjacent complementarity, meaning that the consumption of the good in a given time period is complementary to the consumption of the same good in the subsequent period. This definition embraces both harmful (smoking, alcohol consumption) and purportedly beneficial (dieting, exercise) addictions (Becker & Murphy, 1998). The model can be used to predict addicts' consumption patterns such as short-run and long-run price sensitivity and addictive behaviours such as bingeing. In the model, it is assumed that consumers split their spending between addictive goods and other goods. For addictive goods, utility is intertemporal as it depends on both current consumption and consumption at other times. This feature is used to derive a 'stock of consumption' variable. Changes in the variable over time and the effect on current consumption decisions are based on a continuous-time model. Consumers select the optimal consumption points that maximise lifetime utility based on the lifetime budget, in a dynamic model subject to the flow of the stock variable (Becker & Murphy, 1998).

Relating the theory to alcohol consumption, economic agents are presumed to be the best judges of their welfare. Economic agents can recognise the potential for harm and factor that into their consumption decisions. Alcohol-attributable harms are borne by users who assess them rationally through a cost-benefit analysis at the margin. Therefore, alcohol consumption provides net benefits to most adult users who rationally make informed individual choices. In this regard and in the absence of external costs, the focus on minimising gross health costs alone represents excessive policies. The theory can help explain how socioeconomic inequalities in health has a fundamental role in the use odrugs with low SES increasing the risk of related harms and making the consequences worse (Saenz et al., 2020).

The theory of rational addiction has been criticised for a few reasons. One argument mooted is that addicts usually have impaired judgement and cannot make rational, utility-maximising decisions about their future preferences and consumption (Rogeberg, 2004). The hypothesis that alcohol drinkers use sound information to make consumption choices rationally may not be empirically viable in the light of the high scale and prevalence of alcohol abuse issues globally. The reality is that some alcohol drinkers will have self-control when it comes to alcohol consumption while other alcohol consumers may not be able to comprehend the detrimental effects of alcohol consumption.

2.3.1.4 Bounded Rational Addiction theory

This is an extension of the rational addiction theory developed by Gruber and Köszegi (2004) in light of the drawbacks of the theory of rational addiction. The theory introduces an endogenous discounting of future utilities. The theory argues that addicts have time-inconsistent preferences and exhibit forward-looking behaviour. In the model, the shape of time discounting is assumed to be hyperbolic. The theory provides insight into the heterogeneity in the consumption of addictive goods that can be used to analyse addiction to alcohol. It also provides a basis for understanding the habits that generate addictive or risky alcohol consumption. In analysing health inequalities, socioeconomic and lifestyle determinants such as drug use are major factors in explaining adverse health experiences of those who are poor or of lower social class (Room, 2004).

2.3.2 Psychological theories of alcohol consumption

2.3.2.1 Social learning theory

This is one of the theories of human behaviour analysis that links substance abuse behaviour to environmental influences (Giovazolias & Themeli, 2014). The theory focuses on the importance of peer behaviour as a modelling or normative influence. Its most contemporary version is the social cognitive theory which takes into account the cross-influences between individuals and their environment through the notion of cognitive

20

processing, whereby an individual's behaviour and environment simultaneously interact, affecting all aspects of his reality. The theory has two basic elements – self-efficacy and outcome expectancies – which capture how intellectual processes impacts on a person's behaviour. Self-efficacy comprises the general cognitive mechanism denoting a person's belief in their capacity to influence their life. The mechanism intervenes in the person's behavioural stimuli and enables evaluation of their ability to act in a certain situation (Giovazolias & Themeli, 2014). Outcome expectancies are the belief whether a person's involvement in certain behaviours will achieve the desired outcomes, or not. The expectancies can be formed due to an individual's immediate experience of certain behaviours or through observation of other people's experiences regarding outcomes of the same behaviours. These others could be famous people, public figures, role models and family or friends.

In applying the theory to alcohol abuse, individuals consuming alcohol presume positive expectations and attitudes towards alcohol consumption through the course of observing or reproducing the positive statements or attitudes of their role models. For instance, someone can adopt a drinking behaviour based on observing that alcohol consumption by their parents seems to have a positive relaxation effect after a long day of work. In the theory, drinking refusal self-efficacy involves the perceived ability to refuse to consume alcohol under certain conditions, such as when upset or during social drinking occasions (Hasking, Boyes & Mullan, 2016). The theory supports the idea that problematic drinking is influenced through interaction with and observation of others in a social context. In general, alcohol is sometimes associated with relaxing and having a good time. In terms of the social learning theory, if one grows up in an environment where one seems to be rewarded for drinking alcohol, there will be a strong motivation to copy the behaviour. In sum, learned behaviour interacts with environmental factors to predict a wide variety of delinquent activities, such as alcohol abuse. Based on the theory, lower SES individuals have more likelihood to engage in substance use compared to their higher SES counterparts, which could help to explain socioeconomic gradients in alcohol-related harms (Cooper et al., 2009).

2.3.2.2 Theory of planned behaviour (TPB)

The TPB attempts to predict how behavioural intention determines alcohol consumption among social, high-risk and extreme drinkers. the idea suggests that strong intents to undertake a particular conduct increase the probabilities of the behaviour happening. The TBP has the subsequent main constructs: Attitude Toward the Behaviour (ATB), Subjective Norm (SN), Perceived Behavioural Control (PBC) and Behavioural Intention (BI), where ATB captures a person's beliefs or feelings regarding a behaviour; SN captures the extent to which one believes key role models would either approve or disapprove of one engaging during a certain behaviour; PCB

21

comprises self-efficacy, barriers and facilitators which will inhibit or support a behaviour; and, BI entails a person's plan regarding the perceived likelihood of performing a behaviour (Glassman et al., 2010).

The TBP developed out of the Theory of Reasoned Action (TRA). The TRA argues that behaviour is influenced by one's intents to participate in a certain behaviour, which as a consequence is influenced by two aspects. The first is the attitude which determines the strength of one's assessment of the behaviour as either favourable or unfavourable. The second factor is the perceived social norms around the behaviour. The behaviour is facilitated by the strength of the intention to undertake the particular conduct, perceived behavioural control as well as attitudes and subjective social norms (Haydon, Obst & Lewis, 2018; Ross & Jackson, 2013). The TPB theory has been used extensively to analyse addictive alcohol consumption and related problems. For instance, an individual likely to binge drink would have a strong positive attitude towards the act, likely engage with social peers who approve of the act of binge drinking and also have a strong expectation of binge drinking.

The standard TPB theory described above has been extended to include self-identity, a variable previously determined in empirical research to be strongly linked to alcohol-related behaviours. Self-identity can be defined as the most permanent and significant perception of one's self (Haydon et al., 2018). The identity theory asserts that an individual tends to describe themselves in terms of sociodemographic characteristics, social role, social type or personality traits that may be a powerful predictor of behaviour. Drinking identity is naturally determined by the degree to which a person's views alcohol drinking as fundamental to their identity (Haydon et al., 2018).

In addition to the utility of the TPB variables on purposes to partake in risky alcohol consumption, there has been interest in researching the influence of social circumstances in which risky drinking is undertaken. Besides social norms, social variables such as social facilitation have also been key aspects in TPB research (Ross & Jackson, 2013). Social facilitation is the ability to be comfortable in social circumstances, for example, feeling more confident in fitting to a social group because of similar alcohol drinking patterns. Gauging social reasons for alcohol consumption augments the TPB and allows a more informed understanding of drinking behaviour. The theory can help explain the significant gender and age variances in drinking behaviour and patterns that have been observed in empirical studies (Norman, Bennett & Lewis, 1998).

2.3.2.3 Self-medication Theory

The self-medication hypothesis, which posits that people with mood and anxiety disorders use substances such as alcohol to numb painful emotions (Turner et al., 2018), is one framework useful to understanding why alcohol misuse co-occurs with depression. When people with depression misuse alcohol to cope with adverse feelings,

this increases the risk of alcohol problems occurring (Frohlich et al., 2018). Empirical research has established close links between mental health and alcohol abuse which are broadly consistent with the self-medication hypothesis (Forbes et al., 2015). There are indications of a consistent positive relationship between stress and risky alcohol consumption, with gender and socioeconomic vulnerability modifying the relationship (Dawson et al., 2005).

2.4   The conceptual framework to understand the root causes of health inequalities

While the theories that have been discussed thus far help us to understand the motivations for alcohol consumption, there is a need to understand how several factors interact to result in SES inequalities in alcohol-related harm. Understanding the root cause of the AHP entails also understanding the socioeconomic factors impacting on health, which includes understanding the crucial mechanisms by which the main general elements of health may function to drive socioeconomic health inequities. The factors of the general health of the population can be conceptualised as rainbow-like layers of influence as presented in Figure 2.1.

The core of the figure represents fixed individual-specific characteristics, including sociodemographic characteristics such as age, gender and constitutional characteristics that impact health outcomes. These are surrounded by individual lifestyle factors that are theoretically adjustable by policy. These include individual behaviour choice determinants such as alcohol consumption, smoking behaviours and physical activity. The next layer captures the societal influences of peers and immediate community networks. The third layer highlights the factors influencing the ability to maintain their health, such as living and working environments, food supply and availability of vital goods and services. The outer layer refers to the general socioeconomic, cultural and environmental factors that impact the health outcomes for the overall society (Dahlgren & Whitehead, 2007).

23

Figure 2.1: The main determinants of health
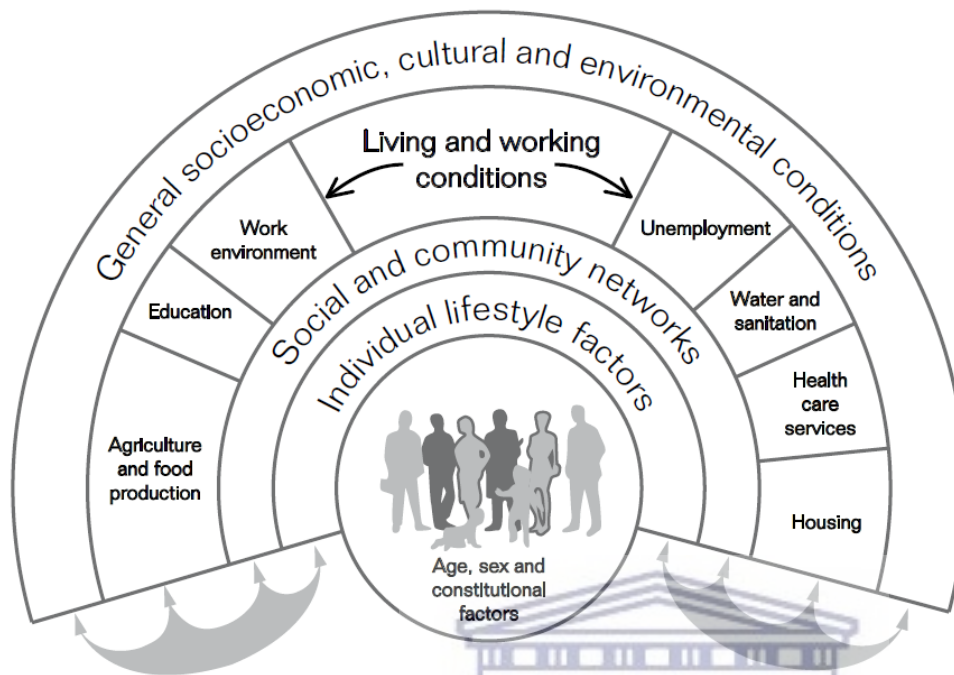
Source: Dahlgren and Whitehead (2007).

The framework for health determinants emphasises interactive influences among the factors: individual lifestyle factors are entrenched in social standards and community systems and area-level characteristics that, as a consequence, are influenced by the broader socioeconomic and cultural setting. The general influences of health can be grouped into positive health influences, protective factors or risk factors. Positive health factors are factors that contribute to the sustenance of health, which include economic security, suitable housing and food security, as well as other emotionally rewarding social relationships (Wilkinson, 2002). Protective factors eradicate the risk of ill-health and include psychosocial influences such as societal support, healthy diets and lifestyles (Dahlgren & Whitehead, 2007). Risk conditions are factors that lead to health problems and diseases and are theoretically preventable. These can be socioeconomic, ecological or lifestyle-related conditions such as alcohol consumption, sedentary behaviour and smoking. All the factors – positive health factors, protective factors or risk factors – contribute to the total burden of disease within a country.

The analysis above is key to understanding the general social factors impacting on health. However, the conceptual framework needs further development to ascertain the determinants of health by socioeconomic groups. There is good evidence that lower SES individuals are more susceptible to alcohol-related harm. Applying and further developing the conceptual framework makes it possible to identify the mechanisms and

24

pathways that underlie the socioeconomic differences in the risk of adverse health-related outcomes. Loring (2014) argued that socioeconomic inequities in health are due to the uneven distribution of the determinants of health. One pathway to health inequities is the different phases of exposure to health hazards linked to SES. The literature has established that exposure to almost all the health risk factors is negatively related to social place in the society. This includes physical, psychosocial and behavioural risk factors such as income, employment and education. The skewed distributions in all risk factors are also prevalent across lifestyle factors as smoking and alcohol misuse (Dahlgren & Whitehead, 2007). The common factor is that the lower the socioeconomic position, the greater the exposure to different health hazards and subsequently, adverse health outcomes. In contrast, better access to resources present opportunities to avoid risks, diseases and the adverse consequences of poor health (Grittner et al., 2012).

Socioeconomic inequities in health are also caused by the unequal distribution of power and resources in the society. Social position is derived from education, occupation or economic resources and is an important determinant of the type, magnitude and distribution of health risks experienced within diverse SES groups. Higher SES groups command more power and likelihood for a better life than lower SES groups. Therefore, social position is an significant determinant of social inequities in health outcomes (Link & Phelan, 1996). This is especially true in South Africa where for close to five decades, institutional racism during apartheid engineered systematic exclusion of black people from resources and power (Deghaye et al., 2014). The legacy of apartheid policies helped create the current, persistent, deep-rooted socioeconomic inequalities in health outcomes (Nwosu & Oyenubi, 2021). The psychosocial effects of the social position can also influence alcohol consumption patterns, as prescribed in the self-medication theory of alcohol consumption. Mackenbach et al. (2005) argued that psychosocial-related issues, for example, lack of control at work, lack of social support and housing insecurity, that generate unhealthy stress and lifestyles, which are characteristically far more common among low SES people.

Aside from the different levels of exposure to health hazards linked to SES, as described above, the other pathway to health inequities is the level of exposure to risks such as alcohol misuse leading to different impacts based on SES. The differential impact between groups can be associated with variances in alcohol consumption patterns and social support systems at work and at home. The differences in impact can be due to a higher likelihood of low SES individuals being exposed instantaneously to numerous risk factors that strengthen each other, such as social segregation, limited income, alcohol misuse, unhealthy lifestyles and limited access to health services (Marmot & Wilkinson, 2002). This highlights the critical role of synergetic effects of the social,

25

cultural and economic settings in the differential impact of adverse health outcomes on different socioeconomic groups.

Another important pathway to social inequalities in poor health outcomes is life-course consequences. This life-cycle viewpoint considers the cumulative effects of all events that occur over the course of a lifetime. A series of early life events leads to ill health later in adulthood. Significant early life events are stronger predictors of health later in life than socioeconomic position at maturity (Kaplan et al., 1996). Material deprivation throughout childhood has been linked to poor health consequences in adulthood, according to empirical investigations (Walters & Suhrcke, 2005). Because life-course impacts are tightly linked to social background, they may have a generational impact. For example, in agriculture, the tot or 'dop' system entangled farm workers in a cycle of poverty that was linked to negative alcohol consequences over generations (Williams, 2016). This was worsened by the fact that farm employment in South Africa is a closed industry, with few farm workers' children employed in other fields, and despite the fact that farm workers might potentially leave, they choose to move from farm to farm, remaining in the same social band (London, 2003). The discovery that some women smoke during pregnancy, which accounts for some of the higher incidence of low birth weight in lower SES groups, is an empirical example. With time, this exacerbates social imbalances in health and increases the risk of coronary heart disease, stroke, and other disorders in adulthood (Manor, Matthews & Power, 1997).

Another mechanism leading to socioeconomic inequities in health outcomes pertains to the social and economic consequences of poor health outcomes. Social gradient has been observed in the severity of the health consequences which increases with a decreasing socioeconomic position. Low SES individuals are exposed to many adverse consequences of illness such as loss of labour income from employment, unemployment and social exclusion, as a result of unemployment or limitations on production activities resulting from poor health. The adverse consequences of illness most likely lead to a downward spiral that impacts health and perpetuates inequalities (Dahlgren & Whitehead, 2007). High SES individuals that undergo health problems have a better chance of keeping their jobs than low SES with similar health problems (Lindholm, Burström & Diderichsen, 2002).

2.5   Alcohol consumption externalities

Alcohol consumption yields private and social benefits as well as costs (Clarke, 2008). In South Africa, an analysis of the economic benefits of the alcohol industry by Harrison (2020) revealed higher economic costs than benefits in the industry. Alcohol plays an important role in South Africa both in consumption and in

26

production. South Africa has a large alcohol industry (Van Walbeek & Blecher, 2014). According to the estimates by the National Treasury, the economic contribution of the sector for the 2009/10 period was R73 billion, or 2,9% of GDP (WCG, 2016). Direct and indirect tax revenue from the sector in the same period was estimated at R41,7 billion (National Treasury, 2014). For the same period of 2009/10, employment in the alcohol industry was estimated at 21 300 direct and 501 000 indirect jobs (National Treasury, 2014)[3]. As such, the production and consumption of alcohol is an important economic activity in the country. While the alcohol industry realises substantial profits from heavy consumption behaviour, the hazardous and harmful use of alcohol exerts an enormous health and social burden on the country (Parry et al., 2012). The direct and indirect economic costs of the alcohol industry in South Africa in 2009/10 were estimated at 10–12% of GDP (Harrison, 2020). A policy option aimed at reducing overall alcohol consumption in South Africa can reduce health inequalities (Mukong & Van Walbeek, 2018).

The social cost of excessive alcohol intake outweighs the individual cost. A total of 54 health disorders have been linked to alcohol usage, either directly or indirectly (Hummel, 2018). The direct expenses of treating the illnesses caused by alcohol use, as well as the indirect costs of research and prevention initiatives, are all included in the healthcare expenditures associated with alcohol consumption (Hummel, 2018). Furthermore, alcohol abuse is one of the leading causes of needless death worldwide (Bouchery et al., 2011). The loss of productivity caused by 'years of life lost' and 'years of life lost to disability' is another substantial societal cost of alcohol intake (White et al., 2011b). Workplace absenteeism, lowered productivity, and lower income have further consequences (Sacks et al., 2013). The other common social costs of alcohol consumption relate to accidents (Clarke, 2008; Parry, 2010) and crime (Mason & Wilson, 1989; Sacks et al., 2013). Drunk driving is implicated in the high prevalence of automobile accidents (Parry, 2005) that often result in death and disability. Intoxication is also linked to many of the thousands of annual pedestrian deaths and injuries on South African roads. Crimes associated with alcohol intoxication include homicide, rape, domestic violence, all forms of assault, and various traffic and property offences (Mason & Wilson, 1989). Alcohol consumption puts pressure on the criminal justice system and this imposes additional costs on the taxpayer (Hummel, 2018). In addition, most of the direct costs of workplace and traffic accidents, and related hospitalisation, treatment, rehabilitation are borne by the taxpayer and pay-outs from accident claims add to the general cost of vehicle and personal insurance premiums.

---

[3] The study followed on Harrison (2020) and used statistics for 2009/10 to allow comparison between the National Treasury Tax Review and the analysis of costs published in South African Medical Journal, which are both based on 2009 statistics.

Figure 2.2 presents a graphical illustration of the difference between private and social costs that relate to alcohol consumption.

Figure 2.2: The negative externalities of alcohol consumption and taxation
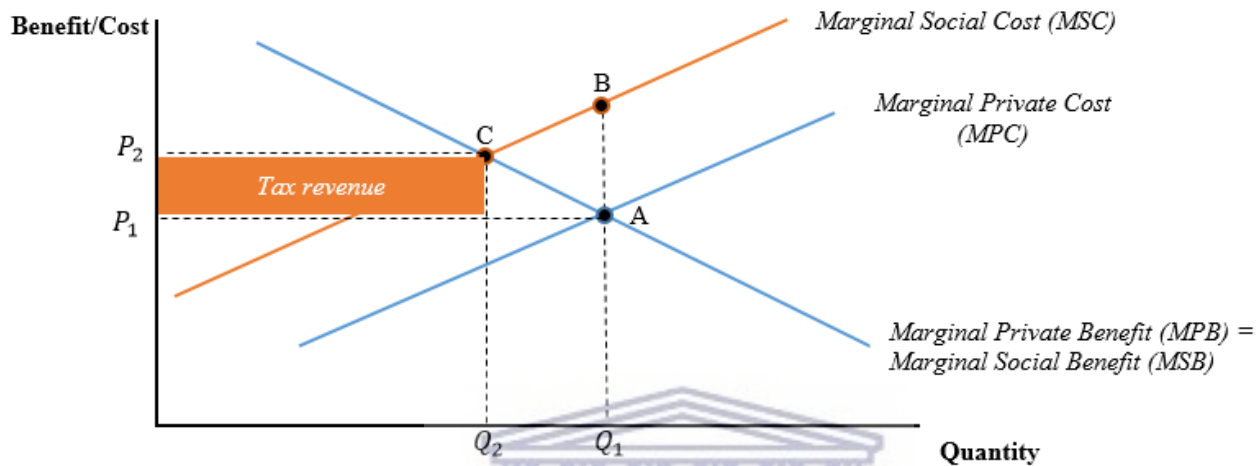
Source: Van Walbeek & Blecher (2014)

In the diagram, the marginal social cost (MSC) curve captures the sum of marginal private cost (MPC) to alcohol consumers as well as any other costs imposed on the society that are related to the consumption of the good. The MPC curve traces the change in the consumers' total cost as they consume additional units of alcohol. Both the MSC and MPC curves are upward sloping and the MSC has a higher intercept as it captures the full costs related to the activity of consuming alcohol in the society. The marginal private benefit (MPB) curve represents the direct benefit to consumers of the consumer consuming an additional unit of alcohol. The marginal social benefit (MSB) curve captures the benefits accruing to the individual consumers of a specific good, along with any other social or environmental benefits or costs. The MSB can be less than MPB in the case of negative externalities of consumption such as alcohol consumption.

Under perfect market conditions, producers would ignore the external costs to others and equilibrium consumption will be at point A where MPB equals MPC. At this point, alcohol consumers will consume Q_1 units of alcohol at the price of P_1. However, this is socially inefficient because the social marginal cost is greater than the private marginal cost. The triangle formed at CBA represents the deadweight loss to society at this suboptimal consumption level. Taxation can be used to increase the marginal cost of consuming alcohol to the marginal social cost. In this case, a tax can be charged to raise the price of alcohol from P_1 to P_2. This method

28

of implementing the tax would help achieve social efficiency at point C where the marginal social cost equals the marginal social benefit. Through the tax, the quantity consumed is reduced from Q_1 to Q_2 and government revenue increases by the area of the shaded rectangle (Van Walbeek & Blecher, 2014).

In South Africa, the burden of the high economic, social and health costs of alcohol consumption falls on poorer people given the culture of heavy drinking that has apartheid and colonial origins (Harrison, 2020). The divergence between private and social costs of alcohol consumption results in externalities (Dahlman, 1979). An externality is a cost or benefit that is borne by others or society as a whole, rather than the person who consumes the commodity or service (Simpson, 2007). Externalities are carried by third parties, while private costs and benefits are absorbed by the direct consumer of the commodity or service. Psychological medical expenses, lost wages, and the personal suffering and distress associated with excessive alcohol consumption are among the private costs of alcohol consumption (Greenfield et al., 2009). Social costs are the sum of external and private costs taking into account all the costs associated with an economic activity. These include the costs borne by the individual economic agent and all costs carried by the society at large. In the presence of external costs, the total cost of producing or consuming a good (private plus external costs) will exceed the benefits (private plus external benefits) (Heien & Pittman, 1993). The social costs of alcohol consumption constitute medical, productivity losses and crime costs (Hummel, 2018).

Because of the substantial social costs of alcohol consumption, there is a strong policy focus on lowering the incentive to consume alcohol, or at the very least assisting in the coverage of these costs. Policymakers can address externalities through a variety of techniques and tools, including institutional changes, transferable property rights, and regulatory and tax procedures. However, not all the institutional and trade solutions are appropriate to address externalities. The main mechanism that policymakers have adopted to address the externalities from alcohol consumption is levying tax on liquor products. The idea behind charging an alcohol tax is to deter alcohol consumption whilst creating revenues (Green, 2011). Alcohol taxation increases alcohol taxes which reduces both the level of alcohol consumption and the associated harm while also increasing taxation revenue at the same time (Anderson et al., 2009). An economic theoretical framework has been proposed to help derive the optimal tax that will ensure effective and equitable intervention to curb externalities from drinking. The optimal Pigouvian tax framework can help design interventions that reduce the social and economic costs of alcohol misuse while potentially preserving the industry's capacity to generate economic benefits. The economic principle behind the derivation of the optimal Pigouvian tax is depicted in Figure 2.3.

Figure 2.3: The optimal Pigouvian tax
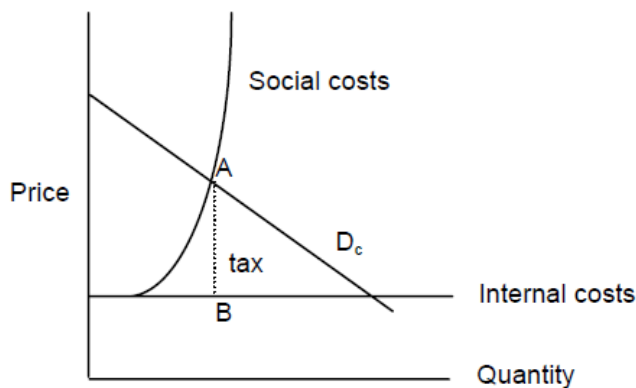
Because the paradigm assumes that tax money is distributed to consumers in a lump sum, the sole influence is on relative pricing. The downward sloping line, Dc, in the diagram illustrates the income-compensated demand curve, as well as the social marginal benefit. The upward sloping social costs illustrated on the diagram represent the social marginal cost. The socially optimal amount of the good for a given consumer is at point A in the diagram, when their consumption's social marginal gain equals their consumption's social marginal cost. At point A, the tax/subsidy per unit is equal to the consumer's net marginal external cost of consuming at their optimal consumption level. The appropriate tax rate is shown by the length AB (Barker, 2002).

The preceding study is based on a typical alcohol drinker. Alcohol users would pay the same optimal tax if they were all the same. Consumers, on the other hand, have heterogeneous demand and cost functions, and each has a unique optimal tax. The ideal uniform tax is a weighted average of each consumer's optimal tax, due to the significant expenses of attempting to distinguish individual consumers. As a result, the best uniform tax balances the efficiency gain from reducing externalities with the loss of consumption advantages from lower consumption that aren't recovered as tax revenue.

The theories discussed earlier show how a variety of factors can influence alcohol consumption at the individual and societal levels. The externalities from alcohol consumption – the burdens imposed upon other individuals or upon the society at large – are of considerable importance to alcohol policy formulation given the social gradient of alcohol harms that has been established in the literature.

2.6   Theories on the alcohol harm paradox

The AHP is the empirical conclusion that alcohol users in lower socioeconomic categories have worse health or die sooner than those in higher socioeconomic groups (Bellis et al., 2016; Jones, Bates, McCoy and Bellis,

2015). Some persons in higher SES categories are more likely to exceed the prescribed drinking limits yet individuals in lower SES groups experience more alcohol-related harm (Lewer et al., 2016).

The mechanisms underpinning the paradox remain unclear (Probst et al., 2014). However, there have been attempts to explain the paradox. These include the premise that deprived drinkers likely suffer greater combined health challenges such as smoking and obesity which aggravate the effects of related harms. Those in deprived communities could also exhibit more harmful drinking patterns such as bingeing and heavy drinking. It is also plausible that those in lower socioeconomic groups could have a history of risky or harmful alcohol consumption compared to those in higher socioeconomic groups. Socioeconomic inequalities in survival among people with alcohol-related issues and diseases have also been proposed as a reason for the inconsistency. For example, lower SES individuals may not receive proper treatment for alcohol-related problems. (Mäkelä, Keskimaki & Koskinen, 2003).

There are also suggestions that methodological issues can help explain the paradox. One point that has been raised is the issue of non-standard cut-offs in the definition of heavy or risky drinking across the different study samples in which the paradox has been observed (Lewer et al., 2016). This inconsistency can be associated with the use of self-report surveys to estimate consumption. Self-reported data is prone to various biases and normally under-report consumption estimates compared on objective alcohol sales data (Robinson et al., 2015).

2.6.1 The drinking pattern hypothesis

According to the theory, socioeconomic differences in harmful alcohol consumption can explain socioeconomic inequalities in alcohol-related outcomes (Bellis et al., 2016; Bloomfield et al., 2006; Fone et al., 2013; Giskes et al., 2011; Grittner et al., 2012; Huckle et al., 2010; Mäkelä & Paljärvi, 2007). Based on the theory, SES influences alcohol drinking behaviors and, as a result, the likelihood of short- and long-term damage. As a result, some alcohol-related health outcomes might be more socioeconomically unequal.

Moreover, alcohol consumption patterns such as the quantity and frequency of drinking can be influenced differentially by socioeconomic determinants. It has been postulated that individuals with higher SES tend to consume alcohol more frequently while those with lower SES tend to drink alcohol in larger quantities. This would result in a differential impact on the outcomes based on SES characteristics and can help explain the paradox (Huckle et al., 2010). The assertion is consistent with the empirical finding in most studies on alcohol use that binge drinking is usually more dominant among the economically disadvantaged members of the society (Fone et al., 2013), whereas higher SES groups tend to consume smaller amounts of alcohol more frequently

31

(Bloomfield et al., 2006). The same can be said regarding the high prevalence of occasional heavy drinking episodes within the lower SES groups compared to the higher SES groups. This level of use cancels out any possible benefits from moderate drinking such as a reduced risk of ischaemic heart diseases (Grittner et al., 2012). The drinking pattern will ultimately reflect SES differences in the outcomes.

The other possible explanation is that SES differences in alcohol harms stem from SES differences in the types of alcohol consumed (Bellis et al., 2016, Grittner et al., 2012). Some alcohol types may carry other health risks when consumed. For example, the consumption of spirits in some populations has been connected with higher risks of liver cirrhosis and certain cancers (Grittner et al., 2012). Mkuu et al. (2018) found evidence of SES differences in unrecorded and illicit alcohol consumption, with lower SES drinkers more likely to both consume unrecorded alcohol and also binge drink on unrecorded alcohol. Unrecorded and illicit alcohol encompasses homemade, illicit or smuggled alcohol products. It also includes substitute alcohol products not originally meant for consumption such as mouthwash and perfumes (Lachenmeier, 2012). Unrecorded alcohol consumption is associated with anomalously high rates of liver cirrhosis (Lachenmeier, 2012). Hence, SES differences in health outcomes would be the result of additional health risks in the SES differences related to the type of alcohol consumed.

2.6.2   The drinking histories hypothesis

The drinking histories hypothesis argues that increased risks of alcohol-related harms in deprived individuals can be explained by whether someone previously consumed alcohol, their age when they started drinking and previous drinking behaviour such as bingeing or heavy alcohol consumption. Drinking histories may differ among deprived and well-off individuals in a way that, though there may be comparable levels of current alcohol consumption, deprived individuals may still have higher levels of alcohol-related harms. Equally important is the history of consuming higher proportions of alcohol and heavy or binge drinking sessions (Bellis et al., 2016). Drinking history is relevant to explain elevated risks of alcohol-related cancers, even in former drinkers abstaining from alcohol for over a decade (Bellis et al., 2016).

2.6.3   Combined health challenges theory

The alcohol harm paradox can be explained through differences in lifestyle factors of alcohol consumers across different SES groups. Deprived individuals are likely to have unhealthy lifestyles involving poor diet and smoking which interact multiplicatively in a synergistically harmful way that increases adverse health outcomes (Bellis et al., 2016; Probst et al., 2014, Van Oers et al., 1999). Compared to affluent individuals, deprived individuals are exposed to lifestyle issues such as poor diet, smoking, alcohol abuse and obesity, which can

32

explain differences in the impact of alcohol use between the two groups. Obesity, smoking and higher alcohol consumption interact to increase the risks of liver disease mortality to a larger extent than the impact of each individual risk (Bellis et al., 2016).

2.6.4   The reverse causality theory

A reverse mechanism has been proposed to explain the paradox, which suggests that in socioeconomically deprived areas, easier access to alcohol outlets and cheaper alcohol pricing may lead to more dangerous consuming behaviors (Giskes et al., 2011). However, losing control over drinking can lead to lower wages, such as through unemployment, which can exacerbate the disparities in alcohol-related harm between SES groups (Mäkelä, Herttua, & Martikainen, 2015).

2.6.5   Area-level socioeconomic status theory

In attempting to explain the paradox, it is theorised that area-level SES might impose an independent effect on harmful alcohol consumption and the related health outcomes (Fone et al., 2013; Giskes et al., 2011; Karriker-Jaffe, 2011; Matheson et al., 2012; Mulia & Karriker-Jaffe, 2012). Karriker-Jaffe (2011) and Matheson et al. (2012) also associate neighbourhood disadvantage with increased illicit drug use. Mulia and Karriker-Jaffe (2012) argued that those residing in economically disadvantaged neighbourhoods are at a greater risk of heavy drinking.

According to the literature, neighbourhood marginalisation is an independent risk factor for drinking. Living in poor neighbourhoods and neighbourhoods with inferior built environments increases the risks of drinking and heavy drinking compared to individuals from affluent neighbourhoods and neighbourhoods with better built environments (Matheson et al., 2012). In addition, the paradox could be explained through social exclusion and relative deprivation where low SES areas suffer from differential development of social structures that help sanction social behaviour and maintain social order, such as policing and schools. Higher SES areas could have better physical resources such as housing and employment opportunities (Karriker-Jaffe, 2011). Problematic drinking practices within deprived neighbourhoods can be traced to that neighbourhood's 'drinking culture'. The role of alcohol in that 'culture' may differ substantially across different SES groups (Mäkelä, Herttua, & Martikainen, 2015). A neighbourhood culture that supports substance use and reinforces drinking behaviour and substance-supportive networks is often located in poor communities rather than in affluent communities (Matheson et al., 2012).

Individuals residing in neighbourhoods characterised by socioeconomic deprivation may be exposed to more stressful living conditions. This could be due to material disadvantages or perceived material inequality. As a result, the individuals may exhibit harmful alcohol consumption behaviours through problem drinking. Problem drinking in deprived areas can increase the demand for alcohol and lead to greater accessibility of alcohol in terms of more premises selling alcohol and lower alcohol prices (Giskes et al., 2011). Matheson et al. (2012) reported that alcohol outlets were concentrated in the most deprived neighbourhoods. Greater density and hence, greater accessibility of alcohol can also introduce a reverse mechanism whereby there can be harmful consumption behaviours among residents in deprived communities (Giskes et al., 2011).

2.6.6 Double jeopardy theory

This is the concept that low SES individuals living in disadvantaged areas are worse off compared to low SES individuals living in affluent areas. Low SES individuals living in disadvantaged areas will likely encounter more stressful living situations as a result or material disadvantage or perceived material inequality. The residents are more likely to partake in heavy drinking as a respite from stress and more likely to experience alcohol-related problems (Giskes et al., 2011, Mulia et al., 2012).

2.6.7 Relative deprivation theory

The relative deprivation theory connects income inequality and harmful alcohol consumption behaviours. It is generally assumed that people strive to achieve comforts (utility) that are standard in their neighbourhood, or that they believe to be standard. A poor person living in a highly income-unequal society will be frustrated by their perception of deprivation relative to others who possess greater utility and their frustration could cause them to engage in problem drinking. Based on the theory, the effects of area advantage on harmful alcohol consumption can vary by individual SES. Relatively deprived poor people in affluent neighbourhoods would experience higher levels of frustration leading to heavier drinking and alcohol problems compared to their advantaged counterparts in the same neighbourhood.

2.7 Potential mechanisms to explain the AHP

It is difficult to explain the mechanisms underpinning the AHP. This section discusses several pathways that can potentially explain the links between alcohol consumption, individual and societal vulnerability factors and health inequalities.

2.7.1 Conceptual model of alcohol use and alcohol problems

Figure 2.4 provides a graphical overview of potential mechanisms that could explain the AHP. The

34

framework showing the causal links between alcohol consumption and health outcomes was developed by the WHO (2013). The model highlights how interwoven causal mechanisms result in AHP across alcohol- related health outcomes. A variety of factors at the individual and societal levels affect alcohol consumption patterns and the risk of adverse health outcomes. Alcohol consumption and related harms are influenced by societal vulnerability factors, individual sociodemographic characteristics, and socioeconomic status (SES) in an ecological perspective. Furthermore, the intermediate mechanisms and long-term repercussions of alcohol consumption and alcohol-relatedharms have negative health consequences. The volume of alcohol consumed and consumption patterns alter the causal influence of alcohol on the health burden of alcohol in the model.

Figure 2.4: Conceptual framework of alcohol use and alcohol problems
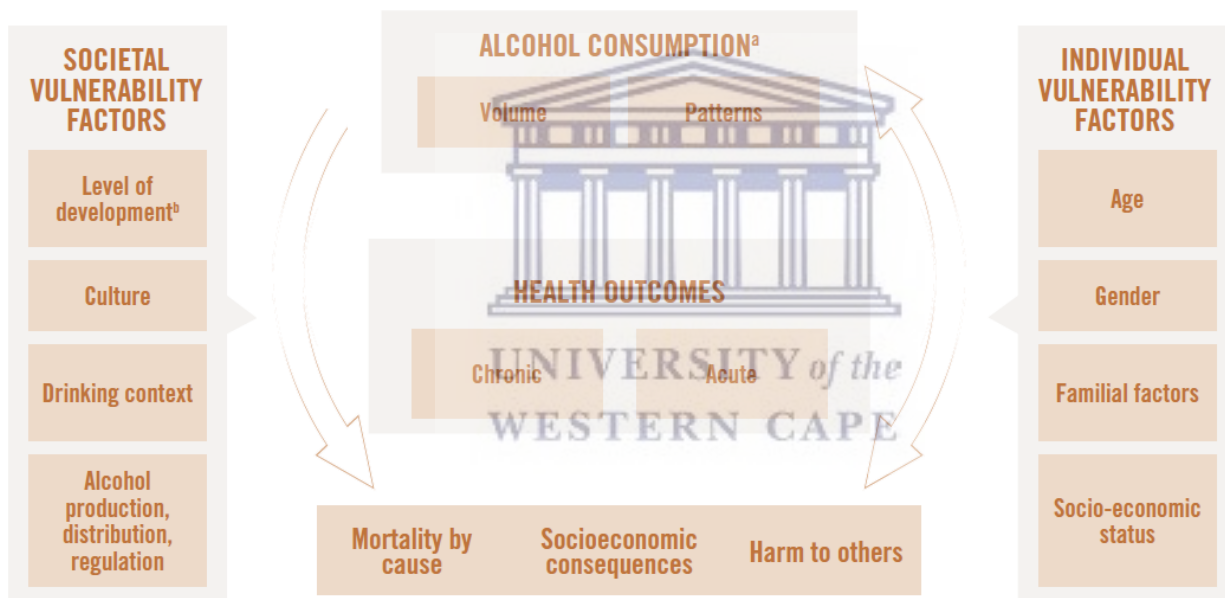
Source: WHO (2013).

More than 200 diseases, injuries, and other health issues with International Classification of Diseases (ICD)-10 numbers are linked to alcohol intake (Rehm et al., 2009). Alcohol use, linked diseases, and injuries usually have a dose-response causal relationship – the more alcohol consumed, the greater the chance of exposure to the consequence (Rehm et al., 2009). Aside from the amount of alcohol consumed, drinking patterns throughout time are linked to the risk of alcohol-related damage. High-risk alcohol consumption patterns, for example, have been associated to a higher risk of short-term injury, such as inadvertent and deliberate injuries (Giskes et al., 2011). In contrast, a low-risk drinking pattern such as eating healthily while drinking has been connected to less

35

harm from chronic diseases (WHO, 2013). The quality of alcohol consumed may also impact negatively on health; for example, the consumption of contaminated, homemade or illegally produced alcohol products potentially results in health problems (WHO, 2013). In addition, alcohol consumption is associated with socioeconomic consequences. Harmful alcohol consumption may result in the loss of labour income, unemployment or family problems, stigma and barriers to accessing healthcare (WHO, 2013).

Alcohol consumption is linked to negative health outcomes and social implications in the model through three intermediate mechanisms: intoxication, dependency, and direct biological impacts (Rehm et al., 2003). Drinking-induced intoxication is thought to be a potent mediator of acute alcohol-related events including accidental or purposeful harm or death. Intoxication has also been linked to long-term health and social difficulties. Despite the fact that alcoholism is a clinical condition in and of itself, it is a powerful mechanism that mediates both alcohol consumption and its social repercussions (WHO, 2013).

The volume of alcohol use and alcohol-related harm is influenced by a combination of individual and societal factors. An individual's decision to consume alcohol, as well as the frequency, quantity, and context of that consumption, is influenced by a combination of biological, cultural, and economic factors. Environmental factors such as economic development, culture, alcohol availability, and regulation, for example, influence alcohol consumption. This demonstrates how the affordability and availability of low-cost alcohol products in underserved areas can have a negative impact on hazardous drinking and, as a result, alcohol damages. Heavy drinking may impoverish the drinker, their family, or their society, resulting in increased health or social consequences for people of low socioeconomic status.

The degree of risk of alcohol-related harms is also based on the physical and socioeconomic context. In South Africa, the legacy of apartheid can explain differences in 'race'-based vulnerabilities to alcohol-related harm. The policies implemented during the apartheid era encouraged the availability of alcohol through government-operated beer halls and shebeens, the unlicensed liquor outlets residents operated in the informal settlements and townships (Harrison, 2020), that instigated the prevailing socioeconomic gradient in alcohol harms. The huge growth of illegal shebeens that began in apartheid and continues today ensured that alcohol was easily available with no limit to trading days and hours or the quantities and quality of what was sold. Shebeens normalised excessive and regular drinking, including potentially for underage drinkers, and introduce disproportionate risks to deprived communities not experienced in affluent communities. The consensus is that alcohol misuse remains prevalent through the unlicensed suppliers in the country and the sector is not regulated by the government (Fieldgate et al., 2013).

The social or legal consequences of alcohol consumption based on alcohol policies, laws and regulations and enforcement can increase the susceptibility of drinkers to alcohol-related social harm. The general lack of regulation of unlicensed liquor outlets and the proliferation of the illicit liquor trade in South Africa leads to increased harm, mainly in the poor communities (WCG, 2016). The Western Cape government (WCG, 2016) estimated that as high as 70% to 80% of alcohol products are consumed in the informal market. The lack of regulation encourages alcohol-related offences such as selling alcohol to underage persons, allowing consumption of alcohol on the premises, extended trading times and selling alcohol to already-intoxicated persons. The higher concentration of unlicensed outlets in informal settlements and poorer communities results in disproportionate health risks for the poor. Cheap, sugar-fermented alcoholic beverages are widely distributed in the Western and Eastern Cape. Simply by being easily available, cheap alcohol products encourage increased alcohol consumption and result in low SES drinkers being disproportionately impacted by cheap alcohol compared to high SES drinkers (Room, 2004). The poor may resort to cheaper alcohol alternatives or surrogates due to affordability constraints.

The concept of norms refers to informal social rules or proscriptions defining acceptable and unacceptable behaviour within a social grouping. In the South African experience, the legacy of apartheid resulted in different drinking norms for different sub-populations within the communities and the country. Drinking norms within the country are largely based on age, gender, religion or population group. For example, the dop system in apartheid cultivated a culture of heavy alcohol consumption by farm workers and their families in farms and rural towns, especially among the coloured communities (London, 2003; Van Walbeek & Bletcher, 2014). The culture of heavy drinking in the African black population group has origins in apartheid-era shebeens and beer halls as shown above (Harrison, 2020). As a result, drinking levels and patterns differ across genders and the whites, coloured, Indian and African population groups in South Africa. It has been argued that South Africa is becoming more tolerant of youth alcohol consumption (Fieldgate et al., 2013). This helps to explain the high prevalence of risky alcohol consumption and consequences such as drunkenness, violence, car accidents, irresponsible sexual behaviour and criminal activities (Fieldgate et al., 2013).

The theoretical model was used to identify the social determinants of alcohol consumption that impact subjective health status, chronic health conditions and mental health status. The model highlights how alcohol consumption within the community differs by individual sociodemographic factors such as age, gender, population group, familial factor, SES and societal vulnerability factors, such as alcohol regulations and social acceptability norms about consumption. The environmental and psychosocial contexts for alcohol consumption can result in

socioeconomic discrepancies in alcohol harms. Low SES individuals are more likely to consume alcohol under 'unsafe settings' frequented by other high-risk drinkers compared to the high SES individuals, who tend to drink in conducive social environments such as work-related events, or with friends. The model offers a framework to understand and explain the unique patterns and trends of alcohol consumption in South Africa considering the country's historical and contemporary experiences. Various factors resulting from the long history of systemic racism and institutionalised segregation result in differential vulnerability and socioeconomic consequences and susceptibility to poor health outcomes, which manifest in alcohol-related adverse physical, mental and social outcomes.

2.7.2 Conceptual model of alcohol use and alcohol problems

Figure 2.5 presents the potential explanations of the AHP that are not a result of differential exposure to alcohol consumption. This was adapted from Peña (2021) to show how differential SES vulnerability impacts socioeconomic consequences and health outcomes.

Figure 2.5: Explanations for the AHP
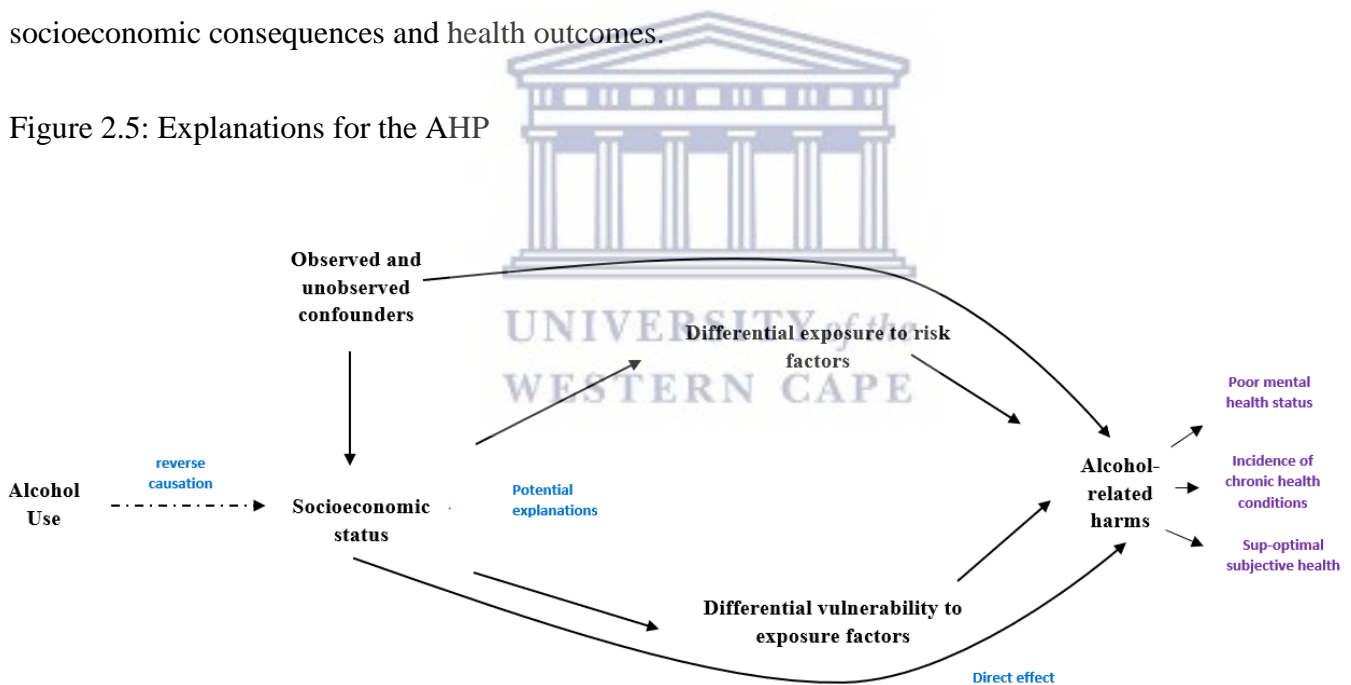
Source: Adapted from Peña (2021).

The original framework was used to examine the AHP for Finland and Chile, two countries recognised for high levels of alcohol consumption and harms. The framework was focused originally on general harms but this study adapted it for the incidence of specific alcohol-related health outcomes on low SES individuals and groups; poor mental health status, chronic health conditions and suboptimal subjective health status. This allows the study to answer the research question; to explore the disproportionate impact of alcohol consumption on the specific

38

health outcomes and the possible transmission mechanisms. The model adaptation contributes to the theoretical framework through the extension and empirical application to specific alcohol harms in South Africa.

A combination of risk factors influences socioeconomic inequalities in health through differential exposure and differential vulnerability. The literature suggests a link between the level of vulnerability of an individual and the likelihood of developing alcohol problems (Peña, 2021). Compared to high SES individuals, low SES individuals are exposed to several different individual and environmental risk factors other than alcohol use. Associations have been found between low SES and risky behaviour such as smoking and a sedentary lifestyle (Dahlgren & Whitehead, 2007). These combine to adversely influence health, making low SES people more vulnerable to alcohol-related harms. In addition, the psychological stress of living in deprived areas and experiencing stressful life events could potentially modify the association between SES and alcohol-related harms.

Another potential pathway of differential vulnerability is through constraints in accessing social resources and healthcare. With poor access to resources, the lesser the socioeconomic position, the higher the chances of exposure to different health hazards and adverse health outcomes. By contrast, better access to resources presents opportunities to avoid risks, diseases and the negative consequences of adverse health (Grittner et al., 2012). Differential vulnerabilities are mitigated to a large extent through equitable provision of healthcare within the society (WHO, 2013). However, inequalities across ethnic lines have been extensively reported in South Africa in health, education and social services, mainly due to the effects of policies enacted during apartheid. With unequal access to resources, the health and social consequences of alcohol consumption are likely to be more severe for those with low SES than those with high SES (Blas & Kurup, 2010).

Another potential explanation for the AHP is reverse causation where downward social selection results in adverse socioeconomic circumstances, especially for high-risk alcohol consumers (Katikireddi et al., 2017). In this scenario, alcohol consumption has a causal effect on SES. Empirical evidence has established a unidirectional association between heavy drinking and unemployment (there was no causality running from unemployment to heavy drinking) (Peña, 2021). Also, early initiation into alcohol use can negatively affect educational attainment, earning potential and /or employment status in adult life (Peña, 2021).

