Prevalence of substance use and associated risk factors amongst secondary school students aged 12 to 17 years in Mzuzu, Malawi

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Declaration

I, Zondiwe Lyson Greevins Goodnews Banda, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Abbreviations

AOD	: Alcohol and Other Drugs
CHAM	: Christian Health Association of Malawi
DALY	: Disability-Adjusted Life Years
HPV	: Human Papilloma Virus
LMIC	: Low- and Middle-Income Countries
NSDUH	: National Survey on Drug Use and Health
SDGs	: Sustainable Development Goals
TB	: Tuberculosis
WHO	: World Health Organisation
YLDs	: Years Lived with Disability
YRBS	: Youth Risk Behaviour Survey
YRBSS	: Youth Risk Behaviour Surveillance System

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Abstract

Background

The use of alcohol and other drugs (AODs) among adolescents has emerged as an increasing public health concern globally and requires an urgent response in low- and middle-income countries (LMICs), particularly in Sub-Saharan Africa, where AOD use is on the rise. Recent systematic reviews of regional evidence have estimated that approximately 40% of adolescents use alcohol or other drugs. This translates to a burden of Disability Adjusted Life Years (DALYs) 2.5 times higher than has been seen in high-income countries. To date, very few studies have investigated the prevalence of AOD use among adolescent school learners in Mzuzu, Malawi. As a result, little is known about the factors that may place these adolescents at increased risk of AOD use. This study therefore endeavours to address these gaps.

Methods

421 adolescent school learners aged between 12 and 17 years were recruited in this cross-sectional study. Following individual informed assent and parental consent, a self-administered questionnaire was administered to secondary school learners to estimate the prevalence of alcohol and drug use in two public secondary schools within the city of Mzuzu, Malawi. Socio-demographic characteristics of all learners, their household members as well as levels of exposure to victimisation and social support were investigated as factors which may influence alcohol and drug use amongst the sample. Means and proportions were used to describe socio-demographic data as well as the prevalence of lifetime alcohol and drug-use. Unadjusted and adjusted associations between risk factors and lifetime alcohol and drug-use were also explored. Only variables that were significant in unadjusted logistic regression models were included in the final adjusted regression model. The findings are presented in the form of odds ratios (ORs) with 95% confidence intervals (CIs).

Results

The prevalence of lifetime alcohol-use was 17.1% (n=72) across the sample of secondary school learners. A lower prevalence rate of drug-use was found across the sample, with 7.1% (n=30) of learners reporting any prior use of drugs. In adjusted models, being male, school grade level, attending religious services, sleeping arrangements in the household, household ability to meet subsistence needs, tobacco and alcohol-use by other household members were

found to be significantly associated with lifetime alcohol use. In the adjusted models for lifetime drug-use, being male, school grade level, living in a single parent household, sleeping arrangements and alcohol-use and drug-use among household members were found to be significant predictors of drug-use among the sample of learners.

Conclusion

Results from the study show that alcohol and drug-use are prevalent among adolescent school learners in Mzuzu, Malawi and are associated with several socio-demographic and household factors which place learners at increased risk. This illustrates that AOD use is an issue of concern amongst adolescents in Malawi. There is a need for larger studies to be conducted on AOD use among adolescents in Malawi to generate nationally representative data which would help inform the development and implementation of comprehensive services for the treatment and prevention of alcohol and other drug (AOD) use among adolescent school learners in Malawi.

Keywords:

Prevalence, substance-use, adolescent, secondary school students, alcohol-use, drug-use

Chapter 1. Introduction

This introductory chapter provides a high-level overview of the importance of this study, both in terms of global health and development as well as for Malawi, specifically. Against this backdrop, the study aims, and specific objectives are outlined. The chapter concludes by defining the structure of this thesis.

1.1. Background

The adolescent use of alcohol and other drugs (AODs) is a public health concern globally (Chilton, 2021; Ali et al., 2011) and is of particular concern in low and middle income countries (LMIC) (Afolabi et al., 2012). Young people under 15years represent approximately 26% of the global population, while in Sub Saharan Africa the proportion of young persons under fifteen years is approximately 43% (Kaneda & Dupuis, 2017). Sixteen percent of the global burden of disease is attributed to mental and substance use disorders amongst this age group (WHO, 2021).

In some countries, the prevalence of AOD use has been decreasing, particularly alcohol and tobacco use, with a number of studies conducted in Finland and the United States reporting a decline in alcohol and tobacco use over time (Sourander et al., 2012). Although the overall trend in Europe shows a decline in alcohol and tobacco use, there appears to be an emergence of e-cigarette use however (Meza et al., 2020). On the other hand, in some countries, including those in Sub-Saharan Africa (SSA), trends represent a rise in AOD use. For example, a recent systematic review estimated that approximately 7% of adolescents use alcohol and 2% other drugs. In Africa, Disability Adjusted Life Years (DALYs) are 2.5 times higher than in high-income countries (Gore et al., 2011).

Several studies have been conducted in SSA investigating the prevalence of AOD among adolescents, including those in settings across South Africa (Moodley et al., 2012), Zimbabwe (Rudatsikira et al., 2009), Nigeria (Oshodi et al., 2010) Ethiopia (Reda et al., 2012) and Zambia (Siziya et al, 2013). In Zambia, the Global School Health Survey of 2004, having sampled 2,257 adolescents, found that 37.2% of adolescents reported any cannabis use (Siziya et al., 2013). Further, out of a sample of 1, 872 adolescents 8.2% reported any tobacco use (Siziya et al., 2007). Both these studies were conducted in secondary/ high school settings.

A study that was conducted among 9, 819 adolescents aged 12 to 19 years recruited from four countries; Burkina Faso, Ghana, Uganda and Malawi found that 9% of the adolescents reported having been drunk in the year preceding the study. (Kabiru et al., 2010). In a Malawian nationally representative study involving adolescents and youths in urban and semi urban areas, it was found that the prevalence of tobacco, alcohol and illicit-drug use was 4.4%, 17.3% and 19%, respectively (A. Muula, 2016). Another study conducted in Lilongwe, revealed the prevalence of cigarette smoking among adolescents aged 13 to 15 years was 6.2% (A. S. Muula & Mpabulungi, 2007). With regards to cigarette smoking among adolescents, the overall prevalence rate was estimated to be 2.5%, with gender disaggregation revealing the rate amongst males to be3.2% whilst for females, a lower prevalence rate of 1.8% was estimated (A S Muula et al., 2008a).

AOD use among adolescents have been associated with several negative outcomes. These include road accidents and injuries, poor health, unemployment, suicide, short life expectancy, lower cognitive skills, effect on behaviour, attention and concentration and sleep deprivation (Lisdahl et al., 2013; WHO, 2014; Cohen-zion et al., 2010). Other problems associated with AOD use among adolescents include unhealthy habits in adulthood (Das et al., 2016) such as addiction (Breslauatb et al., 1993). Additional outcomes may include delinquent behaviours, problems at school which may include poor performance and dropping out of school, theft, violence, inappropriate sexual behaviours which may lead to unplanned early pregnancies and premature parenthood (Ellickson et al., 2001; Acuda et al., 2011; Mnguni, 2014; Hoel et al., 2014; Abuya, Oketch, & Musyoka, 2013).

Given these implications of AOD use among adolescents, understanding factors associated with use of AODs may be useful in developing prevention programs. In a study conducted in Zambia for example, AOD use was associated with having been bullied and not having parental supervision during free time (Siziya et al., 2013). In a study carried out in Botswana among adolescent primary and secondary school learners 'self-image, perceived norms in conformity with smoking, perceived prevalence and exposure to smoking by peers and family and access to tobacco products' were identified to be predictors of tobacco use among adolescents (Mbongwe et al., 2017). With regards to adolescents within secondary school settings, the easily accessible alcohol and drugs within the home or within the community and 'individual and social vulnerability factors' such as low personal perception, low future expectation and suicidal ideations were noted to be risk factors (Riva et al., 2018). It was also noted in a study

that involved nine African countries that age, personal attributes (such as suicidal ideation, current smoking, school truancy, and having had two or more sexual partners), parental smoking status and environmental stressors including bullying were also associated with AOD use amongst adolescents (Peltzer et al., 2018). In Malawi, the prevalence rate of smoking was 2.5% and the associated factors of tobacco use included: parents who smoke (9.6%), friends who smoke (3.16%), having pocket money (3.14%) and 'perception that smoking increases weight' (3.16%). It was also noted that those adolescents students who thought that tobacco use was harmful health wise were 56% less likely to use tobacco (A S Muula et al., 2008b).

To date, only a few studies have investigated the prevalence of alcohol and other drug (AOD) use among adolescent school learners in Malawi. So far, no study has been published in relation to prevalence of AODs use and adolescents or secondary school learners in Mzuzu. Further, little is known about the factors that may place these adolescents at increased risk of AOD use. This study therefore endeavours to address these gaps by answering the following research question(s): what is the prevalence of AOD use among secondary school learners aged 12 to 17 years in Mzuzu, Malawi, and; what are the risk factors associated with AOD use in this population? It was hoped that the pursuit of these critical research questions will shed light on the significance of this issue for Malawi, and inform the development and implementation of comprehensive services for the treatment and prevention of alcohol and other drug (AOD) use among adolescent school learners in Malawi.

1.2. Aim

To determine the prevalence and factors associated with alcohol and other drug (AOD) use among secondary school learners aged 12 to 17 years of age in Mzuzu, Malawi.

1.3. Objectives

The objectives of this study were:

- To determine the prevalence of alcohol and other drug (AOD) use among secondary school learners aged 12 to 17 years of age in Mzuzu, Malawi.

- To investigate the factors associated with alcohol and other drug (AOD) use amongst secondary school learners aged 12 to 17 years of age in Mzuzu, by examining the

influence of a number of socio-demographic and family composition related variables in addition to measures of bullying and perceived social support.

1.4. Thesis Outline

This dissertation is presented in five chapters. In this Chapter (1), a briefly described background of the context of this study. Chapter 1 also outlines the need for this research, and its aims and objectives. Chapter 2 reviews the international and global literature on AOD use in relation to adolescent populations. This encompasses a synthesis of evidence concerning the global and Sub-Saharan prevalence of AOD use among this population and associated risk factors. In Chapter 3, the methodology employed in the current study is described in detail. In this Chapter, the study design, setting, participants and sample size are described, as well as the study's procedure, including measures that were used in the collection of data. Following these details, the analytical approach undertaken as well as key ethical considerations for this study are clarified. Chapter 4 presents the results and a brief narrative of study findings in relation to the objectives. Chapter 5 discusses the study's major findings. It outlines the study limitations and implications of the findings for practice and policy development, as well as offering recommendations for future studies.

Chapter 2. Literature Review

Having outlined the importance of this study, and it's overall aim and objectives in Chapter 1, Chapter (2) provides a review of the available literature to highlight what is known about AOD use among adolescents, globally and regionally. The literature review begins with a review of published literature relating to the burden of AOD use among adolescents, followed by an examination of what is known about the consequences of AOD use among this population and available services for adolescents with substance use disorders. Guided by Bronfenbrenner's ecological systems theory (Paquette & Ryan, 2001), relevant literature exploring the risk and protective factors associated with AOD use among adolescents will be further examined. Finally, the Chapter will conclude with an assessment of the gaps in knowledge, the strengths and weaknesses of the existing evidence base and the rationale for this study.

2.1. Burden and prevalence of Alcohol and other drugs (AOD) use among adolescents

Alcohol and other drug (AOD) use significantly contribute to the global burden of disease. In 2010, the leading causes of Years Lived with Disability (YLDs) were mental and substance use disorders, with illicit drug use disorders representing 10·9% and alcohol use disorders at 9·6% of YLDs, respectively (Whiteford et al., 2013). Additionally, 25% of deaths amongst individuals aged between 20 to 39 years is attributed to alcohol-use (WHO, 2017). This was also evident in a Global burden of disease study (Degenhardt et al., 2018) which reviewed data from 195 territories during the period between 1990 to 2016 in which alcohol-use was ranked as the seventh most significant risk factor for mortality and Disability-Adjusted Life Years (DALYs). Alcohol-use contributed to 3.8% deaths amongst females and 12.2% amongst males. It was also responsible for 2.3% of DALYs amongst females and 8.9% amongst males, respectively.

Untreated AOD use also results in negative impacts on health outcomes more broadly. This burden is further exacerbated by the association between AOD use and a combination of communicable and non-communicable diseases. Among communicable diseases, alcohol use has been found to increase the likelihood of unsafe sexual practices increasing the risk of sexually transmitted infections. These include HIV and Human Papilloma Virus (HPV) and in turn, cervical cancer (WHO, 2017). Alcohol also contributes to respiratory infections such as tuberculosis (TB) and lung infections (pneumonia) (Charlson et al., 2019; GBD 2016 Alcohol

and Drug Use Collaborators, 2018; Scott-Sheldon et al., 2014). Non-communicable diseases associated with AOD use include bronchitis, cancers, mental illness, liver problems (such as hepatitis, cirrhosis and other problems caused by hepatitis), epilepsy, pancreatitis, gastro-intestinal tract conditions, and non-communicable diseases such as hypertension and other cardiovascular problems, diabetes, liver problems, oesophageal cancer, accidents and injuries just to mention a few (Adu-gyamfi & Brenya, 2014; Embleton, Atwoli, Ayuku, & Braitstein, 2013; Charlson et al., 2019). Furthermore, injectable drug-users may acquire infections including sepsis, leading to thrombosis and heart problems such as endocarditis (Degenhardt et al., 2018).

2.1.1 Global prevalence estimates of substance abuse among the youth

Globally, AOD use among adolescents has been widely reported. the global prevalence of tobacco use was at 22.6% (Males at 35.3% and females at 9.3%) in 2000 and reduced to 17% (males at 17% and females at 5.6%) in 2015 among the young people aged 15 to 24 years of age (World Health Organization, 2019). On the other hand, alcohol consumption by adolescents 15 to 19 years globally is at 26.5% (World Health Organization, 2018a). In the United States for instance, among adolescents aged 14 to 17 years old, prevalence of cigarette smoking ranged between 4.5% to 14% using the National Survey on Drug Use and Health (NSDUH) and 4.7% to 18.5% using the Youth Risk Behaviour Surveillance System (YRBSS). Binge alcohol consumption and cannabis use was also noted to be an issue of concern; with prevalence rates ranging from 5.9% to 14.3% and 6.3% to 18.7% respectively using the NSDUH; this is in comparison to prevalence rates ranging from 7.1% to 21.7% and 8.2% to 27.1% for alcohol and cannabis use respectively using data from the YRBSS (Moss et al., 2018). In Thailand, 7.1% of the adolescents abused alcohol daily and 9.8% were engaged in substance use. Furthermore, 11.6% had ever used a substance in their life (Eğitimine et al., 2017).