2.8 Conclusion

The chapter presented multi-disciplinary theories that attempt to explain the behaviours that drive risky alcohol consumption and how this relates to adverse outcomes. The chapter also provided theoretical explanations for

why deprived populations tend to suffer greater levels of harm than less deprived populations despite similar or less alcohol consumption. The chapter focused on the economic and psychological theories that model how consumers make alcohol consumption decisions as well as explain the observed linkages between alcohol consumption and related outcomes. The economic theories that model consumption decisions with economic models of addictive behaviour and psychological theories that attempt to explain alcohol drinking initiation and the course of alcohol use, including alcohol abuse or dependence, were reviewed. This chapter also reviewed theories that have been proposed over the years to explain how alcohol consumption caused problems. The chapter presented testable hypotheses that have been proposed to explain why deprived populations tend to suffer greater levels of harm than less deprived populations, despite similar or lower alcohol consumption. The chapter also reviewed theories that attempt to explain the alcohol harm paradox. It presented the various hypotheses that have been proposed to explain why deprived populations tend to suffer greater levels of harm than less deprived populations, despite similar or lower alcohol consumption.

40

CHAPTER THREE: EMPIRICAL LITERATURE

3.1 Introduction

This chapter surveys the existing empirical literature on the AHP in the light of the theoretical literature discussed in Chapter 2. The first part of the chapter discusses the background to the empirical literature followed by the discussion on alcohol consumption as an externality. The empirical incidence of impacts such as healthcare costs, productivity losses and the social costs of alcohol misuse based on SES, are reviewed. After discussing the empirical relationship on the AHP with a special focus on the following alcohol outcomes – subjective health status, chronic health conditions and mental health status – the last section discusses the AHP and the three alcohol outcomes in relation to empirical evidence from South Africa.

3.2 Background

The previous chapter introduced an approach where multi-disciplinary theories from economics and psychology were employed to explain the underlying causal mechanisms for the AHP. Through this approach, the study offers a wider ecological perspective on the interacting mechanisms between individuals and their environment that co-produce AHP. The chapter also empirically examined how alcohol consumption is inter-linked with both private and social costs and benefits. Excessive alcohol use impacts heavily on health inequalities in South Africa where the full economic welfare costs of harmful alcohol use were 10% to 12% of GDP in 2009 (Matzopoulos et al., 2014). It is the external costs of alcohol consumption that constitute a major economic burden and a concern for public policy. The major types of external costs of alcohol consumption are discussed in this chapter.

3.3 Alcohol consumption as an externality

Alcohol consumption imposes external costs on society, particularly when consumed at high levels or in risky settings. The study considers three major types of external costs: (1) healthcare costs (2) lower productivity and (3) social costs of alcohol-related crime. The impact of alcohol consumption on health arises from risky drinking which has been linked to organ damage, morbidity, disability and premature mortality. The productivity losses from alcohol use result from premature mortality and reduced productivity due to morbidity which constrains economic output and production (Van Walbeek & Blecher, 2014). Alcohol-associated crimes result in social costs due to property damage, and the use of state resources in policing, justice and corrections and transport management (Easton, 2008).

41

3.3.1 Healthcare costs of alcohol misuse

The AHP manifests through health problems which form a significant aspect of the overall risks induced by the harmful consumption of alcohol (Powrie et al., 2014). South Africa continues to experience high social, economic and health costs of excessive alcohol consumption especially in rural and urban low SES communities.

There are 54 health conditions linked to alcohol consumption (Hummel, 2018). The WHO expands the impact to include damage to mental health (WHO, 2004). Total healthcare costs associated with alcohol consumption include health insurance administrative costs and costs related to training substance abuse and mental health professionals. Added to this are treatment costs, research and prevention costs.

Table 3.1 lists the wide variety of health problems associated with alcohol misuse. These range from health conditions that are entirely attributable to alcohol misuse to those where alcohol misuse is only partly responsible. Healthcare costs attributable to alcohol misuse can be ascertained for all alcohol-consuming countries worldwide. There are multiple ongoing efforts to evaluate the global burden for different countries of disease and injury attributable to alcohol. In the US, Sacks et al. (2013) estimated the healthcare costs related to alcohol consumption to equal USD114.1 billion annually. Gilmore and Atkinson (2010) estimated UK's health service costs for treating alcohol-related disease as ₤2.7 billion at the time of their study.

Rhem et al. (2012) undertook a systematic review analysis of the relations between different dimensions of alcohol consumption and the burden of disease. The other aims of the study were to determine the effect of average alcohol consumption volumes and drinking patterns on diseases and to give an overview of the impact of the quality of alcohol on the burden of disease. The study undertook a systematic literature review to identify published research articles on alcohol-related diseases. The research adopted the epidemiological criteria to determine causality and meta-analysis to ascertain the extent of the risk relations. The results presented evidence of the causal influence of the average volume of alcohol consumption and major diseases. For most diseases, the relative risk was found to increase with the level of alcohol consumption. The dose-response relationships were quantifiable for all diseases. For several diseases and injuries, there were stronger effects on mortality than on morbidity.

Table 3.1: Healthcare costs attributable to alcohol misuse

Consequences to health System	100% attributable to alcohol use	Partly attributable to alcohol use
Treatment for alcohol misuse: => Hospital inpatient visits => Hospital outpatient visits => Accident and emergency visits => Ambulance services => Practice nurseconsultations => NHS GP consultations => Laboratory tests => Dependency prescribed drug; => Other health care costs (All of the above multiplied by appropriate attributable fractions)	• Alcoholic psychosis • Alcohol dependence • Alcohol abuse • Alcoholic polyneuropathy • Alcoholic cardiomiopathy • Alcoholic gastritis • Alcoholic liver cirrhosis • Ethanol toxicity • Other alcoholic poisonings	• Lip cancer • Oral cancer • Pharyngeal cancer • Oesophangcal cancer • Colon cancer • Rectal cancer • Hepatic cancer • Pancreatic cancer • Laryngeal cancer • Breast cancer • Pellagra • Hypertension • lschaemic heart disease • Cardiac sysrythmias • Heart failure • Stroke • Oesophangcal varices • Gastro-eosophangeal haemorrage • Cholelithiasis • Acute pancreatitis • Low birthweight • Road injuries • Fall injuries • Fire injuries • Drowning • Aspiration • Machine injuries • Suicide • Assault • Child abuse

Source: Adapted from Single et al. (2001).

In a systematic review and meta-analysis of the literature on alcohol consumption and health outcomes imputable to alcohol use, Rehm et al. (2017) sought to provide updates on data used for global and national comparative risk assessments (CRAs). The study considered the volume of alcohol consumed, blood alcohol concentration measure and drinking patterns as dimensions for exposure. Alcohol-related outcomes for mortality and morbidity were based on the International Classification of Diseases (ICD) codes. The results linked alcohol use causally to many diseases and injury categories. For most of the diseases partially attributable to alcohol, the relationship with the volume of alcohol consumed was monotonic. A beneficial relationship was found between moderate drinking and health. In addition, alcohol use was found to cause marked harm to others.

Another manifestation of the AHP is fetal alcohol spectrum disorder (FASD) a major source of mental illness and behavioural disorders that generates a large public cost during each sufferer's lifetime (Clarke, 2008). Abel (1995) established a socioeconomic gradient in FASD where low SES women had about a 10 times higher chance to experience the condition. The rates of FASD in South Africa are estimated to be 18 to 141 times

43

greater than those for the various racial populations in the US (May et al., 2000). This confirms the higher burden of the adverse health impact of alcohol consumption by blacks residing in the rural farming regions in South Africa.

3.3.2 Productivity losses

The externalities from alcohol consumption can manifest in the AHP due to productivity losses. Alcohol misuse can influence an individual's productivity in the short-run and long-run. Harmful alcohol use can lower productivity through increased work absences and lateness, high employee turnover and work-related accidents. In the long run, risky alcohol abuse can reduce productivity and wages indirectly via depreciation of the individual's health capital, education capital and labour market experience (Kenkel et al., 1994). The socioeconomic health inequalities would result from alcohol-using, high SES individuals having stronger social support networks and social protection systems that insulate them from these negative consequences of risky alcohol consumption. Lacking such protection, low SES individuals risk higher exposure to negative consequences from the loss of individual productivity associated with harmful alcohol consumption.

Common measures associated with lost productivity are 'years of life lost' and 'years of life lost to disability' (Hummel, 2018). These can be a consequence of death or premature retirement which reduces the workforce size in an economy (Easton, 2008). White et al. (2011b) found the annual cost of harmful alcohol consumption in the US at a total of 2.3 million years of life lost. In addition, death from alcohol consumption was the third-largest cause of preventable death in the USA (Bouchery et al., 2011). The annual productivity loss due to alcohol consumption in the US was estimated at USD673.3 million with a good portion being the result of excessive drinking (Sacks et al., 2013). The estimated burden of disease attributable to alcohol use in 2000 was 7,1% of all deaths and 7,0% of total disability-adjusted life years (DALYs) in South Africa (Peltzer, Davids & Njuho, 2011). Parry, Myers and Thiede (2003) postulated that alcohol misuse hinders the rate of economic development in the country. Notwithstanding the high levels of alcohol-related deaths and significant contribution to the burden of disease and injury globally, there is evidence of the AHP in higher low SES alcohol-related hospital admissions and deaths compared to high SES individuals, despite no differences in average levels of alcohol consumption (Boyd et al., 2021b).

3.3.3 Social costs of alcohol-related crime

The AHP can also manifest through direct and indirect social costs of alcohol-related crime. Direct costs can be through harm perpetrated while under the influence of alcohol. Alcohol has been associated with violence with some people more likely to engage in or provoke violence when drunk than when sober. Cook and Moore (2002)

list examples of violence under the influence of alcohol such as when a parent may strike an irritating child, people may escalate arguments into physical fights, a robbery victim may resist an armed attack and soccer fans may riot in response to an unsatisfactory outcome. It has been that crime rates are higher in poor neighbourhoods compared to more affluent ones (Holzman-Escareno, 2009). The socioeconomic gradient in the alcohol outcomes in the environmental context may see low SES individuals likely exposed to more neighbourhood disadvantages related to alcohol-fuelled violence and crime, compared to high SES individuals.

Greenfield et al. (2009) reviewed the prevalence and correlates of externalities from alcohol abuse in the US. Their study considered the impact of one's drinking on family problems such as assaults, accompanying an intoxicated driver, car accidents, financial problems and vandalised property. The study found significant external costs of drinking. On a lifetime basis, 60% of the respondents reported externalities. The impact on family and finances was more concentrated on women, although men reported more assaults, accompanying drunk drivers and accidents. Marital status, age, ethnicity and heavy drinking history were associated with more alcohol externalities. Unmarried, older, white persons with a history of heavy drinking were the most impacted.

South Africa has strong association between the use of alcohol and crime (Parry et al., 2002). According to Parry et al. (2002), 23% of those arrested in Cape Town in 2000 reported being under the influence of alcohol at the time of their alleged offence. The same study found that in 2000, between a third to a half of arrests in Cape Town, Durban and Johannesburg pertained to 'family violence' committed under the influence of alcohol. In addition, 40% of people killed in car accidents in the country were associated with drunk driving (Parry, 2010). AHP manifests in the discrepancy in the psychosocial and environmental contexts of alcohol consumption between low and high SES individuals. Low SES individuals tend to consume alcohol in unsafe settings, exposing themselves to violence and unintentional injury. In contrast, high SES individuals tend to consume alcohol within safe social environments such as work-related events, at home or among friends with sufficient social support networks.

3.4   Alcohol-related harms/ problems

The alcohol industry is very important and contributes significantly to South Africa's economy. Major players such as the manufacturers, distributors, retailers and their shareholders accrue the most benefits from the alcohol industry. However, the economic contribution of the alcohol industry is surpassed by the costs of alcohol consumption. Research has indicated that alcohol industry profits are heavily reliant on harmful drinking practices with binge drinking accounting for a substantial share of the industry profits. This is more prevalent at

45

the lower end of the alcohol market where the profit is dependent on volumes rather than the sale of premium brands. The economic contribution of the alcohol industry was estimated at 3,9% of GDP in 2009 (Van Walbeek & Blecher, 2014). The estimated financial cost to South Africa's economy of harmful alcohol use was R37,9 billion, or 1,6% of GDP in 2009 (WCG, 2016). The net cost to the economy has been estimated at almost 7–10% of GDP, or R165–236 billion (WCG, 2016).

In terms of fatal injuries, data from the National Injury Mortality Surveillance System 2008 showed that 54% of injury-related deaths in the country involved persons under the influence of alcohol. The average concentration for those with positive blood alcohol concentrations was 0.18 which is double the current legal limit of 0.05 g per 100 ml for driving. Furthermore, it is estimated that roughly 17 000 people die on the country's roads every year with a further 68 000 seriously injured. Data from the South African Medical Research Council (SAMRC) indicates that 50% of drivers and over 60% of pedestrians killed were under the influence of alcohol. It is postulated that 24% of the deaths and non-fatal injuries would be prevented if drivers were not driving under the influence of alcohol (Govender, Sukhai, Roux & van Niekerk, 2021). The previous estimated total cost of damage in alcohol-related crashes in South Africa was R7,9 billion based on 2009 estimates. The research by the Road Traffic Management Corporation in collaboration with the SAMRC and the University of South Africa (Unisa) found that 27.1% of fatal crashes in the country were alcohol-related and costing the country R18.2 billion annually. The majority of the fatal crashes (55%) occur during the night and about three out of five happen over the weekends (Govender et al., 2021).

By province, the Western Cape has more alcohol-related harms than the other provinces in South Africa (WCG, 2016). Alcohol-related risk is a major contributor to four of the five main components of the Western Cape Burden of Disease pattern. In addition, alcohol was also highlighted as the leading substance of abuse in the province, according to South African Community Epidemiology Network on Drug Use (SACENDU). The study results indicated that alcohol was the primary drug of abuse for 21% of all patients who opted for drug-rehabilitative treatment in the province. Morojele, Myers, Townsend, Lombard, Pluddemann, Carney, Williams, Padayachee, Nel and Nkosi (2013) conducted a survey of Grade 8 to 10 learners in Western Cape provincial schools focusing on substance use. The survey found that alcohol was the most commonly reported substance of use with 66% of learners acknowledging alcohol use. In contrast, 23,6% of learners reported cannabis use and less than 6,1% reported taking harder drugs. The same survey found that between a fifth and a quarter (22,3%) reported binge drinking in the two weeks before the study and 10% were drunk weekly. In another study, by Morojele, Lombard, Burnhams, Williams, Nel and Parry (2018) found that binge drinking prevalence

in the Western Cape among learners in Grades 8 to 11 was 35,2%, substantially higher than the national average of 25,1% and more than in any other province.

In addition, FASD is one of the leading causes of mental retardation in a number of countries, including South Africa (Gossage, Snell, Parry, Marais, Barnard & De Vries, 2014). The country has recorded the highest prevalence of FASD. According to the DTI, the rate of FASD increased from 4,8% to 8,8% in the country between 1997 and 2001 (DTI, 2016). Nationally, the FASD rate is estimated to be 14 out of 1 000 births, while worldwide, the FASD rate is estimated to be 0.97 births out of 1 000. The prevalence of the disorder is especially high in the Western Cape, Northern Cape and Gauteng where the FASD prevalence is the highest in the world (DTI, 2016). Research by the DTI (2016) ascertained high levels of FASD in the region of 18% to 26% among Grade 1 learners in high- risk communities in the Western Cape.

3.5   Empirical evidence on alcohol harm paradox

Empirical studies have shown that lower SES groups are more vulnerable to alcohol consequences. Importantly, the mechanisms by which SES may influence alcohol consumption, and consequently health outcomes, needs to be understood.

Alcohol consumption behaviour has a variety of determining factors. These include macro-level factors such as historical and geopolitical context, as well individual-level correlates. A person's alcohol consumption behaviour is also be shaped by the physical and social environment in which they live. This include the community setting, family and peer influences, biological make-up, prenatal alcohol experience, psychological factors, sociodemographic characteristics and SES (Collins, 2016). The factors operate within various systems and interact to impact on alcohol-related outcomes, such as adverse alcohol-related consequences (Treno et al., 2014).

3.5.1   Empirical evidence on SES and alcohol consumption

The empirical connection between SES and drinking patterns is not straightforward (Jones, Bates, McCoy and Bellis, 2015) and is operationalised on various levels such as individual and area/neighbourhood, through a variety of parameters such as income, age, population group, sex, education and area/household-level SES.

Despite the unequal impact that alcohol consumption has on low SES groups, there is empirical evidence showing little or no differences in consumption between low and high SES groups (Jones, Bates, McCoy and Bellis, 2015). Many surveys have revealed that lower SES groups consume the same or less alcohol than higher

SES groups on average, or even have more chances of abstaining altogether (Fuller, 2008; Jefferis, Manor & Power, 2007). The study by Mäkelä and Paljärvi (2008) produced supporting evidence. Mäkelä and Paljärvi (2008) researched whether there were differential drinking patterns between SES groups that would explain the observed differences in outcomes and whether similar drinking patterns predicted higher mortality among lower SES groups. The study found that the consequences of similar drinking patterns were more severe for those with lower SES. The study findings provided evidence for the AHP, although the mechanisms or pathways that produced the linkages were not unpacked in that study.

The presence of SES differences in alcohol consumption patterns and education is well established (Centers for Disease Control and Prevention (CDC), 2012; Jefferis et al., 2007). Jefferis et al. (2007) found greater odds of being non-drinkers among those who are less educated. The study used data from a cohort of British adults born during the same week in March 1958 who were followed up to adulthood. For those who consume alcohol, a meta-analytical review of empirical evidence by Grittner et al. (2012) revealed no SES differences of drinking levels in survey data across 25 countries participating in the Gender, Alcohol and Culture International Study (GENACIS). The study employed individual SES as measured by the highest attained educational level. Other empirical researchers have also found a relationship between educational achievement and binge drinking. The study findings discussed thus far indicate that low SES is associated with less likelihood of alcohol consumption. Some studies have gone a step further to explore the relationship between educational achievement and binge drinking. In a population-based study, the CDC (2012) researched the association between drinking patterns and several SES covariates among adults in 48 states and Washington, DC. Those without high school qualifications had the lowest prevalence of binge drinking (CDC, 2012). However, in contrasting findings, Casswell, Pledger and Hooper (2003) investigated the link between SES and drinking patterns in young adults using data that was collected as part of a longitudinal study of a birth cohort of New Zealanders. The study found that the less educated drank significantly more during a drinking occasion.

Some studies focused on the effects of household-level characteristics on alcohol consumption behaviour. A good number of the studies identified associations between household-level SES and alcohol consumption behaviours. Giskes et al. (2011) researched the association between individual and household-level SES position and harmful alcohol consumption behaviours among adults in Melbourne, Australia. The study results revealed that less household income was associated with a low frequency of alcohol consumption. In terms of consumption patterns, Giskes et al. (2011) found that people with socioeconomically privileged upbringings were more frequent consumers of alcohol, whereas those from disadvantaged upbringings drank less frequently

48

but in greater quantities on each drinking occasion. Patrick et al. (2012) discovered similar results in an analysis of data from the Panel Study of Income Dynamics in the US. The study found that adults with the highest household SES had greater alcohol use, and those with higher levels of family wealth reported a higher prevalence of monthly heavy drinking. The study by Lewer et al. (2016) also revealed that lower SES was associated with higher chances of exceeding recommended limits for weekly and episodic drinking, and even higher chances of exceeding more extreme thresholds. In similar findings, Casswell et al. (2003) found that those of lower SES consumed higher quantities of alcohol, which may explain the reduced life expectancy that was prevalent among the lower SES groups.

Area-level SES characteristics have been hypothesised to impact on alcohol consumption outcomes. In a population-based study of New York City, Galea et al. (2007) found that high income neighbourhoods had the highest prevalence of alcohol consumption and greater frequency of drinking occasions. Another population-based study by Karriker-Jaffe et al. (2011) from the 2000 US Census and the 2000 and 2005 National Alcohol Surveys examined the associations between neighbourhood disadvantage, the levels of abstinence and heavy drinking. The study used SES as operationalised by low educational attainment, employment status and financial assets. Individual-level SES was determined the strongest impact on drinking patterns. Controlling for individual-level factors, neighbourhoods with lower SES were characterised by a greater prevalence of alcohol abstinence compared with neighbourhoods with higher SES, although among those who drank, neighbourhood disadvantage was associated with heavy drinking and negative alcohol-related consequences. The associations were moderated by sociodemographic characteristics such as ethnicity and gender. In contrast, a review of 48 studies by Bryden et al. (2013) produced inconclusive findings regarding the relationship between alcohol use and SES as operationalised by neighbourhood deprivation, poverty, income levels and unemployment. However, the study corroborated findings from individual-level studies that individuals living in higher-income areas reported greater alcohol use.

Mulia et al. (2008) explored the associations between ethnic differences and the different levels of alcohol use using data from the 2005 National Alcohol Surveys in the US. The study compared alcohol use patterns among African American, Hispanic and white Americans. The research found association between social disadvantage and problem drinking for all the three groups. However, African Americans and Hispanics had greater exposure to social disadvantage than whites and accounted for higher rates of problem drinking. In corroborating findings, Karriker-Jaffe et al. (2012) examined whether neighbourhood disadvantage and alcohol consumption patterns differed interactively by ethnicity and/or gender. The study sample included white, African American and

Hispanic adults and data was extracted from the 2000 and 2005 National Alcohol Surveys merged with 2000 Census data. The finding was that area-level disadvantage was significantly associated with increased abstinence. Using the same data set, Mulia and Karriker-Jaffe (2012) identified additional relations between individual-level and neighbourhood SES that influenced alcohol consumption. Low SES individuals living in advantaged neighbourhoods had higher odds of heavy drinking and intoxication compared to higher SES individuals living in the same advantaged neighbourhoods. In contrast, area-level disadvantage was associated with an increased risk of alcohol-related problems in women and individual-level SES did not seem to impact this relationship. A common theme in the findings was the protective effect of neighbourhood disadvantage on the risk of drinking.

Other research looked at the interaction of individual socioeconomic status and area-level variables on alcohol use. Chuang et al. (2007) discovered significant interacting relationships between neighborhood features and individual SES in a review of Taiwan Social Change Survey data. Varied neighborhood characteristics resulted in different interaction patterns, according to the research. For example, for low-income women, education had a favorable influence on substance misuse, whereas for high-income women, it had a negative effect. The findings corroborate the relative deprivation hypothesis, which states that low-income people residing in rich regions experience relative deprivation and status. Instead, for low-income people, neighborhood social disorganization has a beneficial influence on drinking, but not for high-income people. These interactive effects back up the double jeopardy theory, which states that living in a neighborhood with a lot of social disorganization amplifies the impact of individual low SES.

In contrast, and as indicated above, Karriker-Jaffe (2011) found equivocal evidence that area-level deprivation was related to increased alcohol use in a meta-analytical assessment of over 40 studies. The study looked at the effects of living in a specific neighborhood and operationalized a wide variety of SES effects at the neighborhood level. According to the survey, residents in a specific location consumed alcohol in equal amounts. The results of alcohol use were grouped by geographic location. However, the research mentioned so far give mixed evidence for the idea that area-level disadvantage is linked to increased alcohol consumption, with some confirming the hypothesis and others indicating that area affluence is linked to increased alcohol consumption.

3.5.2   Empirical evidence on SES, subjective health status and alcohol consumption

Subjective health status is a strong predictor of morbidity and mortality (Cai, Coyte & Zhao, 2017; Kaplan et al., 1996). The measure is also used to ascertain the health status of the population and health inequalities within populations (Cai et al., 2017). The empirical literature has reported a SES gradient in self-rated health status

with improvements in health status associated with an increase in SES (Cai et al., 2017; Kawachi, Kennedy & Glass, 1999; Kawada, 2003).

Previous research has found strong links between SES and self-reported health status. Stranges et al. (2006), for example, used data from the Western New York Health Study to investigate the relationship between self-rated health status and alcohol use patterns. High alcohol consumption was linked to a worse subjective health status than regular and moderate alcohol consumption, according to the study. Williams et al. (2010) used the National Center for Health Statistics to investigate the link between alcohol intake and self-reported health status in the United States. According to the findings, the most extreme alcohol abuse was linked to a much lower health status. In China, Cai et al. (2018) investigated the extent to which lifestyle and psychosocial factors could explain the link between SES and self-rated health. The research used data from the Chinese General Social Survey from 2013. According to the findings, people with a higher socioeconomic status were more likely to report good self-rated health than those with a lower socioeconomic status.

Williams et al. (2010) evaluated the relationship between alcohol consumption and individual perception of health in a sample of primarily older male military veterans in the US. The study found that poorer health status was significantly associated with alcohol misuse. Paljärvi et al. (2011) studied how subjective measures of binge drinking predict suboptimal self-rated health. The study employed data from the Health and Social Support baseline postal survey conducted in 1998. The survey conducted repeated measurements five years later in 2003. The results indicated that alcohol drinking predicted suboptimal subjective health while accounting for several potential confounders.

Gender inequalities have also been discovered in empirical studies. In the United States, Balsa et al. (2008) intended to estimate the consequences of alcohol use on subjective health status as well as other health violations. The study used data from the first wave of the National Epidemiologic Survey on Alcohol and Related Conditions, a nationally representative survey, to make the finding. For men, there were no significant relationships, but for women, alcohol use was linked to a better self-perceived health status, better cardiovascular health, and reduced hospitalization rates. However, the findings could be influenced by observational study biases, and more research is needed to establish the observed potential benefits of alcohol consumption.

In Scandinavian and Anglo-Saxon nations, the 'J-shaped' or curvilinear association between average alcohol use and poor self-rated health has also been reported (Valencia-Martn, Galan, & Rodrguez-Artalejo, 2008). Valencia-Martn et al. (2008) investigated the link between alcohol and subjective health in the Spanish general

51

population, taking into account average volume, drinking pattern, and alcohol misuse. Data for the study came from telephone interviews of 12 037 persons that were conducted from 2000 to 2005 in Madrid. Even after correcting for drinking patterns, the study indicated that infrequent and moderate alcohol use was related with higher subjective health. Frequent binge drinking and alcohol abuse, on the other hand, were linked to poor subjective health. Grnbk et al. (1999) published a study that supports these findings. In Denmark, the researchers looked at the link between alcohol use and self-reported subjective health. The study looked at a variety of alcoholic beverages, including beer, wine, and spirits. The WHO Copenhagen Healthy City Survey provided the study's data. The study discovered a curvilinear link between overall alcohol consumption and poor health. While beer and spirits were not linked to optimal self-perceived health, light to moderate wine consumption was.

A contemporaneous study by French and Zavala (2007) also supported the findings of Valencia-Martín et al. (2008). In the United States, French and Zavala (2007) investigated the link between alcohol use and self-reported health status. The sample was taken from the 2002 National Health Interview Survey in the United States. The regression models in this study included a variety of demographic and lifestyle characteristics as covariates. According to the findings, present moderate drinkers were more likely than past drinkers and lifetime abstainers to have an above-average health state. Even after controlling for chronic health conditions, demographic and lifestyle characteristics, the empirical findings supported the J-curve hypothesis, indicating that moderate alcohol use is associated with the highest likelihood of reporting higher subjective health status. Poikolainen (1996) reviewed the evidence of how alcohol consumption was associated with overall health outcomes in the US. The study used data from the National Health Interview Survey in the United States. The study revealed that moderate alcohol consumption is beneficial to one's health, whereas excessive consumption is harmful. However, as compared to abstinence, the benefits of moderate drinking were shown to be minor, while the harm caused by severe drinking was significant. Despite the significance of the findings, the study did not examine the potential variations between different types of beverages. There hasn't been any solid evidence that wine is better than beer or spirits in general. The study did not specify the optimal levels of intake that would be advantageous to one's health, nor did it take into account the consequences of various drinking patterns (the discussion of the studies of Ashley et al., 1997, and others below on the association of alcohol with mortality has relevance here).

3.5.3 Empirical evidence on SES, chronic health conditions and alcohol consumption

There has been a lot of research done on the link between alcohol use and health effects. Alcohol intake has been linked to a variety of health problems, including liver disease, heart disease, TB, asthma, cancer, and high blood pressure, according to existing research (Balsa et al., 2008; Olson & Kutner, 2000; Rehm, 2011; Sakurai et al., 1999). The link between alcohol consumption and health is complicated (Sakurai et al., 1999; Stranges et al. 2016; Williams et al., 2010). A large amount of research has discovered a causal link between alcohol intake and negative health outcomes. The most typical finding is that drinking alcohol is linked to poorer health than refraining. Binge drinking and excessive drinking habits have also been linked to a higher risk of illness.

There is a positive link between alcohol use and risk for most health outcomes (Gutjahr, Gmel & Rehm, 2001; Olson & Kutner, 2000; Williams et al., 2010). Gutjahr et al. (2001) discovered more than 60 health consequences for which a causal link between alcohol intake and negative health outcomes could be deduced in a meta-analytical assessment of alcohol-related health consequences. Rehm (2011) investigated the dangers of alcohol and alcoholism in the general population of the United States and discovered that alcohol is a necessary underlying cause of more than 30 illnesses and a contributing factor in many more.

There is also evidence in the literature of a curvilinear U or J-shaped relationship between alcohol intake and adverse health outcomes, including mortality. This relationship associates low-level drinking with better health status than either abstaining or drinking excessively. The curvilinear, U or J-shaped relationship is almost exclusively attributed to the decreased death rate from coronary heart disease among drinkers (Balsa et al., 2008; French & Zavala, 2007; Hoffmeister et al., 1999; Poikolainen, 1996; Vahtera et al., 2002; Valencia-Martín et al., 2008; Williams et al., 2010).

Ashley et al. (1997) examined the subject of whether moderate drinking was helpful for health by conducting a systematic evaluation of empirical evidence from peer-reviewed health and social science literature and expert reports. The key finding was that moderate alcohol use may prevent some elderly adults from coronary heart disease. Moderate drinking, on the other hand, was linked to an increased risk of haemorrhagic stroke, some malignancies, accidents and injuries, as well as a variety of social issues. Using data from the Netherlands' general population survey, Jose et al. (2000) investigated whether there was a U or J-shaped association between alcohol intake and death. The study evaluated the health of drinkers with various drinking patterns and frequency of consumption. The findings revealed a U-shaped relationship between average alcohol consumption and health. Drinking habits were also discovered to be a significant determinant in this relationship. In Japanese

males, Sakurai et al. (1999) discovered a similar U or J-shaped relationship between alcohol use and subjective health.

Marugame et al. (2007) investigated the link between alcohol consumption patterns and all-cause mortality in Japan to evaluate the J-shaped hypothesis. The study used data from a large-scale, population-based cohort study that included 88 746 people between 1990 and 2003. The Cox proportional hazards models were used to calculate hazard ratios for alcohol drinking patterns on all-cause death. The models adjusted for potential confounding factors that were argued in previous studies to be risk factors for all-cause death. These included age at baseline, smoking status, BMI, diet and exercise. The results showed no increase in all-cause mortality in male, regular light alcohol drinkers, irrespective of the frequency of alcohol intake. Heavy drinkers had an increased risk of all-cause mortality among those consuming alcohol five to seven days per week. There was no evidence of an increase for those consuming alcohol less than four days per week. In general, the findings support the Japanese social belief in 'liver holidays'; the belief that heavy drinkers would derive health benefits by abstaining from alcohol for more than two days a week.

3.5.4   Empirical evidence on SES, depressive symptoms and alcohol use

Alcohol use has been associated with poor mental health outcomes such as depression and anxiety (Bell & Britton, 2014; Boden & Fergusson, 2011; Dawson et al., 2005; Dowdall et al., 2017; Peltzer & Pengpid, 2015). This association produces a perpetuating cycle of harmful outcomes (Bellos et al., 2013, Corrigall & Matzopoulos, 2013; Moussavi et al., 2007; Rotheram-Borus et al., 2015). Alcohol use and depression pose major health challenges, on their own and where they overlap. Causal linkages between the two variables are suggested, where exposure to one increases the risk of the other (Boden & Fergusson, 2011). In addition, several empirical studies have established associations between SES, depression and the use of substances, including alcohol (Goodman & Huang, 2002).

The theory of relative deprivation has been applied to the study of the relationship between socioeconomic status, depression, and substance abuse (Wilkinson, 2002). Psychological elements, according to the hypothesis, are the causal pathway connecting SES and health outcomes. Depressive symptoms have been suggested as a mechanism via which SES influences substance use in some research (Adler et al., 1994; Anderson & Armstead, 1995). In the United States, Goodman and Huang (2002) investigated the link between socioeconomic status, depression, and substance abuse. The data came from the Adolescent to Adult Health Longitudinal Study. SES was measured in the study using parental education and household income. Although the mediation effects were

not robust, the study results showed that depressive symptoms were a causal pathway linking SES to drug use behaviors.

Despite popular support, research has provided little empirical support for the tension reduction theory (Polivy, Schueneman & Carlson, 1976). Moreover, Young, Oei and Knight (1990) argued that alcohol effects are complex and multiplicative and, therefore, the hypothesis cannot be the only explanation of drinking behaviour. Some studies have revealed that stress can lead to increased alcohol consumption, particularly among heavy drinkers, which supports the notion (Dvorak et al., 2018). Other studies have used subjective measures of tension reduction to test the notion and found a robust link between daily perceived stress and binge drinking (Dvorak et al., 2018).

Peirce et al. (2000) investigated the relationship between one's social network (social contact), perceived social support, depression, and alcohol consumption in the United States to evaluate the affect regulation hypothesis. The structural equation modeling analysis was used to test a three- wave longitudinal panel model. The findings validated the feedback hypothesis, which states that increasing alcohol use leads to less engagement with one's social network (social contact), and that social contact is favorably connected to perceived social support, which is adversely related to depression.

In a separate study, Grzywacz and Almeida (2008) explored the links between stress, depression, and alcohol consumption in a nationally representative adult cohort in the United States. According to the findings, depressed symptoms are linked to an increased likelihood of binge drinking. The study also discovered that educational attainment, as a proxy for socioeconomic class, mitigated correlations between stress, bad affect, and binge drinking.

Dawson et al. (2005) investigated the association between alcohol use and depressive symptoms in the US. The study also considered the modifying effect of SES correlates such as gender and poverty. Data for the study was obtained from 26 946 drinkers who were at least 18 years of age. The study found consistent positive correlations between past negative events and heavy drinking. Depressive symptoms were mainly associated with job-related issues. Males were found to be prone to having more depressive symptoms and heavy drinking. The study also found that economic vulnerability increases the likelihood of alcohol consumption.

Mäkelä, Raitasalo, and Wahlbeck (2015) conducted a cross-sectional study in the Finnish general population to determine the link between mental health and alcohol use. SES characteristics and lifestyle were included as interactive predictors in the association between alcohol use and mental health in the study. The study indicated

that poor mental health and psychological distress were linked to the number of binge drinking episodes, and that hazardous drinking and alcohol problems were linked to poor mental health and psychological distress across all social status categories. Weich et al. (2019) investigated mental comorbidity in institutionalized, alcohol-dependent people

seeking treatment. The study discovered that individuals who abuse alcohol, particularly women, have a significant rate of psychiatric comorbidity.

Peltzer and Pengpid (2015) wanted to see if there was a link between different drinking patterns and mental health. Data from 19 328 undergraduate university students from 27 universities in 26 countries across Asia, Africa, and the Americas were used in the study. After controlling for sociodemographic characteristics, social support, and self-rated health status, the study discovered that heavy and binge drinkers had a higher risk of experiencing heightened depression symptoms than moderate and non-drinkers.

Torikka et al. (2016) assessed patterns of alcohol use based on SES and depression in Finland for the period 2000 to 2011. SES was measured using parental education and unemployment. Despite a decrease in the rates of frequent drinking and frequent intoxication, low SES as operationalised by levels of parental education and unemployment was associated with a higher likelihood of depression. Martinez et al. (2015) looked at the link between alcohol usage and depressed symptoms in Norwegian people of various socioeconomic backgrounds. The study's data came from two Norwegian health studies that were conducted in 2000 and 2001. Based on SES, they discovered substantial links between depressive symptoms and alcohol consumption. Individuals with the lowest education level had a significantly higher probability of feeling depressive symptoms, which was significantly associated to an increased risk of heavy drinking.

The mediating effects of depression on the link between SES and quality of life among patients with alcohol use disorder (AUD) in South Korea were examined by Lee et al. (2020). Patients who had been diagnosed with AUD in the previous year provided data for the study. Stable housing, income, quality of life, employment, social support, and depression were used as predictors in the study. The findings revealed a statistically significant positive association between SES and social support, as well as a substantial negative relationship between SES and depression.

Karriker-Jaffe (2011), on the other hand, found no significant links between stress-related alcohol use and neighborhood socioeconomic status. The study looked at the links between extremes in neighborhood SES and substance use in the United States, which included alcohol. The researchers wanted to see if residing in a

disadvantaged neighborhood was linked to stress-related, high-risk substance use habits. Another idea was that being in affluent neighborhoods is linked to 'healthy' substance use, such as drinking within recommended limits. The study used data from the National

Alcohol Surveys of 2000 and 2005, which included nationally representative samples of US people. These were compared to indicators of neighborhood SES from the United States Census Bureau's 2000 Decennial Census. The findings revealed that residing in an impoverished neighborhood was linked to an increased risk of substance abuse, although there were no significant associations with alcohol abuse.

Despite the vast majority of studies showing significant positive associations between SES and stress-related substance use, a study by Humensky (2010) produced contrasting results. Humensky (2010) investigated whether people with a higher socioeconomic status were more likely to consume drugs than people with a lower socioeconomic status. The researchers looked at data from the National Longitudinal Survey of Adolescent Health throughout time (AddHealth). Parental education and income were used to determine SES. The findings revealed a link between greater SES and higher rates of binge drinking, as well as other substance misuse behaviors. Bonevski et al. (2014) investigated the relationship between mental health comorbidities and the risk of concurrent cigarette and alcohol consumption at hazardous levels. The researchers used data from the 45 and Above Study, a large cohort study in New South Wales, Australia, that included 267 153 persons aged 45 and up. The study found a link between greater SES and alcohol usage, as well as lower distress. Risky alcohol intake, on the other hand, was linked to both low individual and area-level SES.

A study by Giupponi, Bizzarri, Pycha, Innamorati, Lester and Conca (2010) evaluated how SES interacted with psychopathology in individuals suffering from AUD who ended up committing suicide. The researchers argued that major depression represents an important risk factor for suicide among alcoholics. Data on the causes and methods of death came from provincial Departments of Public Health. Unreliable jobs, low educational attainment, and alcohol use problems were all linked in the study. Calhoun et al. (2018) discovered a U-shaped curve, indicating that moderate alcohol intake was associated with decreased incidence of mental health disorders and poor overall health.

3.6 Empirical relationship between alcohol availability, consumption and related problems

The single distribution theory relates to the distribution of alcohol consumption and the level of alcoholism in a society. In the theory, various drinking practices are closely linked within a population.

The distribution of alcohol consumption varies widely across the population in a way that the annual population alcohol intake can be defined mathematically using a lognormal distribution (Skog, 1985). The theory has been extensively tested in developed countries. Most of the studies have found a highly skewed distribution of alcohol consumption. However, the distributions found didn't have any definite mathematical properties. Also, the variance of the distribution found in the empirical studies was different from what the theory predicted (Skog, 1985). Skog (1985) argues that the theory is untenable because its basic hypothesis does not fit the data very well and also fails to explain anything.

Hallgren, Leifman and Andréasson (2012) explored the polarisation hypothesis for the Swedish youth population in the light of the predictions of Skog's theory. The polarisation hypothesis is the finding that, despite a reduction in population alcohol consumption levels, alcohol-related hospitalisations have risen. According to the collectivity of drinking hypothesis, reductions in annual consumption have an impact on all levels of drinking, including heavy drinking. In their investigation, Hallgren et al. discovered evidence of a polarization effect in juvenile drinking, which opposed Skog's predictions.

Brunborg, Bye, and Rossow (2014) used Norwegian adults to test Skog's hypothesis of collectivity of drinking behaviour predictions. The relationship between mean consumption and the proportion of heavy drinkers was discovered by comparing the proportions of heavy drinkers at different time points to the consumption means. Log-transformed consumption means were regressed on log-transformed percentile values to evaluate the link between consumption levels and mean consumption. The study's findings corroborated the theory's predictions, showing a strong empirical link between average alcohol intake and the share of heavy drinkers. The findings showed that a rise in mean consumption was linked to an increase in consumption across the board, from light to heavy drinkers.

A sizable empirical literature has accumulated reinforcing the predictions of the rational addiction theoretical model. The theory predicts that current consumption of addictive goods also depends on past and future consumption of the good. There have been consistent findings that higher future prices result in lower current consumption, in line with what's expected for forward-looking addicts (Van Walbeek & Blecher, 2014). Some empirical studies on rational addiction focused on modelling smoking behaviour. Gruber and Köszegi (2001) estimated the response in cigarette consumption to legislated state excise taxes that had not yet been implemented. Gruber and Köszegi (2001) found empirical evidence of forward-looking cigarette smokers.

Chaloupka (1991) tested the Becker-Murphy (1988) model of rational addictive behaviour on cigarette smoking using the Second National Health and Nutrition Examination Survey in the US. The study derived demand equations considering the characteristics of addictive consumption behaviour such as reinforcement, tolerance and withdrawal. The findings suggested that smokers do not behave myopically. The estimated long-run price elasticities indicated that price increases would lower cigarette consumption.

In addition, Chaloupka (1991) tested Becker-Murphy's model's implication that individuals with a greater preference for the present are potentially more liable to becoming addicted than those with a greater preference for the future. The implications were tested through estimating cigarette demand equations separately using samples based on age and education levels. The findings were that the young and less educated behave more myopically than their more educated and older counterparts. More myopic and addicted consumers were more responsive to changes in prices than less addicted myopic consumers in the long run.

Balia and Jones (2008) investigated the determinants of premature mortality risk in the UK for the 1984–1985 period. The study derived a behavioural model relating premature mortality to observable and unobservable factors. The research focused on unobservable individual heterogeneity and endogeneity. The research adopted the MSL approach for an MVP to estimate a recursive system of equations for deaths and lifestyles. A Gini decomposition analysis was conducted comparing overall health inequality. This enabled the study to determine the inequality in the distribution of health within the population and to calculate the contribution of socioeconomic factors. The study found a reduced role of SES in explaining premature mortality.

Cheah (2015) used data from the Third National Health and Morbidity Survey to investigate the socioeconomic variables of alcohol intake in Malaysia. The factors that influence the amount of alcohol consumed were studied using logit models. Being young, low-income male, less educated, non-single, rural-dwelling, and employed was found to be positively associated with high alcohol consumption. Being a high-income earner, educated, urban inhabitant, and unemployed were all found to be favorably associated with light alcohol consumption.

Hasking et al. (2015) studied drinking behavior in Australian adults between 2013 and 2014 using both the Reinforcement Sensitivity and Social Cognitive theories. The study offered a theoretical model in which the two hypotheses may be combined to provide insight into the use and misuse of alcohol. The role of alcohol expectancies and drinking rejection self-efficacy in reward sensitivity, alcohol consumption, alcohol-related difficulties, and dependency symptoms was investigated. Path analysis revealed two paths linked to reward sensitivity, alcohol expectancies, and self-efficacy in drinking refusal. Alcohol use was found to be linked to

59

self-efficacy in drinking rejection in social circumstances as well as for emotional relief. The ability to regulate drinking in social contexts was found to be linked to sensitivity to reward through expectations of greater confidence and personal belief in one's ability to control drinking.

The link between economic disadvantage, socioeconomic status, and alcohol-related mortality has been studied extensively. Hajema et al. (1997) evaluated the effects of drinking habits and social factors on the incidence and chronicity of alcohol-related disorders in Denmark while exploring the causes of alcohol-related problems. The study identified drinking characteristics and difficulties based on gender and age. At home, at other people's homes, on licensed places, and at work were all deemed drinking situations. Drinking settings were divided into four categories: midday, afternoon, dinner, and evening. Social conditions, marital status, work position, SES, households with children, parents' drinking behavior, age, and gender were all addressed in the study. The researchers conducted logistic regression analysis to see whether the variables were connected to drinking problems and to explain the severity and frequency of those problems. According to the findings, relatively high levels of consumption and frequent heavy drinking were positively associated with the chronicity of drinking issues. Marital status was found to be connected with the chronicity of drinking issues among the social determinants. The continuation of drinking problems was found to be positively connected with cohabitation and having children in the home.

Mäkelä (1999) looked at alcohol-related mortality in Finland as a function of socioeconomic status. Several metrics of SES were used to separate differences in alcohol-related mortality. Personal income, education, occupational class, household income per consumption unit, and housing tenancy were all evaluated in the study. The study's dataset contained 21 922 alcohol-related deaths, which were compiled by combining census records with death records from 1987 to 1995. For all SES parameters, alcohol-related mortality was shown to be greater in low SES groups. Personal income was a better predictor of alcohol-related mortality than spending power among males and the opposite was true for women among the SES characteristics studied. SES is a major predictor of acute and chronic alcohol-related mortality, according to the study.

Many countries have socioeconomic gradients in alcohol-related mortality, according to international literature. Large socioeconomic inequalities in alcohol-related mortality in Finland, according to Mäkelä et al. (2003), can be explained by differences in morbidity or survival. The study's data came from hospital discharge registers that were connected to population censuses for socioeconomic information. The mortality risk associated with SES was calculated using Cox's regression model. Socioeconomic inequalities in alcohol-related hospitalization rates were found to be similar in magnitude to those seen in alcohol-related death, according to the study. After

60

discharge, there were no socioeconomic differences in survival. The implication was that socioeconomic variations in alcohol-related mortality are not caused by differences in survival following hospitalization.

Mäkelä and Paljärvi (2008) followed-up on a prior study to research the association between drinking patterns and alcohol-related consequences and whether there were socioeconomic differences in the relationship. Data for the study was obtained from cross-sectional surveys on drinking habits from Finland across several years: 1969, 1976 and 1984. There were subsequent follow ups on the survey participants to ascertain the incidences of alcohol-related mortality and hospitalisations. Drinking patterns were approximated from total consumption, frequency of consumption, the amounts drunk at a time, the volume consumed in episodes of heavy drinking and occasions. The findings were that low SES groups suffer more severe consequences from similar drinking patterns. Workers who engage in labour-intensive occupations had a higher risk of death or hospitalisation that is alcohol related compared to non-manual workers, adjusted for drinking patterns. The hazard was higher than for non-manual workers across all the categories of total alcohol consumption and in each level of the volume consumed in heavy drinking occasions.

Empirical evidence has been advanced showing significant associations between lower SES and poor health status and high prevalence of health problems. Even though there is no consensus on the exact pathways between SES and health, lifestyle factors have been determined to play an important role in this relationship. Van Oers et al. (1999) studied the relation between SES, alcohol consumption and related problems in Rotterdam. The study used data from a general population survey. The methodology involved calculating odds ratios using educational attainment as the exogenous variable and alcohol use, alcohol-related outcomes and harmful alcohol consumption as response variables. Abstinence was shown to be inversely connected to educational level for both men and women in the study. Men with the lowest educational attainment were more likely to engage in risky alcohol intake. There was no link between women's educational attainment and the prevalence of binge drinking. Psychological dependence and social issues were more prevalent among men in intermediate educational groups. Educational attainment and psychological dependence were found to be negatively associated in women. Even after accounting for differences in drinking behavior between the sexes, the findings showed a higher frequency of alcohol-related issues among groups with lower educational attainment.

Lantz et al. (2001) undertook a study of US adults to investigate the role of health-risk behaviours in explaining socioeconomic health disparities. The study researched SES differences in subjective health and the association with observed higher prevalence of individual health-risk behaviours among low SES individuals. The research explored the relationship between SES as operationalized by income and education, physical functioning and

61

self-rated health in 1994. The empirical model included the multinomial logistic regression framework. The study included covariates such as age, sex, ethnicity, smoking, alcohol consumption, sedentary behaviour, and Body Mass Index (BMI). The study found that both income and education are significant determinants of poor health outcomes. These health-risk behaviours could statistically explain a modest portion of the socioeconomic differences.

In 15 countries, Bloomfield et al. (2006) looked into social inequalities in alcohol use and related disorders. Mexico, Brazil, Israel, the Czech Republic, Hungary, Switzerland, the Netherlands, Germany, Finland, Norway, and Sweden were among the countries analyzed. The study employed educational attainment as a proxy for socioeconomic status. The majority of the data came from national samples. The researchers computed age-adjusted odds ratios for current drinking status, heavy drinking, heavy episodic drinking, and alcohol-related effects by gender and educational level. A significant conclusion was that social inequality distribution patterns were limited to some nations and were not universal. Social inequalities in alcohol consumption were also discovered to change by gender and between nations, depending on the alcohol measurements used.

Rahav et al. (2006) researched alcohol consumption and the association with neighbourhood characteristics with special focus to uncover gender differences in the relationship. The study used aggregated data from GENACIS project surveys in 29 countries and the 2003 WHO Global Alcohol Database. They found that drinking was more prevalent in men than women in all the participating countries. The gender differences in drinking were strongly linked to women's position in society and the level of modernisation of a country. The study derived similar results for all indicators of the adverse consequences of alcohol consumption.

Kuendig et al. (2008) assessed the relationship between demographic characteristics, SES and the adverse consequences of alcohol consumption across seven European countries. The study employed conditional logistic regression modelling where instances where one explored the alcohol-related consequence were matched to controls by drinking patterns. Controls were cases

not experiencing the alcohol-related adverse consequence. The study found consistent links between demographic characteristics, SES and the incidence of alcohol-related consequences. The results were consistent and significant even after controlling for the effects of drinking patterns. Educational achievement and economic status were found to be consistent effects across countries, but the effects across consequences were in different directions.

There is growing literature on the negative health outcomes of social disadvantage on minority populations. Mulia et al. (2008) investigated whether health impacts also apply to alcohol problems. In the research, social disadvantage is examined as a source of tension and its relationship with alcohol consumption and related-problems among African Americans, Hispanic and white Americans in the US using 2005 US National Alcohol Survey data. The study employed measurement of social disadvantage as the level of poverty, incidences of biased treatment, racial stigma and a composite variable for social disadvantage. The main outcome variables were risky and hazardous alcohol consumption. The study found high prevalence of blacks and Hispanics to higher levels of social disadvantage compared to whites across the measures implemented in the study. Socioeconomic disadvantage was associated with problem drinking in all three ethnic groups. A higher risk of alcohol problems was partially explained by emotional distress and multiple sources of extreme disadvantage.

In the USA, evidence shows that blacks and Hispanics experience greater burden of alcohol-related health burdens compared to whites (Mäkelä & Paljärvi, 2008). However, it is not clear whether the ethnic disparities extend to other alcohol-related problems, such as alcohol addiction and adverse social consequences of alcohol consumption. Mäkelä and Paljärvi (2008) sought to find out the extent of racial inequalities in social consequences of alcohol consumption and alcohol addiction symptoms in the US. The study also examined whether and how heavy alcohol consumption and ethnic disparities are associated and the degree to which social disadvantage can account for the disparities. The research utilized data on current drinkers from the 2005 US National Alcohol Survey. The analysis used logistic regression to evaluate differences in alcohol- related consequences at three levels of heavy alcohol consumption. Heavy alcohol consumption was approximated through a composite variable integrating heavy episodic drinking, rate of drunkenness and the maximum amount of alcohol consumed in a typical drinking occasion. To determine the role of social disadvantage, three indicators were considered – poverty, unfair treatment and racial stigma. The study found high likelihood for black and Hispanic drinkers to report social consequences of alcohol consumption and alcohol-addiction symptoms than white drinkers. The same findings held even after controlling for heavy drinking and demographic characteristics. Social disadvantage contributed the most to ethnic differences in problems.

In Melbourne, Australia, Giskes et al. (2011) investigated the link between socioeconomic status and problematic alcohol intake. This was a primary study that used data from a postal questionnaire with a sample size of around 2500 people. Educational attainment, household income, and the number of low-income households in the country were used to operationalize the SES. The researchers divided alcohol-related behaviors into two categories: short-term and long-term harm. According to the findings, socioeconomic

63

disadvantage at both the individual and family levels is a significant driver of alcohol intake. According to the findings, study participants from socioeconomically advantaged backgrounds drank alcohol more frequently than those from disadvantaged backgrounds, who drank alcohol less frequently but in larger amounts on a normal drinking occasion.

Erskine et al. (2010) investigated how alcohol-attributable mortality varies according to socioeconomic deprivation and geographical setting for England and Wales. The research adopted an ecological study design. In the study, socioeconomic deprivation was approximated through the Carstairs Index. The findings revealed a substantial relationship between alcohol-related mortality and socioeconomic deprivation, with rates gradually rising in more disadvantaged areas. Men had a higher rate of alcohol-related mortality, which was observed to rise with age. Individuals from the poorest quintiles had the highest disproportionate mortality rates. Individuals in urban regions were exposed to greater rates of alcohol-related mortality than those in rural areas, with differences maintaining after socioeconomic hardship was controlled for.

The empirical evidence suggests that deprivation in one's neighborhood increases the likelihood of alcohol and drug abuse. However, only a few research studies have looked at the relationship between the environment at the neighborhood level and alcohol intake from a gender viewpoint. In the Canadian context, Matheson et al. (2012) examined the impact of gender and area-level disadvantage on alcohol use. The study looked into the link between gender, socioeconomic disadvantage, and alcohol intake. The study's data came from a national sample of Canadians. Poisson regression was used to investigate the cross-level interaction between gender and area- level deprivation while controlling for potential confounders. The results indicated that area-level material deprivation was independently related with alcohol consumption. The analysis revealed a U-shaped curve relationship between area-level deprivation and alcohol consumption for men. In men, those hailing from the most deprived neighbourhoods were found to consume more alcohol by volume weekly than men from affluent areas. However, in women, there were no differences in drinking by neighbourhood material deprivation. Overall, alcohol-related problems were found to be gender-specific, with men suffering more health difficulties compared to women.

Karriker-Jaffe (2011) conducted a systematic review of the impact of neighborhood-level SES on substance use and consumption outcomes, including alcohol use. The study looked into the link between deprivation in one's neighborhood and substance abuse. The study also attempted to determine whether the impact is influenced by the size of the study area, the operationalization of SES, age or race, or the research methodology used. The findings of the study were divided into groups based on methodological aspects in the analysis. The researchers

64

also looked at how effects clustered within trials and discovered substantial evidence that alcohol consumption outcomes cluster by location. The evidence for the concept of area-level disadvantage was limited, and the research showed mixed support for the idea that area-level disadvantage is linked to greater substance use at one time. According to the findings, socioeconomic disadvantage differs depending on age, ethnicity, neighborhood size, SES indicator, and study technique.

Huckle et al. (2010) investigated the association between SES, alcohol consumption patterns and alcohol-related consequences. The study also aimed to identify the risk of heavier consumption by SES group. The data used was from three comparable national telephone surveys: 1995, 2000 and 2004. The results found that different quantity and frequency dimensions of drinking interacted differently with SES. SES as defined by educational attainment, income and occupational class were associated independently with alcohol consumption. Lower SES groups were found to drink higher amounts of alcohol volumes while higher SES groups were found to have more frequent episodes of drinking lower amounts of alcohol. The lower SES groups were also found to be at higher risk of drinking heavier quantities compared to individuals in higher SES groups. However, with a few exceptions, SES was found to play a minor role in predicting drinking consequences after controlling for drinking patterns.

The evidence from contextual studies supports that neighbourhood deprivation is related to alcohol consumption and drug use. Fone et al. (2013) studied the impact of area-level deprivation on the likelihood of risky alcohol drinking behaviour in Wales, UK. This multilevel analysis used cross- sectional data from successive annual Welsh Health Surveys for the period 2003/2004–2007 with over 32 692 households and 58 000 respondents. The study found higher risk of binge drinking in residents living in deprived communities, particularly in youthful men. Interestingly, the research also found no indication that residing in more socioeconomically deprived areas is associated with a higher likelihood of harmful alcohol consumption.

Paljärvi et al. (2011) studied the association between low SES and risky alcohol consumption patterns in Finland. The study employed educational level, employment status, receiving a disability pension and previous experience with financial hardships as the indicators of socioeconomic disadvantage. Risky drinking indicators were determined from the frequency of intoxication, drinking after-effects and alcohol-related syncope. The research observed a socioeconomic gradient within all the categories of risky alcohol consumption. The socioeconomic gradient was comparatively greater across all patterns of risky alcohol consumption. However, the study found no marked gender differences in the socioeconomic gradient in alcohol consumption and outcomes.

65

Mulia and Karriker-Jaffe (2012) looked at the combined effects of neighborhood and individual SES on alcohol intake and problems in the United States. The following theories presented as theoretical reasons for the link were empirically tested: double jeopardy, relative deprivation, and status inconsistency hypotheses. The principle of double jeopardy states that a combination of different types of deprivation increases health risks more than a single type of deprivation. In circumstances where an individual maintains distinct ranks on different social status dimensions, this is known as status inconsistency. This can lead to resentment, anxiety and problem drinking. The relative deprivation hypothesis posits that income inequality is associated with the poor population. Risky alcohol consumption was defined as drinking exceeding the guidelines defined at the national level. Multiple logistic regression models were run. The findings of the study backed up the relative deprivation theory and emphasized alcohol-related health hazards for low-income males living in affluent areas. The study found no empirical support for the ideas of double jeopardy and status inconsistency, which is notable.

There has been work on international comparison of socioeconomic inequalities in alcohol use. Grittner et al. (2012) studied the association between country-level characteristics, individual SES and alcohol consumption. The research used data on 101 525 cross-sectional survey participants in 33 countries. Individual SES was estimated through educational attainment. Indicators of alcohol use were current drinking status and frequency of risky drinking. The results indicated positive association between higher individual SES and current drinking across all the countries studied. The study also discovered a link between a high country's SES and a high prevalence of alcohol usage. Lower SES was linked to an increased risk of binge drinking in men. Women with a high socioeconomic status who lived in low-income nations had a higher chance of drinking on a single occasion than women with a lower socioeconomic status who lived in the same countries. In higher-income countries, the opposite was true.

Probst et al. (2014) investigated the impact of alcohol intake on health inequalities based on socioeconomic status. The researchers conducted a comprehensive review and meta-analysis of the literature on alcohol-related mortality by socioeconomic status (SES), which was operationalized by educational attainment, occupation type, and employment status. The research pooled and gender stratified the relative risk ratios (RRRs) of alcohol-attributable mortality for different operationalisation of SES. The study supported the finding of alcohol intake as the fundamental factor in high mortality risks in more deprived populations.

An extensive body of literature has shown that low SES is a determinant in the negative outcomes from alcohol consumption. Livingston (2014) researched the socioeconomic inequalities in risk- taking behaviours attributable to alcohol consumption in Australia, including whether differences in risky drinking account for

66

socioeconomic differences in alcohol-attributable harm. Risk-taking behaviour during drinking episodes was aggregated into two main risk scores. The study used Adjusting for age, sex, and alcohol consumption patterns, Poisson regression was used to examine the relationship between SES and risk-taking behavior. The findings revealed that respondents with a higher socioeconomic status had a higher rate of alcohol-related risky behavior than those with a lower socioeconomic status. Even after controlling for age and sex, the results for volume and frequency of drinking were identical. The findings suggested that variations in drinking behavior cannot explain for socioeconomic disparities in alcohol-related outcomes.

Alcohol intake has a disproportionate negative impact on people of low socioeconomic status, according to the existing empirical data. Jones, Bates, McCoy, and Bellis (2015) conducted a systematic analysis of published international studies that investigated the relationship between alcohol intake, socioeconomic status, and the prevalence of chronic diseases linked to alcohol consumption. The study looked at the link between SES and the risk of alcohol-related mortality and morbidity, as well as the role of alcohol use as a mediating factor. The findings revealed a variety of connections between a variety of alcohol-related illnesses and socioeconomic factors. The study discovered a link between low socioeconomic status and an increased risk of alcohol-related disease. Breast cancer risk was found to be related with greater SES in females.

Socioeconomic disparities in alcohol-related mortality have been reported in numerous research conducted in industrialized nations. Mackenbach et al. (2015) investigated the disparities in alcohol-related mortality across 17 European countries because the extent of the discrepancies and long-term trends had not been established, particularly for European countries. From mortality registers, data on mortality connected with alcohol intake was collected and assembled by age, gender, educational level, and occupational class. Using educational attainment and occupational class, the study calculated relative and absolute inequality between low and high SES groups. Across the 17 studies looked at, low SES groups had greater rates of alcohol-related death, regardless of educational level or occupational status. In the countries investigated, the discrepancy in alcohol-related mortality rose with time. In lower SES groups, the increase in alcohol-related mortality was more pronounced. According to the findings of the study, alcohol-related mortality accounted for 10% or more of the socioeconomic disparities in total mortality in various countries in 2015.

There has been an increase in socioeconomic differences in severe alcohol-related harm over the past two decades (Mäkelä, Herttua, & Martikainen, 2015). Through a systematic review, Mäkelä, Herttua, & Martikainen (2015) studied the associations between SES, alcohol use and related harm in Finland and the use of alcohol pricing as a means of intervention. The results indicated great socioeconomic differences in extreme levels of

67

alcohol-related harm. The impact of alcohol- related mortality on socioeconomic differences in life expectancy widened. The effects of alcohol pricing were at times weak and not fully consistent by gender and across different measures of harm. The lowest SES groups were the most affected by the gradual decline in prices in absolute terms. The situation was reversed among men in relative terms.

Jones, Bates, McCoy and Bellis (2015) conducted a systematic literature review to ascertain the relationship between alcohol consumption, socioeconomic indicators and a range of alcohol- attributable conditions and socioeconomic indicators. The methodology involved systematic reviews and meta-analyses of evidence from previous studies. The study undertook a secondary analysis of existing data and re-analysed the 2008–2010 General Lifestyle Survey (GLS) data for more insights on alcohol drinking volumes, patterns and SES. Several government departments utilize GLF data to support planning and policy choices, as well as to track the impact of policy changes in the United Kingdom. As self-reported information on alcohol use in general population surveys tends to produce underestimates, the study adopted a new questionnaire to capture instances where alcohol is consumed on special occasions. The study found significant association between low SES and an increased risk of a range of health conditions: cancers (head and neck), hypertension, strokes and liver disease. The research also established high risk of breast cancer among higher SES individuals in females. The findings were consistent after controlling known risk factors and other potentially confounding factors.

Bellis et al. (2016) tested the following hypotheses to explain the AHP: combined health challenges, alcohol consumption histories and disproportionately under-reporting consumption. 'Combined health challenges' hypothesises that deprived drinkers engage in unhealthy lifestyles such as smoking and poor diet that exacerbate the effects of alcohol harms. Alcohol consumption

histories' hypothesises that individuals of low SES suffer more harm due to having a history of more harmful consumption. The third hypothesis concerns why the low SES group of drinkers under-report alcohol consumption. May 2013 to April 2014 data from the UK National Survey as used to assess each of these hypotheses. For each hypothesis, the researchers examined socioeconomic differences in adverse alcohol consequences for low SES and high SES individuals, controlling for overall alcohol consumption. The study found high likelihood of smoking behaviour, being overweight and poor lifestyle choices in low SES individuals that were independent of total consumption. The study concluded that deprivation and health-challenging behaviours have multiplicative effects on alcohol-related conditions.

Collins (2016) compiled findings from international research on the association between socioeconomic determinants and alcohol consequences. The study looked at how socioeconomic characteristics, educational attainment, work position, and alcohol-related outcomes influenced alcohol consumption. The study discovered a link between SES and alcohol consumption. Individuals with a higher socioeconomic status drank more frequently and consumed more alcohol. Individual-level characteristics including gender, ethnicity, and drinking status, on the other hand, moderated the association. The findings also revealed an inverse association between socioeconomic status and harmful alcohol-related effects, such as mortality. The inference is that, while low-income people are less likely to drink or consume alcohol in general, they are more likely to be badly affected by its effects.

The prevalence of diseases in low and middle-income countries varies with SES and the inequalities are made worse by individual lifestyle choices (Mukong et al., 2017). That is, lifestyle factors contribute to income-related health inequalities. Mukong et al. (2017) examined the contribution of individual lifestyle choices, such as smoking and alcohol consumption, to health inequalities in the South African context. The study used a concentration index to measure health inequalities outcomes. The decomposition technique was used to isolate the contribution of lifestyle choices to health inequalities. Data was obtained from the National Income Dynamic Studies collected in 2008, 2010-2011 and 2014/2015. Mukong et al. found that lifestyle choices contributed significantly and positively to income-related health inequalities. They concluded that smokers and the impoverished have a lot of inequities in self-reported and lifestyle-related ill-health.

Murray et al. (2002) attempted to disaggregate the protective effects of usual drinking at various levels of consumption. The study employed data from Winnipeg, Manitoba, Canada. The survey participants were interviewed in 1990 and 1991. The focus of the study was to evaluate the association between the risk of cardiovascular diseases, normal drinking and binge drinking. The results indicated that binge drinking increased the risk of coronary heart disease. In contrast, normal drinking had significant cardio-protective effects.

Robinson et al. (2015) reviewed alcohol consumption volumes, beverage types, drinking patterns and the alcohol-related burden of disease in the multiple Sub-Saharan African (SSA) countries for 2002: Swaziland, Namibia, Mauritius, Mali, Gambia, Madagascar, Seychelles, Malawi, Niger, Congo, Nigeria, Togo, Senegal, Tanzania, South Africa, Mozambique, Cape Verde, Côte d'Ivoire, Zimbabwe, Uganda, Central African Republic, Zambia, Angola, Lesotho, Burundi, Guinea, Eritrea, Guinea-Bissau, Benin, Botswana, Burkina Faso, Comoros, Ethiopia, São Tomé and Príncipe, Sierra Leone, Mauritania, Ghana, Equatorial Guinea, Chad, Democratic Republic of the Congo, Cameroon, Kenya, Liberia and Rwanda. Data on exposure was gathered

69

from national surveys, the WHO Global Status Report on Alcohol and the WHO Global Alcohol Database. Data on mortality and disability was obtained from the WHO directly. The study results showed higher alcohol consumption per capita in SSA compared to the global consumption rate. Alcohol consumption was linked to the high global disease burden.

In conclusion, there is a large amount of research on the health effects of alcohol usage. Excessive drinking has been linked to an increased risk of poor health outcomes in the majority of studies. The majority of research that show the health advantages of moderate drinking also show the negative effects of heavy drinking. Drinkers are classified in most research based on their average alcohol intake, a practice that tends to mix people who have quite varied drinking habits together. However, it has been proposed that drinking pattern, not just average intake, is important in the association between alcohol consumption and health (Jose et al., 2000).

3.7   Empirical evidence from South Africa

Alcohol misuse is common in South Africa, with a considerable proportion of current drinkers consuming alcohol at dangerous levels. According to the National Demographic and Health Survey of 1998, around a third of weekend alcoholics consume alcohol at dangerous amounts (Parry et al., 2003). One of the consequences is a significant strain on the country's health, welfare, and private economic sectors.

Adams et al. (2013) looked into the extent of risky alcohol drinking among young adults in Cape Town, South Africa, who came from low-income families. Data for the study was collected using a cross- sectional survey approach using the Alcohol Use Disorder Identification Test (AUDIT) data- gathering instrument. The study found that 54% of the male and 48% of the female participants in the study were alcohol addicted. The findings are typical of alcohol consumption in low-income neighborhoods. Alcohol abuse has a negative impact on the individual as well as the community.

Probst et al. (2018) attempted to utilize SES to calculate HIV/AIDS mortality in the whole adult population of South Africa owing to alcohol usage. The researchers used both individual and aggregate data, as well as RRRs from existing empirical literature, to conduct a comparative risk assessment. In 2012, the researchers employed a nationally representative poll with 27 070 individuals. The poll produced data on alcohol consumption based on socioeconomic status, gender, and age. Alcohol consumption was found to play a significant role in the socioeconomic disparities in HIV/AIDS mortality in the study. Probst et al. (2018) conducted a systematic review and meta-analysis to estimate socioeconomic inequalities in HIV/AIDS mortality risk in South Africa for various metrics of SES. Using inverse-variance, weighted, DerSimonian-Laird random effects meta-analysis,

the researchers pooled the measurements of relative risk (according to RRR) individually for indicators of SES such as education, income, asset score, and employment status. The meta-analysis found that people with low SES, as assessed by income, assets, and employment status, had a 50% higher chance of dying from HIV/AIDS than people with high SES. When only education level was utilized as a measure of SES, however, the results were mixed.

Peltzer et al. (2011) assessed the extent of alcohol use and problem drinking among South Africans in order to offer an accurate and up-to-date data point on the prevalence of alcohol use and problem drinking in the country. Data from the South African National HIV, Incidence, Behaviour, and Communication (SABSSM) survey from 2008 were used in the study. Alcohol usage and problem drinking were assessed using the Alcohol Use Disorder Identification Test (AUDIT). Age, geo-locality, educational level, income, and population group were used to stratify the data. The odds ratios for the factors in relation to hazardous drinking were calculated, and the corresponding confidence intervals were estimated. Men reported current alcohol usage at a higher rate than women, according to the findings. Current drinkers were most likely to be white men and Indian/Asian women. Current drinking was more likely to be reported by city people than by rural dwellers. Men reported risky drinking at higher rates than women. Risky drinking was linked to men in their 20s and 40s, people of colour, poorer socioeconomic status, and less education. For women, risky drinking was linked to living in the city, being a member of the coloured community, having a lower education, and having a greater income.

3.8 Conclusion

The empirical literature on the external costs of alcohol intake was reviewed in this chapter. Alcohol intake has been linked to high healthcare expenses, productivity losses, and social costs connected with alcohol-related crimes. The chapter also looked into the empirical evidence for links between alcohol intake and socioeconomic status. In comparison to higher SES groups, low SES groups have either a low prevalence of alcohol consumption or a low risk of severe drinking behavior, according to the majority of studies. High SES groups were shown to have a higher prevalence of alcohol usage and severe drinking in some circumstances. Many studies looked into the links between socioeconomic status, depressive symptoms, and alcohol consumption. The majority of research found substantial links between alcohol use and depressive symptoms, with low SES groups having a higher risk of problem drinking. However, the outcomes of a few of investigations were mixed. In addition, the chapter summarized empirical research on the links between alcohol intake, socioeconomic status, self-rated health status, and chronic health disorders. The empirical evidence on the AHP largely supports

71

a negative link between socioeconomic status and negative alcohol-related effects, with lower socioeconomic status persons suffering more alcohol-related harm than higher socioeconomic status individuals.

CHAPTER FOUR: DRINKING IN SOUTH AFRICA – CONTEXT, HISTORY, POLICY AND REGULATION

4.1 Introduction

This chapter presents the historical, political, socioeconomic and regulatory contexts of alcohol consumption and the AHP in South Africa. The first section discusses the AHP and the link to the structural socioeconomic architecture of apartheid and how it manifested across the different population groups in the country. This is followed by a discussion of the alcohol consumption patterns and trends in the country; the impact of alcohol-attributable harms on society; the historical and current liquor policy; and, the legislative framework for regulating alcohol production and consumption.

4.2 Historical, political and socioeconomic contextual background

South Africa has a long and infamous history of high inequality that began with the beginning of colonialism and continued throughout apartheid (forced 'racial' segregation). During apartheid, the provision of services was channeled along 'racially' segregated lines. Policies were enacted that created vast ethnic disparities in the provision of education, health services and basic infrastructure such as the provision of potable water, sanitation and housing (Özler, 2007). Özler (2007) found that only a quarter of Africans could access piped water in their households while Asians and whites had almost universal access. The disproportionate provision of services to different population groups on the spurious basis of 'race' created a host of social and economic problems and inequities (Jacobs & Jacobs, 2013). Apartheid policies enforced spatial segregation along ethnic lines where the majority of poorer blacks were confined to underdeveloped and overcrowded neighbourhoods known as locations or townships (Nwosu & Oyenubi, 2021). Many others could not even access this poor accommodation and ended up living in the squalor of squatter camps that mushroomed into huge informal settlements that exist permanently today. Apartheid actively fomented poverty, especially among the African population group, through constrained access to basic services, inadequate housing, insufficient training and labour opportunities, undersupplied infrastructure, no access to formal finance mechanisms and systematic, relentless disruption of family and community life. Empirical research has established that residing in these deprived areas increased the risks of drinking and drug use and acted as an effect modifier on related harms (Matheson, White, Moineddin, Dunn and Glazier, 2012).

The legacy of colonialism and apartheid and the associated spatial segregation and social injustice in the country represented a significant dimension in the historical development of the settlement patterns of the poor (Strauss, 2019). The associated neighbourhood marginalisation manifested in societal breakdown, family violence, alcohol-attributable diseases, crime and accidents in deprived communities. Moreover, the empirical literature has found that marginalisation at a neighbourhood level is an independent risk factor for alcohol consumption. This is through the association between neighbourhood marginalisation and the prevalence of an area-level 'culture' that supports substance use, strengthens harmful alcohol consumption behaviour and reinforce networks that are supportive of substance-use more in deprived communities than in affluent communities (Matheson et al., 2012). According to the area-level socioeconomic theory of AHP, deprivation in low SES areas can apply an independent impact on harmful drinking and the related health outcomes (Fone et al., 2013; Giskes et al., 2011; Karriker-Jaffe, 2011; Matheson et al., 2012; Mulia & Karriker-Jaffe, 2012). It has also been argued that socioeconomic deprivation and exclusion generate more stressful living conditions where those living in inhospitable housing such as shacks are likely exposed to adverse health outcomes (Nwosu & Oyenubi, 2021). This, in turn, may increase the demand for alcohol which in turn eases the access to alcohol through the establishment of more alcohol outlets and lower alcohol prices (Giskes et al., 2011). Greater accessibility to alcohol can also introduce a reverse mechanism whereby there can be harmful consumption behaviours among residents in deprived communities (Giskes et al., 2011).

During apartheid, alcohol was a form of social and economic control in the history of South Africa (Freeman & Parry, 2006; Parry & Bennetts, 1998). It has been argued that after colonisation, the "British unsuccessfully prohibited the use of alcohol by Africans in an attempt to prevent what they saw as social decay and disorder, encouraged by its use…" (London, 1999). This in turn would control the activities, social customs and liberties of black people (Freeman & Parry, 2006). The 1928 Liquor Act was instituted in which beer was used as an instrument of control and compliance. The Act prohibited Africans (and initially Indians) from serving or transporting liquor or entering premises licensed to sell alcohol, in an apparent attempt to curb social deterioration (Olivier, Curfs & Viljoen, 2016). However, this left the state with a monopoly on the African market as local authorities established municipal beerhalls (taverns) in the townships where men could legally drink, ostensibly to help finance township development. It could be argued that the real purpose was to maintain a docile workforce, both by allowing drunkenness and by removing surplus capital from workers so that they would be forced to return to the factories and mines. Given that the introduction of the Act and the beer halls were both met with sporadic rioting and protests, it could be said that African communities were well aware of

74

the politicisation of drinking. The restrictions on alcohol purchases and consumption did not prevent a plethora of illegal shebeens from offering a home-grown alternative to the beer halls. The growth of illegal shebeens massively increased access to alcohol, aided by the quiet collusion of white-owned alcohol manufacturers. The shebeens provided a means for socialising, self-employment for the owners and their helpers and became a form of resistance to apartheid policies (Freeman & Parry, 2006). Thousands of African people were criminalised through countless raids, harassment, arrests, prosecutions and imprisonment until the Liquor Act was amended in 1962 to allow Africans to purchase alcohol from any liquor store (Jacobs, Steyn & Labadarios, 2013; Parry & Bennetts, 1998).

According to the contextual background as outlined above apartheid helped shape the political, economic, and cultural power relations in the country and ultimately forced alcohol consumption patterns to differ along ethnic lines. The background of slavery and apartheid created the social, cultural and historical environments that shaped beliefs, attitudes and perceptions of alcohol dependence (Jacobs & Jacobs, 2013). The history of the country resulted in unique alcohol consumption and inequality experiences compared to other countries. This history and the associated resistance has been linked to the current alcohol-related behaviours in the country (Freeman & Parry, 2006). It has been argued that the social and economic developments of the apartheid period made life extremely hard for black people resulting in several people turning to alcohol consumption in order to alleviate their anxiety and distress (Freeman & Parry, 2006). Apartheid laws resulted in family fragmentation through the migrant labour system, enforced through the carrying of the hated 'pass'. Anyone found without a pass or without authorisation to be where they were found was summarily arrested and could be 'endorsed out' (banned) at the stroke of an official's pen. Many families chose to live together and risk the 'illegal' parent being forcibly removed, as many were. Consequently, several children grew up in single-parent families or were brought up by grandparents or other relatives. With the family torn apart in this way, children who grew up without both parents functionally experienced exposure to violence and trauma. Migrant workers of both genders dealt with the stress of separation from the family unit by using and abusing alcohol.

Empirical evidence suggests that single-parent families encounter stressful life events and risk behaviours of alcohol (Jablonska & Lindberg, 2007). In addition, the physical separation of the population groups and the associated forced removals resulted in social decay and social disintegration, exacerbated by the many other oppressive apartheid laws that controlled the lives of the black population. Besides the breaking down of the family, apartheid restricted, disrupted and neglected black communities to the extent that the resultant social disintegration led to endemic violence and gangsterism that persists in post-apartheid South Africa. It has been

noted that much of the causes of problem drinking currently has been associated with the lingering effects of the apartheid policies and laws (Pretorius, 2010). One example is the SES disparities in alcohol consumption found in men residing in informal settlements across the country (Lawana & Booysen, 2018).

Another current manifestation of apartheid policies is the dop system, which formally ended decades ago but persists in some form or another, particularly in areas employing coloured farm workers. In the dop system, farm workers received food and wine rations, in lieu of or as partial payment in exchange for labour (Gossage et al., 2014; Pretorius, 2010). The system originated from the early years of colonial settlement in the Cape Colony. During that time, native people were made to enter service on colonial farms with compensation in alcohol, tobacco or bread. The system was encouraged by the fact that it was illegal to sell or serve alcohol to slaves or Khoi farm workers in the Dutch colony. The authorities, however, turned a blind eye to wine being given as rations to workers. It soon developed into an established component of agricultural practice and a central element of social control over aboriginal people especially in the western region of the Cape. It played a crucial role in the enlistment, retention and reproduction of agrarian labour as well as providing a way to exchange unsaleable low-grade alcohol for something of much greater value – labour (London, 1999).

In commercial farming in the Western Cape, the dop system was also significant in limiting the migration of the rural labor population (Waldman, 1993). The practice was declared unlawful in 1962, but a legal loophole allowed alcohol to be provided as a perk and/or incentive (London, 1999).In the dop system, workers would typically receive a small mug of wine before starting work, at every meal break and at the end of the day, thus drinking as much as five times a day. There is evidence associating the dop system and problem drinking (Gossage et al., 2014; London, 1999). The system was blamed for perpetuating a culture of risky alcohol consumption especially among coloured communities and in the rural areas. The dop system formed part of the economic fabric, especially among agricultural labourers in the Western Cape and Northern Cape whose labour payments were partially compensated in alcohol. This in turn held them captive in addiction (Van Walbeek & Blecher, 2014). In another study of the dop system on farms in South Africa, London (1999) found that the system has encouraged and enhanced alcohol consumption in the coloured agricultural community. According to London (1999), the resultant cultural practices of regular drinking are thought to manifest in risky alcohol consumption behaviour in the country.

The adverse consequences of the dop system include societal disruption, productivity losses, injury, domestic violence, child neglect and fetal alcohol syndrome (FAS). The dop system is responsible for the cycle of poverty, alcohol addiction, interpersonal violence and poor self-esteem among generations of farm workers (London,

76

1999). The limited social outlets or facilities available cause farm workers to drink alcohol as a substitute for other recreation in their daily lives. The widespread alcohol dependence and abuse predispose farm workers to many poor health indicators and occupational injury. The risks of alcohol harms were higher for the farm workers as a result of various mechanisms. For one, the inebriating effects of alcohol may promote negligence and accident-prone behaviour. In the long-term, alcohol misuse may encourage unhealthy lifestyles which increases susceptibility to work hazards. The health risks from alcohol are compounded by frequent malnutrition and by limited access to healthcare resources due to the overstretched rural healthcare system. Lack of healthcare services increases the risk of alcohol- related diseases remaining untreated adding to the burden of alcohol-related health harm in those with low SES.

Farm workers' children are affected in two major ways. Firstly, the association of risky alcohol consumption during pregnancy with a high prevalence of FASD is well established. Children with FASD have intellectual and behavioural problems that can impede their education. The syndrome can result in delays in developmental growth, overactiveness, attention deficits and learning challenges which confound the educational experience and learning capacity of affected children (Vellios & Van Walbeek, 2018). According to Vellios and Van Walbeek (2018), alcohol consumption during pregnancy and the related birth defects can be attributed to the remaining vestiges of the dop system and the high prevalence of risky alcohol consumption among farm labourers. Viljoen et al. (2005) found the highest rate of FAS in their study of a South African community compared to what has been stated in any overall community in the world. The extremely high rate of FAS has been directly associated with low SES, ease of access to cheap alcohol and the culture of harmful alcohol consumption that is rooted in the dop system (Vellios & Van Walbeek, 2018).

Secondly, a key instigator of substance abuse is experimentation, whereby a typically younger person is motivated to try using a substance by either the sight of someone using and apparently enjoying it, or the perception that peers or role models use it. Merton (1957) defined deviant innovation as the employment of unconventional methods, such as drug peddling, to accomplish a culturally acceptable aim, such as financial stability. In the case of farm workers, children are exposed to an environment where parents are constantly drunk or drinking or doing something associated with drinking, such as working in the dop system, purchasing alcohol or socialising with friends. As such, alcohol is normalised into the culture of their lives. It is associated with becoming an adult or behaving like one; it is the main recreational activity observed; it is used at ceremonial occasions and celebrations; and, it is seen as a refuge from stress. When not in school, children of farm workers are frequently coerced into working, where alcohol may be further normalised by the sight of an authority figure

– the [almost always] white farmer – dispensing the dop, and workers outside their own family overtly acquiesce to the system. Even when watching television, albeit that the glamorous lives depicted are far removed from their own, farm workers' children are bombarded by alcohol advertising. The overall effect of these influences is that, despite all the negative impacts of alcohol abuse and alcoholism, the children of farm workers perceive no stigma attached to drinking so serious as to prevent them from trying it.

The legacy of apartheid policies manifested in the health inequalities that are mainly prevalent in the agricultural sector. The public health challenge impacts farm and rural area dwellers more than urban dwellers although low SES individuals experience more alcohol-related health problems compared to high SES individuals in both urban and rural environments (the AHP). One of the reasons for the AHP are the health-challenging behaviours that are prevalent on the farms and in agricultural communities. A study by London (2003) found farm workers had limited access to running water, toilet facilities, electricity, security and health services, as well as high levels of illiteracy. These social and environmental variables interact multiplicatively to explain the socioeconomic differences in harm, despite the different groups consuming similar amounts of alcohol.

The variances in the consumption patterns can offer another explanation to the AHP where people in the agricultural communities consume alcohol in more harmful ways. The dop system encouraged heavy alcohol consumption which impacted negatively on the health of farm workers and their families and also predisposed them to various social and environmental hazards. The dop system resulted in the availability of cheap alcohol and uncontrolled alcohol distribution in the agriculture industry. London (2003) found that the social context on the farms results in extraordinarily high alcohol consumption among farm workers. The author estimated the quantity of alcohol consumed among Western Cape agricultural workers as roughly twice that of their urban counterparts. The same study found higher levels of alcoholism among farm workers compared to urban dwellers.

South Africa entered into a new political dispensation in 1994 when a new democratic government of national unity was elected. With the advent of democracy, the new government started replacing the apartheid laws and legislations to grant freedom to all South African citizens. The Land Reform Act was passed in Parliament in 1996, aimed at defending the rights of agricultural workers and enabling individuals to (re)claim land. In addition, the new Liquor Act, Act 59 of 2003, confirmed the illegality of the dop system and even seasonal workers began to organise themselves in trade unions. With the assistance of NGOs, farm workers are even organising to access social development programmes (Kritzinger & Vorster, 1995).

Despite the political changes and attempts to democratise labour relations in the agriculture sector, transformation lags far behind other sectors (London, 2003). One reason for this is that alcohol abuse has been normalised as a 'way of life' in agricultural communities. This is compounded by the setting where there are no social alternatives for recreation other than social drinking. The dop system ensured a constant supply of alcohol for the farm workers who were either supplied with alcohol in addition to their wages or could opt for additional remuneration in the form of alcohol. London (2003) argued that outlawing the dop system in the absence of a coherent social rehabilitation programme led to worse forms of social disintegration. This was attributed mainly to addicted workers spending more of their meagre salaries on alcohol in a way that perpetuated poor social indicators for farm workers (London, 2003).

The conceptual framework discussed in Chapter Two provides the linkages between the general socioeconomic, cultural and environmental factors and health inequalities in the society. Institutionalised racism during apartheid grossly disadvantaged Africans and coloureds in terms of services such as healthcare and educational facilities. Africans specifically experienced more exclusion and exploitation than the other population groups. As depicted in Figure 4:1, this, in turn, created a vicious cycle of social and economic marginalisation leading to worse social and health outcomes among the African and Coloured population groups.

Figure 4.1: The vicious cycle of social and economic marginalisation in South Africa
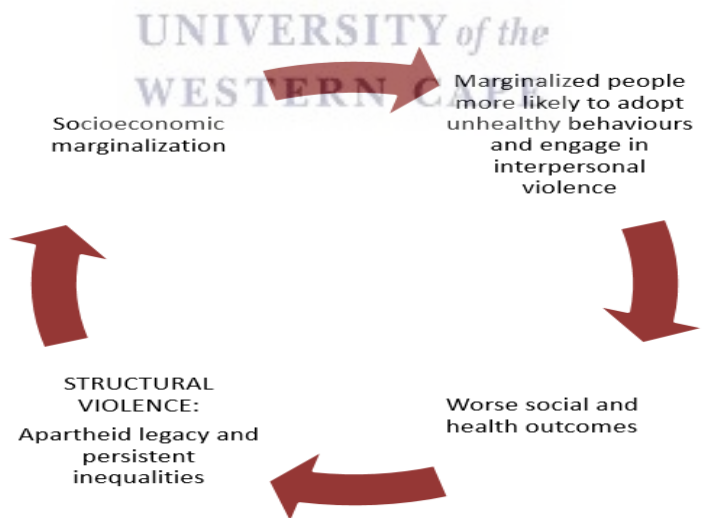
Source: Adapted from Harrison (2020)

'Racial' exploitation during apartheid created a complex interplay of social, economic and political processes which perpetuated a vicious cycle of socioeconomic marginalisation and worse health outcomes, especially for

79

Africans. The deep-rooted socioeconomic inequalities promote unhealthy behaviours and poor alcohol-related health outcomes. The disproportionate impact of alcohol-related harms on low SES individuals in South Africa today can be linked to the deliberate policy of institutional racism, exclusion and exploitation instituted during apartheid.

4.3   Alcohol consumption, drinking patterns and trends

South Africa has one of the highest alcohol consumption rates in the world. Peltzer and Ramlagan (2009) calculated that 30% of people in the country have consumed alcohol at some point in their lives. According to Fieldgate et al. (2013), this share is around 35%. Despite the fact that the lifetime prevalence of alcohol usage is significant, it is not higher than the global average of 45% (WHO, 2019a). In 2005, the average amount of alcohol drunk by a typical South African adult was around 20ℓ, which was among the highest in the world (Parry, 2005). The percentage of people who drink alcohol has remained stable over time, with 35% in 2005 (Fieldgate et al., 2013) and 33,1% in 2014/15. (Vellios & Van Walbeek, 2018). Binge drinking was estimated to be 45,4% among alcohol drinkers in 2005, compared to a global average of only 11,5%. The prevalence of binge drinking was distributed by gender as follows: 41,2% for females and 48,1% for males (Fieldgate et al., 2013). Binge drinking was reported by 43,0% of alcohol drinkers in 2014/15 broken down as 48,2% of men and 32,4% of women (Vellios & Van Walbeek, 2018).

The proportion of alcohol consumers has remained consistent over the years, at 35% in 2005 (Fieldgate et al., 2013) and 33,1% in 2014/15 (Vellios & Van Walbeek, 2018). In 2005, the prevalence of binge drinking among alcohol drinkers was estimated at 45,4%, against the global average of only 11,5%, which was distributed by gender as follows: 41,2% for females and 48,1% for males (Fieldgate et al., 2013). In 2014/15, 43,0% of alcohol drinkers reported binge drinking: 48,2% males and 32,4% females (Vellios & Van Walbeek, 2018).

South Africa is the 47th greatest consumer of alcohol, according to the WHO Global Status Report on Alcohol 2004. (WHO, 2004). In a typical year, the country consumes roughly 5 billion ℓ of alcoholic beverages, according to the Medical Research Council, excluding "unrecorded" consumption. Traditional brewed beverages, smuggling, tourist drinking, and brews with content that is below the legal definition of alcohol are all examples of unrecorded usage. Unrecorded alcohol consumption was estimated to be 2.2ℓ per adult in South Africa. Total alcohol consumption is believed to be around 10ℓ per adult, with other estimates putting it at 12,4 ℓ per adult (Freeman & Parry, 2006).

According to the research, at least half of all alcohol use in South Africa is done in dangerous ways (WCG, 2016). According to Eaton et al. (2015), the country has some of the world's worst drinking habits. According to a 2014 SAMRC survey of nearly 2, 000 adult drinkers in the Gauteng municipality of Tshwane, roughly 66% ingested six or more drinks during a typical drinking episode. Heavy drinkers were responsible for 86% of all alcohol intake (WCG, 2016). According to the WHO, 40,6% of the country's population is currently consuming alcohol. Approximately a quarter of drinkers engage in high, episodic consumption of alcohol (binge drinking). The average male drinker consumes 32,8 ℓ of pure alcohol per year, which is more than double the global average of 21,2 ℓ. A typical female drinker consumes 16 ℓ of pure alcohol per year, which is nearly 80% more than the global average of 8,9 ℓ. According to WCG's 12-month prevalence estimates, about 5,6% of alcohol consumers in the country suffer from alcohol use disorders, such as addiction and hazardous use (2016).

4.4   Alcohol policy context and regulation in South Africa

In South Africa, the liquor industry is characterised by disparities that resulted from the historical legacies of the country. For instance, the 1928 Liquor Act aimed to use alcohol as an instrument of control and compliance but resulted in the growth of illegal shebeens (Harrison, 2020). As a result, a large illegal liquor trade operated, and continues to operate, especially in the townships.

The main aim of alcohol regulation is to strike a balance between the economic contribution of the alcohol industry and the costs of alcohol abuse. The economic approach assumes that there is an optimal point of consumption for both individuals and society. Therefore, the government aims to push the society towards this optimal position through legislation and regulation. This section reviews both the national and local government approaches to regulating alcohol production, distribution and consumption in the country over time.

Throughout its history, South Africa has enacted laws to limit alcohol consumption among the population. The main theme running through the successive laws was alcohol control. For instance, regulation in the late 19th century had simultaneous impact. On the one hand, the legislation was used to restrict the access of African labourers to alcohol in mitigating concerns from the mining industry that alcohol use harmed productivity. On the other hand, alcohol enabled farmers to secure labour through the dop system (London, 1999). There were efforts to curtail the dop system through the Liquor Act of 1928 although the Act did not abolish the practice. The practice was only outlawed in 1962 when the Act was amended to prohibit compensation with alcohol as part of the remuneration. However, workers could continue to accept wine 'gifts' as part of their employment. London (1999) found that no prosecutions for dop have ever been enforced in terms of the Act. Another

81

mechanism of control enacted by the nominally Christian state during apartheid was to allow no sales of alcohol on Sundays and Christian holidays (not coincidentally, sales flourished at illegal shebeens on these days). Supermarkets were eventually licensed to sell alcohol but this was still banned on Sundays in the 1989 Act.

The 1989 Act repealed various prior laws and amendments passed between 1962 and 1987. The Act regulated alcohol manufacturing, distribution and trade until just before 1994 during which time the economic benefits of the alcohol industry were prioritised over the welfare of the majority in the country. The advantages of alcohol production were not balanced against the adverse impact of alcohol consumption (Van Walbeek & Blecher, 2014). After 1994, the new government started enacting laws aimed at balancing the impact of the alcohol industry on society. The focus area for regulation was to balance the economic and social benefits of alcohol production and the harmful effects of alcohol consumption. The legislation also sought to address the legacy of socioeconomic disparities associated with alcohol consumption. Another focus area was to reduce the high number of unlicensed shebeens, which constituted 70% of alcohol outlets in 1994 (Parry, 2010). Gossage et al. (2014) reported an estimate of 5 300 licensed liquor outlets and 25 000 unlicensed/illegal outlets in the Western Cape alone. The other aim was to incorporate more black entrants into the alcohol industry at all levels (Parry, 2010).

The Liquor Act of 1989 was amended by the Liquor Amendment Act, 1995. A policy framework that was approved in 1997 aimed to regulate the registration of alcohol production and trade as well as create structures to implement the liquor regulations. In 1998, the DTI presented the Liquor Bill to Parliament which proposed, among other changes, a change to replace the existing regulation with a strict three-tier-based liquor regulation system. However, there were fears regarding provincial and national capacity resulting in the Bill being referred to the Constitutional Court for review. In its review, the Constitutional Court found certain aspects of the Liquor Bill to be unconstitutional. As a result, the Constitutional Court ruled that the DTI could intervene and create national systems to register alcohol manufacturers and distributors. With the ruling, the provincial governments were tasked with business zoning and related issues to alcohol licensing such as trading hours. In addition, provincial governments were required to regulate manufacturing and the liquor trade. Following further consultations with stakeholders, the Liquor Act, Act 59 of 2003, was passed into law in August 2004.

In 2016, there were proposals to amend the Liquor Act of 2003. The DTI presented the National Liquor Policy review document with the policy recommendations for the amendment. The policy review considers the developments and trends in the industry to date, assesses the progress to date and makes recommendations regarding areas that require more strengthening. The review identified certain challenges resulting from the gaps

82

in the legislative framework. The socioeconomic impact of alcohol, the slow rate of industry transformation, the calibration of critical regulatory features and improved regulatory collaboration, eliminating the manufacture and trade of illegal or illicit alcohol, and challenges with the National Liquor Authority's regulatory capacity are among the other challenges identified (NLA). These issues arose from the liquor industry's behaviour, cultural attitudes toward alcohol, and possibly leniency in enforcing the current liquor regulatory structure. The assessment recommended a number of particular steps, including a review of the NLA's administrative structure to ensure adequate capacity for liquor registration, application, and education and awareness.

The Liquor Amendment Bill of 2016 contained proposals to amend the Liquor Act of 2003. An important proposal was to restrict liquor advertising. Placing a ban on alcohol marketing was the most cost-effective way to lessen the harm caused by alcohol (Anderson et al., 2009). Advertising normally aims to encourage viewers to identify as drinkers and to identify with a brand. With evidence that youth exposure to alcohol advertising is one to two-thirds higher than adult exposure, it can be assumed that the youth are susceptible to the results of advertising. There are studies that found evidence linking alcohol advertising and promotion to underage consumption (Parry, 2010; Morgenstern, Isensee, Sargent & Hanewinkel, 2011). These studies found that adolescents are more likely to drink more alcohol if they initiated drinking as youths. Further, the exposure of youth to alcohol advertising increases the likelihood of suffering alcohol-related harms in the following three years. Alcohol advertising has also grown with the growth of social media platforms. The alcohol industry has targeted social networking, interactive websites and branded screensavers in its media promoting alcohol consumption (Parry, 2010). These channels are known to be popular with youth. To mitigate the impact, some countries adopted bans on advertising alcohol on social and small media. For instance, Finland barred interactive alcohol advertisements on social media and Russia has banned internet-based alcohol advertisements (Katainen, Kauppila, Svensson, Linderman & Hellman, 2020).

Locally, the policy interventions include lobbying for a national ban on alcohol advertising that is visible to any persons under the age of 18, including restrictions on sports advertising and promotions that link alcohol to aspirational achievement. Sports advertising and promotions were targeted based on the association of higher levels of consumption with sports spectators. The WCG (2015) argued that the association of sports stars with alcohol in advertising increases the likelihood of the youth identifying alcohol with sporting success. The restrictions on advertising include reducing television and radio time slots although research suggests this would have a limited impact on restricting youth exposure to alcohol. This is because alcohol advertisers can saturate their available slots for maximum exposure. Hence, a total restriction on alcohol advertising to youth is preferred

83

to effectively reduce youth alcohol consumption and related harms. Measures to limit the visibility of alcohol advertising to persons under the age of 18 would involve focusing the advertising on adult venues such as nightclubs and casinos and other points of sale.

The WCG (2016) suggested reducing alcohol-related harms by raising the national minimum legal age for one to purchase or consume alcohol from the current 18 to 21 years. Effectively, this would delay the introduction of liquor consumption by youths. Aiken, Claire, Wadolowski, Hutchinson, Najman, Slade, Bruno, McBride, Kypri and Mattick (2018) found that lower alcohol initiation age increases the likelihood of a person to encounter alcohol-related problems from heavy drinking at later stages in life. This is partly because for most people, the development of brain continues up until the age of 25. Early exposure of adolescent brains to alcohol is likely to impair neurological development. This can cause the youth to make reckless choices, encounter memory lapses, or process and send neural impulses more slowly (Ewing, Sakhardande & Blakemore, 2014).

The high density of alcohol outlets is associated with increased harms that include intimate partner violence and murder. There are recommendations to issue or renew alcohol retail licences based on statistically determined evaluation of the link to harms. Previous studies suggest that increasing trading hours results in increased harms. Hence, reducing the hours of alcohol trade reduces alcohol consumption and consequently alcohol-related harms. A systematic review found that the increase of trading hours by two hours increases alcohol-related harms. In a study of Diadema in Brazil, new laws dictating on-premise alcohol consumption to close at 23:00 lead to a reduction in the amount of murders by 106% (WCG, 2016).

The Liquor Amendment Bill of 2016 also proposed enforcing alcohol pricing and restrictions on trading hours to reduce alcohol availability. The WCG (2016) argued that South Africa has more affordable alcohol products compared to the majority of low and middle-income countries based on household income. A related study by Casswell et al., (2018) suggested that a strategy targeting alcohol prices would have substantial impact in reducing the demand of alcohol and that the consequences are likely to have more impact on low SES individuals and the youth, who are worse affected by price changes, than high SES individuals. It has been argued that low-pricing, volume-based trade practices, and poor regulation and enforcement in alcohol sales are the main drives from the supply-side of alcohol consumption and risky consumption patterns. As a result, it's believed that 70% to 80% of alcohol is drunk in the unregulated and informal market. There are also efforts underway to lobby the national government to increase the price of alcohol by imposing an excise tax and/or instituting minimum unit pricing. Alcohol price policies, restrictions on availability and restrictions on advertising are thought to be one of the most effective ways to prevent alcohol-related damage (WCG, 2016).

Setting maximum trade hours limits to reduce alcohol consumption in line with the alcohol-related harms reduction strategy is one of the proposed policy measures. Also reducing alcohol availability through shorter trading hours is a WHO 'best buy' method for reducing alcohol-related harms since it is one of the most effective and cost-effective interventions. Currently, trading hours and days vary by province, with more relaxed market times resulting in higher alcohol availability. WCG (2016) made a policy proposal to implement uniform trading hours to reduce excessive trading hours that support harmful alcohol consumption, although variations or exceptions could be made to the uniform trading to allow for flexibility based on residential areas, business nodes or tourism needs. For example, the trading times could be more restricted for areas such as Cape Town, due to poor socioeconomic conditions and high levels of interpersonal violence, some of which is linked to alcohol consumption.

Based on WCG (2016), evidence from Australia and South Africa show positive effects of reducing alcohol sales hours. In Tennant Creek in Australia, a successful campaign was mounted to close off-premise consumption on paydays. As a result, alcohol-related hospital admissions dropped by 34% with a 50% drop in admissions to women's shelters. A South African case study involved Siyahlala, an informal settlement in the Brown's Farm area of Nyanga[4]. In 2006/7, the area had the highest murder rate in South Africa. Between May 2006 and June 2007, a broad-based community crime- prevention campaign was implemented. To decrease trading hours, Shebeens were asked to close by 21:00. There was a decline in violent offenses which closely linked with the enactment of the early closures, which were corroborated by the shebeen proprietors. During the same time period, crime rates dropped from 5 to 8 murders per month to nearly zero. There was also a significant drop in assault cases, which fell from 30 to 38 in a typical month to 10 to 17. Based on the initiative's effectiveness, strong penalties have been proposed for liquor sales for off-consumption from facilities that are licensed to sell and serve on-site, including the possibility of license suspension (WCG, 2016).

WCG (2016) suggested that one of the most effective ways to address the availability of cheap alcohol is to introduce minimum unit price for alcohol products. The method would address the cost of alcoholic beverages that are often consumed by heavy drinkers while having no detrimental impact on moderate drinkers. Minimum unit pricing minimizes the likelihood of alcohol being sold below cost, given away, or subsidized, lowering alcohol use. Rather than the volume of alcoholic beverages, excise taxes and minimum unit price can be applied to the absolute alcohol content. The ideal strategy for reducing alcohol consumption is the imposition of excise

---

[4] Nyanga is a surburb in Cape Town, South Africa

taxes. According to evidence, an increase in the alcohol tax is passed on to the customer in the form of an increase in the retail price of alcohol. Excise taxes have the extra benefit of increasing money for the government.

Based on household income, it has been claimed that South Africa has more affordable alcohol goods than most low- and middle-income countries. The study by WCG (2016) suggests that a policy targeting alcohol prices would curb alcohol demand. The impact is likely to be greater for low SES households and the youth due to being more responsive to price changes, compared to high SES households. There are currently initiatives underway to persuade the national government to raise alcohol costs by raising the excise tax or implementing minimum unit pricing. According to Van Walbeek and Chelwa's (2019) research, changes in alcohol excise taxes result in changes in the country's alcohol consumption behavior. According to the WCG (2016), beer sales account for the majority of excise taxes (59%) followed by wine sales (27%), and spirits sales (2%). A 10% rise in the price of alcohol is predicted to lower beer consumption by 4%, low-priced wine by 11%, medium-priced wine by 8%, and spirits consumption by 8%. Excise taxes and minimum unit pricing are two key ways for regulating alcohol prices that might be considered at the national level. Both tactics must consider the type of alcohol, the percentage of alcohol in the product, and market anomalies. In South Africa, for example, 750 mL bottles of alcohol are significantly less expensive than 330 mL bottles of the same alcohol. Because of the various pricing for different size alternatives, it is easier for low-income people in the country to get relatively inexpensive beer by purchasing the larger size.

The Liquor Act of 2003 was passed in order to reform the country's liquor business. It set the tone for the country's nine provinces to be in charge of implementing liquor legislation in terms of liquor micro-manufacturing and retail licensing. In provinces that have ratified and promulgated their own provincial liquor legislation, the Act repealed the 1989 Act. The most important criterion is that provincial legislation adheres to the general goals of regulating the liquor trade, encourages possibilities for new entrants (particularly historically disadvantaged individuals), and mitigates the adverse impacts of alcohol misuse (Petersen & Charman, 2010). To date, the provinces of KwaZulu-Natal, Eastern Cape, Gauteng, Northern Cape, and Western Cape have adopted legislation in accordance with the Act. The 1989 Act, on the other hand, is still in effect in the remaining four provinces. In several jurisdictions in the country, the 1989 Act coexists with other provincial legislation. The coexistence confounds and undermines efforts to harmonise an alcohol industry regulatory environment and strategy.