2.1.2 Prevalence of AOD use among the youth in the Sub-Saharan Africa

Recently, we have seen an increase in studies from Africa investigating the prevalence of AOD use among adolescents. A systematic review on AOD use among adolescents in Sub-Saharan Africa reported a prevalence of 41.6%. Substance specific prevalence rates amongst the most

frequently used substances include alcohol (32%), tobacco (23.5%), khat (22%) and cannabis (15.9%; Isaac, 2018). Khat leaves are from the Khat shrub which releases psycho-stimulant chemicals cathinone and cathine when chewed (Isaac, 2018). Another systematic review which included 56 studies from East Africa recruiting young adults aged between 15 and 24 years reported that 37% of secondary school students had 'ever used' alcohol (Francis et-al, 2014). In a review including four national prevalence studies and two sentinel studies conducted in South Africa between 1998 and 2008, it was noted that adolescents start using alcohol very early in life; 12% had started using alcohol by the age of 13. The same study also revealed that binge drinking significantly increased among girls from 27.3% in 1998 to 36.6% in 2003 and lifetime alcohol use ranged from 49.%1 – 49.6% (Ramsoomar & Morojele, 2012). Cannabis and opioid represent the most frequently used substances, reflecting prevalence rates of 289.7 cases per 100,000 and 253 cases per 100,000 respectively. Together, these accounted for 1.3% of all DALYs (Degenhardt et al., 2018).

In Nigeria, a 2010 district level study of substance use using the World Health Organization (WHO) Students Drug Use Questionnaire among adolescents aged between 11 to 20 years from ten randomly selected secondary schools (seven public secondary schools and three private schools) revealed that benzodiazepines (diazepam, Nitrazepam and Bromazepam) were the most common substances used with a prevalence of 32.2%, with the prevalence of alcohol tobacco, cannabis, heroin and cocaine use estimated at 9.2%, 5.2%, 4.4%, and 3.8%, respectively (Oshodi et al., 2010).

A cross-sectional study conducted among adolescents in Eastern Ethiopia using an adapted Youth Risk Behaviour Survey (YRBS) questionnaire also found that alcohol was used frequently by adolescents (Reda et al., 2012) (Details in table 1). The prevalence of life time alcohol consumption among the sampled participants was 22.2%. Similar results were found in South Africa where the Substance Use Scale was applied to a stratified sample of urban, semi-urban and urban schools (Madu & Matla, 2003). For more information refer to table 1. Of the 435 learners included in the study between the ages of 15 and 19 years, 19.8% reported any use of substances. Of those who reported any AOD use, alcohol accounted for 39.1%, cigarettes 53% and Cannabis 25.6%. In Zimbabwe, another study among adolescents aged between11 to 17 years, estimated the prevalence for any alcohol, cannabis and tobacco use was 9.5%, 9.1% and 8.5% respectively (Rudatsikira et al., 2009). Cannabis is also highly used in Sub-Saharan Africa. It is the third most abused substance amongst African youth (World

Health Organisation, 2001). Africa produces 25% of the world's cannabis and is the home of 70% of the total cannabis that is exported to Europe (Acuda et al., 2011).

Table 1: Characteristics of the studies included in prevalence estimates

Authors Year	Country	Type of Study	Setting (e.g. Schools)	Age	Sample Size (n)	Sampling Strategy	How was AOD measured?	Prevalence reported
Reda et al, 2012	Ethiopia	Cross-sectional	Secondary school	Mean age 16.4 years	1890	Stratified	Youth Risk Behavior Survey (YRBS)	Alcohol 22.2% Males – 68.3% Female 31.7%
Rudatsikira E and Muula A, 2009	Zimbabwe	Survey	School	13 – 15 years	1984	Two stage cluster sample design and random.	Global School-Based Health Survey questionnaire	Cigarettes – 8.5% Alcohol – 9.5% Cannabis - 9.1%
Madu SN and Matla MP, 2003	Pietersburg (South Africa)	Cross-sectional	Secondary School	13 – 19	435	Stratified cluster sampling	Family Environment Scale, and Substance Use Scale (Designed by authors)	Substance use 19.8% of which: Alcohol- 39.1% Cigarettes- 53% Cannabis-25.6% Glue – 8.1% Cocaine- 8.1% Others (Snuff, Benzene) 4.7%
Mashita et al, 2011	South Africa	Cross-sectional	Primary Schools	11 – 18	1654	Random	Questionnaire designed by the investigators. questions extracted from validated tools: Birth to Ten Study, Amsterdam Growth and Health Longitudinal Study and South African National Youth Risk Behaviour Survey	Tobacco use 11-12yrs Boys:7.8% Girls:3% 17-18yrs Boys: 21.6% Girl: 4.5%
Oshodi O, Alna O and Onajole A, 2010	Nigeria	Cross-sectional	Secondary Schools	11 – 20	402	Stratified for schools then Random sampling for adolescents	WHO Students' Drug Use Questionnaire	Alcohol- 9.2% Cannabis- 4.4% Tobacco- 5.2% Heroin- 3.8% Cocaine- 3.8% Hypno-sedatives (Diazepam, Nitrazepam and Bromazepam) - 32.3%
Moodley S, Matjila M & Moosa M, 2012	South Africa	Cross-sectional	Secondary Schools	Mean age 16.2 years	895	Cluster and random	CRAFT Screening Tool	Alcohol -51.4% Cigarette – 25.2% Cannabis – 13.2%
Muula A &Mpabulungi L, 2007	Malawi (Lilongwe) and Uganda (Kampala)	Cross-sectional	Primary and Secondary Schools	13 – 15	4609	Two stage cluster sampling	Global Youth Tobacco Survey (GYTS)	Malawi (Lilongwe) –6.2% Uganda (Kampala) –5.6%

AOD among adolescents is also prevalent in Malawi's neighbouring states. In Tanzania the prevalence of any AOD use is on the increase (Mbatia et al., 2009). Adolescents reported to have started consuming alcohol as early as 10 years; such use found to be influenced by parents, relatives or intimate peers (Osaki et al., 2018). It was noted that within the range of 5% to 12% of young people in Tanzania have been involved in AOD use, including substances such as Tobacco cigarettes, Alcohol, Cannabis and Khat. However, only 2.1% have been found to use injectable psychoactive substances such as Heroin (Yusuph & Negret, 2016). In a study that was carried out in Dar es Salaam using the Global Youth Tobacco Survey (GYTS), it was estimated that 13.3% of the adolescents had ever smoked tobacco (Kapito-Tembo et al., 2011). In Zambia, it was determined that alcohol use was initiated early in life, with 36.4% of students reporting starting to drink alcohol from the age of 13 or earlier (Swahn et al., 2011). The prevalence of smoking among adolescents was noted to be at 8.2% (10.4% males and 6.2% females) in Kafue, Zambia (siziya, rudatsikira, & muula, 2007), and 13% in Ndola, Zambia (Mutale et al., 2016a). Another study conducted in Zambia estimated Cannabis use among in-school adolescents to be 37.2% (34.5% for males and 39.5% for females). Cannabis use was associated with having been involved in sexual intercourse, alcohol use and being bullied.

2.1.3 Prevalence estimates of substance use among youth in Malawi

Few studies have been published depicting the prevalence of AOD use among adolescents in Malawi. A study done in Lilongwe, the capital city of Malawi, indicated prevalence of cigarette smoking among adolescents aged 13 to 15 years as 6.2% (A. S. Muula & Mpabulungi, 2007) (Table 1). Despite that not much data is available on AOD use among the adolescent age group in Malawi, representing one of the ten countries in Sub-Saharan Africa where alcohol consumption is on the rise (Acuda et al., 2011). Furthermore, no published study was found investigating substance use other than alcohol in Malawian secondary schools.

In Malawi, it is illegal regardless of the age to import, produce/ grow, process and distribute psycho-active recreational substances such as cannabis, unless where special permit has been granted by the Government (Malawi Dangerous Drugs Act, 2014; Bandawe, 2022; Cannabis Regulatory Authority, 2020). The law is said not to have been clear on smoking or using cannabis (Sensi Seeds, 2021). However, Cannabis Regulatory Authority indicates that it is illegal to smoke or use cannabis for recreational purposes (Cannabis Regulatory Authority, 2020). As regards to alcohol, the policy prohibits sales and consumption to all ages under

eighteen years (National Alcohol Policy, 2017). Contrary to alcohol and cannabis, there are no restrictions to cigarette/ tobacco sales and smoking (Campaign for Tobacco-Free Kids, 2019).

2.1.4 Measuring AOD in adolescents

Assessing adolescents for AOD use remains a challenge. The reason of the complexity lies in the process of identifying AOD use amongst this population, given that it often manifests as a result of multidimensional and multi-system circumstances. Standardised comprehensive assessment using validated tools is required in all stages to establish with valid information to support identification. AOD use may also be detected using biomarkers.

Self-reported tools that have been validated in various languages and contexts include the Comprehensive Adolescent Severity Inventory (CASI) (Meyers et al., 1999), the CRAFT (which takes the first letter in **C**ar, **R**elax, **A**lone, **F**orget, **F**riends, **T**rouble) and the Global Appraisal of Individual Needs (GAIN). GAIN is very important in clinical decision making, has a sensitivity of 90% and a specificity above 92% (Chan et al., 2008). Substance use in adolescents can also be determined using the Detection of alcohol and drug problems in adolescents (DEP-ADO). The tool has shown a higher diagnostic utility in identification of substance use compared to CRAFFT despite the fact that CRAFFT is better in looking at substance use over a life time (Bernard et al., 2005).

While well administered self-report measures have advantages like easiness to obtain information, inexpensive and takes less time to obtain information, there are disadvantages that may be encountered with this method. These include limitations and biases such as honesty, introspective ability, interpretation of questions, rating scales, response bias and sampling bias (Salters-Pedneault, 2020). Apart from self-reports, AODs may be measured using biomarkers. Although biomarkers are useful and measures illicit drug use; such as urine tests urine tests (Etzel, 1990; Etter et al., 2000; Høiseth et al., 2008), saliva (Jarvis et al., 2003) Montalto & Wells, 2007), hair samples and blood (Jarvis et al., 2003) (Helander et al., 2012) and on the skin (Voss et al., 2014), these tend to be very expensive and have limited acceptably for use in adolescents.

2.2 Implications of untreated AOD use in adolescents

Adolescence is a very important life-stage as it reflects the critical period for which behaviours develop and possibly last into adulthood. This is usually the time one initiates AOD use. Adolescence is also the time for brain development and functioning and AOD use during this period has a negative impact on brain development and functioning (Silins et al., 2015). Furthermore, adolescence is the period when active development of the brain takes place. AOD use has an effect on this process. Evidence has shown that there are structural changes of the white and grey matter and this disturbance caused in this neural developmental process may result into lower cognitive skills as compared to non-users. Furthermore, AOD use may have an effect on the behaviour, attention and concentration if the user attends classes while intoxicated (Lisdahl et al., 2013). Sleep deprivation was also another consequence caused by heavy AOD use (particularly, alcohol and cannabis use (Cohen-zion et al., 2010). Untreated AOD use in this age group may lead to substance addiction, including alcohol. Adolescents who start smoking between the ages of fourteen and sixteen have a 1.6 times higher likelihood of becoming dependent on tobacco (Breslauatb et al., 1993). Early use of tobacco may later result in delinquent behaviours and renders adolescents three times more likely to become regular users of other substances and selling drugs(Ellickson et al., 2001). Furthermore, a number of behavioural problems and their resultant consequences are associated with adolescent substance use. These include problems at school, dropping out, theft, violence and also unplanned early pregnancies and premature parenthood as a result of inappropriate sexual behaviours(Ellickson et al., 2001).

Untreated AOD use is also associated with a number of health and social problems. Some of these include risk for accidents, unemployment, suicide, and short life expectancy(WHO, 2014).A systematic review which included 46 studies also revealed that AOD use increased chances for school drop-out (Townsend et al., 2006). This was also revealed through the results of other studies further indicating outcomes including poor school attendance and performance in class (Acuda et al., 2011; Mnguni, 2014; Hoel et al., 2014; Abuya, Oketch, & Musyoka, 2013). In a systematic review involving studies in Sub-Saharan Africa, it was noted that alcoholism resulted in family disharmony, domestic violence and quarrelling, sexual problems, poor family interactions, juvenile drinking, juvenile delinquencies, financial difficulties and health problems. It was also noted that the practice increased HIV risk(Acuda et al., 2011).

2.3 Risk factors for substance use among adolescents

There are several risk factors for AOD use. To start with, for an adolescent to develop a behaviour of AOD use has to start with experimenting. To do this there is need for an influencing factor. After experimenting, there has to be a factor again to sustain the behaviour. These influencing factors will be explored using the Bronfenbrenner Social Ecological Theory.