The Western Cape Liquor Act, adopted in 2008, set the tone for the full execution of the WCG's autonomous legislation. The Western Cape Liquor Act was intended to regulate the liquor industry's retail and micro-

manufacturing sectors through licensing. The Act specifies the conditions for all liquor retail traders and micro-manufacturers in the province to be regulated. Due to their failure to meet the onerous compliance criteria for licensing, the majority of non- regulated micro-enterprises that sell liquor, known as shebeens, may be excluded from the regulatory framework under the Act. The necessity that all liquor license applicants get acceptable land-use zoning permission from local government structures is one of these factors. However, because many shebeens are located in residential neighborhoods, these establishments are unlikely to receive land use approval or a liquor license, even if they meet all other regulatory standards. Closure or unlawful trading are the most likely outcomes for these businesses. (Petersen & Charman, 2010). Licensing is only the first step in compliance. In informal settlements, for example, shebeens would be highly unlikely to satisfy sanitary, hygiene and fire safety requirements, including by-laws and regulations about noise, waste disposal and public nuisance, let alone formally register their businesses and employees, maintain proper accounting and meet their tax obligations.

The National Department of Health in South African is considering regulating alcohol advertising. As mentioned in Chapter 1, probably amid significant industry opposition, the government failed to get beyond Cabinet approval when it drafted the Control of Marketing of Alcoholic Beverages Bill in 2012. The Bill particularly sought to end advertising alcohol at any place where children could see the advert. At the provincial level, the WCG supports the national government efforts to regulate alcohol advertising. If a comprehensive prohibition is not achieved, it has been suggested that advertising, marketing, and promotion of alcohol goods and companies be prohibited at all public facilities and events hosted by the WCG. Advertising expenditure in the country has increased dramatically in recent years, rising from R834,6 million in 2007 to R1,8 billion in 2012, according to the Nielsen AdEx. The industry spends considerable amounts to associate positive beliefs and norms with alcohol consumption. It has been argued that the alcohol industry should not only stop producing the content but also contribute to counter-messaging the beliefs and norms the industry helped create (Parry, 2010). In addition, the alcohol industry may engage in corporate social investment efforts such as providing sponsorship to create a positive spin around drinking and company brands.

The early attempts to partially implement the 2016 Liquor Act sparked mass protests, with assertions that it would result in the layoff of thousands of workers and damage the livelihoods of shebeen owners' families. The government responded by emphasizing the key advantages of stricter control, namely the reduction in alcohol misuse. According to Petersen and Charman (2010), the method of closing and criminalizing shebeens may not achieve the intended outcome and may have unanticipated negative consequences. Although the number of alcohol outlets and density per 1, 000 population decreased after the Act was enacted, Bowers, Davids, and

London (2020) found that illegal outlets were still more likely to be located in more deprived areas, while legal outlets were more likely to be located in less deprived areas.

The provincial Liquor Authority in KwaZulu-Natal is responsible for ensuring effective regulation and control of liquor retail, sale, and micro-manufacture in the province. The KwaZulu-Natal Liquor Act of 2010 was passed by the provincial assembly, thereby repealing the 1989 Liquor Act of 1989. The Act's goals include regulating micro-manufacturing and the sale of liquor, lowering the socioeconomic and other costs of alcohol abuse, allowing the public to participate in the registration process, and promoting the development of a responsible and sustainable retail and micro-manufacturing liquor industry that allows for new entrants, diversity of ownership, and a social responsibility ethos in the industry (DTI, 2016).

Another key feature of the liquor industry is the high levels of concentration resulting in low levels of competition. The large enterprises that continue to dominate the liquor landscape were born in and nurtured during apartheid. Further, the previous regime's policies benefitted participants along ethnic lines, and white wine farmers and alcohol businesses received considerable assistance from banks, the apartheid government and its agencies. Consequently, the transformation of the liquor industry has been one of the policy concerns for the current government. The attempts by the government to transform the industry has resulted in a substantial increase in distribution licences. This is because to the requirement that each distribution outlet have its own license. Despite this, the degree of vertical integration between production and distribution implies that the distribution sector is highly concentrated. Individuals from traditionally underprivileged backgrounds have

also begun to participate. Furthermore, there are signs of minimal transition, as the people who gained the most from past policies continue to benefit from the new regulations. The key reason for the lack of progress in the industry's participation and transformation is the existence of loopholes in current regulations. To encourage involvement and change in the industry, license conditions must be vigorously enforced and monitored in accordance with the B-BBEE Codes of Good Practice (DTI, 2016).

4.5   Conclusion

The chapter discussed the historical, political, socioeconomic and regulatory issues pertaining to alcohol consumption in South Africa. The section also discussed alcohol consumption patterns and trends as well as the historical and current alcohol policy and legislative framework for regulating alcohol production and consumption in the country. South Africa has a history of apartheid and segregation that created the social, cultural and historical environment that shaped the beliefs, attitudes and perceptions of alcohol dependence. In

88

turn, resistance to apartheid policies has been linked to the current patterns of alcohol-related behaviours in the country. The disproportionate provision of services to different population groups created a host of social and economic issues as well as inequities. This has resulted in socioeconomic inequalities being identified in alcohol use in South African poor communities, especially in the urban informal settlements. Other manifestations of apartheid policies include the dop system, which has been associated with problem drinking among coloured communities and in the rural areas. The country also has one of the highest rates of alcohol consumption globally with most of the alcohol consumption done in risky patterns. Alcohol consumption results in high levels of conflict in families, violence, crime, alcohol-related diseases, sexual violence, high-risk sexual behaviours and road accidents. As a result, throughout its history, South Africa has enacted laws to limit alcohol consumption among the population and adopted various policy interventions that have been preferred to reduce alcohol consumption in line with the alcohol-related harms reduction approach.

89

CHAPTER FIVE: METHODOLOGY

5.1 Introduction

This chapter presents the methodology of the study. The first part of the chapter introduces the theoretical model adopted by the research to understand the interwoven mechanisms that underpin the AHP. The theoretical model is based on the approaches discussed in the literature review with a focus on the individual behaviours and contextual factors that influence alcohol-related harm. This is pertinent for South Africa where socioeconomic differences were engineered by institutional racism, colonisation and apartheid along 'racial' lines, location (rural/urban) and gender (Deghaye et al., 2014). The theoretical model is used as the basis to select the socioeconomic variables for the empirical study. The variable selection exercise is also based on previous economics studies on the subject. Both the dependent and independent variables are discussed next. The theoretical model predictions are also used to hypothesise the nature of the impacts of the selected socioeconomic variables on alcohol-related outcomes. The second part of the chapter develops the empirical model. The study then outlines the outcome variables as well as the independent variables and covariates adopted in the study. The chapter concludes with a discussion of the insights obtained in the study based on data from the National Income Dynamics Study (NIDS).

5.2 Theoretical model

It is difficult to explain the mechanisms underpinning the AHP. To date, most of the research on the AHP lacked clear theoretical underpinnings. This research adapted the model discussed in section 2.7.2 derived from Peña (2021) to illustrate interwoven causal mechanisms for the AHP across alcohol-related health outcomes (Figure 5.1). The model was adapted for alcohol-related harms within the scope of the study – mental health status, chronic health conditions and self- perceived health status. For brevity, the conceptual model derived broad categories of the causal connections that have been identified in the literature:

a) Differential vulnerability to risk factors;
b) Differential exposure to risk factors;
c) Reverse causality.

90

Figure 5.1: Theoretical explanations of the AHP
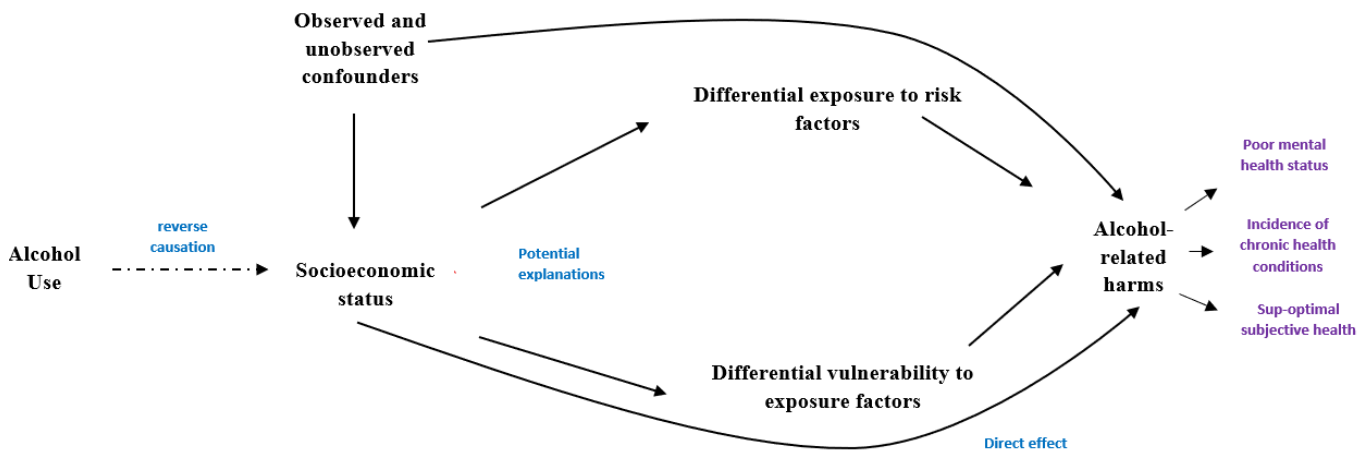
Source: Adapted from Peña (2001).

The AHP could result from different vulnerabilities and, based on the literature, the more vulnerabilities an individual has, the more likely they will develop alcohol problems (WHO, 2013). In addition, it has been established that vulnerable individuals have more chances of experiencing more than one individual risk factor such as unhealthy diet, sedentary behaviour and substance use (Blas & Kurup, 2010). Low SES individuals are exposed to many different personal and environmental risk factors more often compared to high SES individuals. According to the literature, exposure to risk factors is negatively associated with social position. These include material, psychosocial and behavioural risk factors such as income, employment and education (Dahlgren & Whitehead, 2007). The skewed distributions in all risk factors are also prevalent across lifestyle factors such as smoking and alcohol misuse (Dahlgren & Whitehead, 2007). Individual vulnerability signifies susceptibility to adverse health outcomes, which often manifests in suboptimal physical, mental and subjective health and social outcomes. The lower the socioeconomic position, the greater the exposure to different health hazards and subsequently, adverse health outcomes.

Based on the diagram, there are several potential explanations for why low SES individuals appear more vulnerable to the alcohol-related health outcomes under study. One explanation for the greater vulnerability is that lower SES groups lack resources, making it difficult for them to avoid adverse consequences of behaviour such as alcohol consumption. Low SES individuals are likely to consume alcohol in unsafe conditions and settings that are most likely frequented by other high-

91

risk drinkers, such as shebeens and unlicensed outlets. This might expose low SES individuals to short-term risks such as violence and unintentional injury and the long-term risk of infectious diseases as well as chronic health conditions. Combined with area-deprivation and inhospitable living conditions, the associated (psychosocial) health outcomes potentially modifies the association between SES and mental health. Area-level disadvantage is associated with increased psychological distress which in turn can result in binge drinking as a form of self-medication (Forbes et al., 2015). By contrast, higher SES individuals could choose safer drinking environments that provide protective buffers to insulate them from the negative consequences of their actions (Walsh, 2016). Another potential explanation for the greater vulnerability among low SES individuals is their lack of access to healthcare services, treatment and rehabilitation for alcohol-related problems. Low SES individuals are generally confined to under-resourced public health services where long waiting lists for treatment are more common. This introduces challenges for them to access, adhere to and attend follow-up appointments for treatment. The limited supply of healthcare services can result in chronic illnesses going untreated. High SES individuals can seek out treatment and, for those who can afford private healthcare services, get treatment quicker and be more likely to comply with and complete treatment programmes (Walsh, 2016).

5.3 Empirical model

5.3.1 Model specification

The main objective of the study is to determine if the AHP exists in South Africa and then to review associations between SES, alcohol use and a host of related outcomes such as subjective health status, chronic health conditions and mental health status. The study also aims to explore the possible reasons behind the hypothesised correlations. To aid the determination, the study relied on empirical evidence and the theoretical model to ascertain the variables for inclusion into the empirical model. The available empirical evidence points to differential vulnerabilities to risk factors and alcohol exposure based on sociodemographic factors such as age, gender, population group and the environment modifying the socioeconomic inequalities of adverse health outcomes. As per the theoretical model, the likelihood of low SES individuals and groups bearing the burden of adverse health outcomes is strongly associated with their differential exposure to the risk factors and differential vulnerability to the risk factors.

The study uses multivariate logistic regression to analyse the likelihood of socioeconomic factors impacting on both drinking behaviour and related health problems. The study followed on the methodology by Newacheck, Hung, Park, Brindis and Irwin (2003). The adoption of logit models is appropriate given that the three dependent variables can be structured as binary outcomes. The models allow the research to predict the probability of the

92

outcomes falling between the unit intervals. The study follows on Cheah (2015) and formulates the logit model in the general form as:

$$\log \frac{P}{1-P} = \alpha + \beta_i X_i + \varepsilon$$

In the first empirical model where the outcome variable is self-rated health status, P is the probability that the participant reports good health status and $1 - P$ is the probability that the participant reports poor self-perceived health status. $\frac{P}{1-P}$ are the odds that the participant considers themselves to be in good health. X is the vector of independent variables hypothesised to impact on the probability of reporting good health status. β are the coefficients of the independent variables and ε is the error term. To model the health status indicators, the study employs binary outcomes equal to one in the presence of good health and zero in the absence of good health.

In the model with chronic health conditions as the dependent variable, P is the probability that the participant suffers from a specific chronic health condition such as cancer, stroke, diabetes, asthma, tuberculosis, high blood pressure, heart problems and other diseases/disability. $1 - P$ is the probability that the participant doesn't suffer from a particular chronic condition. $\frac{P}{1-P}$ are the odds that the participant suffers from a specified chronic condition. X is the vector of independent variables hypothesised to impact on the probability of suffering from the specified chronic condition. β are the coefficients of the independent variables and ε is the error term. The study employs binary outcomes equal to one in the presence of the diagnosis and zero in the absence of the diagnosis.

In addition, the study also used the logistic model to determine the association between mental health status and alcohol drinking patterns. In the equation, P is the probability that the participant is an alcohol drinker exhibiting depressive symptoms and $1 - P$ is the probability that the participant is an alcohol drinker who doesn't exhibit depressive symptoms. $\frac{P}{1-P}$ are the odds that the participant is an alcohol drinker with depressive symptoms. X is the vector of independent variables hypothesised to impact on the probability of being an alcohol drinker with depressive symptoms. The model included several socioeconomic characteristic indicators such as age, population group, gender, educational attainment and marital status. β are the coefficients of the independent variables and ε is the error term. To model the mental health indicators, the study employs binary outcomes equal to one in the presence of suboptimal mental health symptoms and zero in the absence of the symptoms.

The study used the odds for the outcomes under study to derive the odds ratios (OR). For each of the outcomes – mental health, chronic health conditions and subjective health status – odds ratios were computed based on exposure to alcohol consumption as the risk factor. The odds ratios were calculated as:

93

$$OR = \frac{a/b}{c/d} = \frac{ad}{bc}$$

where

In the table, a represents exposure to alcohol as a risk factor among individuals suffering alcohol harm in the scope of the study; mental health, chronic health conditions and subjective health status. b represents the individuals who are exposed to alcohol consumption but are not suffering any of the harms in question. c represents individuals who are not exposed to the alcohol consumption risk factor but suffer the alcohol harms. d are those individuals who are neither exposed to the risk factor nor suffering the alcohol harms under study.

ORs are expressed as numbers and are interpreted as below:

OR=1: The result indicates no difference in the odds of suffering alcohol harm for individuals exposed to alcohol and those not exposed to it.

OR<1: The result indicates lower odds of suffering alcohol harm for individuals exposed to alcohol compared to those not exposed to it. This means that exposure to alcohol may reduce the odds of suffering the alcohol harm in question.

OR>1: The result indicates higher odds of suffering alcohol harm for individuals exposed to alcohol compared to those not exposed to it. This means that exposure to alcohol may increase the odds of suffering the alcohol harm in question.

A diagnosis of the model specification was carried out. Also, all of the tests were performed based on p-values of 5% and 10%.

5.3.2 Outcome variables

The AHP is the empirical finding of socioeconomic inequalities in alcohol-related harm despite no significant differences in consumption. The literature shows that harmful alcohol consumption increases the overall risk of morbidity and mortality (Holder, 2006). Based on the study objectives, the study incorporated the following alcohol-related outcomes into the analysis: subjective health status, chronic health conditions and depressive symptoms as a proxy for mental health status. Prior researchers have found significant associations between alcohol consumption and this range of health measures (Lim et al., 2007; Newacheck et al., 2003).

5.3.2.1 Subjective health status

The AHP has been established for a range of health outcomes. Self-rated health status is the subjective perception of one's overall health status which has been found to predict objectively measured health outcomes (Paljärvi et al., 2011; Poikolainen, 1996; Shields & Shooshtari, 2001). In the current study, self-rated health status was assessed through answers to the NIDS survey question: *"How would you describe your health at present? Would you say it is excellent, very good, good, fair, or poor?"* Table 5.1 below indicates how the study scored self-rated health status (from the NIDS).

Table 5.1: NIDS Questionnaire on self-rated health status questions

Section J: Health

INTERVIEWER READ OUT: We would like to ask you about some health conditions that people sometimes complain about				Validation Rule	skips
J1 *hldes*	How would you describe your health at present? Would you say it is excellent, very good, good, fair, or poor?	Excellent	1		
		Very good	2		
		Good	3		
		Fair	4		
		Poor	5		
		Refused	-8		
		Don't Know	-9		

Source: NIDS questionnaire.

The study used the responses to the question to gauge the perceived general health status of the respondents. The category "Good health" was created by merging 'excellent', 'very good' and 'good' responses. The "Poor health" category was created by merging 'fair' and 'poor' responses. This follows a similar approach to Grønbæk et al. (1999), Shields and Shooshtari (2001) and Wang et al. (2019).

5.3.2.2 Chronic health indicators

To determine the AHP in South Africa, the study incorporated a range of health indicators into the empirical analysis. The study followed Mukong et al. (2017), to select health indicators based on their likely association

95

with harmful alcohol use. The empirical model incorporated the following self-reported diagnosis of the following health conditions: tuberculosis, high blood pressure, diabetes, stroke, heart problems, cancer, persistent cough, depression and chest pains. Table 5.2 displays an example of how the questions on chronic health conditions were formulated. The table focused on the question on Tuberculosis diagnosis and the questions on the other conditions were formulated in the same way.

Table 5.2: An Example of the NIDS Questionnaire on chronic health questions

CJ13.1.1	Computer check: Has this person told us before that they have **Tuberculosis / TB?** *(best_tb = 1)*	Yes	1		
		No	2		J13.1.2
J13.1.1 hltb_bf	We were previously told that you have **Tuberculosis / TB** is this correct?	Yes	1		J13.1.3
		No	2		CJ13.2.1
		Refused	-8		CJ13.2.1
		Don't Know	-9		CJ13.2.1
J13.1.2 hltb	Have you ever been told by a doctor, nurse or health care professional that you have **Tuberculosis / TB?**	Yes	1		
		No	2		CJ13.2.1
		Refused	-8		CJ13.2.1
		Don't Know	-9		CJ13.2.1
J13.1.3 hltb_med	Are you currently taking medication for Tuberculosis / TB?	Yes	1		CJ13.2.1
		No	2		
		Refused	-8		
		Don't Know	-9		
J13.1.4 hltb_stl	Do you still have Tuberculosis / TB?	Yes	1		
		No	2		
		Refused	-8		
		Don't Know	-9		

Following Jose et al. (2000), the study classified respondents according to whether or not they reported suffering from any of the chronic health conditions.

5.3.2.3 Mental health status

The study reviewed the relationship between alcohol use and specific depressive symptoms to further unpack the AHP. Empirical research found evidence that alcohol consumption contributes to depression (WHO, 2004). Cornah (2006) indicated that individuals consuming higher amounts of alcohol are susceptible to higher levels of mental ill-health. Despite previous research, there is still a lack of comprehensive studies on the links between SES, concurrent alcohol use and mental health (Bonevski et al., 2014). The depression variable was derived

96

from responses to the emotional health questions in the NIDS survey questionnaires. Across all the waves, respondents were asked 10 questions relating to their mental well-being. The emotional health questions from the NIDS questionnaire have been copied in Table 5.2 below.

Table 5.2: NIDS Questionnaire – emotional health questions

Section K: Emotional health

INTERVIEWER READ OUT: We would like to know how your general well-being has been over the past week.

I am going to read a list of some of the ways you may have felt or behaved during the last week. Please state how often you have felt this way during the **past week.**
Interviewer: Select one option on each line

	During the past week...	Rarely or none of the time (less than 1 day)	Some or little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)	Refused
K1 emobth	I was bothered by things that usually don't bother me	1	2	3	4	-8
K2 emomnd	I had trouble keeping my mind on what I was doing	1	2	3	4	-8
K3 emodep	I felt depressed	1	2	3	4	-8
K4 emoeff	I felt that everything I did was an effort	1	2	3	4	-8
K5 emohope	I felt hopeful about the future	1	2	3	4	-8
K6 emofear	I felt fearful	1	2	3	4	-8
K7 emoslp	My sleep was restless	1	2	3	4	-8
K8 emohap	I was happy	1	2	3	4	-8
K9 emolone	I felt lonely	1	2	3	4	-8
K10 emogo	I could not "get going"	1	2	3	4	-8

Source: NIDS questionnaire.

The responses were tallied on a 4-point Likert scale to indicate the frequency with which the depression symptom was experienced. The survey responses were totaled up using the 10-item version of the Centre for Epidemiological Studies Depression Scale to determine the total score for depressive symptoms (Radloff, 1977). The presence of substantial depressive symptoms was defined in this study as a score of 10 or higher (SDS). Radloff also advocated for the same criterion (1977). Other research employing the NIDS to assess depression, such as Mungai and Bayat (2019) and Dowdall et al., used the same scale (2017). The CES-D scale is a widely used psychiatric tool for detecting depressed symptoms with good psychometric qualities (Dowdall et al., 2017; Mungai & Bayat, 2019). The Cronbach's alpha for the scale in this sample was 0.75 reflecting high reliability of the responses to the question at hand. Following on Anthenelli and Schuckit (1993), who asserted that "symptoms are not diagnoses", and the methodology of Mungai and Bayat (2019), the study assesses the

97

symptomatology that suggests significant vulnerability to depression and was not an attempt to diagnose depression.

5.4 Explanatory variables

The study incorporated several explanatory variables for AHP. Based on the theoretical model and related economics studies on the same subject, the following socioeconomic variables are hypothesised to have a significant impact on alcohol-related problems: education, occupation, income, employment status and neighbourhood deprivation. Alcohol consumption was approximated using the quantity and frequency indicators in the data. In the literature, indicators of individual-level SES mainly focus on income, education and occupation. Empirical studies normally adopt different area SES measures. Some studies derive composite measures of area SES from various indicators of SES advantage and disadvantage across multiple dimensions, which include financial resources, educational capital and employment opportunities. South Africa has a legacy of apartheid whereby social planning conflated 'race' and class. Age, population group and gender are also included as structural and biological determinants of both alcohol consumption and related problems. Following on previous literature, the study included the following covariates: gender, age, education level, marital status, income adjusted for household size, employment status. The current study controlled for various potential confounders to eliminate biases as potential explanations for the AHP.

5.4.1 Alcohol consumption

Exposure to alcohol was determined from the quantity and frequency questions in the NIDS surveys. Relating to alcohol consumption, participants were asked the two-alcohol consumption quantity and frequency questions: "How often do you drink alcohol?" and "On a day that you have an alcoholic drink, how many standard drinks do you usually have?" A standard drink was defined as a small glass of wine or a 330 ml can of regular beer, a tot of spirits, or a mixed drink. The question "How often do you drink alcohol?" was used to evaluate the rate of alcohol consumption. Response categories to the question ranged from "I have never drunk alcohol", "I no longer drink alcohol", "I drink very rarely", "Less than once a week", "On 1 or 2 days a week 5", "On 3 or 4 days a week", "On 5 or 6 days a week", "Every day", "Refused" and "Don't know".

The quantity of alcohol consumption was determined from responses to the question: "On a day that you have an alcoholic drink, how many standard drinks do you usually have?" A standard

drink was defined as a small glass of wine; a 330 ml can of regular beer, a tot of spirits, or a mixed drink. Response categories to the question included "13 or more standard drinks", "9 to 12 standard drinks", "7 to 8

standard drinks", "5 to 6 standard drinks", "3 or 4 standard drinks", "1 or 2 standard drinks", "Refused" and "Don't know". The quantity for alcohol units was calculated using averages and approximations; for example, 7 to 8 standard drinks were considered to be 7.5.

Following the methodology by Caetano (1987), the two categories indicating drinking quantities and frequencies were cross-tabulated to derive an index for the alcohol units consumed in a typical week, which was used for the analysis in this study. The frequency of alcohol use was proportioned to 7 days as in Table 5.3 below:

Table 5.3: Frequencies of alcohol use proportioned to 7 days

Frequency	Weight	Proportion
I have never drunk alcohol	0	0.0
I no longer drink alcohol	0	0.0
I drink very rarely	0.25/7	0.0
Less than once a week	0.5/7	0.1
On 1 or 2 days a week	1.5/7	0.2
On 3 or 4 days a week	3.5/7	0.5
On 5 or 6 days a week	5.5/7	0.8
Every day	7	1.0
Refused	0	0.0
Don't know	0	0.0

Source: Author's own calculations using NIDS 2015/16.

The quantity of alcohol consumption was determined from responses to the question: "On a day that you have an alcoholic drink, how many standard drinks do you usually have?" A standard drink was defined as a small glass of wine; a 330 ml can of regular beer, a tot of spirits, or a mixed drink. Response categories to the question included "13 or more standard drinks", "9 to 12 standard drinks", "7 to 8 standard drinks", "5 to 6 standard drinks", "3 or 4 standard drinks", "1 or 2 standard drinks", "Refused" and "Don't know". The alcohol volumes were turned into amounts of pure alcohol in grams [g]. Total pure alcohol amounts were calculated using averages and approximations; for example, 7 to 8 standard drinks were considered to be 7.5. An approximate alcohol content (Vol-%) of 4.8 was applied following Poikolainen and Vartiainen (1999). The amount of pure alcohol [g] consumed at a time was calculated as below:

99

$$= Volume \ [ml] x \ Vol -\% \ x \ 0.816 \ [g/ml]$$

$$= 330 \ x \ 0.048 \ x \ 0.816$$

$$= 12g$$

Based on the calculation, the amount of alcohol per drinking occasion was derived as in Table 5.4.

Table 5.4: Alcohol amount per drinking occasion, in grams of pure alcohol [g]

Quantity	Average quantity	Pure alcohol [g]
13 or more standard drinks	15	180
9 to 12 standard drinks	10.5	126
7 to 8 standard drinks	7.5	90
5 to 6 standard drinks	5.5	66
3 or 4 standard drinks	3.5	42
1 or 2 standard drinks	1.5	18
Refused	0	0
Don't know	0	0

Source: Author's own calculations using NIDS 2015/16.

The average amount of pure alcohol [g/day] was calculated as:

Pure alcohol [g] at a time x Frequency of alcohol use [1/day]

The responses to the two questions were used to understand the alcohol consumption patterns of the individuals. For both questions, missing responses that were originally coded under "Refused" and "Don't know" were imputed. Using the same information, the sample members are classified as abstainers, light drinkers, moderate drinkers or excessive drinkers. The drinking patterns are also used to classify the sample members either as binge drinkers or not. Following on Vellios and Van Walbeek (2018), abstainers are defined as those not currently consuming alcohol. Participants who partake in alcohol consumption are classified as current alcohol users regardless of the drinking amount. The study follows two national studies by Vellios and Van Walbeek (2018) and by Ramsoomar and Morojele (2012), to define those who reported consumption of five or more standard drinks on an average drinking day as binge drinkers. The study followed Fieldgate et al. (2013) to define heavy drinkers as those drinking 15 or more units of alcohol in a typical drinking week. This study follows a similar approach to the WCG (2016) and refers to liquor products as 'alcohol'.

100

5.4.2 Education

In the NIDS survey, participants were asked the highest grade of school they had completed. The participants were then asked the highest level of education they had completed. In addition, the survey participants were asked if they had completed any diplomas, certificates or degrees outside of school. The study follows on Vellios and Van Walbeek (2018) to code the responses into "no schooling" for participants who didn't complete any school years. The "some primary schooling" code was used for participants who attended school until any grade between grades 1 to 7. Participants who had their highest school grade between grades 8 and 11 were coded as people with "some secondary schooling". Survey participants who indicated completion of grade 12 were coded as "completed secondary schooling". The "some tertiary" code was used for those participants who completed any diplomas, certificates or degrees outside of school.

5.4.3 Employment status

The NIDS survey asked questions regarding employment history to determine the labour market participation status of the respondents. Responses to the questions allowed the classification of participants as either employed or unemployed.

5.4.4 Occupation

A follow-up question on the questionnaire regarded the main tasks or duties completed at work. In using the data, the study opts for the Statistics South Africa (2005) definitions of occupational codes by skill level, which accord with the South African Standard Classification of Occupations (SASCO). Table 5.5 below lists the occupational codes by skill levels adopted by the research.

Basic occupations, the military forces, and unidentified occupations were coded as skill level 1 based on the occupational codes by skill level classification. Skill level 2 workers include clerks, service workers, shop workers, market sales workers, skilled agricultural workers, fishery workers, craft and allied trades workers, plant and machinery operators, and assemblers. Skill level 3 was assigned to technicians and associate professionals. Skill level 4 was assigned to legislators, senior officials, managers, and professionals. The coding also follows the methodology of Mungai (2016).

Table 5.5: Classification of occupational codes and skill levels

	Occupational Group	Skill Level
1	Legislators, senior officials and managers	4
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerks	2
5	Service Workers and shop and market sales workers	2
6	Skilled agricultural and fishery workers	2
7	Craft and related trades workers	2
8	Plant and machinery operators and assemblers	2
9	Elementary occupations	0
0	Armed forces and unspecified occupations	0

Source: NIDS questionnaire.

5.4.5   Income

In terms of income disparity, it was discovered that labor market income was the main contributor to South Africa's high levels of inequality (Hundenborn et al., 2018). Between 1993 and 2014, according to Hundenborn et al. (2018), labor market income contributed between 84% and 90% to overall Gini coefficients. Poverty-relieving policies such as government handouts, on the other hand, were found to have a positive and offsetting influence on inequality. Variables in household composition have also been found to increase inequality. The findings of the study made it necessary to incorporate both labor and household income as SES indicators in the current analysis.

Participants in the NIDS were asked about the amount and sources of any money they received. Participation in the labor market, income from non-employment sources, contributions received, and personal ownership were all sources of income. Because income is a continuous variable, cut- off numbers are commonly used to create income groups. Normally, cut-off points are determined using percentiles, median or mean values, or absolute thresholds. Easterly (2001) used fixed percent ages of the income distribution to define the classes. Some literature categorised the income classes by defining thresholds on the median per capita income. Burger et al. (2014) opted for the polarisation method. The polarisation approach utilises the concepts of identification and alienation to identify homogenous social clusters within a population. Another approach is setting the poverty line or a line of affluence at a specific level of per capita income which is used to distinguish between the classes.

However, a criticism of the approaches that use cut-offs is that thresholds are often arbitrary. That makes the income classification subjective to the researcher. In addition, the categorisation may result in income groupings with considerable variation in socioeconomic characteristics (Burger et al., 2014). Despite the drawback, the

approach that compares per capita income to either the poverty line or the line of affluence is usually preferred as it allows comparisons with other countries. As a result, the study takes the same method. The study followed Giskes et al. (2011) and considered all members of the household's total annual income, including pensions, allowances, and investments. The per capita income was obtained by dividing household income by the number of people in the household. The study also uses quantile rankings to identify income classes, with the first quantile representing the lowest income group and the fourth quantile being the highest income category, as proposed by Moussavi et al. (2007). The study also used Statistics South Africa's (2019) classification system to divide drinkers' per capita income into two groups: poor and non-poor. The poor group was broken further into chronic and transient subgroups. The survey participants who remained poor in both time periods were classified as 'chronic poor'. Those who had a change in the same period were classified as 'transient poor'.

5.4.6   Neighbourhood disadvantage

Social planning during apartheid confused race and class. Inequality, poverty, and social exclusion were spatially placed by neighborhood in the system. As a result, the country's deprivation shows clear patterns based on geographic location, with the former homeland areas currently being the most disadvantaged. Apartheid policies left a legacy of uneven service provision to distinct demographic groups, resulting in a slew of social and economic challenges as well as injustices (Jacobs & Jacobs, 2013). Apartheid made it easier for black people to live in poverty by denying them access to essential services, poor housing, limited employment prospects, and insufficient infrastructure. As a result, socioeconomic disparities in alcohol use among South African men residing in urban informal settlements were discovered (Lawana & Booysen, 2018). According to Dowdall et al. (2017), the unit of exposure for substance addiction disorders is the neighborhood, not the individual. Peltzer and Ramlagan (2009) recommended that the study include both the province of residence and whether living in urban or rural setting as factors.

5.4.7   Covariates

The analyses in the research were stratified by gender, population group and age. In previous studies, the covariates were shown to influence the direction and strength of associations between SES, alcohol consumption and related problems. In general, males tend to consume more alcohol than females (Fuller, 2008; Holder, 2006; Vellios & Van Walbeek, 2018). Within South Africa, empirical evidence has shown differences in drinking patterns for Africans, whites, coloureds and Indians/Asians (Van Walbeek & Blecher, 2014; Vellios & Van Walbeek, 2018). In addition, the youth, adults and the elderly exhibit distinct patterns of alcohol use (Vellios & Van Walbeek, 2018).

5.5   Data

The research used data from the National Income Dynamics Study (NIDS) survey's four waves. The National Income Dynamics Study (NIDS) is a face-to-face, longitudinal, nationally representative panel survey of South African individuals and households. The four waves of NIDS used in the study were implemented by Southern Africa Labour and Development Research Unit (SALDRU). The poll examines South Africans' well-being across multiple socioeconomic aspects and over time. The NIDS survey sampled households in South Africa's nine provinces using a stratified, two-stage cluster sample methodology. The first stage consisted of selecting 400 primary sampling units (PSUs) from a master sample of 3, 000 PSUs designated by Statistics South Africa. Within each PSU, eight non-overlapping samples of ten or twelve dwelling units were systematically drawn at the time the 2003 Master Sample was prepared. Stats SA refers to each of these samples as a "cluster." The different household surveys undertaken by Stats SA between 2004 and 2007 (such as the Labour Force Surveys, General Household Surveys, and the 2005/06 Income and Expenditure Survey) were then assigned to these clusters. Two clusters in each PSU, however, were never used by Stats SA and were assigned to NIDS. A sample of 400 PSUs had to be taken from the 3000 PSUs in the Master Sample in the first stage. The 53 district councils are the stated strata in the Master Sample (DCs). PSUs were chosen within strata with a probability proportionate to size, and the sample was proportionally allocated to these 53 strata (Woolard, Leibbrandt, De Villiers, 2010).

NIDS was supposed to be a panel of all people who lived in a certain household. Homeless and institutionalized people were not included in the sample. The original survey respondents were recognized as members of the ongoing sample (CSMs). In 2008, 28 247 CSMs were interviewed in the first wave. The goal was to re-interview the same group every two years after that. In Waves 2, 3, and 4, however, household members from the initial sample as well as additional persons who had joined the original homes were re-interviewed. For example, a child born to a female CSM after baseline becomes a continuing sample member. Questionnaires for households, individuals over the age of 15, children, and proxies are included in the NIDS survey.

5.5.1   Wave-on-wave attrition and non-response

The use of longitudinal data exposes the results to the danger of attrition bias. Attrition occurs as a result of survey non-response, primarily owing to panel drop-outs at each wave. Participants' drop-outs could be caused by health concerns, death, institutionalization or migration. In those circumstances, the survey participants who remain are expected to be healthier on average than the Wave 1 group. Furthermore, the survivors' socioeconomic status is not indicative of the initial population collected at Wave 1. (Jones et al., 2007). Non-response, if not taken into consideration, might lead to inaccurate estimations of the connections being assessed.

104

In Wave 1 of the study, 10 858 households were eligible to participate. 7 296 households consented to participate out of this total (Brown et al., 2012). A total of 31 163 people were identified as members of the homes that took part in the study. To avoid double counting, a total of 2 916 persons who were not resident members were eliminated from the study. Non-residents who were "out-of-scope"[5] were, however, included in the study. Children who were classed as continuing sample members were among the 28 247 sample members who took part (CSMs). In future rounds, the goal was to re-interview the CSMs. Out of the 28 247 CSMs who took part in Wave 1, 26 794 answered to the survey questions, while the remaining 1 453 either declined or were unavailable. This equates to a survey response rate of 95%.

Out of the 28,247 CSMs who were interviewed in Wave 1, a total of 22,050 were re-interviewed in Wave 2. When individuals who moved out of scope or died between the two waves are excluded, the attrition rate is 19%. The attritors are not permanently lost to the panel because their contact information is maintained on file and interviews are tried in subsequent rounds. For CSMs exclusively (excluding deceased and those moved out of scope but including new CSMs from Wave 2), the corresponding non-response percentage from Wave 2 to 3 is 16 percent. In Wave 4, 21,706 of the 28,226 CSMs who took part in Wave 1 of the poll were re-interviewed. As a result, there was a 23% attrition rate between Waves 1 and 4. Table 5.6 shows the attrition rates by wave and population category for each of the four waves studied.

---
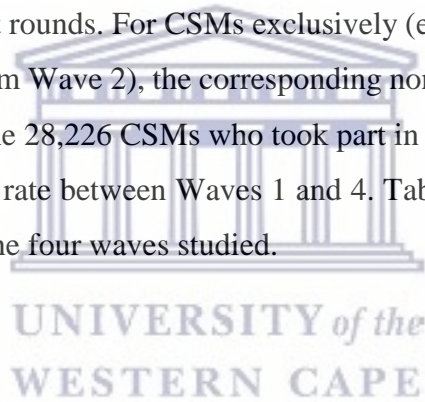
[5] "Out-of-scope" are individuals who were residing in institutions such as a hospital, prison or student hostel at the time of the survey

Table 5.6: Wave on wave attrition by population group

	Pop.Group	Refusal	Non-Contact	Deceased	Total	Attrition Rate
Wave 4	African	1,410	1,487	718	3,615	10,97
	Coloured	418	368	120	906	16,41
	Asian/Indian	117	86	10	213	42,94
	White	348	456	35	839	53,47
	Total	2,293	2,397	883	5,573	13,75
Wave 3	African	1,309	1,737	581	3,627	13,22
	Coloured	483	281	97	861	18,21
	Asian/Indian	122	41	5	168	36,36
	White	504	208	25	737	50,31
	Total	2,418	2,267	708	5,393	15,82
Wave 2	African	1,200	2,189	738	4,127	18,59
	Coloured	554	465	102	1,121	26,93
	Asian/Indian	135	32	8	175	40,79
	White	538	207	28	773	53,94
	Total	2,427	2,893	876	6,196	21,95

Source: Chinhema et al. (2016).

5.5.2 Attrition on alcohol consumption

In Wave 1, 15 631 people out of a total of 28 226 people replied to the alcohol consumption questions. The non-attritors are the 10 813 individuals who answered the identical questions in Wave 4 as the 15 631 who answered the alcohol questions in Wave 1. 4 818 people completed the questions in Wave 1 but were unable to complete the questions in Wave 4. As a result of these attritors in relation to the alcohol consumption variable, the attrition rate was 31.37 percent.

Through analysing the alcohol variable specific attrition, we can ascertain that all the non-attritors by definition managed to answer the alcohol questions of the adult Wave 4 questionnaire. 3 069 of the attritors were administered the adult questionnaire in Wave 1: 626 had the proxy questionnaire answered for them and 1 123 were missing. The reasons for attrition are varied with 27,56% of attrition explained by household-level non-response. Death between Waves 1 and 4 accounts for a significant portion of attrition at 35,36%. 19,16% of the attrition can be attributed to participants who were not tracked in Wave 4. Interestingly, 12,97% of the attritors were successfully interviewed in Wave 4 although they opted not to answer the alcohol questions. A smaller proportion of the attritors, about 4,48%, refused to answer the survey or were not available. Only eight survey members, representing 0,17% of the attritors, moved outside of the country and couldn't be interviewed. The attrition numbers and the reasons for attrition are presented in Table 5.7 below.

106

Table 5.7: Reasons for attrition

Reason for attrition	Attrition	Percent
Successfully interviewed	625	13.0%
Refused/ Not available	216	4.5%
Household-level non-response	1,328	27.6%
Not tracked in wave	923	19.2%
Moved outside of SA	8	0.2%
Deceased in this wave	595	12.3%
Deceased in a prior wave	1,123	23.3%
Total	**4818**	**100 %**

Source: Author's own calculations using NIDS 2008, 2010, 2012 and 2014/15.

An attrition probit regression helps determine if attrition in the sample is associated with alcohol consumption and the other factors under consideration in the study. The study follows on Baulch & Quisumbing (2011) in adopting probit regression to test and adjust for attrition bias in the sample. The use of probit regression is regarded as a simple procedure to test for attrition due to observables in household panel survey (Baulch & Quisumbing, 2011). The regression test enables the determination of whether attrition is random or non-random for the alcohol consumption variable. The determination allows for corrective action such as assigning proper weights to be undertaken, without which statistical analysis would produce misleading estimates regarding the relationships and could result in incorrect statistical inferences.

The study tracked attritors in the panel to run the attrition probit regression. In the study, attritors were defined as respondents who answered the alcohol consumption questions in Wave 1 but couldn't do so in Wave 4. This pertains to the respondents who had missing self-reported alcohol consumption information in Wave 4. Table 5.8 below reports the results of the attrition probit which estimates the likelihood that individuals who answered the alcohol consumption question in Wave 1 would attrite.

Table 5.8: Attrition probit for alcohol consumption

Explanatory variable	dF/dx	Std. Err.	P-value
Age squared	0.00***	0.00	0.00
Log income	0.04***	0.01	0.00
Household size	-0.02***	0.00	0.00
Gender			

Male	1.00		
Female	0.1***	0.02	0.00
Population group			
African	1.00		
Coloured	0.01	0.03	0.68
Indian	0.17***	0.04	0.00
White	0.21***	0.03	0.00
Marital status			
Married	1.00		
Not married	0.00***	0.02	0.96
Self-reported health status			
Excellent health	1.00		
Very good health	0.01	0.02	0.53
Good health	-0.01	0.02	0.60
Fair health	0.04	0.03	0.12
Poor health	0.14***	0.03	0.00
Geo-location type			
Urban	1.00		
Rural	0.06***	0.02	0.00
Education			
Tertiary education	1.00		
Some primary schooling	0.09***	0.03	0.00
Some secondary schooling	0.03	0.03	0.34
Completed secondary schooling	0.04	0.03	0.16
No schooling	0.16***	0.04	0.00
Number of observations = 4 678			
Pseudo R-squared = 0.06			
P-value = 0.00			

***5% significance level and ** 10% significance level

Source: Author's calculation based on NIDS: 2008, 2012 and 2014/2015.

From the attrition analysis results displayed above, the p-values suggest that the null hypothesis that attrition is random at a 5% level of significance can be rejected. The results indicate that baseline variables such as age, income, household size, gender, population group, marital status and education level are jointly statistically significant predictors of attrition on the alcohol variable. Hence, attrition can be determined to be non-random in the context of the alcohol consumption variable which is the main focus of the study.

5.5.3 Accounting for survey design, attrition and item non-response

The way the NIDS survey is set up means that the probabilities of selecting a particular PSU and a particular household are different. To ensure that the sample continues to be representative in terms of provincial and demographic distribution, weights were calculated and calibrated. Design weights are designed to correct for survey non-response. Design weights were calculated as the inverse of the inclusion probability. When it's possible to observe an individual at least twice, the probability of observing the individual again is calculated:

- Probability$_{1,X}$ – This is the probability of observing an individual from Wave 1 (i.e. one of the CSMs) again in Wave X where X is 2, 3 or 4

Possible attrition bias comes from the fact that the survey members who were successfully re-interviewed in subsequent waves are not a random subset of all the individuals surveyed in the first wave. To correct for attrition bias, the present study adopts the following survey design weights cluster: strata and weight were w1_cluster, w1_dc2011, w1_pweight, w2_pweight, w3_pweight and w4_pweights. The study also considered adults who responded to the alcohol questions in both Waves 1 and 4, to correct for non-response.

5.5.4 Sample characteristics

This study used responses from the adult questionnaire from ages greater than 18 years. The data for the study came from the sub-sample of 9 499 balanced panel respondents who responded to alcohol questions in Wave 1 and 4. The study was more interested in the prevalence of alcohol consumption and related problems and hence treated Wave 1, 2, 3 and 4 data as a pooled cross- sectional dataset.

The distribution of attrition by population group is presented in Table 5.9 below. As reflected in the table, the African group is the most dominant population group across both waves. In Wave 1, Africans constituted 84% of the sample although the contribution declined in Wave 4. The coloured group was the second-most dominant population group in Wave 1 and the contribution remained stagnant in Wave 4 at 8%. The least represented population group was Asian/Indian at 2% in Wave 1 and there was a marginal increase to 3% in Wave 4. There

was a significant increase in the proportion of whites in the sample to being the second-largest group in Wave 4.

Table 5.9: Distribution of the sample (n=9499)

Population group	Wave 1	Wave 4
African	84%	77%
Coloured	8%	8%
Asian/Indian	2%	3%
White	7%	12%
Total	**100%**	**100%**

Source: Author's own calculation based on NIDS: 2008, 2012 and 2014/15.

The sample has females as the most dominant gender group across both waves with 60% in Wave 1 though the proportion dropped to 57% in Wave 4. This information has been presented in Table 5.10.

Table 5.10: Gender distribution of the sample

Population group	Wave 1	Wave 4
Male	40%	42%
Female	60%	58%
Total	**100%**	**100%**

Source: Author's own calculation based on NIDS: 2008, 2012 and 2014/15.

In terms of the geographical distribution of the sample, there are negligible changes between the waves. Almost a quarter of the sample resided in Gauteng across both waves. KwaZulu-Natal contributed the second-largest proportion in the sample across both waves. The Eastern Cape and Limpopo contributed similar proportions in the sample. The Northern Cape had the least number of participants in both waves. Table 5.11 below displays the distribution of the sample by both the province and wave.

Table 5.11: Distribution of the sample by province and wave

Province	Wave 1	Wave 4
Western Cape	9%	11%
Eastern Cape	13%	12%
Northern Cape	2%	2%
Free State	6%	5%
KwaZulu-Natal	18%	17%
North West	9%	9%

110

	24%	25%
Gauteng	24%	25%
Mpumalanga	7%	7%
Limpopo	13%	10%

Source: Author's own calculation based on NIDS: 2008 and 2014/15.

It is also possible to analyse the sample in terms of the geographical area types where the sample members resided. According to the breakdown given in Table 5.12 below, the majority of the sample members were from formal urban areas and tribal authority areas while negligible proportions were from formal rural areas and urban informal geographical area types. There was also a significant change with a 5% decline in the proportion of sample members living in tribal authority areas between the waves.

Table 5.12: Distribution of the sample by geographical area type

Geographical area type	**Wave 1**	**Wave 4**
Rural Formal	7%	8%
Tribal Authority Areas	34%	29%
Urban Formal	49%	54%
Urban Informal	10%	9%
Total	**100%**	**100%**

Source: Author's own calculation based on NIDS: 2008 and 2014/15.

5.6 Limitations of the chosen methodology

There are limitations associated with the chosen methodology. The theoretical model postulates that health is partially determined by lifestyle choices that, in turn, depend on preferences, budgets, time constraints and unobservable characteristics. While acknowledging that, along with alcohol consumption, other lifestyle variables such as tobacco use, diet and lack of physical activity are also linked to morbidity and mortality (McGinnis & Foege, 1993), the study mainly focuses on alcohol consumption. The use of NIDS data for the study potentially introduces an additional bias in the study findings. In the surveys, health and lifestyle information were self-reported by the individuals which makes the information susceptible to recall bias. Recall bias is the systematic error that results due to differences in the accuracy of recollection of past experiences and events by study participants. However, the use of self-reported health information has been extensively reported in the literature. Examples include Shield et al. (2013), Martinez et al. (2015) and Torikka et al. (2016). In this study, the responses regarding depression questions were found to be reliable. The study manipulated NIDS data to fit the purpose of your study which might have changed or diluted the meaning of some of the answers.

111

5.7   Conclusion

This chapter presented the theoretical model and empirical models used in the study to unpack the possible explanations of the AHP. The theoretical model provided three main explanations from the empirical literature to explore the possible explanations of the AHP. These include vulnerabilities to both the risk factors and exposure to alcohol as well as the reverse causality hypothesis. The study applied logistic models to determine the likelihood of various alcohol-related diseases under different socioeconomic factors and conditions. Data for the study was derived from the NIDS, Waves 1 (2008) to 4 (2014/15). The study exploits the rich nature of the NIDS datasets such as national representativeness and detailed demographic, socioeconomic, lifestyle and health information to ensure robust analysis, reported in the next chapter.

CHAPTER SIX: MAIN FINDINGS

6.1 Introduction

This chapter presents the empirical findings of the study on the AHP in South Africa across the pre-defined health outcomes: subjective health status, chronic health conditions and mental health status. The chapter reviews the characteristics of the survey participants based on self-reported health status, sociodemographic status, alcohol consumption behaviour, SES, province of residence and geo-location. The chapter also presents the trends, prevalence, distribution and dynamics of alcohol consumption and the associated problems grounded on the analysis. The chapter concludes by estimating the empirical relationship between different patterns of alcohol consumption and subjective health status, chronic health conditions and depressive symptoms.

6.2 Characteristics of the study sample

Table 6.1 provides a summary of the characteristics of the study population. The sample members were relatively healthy with the majority reporting good health status or better across all the waves. Females were the dominant gender group in the sample. The sample majority was also African. The bulk of the sample reported having at least secondary school education with over a quarter reportedly having tertiary education or more in wave 2014/15.

Table 6.1: Sociodemographic, self-rated health status and socioeconomic characteristics of the sample

	2008	2010	2012	2014/15
	n (%)	n (%)	n (%)	n (%)
Self-rated health status				
Excellent	2 898 (30,5%)	3 045 (38,2%)	2 485 (30,6%)	2 573 (27,1%)
Very Good	2 558 (26,9%)	2 408 (30,2%)	2 317 (28,5%)	2 694 (28,4%)
Good	2 291 (24,1%)	1 642 (20,6%)	2 238 (27,5%)	2 894 (30,5%)
Fair	1 137 (12,0%)	647 (8,1%)	822 (10,1%)	1 002 (10,6%)
Poor	612 (6,5%)	224 (2,8%)	271 (3,3%)	334 (3,5%)
Gender				
Male	3 757 (39,6%)	3 225 (40,5%)	3 336 (41,0%)	4 007 (42,2%)
Female	5 741 (60,5%)	4 742 (59,5%)	4 799 (59,0%)	5 491 (57,8%)
Population group				
African	7 939 (83,6%)	6 805 (80,4%)	7 120 (80,0%)	7 356 (77,5%)
Coloured	725 (7,6%)	687 (8,1%)	723 (8,1%)	784 (8,3%)
Asian/Indian	183 (1,9%)	211 (2,5%)	215 (2,4%)	251 (2,7%)
White	650 (6,9%)	762 (9,0%)	841 (9,5%)	1 106 (11,7%)
Educational attainment				

113

	2008 n (%)	2010 n (%)	2012 n (%)	2014/15 n (%)
No schooling	888 (9,4%)	692 (8,7%)	763 (9,4%)	749 (7,9%)
Some primary	1 920 (20,2%)	1 600 (20,1%)	1 519 (18,7%)	1 663 (17,5%)
Some secondary	3 557 (37,5%)	2 891 (36,3%)	2 874 (35,3%)	3 123 (32,9%)
Completed secondary	1 628 (17,1%)	1 271 (16,0%)	1 308 (16,1%)	1 400 (14,7%)
Tertiary or more	1 503 (15,8%)	1 512 (19,0%)	1 669 (20,5%)	2 562 (27,0%)
Per capita income quartile				
1	2 173 (22,9%)	1 669 (19,7%)	1 784 (20,1%)	1 779 (18,7%)
2	2 079 (21,9%)	1 604 (19,0%)	1 705 (19,2%)	1 768 (18,6%)
3	2 184 (23,0%)	2 076 (24,5%)	2 053 (23,1%)	2 163 (22,8%)
4	3 060 (32,2%)	3 116 (36,8%)	3 357 (37,7%)	3 787 (39,9%)
Occupation status				
Code 1 (elementary occupations)	786 (19,6%)	639 (22,1%)	820 (24,0%)	1 005 (22,1%)
Code 2 (service workers, skilled agricultural workers)	2 558 (63,6%)	1 719 (59,4%)	1 899 (55,5%)	2 625 (57,6%)
Code 3 (technicians and associate professionals)	187 (4,7%)	142 (4,9%)	195 (5,7%)	249 (5,5%)
Code 4 (professionals)	491 (12,2%)	395 (13,7%)	506 (14,8%)	680 (14,9%)
Employment status				
Employed	4 225 (44,5%)	3 492 (43,8%)	3 976 (48,9%)	5 302 (55,8%)
Unemployed	5 273 (55,5%)	4 475 (56,2%)	4 159 (51,1%)	4 196 (44,2%)
Age group				
18–24	2 264 (23,8%)	1 276 (15,1%)	830 (9,3%)	90 (1,0%)
25–34	2 331 (24,5%)	2 230 (26,4%)	2 545 (28,6%)	2 967 (31,2%)
35–44	1 929 (20,3%)	1 912 (22,6%)	2 019 (22,7%)	2 292 (24,1%)
45–54	1 461 (15,4%)	1 449 (17,1%)	1 603 (18,0%)	1 836 (19,3%)
55–64	951 (10,0%)	949 (11,2%)	1 100 (12,4%)	1 248 (13,1%)
>=65	560 (5,9%)	648 (7,7%)	801 (9,0%)	1 063 (11,2%)
Marital status				
Married/Living with partner	4 121 (43,4%)	3 605 (45,3%)	3 539 (43,5%)	4 214 (44,4%)
Never married	4 402 (46,4%)	3 447 (43,3%)	3 591 (44,2%)	3 778 (39,8%)
Widowed	670 (7,1%)	643 (8,1%)	704 (8,7%)	1 085 (11,4%)
Divorced/Separated	304 (3,2%)	271 (3,4%)	299 (3,7%)	419 (4,4%)
Province				
Western Cape	817 (8,6%)	787 (9,3%)	884 (9,9%)	1 049 (11,1%)
Eastern Cape	1 209 (12,7%)	985 (11,6%)	1 135 (12,8%)	1184 (12,5%)
Northern Cape	190 (2,0%)	173 (2,1%)	179 (2,0%)	202 (2,1%)
Free State	601 (6,3%)	527 (6,2%)	522 (5,9%)	501 (5,3%)
KwaZulu-Natal	1 710 (18,0%)	1 492 (17,6%)	1 552 (17,4%)	1 653 (17,4%)
North West	835 (8,8%)	774 (9,1%)	832 (9,4%)	889 (9,4%)
Gauteng	2 236 (23,6%)	2 143 (25,3%)	2 244 (25,2%)	2 405 (25,3%)
Mpumalanga	664 (7,0%)	552 (6,5%)	591 (6,7%)	665 (7,0%)
Limpopo	1 234 (13,0%)	1 030 (12,2%)	958 (10,8%)	946 (10,0%)
Geo-location				
Rural Formal	674 (7,1%)	650 (7,7%)	636 (7,1%)	772 (8,1%)

114
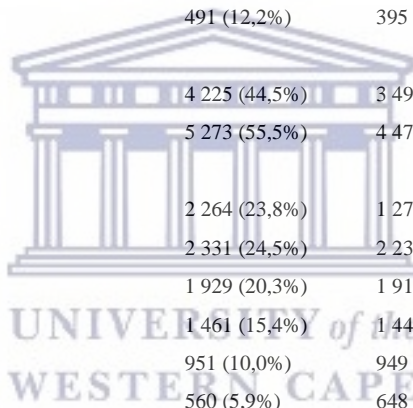
	2008	2010	2012	2014/15
	n (%)	n (%)	n (%)	n (%)
Tribal Authority Area	3 249 (34,2%)	2 704 (31,9%)	2 740 (30,8%)	2 722 (28,7%)
Urban Formal	4 655 (49.0%)	4 376 (51.7%)	4 706 (52.9%)	5 169 (54.4%)
Urban Informal	920 (9.7%)	736 (8.7%)	819 (9.2%)	834 (8.8%)

Source: Author's own calculations using NIDS 2008, 2010/11, 2013 and 2014/15.

The unemployed comprised a bigger proportion of the study sample, except in Wave 4 where the majority of the sample were employed. Among the employed, the most prevalent occupations were service workers and skilled agricultural workers. Despite the evident increase in age as the waves progressed, over half of the sample was between 18 and 44 years of age across all the waves. By marital status, the majority or almost equal proportions of the survey members were either married/living with a partner or had never been married. Roughly a quarter of the sample members resided in Gauteng. KwaZulu-Natal also contributed significantly to the sample. However, the Northern Cape contributed the least to the sample. Over half of the survey participants resided in urban formal areas. A significant proportion resided in tribal authority area geo-localities.

6.3 Alcohol consumption trends and patterns in South Africa

6.3.1 Alcohol consumption prevalence and trends

The level of alcohol use in the country increased between 2008 and 2014. Based on the information in Figure 6.1, almost a quarter of the South African adult population were alcohol consumers in 2008. The high prevalence of alcohol consumers after 2008 can be linked to economic recession following the 2008 global financial crisis. There was a marginal increase in the proportion of drinkers between 2008 and 2010. However, there was a substantial increase in the share of drinkers between 2010 and 2014. The proportion of alcohol consumers in the sample increased to 34% in 2014 in an indication of changing alcohol consumption behavior within the sample.

Figure 6.1: Prevalence of alcohol consumption over time

Figure 6.2 highlights the prevalence of alcohol consumption by gender over time. Based on the figure, the proportion of males partaking in alcohol consumption was greater than females for the entire period under review.

Figure 6.2: Prevalence of alcohol consumption by gender
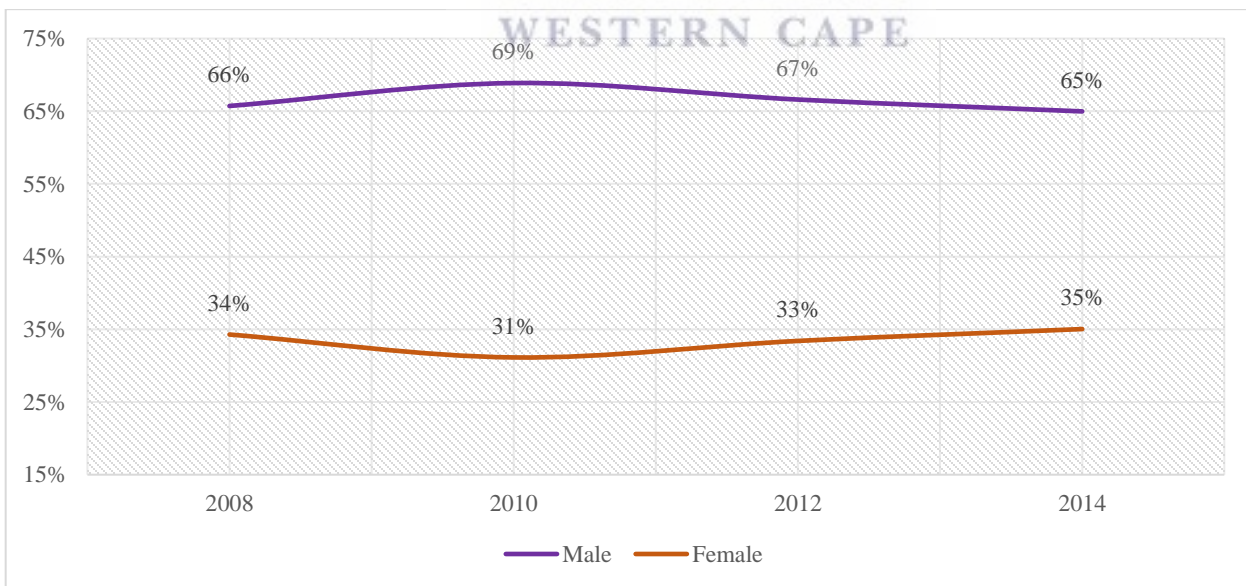
116

The sociodemographic gradients in harmful drinking by population group and gender in the country are displayed in Figure 6.3. The diagram depicts the proportion of alcohol consumers who are either binge or heavy drinkers. This includes those who either consume more than five alcohol units in a typical drinking day or those consuming more than 15 alcohol units in a typical week.

Figure 6.3: Sociodemographic gradients in harmful drinking in South Africa
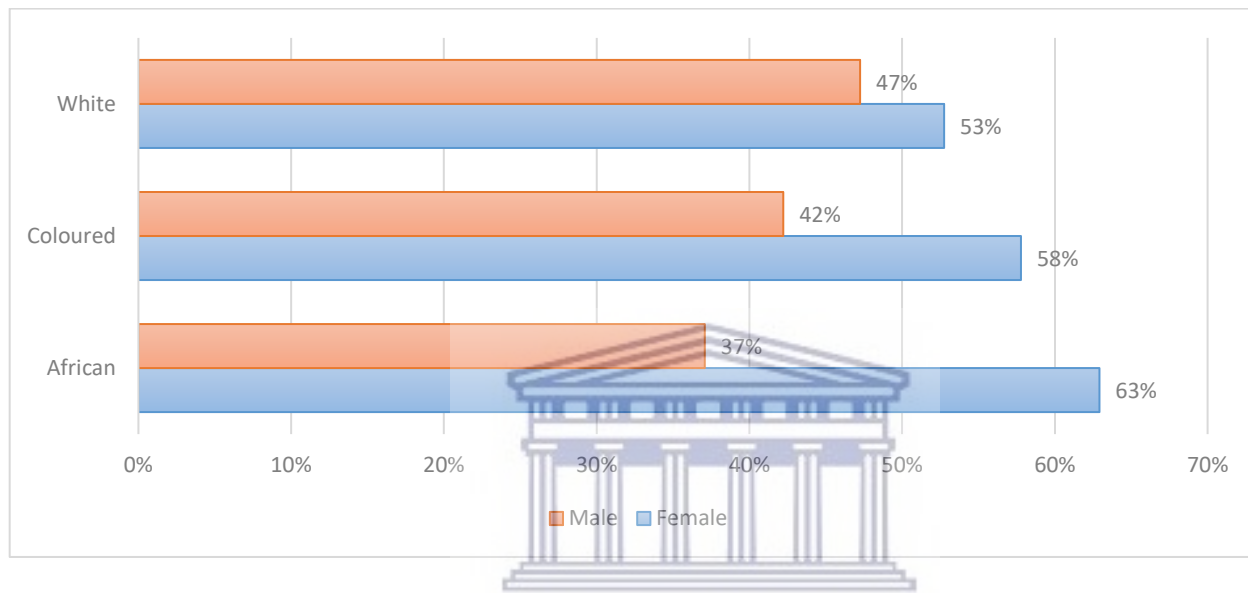
Source: Author's own calculations using pooled NIDS 2008, 2010, 2012 and 2014/15

Based on the information in the figure, harmful alcohol consumption is more common among African females. This can be associated with the harmful drinking culture of Africans which has its roots in apartheid, as previously explained. Across all the population groups, females constitute the majority of harmful alcohol consumers in a finding consistent with London (2003) that females had extraordinary exposure to occupational disease and harm. The same point applies in explaining why more coloured females than males engage in harmful alcohol consumption. This can also be linked to low SES as evidenced by high illiteracy rates, especially among adult female farm workers (London, 2003). London (2003) also found a high vulnerability in females due to being victimised by domestic violence.

6.4 Relationships between SES, subjective health status and different patterns of alcohol use

6.4.1 Introduction

Self-rated health status and health-related behaviour are linked to self-reported health status (Stranges et al., 2006; Williams et al., 2010). Furthermore, self-reported health has been linked to both morbidity and death.

Self-reported health metrics have a higher predictive validity for all- cause death (Lorem et al., 2020). Lower levels of perceived health status increase the risk of death, which is moderated by sociodemographic characteristics such as age, population group, gender, education, and income. DeSalvo et al. (2006) discovered that people who self-rated their health as "poor" had a two-fold higher death risk than people who self-rated their health as "excellent." As a result, alcohol intake is linked to poor self-reported health, particularly among those who drink at dangerous amounts (Petrie et al., 2008).

6.4.2   Subjective health status and alcohol consumption patterns

This section evaluates patterns in both self-rated health status and alcohol consumption patterns in South Africa. The researcher cross-tabulated the sample data to estimate the prevalence rates of good and poor health across the weekly alcohol unit consumption. Figure 6.4 depicts the extent of alcohol drinking by both health status and gender. The figure demonstrates a clear link between alcohol consumption and health status. It can be observed that those reporting poor health status consumed significantly high quantities of alcohol units in a week compared to those with good health status. The same pattern was evident across both gender groups. Most males reporting poor health status consumed three or more alcohol units in a typical week compared to those who reported good health status. Also, the majority of female drinkers reporting poor health status drank a significantly high amount of alcohol units in a week compared to female drinkers reporting good health.

The extent of alcohol drinking by health status, gender and population group in 2014/15 was analysed (Figure 6.5). For the African population group, a greater proportion of those reporting poor health status consumed larger quantities of alcohol units in a typical drinking week compared to those who reported good health status. The finding was consistent across both gender groups although, in general, a higher percentage of males were consuming higher quantities of alcohol units per week compared to females. In contrast, there are subtle variances in the amount of alcohol consumed by the coloured population group with similar drinking patterns for males across good and poor health status. However, among females, the majority of those reporting poor health status drank larger quantities of alcohol units per week compared to those reporting poor health status. There were marked differences in the drinking behaviours of those with poor and good health status for the white population group. In males, the majority of those who drank high quantities of alcohol units per week reported good health status. However, for females, the majority of those reporting poor health status drank significantly more than their counterparts who reported good health status.

118

Figure 6.4: Extent of drinking by subjective health status and gender in 2014/15
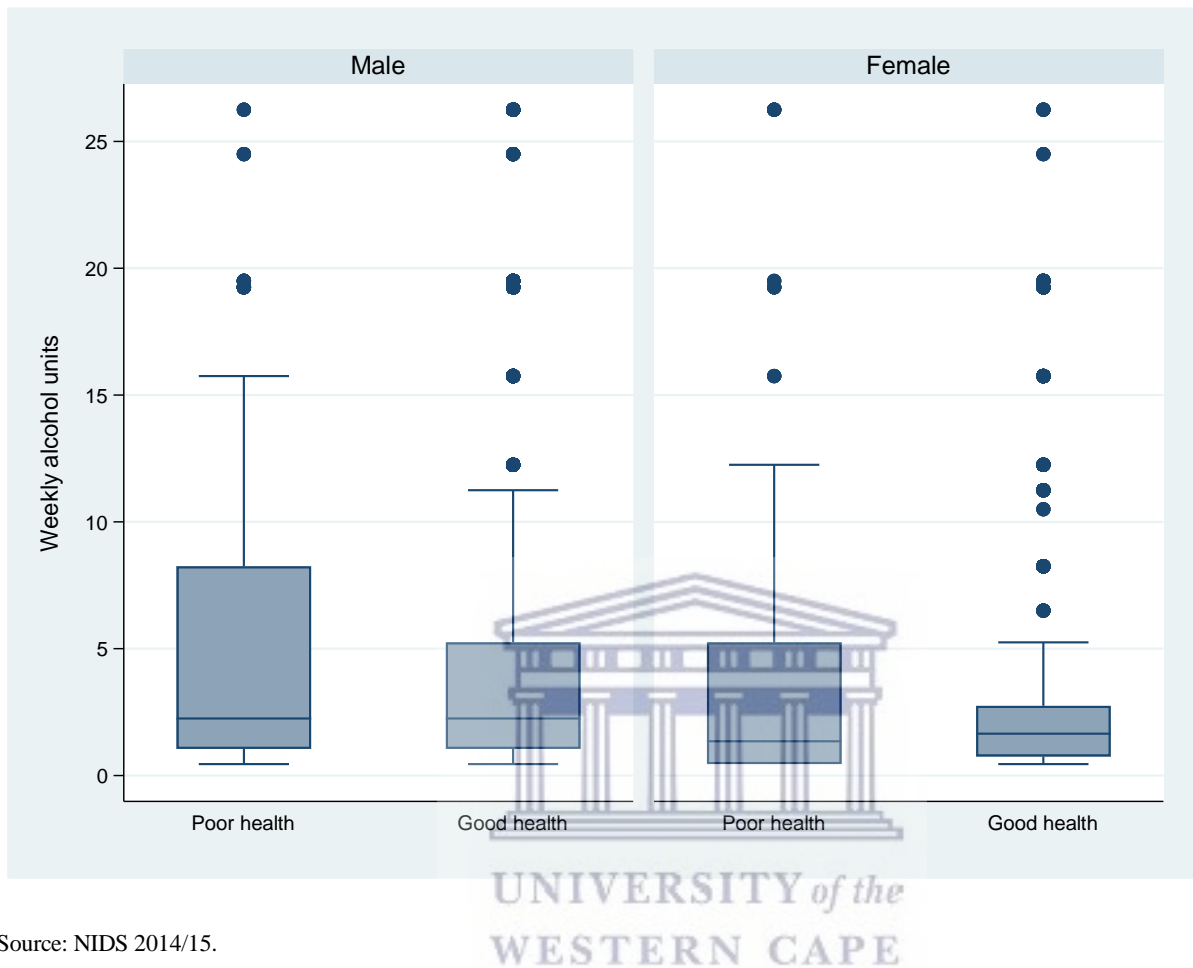
Table 6.2 displays the distribution of the sample members by subjective health and socioeconomic characteristics. The table indicates that females were the majority in the sample and also constituted the majority in both the good health and poor health categories. Africans were the overall majority in the sample and also across both health categories. The table indicates that those who attained secondary school or more constituted a relatively large proportion compared to those with some primary or no schooling.

119

Figure 6.5: Extent of drinking by subjective health status, gender and population group in 2014/15
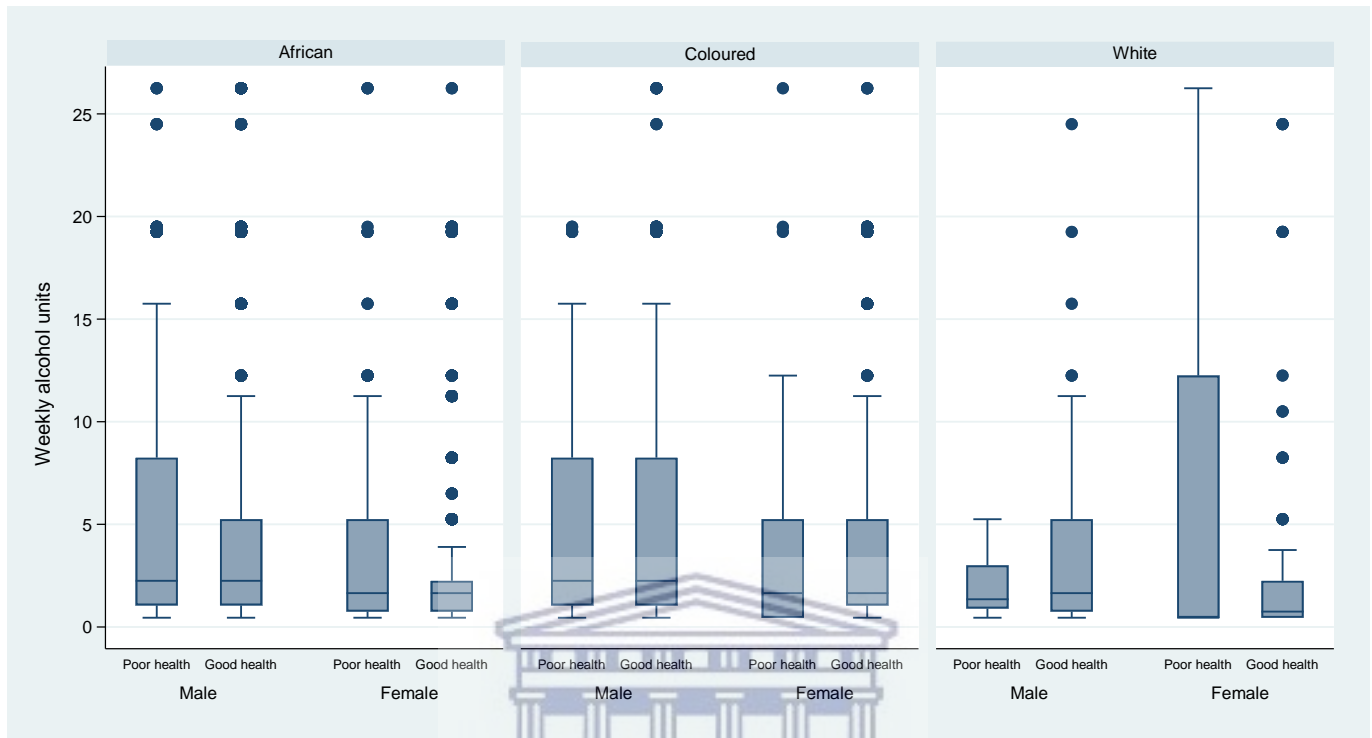
Source: NIDS 2014/15.

The majority in the sample were unemployed with the proportion reporting poor health markedly dominating those with good health. The sample majority was relatively young with more than 50% reporting being 44 years old or younger.

Table 6.2: Socioeconomic characteristics of the sample participants by subjective health

	Good health status		Poor health status		Overall	
	n	*Proportion %*	*n*	*Proportion %*	*n*	*Proportion %*
Gender						
Male	25 941	47%	3,067	36%	29,008	45%
Female	29 489	53%	5,526	64%	35,016	55%
Population group						
African	43 236	78%	6753	79%	49,990	78%
Coloured	4 821	9%	824	10%	5,645	9%
Asian/Indian	1 462	3%	236	3%	1,698	3%
White	5 912	11%	780	9%	6,692	10%
Educational attainment						
No schooling	3 287	6%	1 716	20%	5 003	8%

Some primary	8 468	15%	2 608	30%	11 076	17%
Some secondary	20 533	37%	2 700	31%	23 233	36%
Completed secondary	10 713	19%	687	8%	11 401	18%
Tertiary or more	12 418	22%	881	10%	13 299	21%
Employment status						
Employed	27 439	50%	2 784	32%	30 223	47%
Unemployed	27 992	51%	5 809	68%	33 801	53%
Age group						
18–24	11 392	21%	365	4%	11 757	18%
25–34	16 282	29%	1 081	13%	17 363	27%
35–44	11 771	21%	1 529	18%	13 299	21%
45–54	7 753	14%	1 915	22%	9 668	15%
55–64	4 875	9%	1 749	20%	6 625	10%
65+	3 357	6%	1 955	23%	5 312	8%
Province						
Western Cape	6 323	11%	1 070	12%	7 394	12%
Eastern Cape	6 585	12%	1 117	13%	7 701	12%
Northern Cape	1 055	2%	222	3%	1 278	2%
Free State	2 906	5%	620	7%	3 525	6%
KwaZulu-Natal	9 839	18%	1 796	21%	11 635	18%
North West	4 837	9%	751	9%	5 588	9%
Gauteng	14 181	26%	1 718	20%	15 899	25%
Mpumalanga	3 846	7%	530	6%	4 376	7%
Limpopo	5 859	11%	769	9%	6 628	10%

Sources: NIDS 2008, 2010, 2012 and 2014/15 (author's calculations).

6.4.3 Subjective health status and drinking status transitions

Self-reported health status is subject to change over time due to changes in the mediating factors. Research has shown associations between changes in self-rated health status and changes in functional capacity and physical activity, development of chronic conditions and changes in sociodemographic and economic characteristics which include income, age and education (Wilson et al., 2007). The study reviewed the changes in health status at two time periods; in 2008 when a survey participant was not an alcohol drinker and in 2014/15 when the participant reported being an alcohol drinker. The results were reported in Table 6.3 as the transition matrix showing self-reported health status of those who moved from non-drinkers in 2008 to drinkers in 2014/15.

121

Table 6.3: Transition matrix of changes in self-reported health status and drinking status in 2008 to 2014/15

Self-reported health status in 2008	Self-reported health status in 2014/15					
	Excellent	Very good	Good	Fair	Poor	Total
Excellent	37%	30%	27%	4%	2%	**100%**
Very good	34%	28%	28%	9%	1%	**100%**
Good	20%	30%	35%	11%	3%	**100%**
Fair	14%	13%	39%	26%	8%	**100%**
Poor	14%	19%	30%	19%	17%	**100%**
Total	**29%**	**27%**	**30%**	**10%**	**3%**	**100%**
Chi2(16) = 168.6493 Pr = 0.000						

Source: NIDS 2008 and 2014/15.

Based on the information on the table, the proportion of survey participants who made the transition to a lower health status category is higher than those who made a transition to a higher status. This is evident from the sum of the cells below the diagonal of blue highlighted cells, being higher than those above the highlighted diagonal. The study follows a similar procedure to the one adopted by Setati (2020) in this derivation. In comparing the self-reported health status across the two time periods, a decline in self-rated health status is evident from the period when the participant was not an alcohol drinker to the time they reported drinking. This finding could be indicative of the detrimental health impacts of alcohol consumption over time.

In Table 6.4, the study traces a similar transition matrix to that in Table 6-3 but instead for the male gender. Based on the data presented in the table, the cells below the diagonal are far greater than those above the diagonal. This finding suggests that the proportion of males who made a transition to worse health is greater than for those who made a transition to better health status. This means, on average, the self-rated health status for males worsened from 2008 to 2014/15, indicating worsening health status on average over time and upon transitioning from being non- drinkers to drinkers.

Table 6.4: Transition matrix of changes in self-reported health status from 2008 to 2014/15 for males

Self-reported health status in 2008	Self-reported health status in 2014/15					
	Excellent	Very good	Good	Fair	Poor	Total
Excellent	40%	29%	26%	3%	2%	**100%**
Very good	40%	25%	25%	8%	1%	**100%**
Good	18%	32%	34%	13%	2%	**100%**
Fair	22%	14%	43%	14%	6%	**100%**
Poor	14%	21%	36%	14%	14%	**100%**

122

Total	33%	27%	29%	8%	3%	100%
Chi2(16) = 70.5726 Pr = 0.000						

Source: NIDS 2008 and 2014/5.

Table 6.5 also displays a transition matrix, however for the female gender. In the table, we observe the same patterns as with Tables 6.3 and 6.4 where the cells below the diagonal have a higher percentage of people linked to the cells above the diagonal. The finding indicates that a higher number of females transitioned to a poorer health status category compared to those who transitioned to a better health status category. The observation suggests that there was a general decrease in self-rated health status for females upon becoming drinkers and over time.

Table 6.5: Transition matrix of changes in self-reported health status from 2008 to 2014/15 for females

	Self-reported health status in 2014/15					
Self-reported health status in 2008	**Excellent**	**Very good**	**Good**	**Fair**	**Poor**	**Total**
Excellent	34%	31%	28%	6%	2%	**100%**
Very good	27%	31%	31%	10%	1%	**100%**
Good	22%	28%	36%	10%	4%	**100%**
Fair	8%	11%	37%	35%	10%	**100%**
Poor	15%	17%	27%	22%	20%	**100%**
Total	**25%**	**28%**	**32%**	**12%**	**4%**	**100%**
Chi2(16) = 104.1619 Pr = 0.000						

Source: NIDS 2008 and 2014/15.

Figure 6.6 traces the responses of the alcohol consumers to the self-reported health status question in 2008. In the figure, each of the five health status categories is broken down into the two income classifications of the sample members – poor and non-poor – and the percentage distribution displayed on the vertical axis.

123

Figure 6.6: The distribution of the frequency of income classification of drinkers by health status in 2008

	Excellent health	Very good health	Good health	Fair health	Poor health
Poor	41%	39%	46%	57%	72%
Not poor	59%	61%	54%	43%	28%
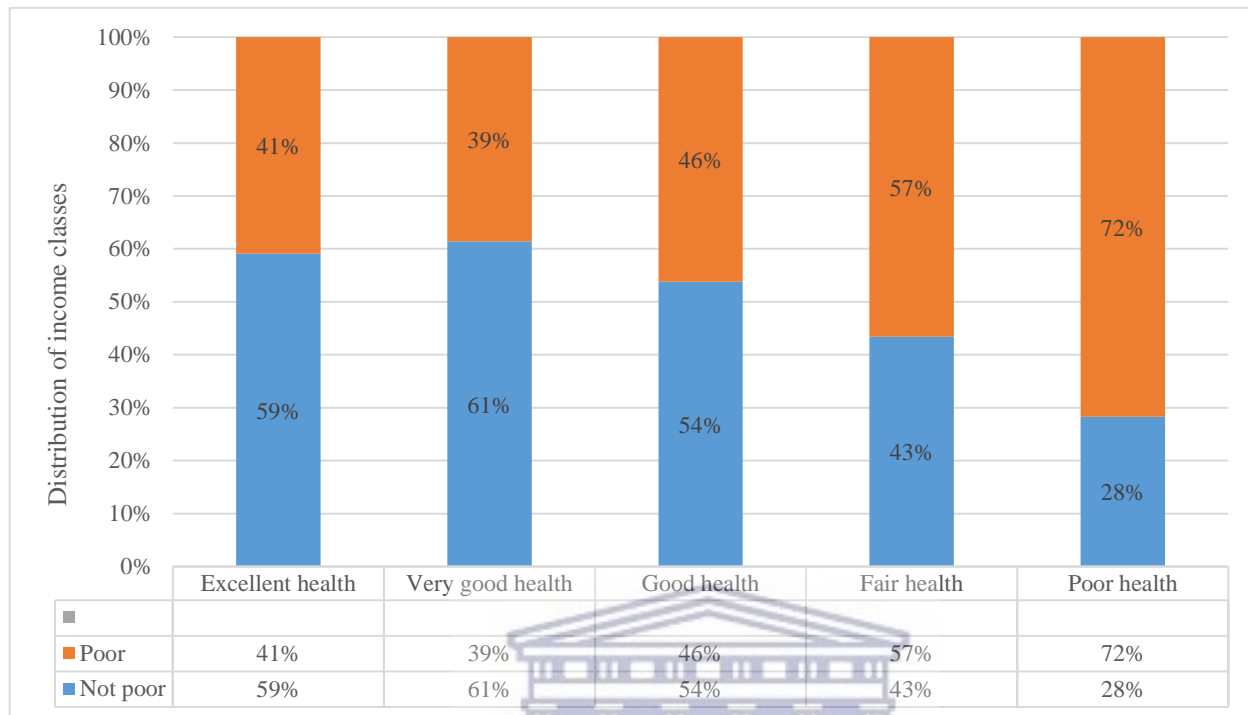
Source: NIDS 2008.

The figure illustrates a higher proportion of those who are not poor reporting better health categories. In contrast, a high proportion of those who are poor report lower health status. For instance, the majority of those who reported excellent, very good and good health status were not poor. However, the poor constituted the majority of those who reported either fair or poor health status.

Figure 6.7 traces the responses of the alcohol consumers to the self-reported health status question in 2014/15. The table highlights similar patterns to 2008 where a high proportion of those who are poor report lower health status. However, a relatively low proportion of the non-poor drinkers reported good health status compared to 2008.

Figure 6.7: Distribution of the frequency of income classification of drinkers by health status in 2014/15

	Excellent health	Very good health	Good health	Fair health	Poor health
Poor	57%	58%	57%	55%	72%
Not poor	43%	42%	43%	45%	28%
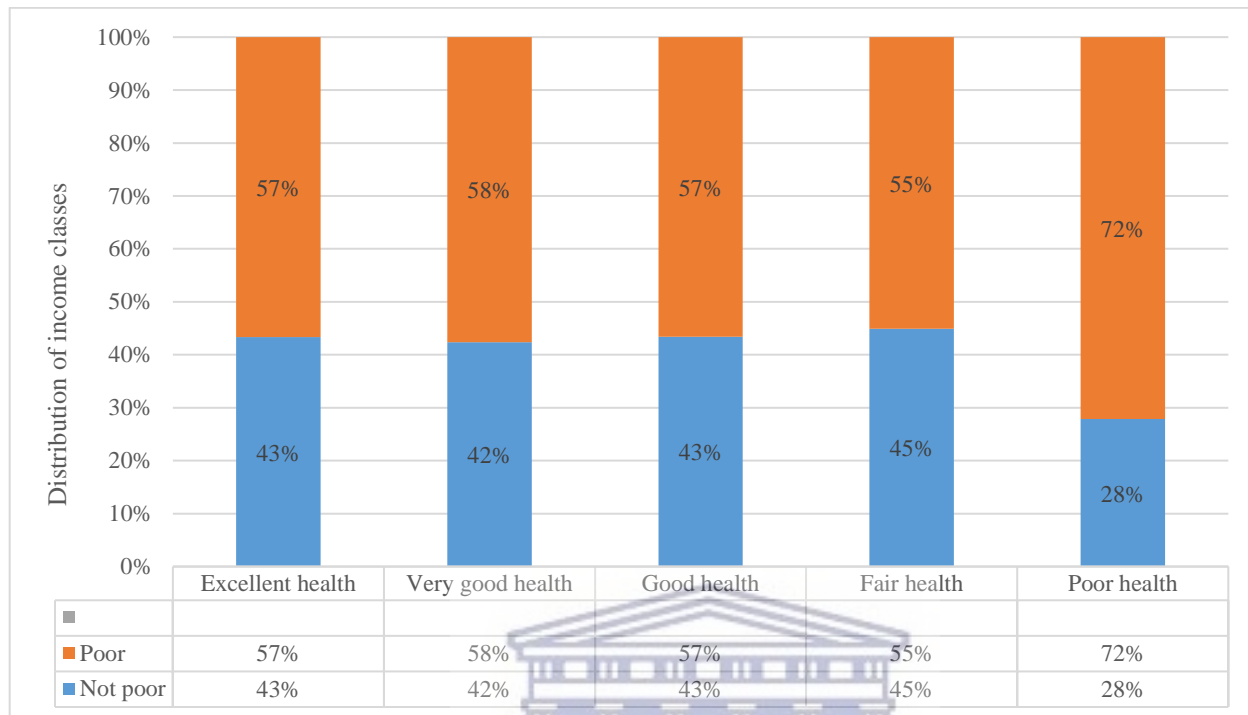
Source: NIDS 2014/15.

6.4.4 Structural determinants of self-reported health status and alcohol consumption patterns

While adjusting for demographic and socioeconomic characteristics, logistic regression analysis was used to investigate the connection between self-rated health status and alcohol intake. To investigate the impact of different income levels on the health condition of alcohol consumers, a logistic regression model was constructed. Self-reported health status was converted into a binary outcome variable in the model, with "1" indicating excellent health and "0" indicating poor health. In the regression, the non-poor were treated as the base category. The independent variable is changes in income levels or movements within the income categories between 2008 and 2014/15. The regression model controls for the following sociodemographic characteristics: gender, marital status, population group, employment status and geo-location type. The results of the logistic regression model predicting good health status are reported in Table 6.6.

Table 6.6: Associations between subjective health status and income categories for alcohol drinkers between 2008 and 2014/15, adjusted odds ratios (OR) from multivariate logistic regression analysis

Variables	Gender		Population group			Model 6: Full Specification
	Model 1: Male	Model 2: Female	Model 3: African	Model 4: Coloured	Model 5: White	

125

Income poverty (Base: Non-poor)						
Transient poor	0.8549***(0.0589)	0.7701***(0.0718)	0.8355***(0.0543)	0.753***(0.0829)	0.8063 (0.3763)	0.815***(0.045)
chronic poor	0.7071***(0.0782)	0.6709***(0.0841)	0.6743***(0.0616)	0.735***(0.1508)	-	0.6773***(0.0556)

All the results are adjusted for gender, marital status, population group, employment status and geo-location type.
Standard errors in brackets, *** and * denote significance at 5% and 10% levels respectively.

Source: NIDS 2008 and 2014/15.

The results of the logistic regression model for self-rated health status reveal the importance of changes in income levels in predicting a decline in health status. In particular, both those who stayed in chronic poverty and those who moved in and out of poverty were significantly less likely to rank their health status higher compared to those who were non-poor during the period under review. The finding supports the AHP where those who are disadvantaged tend to suffer more alcohol-related harm compared to the more advantaged counterparts; in this case, in terms of poorer health status.

In the second regression model, factors associated with good and poor health status categories were examined by gender (females and males) and population group (African, coloured and white). The model estimated the differential effect of alcohol usage on the health status of abstainers versus alcohol consumers between 2008 and 2014/15. The model has binary outcome variables; good and poor self-reported health status. The regression results were adjusted for gender, marital status, population group, employment status and geo-location type. The findings on the association between subjective health status and alcohol consumption patterns are reported in Table 6.7.

The difference in difference approach helps reduce biases from the health comparisons over time that could be the result of trends due to other causes of the outcome. The results from the full model specifications indicate significantly less chance of reporting good health status after exposure to alcohol. Both genders had less likelihood of self-reporting good health status if exposed to alcohol consumption although the results were statistically significant for males and not for females. The same finding was also evident across population groups where African and coloured participants were significantly less likely to report good health status after exposure to alcohol. However, the results were not statistically significant for the white population group.

Table 6.7: The differential effect of alcohol consumption on self-reported health status between 2008 and 2014/15, odds ratios (OR) from multivariate logistic regression analysis

Model		Coefficient	Std Error	Sample size(n)	Prob>Chi-squared
Gender	Model 1: Male	-0.205***	0.1012	13 155	0.000

126

	Model 2: Female	-0.052	0.1008	19 911	0.000
Population group	Model 3: African	-0.193***	0.0777	26 574	0.000
	Model 4: Coloured	-0.457***	0.1611	4 744	0.000
	Model 5: White	0.2256	0.3388	1 366	0.000
Model 6: Full Specification		-0.122*	0.0668	32 684	0.000

*** and * denote significance at a 5% and 10% level respectively.

Source: NIDS 2008 and 2014/15.

The researcher performed several multivariate logistic regression analyses to ascertain the association between subjective health status and the different patterns of alcohol consumption, while controlling for sociodemographic characteristics. The regression equations employ self- rated health status as a binary variable with "1" representing good health status and "0" representing suboptimal health status. The study adopted various drinking frequencies and alcohol units per drinking occasion as independent variables. In the models with the different alcohol consumption frequencies, daily consumption of alcohol is considered as the baseline category. In the models with different alcohol units per drinking episode, the consumption of 9 units of alcohol or more per drinking occasion is regarded as the reference category for the analysis. Separate models were fitted for gender and population groups as well as a full model specification.

Table 6.8: Associations between subjective health status and alcohol consumption patterns, adjusted odds ratios (OR) from multivariate logistic regression analysis

Variables	Gender		Population group			Model 6: Full Specification
	Model 1: Male	Model 2: Female	Model 3: African	Model 4: Coloured	Model 5: White	
Alcohol drinking frequency						
(Base: Drinking every day)						
Drinking rarely	2.1932*** (0.3002)	2.5785*** (0.5801)	2.6164*** (0.3643)	1.9672*** (0.5803)	1.8354 (1.4126)	2.2169*** (0.2566)
1 or 2 days a week	1.7814*** (0.2523)	2.5766*** (0.6047)	2.3823*** (0.3463)	1.7645* (0.5284)	1.7825 (1.5261)	1.9981*** (0.2407)
3 or 4 days a week	1.5774*** (0.2515)	1.4609 (0.3805)	1.8004*** (0.2896)	1.4788 (0.5029)	1.1283 (1.1326)	1.5493*** (0.2091)
5 or 6 days a week	1.3014 (0.2635)	2.1613*** (0.7091)	1.6561*** (0.3284)	1.077 (0.4687)	-	1.4981*** (0.2572)
Alcohol units per drinking occasion						
(Base: 9 or more units)						
1 to 4 units	1.3323*** (0.128)	1.1376 (0.1658)	1.3619*** (0.1228)	1.5359*** (0.2854)	1.1108 (1.2531)	1.334*** (0.1059)
5 to 8 units	1.0669 (0.0692)	1.0527 (0.0881)	1.0689 (0.0624)	1.1158 (0.1285)	0.9024 (0.4677)	1.074 (0.0548)

All the results are adjusted for gender, marital status, population group, employment status and geo-location type.

Standard errors in brackets. ***and * denote significance at 5% and 10% levels respectively.

Sources: NIDS 2008, 2010, 2012 and 2014/15 (author's calculations).

127

Table 6.8 presents the regression results. The results from the full model specification show that compared to those who drink every day (the reference group), drinkers with comparatively lower drinking frequencies were significantly more likely to self-report good health status than poor health. Using those who drank alcohol daily, the chances of reporting poor health status increase in intensity as the number of drinking days increase. Similar associations are evident across genders where, for both genders, the link is more pronounced at a low frequency of alcohol consumption. The relationship is stronger for females than males. For males, there is no statistical significance in the relationship between drinking alcohol 5 or 6 days a week and drinking every day, most likely due to the drinking patterns being similar. Taking into account the population groups, drinkers with less frequent drinking episodes in a week were also more likely to report better health, across the population groups. The chances of reporting poor health status also increase in intensity as the number of drinking days increase. The relationship is statistically significant across all the drinking frequencies for the African population group. However, for the coloured population group, the relationship is statistically significant at low levels of drinking frequency. Despite a similar association for the white population group, the relationship loses statistical significance. This is assuming that other variables in the model are held constant.

In terms of alcohol units consumed in a typical drinking episode, drinking fewer alcohol units relative to drinking 9 or more units per drinking episode (the reference group) was associated with reporting good health status compared to reporting poor health. Yet, there is no significant difference between drinking 9 or more and 5 to 8 alcohol units per drinking occasion across all the model specifications. This is likely due to similarities in consumption behaviours between the two categories. In terms of gender, and using drinking 9 or more alcohol units per occasion as the baseline, males consuming 2 to 4 units per occasion had high likelihood of self-reporting good health status than poor health status. The relationship loses significance for 5 to 8 alcohol units per drinking occasion. For females, drinking fewer alcohol units relative to drinking 9 or more units per drinking occasion was associated with reporting good health status compared to reporting poor

health although the relationship is statistically insignificant. A similar pattern is evident across the population groups with both the African and coloured participants who drink 1 to 4 alcohol units having more chances of reporting good health status. However, the association loses significance for the white population group.

6.4.5 Empirical relationship between self-reported health status and alcohol consumption

This This study aimed to determine the associations between SES, self-rated health status and different patterns of alcohol use in South Africa. Importantly, the research considered the impact of drinking patterns and not simply total average alcohol intake. The study considered the effect of different drinking frequencies and

128

different alcohol units consumed per drinking occasion. The analyses were stratified by population group and gender to help identify the mechanisms by which sociodemographic characteristics may impact health status.

The study sample was composed largely of the female gender, the African population group, the unemployed, the relatively young and those who attained secondary school level of education. In general, and across both genders, those reporting poor health status consumed significantly high amounts of alcohol in a week compared to those with good health status. This was more prevalent for males than females. The finding was consistent with international literature where drinking and high-risk drinking are consistently more pronounced in the male compared to the female gender group (Bratberg et al., 2016; Li et al., 2010). Previous research suggests that females have protective factors against alcohol drinking compared to males. These include social sanctions where alcohol consumption by females is regarded as socially unacceptable. On the other hand, males are more exposed to socially aggressive situations that result in drinking to relieve distress, and more excessive alcohol drinking than females.

The study analysed changes in self-reported health status as the drinking status changed between 2008 and 2014/15. The overall finding was that the majority of the sub-sample of participants who started drinking during the period under review moved into a lower health status category. The finding that exposure to alcohol is associated with suboptimal health status, after adjusting for socioeconomic and sociodemographic variables, is consistent with most previous studies (Mikolajczyk et al., 2016; Saito et al., 2005). This could be due to the hypothesised adverse effect of alcohol consumption on health over a long-term period. Alcohol consumption over some time has been theorised to negatively affect almost every system in the body. Furthermore, negative health effects of alcohol consumption can become more prevalent over time (Mikolajczyk et al., 2016).

The finding that exposure to alcohol was associated with lower health status was consistent across genders. The similarities in the effect on gender could be a result of gender convergence in alcohol drinking behaviour which results in similar health impacts of risky drinking between males and females over time. This finding is consistent in international literature where gender convergence was ascertained in both alcohol consumption and related problems across different countries (Bergmark, 2004; Bratberg et al., 2016; Keyes & Hasin, 2008; Kuntsche et al., 2011; Lim et al., 2007). This could be due to emancipation, in which women are increasingly moving into male- dominated occupations and/or lifestyles (Bloomfield et al., 2006). It's also been suggested that women's stress levels may rise as a result of juggling employment and children, leading to higher alcohol use and misuse (Keyes & Hasin, 2008). The influence of gender-based drinking convergence is a significant area for further investigation.

129

The study results reveal a socioeconomic gradient in the association between alcohol consumption and poor self-rated health status. The poor constituted the majority of those reporting suboptimal health outcomes while the non-poor constituted the majority who reported good health status in 2008 as well as in 2014/15. The finding is consistent with the AHP where individuals of low SES seem to suffer more alcohol-related health harms compared to those of high SES despite no significant differences in alcohol consumption behaviours (Collins, 2016; Karriker-Jaffe, 2011; Katikireddi et al., 2017). The main reason for the observed relationship is that low SES places individuals at a significant disadvantage within society, with the state of poverty being one of the most powerful predictors of both mental and physical ill-health (Newacheck et al., 2003). This result can be directly related to differences in the psychosocial and ecological contexts in which alcohol consumption takes place for the different SES groups. Individuals of low SES may be predisposed to drinking alcohol in 'unsafe settings' that expose them to violence and unintentional injury, and in the long term, infectious diseases such as HIV/AIDS (Walsh, 2016). In addition, a state of poverty has been shown to correlate with increased psychological distress, which can drive individuals to binge drink as a form of self-medication.

The main findings of the association between self-reported health status and drinking quantity and frequency explanatory variables were as expected, with health status diminishing with increases in both the frequency of alcohol consumption and the quantity of alcohol consumed. The study found that, in general, the majority of those who reported drinking a higher amount of alcohol were more likely to report suboptimal health status outcomes. This could be because drinking is associated with morbidity and functional decline, which reflects in self-reported health status (Stranges et al., 2006; Valencia-Martín et al., 2008). The same finding was evident across genders and population groups. The only exception was for white males who appear shielded from alcohol harms versus the rest of the population and gender population groups. The findings are consistent with the mainstream literature that found associations between large alcohol doses and negative health outcomes (Gutjahr et al., 2001; Jose, 2000; Olson et al., 2000). One possible explanation is that excessive alcohol consumption is often associated with engaging in other health- compromising and risk-taking behaviours (Marlatt & Witkiewitz, 2002).

A close look at the regression output suggests that drinking patterns are influential factors of subjective health. The study found an increased risk of subjective, suboptimal health outcomes with an increased frequency of beer-drinking episodes. The results of the study corroborate the findings of previous studies in demonstrating that people who frequently drink heavily experience health problems compared to those who drink moderately or abstain completely between alcohol use and self-reported health status (Ashley et al., 1997). Possible

130

explanations could be that drinking habits may have direct health impacts through biological mechanisms which may, in turn, influence health (Jose et al., 2000).

6.4.6 Findings on self-rated health status

Section 6.4 discussed the association between SES, self-rated health status and different patterns of alcohol use in South Africa. The study determined a clear association between alcohol consumption and health status. In the study, those reporting poor health status consumed significantly high amounts of alcohol in a week compared to those with good health status. The pattern was similar across both gender groups.

Upon further analysis of alcohol consumption by health status, gender and population group revealed population group and gender differences in self-reported health status. For the African population group and across both gender groups, a greater proportion of those reporting poor health status were consuming larger amounts of alcohol units in a typical drinking week compared to those who reported good health status. However, for the coloured population group, there were marked gender differences, with the majority of females reporting poor health status consuming larger amounts of alcohol per week compared to those reporting poor health status. For the white population group, the majority who drank high amounts of alcohol per week reported good health status. In terms of transitions, the study reviewed the changes in the health status of those who were not alcohol drinkers in 2008 and reported being alcohol drinkers in 2014/15. The proportion of participants who made a transition to worse health is greater than those who made a transition to better health status.

Considering income categories, a higher proportion of those who are not poor reported better health categories over the years. In contrast, a high proportion of those who are either chronic poor or transient poor reported lower health status. The finding supports the AHP where those who are disadvantaged tend to suffer more alcohol-related harm compared to more advantaged counterparts, in this case in terms of poorer health status. The regression results indicated that the chances of reporting poor health status increase in intensity as the number of drinking days increase. Similarly, consuming more units per drinking occasion was associated with reporting poor health status.

6.5 Relationships between SES, chronic health conditions and different patterns of alcohol use

6.5.1 Introduction

Alcohol consumption is associated with a higher risk of many chronic disease outcomes. The patterns of consumption, average volume of alcohol consumed and quality of the alcohol consumed are likely causally

131

linked to chronic diseases and conditions (Shield et al. 2013). Alcohol is considered an important predictor for a wide range of health outcomes such as liver disease, heart disease, tuberculosis, asthma, cancer and high blood pressure (Balsa et al., 2008; Olson et al., 2000; Rehm et al., 2003; Rehm, 2011; Sakurai et al., 1999).

According to Shield et al. (2013), alcohol is entirely responsible for 25 chronic disease and condition codes in the International Classification of Diseases (ICD)-10, and alcohol is a component-risk factor in a variety of cancers, tumors, neuropsychiatric disorders, and cardiovascular and digestive diseases. Consumption of alcoholic beverages contributes greatly to the burden of chronic diseases and disorders (Shield et al., 2013). According to Gutjahr et al. (2001), there are causal correlations between alcohol use and 60 health outcomes. Furthermore, research by the WHO have revealed that alcohol consumption contributes to the global burden of disease, with alcohol accounting for around 4% of DALYs worldwide in 2000. (WHO, 2002).

The majority of the studies on the alcohol–disease relationships found associations between increased risk of major chronic disease and different patterns of alcohol consumption (Jiang et al., 2003). In general, the risk increases with the volume of alcohol consumed. Alcohol consumption is detrimentally associated with many cardiovascular outcomes such as hypertension, stroke, liver disease, diabetes and different cancers to varying degrees (Parry, Patra & Rehm, 2011). Pathways include the interaction between alcohol and the effects of medications, the toxic and biochemical effects of alcohol, intoxication and alcohol dependence (Madden et al., 2019; Shield et al., 2013). The detrimental association of alcohol consumption and disease is generally attenuated by sociodemographic features such as population group, education, gender and marital status (Mukamal, Ding & Djoussé, 2006).