2.3.1 Social-Ecological Model of Human Development

Bronfenbrenner's ecological model of systems was developed by Urie Bronfenbrenner and explores the influencing factors for a child to develop a particular behaviour (Paquette & Ryan, 2001). The theory is described through five layers known as systems. These layers are: Microsystem, Mesosystem, Exosystem, Macrosystem and Chronosystem (Paquette & Ryan, 2001). An individual's own personality traits may be the primary influencing factor for the development of a particular behaviour however, the framework posits that various environmental factors can influence the behaviour of adolescents. This model will form the basis of the description of factors that may render an adolescent prone to initiating AOD use behaviour. Below, Figure 2 illustrates the key elements of this theory which will be discussed in the subsequent sections

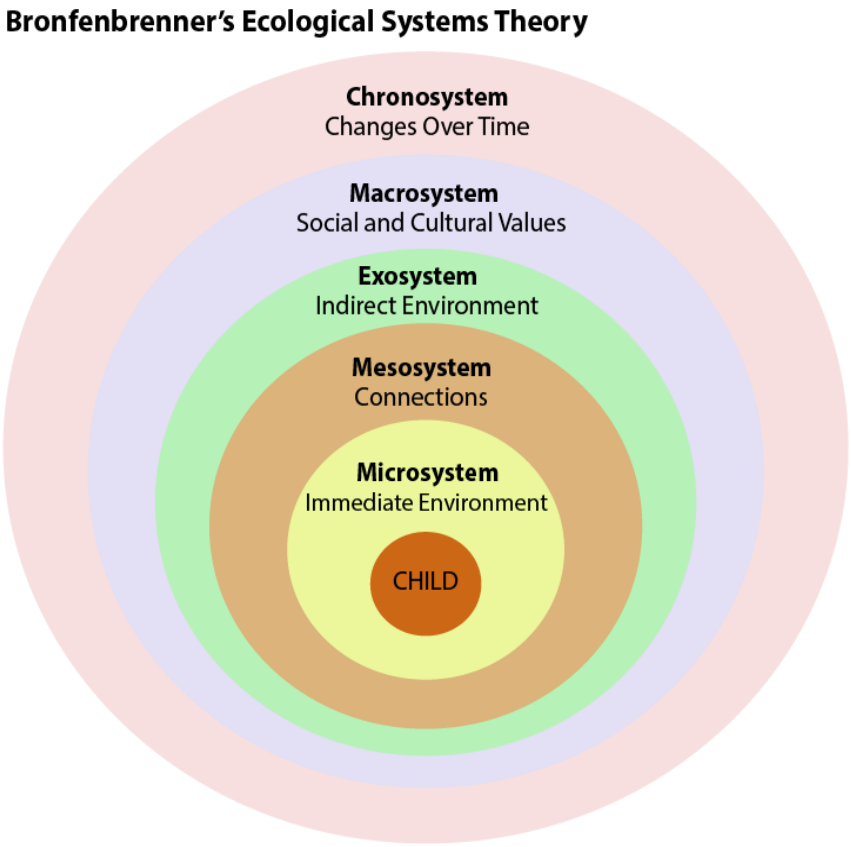


Figure 2 Bronfenbrenner's ecological model of systems theory

2.3.1.1Individual Factors

Individual factors relate to how a child would influence the environment in the microsystem and how the environment influences him/ her (Paquette & Ryan, 2001). A number of studies have been conducted in relation to genetic or biological risk factors. In a research review (Weinberg, 2001) several factors were noted to be risk factors for AOD use. Genetic risk factors included children of parents who engage in AOD use during pregnancy, temperament, having another psychiatric condition, defective executive cognition, academic failure, low self-esteem, or defective social skills.

Severe mental conditions such as schizophrenia have also been known to have a higher risk for AOD use (Robert & Mueser, 1996). Additionally, depression, psychological difficulties, acute stress and anxiety. Other factors would include significant losses in life, negative thoughts, defective problem solving and coping skills and conduct disorders (Uchtenhagen, 2004;Weinberg, 2001; World Health Organization 2015). Age is another factor in this category. Adolescence is the stage where the majority of experimentation takes place, thereby

leading to behaviour and habit formation. This includes experimenting with AOD use (World Health Organization 2015).

2.3.1.1 Microsystems

Microsystems encompass the most immediate adolescents' environment and includes their parents, schools and peers. This has the greatest influence on a growing child bi-directionally (Paquette & Ryan, 2001). Environmental factors play a very important role in behavioural development, in addition to the fact that environmental factors such as family and peer dynamics also represent important risk factors for AOD use (Weinberg, 2001).

Several studies conducted in relation to AOD use are in line with this theory. In a study that was done in Panama, Costa Rica and Guatemala, dysregulation, peer deviance, dropping out of school and exposure to violence were found to be risk factors associated with increased AOD use (Kliewer & Murrelle, 2014). In addition to this, a study conducted in South Africa exploring environmental risk factors for AOD use among adolescents identified low family morals, religious factors, family conflicts, and AOD use amongst other family members. (Madu & Matla, 2003). Similarly, results from a study conducted in Ndola, Zambia indicated that adolescents who were coming from families whose members reported cannabis use were at a higher risk of developing the same behaviour (Mutale, Mwakazanga, Mulenga, & Siziya, 2016); with evidence demonstrating that parents with AOD use disorders are likely to influence their children to engage in AOD use (Shin et al., 2009);Mashita et al., 2011). The school environment is also another important risk factor. A study conducted in Malawi involving 2359 adolescents aged between 13 to 17 years highlighted the association between bullying ,victimisation and AOD use (Kim et al., 2020). The maltreatment of children including neglect and sexual and physical abuse may lead to psychopathology and this may in turn lead to increased AOD use and the development of dependency (Shin et al., 2009).

In summary, the range of risk factors in the microsystem which have a demonstrated influence on AOD use among adolescents include: being male, having a parent or sibling who uses AODs, genetic factors and living in conditions of poverty. Risk factors pertaining to an individual such as 'novelty, sensation seeking, oppositional behaviour, conduct disorder, poor school performance, low commitment to education and leaving school early'. In addition, school environments that are associated with the presence of bullying and victimisation, exposure to violence; and family factors including style of parenting, poor interaction and/or

relationship between parent and child, being friends with AOD users and antisocial individuals, coupled with the availability of AODs put adolescents at increased risk of AOD use (Degenhardt et al., 2016) World Health Organization 2015).

2.3.1.2 Mesosystems

Mesosystem factors come into existence due the interaction between different factors within the Microsystems; these include family, school, religious, peer and community components. For instance, parents may be influenced by the religion to behave in in a particular way towards their child thereby influencing the child to develop a particular behaviour.

A. Family Factors

In a study that was conducted in USA which recruited 1810 students from both urban and suburban communities in a metropolitan district, 1810 participants participated, across different race groups and equal gender representation, concluded that family factors played a significant role in the development of AOD use amongst adolescents. The factors included family life events, parental substance use and parent-child conflict. It was also noted that adolescents were less susceptible to parental risk factors (such as parental AOD use) if they had a "higher task attention orientation level and positive emotionality" compared to those with higher activity level and negative emotionality (Wills et al., 2001). Another study that recruited more than 17,000 high school learners, (Amoateng & Barh, 1986), also pointed out that there was significant relationship between level of religiosity and use of AODs and this relationship varied between different denominations. Families who house individuals with AODs or whose members use AODs also influence adolescents to use substances (Manu et al., 2010).

In a review of studies involving middle to high class participants with intact families, it was noted that there was a significant difference between adolescents from families with one or both parents having a mental illness or AOD disorders to those without; with the later having low risk (Mowbray & Oyserman, 2003). Other studies suggest that other mental health disorders amongst the adolescents (such as Attention Deficit Hyperactive Disorder (ADHD)) could increase the risk of AOD use and misuse. This is further exacerbated when a family member also engages in AOD use or misuse or if the adolescent has a mood or behavioural problem (Wilens, 1998).

B. School Factors

In a study that was carried out among the 18- to 26-year-old learners at a school in the US, results revealed that a conducive school climate is a strong protective factor for AOD use, leading to strong recommendations for improving school conditions as a preventative measure (Ryabov, 2021), whilst negative school environment is a risk factor (Manu et al., 2010; Morojele & Brook, 2006)

C. Religious Factors

Religion is another protective factor against AOD abuse. The majority of the studies looking at religiosity and substance abuse concluded that people involved in religion reported less AOD abuse compared to those that were non-religious (Gorsuch & Butler, 1976). In a study that involved 16,130 senior high school students also had similar findings (Amoateng & Barh, 1986). A summary of multiple studies which were conducted by the Search Institute of high school also revealed a similar negative correlation between religion and AOD abuse (Gorsuch, 1995). In Uganda, it was also noted that people with low religious stands were five times more likely to have consumed alcohol compared to those with a good religious standing. (Tumwesigye et al., 2013).

D. Peers

In a study that was conducted in the USA involving 1253 adolescents in Grades 7 to 12 comparing adolescents with extreme attachment to peers against those who took advice from their parents, noted that the first group were at a higher risk of developing deviant behaviour compared to the latter (Fuligni et al., 2001). In a study conducted in South Africa, the impact of peer pressure on the development of AOD use among adolescents came out strongly (Manu et al., 2010).

E. Community Factors

Community elements have also been found to contribute to adolescence use of AODs. Community factors such as child labour, poverty, the presence of AODs within the community, presence of adults who use or abuse AODs and communities that have no strict restrictions against adolescent use of AODs, all have been found to contribute to use of AODs amongst adolescents (Manu et al., 2010). Being exposed to second hand smoking, pro-tobacco

advertisements, easy access and the availability of AODs have also been linked to adolescent AOD use (Centers_for_Disease_Control_and_Prevention, 2008).In addition to the presence of adults who abuse AODs, communities with high crime rates and violence, in addition to having adults with antisocial behaviours were also pointed of as factors influencing the early initiation of AODs amongst adolescents. (Onya et al., 2012).

2.3.1.3 Exosystem

Exosystem factors are those which do not directly come into contact with the child but interact with the microsystem. An example of this would be the parent's working schedule. Whilst the child is not directly involved in the work, it may contribute to potential negative or positive child outcomes through its influence on care giving. The other example is Social Economic Status. In a meta-analysis of nine studies having recruited adolescents between the ages of 10 to 15 years across North American and European countries reported that adolescents with Low Social Economic Status had an increased risk of engaging in Alcohol and cannabis (Lemstra et al., 2008).

2.3.1.4 Macrosystems

This system defines the society's beliefs and values. This does not have a direct link with the child but cascades through all other systems to influence a child. For instance, in a study that was conducted among young persons working at a rural roadside market in Malawi, results indicated that young persons were involved in AOD use as a result of supportive norms which cultivate fertile grounds for the development of AOD use behaviours among young persons. These include beliefs such as those that suggest that substance use enables individuals to be strong (Jere et al., 2017). Another example would be Sex and ethnicity. Gender was noted to be one of the protective factors against AODs. A study conducted in South Africa and the USA noted that females were less involved in AODs in South Africa; of note, this was only a protective factor against cannabis use in the U.S setting. The same study established that black ethnicity was a protective factor against alcohol, cigarettes and cannabis use. In South Africa the study used data from the South African National Youth Risk Behaviour Survey and recruited adolescents from grade eight to eleven while in the US data was from the YRBS and participants were from grade nine to twelve (Reddy et al., 2007). In another related study, the results indicated that ethnicity was also a factor associated with AOD, in addition to gender; however, in recent studies the gender risk gap has been narrowing (Amoateng & Barh, 1986)

2.3.1.5 Chronosystem

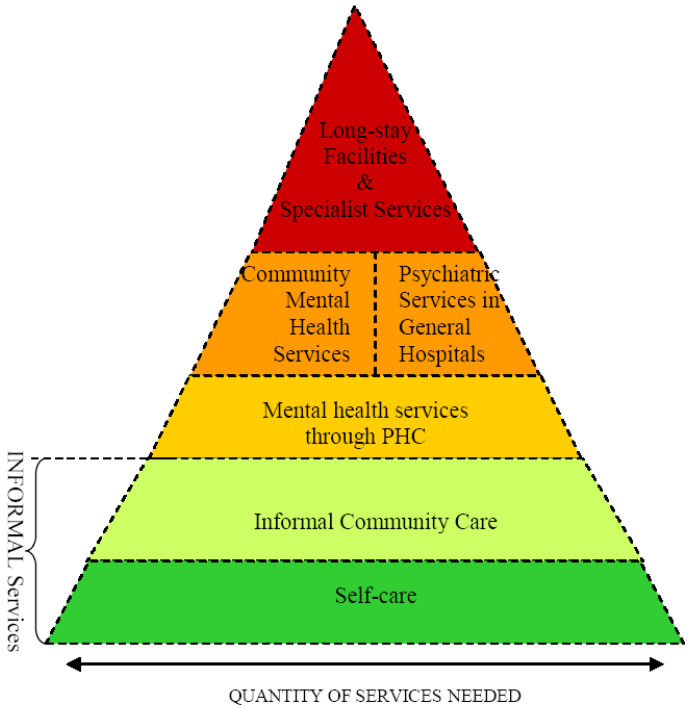
The system describes the time at which influences occur. This could either be internal to the individual across the life-span from adolescence and puberty to adulthood or external to them, for instance the death of a parent (Berk, 2000).

In Malawi, factors that predict adolescent AOD use include male gender, peer pressure, parents who use AODs and exposure to advertisements of AODs (A. S. Muula, 2007). Other influencing factors included availability of pocket money and the perception that with smoking one may gain more body weight (Muula A.S., 2008). In a qualitative study conducted in Lilongwe and Mangochi among the adult population, notable risk factors to AOD use amongst adolescents included traditional beliefs, customs, rites and practices. At special events and occasions, adolescents are encouraged to use substances. An example is during the installation of a village headman, where adolescents would be encouraged to drink alcohol (locally distilled spirits) and smoke cannabis so they can dance all night long without shyness. Peer pressure also came up as one important risk factor for AOD use among adolescents. Some faiths also encouraged their members to use AODs, chamba (cannabis) in particular (Braathen, 2008).

2.4 Services for AOD management

Malawi follows the WHO recommendations on mental health care which gives a guide that implementation of mental health should follow the optimal service mix pyramid (Figure 1) (World Health Organization, 2007). Both mental illnesses and AODs issues are managed in general hospitals, with the exception of three referral psychiatric units.

Fig 1: The WHO Optimal Service Mix Pyramid



Excluding informal levels of care, Malawi has three levels of care. These are primary level (where we find Health centres, Dispensaries, Community and Rural Hospitals), secondary level (District Hospitals) and tertiary level (Central and Specialized Hospitals such as those dedicated to Mental health care) (World Health Organisation, 2010;Dercon, Ruttens, Dercon, & Ruttens, 1998). The facilities in the primary level, also referred to as the first tier, are the most accessible for rural communities. Services at primary level are primary health care (PHC) services offered by the community-based cadres of staff. These cadres include Health Surveillance Assistants (HAS) and volunteers. Their main services include providing health education promotion and other preventive services. Health education topics include AOD use and target groups including learners during school health programs and all other populations during community health initiatives. They are also involved in door-to-door out-reach and clinic activities for all health programs. Other cadres of staff include nurses, medical assistants and clinical officers. Their main function is the management of all medical (including mental health and AOD) and obstetrical cases. All complicated cases are referred to the second level. There is typically human resource inadequacy at the primary health care level and the services are limited to non-specialized care (Ministry of Health, 2016).

The secondary level, also referred to as the second tier include District Hospitals. Each District has one District Hospital. These facilities serve as referral units (for both mental health and

general conditions) from the first tier. While specialized nurses and clinicians are mandated to be available in these facilities (Malawi_Project, 2019), facilities are often manned by clinical officers and general nurses due to the limited number of specialist workers in Malawi. The third level is the central hospital. They are situated in the urban areas and are manned by all specialised cadres. At this level, there are specialised hospitals for Mental Health issues and specialised hospitals for other conditions. These are usually fairly well staffed compared to other levels but still falls short of the desired human resource establishment (Malawi_Project, 2019).