6.5.2 Chronic health conditions and alcohol consumption

The sample data was cross-tabulated to estimate the prevalence rates of good and poor health across the weekly alcohol unit consumption. Table 6.9 gives an overview of the baseline characteristics of the sample.

Table 6.9: Sociodemographic characteristics of the sample participants in 2008 and 2014/15

	Wave 1			Wave 4		
	Male	Female	Overall	Male	Female	Overall
Chronic health conditions						
Chronic	1 567 (34,9%)	2 925 (65,1%)	4 493 (100,0%)	1 938 (38,3%)	3 121 (61,7%)	5 060 (100,0%)
Non-chronic	4 167 (46,7%)	4 750 (53,3%)	8 918 (100,0%)	7 181 (49,2%)	7 413 (50,8%)	14 595 (100,0%)
Alcohol drinking status						
Drinker	2 436 (67,6%)	1 166 (32,4%)	3 603 (100,0%)	4 217 (68,0%)	1 984 (32,0%)	6 202 (100,0%)

132

Abstainer	3 257 (33,2%)	6 550 (66,8%)	9 808 (100,0%)	4 635 (34,5%)	8 817 (65,5%)	13 453 (100,0%)
Population group						
African	4 512 (43,6%)	5 849 (56,5%)	10 362 (100,0%)	7 595 (46,9%)	8 616 (53,2%)	16 212 (100,0%)
Coloured	816 (41,2%)	1 164 (58,8%)	1 981 (100,0%)	1 272 (46,1%)	1 490 (54,0%)	2 763 (100,0%)
Asian/Indian	81 (42,8%)	108 (57,2%)	190 (100,0%)	95 (49,7%)	96 (50,3%)	192 (100,0%)
White	377 (43,0%)	500 (57,1%)	878 (100,0%)	208 (42,8%)	279 (57,2%)	488 (100,0%)
Educational attainment						
No schooling	791 (37,8%)	1 302 (62,2%)	2 094 (100,0%)	709 (36,3%)	1 245 (63,7%)	1 955 (100,0%)
Some primary	1 471 (43,9%)	1 882 (56,1%)	3 354 (100,0%)	1 806 (47,5%)	1 994 (52,5%)	3 801 (100,0%)
Some secondary	1 825 (41,6%)	2 559 (58,4%)	4 385 (100,0%)	3 438 (47,1%)	3 870 (53,0%)	7 309 (100,0%)
Completed secondary	909 (46,4%)	1 048 (53,6%)	1 958 (100,0%)	1 439 (46,1%)	1 685 (53,9%)	3 125 (100,0%)
Tertiary or more	741 (45,8%)	878 (54,2%)	1 620 (100,0%)	1 656 (47,8%)	1 808 (52,2%)	3 465 (100,0%)
Employment status						
Employed	3 211 (54,9%)	2 644 (45,2%)	5 856 (100,0%)	4 797 (55,6%)	3 832 (44,4%)	8 630 (100,0%)
Unemployed	2 461 (32,6%)	5 093 (67,4%)	7 555 (100,0%)	4 040 (36,7%)	6 984 (63,4%)	11 025 (100,0%)
Age group						
18–24	1 181 (45,7%)	1 400 (54,3%)	2 582 (100,0%)	1 996 (48,9%)	2 086 (51,1%)	4 083 (100,0%)
25–34	1 289 (43,9%)	1 650 (56,1%)	2 940 (100,0%)	2 472 (48,2%)	2 656 (51,8%)	5 129 (100,0%)
35–44	1 153 (44,2%)	1 456 (55,8%)	2 610 (100,0%)	1 609 (47,7%)	1 768 (52,3%)	3 378 (100,0%)
45–54	938 (42,8%)	1 253 (57,2%)	2 192 (100,0%)	1 348 (46,6%)	1 548 (53,5%)	2 897 (100,0%)
55–64	641 (41,6%)	899 (58,4%)	1 541 (100,0%)	949 (43,0%)	1 261 (57,1%)	2 211 (100,0%)
65+	504 (35,0%)	936 (65,0%)	1 441 (100,0%)	632 (35,2%)	1 165 (64,8%)	1 798 (100,0%)
Province						
Western Cape	729 (40,7%)	1 060 (59,3%)	1 790 (100,0%)	1 081 (45,8%)	1 280 (54,2%)	2 362 (100,0%)
Eastern Cape	721 (41,4%)	1 021 (58,6%)	1 743 (100,0%)	1 059 (44,8%)	1 305 (55,2%)	2 365 (100,0%)
Northern Cape	445 (45,8%)	527 (54,2%)	973 (100,0%)	595 (48,2%)	641 (51,8%)	1 237 (100,0%)
Free State	381 (46,4%)	439 (53,6%)	821 (100,0%)	571 (47,8%)	623 (52,2%)	1 195 (100,0%)
KwaZulu-Natal	1 244 (37,7%)	2 052 (62,3%)	3 297 (100,0%)	2 325 (43,3%)	3 043 (56,7%)	5 369 (100,0%)
North West	575 (48,5%)	611 (51,5%)	1 187 (100,0%)	823 (52,0%)	761 (48,0%)	1 585 (100,0%)
Gauteng	686 (48,3%)	734 (51,7%)	1 421 (100,0%)	1 157 (49,3%)	1 189 (50,7%)	2 347 (100,0%)
Mpumalanga	403 (43,9%)	516 (56,1%)	920 (100,0%)	636 (48,1%)	687 (52,,0%)	1 324 (100,0%)
Limpopo	481 (38,2%)	777 (61,8%)	1 259 (100,0%)	776 (41,5%)	1 094 (58,5%)	1 871 (100,0%)

Sources: NIDS 2008 and 2014/15 (author's calculations).

Based on the results in Table 6.9, the majority of those who reported having one or more chronic health conditions were female across both periods. Despite the same pattern within the group that reported not having any chronic conditions, the gap between females and males was much smaller. Males dominated the sub-group of alcohol consumers across both waves while females were the majority within the group of abstainers.

The female gender group constituted the majority within all the population groups that are part of the study. The distribution between males and females across educational attainment groups is similar between the 2 time periods although females were the more dominant group. The males constituted the majority within the group

of employed participants across both periods. Conversely, the female gender group constituted the majority within the unemployed group. In terms of age, the distribution of the sample on gender was skewed with more females than males and the difference is very prominent for the group of 65 years old and older.

Table 6.10 traces the sociodemographic characteristics of the sample in the 2008 and 2014/15 periods. As evident in the two tables, there are marked differences between the characteristics of the overall sample and the characteristics of the sample of alcohol consumers. The male gender group dominated the group of alcohol consumers who reported suffering from at least one chronic condition during the period under review. This is in contrast to the overall characteristics of the sample where females dominated the subgroup of members suffering at least one chronic health condition. This is reflective of the national trend where more males report being alcohol consumers compared to females and, hence, subsequently suffer more harms compared to females. In contrast to the general sample, there are more males than females across all population groups except for the white population group, where the gender distribution is almost equal between males and females. Males also constituted the majority of the alcohol consumers with chronic health conditions, across all the educational attainment groups. There is also a change with the provincial distribution for the sample of alcohol consumers with the male gender group being the more dominant. This suggests the higher likelihood of males partaking in alcohol consumption and increasing their exposure to chronic health conditions. A similar pattern is evident across the age groups where more males than females constituted the sample of alcohol consumers. Despite females dominating all the provinces in the overall study sample, the pattern is reversed in the sample of alcohol consumers where males constitute the majority. This is reflective of the alcohol consumption patterns where drinking is more prevalent among males and drinking is associated with adverse health outcomes.

Table 6.10: Sociodemographic characteristics of alcohol consumers in 2008 and 2014/15

	Wave 1			Wave 4		
	Male	Female	Overall	Male	Female	Overall
Chronic health conditions						
Chronic	611 (59,2%)	422 (40,8%)	1 033 (100,0%)	827 (56,7%)	631 (43,3%)	1 458 (100,0%)
Non-chronic	1 824 (71,0%)	744 (29,0%)	2 569 (100,0%)	3 390 (71,5%)	1 353 (28,5%)	4 743 (100,0%)
Population group						
African	1 721 (76,2%)	539 (23,9%)	2 261 (100,0%)	3 159 (72,6%)	1 191 (27,4%)	4 350 (100,0%)
Coloured	232 (58,2%)	166 (41,8%)	398 (100,0%)	405 (54,3%)	341 (45,7%)	746 (100,0%)
Asian/Indian	63 (66,2%)	32 (33,8%)	96 (100,0%)	131 (88,6%)	16 (11,4%)	148 (100,0%)
White	418 (49,5%)	427 (50,5%)	846 (100,0%)	520 (54,5%)	434 (45,5%)	955 (100,0%)
Educational attainment						

134

	2008			2014/15		
No schooling	187 (74,2%)	65 (25,8%)	253 (100,0%)	182 (67,0%)	89 (33,0%)	272 (100,0%)
Some primary	491 (73,5%)	177 (26,6%)	668 (100,0%)	608 (73,7%)	217 (26,3%)	825 (100,0%)
Some secondary	748 (68,5%)	344 (31,5%)	1 092 (100,0%)	1 470 (70,1%)	628 (30,0%)	2 099 (100,0%)
Completed secondary	458 (66,5%)	231 (33,5%)	689 (100,0%)	751 (65,3%)	399 (34,7%)	1 151 (100,0%)
Tertiary or more	551 (61,3%)	348 (38,7%)	899 (100,0%)	1 204 (65,0%)	649 (35,0%)	1 853 (100,0%)
Employment status						
Employed	1 587 (72,7%)	596 (27,3%)	2 183 (100,0%)	2 765 (72,9%)	1 026 (27,1%)	3 791 (100,0%)
Unemployed	849 (59,8%)	570 (40,2%)	1 419 (100,0%)	1 452 (60,2%)	958 (39,8%)	2 410 (100,0%)
Age group						
18-24	394 (64,3%)	219 (35,7%)	613 (100,0%)	705 (65,7%)	367 (34,3%)	1 073 (100,0%)
25-34	675 (71,5%)	269 (28,5%)	945 (100,0%)	1 408 (68,0%)	661 (32,0%)	2 070 (100,0%)
35-44	575 (68,8%)	260 (31,2%)	836 (100,0%)	882 (67,6%)	422 (32,4%)	1 305 (100,0%)
45-54	365 (66,5%)	184 (33,5%)	549 (100,0%)	654 (70,8%)	270 (29,3%)	925 (100,0%)
55-64	262 (67,0%)	129 (33,0%)	391 (100,0%)	355 (71,7%)	140 (28,3%)	496 (100,0%)
65+	139 (58,5%)	98 (41,5%)	237 (100,0%)	176 (60,1%)	117 (39,9%)	294 (100,0%)
Province						
Western Cape	319 (57,2%)	238 (42,8%)	558 (100,0%)	552 (55,5%)	442 (44,5%)	995 (100,0%)
Eastern Cape	266 (77,3%)	78 (22,7%)	344 (100,0%)	495 (71,7%)	195 (28,3%)	691 (100,0%)
Northern Cape	65 (59,7%)	44 (40,3%)	109 (100,0%)	98 (59,2%)	68 (40,8%)	166 (100,0%)
Free State	162 (67,2%)	79 (32,8%)	241 (100,0%)	246 (62,3%)	149 (37,7%)	395 (100,0%)
KwaZulu Natal	370 (67,7%)	176 (32,3%)	546 (100,0%)	661 (78,5%)	181 (21,6%)	843 (100,0%)
North West	277 (75,7%)	89 (24,3%)	366 (100,0%)	452 (75,3%)	148 (24,7%)	600 (100,0%)
Gauteng	619 (65,1%)	332 (34,9%)	951 (100,0%)	1 075 (66,0%)	554 (34,0%)	1 629 (100,0%)
Mpumalanga	191 (71,6%)	75 (28,4%)	266 (100,0%)	305 (72,8%)	114 (27,2%)	419 (100,0%)
Limpopo	164 (75,9%)	52 (24,1%)	216 (100,0%)	329 (71,6%)	130 (28,4%)	460 (100,0%)

Sources: NIDS 2008 and 2014/15 (author's calculations).

Table 6.11 provides an overview of the prevalence of chronic conditions among alcohol consumers by gender in 2008 and 2014/15. The majority of those who reported suffering from cancer were female in both periods.

Table 6.11: Prevalence of chronic alcohol-related health conditions for drinkers by gender in 2008 and 2014/15

	2008			2014/15		
	Males	**Females**	**Overall**	**Males**	**Females**	**Overall**
Cancer	12 (42,3%)	17 (57,7%)	30 (100,0%)	17 (34,3%)	34 (65,8%)	52 (100,0%)
Stroke	26 (70,6%)	10 (29,4%)	37 (100,0%)	33 (77,4%)	9 (22,6%)	43 (100,0%)
Asthma	76 (48,9%)	80 (51,1%)	157 (100,0%)	58 (45,4%)	70 (54,6%)	129 (100,0%)
Heart problem	71 (59,8%)	47 (40,2%)	119 (100,0%)	39 (39,4%)	61 (60,6%)	101 (100,0%)
Diabetes	65 (57,1%)	49 (42,9%)	115 (100,0%)	83 (62,7%)	49 (37,3%)	133 (100,0%)
High blood pressure	327 (57,2%)	245 (42,9%)	573 (100,0%)	318 (55,2%)	258 (44,8%)	577 (100,0%)
Tuberculosis	177 (75,8%)	56 (24,2%)	234 (100,0%)	210 (69,7%)	91 (30,3%)	302 (100,0%)

135

Other disease disabled	182 (56,9%)	137 (43,1%)	320 (100,0%)	250 (56,5%)	192 (43,5%)	443 (100,0%)
One or more disease categories	686 (59,2%)	473 (40,8%)	1 160 (100,0%)	822 (56,7%)	627 (43,3%)	1 450 (100,0%)

Sources: NIDS 2008 and 2014/15 (author's calculations).

Out of the sub-sample of alcohol consumers, the majority of those reporting a cancer diagnosis were female. However, more males in the sub-sample reported stroke, tuberculosis and diabetes diagnoses compared to females. Males reporting stroke, tuberculosis and diabetes diagnoses were about 50% higher than females. The proportion of males reporting hypertension, asthma, heart problems and other diseases was also higher than that of females.

Table 6.12: Prevalence of chronic alcohol-related health conditions for drinkers by population group in 2014/15

	African	Coloured	White	Overall
Cancer	10 (21%)	4 (8%)	36 (71%)	51 (100%)
Stroke	23 (55%)	7 (18%)	11 (27%)	43 (100%)
Asthma	68 (53%)	13 (11%)	46 (36%)	129 (100%)
Heart problem	55 (57%)	14 (15%)	28 (29%)	98 (100%)
Diabetes	59 (46%)	12 (10%)	57 (45%)	129 (100%)
High blood pressure	342 (60%)	78 (14%)	153 (27%)	574 (100%)
Tuberculosis	254 (85%)	46 (15%)	0 (0%)	301 (100%)
Other disease disabled	303 (69%)	43 (10%)	92 (21%)	440 (100%)
One or more disease categories	902 (63%)	191 (13%)	346 (24%)	1 440 (100%)

Sources: NIDS 2014/15 (author's calculations).

As for the population group distribution, the white population group constituted the majority of alcohol consumers who reported a cancer diagnosis. However, the African population group reported the highest prevalence of the rest of the chronic conditions. This is more pronounced for drinkers reporting a tuberculosis diagnosis where 85% are African. Almost half of the drinkers reporting stroke, hypertension, diabetes, asthma and heart problems are African. The coloured population constitutes the second-largest population group of alcohol consumers reporting tuberculosis and stroke diagnoses. However, the white population group constitute the second-largest group of alcohol consumers reporting hypertension, diabetes, asthma, heart problems and other general diseases/disability at a rate almost double that of the coloured population.

136

Figure 6.8: Extent of alcohol drinking by chronic health status and gender
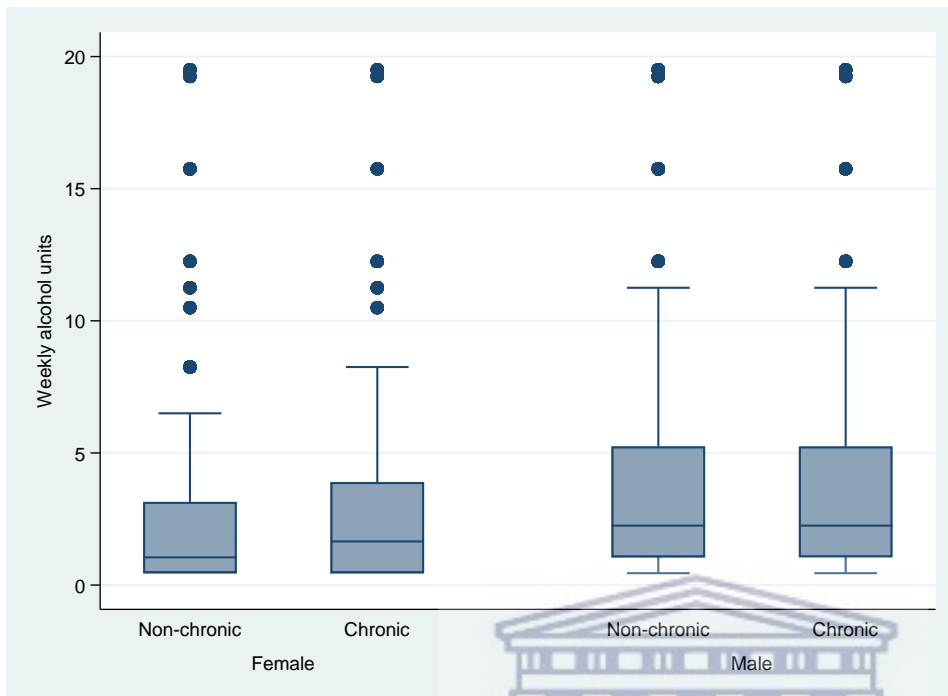
Figure 6.8 presents the extent of alcohol consumption by chronic health status and gender using pooled data from 2008 and 2014/15. Within the female gender group, a bigger portion of females who reported suffering from one or more chronic conditions were consuming a high amount of alcohol in a typical week. However, there is no difference in the prevalence of alcohol consumption among males who reported suffering chronic health conditions and those who did not report suffering any chronic conditions.

In Figure 6.9, the study shows the extent of alcohol consumption by chronic health status and population group for the pooled sample of participants in 2008 and 2014/15. As displayed in the diagram, there are subtle differences in the prevalence of drinking between those reporting chronic conditions and those who did not report suffering chronic conditions across all the population groups. In general, a higher proportion of whites reported consuming larger amounts of alcohol in a typical week compared to other population groups. In addition, the white population group also reported consuming higher amounts of alcohol units compared to the other population groups. Despite this, there were no significant differences between those reporting chronic conditions and those reporting good health status. Within the coloured population group, a slightly higher proportion of those who reported chronic health conditions reported consuming more alcohol units in a typical

137

week. However, there are no noticeable differences in the drinking patterns of Africans based on chronic health status.

Figure 6.9: Extent of alcohol drinking by chronic health status and population group
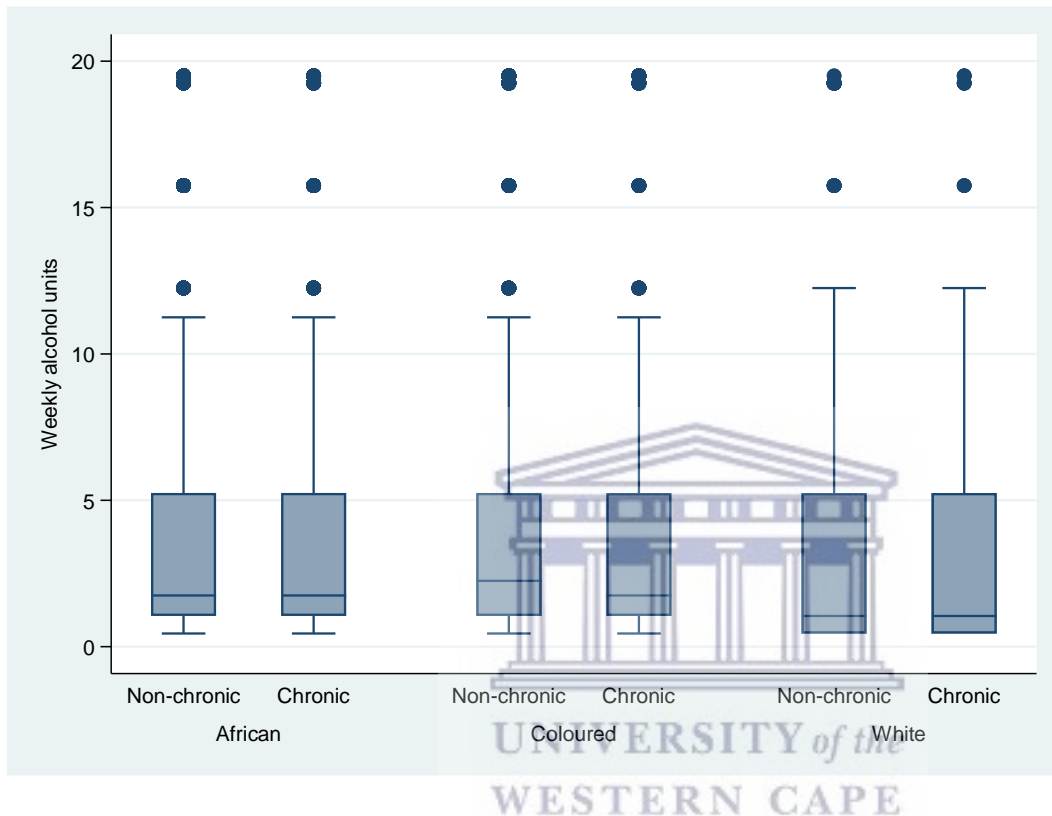
Figure 6.10 reports the relationship between weekly alcohol consumption, the number of chronic health conditions and gender. Based on the information, there are significant gender differences in alcohol consumption among participants with different numbers of chronic conditions. In general, the weekly alcohol consumption for females was less than that of males. The majority of the females suffering from one to two chronic conditions were consuming between 5 to 12 weekly alcohol units. In contrast, the females who reported three or more chronic conditions were consuming a lower amount of alcohol units per typical week.

Figure 6.10: Extent of alcohol drinking by the number of chronic health conditions and gender
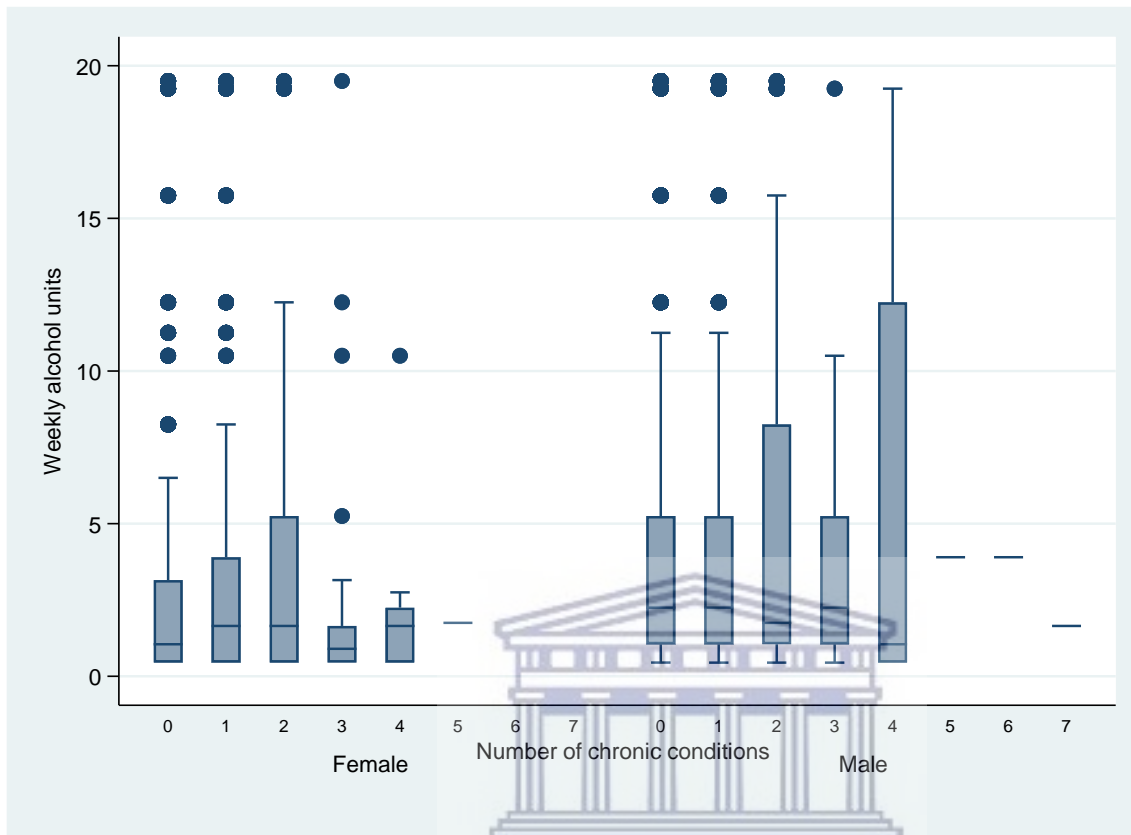
Source: NIDS 2008 and 2014/15.

The relationship between weekly alcohol units and the number of chronic conditions is more pronounced for males. The highest amount of alcohol consumed in a typical week by males reporting multiple chronic conditions was about 19 alcohol units. A bigger proportion of males who reported suffering up to four chronic conditions were consuming higher amounts of alcohol units per week.

Figure 6.11: Extent of alcohol drinking by the number of chronic health conditions and population group

139

Figure 6.11 Relationship between number of chronic conditions and weekly alcohol units by population group
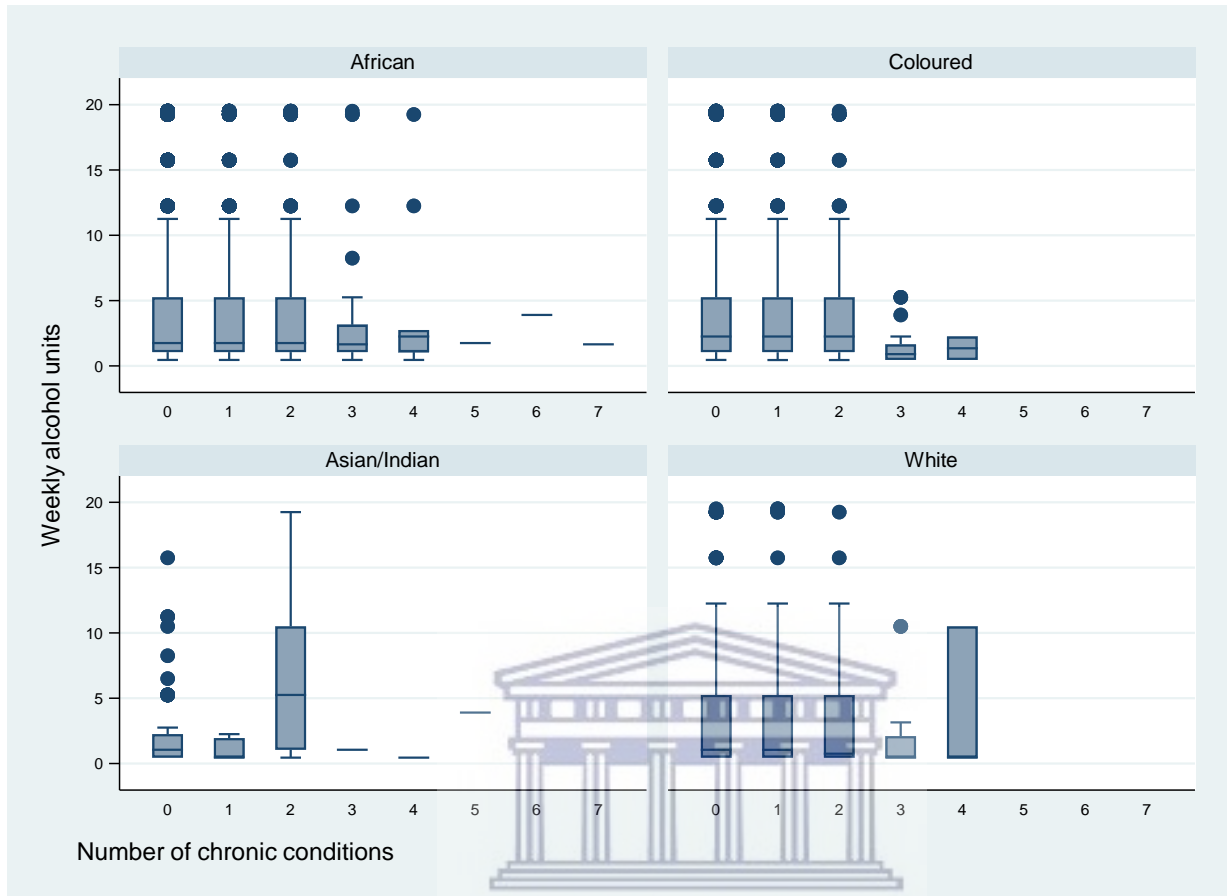
Figure 6.11 outlines the relationship between the number of chronic health conditions and weekly alcohol consumption by population group. The information shows similar drinking patterns for Africans across 0 to 2 chronic health conditions with similar amounts of alcohol units consumed in a typical week. In a similar pattern to those reporting no chronic conditions, those suffering from 1 to 2 chronic conditions were consuming between 2 and 12 alcohol units in a typical week. More than half of the Africans suffering from 3 chronic health conditions reported consuming between 2 and 5 alcohol units per week. As can be expected, very few individuals suffering from 4 or more chronic conditions reported drinking any alcohol. The pattern was similar for the coloured and white population groups with no marked differences in alcohol consumption patterns of those reporting 0 to 2 chronic health conditions. The extent of weekly alcohol consumption was also similar with the majority consuming between 3 and 12 alcohol units in a typical week. However, for the white population group, the majority of those reporting 4 chronic conditions were consuming between 1 and 10 alcohol units per week.

140

6.5.2 Structural determinants of chronic health conditions and alcohol consumption patterns

Table 6.13 reports the logistic regression results testing the association between the chronic diseases under review, alcohol consumption status and racial group and gender characteristics. In the full model specification, alcohol consumption was significantly associated with all the chronic conditions except asthma, heart problems and other diseases/disability. There was a significant negative relationship between alcohol consumption and diagnoses of cancer, stroke, hypertension and diabetes. Alcohol consumption was significantly associated with a higher risk of tuberculosis diagnosis.

Table 6.13: Structural determinants of chronic health conditions and alcohol consumption patterns

Variables	Gender		Population Group			Model 6: Full Specification
	Model 1: Male	Model 2: Female	Model 3: African	Model 4: Coloured	Model 5: White	
Cancer	0.7328* (0.1328)	0.7945 (0.1259)	0.9346 (0.1619)	0.3647*** (0.1102)	0.8894 (0.1883)	0.75*** (0.0891)
Stroke	0.7183*** (0.099)	0.695*** (0.1051)	0.6222*** (0.0828)	0.9199 (0.1663)	0.5593 (0.2355)	0.6935*** (0.0704)
Tuberculosis	1.3344*** (0.0753)	1.3994*** (0.0916)	1.3758*** (0.0673)	1.2653*** (0.1162)	0.6778 (0.4159)	1.3532*** (0.0581)
Hypertension	1.0941*** (0.0487)	0.8385*** (0.0328)	0.9711 (0.0345)	0.8309*** (0.0494)	1.0749 (0.1153)	0.9285*** (0.0269)
Diabetes	0.694*** (0.0533)	0.6442*** (0.0505)	0.6347*** (0.0439)	0.6647*** (0.0758)	0.7187* (0.1242)	0.6592*** (0.0359)
Asthma	1.1369 (0.0948)	1.0429 (0.0778)	1.1996*** (0.082)	0.8676 (0.1023)	0.9918 (0.1729)	1.0683 (0.0591)
Heart problem	0.8911 (0.0904)	1.0338 (0.084)	1.1905*** (0.0952)	0.703*** (0.0953)	0.719* (0.1309)	0.955 (0.0604)
Other diseases	0.9869 (0.0534)	1.1296*** (0.064)	1.0911* (0.0491)	0.8224* (0.0855)	1.0688 (0.1594)	1.0334 (0.0407)

All the results are adjusted for gender, marital status, race, employment status and geo-location type. Standard errors in brackets. ****denotes significance at 5% level, *denotes significance at 10% level.

Sources: NIDS 2008, 2010, 2012 and 2014/15 (authors' own calculations).

In the gender model, alcohol consumption was significantly associated with diagnoses for stroke, tuberculosis, hypertension and diabetes across both gender categories. For both males and females, alcohol consumption was significantly associated with higher chances of diagnosis for tuberculosis. However, alcohol consumers across both genders were significantly less likely to suffer from stroke or diabetes. Alcohol consumption significantly increased the risk of hypertension for males and conversely, significantly reduced the chances of hypertension for females. A cancer diagnosis was negatively associated with alcohol consumption for both males and females although the relationship was not significant for females. Other diseases/disability was shown to have a significant positive relationship with alcohol consumption for males. In contrast, the relationship was negative and statistically insignificant for females. The relationship between alcohol consumption and asthma and heart problems was statistically insignificant for both genders.

141

Within the population group categories, the regression results reveal several notable disparities. Across all population categories, there was a substantial link between alcohol intake and diabetes and cardiac issues. Among three population groups, there was a substantial negative relationship between alcohol use and diabetes diagnosis. Alcohol consumers were much more likely to report diagnoses for asthma, heart issues, and other diseases/disabilities in the African population group, according to the findings. For the coloured and white population groups, however, there was a substantial negative connection between alcohol use and heart disease diagnoses. The link between alcohol intake and cancer and hypertension diagnoses was negative in all demographic groups, although it was substantial in the coloured population group. A similar link was discovered for a stroke diagnosis, albeit the link was only significant in the African population.

Table 6.13: Associations between chronic health status and alcohol consumption – odds-ratios from logistic regression analysis

	Males	Females	African	Coloured	White
Chronic health status					
Non-chronic health conditions (Base category)	1	1	1	1	1
Chronic health conditions	1.03 (0.04)	1.01 (0.04)	1.07* (0.04)	0.87*** (0.06)	1.07 (0.13)
Constant	0.67*** (0.05)	0.14*** (0.01)	0.11*** (0.01)	0.58*** (0.07)	0.43 (0.27)

All regressions included a complete set of SES indicators and geo-location type. Standard errors in brackets.
***denotes significance at a 5% level, *denotes significance at a 10% level.

Sources: NIDS 2008, 2010, 2012 and 2014/15 (author's calculations).

Table 6.14 uses pooled sample data from 2008, 2010, 2012, and 2014/15 to show the connection between chronic health issues and alcohol intake. According to the regression results, there is a positive link between alcohol use and chronic health status. Although the results were not statistically significant, the link was constant across gender groups. Belonging to the African population group was found to be substantially connected with a higher risk of suffering from chronic health issues. Belonging to the coloured population group, on the other hand, was strongly linked to a lower risk of chronic health problems. Although the association was not statistically significant, there was a positive relationship between alcohol use and the likelihood of chronic diseases in the white population group.

6.5.3 Empirical relationship between chronic health conditions and alcohol consumption

This research investigated the association between chronic health conditions and different patterns of alcohol use in South Africa. The study also considered the role of sociodemographic factors and SES as modifiers in this relationship.

In general, a higher proportion of females reporting chronic conditions were consuming a higher amount of alcohol units in a typical week. This is in contrast to females not reporting any chronic conditions who were consuming fewer units per week. However, there was no marked difference in drinking quantities for males regardless of chronic health status. In population terms, similar drinking patterns could be ascertained across all the population groups except for the coloured group, where the majority of those reporting chronic health conditions also reported consuming a higher amount of alcohol in a typical week. In addition, the majority within the white population group was consuming higher amounts of alcohol per typical drinking week compared to the other population groups.

A larger proportion of males with more chronic health problems consumed more alcohol units per week. The white population group had a larger proportion of persons with more than one chronic disease, as well as consuming a higher proportion of alcohol units per week. Cancer, stroke, and diabetes diagnoses were all linked to a lower risk of drinking alcohol in both men and women. This could be because when people have health concerns, they stop drinking totally. Diagnoses of TB and hypertension, on the other hand, were linked to an increased risk of consuming alcohol. Other diseases were shown to be strongly related with a higher likelihood of alcohol drinking in females. This finding is in line with epidemiological research that show that alcohol intake has a negative impact on chronic health outcomes (Satre, Gordon & Weisner, 2007). Despite the fact that certain drugs contain alcohol, the two can interact negatively, putting users at risk of hazardous responses.

Multiple health issues, such as tuberculosis, asthma, heart disease, and other disorders, were found to be strongly linked with the likelihood of using alcohol in the African population group. Stroke and diabetes, on the other hand, were strongly linked to a lower likelihood of drinking alcohol. Cancer, hypertension, diabetes, heart issues, and other disorders diagnoses were linked to a lower risk of alcohol usage in the coloured population group. Only tuberculosis was linked to an increased likelihood of consuming alcohol. In contrast, there was no substantial positive relationship between alcohol intake and any chronic health condition in whites. This could be due to the fact that alcohol can aggravate medical issues and interact negatively with medications.

Some authors have speculated that lower SES individuals are more likely to experience adverse social consequences because of alcohol drinking. This could be due to the group having fewer financial resources resulting in higher rates of health problems.

6.5.4 Findings on chronic health conditions and different patterns of alcohol use

In conclusion, Section 6.5 concerned the association between SES, chronic health conditions and different patterns of alcohol use in South Africa. The research ascertained that a bigger portion of females who reported suffering from one or more chronic conditions consumed large amounts of alcohol per typical week. However, there were no differences in the prevalence of alcohol consumption among males who reported suffering chronic health conditions and those who did not report suffering any chronic conditions. In terms of population groups, a higher proportion of whites were consuming larger amounts of alcohol in a typical week compared to other population groups across both chronic health statuses. The study also ascertained that a higher proportion of males who reported suffering more than one chronic health condition were consuming higher amounts of alcohol units per week. Alcohol consumption was significantly associated with a higher risk of a tuberculosis diagnosis. In contrast, the study uncovered a significant negative relationship between alcohol consumption and diagnoses of cancer, stroke, hypertension and diabetes. In addition, alcohol consumers across both genders were significantly less likely to suffer from a stroke or diabetes. This finding is supported in the literature where people reportedly living with long-term health conditions develop ways to manage the conditions, such as quitting alcohol consumption.

6.6 Relationships between SES, depressive symptoms and different patterns of alcohol use

6.6.1 Introduction

Alcohol use has been associated with poor mental health outcomes such as depression and anxiety (Bell & Britton, 2014; Boden & Fergusson, 2011; Dawson et al., 2005; Dowdall et al., 2017; Peltzer & Pengpid, 2015). Alcohol use and depression pose major health challenges, each on their own and, where they overlap, they produce a perpetuating cycle of harmful outcomes (Bellos et al., 2013; Corrigall & Matzopoulos, 2013; Moussavi et al., 2007; Rotheram-Borus et al., 2015). Causal linkages between the two variables have been suggested where exposure to one increases the risk of the other (Boden & Fergusson, 2011).

When compared to other countries, South Africa has one of the highest rates of alcohol consumption and a high incidence of depressive symptoms (Ardington & Case, 2010). In South Africa, the proportion of adults exhibiting symptoms of common mental disorders has been estimated to be around 30%. (Corrigall & Matzopoulos, 2013; Weich et al., 2019). Between 2002 and 2004, the South African Stress and Health Survey (SASH) discovered a lifetime prevalence of any psychiatric condition of 30,3%. Mungai and Bayat (2019) calculated the proportion of depressed South African adults and found 33,15% in 2008, 22,31% in 2010, 24,43%

144

in 2012 and 26,05% in 2014/15. Despite the decline between 2008 and 2010, the prevalence of depressive symptoms has reflected a steady upward trend from 2010.

The lifetime prevalence of alcohol use in the country was estimated at 30% by Peltzer and Ramlagan (2009). Fieldgate et al. (2013) estimated this proportion at 35%. Although the lifetime prevalence of alcohol use is high, it doesn't exceed the global average of 45% (WHO, 2019a). The average amount of alcohol consumed by a typical South African alcohol drinker was approximately 20ℓ per adult in 2005 which was among the highest in the world (Parry, 2005). The proportion of alcohol consumers has remained consistent over the years with 35% in 2005 (Fieldgate et al., 2013) and 33,1% in 2014/15 (Vellios & Van Walbeek, 2018). In 2005, the prevalence of binge drinking among alcohol drinkers was estimated at 45,4% (against the global average of only 11,5%) which was distributed by gender as follows: 41,2% for females and 48,1% for males (Fieldgate et al., 2013). In 2014/15, 43,0% of alcohol drinkers reported binge drinking, broken down into 48,2% males and 32,4% females (Vellios & Van Walbeek, 2018).

The concurrence of high levels of depressive symptoms and alcohol abuse compounds the mental health burden (Corrigall & Matzopoulos, 2013). Alcohol drinkers are at higher risk of poor mental health compared to non-drinkers (Choi et al., 2014; Strakowski et al., 2000). In addition, alcohol abuse was determined to be the most prevalent, individual lifetime disorder in South Africa, affecting 11,4% of the adult population in the country (Herman et al., 2009). The high overall alcohol-attributable burden for neuropsychiatric conditions in the country is estimated at 18,4% (Schneider et al., 2007).

6.6.2 Depressive symptoms trends, prevalence and distribution in South Africa

The data indicates a high prevalence of depressive symptoms in the sample over time. Figure 6.12 displays the patterns of depressive symptoms over the four waves of NIDS.
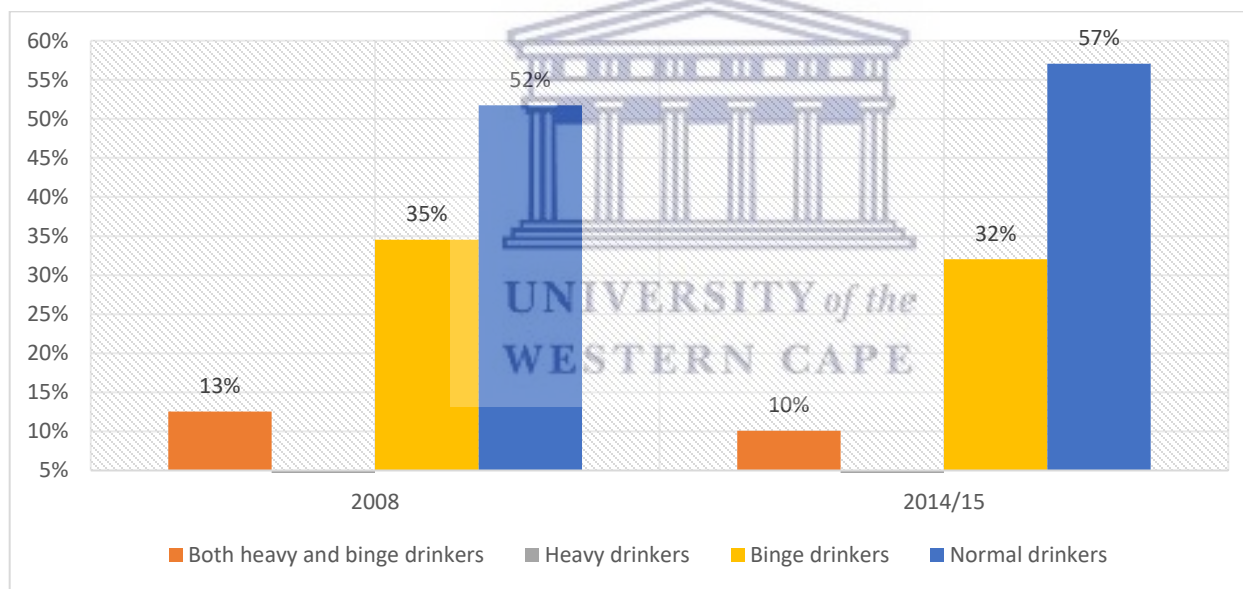
Figure 6.12: Proportion of depressed adults in South Africa between 2008 and 2014/15

145
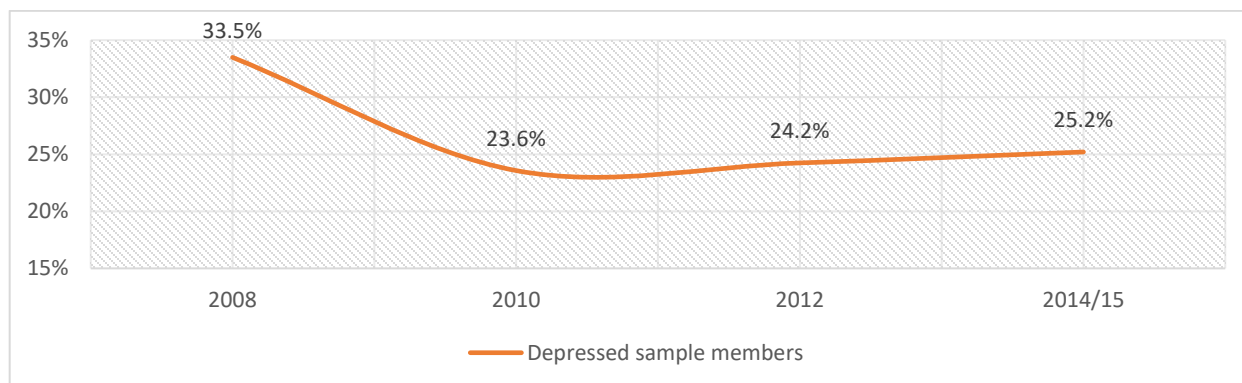
In 2008, 33,5% of the South African adult population exhibited depressive symptoms. The high prevalence of depressive symptoms in 2008 can be linked to the 2008 global financial crisis (UNAIDS, 2012). Locally, the impacted worked through job insecurity, businesses closures, rising inflation and uncertainty. In 2010, 23,6% of the adult population exhibited depressive symptoms in a 9,9% decline compared to 2008. This was in line with improvements in the socioeconomic conditions with the end of the economic crisis. In 2012, 24,2% of the adult population exhibited depressive symptoms which was a slight (0,6%) increase from 2010. There was also a marginal increase (1%) from 23,6% in 2010 to 25% in 2014/15. The results closely match the findings by Mungai & Bayat (2019) who found close matches in the trends, distribution and prevalence of depressive symptoms in the country for the period under consideration.

Figure 6.13: The proportion of drinkers who were depressed, by drinking categories between 2008 and 2014/15

Figure 6.13 depicts the proportion of drinkers who were depressed, by the drinking categories for the period under study. Despite the overall decline in the prevalence of depression over the years, there were shifts in the drinking patterns among the drinkers who were depressed. Normal drinkers constituted the highest number of drinkers who were depressed in both years though we saw an increase in the proportion of normal drinkers who were depressed in 2014/15. There was also a shift in the drinking patterns of the depressed with a reduction in the proportion risky drinkers and an increase in normal drinkers over the time period over the period under review.

146

The distribution of depressed alcohol drinkers can be analysed across the drinking categories and gender. Figure 6.14 presents the distribution of alcohol drinkers who were depressed for males and females in 2008 and 2014/15. Close to 65% of male alcohol drinkers were normal drinkers and approximately 35% were either binge or heavy drinkers. In contrast, fewer than 50% of female alcohol drinkers were normal drinkers, with the majority being either binge or heavy drinkers. Females with high significant depressive symptoms (SDS) scores were more likely to abuse alcohol than their male counterparts.

Figure 6.14: Depressed alcohol drinkers by drinking category and gender for 2008 and 2014/15
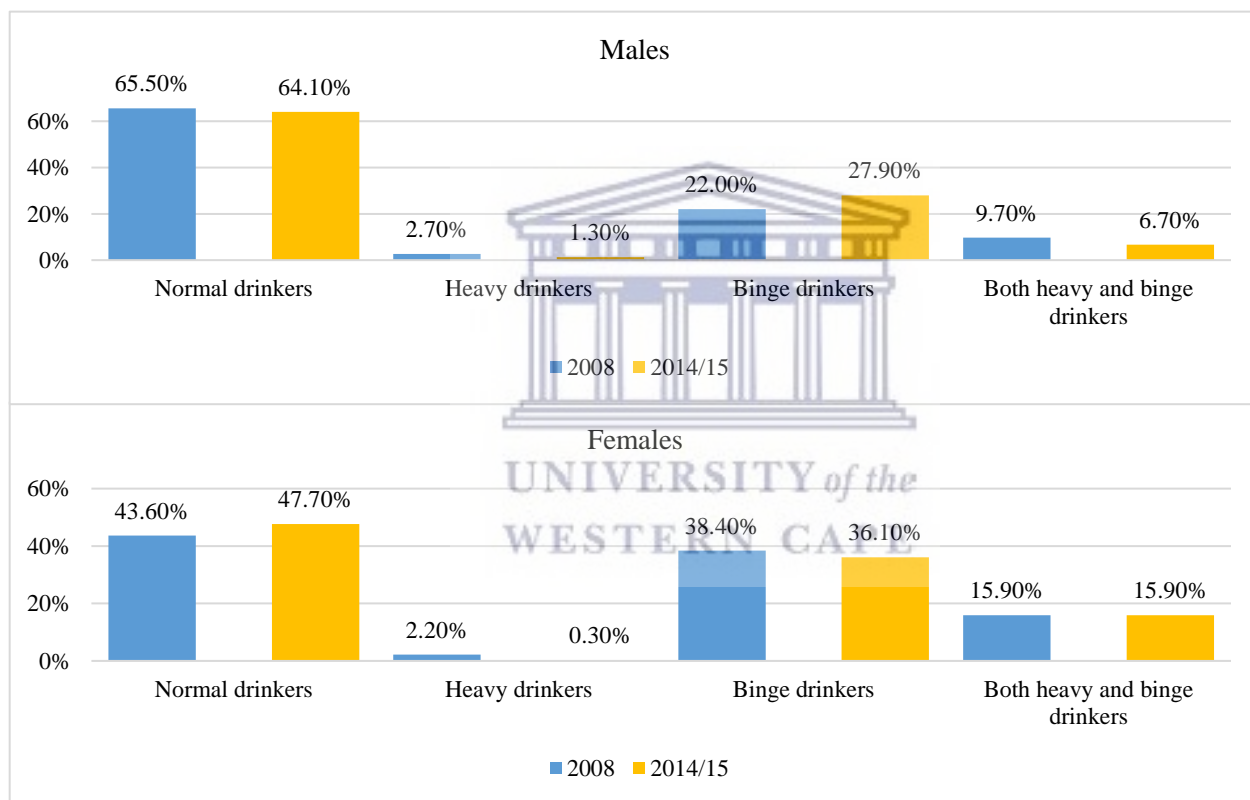
Source: NIDS 2008, 2010, 2012 and 2014/15 (author's calculations).

Table 6.15 outlines the socioeconomic characteristics of the sample of alcohol drinkers who exhibited depressive symptoms in 2008 and 2014/15. Males constituted the largest proportion of the sample across both periods. In terms of population groups, the African population group was the most dominant across both periods. The population group patterns in the table reflect the population patterns in South Africa[6]. According to Statistics South Africa (2005), the African population group constitute 80,5% of the population and accounted for 75%

---

[6] The contribution of the Asian/ Indian population group to the sample was quite small and this could affect statistical inferences regarding this group from this study.

147

of alcohol drinkers who were depressed. The coloured population group constituted about 8,8% of the South African population and accounted for 11% of alcohol drinkers who were depressed. Similarly, whites constituted 8,3% of the population and accounted for 11% of alcohol drinkers who were depressed. The Asian/Indian population group constituted the least proportion of depressed drinkers in both periods with 3% in 2008 and the figure decreased by 2% to end up at only 1% in 2014/15[7]. The population group constituted 2,5% of the South African population in 2014/15 and the group accounted for 1% of the proportion of alcohol drinkers who were depressed (Statistics South Africa, 2016).

Table 6.14: Characteristics of the sample of alcohol drinkers with depressive symptoms

| | 2008 | | 2014/15 | |
	n = 1125	*Proportion %*	*n = 1439*	*Proportion %*
Gender				
Male	731	65%	964	67%
Female	394	35%	475	33%
Population group				
African	855	76%	1 077	75%
Coloured	119	11%	160	11%
Asian/Indian	36	3%	20	1%
White	115	10%	182	13%
Educational attainment				
No schooling	119	11%	63	4%
Some primary	305	27%	244	17%
Some secondary	394	35%	485	34%
Completed secondary	143	13%	243	17%
Tertiary or more	164	15%	404	28%
Employment status				
Employed	581	52%	766	53%
Unemployed	544	48%	673	47%
Age group				
18—24	191	17%	254	18%
25—34	284	25%	440	31%
35—44	279	25%	340	24%
45—54	176	16%	214	15%
55—64	122	11%	124	9%
65+	74	7%	68	5%
Province				
Western Cape	112	10%	285	20%
Eastern Cape	124	11%	149	10%
Northern Cape	36	3%	35	2%
Free State	88	8%	66	5%
KwaZulu-Natal	206	18%	152	11%
North West	138	12%	118	8%
Gauteng	264	23%	459	32%
Mpumalanga	67	6%	78	5%
Limpopo	91	8%	98	7%

Source: NIDS 2008 and 2014/15 (author's calculations).

In terms of educational attainment, the majority in the sample had low levels of educational attainment ranging from no schooling to some secondary schooling. The employed were the majority in the sample at both periods. The sample majority was composed of the relatively young age groups with the 18–39 age group constituting 57% in 2008 and 60% in 2014/15. Overall, the majority of drinkers who were depressed were male, African, had low levels of educational attainment, were unemployed and relatively young.

Figure 6.15 highlights the distribution of drinkers with depressive symptoms and the SDS scores across gender and population groups in 2008. In general, more female drinkers had high SDS scores compared to their male counterparts across population groups. Across all population groups and gender, Africans had the biggest proportion of drinkers who were depressed with high median scores for both males and females. The maximum SDS scores for both African males and females was 30, considering outlier observations. The coloured population group was the second- most impacted group with higher median scores for both genders. There was a noticeable spread within the female category reflected in the outlier observations and maximum SDS scores of 30 for females and about 28 for males. Whites displayed similar patterns between males and females although there was greater variability within the female category where the maximum score was much higher, at about 26, compared to 22 for males.
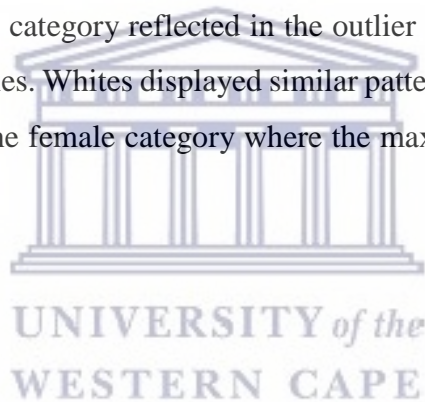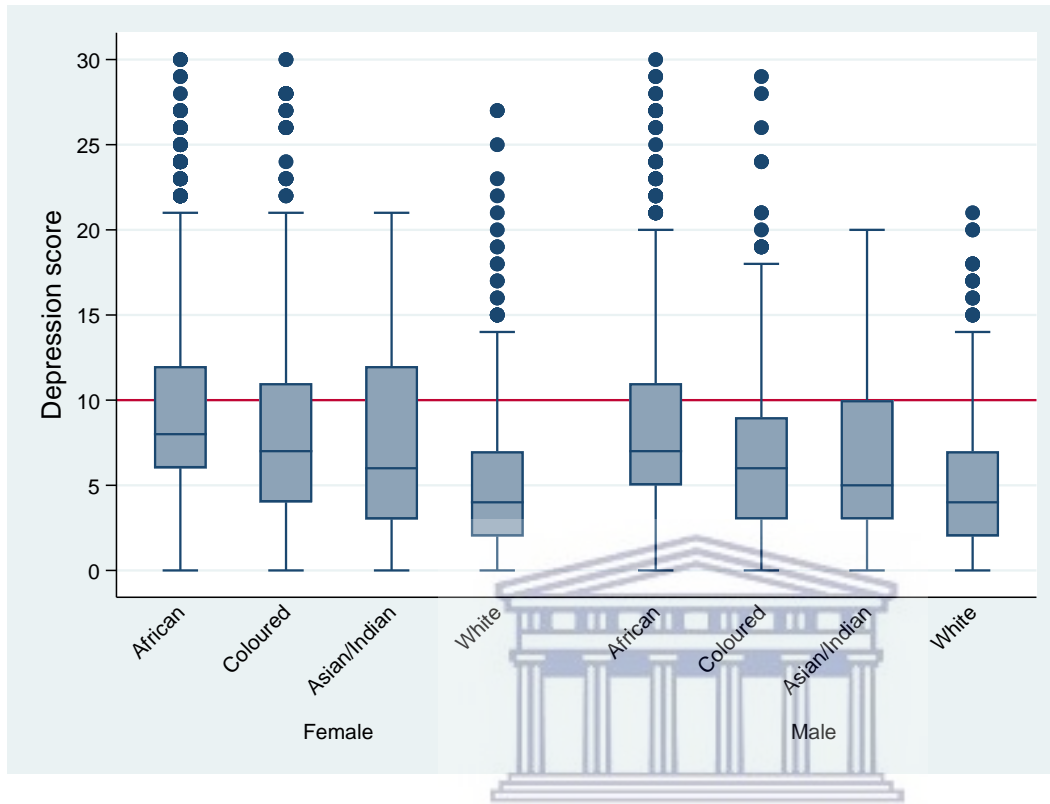
Figure 6.15: Boxplot on CES-D scores by gender and population group for alcohol consumers who were depressed in 2008

Figure 6.16 displays the distribution of drinkers with depressive symptoms and the levels of depression across gender and population groups in 2014/15. Despite an overall decline in the prevalence of depressive symptoms after 2008, there were more female drinkers with high SDS scores compared to their male counterparts, in a similar pattern to 2008. In a significant shift, more whites displayed depressive symptoms compared to the Asian/Indian population group in 2014/15, than in 2008. There was also an overall increase in the prevalence of depressive symptoms among whites as reflected in both an increase in the group's median score and maximum values. However, there was no change in the gender distribution within the group. There was a shift within the Asian/Indian group with more males than females reporting higher SDS scores. The African female group remained dominant followed by coloured females. Despite an increase in variability for African males, there was a noticeable decline in the prevalence of depressive symptoms within this group between 2008 and 2014/15. This could be a result of the disproportionate impact of the 2008 global financial crisis on females in general and Africans in particular. The groups were more vulnerable in part due to entrenched gender and ethnic inequality in the country (Ngandu et al., 2010; Stavropoulou & Jones, 2013).
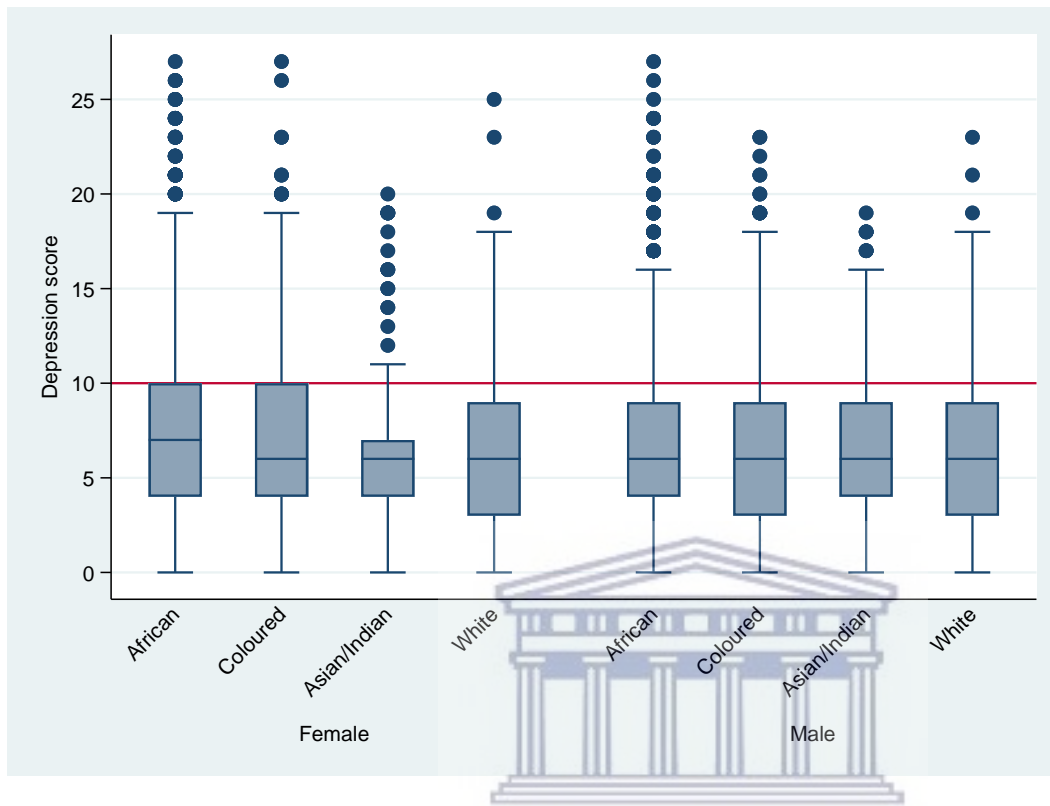
150

Figure 6.16: Boxplot on CES-D scores by gender and population group for alcohol consumers who were depressed in 2014/15

The boxplot in Figure 6.16 displays the depression scores by gender and drinking categories in 2008. Female drinkers who engage in heavy and binge drinking reported the highest SDS scores. For females who reported heavy drinking, the minimum depression score was above 5 and more than 50% of female binge drinkers displayed SDS. Also, within the normal drinking category, more females had higher depression scores compared to males. Even though the trend is similar within the male category, it is at a comparatively lower scale when compared to females. Male binge and heavy drinkers reported high SDS scores compared to normal drinkers.

6.6.3   Structural determinants of depression and alcohol consumption

The study employed logistic regression analysis to ascertain the association between depression and alcohol consumption. The regression equation was employed to model the likelihood of sample members consuming alcohol given their depression status. Table 6.16 displays the regression results to determine the predictors of depression status of alcohol drinkers in the sample.

The significant predictors of depression among alcohol consumers were female gender, being African, lower level of educational attainment, higher age, less income and being unemployed. The association with the home province was statistically significant and highlighted that residing in Northern Cape, Free State, Gauteng, Mpumalanga and Limpopo reduces the likelihood of being an alcohol drinker when using the Western Cape as the baseline. Marital status was also statistically significant in explaining alcohol consumption with being widowed, separated or never married versus being married/cohabiting increasing the chances of being a drinker. Geo-location type was statistically significant in explaining drinking status, with residing in a tribal authority area or urban formal area versus the rural formal area reducing the chances of being an alcohol drinker.

152

Table 6.15: Logistic regression on depression status of alcohol consumers and socioeconomic characteristics

Predictors	Coefficient	Standard Error
Gender		
Female	1	
Male	-0.219*	0.039
Population group		
African	1	
Coloured	-0.68*	0.066
Asian/Indian	-0.501*	0.188
White	-0.924*	0.099
Educational attainment		
No school	1	
Some primary education	-0.026	0.066
Some secondary education	-0.246*	0.071
Completed secondary education	-0.425*	0.084
Tertiary education or more	-0.416*	0.085
Age		
Age	0.008*	0.002
Marital Status		
Married/Cohabiting	1	
Widowed	0.213*	0.082
Separated	0.514*	0.101
Never married	0.155*	0.045
Per capita income quantiles		
First quantile	1	
Second quantile	-0.18*	0.053
Third quantile	-0.18*	0.053
Fourth quantile	-0.351*	0.061
Employment Status		
Unemployed	1	
Employed	-0.291*	0.039
Province		
Western Cape	1	
Eastern Cape	-0.093	0.078
Northern Cape	-0.282*	0.077
Free State	-0.173*	0.086
KwaZulu-Natal	-0.037	0.077
North West	-0.088	0.087
Gauteng	-0.2*	0.077
Mpumalanga	-0.399*	0.097
Limpopo	-0.387*	0.098
Geo-location type		
Rural formal	1	
Tribal Authority Areas	-0.201*	0.066
Urban Formal	-0.021	0.059
Urban Informal	0.182*	0.081
Constant	-0.372*	0.137
Chi-square	784.27	
Prob > chi-square	0	

***denotes significance at a 5% level and ***denotes significance at a 10% level.

Source: NIDS 2008, 2010, 2012 and 2014/15 (author's calculations).

6.6.4   Empirical relationship between depression and alcohol consumption

The high proportion of drinkers who were depressed in 2008 could have been due to the effects of the global economic crisis in 2008. The steady increase in recent years could be due to general pessimism about the country's economic outlook (Chingwete & Nomdo, 2016). There was a clear shift in the drinking patterns during the period under review, with a decline in the proportion of normal drinkers and binge drinkers who were depressed. Instead, there was an increase in the proportion of heavy drinkers in more recent years. The finding provides modest support for the tension reduction theory which links the exposure to stress-producing life situations to heavy or binge drinking.

The study results provide evidence that poor mental health may also be a maintaining factor for alcohol consumption, a similar finding to other studies (Bell & Britton, 2014; Boden & Fergusson, 2011; Dawson et al., 2005; Dowdall et al., 2017; Peltzer & Pengpid, 2015). Even though males are more likely to be drinkers, more than 50% of female drinkers who were depressed abused alcohol, in comparison to 35% of males. This could be indicative of the higher stressor vulnerability factors among South African females compared to males (Ardington & Case, 2010; Mungai & Bayat, 2019). The African population group is less likely to report alcohol drinking than other population groups though they are more likely to report abusive drinking patterns (Vellios & van Walbeek, 2018). The higher prevalence of alcohol drinking in the South African youth population could be due to favourable attitudes about alcohol cultivated through alcohol marketing and peer pressure (Morgenstern et al., 2011; Morojele et al., 2018). Another finding was that lower educational attainment and being employed rather than unemployed increased the likelihood of being a drinker. One mechanism that has been proposed to explain the association between employment and drinking is that stressful job-related situations could lead people to use alcohol as a stress-relief mechanism (Caetano et al., 2016). Low educational attainment can lead to material deprivation and stress, with alcohol drinking as a coping mechanism.

The regression results also suggested that the female gender, African population group, a lower level of education, higher age, lower income, being unemployed, province of residence and geo- location type are associated with a higher prevalence of depressive symptoms. Drinkers who engage in abusive drinking patterns reported higher depression scores compared to those who were normal drinkers. This evidence supports the hypothesis that alcohol abuse such as binge and heavy drinking worsens mental health. The African population group has more likelihood of depressive symptoms in what could reflect the country's unchanged social and economic status after the apartheid era (Atwoli et al., 2013). One reason females could report a greater number of depressive symptoms than males is that they tend to carry heavy family responsibilities yet have limited

154

economic and social power (Mungai & Bayat, 2019). The association between higher age and higher prevalence of depression could be a result of overwhelming home and work task burdens where failure to cope could lead to feelings of depression (Ajaero, Nzeadibe & Igboeli, 2018). Lower SES could lead to depression due to the members suffering material deprivation that can lead to feelings of incompetence, powerlessness and helplessness (Dowdall et al., 2017). Bateman (2015) argues that poverty increases both the prevalence, intensity and duration of depressive symptoms. Education could form a strong protective factor against depression (Ardington & Case, 2010). It is also possible that depressed drinkers who are better educated are more aware and responsive to their symptoms and are more likely to seek treatment options than the less educated depressed drinkers (Weich et al., 2019). Employment has been argued to have a similar protective effect, especially given the high rates of economic exclusion and poverty that characterise the South Africa economy (Dowdall et al., 2017).

6.6.5   Findings on depressive symptoms and patterns of use

In section 6.6, the research looked at the relationship between socioeconomic status, depressive symptoms, and various patterns of alcohol consumption in South Africa. Depressive symptoms are common in the country, and alcohol addiction adds to the mental health problem. Alcohol drinkers have a higher risk of poor mental health than non-drinkers, according to many studies. The prevalence of depression has decreased over time, according to this study. However, among depressed drinkers, there was a substantial shift in drinking patterns, with the majority engaging in binge drinking in 2008 and heavy drinking in 2014/15. Female gender, African population group, lower level of education, higher age, lower income, being jobless, province of residence, and geo-location type are all linked to a higher prevalence of depressed symptoms, according to the regression results. Women and black people were particularly susceptible, owing to the country's ingrained gender and racial disparities.

CHAPTER SEVEN: CONCLUSION

7.1   Introduction

This study had several objectives encompassing a comprehensive examination of the AHP in South Africa. It examined the AHP across multiple health outcomes – subjective health status, the incidence of chronic health conditions and mental health status. The study adopted a broader community perspective of alcohol consumption where several factors interact to determine alcohol consumption behaviours and related harms in the population. This thesis unpacked the role of several interwoven causal mechanisms closely linked to the legacy of apartheid in perpetuating the AHP. The research contextualised the country's history of institutionalised racism in which apartheid had crucial socio-political, economic and behavioural impacts on the current patterns of alcohol use and related harms. The current alcohol regulations and policy interventions were reviewed for effectiveness in reducing the cost of harmful alcohol use in the country. Lastly, in this chapter, the research provides recommendations on reducing the AHP based on the study findings.

In South Africa, especially where alcohol consumption and related problems are intertwined with the contextual historical, political and socioeconomic environment. The country's apartheid system built on the entrenched cultural norms of regular alcohol consumption over the preceding 300 years to create a social, cultural and historical environment that shaped current beliefs, attitudes and perceptions relating to alcohol consumption. The iniquitous dop system was more than an economical means to secure or placate labour. It was apartheid social engineering, a strategy as deliberate as pass-carrying and forced removals, designed to subjugate and control people. Profits were a bonus. The 'culture' of heavy drinking especially prevalent on the farms in the country, and particularly in the Western Cape, was born in the dop system, which created a social context for institutionalised high rates of daily alcohol consumption with detrimental impacts to the farm workers and their families' health, reproductivity, human rights, dignity and social cohesion.

Social injustice, spatial segregation and socioeconomic exclusion implemented during apartheid shaped the historical development of the settlement patterns in the country. Distinct residential zones were established along ethnic lines with the best urban, industrial and agricultural areas reserved for whites while Africans were confined to impoverished, under-industrialised and under- resourced homelands, which acted as a reserve for surplus labour. Black migrant workers were allowed to leave these reserves under strict controls to work in the mines, farms and factories. They lived in compounds and men-only hostels, joined by urbanised blacks forcibly removed from the cities and suburbs for whom the government reluctantly built endless rows of anonymous

156

'matchbox' houses in African-only townships far from the city with few amenities and services. Hunger and unemployment drove many more people to migrate to the urban centres, rapidly exhausting the limited stock of formal housing. Wood-and-iron shacks soon proliferated around the townships. Everything was in short supply, including jobs, food and other necessities of life. The lack of recreation and opportunity, the stress of living in deeply deprived conditions and the ever-present threat of state oppression engendered a range of social ills, including gangsterism and violence. This resulted in mass psychosocial distress that led to widespread problem alcohol consumption as a means to manage anxiety and depression and easing boredom. From government-owned beer halls to illegal shebeens and a few licensed taverns, there was no shortage of supply of alcohol. Harmful alcohol consumption became an antidote to the socioeconomic challenges associated with poverty entrapment. Alcohol abuse, in turn, resulted in social breakdown, violence within families, alcohol-attributable diseases, accidents and in deprived groups, which in turn perpetuated a cycle of problem drinking. General under-resourcing of health and social services in these areas produced a steep socioeconomic gradient in related harms, which persists today, exacerbated by the persistent lack of economic growth.

The alcohol controls imposed during apartheid were instrumental in shaping the current alcohol- related behaviour and associated problems in the country. For example, the huge growth in illegal liquor trading in the townships resulted in high density of alcohol outlets in deprived residential areas estimated at 25 000 unlicensed alcohol outlets in the Western Cape alone (Gossage et al., 2014). Aside from accessing the conventional beer and spirits sold in the shebeens, low SES individuals are likely to consume home-brewed beer, spirit concoctions, cheap wine and sugar-fermented beverages, further exposing them to more harms compared to high SES, which can partially explain the AHP.

7.2   Key findings

The The study's key finding is that it confirms the evidence of the AHP in South Africa – the socioeconomic gradient in the alcohol-related health outcomes that were under observation. The

157

results indicate that SES has a modifier effect on the disproportionate impact of alcohol-related health harms which in turn drives health inequalities in the country. The research found that interactions between individual and area-level SES combine to influence alcohol consumption, and thus health outcomes.

The study established the high incidence of alcohol consumption among the NIDS study participants. There was a significant growth in the proportion of drinkers between 2008 and 2014/15 in line with associated literature that reported a high alcohol consumption rate of around 33% in 2014/15 (Vellios & Van Walbeek, 2018). There is evidence suggesting that at least half of the alcohol consumption occurred in risky patterns. This confirms findings from related studies which found that South Africa has some of the worst alcohol consumption habits in the world (Corrigall & Matzopoulos, 2013) In the 2014/15 period, 43% of the drinkers were found to be binge drinkers (Vellios & Van Walbeek, 2018). It also has been estimated that South Africa has approximately 45% of drinkers partaking in heavy episodic drinking occasions in a typical drinking week (Fieldgate et al., 2013).

The study found gender differences across alcohol consumption rates, drinking frequencies, number of drinking occasions and drinking patterns. Alcohol consumption was more common among male South Africans compared to their female counterparts. The finding was consistent with literature that has found current alcohol consumption by 41,5% of the males and 17,1% of females in the country (Peltzer & Pengpid, 2015). Other patterns were also pertinent, especially among drinking males with the majority reporting risky drinking compared to females. The finding was also consistent with literature that found an overall prevalence of harmful drinking in 6% of males and 2,4% of females (Peltzer & Pengpid, 2015). The higher impact on males could be a result of the differential effect of alcohol consumption on males due to multiple factors. The gender differences could be due to social and cultural alcohol-related norms and values. In general, alcohol consumption by males is more acceptable compared to that of females. Alcohol consumption by males serves to demonstrate masculinity while intoxication by females is regarded as incompatible with their social behaviour and responsibilities.

Upon reviewing the interaction between SES, self-rated health status and different patterns of alcohol use, the study found a significant relationship between alcohol consumption and poor self-reported health especially for those drinking at risky levels. The pattern was evident across both

gender groups with the majority of those with poor health status reporting drinking a significantly high volume of alcohol in a typical drinking week. In terms of population groups, the African population group had a greater proportion of those reporting poor health status consuming larger amounts of alcohol units per typical drinking week compared to those who reported good health status. The coloured population group also displayed similar drinking patterns for males across both good and poor health status. In contrast, white males had the majority who are drinking high amounts of alcohol units per week yet reporting good health status.

The study also reviewed the changes in health status at two time periods; in 2008 when some survey participants were not alcohol drinkers and in 2014/15 when these participants reported being alcohol drinkers. The analysis revealed that the proportion of participants who made the transition to a lower health status category is higher than those who made a transition to a higher status. This finding could be indicative of the detrimental health effects of alcohol consumption over time especially upon becoming alcohol consumers. The observation suggests that there was a general decrease in self-rated health status for females upon becoming drinkers and over time. Based on income classification, a higher proportion of those who were not poor reported better health categories compared to a high proportion of those who were 'chronic poor' who reported lower health status. The logistic regression results reveal that those who stayed in chronic poverty and those who moved in and out of poverty were significantly less likely to rank their health status higher in comparison to those who were non-poor during the period under review. These findings support the AHP where those disadvantaged tend to suffer more alcohol-related harm compared to their more advantaged counterparts, in this case in terms of poorer health status. Across both genders and the population groups, participants were significantly less likely to report good health status after exposure to alcohol. However, the white population group was less impacted despite consuming alcohol in amounts comparable to other population groups, providing further support for the AHP.

In relation to drinking patterns, the study found that those with comparatively fewer drinking frequencies were significantly more likely to self-report good health status than poor health. The chances of reporting poor health status increased as the number of drinking days increase. This was more prevalent for males compared to females. Previous research suggested that females have protective factors against alcohol drinking compared to males. These include the fact that males

are more exposed to socially aggressive situations that result in drinking to relieve distress and, thereby, excessive alcohol drinking. Across all population groups, drinkers with less frequent drinking episodes in a week were more likely to report better health across the population groups. The findings further confirm the notion that risky alcohol consumption behaviour has negative health consequences. An exception was the white population group where the association was not statistically significant. In terms of alcohol units consumed per drinking occasion, drinking fewer alcohol units relative to drinking more units per drinking occasion was associated with reporting good health status compared to reporting poor health. Similarly, for male gender, consuming less alcohol units per occasion was associated with self-reporting good health status rather than poor health status. A similar pattern is evident across the population groups with the African and coloured participants who drink less alcohol more likely to report good health status. However, the association lost significance for the white population group which indicated that the group was less impacted compared to other population groups.

The study also discovered a link between drinking alcohol and an increased risk of several chronic health disorders. The female gender group had a higher percentage of participants who said they had one or more chronic diseases and drank a lot of alcohol on a weekly basis. In comparison to other population groups, whites had a higher proportion of individuals who reported drinking more alcohol in a normal week. Females with varying numbers of chronic conditions consumed less alcohol on a weekly basis than males with the same number of chronic conditions. Alcohol use was found to have a significant association with the incidence of cancer, stroke, hypertension, and diabetes diagnoses in the regression analyses. This could be due to the fact that alcohol can aggravate medical issues and interact negatively with medications.

Related literature has found that lower SES individuals are more likely to experience adverse social consequences because of alcohol drinking. This could be due to having fewer financial resources resulting in higher rates of health and other problems.

Alcohol use has been linked to negative mental health outcomes such as depression and anxiety, with both posing considerable health risks on their own, and when they overlap, they create a vicious cycle of negative consequences. When compared to other countries, South Africa has a high prevalence of depressive symptoms as well as one of the highest rates of alcohol consumption in the world. However, the study showed a decrease in the proportion of the adult population in

South Africa who had depressed symptoms across the study period. Despite the overall decline in the prevalence of depression over the years, there were noticeable shifts in the drinking patterns among the drinkers who were depressed from binge drinking to heavy drinking. Gender differences were also evident with females with more depressive symptoms more likely to abuse alcohol than their male counterparts. In terms of population groups, there was a high prevalence of depressive symptoms among African females. This could be due to the disproportionate impact of the 2008 global financial crisis on females. Research established that women are more vulnerable to economic shocks compared to males (UNAIDS, 2012). The group's vulnerability could also in part be due to entrenched gender and ethnic inequality in the country. In general, the significant predictors of depression among alcohol consumers were female gender, being African, lower level of educational attainment, higher age, less income and being unemployed, all of which supports the AHP.

According to the research reviewed in this study, the alcohol business contributes significantly to South Africa's economy in terms of employment, output, and export earnings. However, the sector comes at a high cost to the economy in terms of wellbeing. The expenses of alcohol drinking outweigh the economic benefits of the alcohol business. The total economic welfare costs of harmful alcohol consumption include resources allocated to address alcohol-related harms, lost wages and productivity, and non-financial welfare costs such as high levels of family conflict, violence, sexual violence, high-risk sexual behaviors, and road accidents. The societal costs of alcohol intake were discovered to be substantial, especially considering the high rates of alcohol consumption in general and dangerous alcohol consumption patterns in particular.

The research also shows that the current alcohol regulation regime and focus of the legislation do not adequately consider the impact of alcohol-related harms on society and properly address the consequences. This is due to a combination of factors. One is the persistent gaps in the legislative framework that the 2016 Liquor Amendment Bill aimed to address that have not been enacted into law. The proposed bill includes a number of modifications that, if implemented, could help to reduce the prevalence of alcohol abuse. These changes include increasing the drinking age to 21, introducing new liability clauses for alcohol traders, banning alcohol sales and advertising on social and small media and introducing a 100-metre radius limitation on alcohol trade around educational and religious institutions. In addition, the liquor industry has not been supportive of

alcohol price increases as a means to reduce alcohol abuse. The industry has advocated for self-regulation instead and generally continue to oppose greater government regulation. As a result, the negative consequences of alcohol consumption remain a substantial health, social and economic burden for the country. Despite the efforts by national, provincial and local spheres of government, there is still a need to develop integrated, sustained support for effective interventions to reduce alcohol-related harms.

Overall socioeconomic inequalities in health and wellbeing are exacerbated by socioeconomic inequities. Despite reporting lower or equal alcohol usage to those with higher SES, participants with lower SES had greater alcohol-related outcomes in the study. The ubiquity of the alcohol-harm paradox in the population is demonstrated by this. According to the findings of the study, the AHP can be explained by differential susceptibility, which occurs when participants are exposed to distinct sociodemographic, environmental, and behavioral risk or protective factors. Due to the country's unique history, political socio-cultural environment, and structural factors such as accessibility, availability, affordability, and alcohol policies, socioeconomic differences in alcohol-related harm are linked to differential access to preventive, diagnostic, and treatment services.

In conclusion, the study found clear evidence of the alcohol harm paradox in the NIDS study population and highlighted some of the determinants that create and sustain the paradox.

7.3   Key contributions of the study

Most studies on AHP focus on individual and local interactions and influences of alcohol consumption. The current research adopted the broader perspective of the community as a complex adaptive system composed of interacting factors that determine alcohol-related harms. This approach goes beyond individual behaviour to enhance the understanding of the AHP by considering the complex interacting mechanisms between individuals and their environment.

The AHP was empirically tested in South Africa in this study. The AHP is not only a public health burden, but it also contributes to widening health disparities. Despite international evidence of the AHP, the causes of the association remain mostly unknown. Furthermore, there is a scarcity of research in South Africa on the fundamental causes of the conundrum. Socioeconomic inequalities in alcohol-related harms have been described in empirical investigations using proximal

individual-level characteristics as plausible explanations. The community-based approach to alcohol problems allows researchers to examine the deep-seated socioeconomic health inequalities left over from apartheid's legacies. The answers for the paradox were only hypothesized before, and this study put the correlational and regression analyses for South Africa to the test. In addition, this research was able to examine the various answers for the paradox that have been proposed in the scientific literature.

The study comprehensively contributes to the body of knowledge about alcohol use by contextualising the AHP framework to the local social vulnerabilities and inequalities associated with historical apartheid policies. Differential vulnerabilities operate via channels, including differential access to healthy diets, access to quality healthcare and affordability of necessities. These act as a potential explanation for the AHP where social consequences of alcohol consumption are likely more severe among those with fewer resources. In the study, susceptibility to poor health outcomes for low SES individuals manifested in mental health status, the incidence of chronic health conditions and poor self-perceived health.

The study contributed a review of the current regulatory and policy interventions and their effectiveness in curtailing the disproportionate costs of harmful alcohol use among the population. The study considered the policy options that have been employed to reduce negative externalities in the country, and their effectiveness. The current legislative framework does not focus on adequately addressing the impact and consequences of alcohol-related harms on society. The research provided recommendations for this, based on the theoretical frameworks, conceptual model and empirical studies of the study.

7.4   Recommendations

In light of the research findings confirming the AHP in South Africa and the adverse health impact of alcohol consumption falling disproportionately on low SES individuals, the following recommendations are made on how the government and society can intervene and mitigate the socioeconomic inequalities in alcohol-related harm.

- Given the unequal impact of alcohol on mental health and chronic health conditions as demonstrated by the AHP, it is recommended that alcohol regulation be centred around the WHO-recommended 'best buys': regulation of alcohol marketing,

controlling the physical availability of alcohol and increasing prices of alcohol products. These could be implemented at national, provincial and local levels.

- The fragmented legislative framework should be addressed. At the national level, the DTI designs the default alcohol legislation for provinces but requires provinces to pass their own legislation, to address the specific challenges and realities of the alcohol market and industry. However, only three provinces – the Western Cape, Gauteng and Eastern Cape – have passed provincial legislation. This piecemeal approach to alcohol regulation allows the alcohol industry to act in its own interests and creates opportunities for illegal suppliers to operate outside government oversite, the tax net or health and hygiene concerns, risking further alcohol-related harms in the country.

- As discussed in Chapter 4, the DTI prepared the most recent National Liquor Bill in 2016, which included numerous broad measures to reduce alcohol-related harms. The amendment bill proposes, among other things, raising the legal drinking age to 21 years old, prohibiting alcohol sales within a 100-meter radius of educational and religious institutions, prohibiting alcohol sales and advertising on social and small media, and establishing a liability clause for alcohol sellers. The bill was approved by the cabinet in 2016, but development was slowed by opposing interests and pressure from the alcohol industry. Recent COVID-19 lockdown restrictions showed that simple measures such as reducing the number of outlets selling alcohol, curbing the hours of sale, and policing a night-time curfew dramatically reduced the incidence of drunkenness, road accidents, violent crime and hospital admissions for trauma across the country, proving that stricter regulation would impact positively on alcohol-related harms. In line with these developments, the current study recommends that the government and Parliament rapidly move to the adoption of the Liquor Amendment Bill of 2016 as a way of permanently reducing alcohol harms.

- The study theorised the easy availability of alcohol as one of the factors that drive the AHP. The availability of alcohol is driven by price and physical accessibility. Deprived neighbourhoods have a greater alcohol outlet density compared to advantaged neighbourhoods, contributing to disproportionate alcohol harms. Therefore, it is recommended that availability be controlled through regulating the

density of alcohol outlets, trading days and hours through stricter control of licensing. Second, price strategies should include raising the price of alcoholic beverages through excise taxes and/or implementing minimum unit pricing (MUP). Alcohol pricing policies are seen to be successful in reducing the socioeconomic impact of alcohol-related harms (WCG, 2016). MUP does not impose a disproportionate financial cost on moderate drinkers in lower socioeconomic categories, according to various research. Instead, it focuses on risky and harmful drinkers from all socioeconomic backgrounds, as these are the ones who buy the cheapest units of alcohol (Holmes et al., 2014).

- The government should revise policies and legislative gaps that allow a high density of alcohol outlets in poorer communities. This could be achieved by considering zoning requirements, population size and density when granting new alcohol licences or when seeking variations of existing licences.

- The policy intervention should also involve rigorous policing and prosecution of unlicensed liquor outlets, not only to reduce alcohol harms caused by their proliferation, but to ensure that all outlets are registered and licenced businesses. This will force them into the tax base, providing a revenue stream that can contribute to funding the treatment of the consequences of alcohol harms including addiction, trauma and rehabilitation.

- Implementing stricter controls on alcohol availability and use is likely to reduce the incidence of certain crimes for the benefit of social cohesion and stability in communities, including intimate partner violence and murder. In a period of alcohol policy reform in New Zealand, interventions such as improved security, a ban on alcohol advertising and stricter liquor licence policies registered significant reductions in alcohol-related harms such as vandalism, violence, theft and sexual assaults (Kypri, Maclennan & Connor, 2020).

- Policies should target high-risk drinkers such as the youth to reduce the average consumption and harms. This can be accomplished by working to de-normalise heavy drinking through regulating alcohol advertising and promoting healthy lifestyle

behaviours. In support of such an approach, several longitudinal studies in Europe have provided evidence of the long-term effects of exposure to alcohol advertising on drinking behaviour (De Bruijn, 2012).

- The study recommends that more be done to mitigate the costs of harmful alcohol use and its impact on economic growth. Among policy interventions that should be considered are increasing alcohol excise taxes and the costs of licensing and compliance with business regulations. There should also be an absolute ban on the presence of children on premises selling alcohol, enforced by severe punitive sanctions for contraventions.

- Low SES individuals tend to be poorly educated, which contributes to poor decisions around using and abusing alcohol. In addition, many poor children and youth, who do not have the emotional intelligence and maturity to make decisions about alcohol use, do not have access to the guidance of a parent or both parents, and in environments characterised by high unemployment and poverty, are exposed to negative role models in the form of alcoholics, gangsters and criminals. The government should make concerted interventions for the treatment of individual high-risk drinkers in communities and simultaneously focus on life skills education of the young to encourage abstinence.

- A specific intervention that is relatively easy to implement is to reduce the permissible blood alcohol concentration levels, ramp up testing of drivers and increase sanctions for driving under the influence of alcohol, including revoking licences.

- Implement a comprehensive preventative programme aimed at supporting pregnant women in having healthier, drug- and alcohol-free pregnancies so that their babies are born healthier. The programme should focus on awareness efforts involving the community at large, all possible stakeholders and service providers, as well as at-risk individuals in low- SES communities. This would reduce the adverse impact of FASD on the lives of children, families and communities in the country.

- Given that low-SES people are more likely to suffer from alcohol-related mental health problems, chronic diseases and conditions, intervention strategies should be

aimed at reducing the negative health effects of alcohol consumption on the poor. This can be accomplished through targeted education programmes directed at disadvantaged individuals and communities about how risky alcohol intake increases the health hazards linked with alcohol. The application of the three "best buys" advocated by the WHO: restricting marketing, reducing physical availability, and raising pricing also has the potential to significantly reduce the adverse impact of harmful alcohol use on low SES individuals and communities.

- One urgent matter calls for the development of comprehensive targeted interventions to reduce the unequal impacts of alcohol harms to mothers, specifically the alarmingly high incidence of FASD caused by pregnant mothers drinking. Aside from the financial and social burden that FASD places on the country, it is unacceptable that a preventable problem created by apartheid continues to exist in the third decade of democracy. It is recommended that a comprehensive and inclusive policy across impacted departments at both national and provincial levels be urgently developed and implemented. As an immediate intervention, the Departments of Health, Social Development and Basic Education should implement a joint educational programme to target women in disadvantaged areas and especially on farms. As part of this, relevant legislation should be amended to criminalise the ongoing dop system practices7 with severe penalties, including imprisonment. In line with approach, programmes such as First 1000 Days should be evaluated for their contribution and impact and rolled out more widely, especially to marginalised and vulnerable sections of the population (e.g. in rural and farm areas)[8].

- Related to this, there is a need to promote and encourage strong and vibrant civil society organisations, trade unions, women's groups, community groups and environmental lobbies to advocate against alcohol use which, in low SES communities, redirects and exports capital out of communities that could be better employed to improve health, education and employment outcomes. The recommendation from the study is for policymakers to consider the importance of

---

[8] The National Integrated Early Childhood Development (ECD) Policy, adopted by Cabinet in 2015, outlines a multi-sectoral approach to promoting the health, nutrition, development and well-being of mothers and young children (Berry, Dawes & Biersteker, 2013)

supporting community efforts in preventing harmful alcohol use, particularly among vulnerable individuals and communities.

- In the conclusion, the study also recommends the adoption of broader community strategies to confront and address the underlying causes of inequalities in the country, that is, the unequal distribution of wealth and resources engineered during apartheid.

7.5 Future research

The findings of this thesis support the rationale for intervention in the alcohol sector to curb alcohol misuse in the country. In this regard, the study identified implications towards future research in this area as well as alcohol policy implications. A national study is urgently needed, specifically focused on informing policy and legislation to address the harms associated with the AHP. This is especially true given that NIDS Wave 5 did not include alcohol related questions, and the study recommends to include them in future.
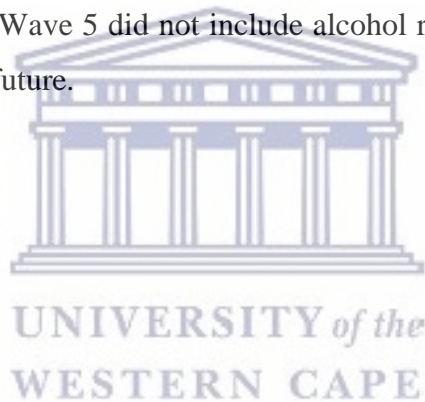
LIST OF REFERENCES

Abel, E.L. & Hannigan, J.H. 1995. 'J-shaped' relationship between drinking during pregnancy and birth weight: Reanalysis of prospective epidemiological data. *Alcohol and Alcoholism, 30*(3): 345–55.

Adams, S., Savahl, S., Isaacs, S. & Carels, C.Z. 2013. Alcohol consumption amongst young adults living in a low socioeconomic status community in Cape Town. *Social Behavior and Personality: An International Journal*, *41*(6), pp.971–979.

Adebiyi, B.O. & Mukumbang, F.C. 2021. A pooled prevalence of fetal alcohol spectrum disorders in South Africa: A systematic review and meta-analysis protocol. *Archives of Public Health*, *79*(1), pp.1–6.

Adler, N.E., Boyce, T., Chesney, M.A., Cohen, S., Folkman, S., Kahn, R.L. et al. 1994. Socioeconomic status and health: the challenge of the gradient. *American Psychologist*, *49*(1), pp.15–24.

African National Congress. 2021. Unity, renewal and reconstruction in the year of Charlotte Maxeke. Speech by C. Ramaphosa at a party rally in Polokwane, Limpopo, South Africa, January.

Ajaero, C.K., Nzeadibe, C.T. & Igboeli, E.E. 2018. Rural-urban differences in the prevalence and predictors of depression among adolescents in South Africa. *South African Journal of Child Health*, *2018*(1), pp.s71–s74.

Anderson, N.B. & Armstead, C.A. 1995. Toward understanding the association of socioeconomic status and health: A new challenge for the biopsychosocial approach. *Psychosomatic Medicine*, *57*(3), pp.213–225.

Anderson, P., Chisholm, D. & Fuhr, D.C. 2009. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *The Lancet*, *373*(9682), pp.2234–2246.

Anthenelli, R.M. & Schuckit, M.A. 1993. Affective and anxiety disorders and alcohol and drug dependence: diagnosis and treatment. *Journal of Addictive Diseases*, *12*(3), pp.73–87.

Ardington, C. & Case, A. 2010. Interactions between mental health and socioeconomic status in the South African National Income Dynamics Study. *Studies in Economics and Econometrics*, *34*(3), pp.69–85.

Ashley, M.J., Ferrence, R., Room, R., Bondy, S., Rehm, J. & Single, E. 1997. Moderate drinking and health. Implications of recent evidence. *Canadian Family Physician*, *43*, pp.687–694.

Ataguba, J.E.O. & Alaba, O. 2012. Explaining health inequalities in South Africa: A political economy perspective. *Development Southern Africa*, *29*(5), pp.756–764.

Atwoli, L., Stein, D.J., Williams, D.R., Mclaughlin, K.A., Petukhova, M., Kessler, R.C. et al. 2013. Trauma and posttraumatic stress disorder in South Africa: Analysis from the South African Stress and Health Study. *BMC Psychiatry*, *13*(1), pp.1–12.

Balia, S. & Jones, A.M. 2008. Mortality, lifestyle and socioeconomic status. *Journal of Health Economics*, *27*(1), pp.1–26.

Balsa, A.I., Homer, J.F., Fleming, M.F. and French, M.T. 2008. Alcohol consumption and health among elders. *The Gerontologist*, *48*(5), pp.622–636.

Baltagi, B.H. & Griffin, J.M. 2002. Rational addiction to alcohol: Panel data analysis of liquor consumption. *Health Economics*, *11*(6), pp.485–491.

Barker, F. 2002. Consumption externalities and the role of government: The case of alcohol. *New Zealand Treasury Working Paper No. 02/25*.

Bateman, C. 2015. Mental health under-budgeting undermining SA's economy. *South African Medical Journal*, *105*(1), pp.7–8.

Baulch, B. and Quisumbing, A., 2011. Testing and adjusting for attrition in household panel data. *CPRC Toolkit Note*.

Beard, E., Brown, J., West, R., Holmes, J., Kaner, E., Meier, P. et al. 2015. Characterising the alcohol harm paradox: A population-based survey of adults in England. *The Lancet*, *386*, p.23.

Becker, G.S. & Murphy, K.M. 1988. A theory of rational addiction. *Journal of Political Economy*, *96*(4), pp.675–700.

Bell, S. & Britton, A. 2014. An exploration of the dynamic longitudinal relationship between mental health and alcohol consumption: A prospective cohort study. *BMC Medicine*, *12*(1), pp.1–13.

Bellis, M.A., Hughes, K., Nicholls, J., Sheron, N., Gilmore, I. & Jones, L. 2016. The alcohol harm paradox: Using a national survey to explore how alcohol may disproportionately impact health in deprived individuals. *BMC Public Health*, *16*(1), pp.1–10.

Bellos, S., Petrikis, P., Malliori, M., Mavreas, V. & Skapinakis, P. 2020. Prevalence of alcohol use disorders and their association with sociodemographic determinants and depression/anxiety disorders in a representative sample of the Greek general population. *Psychiatry Journal*, (*2020).*

Bellos, S., Skapinakis, P., Rai, D., Zitko, P., Araya, R., Lewis, G. et al. 2013. Cross-cultural patterns of the association between varying levels of alcohol consumption and the common mental disorders of depression and anxiety: Secondary analysis of the WHO Collaborative Study on Psychological Problems in General Health Care. *Drug and Alcohol Dependence*, *133*(3), pp.825–831.

Bergmark, K.H. 2004. Gender roles, family, and drinking: Women at the crossroad of drinking cultures. *Journal of Family History*, *29*(3), pp.293–307.

Blas, E. & Kurup, A.S. (Eds.). 2010. *Equity, social determinants and public health programmes*. Geneva: World Health Organisation.

Bloomfield, K. 2020. Understanding the alcohol-harm paradox: What next? *The Lancet Public Health*, *5*(6), pp.e300–e301.

Bloomfield, K.I.M., Grittner, U., Kramer, S. & Gmel, G. 2006. Social inequalities in alcohol consumption and alcohol-related problems in the study countries of the EU concerted action 'Gender, Culture and Alcohol Problems: A Multi-national Study'. *Alcohol and Alcoholism*, *41*(suppl_1), pp.i26–i36.

Boden, J.M. & Fergusson, D.M. 2011. Alcohol and depression. *Addiction*, *106*(5), pp.906–914.

Bonevski, B., Regan, T., Paul, C., Baker, A.L. & Bisquera, A. 2014. Associations between alcohol, smoking, socioeconomic status and comorbidities: Evidence from the 45 and Up Study. *Drug and Alcohol Review*, *33*(2), pp.169–176.

Bouchery, E.E., Harwood, H.J., Sacks, J.J., Simon, C.J. & Brewer, R.D. 2011. Economic costs of excessive alcohol consumption in the US, 2006. *American Journal of Preventive Medicine*, *41*(5), pp.516–524.

Bowers, Y., Davids, A. & London, L. 2020. Alcohol outlet density and deprivation in six towns in Bergrivier municipality before and after legislative restrictions. *International Journal of Environmental Research and Public Health*, *17*(3), p.697.

Boyd, J., Bambra, C., Purshouse, R.C. & Holmes, J. 2021. Beyond behaviour: How health inequality theory can enhance our understanding of the 'Alcohol-Harm Paradox'. *International Journal of Environmental Research and Public Health, 18*(11), p.6025.

Boyd, J., Sexton, O., Angus, C., Meier, P., Purshouse, R.C. & Holmes, J. 2021. Causal mechanisms proposed for the alcohol harm paradox—A systematic review. *Addiction*. doi: 10.1111/add.15567. Online ahead of print.

Bratberg, G.H., Wilsnack, S.C., Wilsnack, R., Haugland, S.H., Krokstad, S., Sund, E.R. et al. 2016. Gender differences and gender convergence in alcohol use over the past three decades (1984–2008), The HUNT Study, Norway. *BMC Public Health*, *16*(1), pp.1–12.

Brown, M., Daniels, R., de Villiers, L., Leibbrandt, M. & Woolard, I. 2012. NIDS Wave 2 User Guide. *University of Cape Town: Southern Africa Labour and Development Research Unit*.

Brunborg, G.S., Bye, E.K. & Rossow, I. 2014. Collectivity of drinking behavior among adolescents: An analysis of the Norwegian ESPAD data 1995–2011. *Nordic Studies on Alcohol and Drugs*, *31*(4), pp.389–400.

Bryden, A., Roberts, B., Petticrew, M. & McKee, M. 2013. A systematic review of the influence of community level social factors on alcohol use. *Health and Place*, *21*, pp.70–85.

Burger, R., Steenekamp, C.L., Van der Berg, S. & Zoch, A. 2014. The middle class in contemporary South Africa: Comparing rival approaches. *Development Southern Africa, 32*(1).

BusinessTech. 2021. South Africa to look at stricter alcohol laws – here's what you should know. 10 January 2021. *BusinessTech*. Available: <https://businesstech.co.za/news/government/459770/south-africa-to-look-at-stricter-alcohol-laws-heres-what-you-should-know/> (Accessed 26 September 2021).

Caetano, R. 1987. Acculturation and drinking patterns among US Hispanics. *British Journal of Addiction*, *82*(7), pp.789–799.

Caetano, R., Vaeth, P.A., Mills, B. & Canino, G. 2016. Employment status, depression, drinking, and alcohol use disorder in Puerto Rico. *Alcoholism: Clinical and Experimental Research*, *40*(4), pp.806–815.

Cai, J., Coyte, P.C. & Zhao, H. 2017. Determinants of and socioeconomic disparities in self-rated health in China. *International Journal for Equity in Health*, *16*(1), pp.1–27.

Calhoun, P.S., Wilson, S.M., Dedert, E.A., Cunningham, K.C., Burroughs, T.K., Hicks, T.A. et al. 2018. The association of alcohol consumption patterns with self-rated physical health and psychiatric distress among Afghanistan-and Iraq-era US veterans. *Psychiatry Research*, *259*, pp.142–147.

Casswell, S., Huckle, T., Wall, M., Parker, K., Chaiyasong, S., Parry, C.D. et al. 2018. Policy-relevant behaviours predict heavier drinking and mediate the relationship with age, gender and education status: Analysis from the International Alcohol Control Study. *Drug and Alcohol Review*, *37*, pp.S86–S95.

Casswell, S., Pledger, M. & Hooper, R. 2003. Socioeconomic status and drinking patterns in young adults. *Addiction*, *98*(5), pp.601–610.

Cawley, J. 2004. An economic framework for understanding physical activity and eating behaviors. *American Journal of Preventive Medicine*, *27*(3), pp.117–125.

Centers for Disease Control and Prevention (CDC). 2012. Current cigarette smoking among adults-United States, 2011. *Morbidity and Mortality Weekly Report*, *61*(44), pp.889–894.

Chaloupka, F. 1991. Rational addictive behavior and cigarette smoking. *Journal of Political Economy*, *99*(4), pp.722–742.

Chaloupka, F.J., Grossman, M. & Saffer, H. 2002. The effects of price on alcohol consumption and alcohol-related problems. *Alcohol Research and Health*, *26*(1), pp.22–34.

Cheah, Y.K. 2015. Socioeconomic determinants of alcohol consumption among non-Malays in Malaysia. *Hitotsubashi Journal of Economics*, pp.55–72.

Chelwa, G., Van Walbeek, C. & Blecher, E. 2015. Evaluating South Africa's tobacco control initiative: A synthetic control approach. *Economic Research Southern Africa Working Paper Series 2015, Working Paper*, *566*.

Chingwete, A. & Nomdo, A. 2016. Despite decline in lived poverty, South Africans increasingly pessimistic about the economy. *Afrobarometer Dispatch No. 83*. Available: http://afrobarometer.org/publications/ad83-despite-decline-in-lived-poverty-south-africanspessimistic-about-economy.