Mental health services including AOD management has not yet been well integrated into the Primary Health Care system in some countries across Africa(Patel, 2007). This has an impact on the accessibility and affordability of AOD services. A study conducted in Sub-Saharan Africa highlighted that most of the specialized mental health and AOD service providers are either at the District or Regional levels and are not able to provide out-reach services in the communities. In areas where community based workers have been used, sustainability has also been an issue due to remuneration challenges (Alem et al., 2008). This has a negative impact on the identification of mental health and AOD use clients requiring services and also on the follow-up of clients who have defaulted treatment. There is scarcity of mental health/AOD services in Low and Middle-Income Countries (LMIC) and in most of these countries the health budgets for mental health/ AOD services is less than 1% of total health expenditure. In addition, amongst those who access care, most of the mental health/ AOD clients receive substandard treatment and this results in increased chronicity and the cost of care(Patel, 2007).

2.5 Barriers to accessing treatment for AOD use amongst adolescents

Barriers are the factors that impede access to care. Access to care is defined as the use of health services which is timely, of appropriate quality, acceptability and offers the best possible outcomes.

Barriers can be grouped into individual barriers (such as low education, inadequate finances, low levels of knowledge and stigma), health system barriers (such as stigma, discrimination and victimization by health service providers, poor privacy and confidentiality, poor attitude by health service providers, inadequate skills of health service providers, cost/ resource implications, waiting time, lack of service integration, inequities in access to care,

inclusiveness, information systems, transparency and accountability, location of service areas and transportation) and structural barriers such as criminalization which leads to stigma and discrimination and harassment by the law enforcers (Millman,1983; Sorsdahl et al., 2012; Petersen et al., 2017; Delany-Moretlwe et al., 2015). Although studies have been conducted on the treatment and management needs of AOD users, these areas remain largely under researched in Sub-Saharan Africa. Geographical accessibility to mental health and AOD services remains a challenge (Hanlon et al., 2010).

In a qualitative study that was carried out in Melbourne, Australia involving parents and adolescents of sub-Saharan origin, four issues were revealed to contribute to limited health care seeking amongst AOD users including stigma, inadequate literacy in relation to mental health amongst both parents and young persons, cultural incompetence as regards to sources of formal help and financial constraints (Mccann et al., 2016). In another study that was conducted in the U.S, it was noted that a large proportion of adolescents (83%) engaging in non-prescribed opioid use were not on treatment; reasons included fear of stigma and a lack of knowledge on the dangers of AOD use (Wu et al., 2011). A study in South Africa which used a convenient sampling method and recruited 868 participants also cited stigma as a significant contributor to a lack of health seeking behaviour. (Sorsdahl et al., 2012).

2.6 Conclusion and rationale for this study

In conclusion, this chapter has described the burden and prevalence of AOD use among adolescents, common approaches to identifying AOD use problems in adolescents, the implications of untreated AOD use among adolescents and the evidence base regarding risk factors for AOD use among adolescents using the Bronfenbrenner's ecological model of systems theory. Based on the results derived from the reviewed literature, it is suspected that alcohol and substance use is a pressing issue among adolescents in Malawi. However, little remains known about the prevalence of alcohol and substance use among adolescents in the country, Mzuzu in particular. Few studies have been conducted or published on this subject within the Malawian context and so far, no such study has been published for the region of Mzuzu. It is therefore important to conduct studies on alcohol, substance use and the associated factors which place adolescents at risk in Malawi. Generating evidence on the prevalence of

alcohol and substance use among adolescents in this context is crucial to provide decision makers with evidence regarding the size of the problem – and, by understanding the associated risk factors, opportunities to intervene. Further, this review has highlighted key factors at various levels that must be investigated in order to comprehensively investigate the nature of AOD use among secondary school students in Mzuzu. Studies of this kind can support the country in the generation of good-quality estimates which may help inform policy makers, law enforcers, social workers, teachers, health workers and many other organisations working with adolescents on the gravity of the problem. Amongst other things it may also help design proper referral systems for adolescents to access proper care on alcohol and substance use related problems.

Chapter 3. Methods

Chapter 2 reviewed key literature and evidence of relevance to the objectives of this study. This Chapter (3) will focus on clarifying the methodological approach undertaken to achieve the aims and objectives of this current study. This will include discussion of the Study Design, Study Setting, Sample Size, Participants, Study Procedure, Measures, Data Analysis and Ethical Considerations.

3.1. Study Design

This study was a cross-sectional, quantitative study that collected primary data from secondary school learners in Mzuzu, Malawi using a self-administered questionnaire.

3.2. Setting

This study was conducted in the city of Mzuzu located in the Northern region of Malawi in Mzimba district (Figure 4). Mzuzu, is home to a population of 221,272 people of which 108,848 are males and 112,424 are females. Only 123,095 are above the age of 18 years. Mzuzu has a land size of 146 km^2 with a population density of 1,516 and a total of 49,562 households (National Statistical Office, 2018). Malawi is a low-income country and one of the poorest

Figure 4 Map of Malawi

countries in Africa, with a poverty head count of 70.3% - indicating that more than half of the population is living on $1.90 a day (World Bank, 2017)

All government hospitals and schools both at the primary and secondary levels are free. This enables every child to have access to free education. There are 29 secondary schools in Mzuzu, of which 13 are private and 16 are government-funded day schools, two of which are boarding schools. This study focused on government-funded day schools in Mzuzu given that the majority of learners in Mzuzu are enrolled in schools of this kind. Students typically enrol into these schools in form one (first year of the secondary school) at an average age of 12 or 13, and graduate in form four (in their fourth year) around the age of 18.

Two schools were selected for this study from a total of 16 Government public schools which are within Mzuzu urban. Simple random sampling was used to select these participating schools. The process was conducted in consultation with the Education officials from the public sector. The name of each of the public secondary schools in the city was written on a piece of paper, which was then folded up and placed into a container. The container was then sealed and shaken. Thereafter, one of the Education Authority representatives was asked to select two pieces of paper from the container. These two names were the names of the participating schools, identified as the Luwinga Secondary School and the Lupaso Community Day Secondary School.

3.3. Sample

Two secondary schools participated in the study. All learners who were within the age range of 12 to 17 years were asked to take part in the study. All the learners meeting this criterion and present during the day of data collection were given a chance to participate in the study. In total, 421 learners participated in the study.

3.4. Participants

Participants of this study were learners enrolled at the two secondary schools selected for the study. Participants were included if they were between the ages of 12 and 17 years and had parental or guardian consent to participate. All secondary school learners at each of the two schools within the stipulated age range were approached for participation. 17 years was chosen

because to be the cut-off point because use and sale of alcohol and tobacco products, is legally permitted in Malawi at the age of eighteen (World Health Organization, 2018b) and the study aimed to target adolescents below the permissible age.

3.5. Study Procedure

After consulting with the head teachers of the identified schools and gaining permission to approach learners, a consent and study information form (in duplicate) was sent home with the adolescents for their parents/ guardians to give consent. A full description of the study and detailed information sheet regarding participation was provided (see Appendix C1 and C2). Adolescents had one week to return the forms while the duplicate form remained with the parents/ guardians. Assent was then sought from those adolescents who returned the form with guardian or parental consent after thorough explanation about the study (see Appendix D1 and D2). All participants were informed that they may withdraw from the study at any time. The self -administered survey questionnaire took an average of 45 minutes to complete. This was done in their classrooms. The sitting arrangement in the classroom enabled every learner to be free and that it was not easy to look at each other's responses. This enabled every participating learner to respond independently. The research team was available to answer any questions during that time. Participants were not allowed to discuss their responses. The questionnaire was administered at an opportune time agreed upon by the participants and educators.

3.6. Measures

In addition to a number of socio-demographic, family composition and household related variables which were sourced from the Youth Risk Behaviour Survey (YRBS) questionnaire (Department of Health- Republic of South Africa, 2002), measures were adapted from the following instruments, either in full or a sub-set of questions were included:

1. **Alcohol Use Disorders Identification test (AUDIT).** This is a tool that was developed by the WHO. It is used to screen for alcohol problems. This tool has been widely used in health facilities and community settings in many areas. It is a ten (10) item self-reporting questionnaire. Each item is scored on a Likert scale. At the end, all the scores are aggregated. A total score of 5 is regarded as problematic alcohol consumption amongst adolescents (Liskola et al., 2018). Areas assessed include duration one has been drinking, number of alcoholic drinks one takes in a day, times one has six or more

drinks per day, occasions within last year when the client has failed to stop drinking, number of occasions an individual failed to accomplish what was expected of him/her because of alcohol, times within the previous year when the client required an alcoholic drink early in the morning prior to activities, occasions one felt guilt after drinking, times one was unable to remember things due to drinking, whether one has ever had an injury or has had someone injured because of his drinking and whether others have ever been concerned with the drinking and advised him/her to stop (Babor et al., 2001). The tool has been used in adult populations in Malawi despite it not being validated in the country. It is however an internationally validated tool (Lancaster et al., 2017;Mafuta, 2015).

2. **Fagerstrom.** This is a tool used to assess tobacco-use. This instrument is self-administered and contains six questions. The questions in this tool include: "How soon after you wake up do you smoke your first cigarette?" which contributes a maximum of 3 scores, "Do you find it difficult to refrain from smoking in places where it is forbidden" which contributes a maximum of 1 score, "Which cigarette would you hate most to give up?"(maximum of 1 score), "How many cigarettes per day do you smoke?" with a maximum of 3 points, "Do you smoke more frequently during the first hours after waking than during the rest of the day?" (Maximum of 1 score) and "Do you smoke when you are so ill that you are in bed most of the day?" (Maximum of 1 score). The participant responds by ticking in the most appropriate box amongst the boxes provided at the end of the question. The tool has a range of 0 to 9 scores with a score of 4 (FTQ) regarded as nicotine dependent (Lin & Scott, 2012). The tool has been validated in high income countries and was found to be reliable, but it has not been validated in Malawi. The tool has been adapted for the adolescent population

3. **DUDIT.** This is a tool which was developed to assess and identify drug use disorders. It was developed by Berman (2003) and can be used along with the AUDIT. It is an 11-item tool which assesses frequency of drug use, number of drugs being used, heavy drug use, craving, loss of control, prioritization of drugs over other important activities, feeling guilty, harmful use and concern from others. The scoring of DUDIT is 0, 1, 2, 3 and 4 in items 1 to 9 and 0, 2 and 4 in items 10 and 11. This brings the maximum total score to 44. Drug use is said to problematic if the score reaches 6 in men and 2 in women. However, in either sex, if the client has a score of 25 or more

he/she is classified as being dependent (Berman et al., 2003). The tool has not been validated in Malawi but has been tested in other countries including South Africa (Vythilingum et al., 2012). The psycho-active substances which were investigated included cannabis (chamba), cocaine, solvents/ inhalants (e.g. petrol) Anticholinergic compounds (e.g. trihexyphenidyl/ Artane) sleeping pills such as Benzo-diazepines, painkillers and Kuber.

4. **The Forms of Bullying Scale**: Bullying was measured using the 'Forms of Bullying Scale'. The Instrument was developed for use among adolescents aged between 12 to 15 years. The tool has 10 items and each item is scored in five categories. Some examples of the items include "I was teased in a nasty way, secrets were told about me to others to hurt me, I was hurt by someone trying to break up a friendship, I was made to feel afraid by what someone said he/she would do to me" (Shaw et al., 2013). The tool has not been validated in Malawi but it has been validated and used in other countries (Solberg & Olweus, 2003). Part of this questionnaire was used in the South Africa Risk and Behaviour Survey (Department of Health- Republic of South Africa, 2002).

5. **The Multidimensional Scale of Perceived Social Support** was used to measure social support. The tool has not been validated in Malawi but has been used in adolescent populations in some studies across South Africa (Tsilika et al., 2019). The tool was developed in the U.S and for use amongst adolescents and has been widely used. It is a 12 item instrument (Zimet et al., 1988). , with scores ranging from 12 to 84. There is no cut-off point in the calibration; the higher the score, the greater the support is deemed to be available. The tool assesses the perceived social support from the family, friends and other significant persons. The responses range from very strongly disagree as 1, Disagree 2, Agree 3 and very strongly agree as 4 (Dambi et al., 2014).

This questionnaire was administered in English since all students were able to understand, read and write English.

3.7. Data Analysis

After all the completed questionnaires were administered and collected, coding of all categorical variables and data entry on an excel work sheet was done followed by data cleaning. Thereafter, the data was exported to SPSS version 26 for analysis. Independent variables included socio-demographic variables such as age, sex, class, frequency of attendance in religious activities, household characteristics, alcohol, tobacco and drug-use among household members, as well as the outcomes of the bullying/victimisation scale and social support scale. Means and proportions were used to describe socio-demographic data and the outcomes of the bullying and social support scales across the sample. Independent variables were used to determine associations with the dependent variables. The dependent variables were: lifetime alcohol use and lifetime drug use, where lifetime use was defined as any use in the adolescent's lifetime. Unadjusted and adjusted associations between the independent variables and the lifetime use of alcohol and drugs were explored using logistic regression. Only those variables that were significant in the unadjusted models were included in the final adjusted regression model. In addition to age and gender, the results were reported as odds ratio (ORs) with 95% confidence intervals (CIs).

3.8. Ethical Considerations

During this study all ethical principles were respected. Before the commencement of the study all necessary permissions were sought for. This included approvals from the Health Sciences Research Ethics Committee (HREC) at the University of Cape Town (HREC Ref: 119/2020), the Department of Education (Mzuzu) in Malawi, the National Committee on Research in the Social Sciences and Humanities (NCRSH) in Malawi and the schools identified for inclusion in the study. The welfare of the respondents was maintained through-out the study. Only adolescents that had both parental consent and had provided their own written assent were allowed to participate.

No harm was anticipated during the research as it did not involve invasive procedures or medications. As such only a low possibility of emotional distress was anticipated. However, care was taken to ensure that all study respondents were protected from any harm. All fairness and respect to human dignity was ensured throughout the study process. These included respecting participants rights to participate or withdraw without fear of consequences, being flexible with their program and being open and available to listen to their questions and concerns. The Mzuzu St John of God Counselling and Mental Health Departments were

contacted and as such were aware of the study taking place. The departments were available and ready to assist with mental health support in the case of any participants becoming visibly distressed whilst completing the questionnaire. In these department there are trained clinical psychologists, counsellors, clinicians and other members forming a multi-dimensional team to provide care. In cases of distress, participants would have been referred to this institution and would have received care at no cost. In the case of participants encountering neglect or abuse being detected, protocols for referral to the District Social Welfare Office (DSWO) for further management or intervention was also prearranged.