Chinhema, M., Brophy, T., Brown, M., Leibbrandt, M., Mlatsheni, C. & Woolard, I. 2016. *National Income Dynamics Study Panel user manual*. Cape Town: Southern Africa Labour and Development Research Unit.

Choi, K.W., Abler, L.A., Watt, M.H., Eaton, L.A., Kalichman, S.C., Skinner, D. et al. 2014. Drinking before and after pregnancy recognition among South African women: the moderating role of traumatic experiences. *BMC Pregnancy and Childbirth*, *14*(1), pp.1–9.

Chuang, Y.C., Li, Y.S., Wu, Y.H. & Chao, H.J. 2007. A multilevel analysis of neighborhood and individual effects on individual smoking and drinking in Taiwan. *BMC Public Health*, *7*(1), pp.1–10.

Clarke, H. 2008. The economist's way of thinking about alcohol policy. *Agenda: A Journal of Policy Analysis and Reform*, pp.27–42.

Collins, S.E. 2016. Associations between socioeconomic factors and alcohol outcomes. *Alcohol Research: Current Reviews*, *38*(1), p.83–94.

Contoyannis, P. & Jones, A.M. 2004. Socioeconomic status, health and lifestyle. *Journal of Health Economics*, *23*(5), pp.965–995.

Cook, P.J. & Moore, M.J. 2002. The economics of alcohol abuse and alcohol-control policies. *Health Affairs*, *21*(2), pp.120–133.

Cooper, K., May, D., Soderstrom, I. & Jarjoura, G.R. 2009. Examining theoretical predictors of substance use among a sample of incarcerated youth. *Journal of Offender Rehabilitation*, *48*(8), pp.669–695.

Cooper, M.L., Russell, M., Skinner, J.B., Frone, M.R. & Mudar, P. 1992. Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *Journal of Abnormal Psychology*, *101*(1), pp.139–152.

Cornah, D. 2006. *Cheers? Understanding the relationship between alcohol and mental health.* London: Mental Health Foundation.

Corrigall, J. & Matzopoulos, R. 2013. Violence, alcohol misuse and mental health: Gaps in the health system's response. In Padarath, A. & English, R. (Eds.). *South African Health Review*, *2012/13*. Durban: Health Systems Trust, pp.103–114.

Dahlgren, G. & Whitehead, M. 2007. A framework for assessing health systems from the public's perspective: The ALPS approach. *International Journal of Health Services*, *37*(2), pp.363–378.

Dahlman, C.J. 1979. The problem of externality. *Journal of Law and Economics*, *22*(1), pp.141–162.

Dawson, D.A., Grant, B.F. & Ruan, W.J. 2005. The association between stress and drinking: modifying effects of gender and vulnerability. *Alcohol and Alcoholism*, *40*(5), pp.453–460.

De Bruijn, A. 2012. *The impact of alcohol marketing. Alcohol in the European Union*. Copenhagen: World Health Organisation.

Deghaye, N., McKenzie, T. & Chirawu, P. 2014. Inequality in South Africa: A two-part document on the current understanding and dimensions of inequality in health, gender and livelihoods. *HEARD Division, Occasional Paper 4*, Oxfam.

Department of Trade and Industry (DTI). 2016. *National liquor policy review*. Pretoria: DT.

DeSalvo, K.B., Bloser, N., Reynolds, K., He, J. & Muntner, P. 2006. Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine*, *21*(3), pp.267–275.

Dietze, P.M., Jolley, D.J., Chikritzhs, T.N., Clemens, S., Catalano, P. & Stockwell, T. 2009. Income inequality and alcohol attributable harm in Australia. *BMC Public Health*, *9*(1), pp.1–9.

Dowdall, N., Ward, C.L. & Lund, C. 2017. The association between neighbourhood-level deprivation and depression: Evidence from the South African National Income Dynamics Study. *BMC Psychiatry*, *17*(1), pp.1–10.

Dvorak, R.D., Stevenson, B.L., Kilwein, T.M., Sargent, E.M., Dunn, M.E., Leary, A.V. et al. 2018. Tension reduction and affect regulation: An examination of mood indices on drinking and non-drinking days among university student drinkers. *Experimental and Clinical Psychopharmacology*, *26*(4), pp.377–390.

Easterly, W. 2001. The middle class consensus and economic development. *Journal of Economic Growth*, *6*(4), pp.317–335.

Easton, B. 2008. Alcohol – Socioeconomic impacts (including externalities). *International Encyclopedia of Public Health*, pp.112–116.

Eaton, N.R., Thompson, R.G., Hu, M.C., Goldstein, R.B., Saha, T.D. & Hasin, D.S. 2015. Regularly drinking alcohol before sexual activity in a nationally representative sample: Prevalence, sociodemographics, and associations with psychiatric and substance use disorders. *American Journal of Public Health, 105*(7), pp.1387–1393.

Erskine, S., Maheswaran, R., Pearson, T. & Gleeson, D. 2010. Socioeconomic deprivation, urban-rural location and alcohol-related mortality in England and Wales. *BMC Public Health, 10*(1), pp.1–8.

Ewing, S.W.F., Sakhardande, A. & Blakemore, S.J. 2014. The effect of alcohol consumption on the adolescent brain: A systematic review of MRI and fMRI studies of alcohol-using youth. *NeuroImage: Clinical*, *5*, pp.420–437.

Fieldgate, I., Jeffrey, R., Madinane, M., Ebrahim, Y., Soobyah, L. & Jordaan, J. 2013. *Economic impact of an advertising ban on alcoholic beverages*. Johannesburg: Econometrix.

Fone, D.L., Farewell, D.M., White, J., Lyons, R.A. & Dunstan, F.D. 2013. Socioeconomic patterning of excess alcohol consumption and binge drinking: a cross-sectional study of multilevel associations with neighbourhood deprivation. *BMJ Open*, *3*(4), p.e002337.

Forbes, M.K., Flanagan, J.C., Barrett, E.L., Crome, E., Baillie, A.J., Mills, K.L. et al. 2015. Smoking, posttraumatic stress disorder, and alcohol use disorders in a nationally representative sample of Australian men and women. *Drug and Alcohol Dependence*, *156*, pp.176–183.

Freeman, M. & Parry, C. 2006. *Alcohol use literature review*. Johannesburg: Soul City Institute. Available: https://www.soulcity.org.za/projects/soul-city-series/soul-city-series-8/literature-review/alcohol-use-literature-review/@@download/file/Alcohol%20Use%20Literature%20Review.pdf (Accessed 5 May 2021).

French, M.T. & Zavala, S.K. 2007. The health benefits of moderate drinking revisited: alcohol use and self-reported health status. *American Journal of Health Promotion*, *21*(6), pp.484–491.

Frohlich, J.R., Rapinda, K.K., O'Connor, R.M. & Keough, M.T. 2018. Examining co-patterns of depression and alcohol misuse in emerging adults following university graduation. *Addictive Behaviors Reports*, *8*, pp.40–45.

Fuller, E. 2008. Alcohol consumption. In Craig, R. & Mindell, J. (Eds.). *Health survey for England 2006. Volume 1: Cardiovascular disease and risk factors in adults.* Leeds: Health and Social Care Information Centre. www.hscic.gov.uk/pubs/hse06cvdandriskfactors

Galea, S., Ahern, J., Tracy, M. & Vlahov, D. 2007. Neighborhood income and income distribution and the use of cigarettes, alcohol, and marijuana. *American Journal of Preventive Medicine*, *32*(6), pp.S195–S202.

Gilmore, I.T. & Atkinson, S. 2010. Evidence to drive policy on alcohol pricing. *The Lancet*, *375*(9723), pp.1322–1324.

Giovazolias, T. & Themeli, O. 2014. Social learning conceptualization for substance abuse: Implications for therapeutic interventions. *European Journal of Counselling Psychology, 3*(1), pp.69–78.

Giskes, K., Turrell, G., Bentley, R. & Kavanagh, A. 2011. Individual and household-level socioeconomic position is associated with harmful alcohol consumption behaviours among adults. *Australian and New Zealand Journal of Public Health*, *35*(3), pp.270–277.

Giupponi, G., Bizzarri, J., Pycha, R., Innamorati, M., Lester, D., Conca, A. 2010. Socioeconomic risk factors and depressive symptoms in alcohol use disorders among male suicides in South Tirol, Italy. *Journal of Addictive Diseases*, *29*(4), pp.466–474.

Glassman, T., Braun, R.E., Dodd, V., Miller, J.M. & Miller, E.M. 2010. Using the theory of planned behavior to explain the drinking motivations of social, high-risk, and extreme drinkers on game day. *Journal of Community Health*, *35*(2), pp.172–181.

Goodman, E. & Huang, B. 2002. Socioeconomic status, depressive symptoms, and adolescent substance use. *Archives of Pediatrics and Adolescent Medicine*, *156*(5), pp.448–453.

Gossage, J.P., Snell, C.L., Parry, C.D., Marais, A.S., Barnard, R., De Vries, M. et al. 2014. Alcohol use, working conditions, job benefits, and the legacy of the "Dop" system among farm workers in the Western Cape province, South Africa: Hope despite high levels of risky drinking. *International Journal of Environmental Research and Public Health*, *11*(7), pp.7406–7424.

Govender, R., Sukhai, A., Roux, D. and van Niekerk, A., 2021. Driver intoxication and risk for fatal crashes in South Africa: A 3-year review. *South African Medical Journal*, *111*(10), pp.968-973.

Green, R. 2011. The ethics of sin taxes. *Public Health Nursing*, *28*(1), pp.68–77.

Greenfield, T.K., Ye, Y., Kerr, W., Bond, J., Rehm, J. & Giesbrecht, N. 2009. Externalities from alcohol consumption in the 2005 US National Alcohol Survey: Implications for policy. *International Journal of Environmental Research and Public Health*, *6*(12), pp.3205–3224.

Grittner, U., Kuntsche, S., Graham, K. & Bloomfield, K. 2012. Social inequalities and gender differences in the experience of alcohol-related problems. *Alcohol and Alcoholism*, *47*(5), pp.597–605.

Grønbæk, M., Mortensen, E.L., Mygind, K., Andersen, A.T., Becker, U., Gluud, C. et al. 1999. Beer, wine, spirits and subjective health. *Journal of Epidemiology and Community Health*, *53*(11), pp.721–724.

Gruber, J. & Köszegi, B. 2001. Is addiction "rational"? Theory and evidence. *The Quarterly Journal of Economics*, *116*(4), pp.1261–1303.

Gruber, J. & Köszegi, B. 2004. Tax incidence when individuals are time-inconsistent: The case of cigarette excise taxes. *Journal of Public Economics*, *88*(9-10), pp.1959–1987.

Grzywacz, J.G. & Almeida, D.M. 2008. Stress and binge drinking: A daily process examination of stressor pile-up and socioeconomic status in affect regulation. *International Journal of Stress Management*, *15*(4), pp.364–380.

Gutjahr, E., Gmel, G. & Rehm, J. 2001. Relation between average alcohol consumption and disease: An overview. *European Addiction Research*, *7*(3), pp.117–127.

Hajema, K., Knibbe, R.A. & Drop, M.J. 1997. Effects of drinking patterns and social conditions on incidence and chronicity of alcohol-related problems. *Contemporary Drug Problems*, *24*(3), pp.473–511.

Hallgren, M., Leifman, H. & Andréasson, S. 2012. Drinking less but greater harm: Could polarized drinking habits explain the divergence between alcohol consumption and harms among youth? *Alcohol and Alcoholism*, *47*(5), pp.581–590.

Harrison, D. 2020. Five urgent strategies to reduce the harm of excessive alcohol consumption in South Africa. (PPTX Document). Available: <https://pmg.org.za/files/200819DGMT.pptx>. (Accessed 5 September 2021).

Hart, A. 2015. Assembling interrelations between low socioeconomic status and acute alcohol-related harms among young adult drinkers. *Contemporary Drug Problems*, *42*(2), pp.148–167.

Hasking, P., Boyes, M. & Mullan, B. 2015. Reward and cognition: Integrating reinforcement sensitivity theory and social cognitive theory to predict drinking behavior. *Substance Use and Misuse*, *50*(10), pp.1316–1324.

Haydon, H.M., Obst, P.L. & Lewis, I. 2018. Examining women's alcohol consumption: The theory of planned behavior and self-identity. *Substance Use and Misuse*, *53*(1), pp.128–136.

Heien, D.M. & Pittman, D.J. 1993. The external costs of alcohol abuse. *Journal of Studies on Alcohol*, *54*(3), pp.302–307.

Henkel, D. 2011. Unemployment and substance use: A review of the literature (1990–2010). *Current Drug Abuse Reviews, 4*(1), pp.4–27.

Herman, A.A., Stein, D.J., Seedat, S., Heeringa, S.G., Moomal, H. & Williams, D.R. 2009. The South African Stress and Health (SASH) study: 12-month and lifetime prevalence of common mental disorders. *South African Medical Journal*, *99*(5).

Hilton, M.E. & Bloss, G. 1993. Economics and the prevention of alcohol-related problems. *Research Monograph*, (25).

Hoffmeister, H., Schelp, F.P., Mensink, G.B., Dietz, E. & Böhning, D. 1999. The relationship between alcohol consumption, health indicators and mortality in the German population. *International Journal of Epidemiology*, *28*(6), pp.1066–1072.

Holder, H.D. 2006. *Alcohol and the community: A systems approach to prevention*. Cambridge: Cambridge University Press.

Holmes, J., Meng, Y., Meier, P.S., Brennan, A., Angus, C., Campbell-Burton, A. et al. 2014. Effects of minimum unit pricing for alcohol on different income and socioeconomic groups: A modelling study. *The Lancet*, *383*(9929), pp.1655–1664.

Holzman-Escareno, A. 2009. The cause of crime. *A Journal of Academic Writing, 7*(3), pp.15–22.

Huang, C.D. 2003. Econometric models of alcohol demand in the United Kingdom. *Government Economic Service Working Paper*, *140*, pp.1–51.

Huckle, T., You, R.Q. & Casswell, S. 2010. Socio-economic status predicts drinking patterns but not alcohol-related consequences independently. *Addiction*, *105*(7), pp.1192–1202.

Humensky, J.L. 2010. Are adolescents with high socioeconomic status more likely to engage in alcohol and illicit drug use in early adulthood? *Substance Abuse Treatment, Prevention, and Policy*, *5*(1), pp.1–10.

Hummel, D. 2018. The potential effects of the social costs from alcohol consumption on state financial condition. *Journal of Public Budgeting, Accounting and Financial Management, 30*(1).

Hundenborn, J., Leibbrandt, M.V. & Woolard, I. 2018. Drivers of inequality in South Africa. *WIDER Working Paper No. 2018/162*.

Iparraguirre, J. 2015. Socioeconomic determinants of risk of harmful alcohol drinking among people aged 50 or over in England. *BMJ Open*, *5*(7), p.e007684.

Jablonska, B. & Lindberg, L. 2007. Risk behaviours, victimisation and mental distress among adolescents in different family structures. *Social Psychiatry and Psychiatric Epidemiology*, *42*(8), pp.656–663.

Jacobs, L. & Jacobs, J. 2013. Narratives on alcohol dependence in the family in post-apartheid South Africa. *Journal of Addiction Research and Therapy*, *4*(3), pp.1–6.

Jacobs, L., Steyn, N. & Labadarios, D. 2013. 'Mind the gap': Observations in the absence of guidelines for alcohol abstinence among expectant women in South Africa. *HSRC Policy Brief, March*. http://hdl.handle.net/20.500.11910/3008

Jefferis, B.J., Manor, O. & Power, C. 2007. Social gradients in binge drinking and abstaining: Trends in a cohort of British adults. *Journal of Epidemiology & Community Health*, *61*(2), pp.150–153.

Jiang, R., Hu, F.B., Giovannucci, E.L., Rimm, E.B., Stampfer, M.J., Spiegelman, D. et al. 2003. Joint association of alcohol and folate intake with risk of major chronic disease in women. *American Journal of Epidemiology*, *158*(8), pp.760–771.

Jones, A., Rice, J., d'Uva, B.T. & Balia, S. 2007. *Applied health economics*. London: Taylor & Francis.

Jones, L., Bates, G., McCoy, E. & Bellis, M.A. 2015. Relationship between alcohol-attributable disease and socioeconomic status, and the role of alcohol consumption in this relationship: A systematic review and meta-analysis. *BMC Public Health*, *15*(1), pp.1–14.

Jones, L., McCoy, E., Bates, G., Bellis, M. & Sumnall, H. 2015. Understanding the alcohol harm paradox in order to focus the development of interventions: Final report, Centre for Public Health. Available: https://alcoholchange.org.uk/publication/understanding-the-alcohol-harm-paradox (Accessed 2 November 2021).

Jose, B.S., Van Oers, H.A., Van de Mheen, H.D., Garretsen, H.F. & Mackenbach, J.P. 2000. Stressors and alcohol consumption. *Alcohol and Alcoholism*, *35*(3), pp.307–312.

Kaplan, G.A., Goldberg, D.E., Everson, S.A., Cohen, R.D., Salonen, R., Tuomilehto, J. et al. 1996. Perceived health status and morbidity and mortality: evidence from the Kuopio ischaemic heart disease risk factor study. *International Journal of Epidemiology*, *25*(2), pp.259–265.

Karriker-Jaffe, K.J. 2011. Areas of disadvantage: A systematic review of effects of area-level socioeconomic status on substance use outcomes. *Drug and Alcohol Review*, *30*(1), pp.84–95.

Karriker-Jaffe, K.J., Zemore, S.E., Mulia, N., Jones-Webb, R., Bond, J. & Greenfield, T.K. 2012. Neighborhood disadvantage and adult alcohol outcomes: Differential risk by race and gender. *Journal of Studies on Alcohol and Drugs*, *73*(6), pp.865–873.

Katikireddi, S.V., Whitley, E., Lewsey, J., Gray, L. & Leyland, A.H. 2017. Socioeconomic status as an effect modifier of alcohol consumption and harm: Analysis of linked cohort data. *The Lancet Public Health*, *2*(6), pp.e267–e276.

Kawachi, I., Kennedy, B.P. & Glass, R. 1999. Social capital and self-rated health: A contextual analysis. *American Journal of Public Health*, *89*(8), pp.1187–1193.

Kawada, T. 2003. Self-rated health and life prognosis. *Archives of Medical Research*, *34*(4), pp.343–347.

Kehoe, T., Gmel, G., Shield, K.D., Gmel, G. & Rehm, J. 2012. Determining the best population-level alcohol consumption model and its impact on estimates of alcohol-attributable harms. *Population Health Metrics*, *10*(1), pp.1–19.

Kenkel, D.S., Ribar, D.C., Cook, P.J. & Peltzman, S. 1994. Alcohol consumption and young adults' socioeconomic status. *Brookings Papers on Economic Activity. Microeconomics, 1994*, pp.119–175.

Keyes, K.M. & Hasin, D.S. 2008. Socio-economic status and problem alcohol use: The positive relationship between income and the DSM-IV alcohol abuse diagnosis. *Addiction*, *103*(7), pp.1120–1130.

Kritzinger, A. & Vorster, J. 1995. The labour situation in the South African deciduous fruit export industry. Sociological Research Programme, University of Stellenbosch.

Krstić, M. & Krstić, M. 2013. The application of rational choice theory in analysis of addiction behaviour. Presentation at the International Conference on Applied Research in Economics, Niš, Serbia.

Kuendig, H., Plant, M.L., Plant, M.A., Kuntsche, S., Miller, P. & Gmel, G. 2008. Beyond drinking: Differential effects of demographic and socioeconomic factors on alcohol-related adverse consequences across European countries. *European Addiction Research*, *14*(3), pp.150–160.

Kuntsche, E., Kuntsche, S., Knibbe, R., Simons-Morton, B., Farhat, T., Hublet, A. et al. 2011. Cultural and gender convergence in adolescent drunkenness: Evidence from 23 European and North American countries. *Archives of Pediatrics and Adolescent Medicine*, *165*(2), pp.152–158.

Kypri, K., Maclennan, B. & Connor, J. 2020. Alcohol harms over a period of alcohol policy reform: Surveys of New Zealand college residents in 2004 and 2014. *International Journal of Environmental Research and Public Health*, *17*(3), p.836.

LaBrie, J.W., Huchting, K., Pedersen, E.R., Hummer, J.F., Shelesky, K. & Tawalbeh, S. 2007. Female college drinking and the social learning theory: An examination of the developmental transition period from high school to college. *Journal of College Student Development*, *48*(3), pp.344–356.

Lachenmeier, D.W. 2012. Unrecorded and illicit alcohol. In Anderson, P., Møller, L. & Galea, G. (Eds.). *Alcohol in the European Union – Consumption, harm and policy approaches*. Europe: WHO, pp.29–34.

Lantz, P.M., Lynch, J.W., House, J.S., Lepkowski, J.M., Mero, R.P., Musick, M.A. et al. 2001. Socioeconomic disparities in health change in a longitudinal study of US adults: The role of health-risk behaviors. *Social Science and Medicine*, *53*(1), pp.29–40.

Lawana, N. & Booysen, F. 2018. Decomposing socioeconomic inequalities in alcohol use by men living in South African urban informal settlements. *BMC Public Health*, *18*(1), pp.1–9.

Lee, S.B., Chung, S., Seo, J.S., Jung, W.M. & Park, I.H. 2020. Socioeconomic resources and quality of life in alcohol use disorder patients: The mediating effects of social support and depression. *Substance Abuse Treatment, Prevention, and Policy*, *15*(1), pp.1–8.

Lewer, D., Meier, P., Beard, E., Boniface, S. & Kaner, E. 2016. Unravelling the alcohol harm paradox: A population-based study of social gradients across very heavy drinking thresholds. *BMC Public Health*, *16*(1), pp.1–11.

Li, Q., Wilsnack, R., Wilsnack, S. & Kristjanson, A. 2010. Cohabitation, gender, and alcohol consumption in 19 countries: A multilevel analysis. *Substance Use and Misuse*, *45*(14), pp.2481–2502.

Lim, W.Y., Fong, C.W., Chan, J.M.L., Heng, D., Bhalla, V. & Chew, S.K. 2007. Trends in alcohol consumption in Singapore 1992–2004. *Alcohol & Alcoholism*, *42*(4), pp.354–361.

Lindholm, C., Burström, B. & Diderichsen, F. 2002. Class differences in the social consequences of illness? *Journal of Epidemiology and Community Health*, *56*(3), pp.188–192.

Link, B.G. & Phelan, J.C. 1996. Understanding sociodemographic differences in health – The role of fundamental social causes. *American Journal of Public Health*, *86*(4), pp.471–473.

Livingston, M. 2014. Socioeconomic differences in alcohol-related risk-taking behaviours. *Drug and Alcohol Review*, *33*(6), pp.588–595.

London, L. 1999. The 'dop' system, alcohol abuse and social control among farm workers in South Africa: A public health challenge. *Social Science and Medicine*, *48*(10), pp.1407–1414.

London, L. 2003. Human rights, environmental justice, and the health of farm workers in South Africa. *International Journal of Occupational and Environmental Health, 9*(1), pp.59–68.

Lorem, G., Cook, S., Leon, D.A., Emaus, N. & Schirmer, H. 2020. Self-reported health as a predictor of mortality: A cohort study of its relation to other health measurements and observation time. *Scientific Reports*, *10*(1), pp.1–9.

Loring, B. 2014. *Alcohol and inequities: Guidance for addressing inequities in alcohol-related harm*. Geneva: World Health Organisation.

Mackenbach, J.P., Kulhánová, I., Bopp, M., Borrell, C., Deboosere, P., Kovács, K. et al. 2015. Inequalities in alcohol-related mortality in 17 European countries: A retrospective analysis of mortality registers. *PLoS Medicine*, *12*(12), p.e1001909.

Madden, M., Morris, S., Stewart, D., Atkin, K., Gough, B. & McCambridge, J. 2019. Conceptualising alcohol consumption in relation to long-term health conditions: Exploring risk in interviewee accounts of drinking and taking medications. *PLoS One*, *14*(11), p.e0224706.

Mäkelä, P. & Paljärvi, T. 2008. Do consequences of a given pattern of drinking vary by socioeconomic status? A mortality and hospitalisation follow-up for alcohol-related causes of the Finnish Drinking Habits Surveys. *Journal of Epidemiology and Community Health*, *62*(8), pp.728–733.

Mäkelä, P. 1999. Alcohol-related mortality as a function of socio-economic status. *Addiction*, *94*(6), pp.867–886.

Mäkelä, P., Herttua, K. & Martikainen, P. 2015. The socioeconomic differences in alcohol-related harm and the effects of alcohol prices on them: A summary of evidence from Finland. *Alcohol and Alcoholism*, *50*(6), pp.661–669.

Mäkelä, P., Keskimäki, I. & Koskinen, S. 2003. What underlies the high alcohol-related mortality of the disadvantaged: High morbidity or poor survival? *Journal of Epidemiology and Community Health*, *57*(12), pp.981–986.

Mäkelä, P., Raitasalo, K. & Wahlbeck, K. 2015. Mental health and alcohol use: A cross-sectional study of the Finnish general population. *European Journal of Public Health*, *25*(2), pp.225–231.

Manor, O., Matthews, S. & Power, C. 1997. Comparing measures of health inequality. *Social Science and Medicine*, *45*(5), pp.761–771.

Marlatt, G.A. & Witkiewitz, K. 2002. Harm reduction approaches to alcohol use: Health promotion, prevention, and treatment. *Addictive Behaviors*, *27*(6), pp.867–886.

Marmot, M. & Wilkinson, R. (Eds.). 2005. *Social determinants of health*. Oxford: Oxford University Press.

Martinez, P., Neupane, S.P., Perlestenbakken, B., Toutoungi, C. & Bramness, J.G. 2015. The association between alcohol use and depressive symptoms across socioeconomic status among 40- and 45-year-old Norwegian adults. *BMC Public Health*, *15*(1), pp.1–8.

Marugame, T., Yamamoto, S., Yoshimi, I., Sobue, T., Inoue, M. & Tsugane, S. 2007. Patterns of alcohol drinking and all-cause mortality: Results from a large-scale population-based cohort study in Japan. *American Journal of Epidemiology*, *165*(9), pp.1039–1046.

Mason, G. & Wilson, P.R. 1989. Alcohol and crime. Trends & issues in crime and criminal justice, *No. 18.* Australian Institute of Criminology, Canberra. https://www.aic.gov.au/publications/tandi/tandi18

Matzopoulos, R.G., Truen, S., Bowman, B. & Corrigall, J. 2014. The cost of harmful alcohol use in South Africa. *South African Medical Journal, 104*(2), pp.127–132.

May, P.A., Brooke, L., Gossage, J.P., Croxford, J., Adnams, C., Jones, K.L. et al. 2000. Epidemiology of fetal alcohol syndrome in a South African community in the Western Cape Province. *American Journal of Public Health*, *90*(12), p.1905.

Mayson, D. 1986. "Hey, you must remember we're staying here on the farms": A pilot study looking at the reasons for the lack of organisation amongst the working class on farms in the Worcester district of the Western Cape. Doctoral thesis, University of Cape Town.

McGinnis, J.M. & Foege, W.H. 1993. Actual causes of death in the United States. *Journal of the American Medical Association*, *270*(18), pp.2207–2212.

McMillan, B. & Conner, M. 2003. Using the theory of planned behaviour to understand alcohol and tobacco use in students. *Psychology, Health and Medicine*, *8*(3), pp.317–328.

Mikolajczyk, R.T., Sebena, R., Warich, J., Naydenova, V., Dudziak, U. & Orosova, O. 2016. Alcohol drinking in university students matters for their self-rated health status: A cross-sectional study in three European countries. *Frontiers in Public Health*, *4*, p.210.

Mkuu, R.S., Barry, A.E., Ishino, F.A.M. & Amuta, A.O. 2018. Examining characteristics of recorded and unrecorded alcohol consumers in Kenya. *BMC Public Health*, *18*(1), pp.1–8.

Morgenstern, M., Isensee, B., Sargent, J.D. & Hanewinkel, R. 2011. Attitudes as mediators of the longitudinal association between alcohol advertising and youth drinking. *Archives of Pediatrics and Adolescent Medicine*, *165*(7), pp.610–616.

Morojele, N.K. & Ramsoomar, L. 2016. Addressing adolescent alcohol use in South Africa. *South African Medical Journal*, *106*(6), pp.551–553.

Morojele, N.K., Lombard, C., Burnhams, N., Williams, P., Nel, E. & Parry, C.D.H. 2018. Alcohol marketing and adolescent alcohol consumption: Results from the International Alcohol Control Study (South Africa). *South African Medical Journal*, *108*(9), pp.782–788.

Morojele, N., Myers, B., Townsend, L., Lombard, C., Plüddemann, A., Carney, T., Petersen Williams, P., Padayachee, T., Nel, E. and Nkosi, S., 2013. Survey on substance use, risk behaviour and mental health among Grade 8-10 learners in Western Cape provincial schools, 2011. *Cape Town: South African Medical Research Council*.

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V. & Ustun, B. 2007. Depression, chronic diseases, and decrements in health: Results from the World Health Surveys. *The Lancet*, *370*(9590), pp.851–858.

Mukamal, K.J., Ding, E.L. & Djoussé, L. 2006. Alcohol consumption, physical activity, and chronic disease risk factors: A population-based cross-sectional survey. *BMC Public Health*, *6*(1), pp.1–9.

Mukong, A.K., Van Walbeek, C. & Ross, H. 2017. Lifestyle and income-related inequality in health in South Africa. *International Journal for Equity in Health*, *16*(1), pp.1–14.

Mukong, A.K., Van Walbeek, C. & Ross, H. 2018. The role of alcohol and tobacco consumption on income-related inequality in health in South Africa. *ERSA Research Brief 137*, January. Economic Research Southern Africa (ERSA).

Mulia, N. & Karriker-Jaffe, K.J. 2012. Interactive influences of neighborhood and individual socioeconomic status on alcohol consumption and problems. *Alcohol and Alcoholism*, *47*(2), pp.178–186.

Mulia, N., Ye, Y., Zemore, S.E. & Greenfield, T.K. 2008. Social disadvantage, stress, and alcohol use among black, Hispanic, and white Americans: Findings from the 2005 US National Alcohol Survey. *Journal of Studies on Alcohol and Drugs*, *69*(6), pp.824–833.

Mungai, K. & Bayat, A. 2019. An overview of trends in depressive symptoms in South Africa. *South African Journal of Psychology*, *49*(4), pp.518–535.

Mungai, K. 2016. The relationship between mental health and socioeconomic status: Depressive symptoms among adults in South Africa. Master of Commerce dissertation, University of the Western Cape.

Murray, R.P., Connett, J.E., Tyas, S.L., Bond, R., Ekuma, O., Silversides, C.K. et al. Alcohol volume, drinking pattern, and cardiovascular disease morbidity and mortality: Is there a U-shaped function? *American Journal of Epidemiology*, *155*(3), pp.242–248.

Newacheck, P.W., Hung, Y.Y., Park, M.J., Brindis, C.D. & Irwin, C.E. 2003. Disparities in adolescent health and health care: Does socioeconomic status matter? *Health Services Research*, *38*(5), pp.1235–1252.

Ngandu, S., Altman, M., Cross, C., Jacobs, P., Hart, T. & Matshe, I. 2010. *The socio-economic impact of the global downturn on South Africa: Responses and policy implications. Research report commissioned by Oxfam South Africa.* Pretoria: HSRC.

Norman, P., Bennett, P. & Lewis, H. 1998. Understanding binge drinking among young people: An application of the theory of planned behaviour. *Health Education Research*, *13*(2), pp.163–169.

Nwosu, C.O. & Oyenubi, A. 2021. Income-related health inequalities associated with the coronavirus pandemic in South Africa: A decomposition analysis. *International Journal for Equity in Health, 20*(1), pp.1–12.

Olivier, L., Curfs, L.M.G. & Viljoen, D.L. 2016. Fetal alcohol spectrum disorders: Prevalence rates in South Africa. *South African Medical Journal*, *106*(6), p.S103.

Olson, C.K. & Kutner, L. 2000. *A comparison of the health effects of alcohol consumption and tobacco use in America*. New York: American Council on Science and Health.

Özler, B. 2007. Not separate, not equal: Poverty and inequality in post-apartheid South Africa. *Economic Development and Cultural Change*, *55*(3), pp.487–529.

Paljärvi, T., Suominen, S., Car, J., Mäkelä, P. & Koskenvuo, M. 2011. Subjective measures of binge drinking, suboptimal subjective health and alcohol-specific hospitalizations among working-aged adults: A prospective cohort study. *Alcohol and Alcoholism*, *46*(5), pp.607–613.

Parry, C.D. & Bennetts, A.L. 1998. *Alcohol policy and public health in South Africa*. USA: Oxford University Press.

Parry, C.D. 2005. A review of policy-relevant strategies and interventions to address the burden of alcohol on individuals and society in South Africa. *African Journal of Psychiatry*, *8*(1), pp.20–24.

Parry, C.D. 2010. Alcohol policy in South Africa: A review of policy development processes between 1994 and 2009. *Addiction*, *105*(8), pp.1340–1345.

Parry, C.D., Bhana, A., Myers, B., Plüddemann, A., Flisher, A.J., Peden, M.M. et al. 2002. Alcohol use in South Africa: Findings from the South African Community Epidemiology Network on Drug Use (SACENDU) project. *Journal of Studies on Alcohol*, *63*(4), pp.430–435.

Parry, C.D., Burnhams, N.H. & London, L. 2012. A total ban on alcohol advertising: Presenting the public health case. *South African Medical Journal*, *102*(7), pp.602–604.

Parry, C.D., Myers, B. & Thiede, M. 2003. The case for an increased tax on alcohol in South Africa. *South African Journal of Economics*, *71*(2), pp.265–281.

Parry, C.D., Myers, B., Morojele, N.K., Flisher, A.J., Bhana, A., Donson, H. et al. 2004. Trends in adolescent alcohol and other drug use: Findings from three sentinel sites in South Africa (1997–2001). *Journal of Adolescence*, *27*(4), pp.429–440.

Parry, C.D., Patra, J. & Rehm, J. 2011. Alcohol consumption and non-communicable diseases: Epidemiology and policy implications. *Addiction*, *106*(10), pp.1718–1724.

Patrick, M.E., Wightman, P., Schoeni, R.F. & Schulenberg, J.E. 2012. Socioeconomic status and substance use among young adults: A comparison across constructs and drugs. *Journal of Studies on Alcohol and Drugs*, *73*(5), pp.772–782.

Peirce, R.S., Frone, M.R., Russell, M., Cooper, M.L. & Mudar, P. 2000. A longitudinal model of social contact, social support, depression, and alcohol use. *Health Psychology*, *19*(1), pp.28–38.

Peltzer, K. & Pengpid, S. 2015. Extent of alcohol use and mental health (depressive and post-traumatic stress disorder symptoms) in undergraduate university students from 26 low-, middle- and high-income countries. *South African Journal of Psychiatry*, *21*(2), pp.39–43.

Peltzer, K. & Ramlagan, S. 2009. Alcohol use trends in South Africa. *Journal of Social Sciences*, *18*(1), pp.1–12.

Peltzer, K., Davids, A. & Njuho, P. 2011. Alcohol use and problem drinking in South Africa: Findings from a national population-based survey. *African Journal of Psychiatry*, *14*(1).

Peña, S. 2021. Socioeconomic differences in alcohol use, disorders and harm: Exploring the alcohol harm paradox. Doctoral thesis in Health Research, University of Helsinki, Finland.

Perali, F., Piccoli, L. & Wangen, K.R. 2015. An extended theory of rational addiction. *DEA Working Papers No. 69*, Departament d'Economía Aplicada, Universitat de les Illes Balears.

Petersen, L.M. & Charman, A.J. 2010. Case study: Understanding the local economic impact of the closure of shebeens in the Western Cape as a consequence of the new Western Cape Liquor Act, 2008. *The Small Business Monitor*, *6*(1), pp.102–109.

Petrie, D., Doran, C., Shakeshaft, A. & Sanson-Fisher, R. 2008. The relationship between alcohol consumption and self-reported health status using the EQ5D: Evidence from rural Australia. *Social Science and Medicine*, *67*(11), pp.1717–1726.

Poikolainen, K. & Vartiainen, E. 1999. Wine and good subjective health. *American Journal of Epidemiology*, *150*(1), pp.47–50.

Poikolainen, K. 1996. Alcohol and overall health outcomes. *Annals of Medicine*, *28*(5), pp.381–384.

Poikolainen, K., Paljärvi, T. & Mäkelä, P. 2007. Alcohol and the preventive paradox: Serious harms and drinking patterns. *Addiction*, *102*(4), pp.571–578.

Polivy, J., Schueneman, A.L. & Carlson, K. 1976. Alcohol and tension reduction: Cognitive and physiological effects. *Journal of Abnormal Psychology*, *85*(6), p.595–600.

Powrie, I., O'Neill, B., Merrick, J. & Powrie, S. 2014. Dealing with a social externality–alcohol and health. *Journal of Wine Research*, *25*(2), pp.105–126.

Pretorius, L.J. 2010. Women's discourses about secretive alcohol dependence and experiences of accessing treatment. Doctoral thesis, University of Stellenbosch.

Probst, C., Parry, C.D. & Rehm, J. 2018. HIV/AIDS mortality attributable to alcohol use in South Africa: A comparative risk assessment by socioeconomic status. *BMJ Open*, *8*(2), p.e017955.

Probst, C., Roerecke, M., Behrendt, S. & Rehm, J. 2014. Socioeconomic differences in alcohol-attributable mortality compared with all-cause mortality: A systematic review and meta-analysis. *International Journal of Epidemiology*, *43*(4), pp.1314–1327.

Radloff, L.S. 1977. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), pp.385–401.

Rahav, G., Wilsnack, R., Bloomfield, K., Gmel, G. & Kuntsche, S. 2006. The influence of societal level factors on men's and women's alcohol consumption and alcohol problems. *Alcohol and Alcoholism*, *41*(suppl_1), pp.i47–i55.

Ramsoomar, L. & Morojele, N.K. 2012. Trends in alcohol prevalence, age of initiation and association with alcohol-related harm among South African youth: Implications for policy. *South African Medical Journal*, *102*(7).

Rehm, J. 2011. The risks associated with alcohol use and alcoholism. *Alcohol Research and Health*, *34*(2), p.135–143.

Rehm, J., Gmel G.E., Gmel, G., Hasan, O.S., Imtiaz, S., Popova, S., et al. 2017. The relationship between different dimensions of alcohol use and the burden of disease—An update. *Addiction*, *112*(6), pp.968–1001.

Rehm, J., Room, R., Graham, K., Monteiro, M., Gmel, G. & Sempos, C.T. 2003. The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: An overview. *Addiction*, *98*(9), pp.1209–1228.

Rehm, J., Samokhvalov, A.V., Neuman, M.G., Room, R., Parry, C., Lönnroth, K. et al. 2009. The association between alcohol use, alcohol use disorders and tuberculosis (TB). A systematic review. *BMC Public Health, 9*(1), pp.1–12.

Republic of South Africa, National Treasury. 2014. A review of the taxation of alcoholic beverages in South Africa: A discussion document. May 2014. Available: http://www.treasury.gov.za/public%20comments/Alc/Alcohol%20Tax%20Review%20-%20May%202014%20Discussion%20Paper.pdf (Accessed 5 September 2021).

Robinson, M., Shipton, D., Walsh, D., Whyte, B. & McCartney, G. 2015. Regional alcohol consumption and alcohol-related mortality in Great Britain: Novel insights using retail sales data. *BMC Public Health*, *15*(1), pp.1–9.

Rogeberg, O. 2004. Taking absurd theories seriously: Economics and the case of rational addiction theories. *Philosophy of Science*, *71*(3), pp.263–285.

Room, R. 2004. Thinking about how social inequalities relate to alcohol and drug use and problems. Prepared for presentation at the 1st International Summer School on Inequalities and Addictions, at the Centre for Education and Training in Addictions, pp.25–7.

Ross, A. & Jackson, M. 2013. Investigating the theory of planned behaviour's application to binge drinking among university students. *Journal of Substance Use*, *18*(3), pp.184–195.

Rotheram-Borus, M.J., Tomlinson, M., Le Roux, I. & Stein, J.A. 2015. Alcohol use, partner violence, and depression: A cluster randomized controlled trial among urban South African mothers over 3 years. *American Journal of Preventive Medicine*, *49*(5), pp.715–725.

Sacks, J.J., Roeber, J., Bouchery, E.E., Gonzales, K., Chaloupka, F.J. & Brewer, R.D. 2013. State costs of excessive alcohol consumption, 2006. *American Journal of Preventive Medicine*, *45*(4), pp.474–485.

Saenz, E., Gerra, G., Campello, G., Busse, A., Kashino, W. & Gumm, J. 2020. *Socioeconomic inequalities and drug use disorders: Current knowledge and future directions for research and action.* Austria: National Institute on Drug Abuse.

Saito, I., Okamura, T., Fukuhara, S., Tanaka, T., Suzukamo, Y., Okayama, A., Ueshima, H. et al. 2005. A cross-sectional study of alcohol drinking and health-related quality of life among male workers in Japan. *Journal of Occupational Health*, *47*(6), pp.496–503.

Sakurai, Y., Hattori, N., Kondo, T., Teruya, K., Shimada, N., Honjo, S. et al. 1999. Association between alcohol intake and subjective health: The Sotetsu study. *The Keio Journal of Medicine*, *48*(3), pp.147–150.

Satre, D.D., Gordon, N.P. & Weisner, C. 2007. Alcohol consumption, medical conditions, and health behavior in older adults. *American Journal of Health Behavior*, *31*(3), pp.238–248.

Schepisi, M., Di Napoli, A., Asciutto, R., Vecchi, S., Mirisola, C. & Petrelli, A. 2021. The 2008 financial crisis and changes in lifestyle-related behaviors in Italy, Greece, Spain, and Portugal: A systematic review. *International Journal of Environmental Research and Public Health*, *18*(16), p.8734.

Schneider, M., Norman, R., Parry, C., Bradshaw, D. & Plüddemann, A. 2007. Estimating the burden of disease attributable to alcohol use. *South African Medical Journal, 97*(8, Pt 2), 664–672.

Setati, T. 2020. Mental health consequences of unemployment: Mental health, somatic symptoms, depressive affect and positive affect. Master's dissertation, Faculty of Commerce, University of Cape Town.

Shield, K.D., Parry, C. & Rehm, J. 2013. Chronic diseases and conditions related to alcohol use. *Alcohol Research: Current Reviews*, *35*(2), p.155–173.

Shields, M. & Shooshtari, S. 2001. Determinants of self-perceived health. *Health Reports*, *13*(1), pp.35–52.

Simpson, B.P. 2007. An economic, political, and philosophical analysis of externalities. *Reason Papers*, *29*, pp.123–40.

Single, E., Collins, D., Easton, B., Harwood, H., Lapsley, H. and Maynard, A., 2001. International guidelines for estimating the costs of substance abuse. Ottawa: CCSA. *see www. ccsa. ca/intguid. htlm*.

Skog, O.J. 1985. The collectivity of drinking cultures: A theory of the distribution of alcohol consumption. *British Journal of Addiction*, *80*(1), pp.83–99.

Statistics South Africa. 2005. *South African Standard Classification of Occupations (SASCO).* Pretoria: Statistics South Africa.

Statistics South Africa. 2016. *Mid-year population estimates 2016, Statistical Release P0302.* Pretoria: Statistics South Africa.

Statistics South Africa. 2019. *Inequality trends in South Africa: A multidimensional diagnostic of inequality*. Pretoria: Statistics South Africa.

Stavropoulou, M. & Jones, N. 2013. *Off the balance sheet. The impact of the economic crisis on girls and young women. A review of the evidence*. New York: Plan International.

Strakowski, S.M., DelBello, M.P., Fleck, D.E. & Arndt, S. 2000. The impact of substance abuse on the course of bipolar disorder. *Biological Psychiatry*, *48*(6), pp.477–485.

Stranges, S., Notaro, J., Freudenheim, J.L., Calogero, R.M., Muti, P., Farinaro, E. et al. 2006. Alcohol drinking pattern and subjective health in a population-based study. *Addiction*, *101*(9), pp.1265–1276.

Strauss, M. 2019. A historical exposition of spatial injustice and segregated urban settlement in South Africa. *Fundamina, 25*(2), pp.135–168.

Torikka, A., Kaltiala-Heino, R., Luukkaala, T. & Rimpelä, A. 2016. Trends in alcohol use among adolescents from 2000 to 2011: The role of socioeconomic status and depression. *Alcohol and Alcoholism*, *52*(1), pp.95–103.

Trangenstein, P.J., Morojele, N.K., Lombard, C., Jernigan, D.H. & Parry, C.D. 2018. Heavy drinking and contextual risk factors among adults in South Africa: Findings from the International Alcohol Control study. *Substance Abuse Treatment, Prevention, and Policy*, *13*(1), pp.1–11.

Treno, A.J., Marzell, M., Gruenewald, P.J. & Holder, H. 2014. A review of alcohol and other drug control policy research. *Journal of Studies on Alcohol and Drugs, Supplement*, (s17), pp.98–107.

Turner, S., Mota, N., Bolton, J. & Sareen, J. 2018. Self-medication with alcohol or drugs for mood and anxiety disorders: A narrative review of the epidemiological literature. *Depression and Anxiety*, *35*(9), pp.851–860.

UNAIDS, A., 2012. Impact of the global economic crisis on women, girls and gender equality. *Web retrieved. http://www. unaids. org/en/media/unaids/contentassets/documents/document/2012/discussi onpapers/JC2368_impact-economic-crisis-women_en. pdf*.

Vahtera, J., Poikolainen, K., Kivimäki, M., Ala-Mursula, L. & Pentti, J. 2002. Alcohol intake and sickness absence: A curvilinear relation. *American Journal of Epidemiology*, *156*(10), pp.969–976.

Valencia-Martín, J.L., Galan, I. & Rodríguez-Artalejo, F. 2008. The joint association of average volume of alcohol and binge drinking with hazardous driving behaviour and traffic crashes. *Addiction*, *103*(5), pp.749–757.

Van Oers, J.A., Bongers, I.M., Van de Goor, L.A. & Garretsen, H.F. 1999. Alcohol consumption, alcohol-related problems, problem drinking, and socioeconomic status. *Alcohol and Alcoholism*, *34*(1), pp.78–88.

Van Rensburg, H.C.J. & Fourie, A. 1994. Inequalities in South African health care: Part I. The problem-manifestations and origins. *South African Medical Journal*, *84*(2), pp.95–99.

Van Walbeek, C. & Blecher, M. 2014. *The economics of alcohol use, misuse and policy in South Africa*. Study commissioned by the WHO South African Office. Cape Town: WHO.

Van Walbeek, C. & Chelwa, G. 2019. Using price-based interventions to reduce abusive drinking in the Western Cape province. A report prepared for the DG Murray Trust, 2018. Available: https://www.semanticscholar.org/paper/USING-PRICE-BASED-INTERVENTIONS-TO-REDUCE-ABUSIVE-Walbeek/a3454d5dcea3926d85cal959db66bb484de5b4b0?p2df (Accessed September 2021).

Vellios, N.G. & Van Walbeek, C.P. 2018. Self-reported alcohol use and binge drinking in South Africa: Evidence from the National Income Dynamics Study, 2014–2015. *South African Medical Journal*, *108*(1), pp.33–39.

Viljoen, D.L., Gossage, J.P., Brooke, L., Adnams, C.M., Jones, K.L., Robinson, L.K. et al. 2005. Fetal alcohol syndrome epidemiology in a South African community: A second study of a very high prevalence area. *Journal of Studies on Alcohol*, *66*(5), pp.593–604.

Wagstaff, A., Paci, P. & Van Doorslaer, E. 1991. On the measurement of inequalities in health. *Social Science and Medicine*, *33*(5), pp.545–557.

Waldman, P.L. 1993. *Here you will remain: Adolescent experience on farms in the Western Cape*. Master's dissertation, University of Cape Town.

Walsh, C. 2016. Why do poor people have more alcohol-related deaths than rich people? MCA essay competition entry, Imperial College London. https://www.m-c-a.org.uk/documents/2016_essay_2

Walters, S. & Suhrcke, M. 2005. *Socioeconomic inequalities in health and health care access in central and eastern Europe and the CIS: A review of the recent literature*. Venice: WHO European Office for Investment for Health and Development, pp.8–11.

Wang, C., Pu, R., Li, Z., Ji, L., Li, X., Ghose, B. et al. 2019. Subjective health and quality of life among elderly people living with chronic multimorbidity and difficulty in activities of daily living in rural South Africa. *Clinical Interventions in Aging*, *14*, p.1285.

Weich, L., Macharia, M. & Gabriels, C.M. 2019. Psychiatric comorbidity among alcohol-dependent individuals seeking treatment at the Alcohol Rehabilitation Unit, Stikland Hospital. *South African Journal of Psychiatry*, *25*(1), pp.1–6.

Western Cape Government (WCG). 2016. *Western Cape alcohol-related harms reduction policy Green Paper*. Cape Town: WCG.

White, A.M., Hingson, R.W., Pan, I.J. & Yi, H.Y. 2011. Hospitalizations for alcohol and drug overdoses in young adults ages 18–24 in the United States, 1999–2008: Results from the Nationwide Inpatient Sample. *Journal of Studies on Alcohol and Drugs*, *72*(5), pp.774–786.

White, H.L., Matheson, F.I., Moineddin, R., Dunn, J.R. & Glazier, R.H. 2011. Neighbourhood deprivation and regional inequalities in self-reported health among Canadians: Are we equally at risk? *Health and Place*, *17*(1), pp.361–369.

Wilkinson, R.G. 2002. *Unhealthy societies: The afflictions of inequality*. Abingdon: Routledge.

Williams, E.C., Peytremann-Bridevaux, I., Fan, V.S., Bryson, C.L., Blough, D.K., Kivlahan, D.R. et al. 2010. The association between alcohol screening scores and health status in male veterans. *Journal of Addiction Medicine*, *4*(1), pp.27–37.

Williams, G. 2016. Slaves, workers and wine: The dop system in the history of the Cape wine industry, 1658–1894. *Journal of Southern African Studies, 42*(5), 893–909. Available: https://www.researchgate.net/publication/308956094_Slaves_Workers_and_Wine_The_'Dop_Sy stem'_in_the_History_of_the_Cape_Wine_Industry_1658-1894/link/5cd95ec2a6fdccc9dda704bd/download

Wills, I. 2012. The politics of Bantu Education in South Africa: 1948–1994. *Political Crossroads, 19*(1), pp.5–24.

Wilson, K., Elliott, S.J., Eyles, J.D. & Keller-Olaman, S.J. 2007. Factors affecting change over time in self-reported health. *Canadian Journal of Public Health*, *98*(2), pp.154–158.

World Health Organisation (WHO). 2002. *The World Health Report 2002: Reducing risks, promoting healthy life*. Geneva: WHO.

World Health Organisation (WHO). 2010. *Global strategy to reduce the harmful use of alcohol*. Geneva: WHO.

World Health Organisation (WHO). 2013. *Global status report on alcohol and health*. Geneva: WHO.

World Health Organisation (WHO). 2019. *Global status report on alcohol and health 2018*. Geneva: WHO.

World Health Organisation. (WHO). 2019. The effects of alcohol control measures on mortality and life expectancy in the Russian Federation. Alcohol policy impact case study. WHO Copenhagen Regional Office for Europe,. *Contract*, (978), p.92.

World Health Organisation (WHO), Mental Health and Substance Use unit. 2004. *Global status report on alcohol 2004*. Geneva: WHO.

Young, R.M., Oei, T.P. & Knight, R.G. 1990. The tension reduction hypothesis revisited: An alcohol expectancy perspective. *British Journal of Addiction*, *85*(1), pp.31–40.