No presents, gifts or remuneration were given to participants in this study. No completed questionnaire could be linked to any particular individual; as such no participant could be held accountable for his or her responses. No punitive measures or benefits were taken against any participant's responses.

Privacy and confidentiality were ascertained by maintaining anonymity and keeping the completed questionnaires secured and locked up in a lockable file cabinet. Participants were assured that the data collected would be used solely for the study purposes.

Chapter 4. Results

4.1. Introduction

This chapter presents the findings of data analyses performed on data collected in June, 2021 on the prevalence and factors associated with alcohol and drug use among secondary school learners in Mzuzu, Malawi. The findings have been presented according to the study objectives under the following subheadings: a) demographic and household characteristics of the sample b) prevalence of alcohol and drug-use c) factors predicting lifetime alcohol-use and (d) factors predicting lifetime drug-use.

4.2. Demographic and household characteristics of sample

The final sample consisted of 421 participants, meeting the sample requirements (see Table 2). Most of the participants were male (50.6%, n=213). The average age of participants was 15.9 years (SD=1.2 years). The majority of the participants were sampled from the secondary school located in the Luwinga region (70.8%, n=298). Overall, participants were equally distributed across grade levels, with exception of Grade 9, where only 15.2% (n=64) of the sample were enrolled. This compares to 32.3%, 29.5% and 23.0% of the sample being enrolled in Grade(s) 8, 10 and 11, respectively. Learners included in the sample reported high attendance of religious services, with 64.1% (n=270) of the sample reporting weekly attendance, 12.4% reporting attendance once or twice a month and the minority of the sample reporting that religious services were attended rarely (18.3%, n=77) or not at all (5.2%, n=22).

Results found that the parents of learners enrolled in the study most often were educated up to secondary school levels, or above. Among the learners' fathers, this equated to 61.1% (n=257), with 68.2% (n=245) of learners reporting that their mothers were similarly educated up to the secondary school level or above. A larger share of the mothers of the sample were had no formal education, or less than a primary school education, when compared to 9.3% (n=39) of fathers, 20% (n=85) of the learners. This was similar for employment status where 25.5% (n=105) of learners reported that their mother was unemployed, compared to unemployment rate of 11.8% (n=45) among fathers. More than half of the sampled learners also lived with at least one female sibling (62%, n=261), with less than half (42.8%, n=180) living with a male sibling. Less than 20% of learners reported living with aunts, uncles, or grandparents.

Table 2 Demographic and household characteristics of sample (N=421)

Variable	n (%)
Age (Mean, SD)	15.9 (1.2)
12	2(0.5)
13	15(3.6)
14	54(12.8)
15	73(17.3)
16	103(24.5)
17	174(41.3)
Gender	
Male	213 (50.6)
Female	208 (49.4)
School	
Luwinga	298(70.8)
Lupaso	123(29.2)
School Grade level	
Grade 8	136 (32.3)
Grade 9	64 (15.2)
Grade 10	124 (29.5)
Grade 11	97 (23.0)
Attendance of Religious Services	
Never	22(5.2)
Rarely	77(18.3)
1-2 times	52(12.4)
Weekly	270(64.1)
Live with parents	
Both parents	232 (55.1)
Single parent	88 (20.9)
Other relative or guardian	101 (24.0)
Fathers' education	
No formal education/less than primary school education	39(9.3)
Secondary School education or above	257(61.1)
No living father or Unknown	125 (29.7)
Mothers' education	
No formal education/less than primary school education	85(20.2)
Secondary School education or above	245(58.2)
No living mother or Unknown	91(21.6)
Father employment status	
Unemployed	45(11.8)
Employed	335 (88.2)
Mother employment status	
Unemployed	105(25.5)
Employed	307(74.5)
Household Composition	
Biological Mother present in Household	311 (73.9)
Biological Father present in Household	241 (57.2)
Uncle(s) present in Household	56(13.3)
Aunt(s) present in Household	55(13.1)
Grandparent(s) present in Household	71(16.7))
Female sibling(s) present in Household	261(62)
Male sibling(s) present in Household	180(42.8)
Sleeping arrangements	
Own bedroom	101 (24.0)
Room Shared with 1 Household Member	112 (26.6)
Room Shared with 2 Household Members	124 (29.5)
Room Shared with 3 Household Member	49 (11.6)
Room Shared with >3 Household Members	35 (8.3)
Household ability to meet subsistence needs	
1 *Insufficient household resources for food*	81 (19.2)
2	87 (22.7)
3	128 (30.4)
4	44 (10.5)

5 *Sufficient household resources for subsistence needs (food, basic needs, clothing), luxury assets and additional assets*	40 (9.5)
Not applicable or Missing	12 (2.9)
Tobacco, Alcohol and/or Drug use in the Household	
Tobacco-use present in the household	27 (6.4)
Alcohol-use present in the household	92 (21.9)
Drug-use present in the household	27 (6.4)

Although the vast majority (73.9%, n=311) of the sample were living with their biological mothers, only 57.2% (n=241) reported their biological fathers present in the household. Regarding the conditions by which the sample of learners live, most learners reported that they sleep in a room shared by two other household members (29.5%, n=124). Of the remainder, 24% (n=101) reported that they had their own bedroom, 26.6% (n=112) sleeping in a room shared with one other household member with 11.6% (n=49) and 8.3% (n=35) of the sample sleeping with three, or more than three household members, respectively.

Using a scale of one to five to measure the ability of a household to meet its needs, where one indicates that a household has insufficient resources for food and five indicates that a household has sufficient resources for food, basic needs, clothing and luxury and/or additional assets, the study found that learners most often rated their household as three or less. 30.4% (n=128) of the sample described that their household has sufficient resources for food and basic items (e.g clothes), but was lacking in many other areas, while 19.2% of learner households were found to have insufficient resources for food, with 22.7% able to meet food-needs but not able to meet basic needs in terms of clothing and other basic items. Across the sample, tobacco-use among household members was rare (6.4%, n=27). The use of alcohol by members of learner households was 21.9% (n=92). By contrast, only 6.4% (n=27) of learners reported that their household member(s) use drugs.

4.3. Prevalence of alcohol and drug-use

The prevalence of lifetime alcohol-use was 17.1% (n=72) across the sample of secondary school learners (see Table 3). A lower prevalence of lifetime drug-use was found across the sample, with 7.1% (n=30) of learners reporting any prior use of drugs. In terms of current use of alcohol and drugs (defined as alcohol or drug-use occurring at least once during the preceding twelve months), lower prevalence rates were observed; 10.2% and 6.4% of learners, reported that they were current users of alcohol and drugs, respectively. A minority of learners (2.4%, n=10) reported current use of tobacco.

Table 3 Adolescent Self-reported Substance-use (Alcohol, and Drugs), Victimization and FBS

Variable	n (%)
Adolescent self-report of any prior use of alcohol	
No	349(82.9)
Yes	72(17.1)
Adolescent self-report of any prior use of drug(s)	
No	391(92.9)
Yes	30(7.1)
Adolescent self-report of current use of tobacco	
No	411(97.6)
Yes	10(2.4)
Adolescent self-report of current use of alcohol	
No	378 (89.8)
Yes	43 (10.2)
Adolescent self-report of current use of drugs	
No	394(93.6)
Yes	27(6.4)
Social Support	**Mean (SD)**
Friends	18.2 (6.6)
Family	22.4(5.8)
Significant Other	19.1(6.5)
Victimisation	
Forms of Bullying Scale (FBS) Score	16.8(10.0)
FBS Items	**n (%)**
Experience of: Teasing in Nasty Ways	
Did not happen	325 (77.2)
Once or Twice	56 (13.3)
Once every few weeks	13 (3.1)
Once a week	7 (1.7)
More than once a week	20 (4.8)
Experience of: Personal secrets being shared to cause hurt	
Did not happen	288 (68.4)
Once or Twice	79 (18.8)
Once every few weeks	18 (4.3)
Once a week	12 (2.9)
More than once a week	24 (5.7)
Experience of: Being hurt as a result of someone attempting to break up a friendship	
Did not happen	295 (70.1)
Once or Twice	63 (15)
Once every few weeks	21 (5)
Once a week	16 (3.8)
More than once a week	26 (6.2)
Experience of: Feeling fear as a result of a threat made by someone	
Did not happen	255 (60.6)
Once or Twice	87 (20.7)
Once every few weeks	24 (5.7)
Once a week	21 (5)
More than once a week	34 (8.1)
Experience of: Feeling hurt as a result of physical action by a person or a group	
Did not happen	299 (71)
Once or Twice	58 (13.8)
Once every few weeks	14 (3.3)
Once a week	20 (4.8)
More than once a week	30 (7.1)
Experience of: Being called names in nasty ways	
Did not happen	234 (55.6)
Once or Twice	80 (19)
Once every few weeks	19 (4.5)
Once a week	15 (3.6)

More than once a week	73 (17.3)
Experience of: Being told that they would not be liked unless they did what they were told	
Did not happen	295 (70.1)
Once or Twice	57 (13.5)
Once every few weeks	17 (4)
Once a week	13 (3.1)
More than once a week	39 (9.3)
Experience of: Damage, destroyal or steeling of personal items	
Did not happen	250 (59.4)
Once or Twice	75 (17.8)
Once every few weeks	25 (5.9)
Once a week	25 (5.9)
More than once a week	46 (10.9)
Experience of: Feeling hurt as a result of being left out of a group	
Did not happen	236 (56.1)
Once or Twice	78 (18.5)
Once every few weeks	24 (5.7)
Once a week	20 (4.8)
More than once a week	63 (15)
Experience of: Lies being told about them or their friends to those they dislike	
Did not happen	208 (49.4)
Once or Twice	73 (17.3)
Once every few weeks	30 (7.1)
Once a week	13 (3.1)
More than once a week	97 (23)

Using responses to the twelve items of the Multidimensional Scale of Perceived Social Support (Dambi et al., 2014), the average level of social support received from friends, family and from significant other(s) were determined to be 18.2 (SD=6.6), 22.4 (SD=5.8) and 19.1(SD=6.5), respectively. Scores generated from this scale range from 12 to 84, suggesting that the sample had low absolute levels of social support overall. As higher scores indicate greater levels of social support available, social support from family were, on average, higher when compared to social support received from friends and significant others. Finally, exposure to victimisation was measured using the Forms of Bullying Scale (Shaw et al., 2013). The sample achieved a mean overall score of 16.8 (SD=10.0); where scores range from 10 to 50.

4.4. Factors predicting lifetime alcohol-use

Both the unadjusted and adjusted associations between lifetime alcohol use and the samples' demographic and household characteristics, levels of social support and exposure to victimisation are presented in Table 4. Given only variables that were significant in the unadjusted models in addition gender the following additional variables were included in the adjusted model: 1) school grade; 2) attendance of religious studies; 3) household ability to meet subsistence needs; 4) tobacco use in the household; 5) alcohol use in the house hold; 6) drug use in the household; 7) experience of: teasing in nasty ways; 8) experience of: personal secrets

being shared to cause hurt; 9) experience of: being hurt as a result of someone attempting to break up a friendship;10) experience of: feeling hurt as a result of physical action by a person or group; 11) experience of: being called names in nasty ways; 12) experience of: being told that they would not be liked unless they did what they were told; 13) experience of: damage, destroyal or stealing of personal items and 14) social support.

After adjusting for these variables, seven variables were found to significantly predict lifetime alcohol-use in the present study. To begin with, male participants were more likely to have used alcohol when compared to females (OR=4.28, 95% CI 2.36-7.75). Compared to learners in grade eight, learners in grades 9, 10 and 11 were 5.6, 4.9 and 6.1 times more likely to have used alcohol, respectively. Attending religious services weekly

Table 4 Logistic Regression: Lifetime Alcohol-use

	Prior Use of Alcohol n (%)		**Odds Ratio (95% CI)**	
Variable	No	Yes	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Total Sample, N=421	349 (82.9)	72 (17.1)		
Gender				
Female	192 (55.0)	16 (22.2)	1.00	
Male	157 (45.0)	56 (77.8)	4.28*** (2.36 - 7.75)	5.69*** (2.38 - 13.59)
School Grade level				
Grade 8	129 (37.0)	7 (9.7)	1.00	1.00
Grade 9	49 (14.0)	15 (20.8)	5.64*** (2.17 - 14.67)	6.36*** (1.78 - 22.74)
Grade 10	98 (28.1)	26 (36.1)	4.89*** (2.04 - 11.73)	7.12*** (2.22 - 22.87)
Grade 11	73 (20.9)	24 (33.3)	6.06*** (2.49 - 14.75)	4.76*** (1.52 - 14.85)
Attendance of Religious Services				
Less than weekly	116 (33.2)	35 (48.6)	1.00	1.00
Weekly	233 (66.8)	37 (51.4)	0.53** (0.32 - 0.88)	0.45** (0.21 - 0.93)
Live with parents				
Other/Not Applicable	84 (24.1)	17 (23.6)	1.00	
Both parents	197 (56.5)	35 (48.6)	0.88 (0.47 - 1.65)	
Single parent	68 (19.5)	20 (27.8)	1.45 (0.71 - 2.99)	
Fathers' education				
No formal/ less than primary education	32 (9.2)	7 (9.7)	1.00	
Secondary School Education or More	221 (63.3)	36 (50.0)	0.74 (0.31 - 1.81)	
No living father or Unknown	96 (27.5)	29 (40.3)	1.38 (0.55 - 3.46)	
Mothers' education				
No formal/ less than primary education	69 (19.8)	16 (22.2)	1.00	
Secondary School education or above	200 (57.3)	45 (62.5)	0.97 (0.52 - 1.83)	
No living mother or Unknown	80 (22.9)	11 (15.3)	0.59 (0.26 - 1.36)	
Father employment status				
Unemployed	38 (11.9)	7 (11.7)	1.00	
Employed	282 (88.1)	53 (88.3)	1.02 (0.43 - 2.41)	
Mother employment status				
Unemployed	88 (25.9)	17 (23.6)	1.00	
Employed	252 (74.1)	55 (76.4)	1.13 (0.62 - 2.05)	
Household Composition				
Biological Mother present in Household				
No	92 (26.4)	18 (25.0)	1.00	

Yes	257 (73.6)	54 (75.0)	1.07 (0.60 - 1.93)	
Biological Father present in Household				
No	144 (41.3)	36 (50.0)	1.00	
Yes	205 (58.7)	36 (50.0)	0.70 (0.42 - 1.17)	
Grandparent(s) present in Household				
No	289 (82.8)	61 (84.7)	1.00	
Yes	60 (17.2)	11 (15.3)	0.87 (0.43 - 1.75)	
Female sibling(s) present in Household				
No	134 (38.4)	26 (36.1)	1.00	
Yes	215 (61.6)	46 (63.9)	1.10 (0.65 - 1.87)	
Male sibling(s) present in Household				
No	201 (57.6)	40 (55.6)	1.00	
Yes	148 (42.4)	32 (44.4)	1.09 (0.65 - 1.81)	
Sleeping arrangements				
Own Bedroom	73 (20.9)	28 (38.9)	1.00	1.00
Share with 1 person	97 (27.8)	15 (20.8)	0.40** (0.20 - 0.81)	0.21*** (0.07 - 0.60)
Share with 2 or more people	179 (51.3)	29 (40.3)	0.42*** (0.24 - 0.76)	0.54 (0.24 - 1.23)
Household ability to meet subsistence needs				
1	72 (20.6)	9 (12.5)	1.00	1.00
2	71 (20.3)	16 (22.2)	1.80 (0.75 - 4.35)	2.18 (0.67 - 7.10)
3	104 (29.8)	24 (33.3)	1.85 (0.81 - 4.20)	3.51** (1.12 - 11.02)
4	33 (9.5)	11 (15.3)	2.67** (1.01 - 7.05)	3.73 (0.94 - 14.76)
5	35 (10.0)	5 (6.9)	1.14 (0.36 - 3.67)	3.58 (0.78 - 16.48)
Not applicable/Not Reported	34 (9.7)	7 (9.7)	1.65 (0.57 - 4.80)	2.12 (0.45 - 9.98)
Tobacco, Alcohol and/or Drug use in the Household				
Tobacco-use in the household				
No	332 (95.4)	61 (84.7)	1.00	1.00
Yes	17 (4.6)	11 (15.3)	3.75*** (1.66 - 8.48)	3.53** (1.00 - 12.39)
Alcohol-use in the household				
No	290 (83.1)	39 (54.2)	1.00	1.00
Yes	59 (16.9)	33 (45.8)	4.16*** (2.42 - 7.15)	4.55*** (1.96 - 10.56)
Drug-use in the household				
No	333 (94.6)	61 (88.9)	1.00	1.00
Yes	16 (5.4)	11 (11.1)	2.17* (0.91 - 5.17)	0.79 (0.21 - 2.93)
Current Tobacco-use by the Adolescent				
No	330 (99.7)	64 (87.5)	1.00	
Yes	19 (0.3)	8 (12.5)	49.71*** (6.19 - 399.27)	
Victimisation during the last school term				
Experience of: Teasing in Nasty Ways				
Did not Occur	276 (79.1)	49 (68.1)	1.00	1.00
Occurred Infrequently	55 (15.8)	14 (19.4)	1.43 (0.74 - 2.78)	2.41 (0.89 - 6.54)
Occurred Frequently	18 (5.2)	9 (12.5)	2.82** (1.20 - 6.63)	0.45 (0.10 - 2.07)
Experience of: Personal secrets being shared to cause hurt				
Did not Occur	250 (71.6)	38 (52.8)	1.00	
Occurred Infrequently	75 (21.5)	22 (30.6)	1.93** (1.08 - 3.46)	2.44 (0.96 - 6.19)
Occurred Frequently	24 (6.9)	12 (16.7)	3.29*** (1.52 - 7.12)	2.78 (0.73 - 10.55)
Experience of: Being hurt as a result of someone attempting to break up a friendship				
Did not Occur	251 (71.9)	44 (61.1)	1.00	1.00
Occurred Infrequently	69 (19.8)	15 (20.8)	1.24 (0.65 - 2.36)	1.36 (0.54 - 3.41)
Occurred Frequently	29 (8.3)	13 (18.1)	2.56** (1.23 - 5.30)	0.71 (0.21 - 2.40)
Experience of: Feeling fear as a result of a threat made by someone				
Did not Occur	214 (61.3)	41 (56.9)	1.00	
Occurred Infrequently	94 (26.9)	17 (23.6)	0.94 (0.51 - 1.75)	
Occurred Frequently	41 (11.8)	14 (19.4)	1.78 (0.89 - 3.56)	
Experience of: Feeling hurt as a result of physical action by a person or a group				
Did not Occur	253 (72.5)	46 (63.9)	1.00	1.00
Occurred Infrequently	61 (17.5)	11 (15.3)	0.99 (0.49 - 2.03)	0.41 (0.14 - 1.18)
Occurred Frequently	35 (10.0)	15 (20.8)	2.36** (1.19 - 4.66)	1.37 (0.43 - 4.36)
Experience of: Being called names in nasty ways				
Did not Occur	202 (57.9)	32 (44.4)	1.00	1.00
Occurred Infrequently	78 (22.4)	21 (29.2)	1.70* (0.92 - 3.13)	0.74 (0.28 - 1.99)
Occurred Frequently	69 (19.8)	19 (26.4)	1.74* (0.93 - 3.26)	0.84 (0.30 - 2.37)
Experience of: Being told that they would not be liked unless they did what they were told				
Did not Occur	255 (73.1)	40 (55.6)	1.00	1.00

Occurred Infrequently	57 (16.3)	17 (23.6)	1.90** (1.01 - 3.59)	0.77 (0.29 - 2.05)
Occurred Frequently	37 (10.6)	15 (20.8)	2.58*** (1.30 - 5.13)	3.07 (0.99 - 9.51)
Experience of: Damage, destroyal or stealing of personal items				
Did not Occur	215 (61.6)	35 (48.6)	1.00	1.00
Occurred Infrequently	84 (24.1)	16 (22.2)	1.17 (0.62 - 2.23)	1.68 (0.63 - 4.45)
Occurred Frequently	50 (14.3)	21 (29.2)	2.58*** (1.38 - 4.81)	2.50 (0.89 - 7.02)
Experience of: Feeling hurt as a result of being left out of a group				
Did not Occur	197 (56.5)	39 (54.2)	1.00	
Occurred Infrequently	87 (24.9)	15 (20.8)	0.87 (0.46 - 1.66)	
Occurred Frequently	65 (18.6)	18 (25.0)	1.40 (0.75 - 2.61)	
Experience of: Lies being told about them or their friends to those they dislike				
Did not Occur	175 (50.1)	33 (45.8)	1.00	
Occurred Infrequently	85 (24.4)	18 (25.0)	1.12 (0.60 - 2.11)	
Occurred Frequently	89 (25.5)	21 (29.2)	1.25 (0.68 - 2.29)	
Social Support	*Mean (SD)*			
Friends	18.1(6.5)	8.5(7.0)	1.01 (0.97 - 1.05)	
Family	22.9(5.7)	20.4(5.9)	0.94*** (0.90 - 0.98)	0.95 (0.89 - 1.00)
Significant Other	19.2(6.4)	18.8(6.8)	0.99 (0.95 - 1.03)	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

decreased the odds of reporting any alcohol use (OR=0.45, 95% CI 0.21, 0.93) compared to attending less than weekly. Adolescents who slept in a room shared with one other person were less likely to report any alcohol use (OR=0.21 CI 0.07, 0.60) compared to those who had their own room. Compared with learners whose households were found to have insufficient resources for food, learners living in households with sufficient resources for food and basic items (e.g clothes) but lacking in many other areas were 3.5 times more likely to have used alcohol (95% CI 1.12 - 11.02). Finally, tobacco and alcohol-use by other household members within learner households were significant predictors of lifetime alcohol use in the sample. Compared to learners without household members who used tobacco, those with household members using tobacco were 3.5 times more likely to report lifetime alcohol use (95% CI 1.00 - 12.39). Similarly, compared to learners without household members who used alcohol, those with household members using alcohol were 4.6 times more likely to report lifetime alcohol use (95% CI 1.96 - 10.56).

4.5. **Factors predicting lifetime illicit drug use**

Both the unadjusted and adjusted associations between lifetime illicit drug use and the samples' demographic and household characteristics, levels of social support and exposure to victimisation are presented in Table 5. In the adjusted model, six variables were found to significantly predict lifetime drug-use in the present study. To begin with, male participants were more likely to have used illicit drugs when compared to females (OR=2.59, 95% CI 1.03 - 6.52). Compared to learners in grade eight, learners in grades 10 and 11 were 12.8 and 23.8 times more likely to have used drugs, respectively. In the sample, living in a single parent

household significantly predicted lifetime drug use among learners (OR=4.79 95% CI 1.21 - 19.05). Adolescents who slept in a room shared with two other household members were less likely to report lifetime drug use (OR=0.32 CI 0.11 - 0.91) compared to those who sleep in their own bedroom. Finally, alcohol-use and drug-use by other household members within learner households were significant predictors of lifetime drug use in the sample. Compared to learners without household members who used alcohol, those with household members using alcohol were 3.9 times more likely to report lifetime drug use (95% CI 1.47 - 10.52). Similarly, compared to learners without household members who use drugs, those with household members using drugs were 5.2 times more likely to report lifetime drug use (95% CI 1.47 - 18.55).

Table 5 Logistic Regression: Any Prior Use of Drugs

	Prior Use of Drugs n(%)		Odds Ratio (95% Confidence Interval)	
Variable	No	Yes	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Total Sample, N=421	391(92.9)	30 (7.1)		
Gender				
Female	199 (50.9)	9 (30)	1.00	1.00
Male	192 (49.1)	21 (70)	2.42** (1.08 - 5.41)	2.59** (1.03 - 6.52)
School Grade level				
Grade 8	135 (34.53)	1 (3.33)	1.00	1.00
Grade 9	62 (15.86)	2 (6.67)	4.35 (0.39 - 48.94)	5.23 (0.43 - 62.96)
Grade 10	112 (28.64)	12 (40)	14.46** (1.85 - 112.96)	12.78** (1.51 - 108.30)
Grade 11	82 (20.97)	15 (50)	24.70*** (3.20 - 190.44)	23.83***(2.83 - 200.36)
Attendance of Religious Services				
Less than weekly	138 (35.29)	13 (43.33)	1.00	
Weekly	253 (64.71)	17 (56.67)	0.71 (0.34 - 1.51)	
Live with parents				
Other/Not Applicable	97 (24.81)	4 (13.33)	1.00	1.00
Both parents	216 (19.95)	16 (33.33)	1.80 (0.59 - 5.51)	2.04 (0.58 - 7.14)
Single parent	78 (55.24)	10 (53.33)	3.11* (0.94 - 10.29)	4.79** (1.21 - 19.05)
Fathers' education				
No formal/ less than primary education	37 (9.46)	2 (6.67)	1.00	
Secondary School Education or More	240 (61.38)	17 (56.67)	1.31 (0.29 - 5.91)	
No living father or Unknown	114 (29.16)	11 (36.67)	1.79 (0.38 - 8.42)	
Mothers' education				
No formal/ less than primary education	79 (20.2)	6 (20)	1.00	
Secondary School education or above	226 (57.8)	19 (63.33)	1.11 (0.43 - 2.87)	
No living mother or Unknown	86 (21.99)	5 (16.67)	0.77 (0.22 - 2.61)	
Father employment status				
Unemployed	42 (11.83)	3 (12)	1.00	
Employed	313 (88.17)	22 (88)	0.98 (0.28 - 3.43)	
Mother employment status				
Unemployed	100 (26.18)	5 (16.67)	1.00	
Employed	282 (73.82)	25 (83.33)	1.77 (0.66 - 4.76)	
Household Composition				
Biological Mother present in Household				
No	106 (27.11)	4 (13.33)	1.00	
Yes	285 (72.89)	26 (86.67)	2.42 (0.82 - 7.09)	
Biological Father present in Household				
No	166 (42.46)	14 (46.67)	1.00	
Yes	225 (57.54)	16 (53.33)	0.84 (0.40 - 1.78)	
Grandparent(s) present in Household				
No	327 (83.63)	23 (76.67)	1.00	
Yes	64 (16.37)	7 (23.33)	1.56 (0.64 - 3.78)	
Female sibling(s) present in Household				
No	147 (37.6)	13 (43.33)	1.00	
Yes	244 (62.4)	17 (56.67)	0.79 (0.37 - 1.67)	
Male sibling(s) present in Household				
No	224 (57.29)	17 (56.67)	1.00	
Yes	167 (42.71)	13 (43.33)	1.03 (0.48 - 2.17)	
Sleeping arrangements				
Own Bedroom	90 (23.02)	11 (36.67)	1.00	1.00
Share with 1 person	104 (26.6)	8 (26.67)	0.63 (0.24 - 1.63)	0.86 (0.29 - 2.59)
Share with 2 or more people	197 (50.38)	11 (36.67)	0.46* (0.19 - 1.09)	0.32** (0.11 - 0.91)
Household ability to meet subsistence needs				
1	78 (19.95)	3 (10)	1.00	
2	78 (19.95)	9 (30)	3.00 (0.78 - 11.50)	
3	119 (30.43)	9 (30)	1.97 (0.52 - 7.49)	

4	40 (10.23)	4 (13.33)	2.60 (0.55 - 12.19)	
5	36 (9.21)	4 (13.33)	2.89 (0.61 - 13.59)	
Not applicable/Not Reported				
Tobacco, Alcohol and/or Drug use in the Household				
Tobacco-use in the household				
No	369 (94.37)	25 (83.33)	1.00	1.00
Yes	22 (5.63)	5 (16.67)	3.35** (1.17 - 9.61)	1.68 (0.42 - 6.68)
Alcohol-use in the household				
No	314 (80.31)	15 (50)	1.00	1.00
Yes	77 (19.69)	15 (50)	4.08*** (1.91 - 8.70)	3.93*** (1.47 - 10.52)
Drug-use in the household				
No	370 (94.63)	24 (80)	1.00	1.00
Yes	21 (5.37)	6 (20)	4.40*** (1.63 - 11.94)	5.21** (1.47 - 18.55)
Current Tobacco-use by the Adolescent				
No	388 (99.23)	23 (76.67)	1.00	
Yes	3 (0.77)	7 (23.33)	39.36*** (9.55 - 162.26)	
Victimisation during the last school term				
Experience of: Teasing in Nasty Ways				
Did not Occur	303 (77.49)	22 (73.33)	1.00	
Occurred Infrequently	64 (16.37)	5 (16.67)	1.08 (0.39 - 2.95)	
Occurred Frequently	24 (6.14)	3 (10)	1.72 (0.48 - 6.17)	
Experience of: Personal secrets being shared to cause hurt				
Did not Occur	266 (68.03)	22 (73.33)	1.00	
Occurred Infrequently	92 (23.53)	5 (16.67)	0.66 (0.24 - 1.79)	
Occurred Frequently	33 (8.44)	3 (10)	1.10 (0.31 - 3.87)	
Experience of: Being hurt as a result of someone attempting to break up a friendship				
Did not Occur	276 (70.59)	19 (63.33)	1.00	
Occurred Infrequently	78 (19.95)	6 (20)	1.12 (0.43 - 2.89)	
Occurred Frequently	37 (9.46)	5 (16.67)	1.96 (0.69 - 5.57)	
Experience of: Feeling fear as a result of a threat made by someone				
Did not Occur	238 (60.87)	17 (56.67)	1.00	
Occurred Infrequently	103 (26.34)	8 (26.67)	1.09 (0.45 - 2.60)	
Occurred Frequently	50 (12.79)	5 (16.67)	1.40 (0.49 - 3.97)	
Experience of: Feeling hurt as a result of physical action by a person or a group				
Did not Occur	283 (72.38)	16 (53.33)	1.00	1.00
Occurred Infrequently	63 (16.11)	9 (30)	2.53** (1.07 - 5.98)	2.42 (0.77 - 7.62)
Occurred Frequently	45 (11.51)	5 (16.67)	1.97 (0.69 - 5.63)	1.50 (0.37 - 6.07)
Experience of: Being called names in nasty ways				
Did not Occur	219 (56.01)	15 (50)	1.00	
Occurred Infrequently	91 (23.27)	8 (26.67)	1.28 (0.53 - 3.13)	
Occurred Frequently	81 (20.72)	7 (23.33)	1.26 (0.50 - 3.21)	
Experience of: Being told that they would not be liked unless they did what they were told				
Did not Occur	279 (71.36)	16 (53.33)	1.00	1.00
Occurred Infrequently	67 (17.14)	7 (23.33)	1.82 (0.72 - 4.61)	0.74 (0.23 - 2.40)
Occurred Frequently	45 (11.51)	7 (23.33)	2.71** (1.06 - 6.96)	1.22 (0.30 - 4.96)
Experience of: Damage, destroyal or steeling of personal items				
Did not Occur	234 (59.85)	16 (53.33)	1.00	
Occurred Infrequently	91 (23.27)	9 (30)	1.45 (0.62 - 3.39)	
Occurred Frequently	66 (16.88)	5 (16.67)	1.11 (0.39 - 3.14)	
Experience of: Feeling hurt as a result of being left out of a group				
Did not Occur	223 (57.03)	13 (43.33)	1.00	1.00
Occurred Infrequently	91 (23.27)	11 (36.67)	2.07* (0.90 - 4.80)	1.78 (0.61 - 5.19)
Occurred Frequently	77 (19.69)	6 (20)	1.34 (0.49 - 3.64)	0.96 (0.24 - 3.90)
Experience of: Lies being told about them or their friends to those they dislike				
Did not Occur	195 (49.87)	13 (43.33)	1.00	
Occurred Infrequently	94 (24.04)	9 (30)	1.44 (0.59 - 3.48)	
Occurred Frequently	102 (26.09)	8 (26.67)	1.18 (0.47 - 2.93)	
Social Support	*Mean (SD)*			
Friends	18.1(6.6)	19.5(6.3)	1.04 (0.97 - 1.10)	
Family	22.4(5.8)	22.5(6.1)	1 (0.93 - 1.07)	
Significant Other	19.0(6.4)	20.1(7.2)	1.03 (0.96 - 1.10)	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Chapter 5. Discussion and Conclusion

5.1. Introduction

The purpose of this chapter is to discuss the findings presented in Chapter 4. It will start with a discussion of the study's main findings concerning the prevalence rates and associated risk factors of alcohol-use and drug-use among secondary school learners (aged 12 to 17 years) in the Mzuzu, Malawi. Thereafter, the study's limitations will be addressed. The chapter will conclude with implications for policy, intervention development and practice, as well as offering recommendations for future research.

5.2. Overview of the main findings

A number of important findings emerged from this study. Firstly, the prevalence of any alcohol and drug-use were estimated at 17.1% and 7.1%, respectively, across the sample of 421 secondary school learners. Secondly, in this sample of secondary school learners, the study identified seven main risk factors for alcohol-use and six main risk factors for drug-use.

5.2.1. Prevalence of alcohol and drug use

In the current study, the lifetime prevalence rate of alcohol-use among the sample of secondary school learners was determined to be 17.1%; where 10.2% of these learners were found to be currently using alcohol. When considered against global estimates of alcohol use amongst adolescents (26.5% in 2015) (World Health Organization, 2018a), and prevalence rates for the Sub-Saharan region (32%) (Isaac, 2018), South Africa (39.1%) (Madu & Matla, 2003) and the East African region of the African continent (37%) (Francis et-al, 2014), this study provides evidence that secondary school learners in the Mzuzu region of Malawi have comparatively lower rates of alcohol use.

At the same time, findings of this study are similar to estimates from Zimbabwe, which indicate a prevalence rate of 15.6% for alcohol-use among school learners (Siziya et al., 2009). Notably, our findings were also found to be substantially higher than estimates derived through a cross-sectional study conducted in 2010 among secondary school students in Lagos, Nigeria, where the prevalence of alcohol-use was found to be 9.2% (Oshodi et al., 2010). Similarly, a more recent study from Ghana revealed lifetime prevalence of alcohol-use among school-going

adolescents to be 12.6% (Asante et al., 2019). Similar to these other studies that found lower estimates of alcohol use, only lifetime and current use were reported in this study. Reporting the prevalence of harmful or hazardous use given low reporting was not considered useful.

In the current study, the lifetime prevalence of drug-use among the sample of secondary school learners was determined to be 7.1%; with the prevalence of current drug-use being only marginally lower - where 6.4% of learners reported current use of drugs. These estimates are lower than average rates for the Sub-Saharan region (15.9%) (Isaac, 2018). Nonetheless studies conducted in South Africa across the same population group were consistent with these estimates, indicating prevalence rates of drug-use as 8.3%. Although Malawi and Zambia are neighboring countries, and would be expected to have similar rates of drug-use among secondary school learners, evidence published in 2013 found that Zambia had substantially higher rates (37.2%) (Siziya et al., 2013) in comparison to our findings.

The reasons for lower prevalence compared to other countries is not clear. However, in another study that was conducted in Blantyre and Lilongwe investigating tobacco use among adolescents suggested that findings in the urban commercial cities may be higher than in the outskirts of town and rural areas (A. S. Muula et al., 2008). Mzuzu is a very small city and therefore this may explain the reason for having low prevalence. The other reason could be that a vast majority of Malawians are religious with Christianity and Islam being the leading faiths (National Statistical Office, 2018). Religion has been identified as a proactive factor against AOD use.

5.2.2. Risk factors for alcohol and drug-use

Significant associations were found to exist between alcohol-use and: being male, being in a higher school grade level, less frequent religious service attendance, learners' sleeping arrangements within their households, measures of learner households' abilities to meet their needs as well as both tobacco and alcohol-use by other household member in learner households. Significant associations were similarly found to exist between drug-use: being male, being in a higher school grade level, less frequent religious service attendance, living in a single parent household, sleeping arrangements and alcohol-use and drug-use among learner household members. It is important to note that due to the cross-sectional nature of the study, no directional link between the identified risk factors and alcohol-use or drug-use can be

inferred. We present a discussion of these risk factors according to specific measures adopted by this study, which align to various systems of the Bronfenbrenner Social Ecological Theory (Paquette & Ryan, 2001).

In relation to the microsystem, specific individual characteristics were found to influence alcohol and drug-use among the sample of secondary school learners examined in this study. The results demonstrated that being male increased the risk of both alcohol and substance-use, which was consistent with existing evidence. For both alcohol and drug-use, the grade-level of the learners were significant predictors of using these substances, particularly amongst those in grade(s) ten and eleven, relative to their younger counterparts in grade eight. Similar findings were established by a study conducted in South Africa (Madu & Matla, 2003). This suggests the increasing age of the adolescent poses increased risk of use of alcohol and/or drugs.

Regarding socioeconomic status (SES), this study adopted two primary proxy measures of household socio-economic status (SES): the sleeping arrangements of the learners, and, a five-item scale to distinguish the extent to which learner households were able to meet their basic needs. For alcohol-use, sleeping in a room shared with another person was found to be protective of alcohol-use, where these learners were significantly less likely to report alcohol use compared to those who slept in a room on their own, whilst for drug-use, sleeping in a room shared with two additional household members was found to be protective of drug-use compared to those who slept in their own bedroom.

For the second measure, determining the extent to which learner households were able to meet their basic needs, learners living in households where sufficient resources were available to cover food and basic needs, but insufficient to acquire luxury assets, were more likely to use alcohol, compared to learners who reported their households had insufficient resources for food. This finding was not significant for drug-use. Nonetheless, taken together, these findings were surprising given that learners who had access to their own room, and who resided in households with sufficient resources to provide food and other assets were considered to be indicative of higher SES. Evidence from HIC settings have produced conflicting findings, where adolescents with lower SES were found to have an increased risk of use of alcohol and drug-use (Lemstra et al., 2008). These findings are however consistent with evidence from Malawian settings which note that influencing factors for AOD use among adolescents include the availability of resources (i.e., pocket money) (Muula A.S., 2008). This suggests that in

comparison to those of the lower SES, learners with additional resource availability in Mzuzu may have increased ability to procure alcohol and drugs. The reason for this paradoxical finding is not clear. However, it may mean the learners had some money which they would use to buy AODs.

In relation to family factors, evidence has shown that family factors impose a significant influence on the development of AOD use in adolescents. Whilst this study did not investigate family life events, the mental health status of parents and the degree of parent-child conflict, it examined tobacco, alcohol, and drug-use of members of the learner households. Interestingly, alcohol-use by household members increased the risk of learner use of both alcohol and drugs, whilst tobacco-use among household members only increased the risk of alcohol-use across the sample, and drug-use by household members was found to uniquely increase the risk of drug use among adolescents. These findings are consistent with existing evidence on the influence of parental substance use influences on adolescent use of substances (Manu et al., 2010), and aligns to the results of a Zambian study conducted in 2016 (Mutale, Mwakazanga, Mulenga, & Siziya, 2016). There is considerable research highlighting how parents' normalisation of alcohol use impacts on a child's use and ultimately their patterns and sustaining of use. Among other reasons, parents who engage in AOD use will have problems to supervise their children and guard them against AOD use as they are in the same practice (Rudatsikira et al., 2009). In addition, parental behaviour would also likely influence the child's behaviour (Kapito-Tembo et al., 2011; Muula A.S., 2008). This is also inline with the Bronfenbrenner's ecological model of systems that through the influence in the microsystems and nurturing the child may be rendered vulnerable to develop AOD use if the parents are also in the AOD use (Paquette & Ryan, 2001; Weinberg, 2001).

This study investigated factors associated with school and peer dynamics that may influence alcohol and/or drug use among adolescents using the Forms of Bullying Scale to assess peer victimization and, the Multidimensional Scale of Perceived Social Support, to assess the extent of support received from friends, family and significant others. In the unadjusted analyses, components of these measures were found to increase the risk of alcohol-use, in particular – with higher rates of victimisation behaviours demonstrating increased risk of alcohol-use among adolescents, and increased family support indicating a protective influence. These associations were not however significant in adjusted analyses. The evidence provided by this study therefore did not substantiate existing research demonstrating the significant link

between victimisation and peer pressure on the development of AOD use among adolescents (Manu et al., 2010)(Morojele & Brook, 2006)

A notable finding however emerged through the determination of a strong association between religiosity and both alcohol and drug-use. Those who attended religious services more frequently were less likely to have used alcohol and similarly, less likely engage in drug-use. These findings correspond to existing evidence on the protective influence of religion in relation to AOD abuse among adolescents (Gorsuch & Butler, 1976; Amoateng & Barh, 1986; Gorsuch, 1995; Tumwesigye et al., 2013). Religion plays an important role in the sense that religious activities tend to have a strategy that teaches against AOD use attitudes and imparts individuals with controls against AOD abuse (Amoateng & Bahr, 1986).

5.2.3. Implications for policy, intervention development and practice

Given the prevalence rates of alcohol- and drug-use among secondary school learners across the sampled schools in Mzuzu, Malawi, determined through this study as well as findings from other contexts in Africa and globally, it is clear that alcohol- and drug-use among adolescents should be recognised as a significant public health concern in Malawi, and the continent more broadly. Despite this study finding a relatively lower prevalence than other context among this population of adolescents, the high prevalence of AOD amongst adults alongside the limited treatment available for substance use disorders (Alem et al., 2008), a focus on prevention is of paramount importance.

To help address this public health issue there must be adequate attention to the direct consequences that impact other sectors, particularly the education sector. As such appropriate measures, and tools to prevent and address AOD use are fundamental. These responses require collaboration, at minimum, across the health and education sector(s), in the development of prevention programs, in light of the existing barriers for all citizens accessing associated services. In light of the limited human resources, financing and inequities in access to mental health and AOD use treatment, this additional adolescent burden will overwhelm the Malawian health system. As a low-income country, the negative outcomes associated with unaddressed AOD use among adolescents are particularly significant for Malawi. Policy makers must be made aware of the possible implications that can arise – ranging from lifelong negative health impacts, unemployment, shorter life expectancy, and addiction – and more immediate

delinquent behaviours, poor school performance, theft, violence, inappropriate sexual behaviours and premature parenthood, which will have enormous economic consequences to this emerging economy.

Where policy is concerned, in Malawi, no recognition is given to adolescent alcohol and drug-use as a major concern in the public sector, nor to the development of preventative strategies to avert the potentially growing crisis. Prevention of these behaviours in the period of adolescence represents a critical opportunity to address this problem in a more cost-effective way, as opposed to grappling with the costs of treating addictive behaviours in the emerging adult population and/or facing the costs of rising unemployment and criminal justice implications. This study has demonstrated that efforts should be prioritised for male adolescents, initially in higher grade levels (i.e. grade 10 and 11). However, the study also sheds light on the opportunity that can emerge from collaboration with religious bodies to support protective influences in this period of growth for all adolescents. Further, routine screening mechanisms for AOD use should be contextualised and integrated as standard practice across the education system with effective referral systems for complex cases to appropriate health services, ideally within the school setting. Further, broader health education programs must be developed to inform families of the consequences that manifest as a result of tobacco, alcohol, and drug-use within the household to adolescents. These should aim to reduce the use of these substances within the household as a means of reducing the risk of subsequent use by adolescents. This would include implementation of strategies that would target teachers, parents and peers to reduce AOD use and /or delay AOD initiation among the adolescents. Some of the interventions would include Preparing for Drug Free Years (PDFY), lowa Strengthening Family Programme (lSFP), Linking the Interests of Families and Teachers (LIFT), Life Skills Training (LST) and Strengthening Family Program (SFP) (Ladis et al., 2019). It would also be important to include mental health issues in the school curriculum to increase mental health literacy on the potential consequences of substance use and reducing harms (Kutcher et al., 2015).

5.3. Study limitations

The study had several limitations. First, the sample size of the study is small and situated specifically to the Mzuzu region, making it difficult to generalise these results to broader populations. The small size of the sample may have impacted the estimated prevalence, the

isolation of risk factors and therefore the ability to compare the study to the results reflected through broader literature on this subject. Participants were recruited from schools which may have contributed to specific biases, as students may have been more likely to not report AOD use, despite procedures assuring learners that there would be no implications to their educational trajectory. Secondly, the study used a self-reporting questionnaire. There were no other tests to confirm the respondents' responses. As such, there is a possibility of biases of self-reported data collection tools like honesty and social desirability bias (Garcia & Gustavson, 1997). Thirdly, due to low self-report numbers, the study did not employ the use of AUDIT and DUDIT.

AOD use is a complex issue to investigate among adolescents, and the use of measurement scales each have their own shortcomings, particularly in light of the context and culture in which they were applied. Subjective methods of assessing AOD use as compared to objective methods like biomarkers may be limited given the potential of fears associated with stigma and disclosure. However, given that this study is the first to empirically assess the prevalence of alcohol and other drug (AOD) use among adolescent school learners in Mzuzu, Malawi, it offers unique insight into the levels of AOD use experienced by learners from this specific population and setting.

Lastly, given this study is cross-sectional and explored associations, two limitations are present in this study design. Directionality and there are other factors that may be associated with adolescent AOD use that were not explored in this study.

5.4. Recommendations for further research

While peer-related factors did not emerge as significant risks to use of AOD among adolescents in Mzuzu, it bears mentioning that these influences are known to be influential and further research should investigate these dynamics using more rigorous study designs and larger sample sizes. Broadly, longitudinal studies for adolescents' populations in Malawi which investigates the risks, prevalence rates of AODs and the possible consequences through adulthood must be considered.

5.5. Study conclusion

The study contributes to the evidence on the prevalence of alcohol and other drug (AOD) use among adolescent school learners in Malawi, as well as the factors that place this population at risk of AOD use. This is the first study of its kind in the Mzuzu region of Malawi and will contribute to the evidence base to aid in the development of targeted preventative interventions to address the problem of AOD use among secondary school learners. The study has also made several recommendations for possible intervention and policy directives as well as further research areas to comprehensively address this rising challenge for Malawi and the African continent more broadly such that the development and implementation of culturally relevant and comprehensive responses dedicated to the treatment and prevention of alcohol and other drug (AOD) use among adolescent school learners in Malawi becomes universally adopted.

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Appendices

Appendix A: Study Timeline

YEAR	**2019**				**2020**			
Month	Jan - March	April - June	July - Sept	Oct - Dec	Jan - March	April - June	July - Sept	Oct
Proposal writing and literature review								
Literature review								
Proposal submission								
Ethics committee submission for approval								
Data collection								
Data analysis								
Thesis writing								
Thesis submission								

Appendix B: Research budget

Item	Description	Quantity	Unit price in Malawi Kwacha (MMK)	Total Amount in Malawi Kwacha (MMK)
A4 white plain papers	For all printing.	10 reams	4,500	45,000
2 GB Flash disk	For data and information storage.	1	5,500	5,500
Printing charges	Printing charges all documents	2,100	50	105,000
Binding	Binding (research proposals).	2 copies	10,000	20,000
Binding	Binding (dissertation).	3 copies	12,000	36,000
Large envelopes	For storage of questionnaires.	8	100	800.00
Pens	For filling data.	8	100	800
Airtime	For communication.	1	5,000	5,000
Refreshments	For participants and research assistants' refreshments	1,000	500	500,000
Hard covers	For documentations	2	2,500	5,000
Fuel	For travelling during preparation and data collection.	30 litres	850	25,500
Allowances	Lunch allowances for research assistants.	4000	9	36,000
Ethics fees	For National ethical approval.	1	5,000	5,000
Total				784,600

Appendix C1: Caregiver Consent form for Interviews with Adolescents

Alan J Flisher Centre for Public Mental Health
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Information letter and informed consent form for an AOD study

Activity	Self administered questionnaire
Participants	Secondary School Students aged 12 to 17 years of age
Principal Investigator:	Professor Katherine Sorsdahl: Alan J. Flisher Centre for Public Mental Health (021 650 4798), Fadia Gamieldien: (021 650 5852) fadia.gamieldien@uct.ac.za Sumaiyah Docrat s.docrat@uct.ac.za and Zondiwe Banda (+265 888 312 885) zondiwechingati@gmail.com

Introduction

Hello. My name is Zondiwe Banda. I am from the Alan J. Flisher Centre for Public Mental Health at the University of Cape Town. We are asking you if your child may take part in completing a questionnaire as part of our study. Before you agree for your child to take part, you should understand what it involves. This information sheet is to help you decide if you want your child to take part in this study. If you have any questions, please ask the project team. You should not agree to this request unless you are happy about all that is involved.

The goal of this study is to find out how big the problem of alcohol and substance use is and its associated risk factors amongst secondary school students aged 12 to 17 in Mzuzu. Your child qualifies for this study as she/he is between 12 and 17 years old and is a secondary school student.

What We're Asking of You and Your Child

If you agree for your child to take part in the study, your child will be one of the many secondary school students aged 12 to 17 years at his/ her school who will take part in filling questionnaires relating to the use of alcohol, cigarettes, drugs, perceived social support and bullying. The exercise will last about 45 minutes and will be scheduled the time that best suits your child without disturbing his/ her lessons.

Potential Risks and Discomforts

We do not foresee any risks for your child participating in this study. There may be however a very slight risk of the child becoming emotional. In such cases appropriate referral will be made at no cost. He/she will never be pressured to answer any of the questions.

Potential Benefits of Taking Part in the Study
There are no direct benefits to your child taking part in this study. Your child's participation will help us provide suggestions and recommendations to the education sector in Mzuzu. In addition, if at any point any topics arise that we feel would require a referral, appropriate referrals will be made.

Confidentiality and Privacy
Any information that your child gives us will remain confidential. The questionnaires will not have names of respondents. Anyone who is working with any of the information your child gives us must sign an agreement not to share what they tell us. It will be disclosed only as required by law: (1) If your child tells us that he/she is about to hurt him/herself or someone else, (2) if he/she is being abused or neglected and (3) if she/he is involved in the neglect and/or abuse of another child. In these cases, we will handle and report that information to the appropriate authorities.
The confidential information will be on the questionnaires and the consent forms, which will be stored separately in locked filing cabinets. This will prevent the information to be linked to identifying particulars of your child. These forms will be destroyed after five years of completion of these activities. The University of Cape Town's ethics committee will have access to all the data. We will use the information your child provides to write and publish papers in academic journals. Your child's name will not appear anywhere in any published material.

Participation and Withdrawal
Participation is voluntary. You can choose for your child not to participate in this interview. Your child also can choose not to participate in the interview. If he/she decides to participate, he/she may choose to stop their participation at any time. There will be no consequences. They may also refuse to answer any questions they do not want to answer.

Who is funding the study?
The study is being funded by the African Mental Health Research Initiative (AMARI).

Reimbursement
Your child will be provided with refreshments during the time of completing the questionnaire.

Rights of Participants. This study has been approved by the University of Cape Town, Faculty of Health Science Human Research Ethics Committee (HREC), National Committee on Research in the Social Sciences and Humanities (NCRSH) in Malawi, the department of education and the participating schools. It will be conducted according to the ethical guidelines and principles of the International Declaration of Helsinki, the South African Guidelines for Good Clinical Practice and the Malawian research guidelines. If you have any questions about your child's rights as a participant, concerns or complaints, please call the chairperson of the National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, P/Bag B303, Capital City, Lilongwe 3, Malawi E-mail address: ncrsh@ncst.mw and chairperson of the UCT ethics committee, Prof Blockman at 021 406 6338 or email Lamees Emjedi at lamees.emjedi@uct.ac.za
. **Who To Contact With Questions.** If you have any questions or concerns about the research, please contact Prof. Katherine Sorsdahl at 021 650 4798 or write to Katherine.sorsdahl@uct.ac.za, s.docrat@uct.ac.za or Fadia.Gamieldien@uct.ac.za.

Indicating Consent

Please let us know if you have any questions before checking this consent form. Please check each item to show that you agree to what is required (leave blank if you do not agree):

Agree	
	I agree for my child to take part in this interview, which has been fully described to me.
	I understand that my child's participation in this interview is completely voluntary, and there will be no penalty if he/she chooses not to participate.

Signing this consent form indicates that you have read this consent form (or have had it read to you), that your questions have been answered to your satisfaction, and that you voluntarily agree for your child _____ (full name of child) to participate in this research study. This form is in duplicate and will receive a copy of this signed consent form for your record.

Parent (Signature and Printed Name) Date

Witness (Signature and Printed Name) Date

*A witness is required if the research participant or legal representative cannot read (e.g. blind or illiterate). The witness should participate in all of the discussions with regards to the participant research during the consent process. By signing this consent form, the witness guarantees that all the information within the consent has been explained to the participant, and that the consent seemed to have been understood and given by free will.

Appendix C2: Chichewa translation for Caregiver Consent form for Interviews with Adolescents

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zondiwechingati@gmail.com

Kalaya ya chidziwitso ndi chivomerezo cha kafukufuku wa mowa ndi mankhwala ozunguza bongo

Ntchito	Mafunso owerenga ndi kuyankha panokha
Otengapo mbali	Ophunzira a m'sukulu za sekondale omwe ali ndi zaka za pakati pa 12 ndi 17 muno mu Mzuzu
Mkulu wa kafukufuku:	Professor Katherine Sorsdahl: Alan J. Flisher Centre for Public Mental Health (021 650 4798), Fadia Gamieldien: (0210 650 5852) fadia.gamieldien@uct.ac.za Sumaiyah Docrat s.docrat@uct.ac.za ndi Zondiwe Banda (+265 888 312 885) zondiwechingati@gmail.com

Mawu oyamba

Odi, Dzina langa ndine Zondiwe Banda. Ndikuchokera ku Alan J Flisher Centre ya zaumoyo wa anthu ku Sukulu ya u kachenjede ya Cape Town University. Tikupempha ngati mwana wanu angatengepo mbali poyankha mafunso ngati mbali ya kafukufuku wanthu. Musanavomereze izi, muyenera kumvetsetsa kachitidwe kake. Kufotokozera uku ndi koti kukuthandizeni kupanga chiganizo ngati mwana wanu angathe kutengapo mbali. Ngati muli ndi mafunso, chonde funsani mkulu wa kafukufukuyu. Musanavomereze, onetsetsani kuti mwakhutira ndi m'mene ziyendere.

Cholinga cha kafukufukuyu n'kuti tipeze kukula kwa vuto lakumwa mowa kapena kugwiritsa ntchito mankhwala osokoneza bongo pakati pa ophunzira a m'sukulu za sekondale omwe ali ndi zaka za pakati pa 12 ndi 17 muno mu Mzuzu. Mwana wanu ndioyenera chifukwa ali m'kati mwa zaka zimenezi komanso ali m'sukulu ya sekondale

Chimene tikupempha kwa inu ndi mwana wanu

Ngati mungalole kuti mwana wanu atenge nawo mbali pa kafukufukuyu, mwana wanu akhala nawo m'gulu la achinyamata ambiri azaka za pakati pa 12 ndi 17 omwe akutenga nawo mbali pa kaufukufukuyu pa sukulu yawo. Ntchitoyi ndoyenga mphindi makumi anayi ndi mphambu zisanu (45) ndipo izi zidzachitika pa nthawi yoyenera kwa mwana wanu ndi kuti sizidzasokoneza ntchito yili yonse ya maphunziro a mwana wanu.

Zovuta pa kafukufukuyu kwa mwana wanu

Ife sitikuonapo choopsa kapena chovuta chiri chonse pa mwana wanu chifukwa chotengapo mbali pa kafukufukuyu. Mwana wanu sadzaumilizidwa, kapena kuyikidwa pa mpani-pani poyankha mafunsowa.

Cholowa potengapo mbali pa kafukufukuyu
Palibe dipo la chindunji kamba kotengapo mbali. Koma ngati mwana wanu angadzapezeke ndi vuto loti ndirofunika kuti akaonedwe ndi aukadaulo ena, ife tidzathandizira pa izi kuti mpaka athandizidwe mwaulere. Zotsatira za kafukufuku ameneyu zidzatithandizira kuti tipeze nzeru ndi nfundo zopititsira patsogolo ntchito za maphunziro muno mu Mzuzu.

Chinsinsi
Zonse zimene mwanawanu angadzatiuze zidzakhala za chinsinsi. Sitidzakambira ndi aliyense pa zimene mwana wanu angatiwuze ndipo aliyense amene adzatengepo mbali pa kafukufukuyu adzasayinira pangano losunga chinsinsi. Izi zikhoza kungosintha pokhapokha lamulo la dziko lino litatero, monga: (1) Ngati mwana wanu atatiwuza kuti akufuna kudzivulaza kapena kuvulaza wina (2) Ngati akuzunzidwa kapena kutayiriridwa (3) Ngati akukhudzidwa ndi kunza kapena kuphwanya ufulu wa achichepere. Koma m'zonsenzi nkhani yake yidzatengedwa mwa u kadaulo nkuyipereka kwa adindo oyenera.
Mayankho onse adzakhala pa mafomu omwe azidzatsekeredwa/ azidzakhomeredwa m'bokosi losungiramo. Mafomuwa adzatsekeredwa malo osiyana ndi kalata ya chivomerezo kuti pasazdakhale kulumikizana kuli konse. Dzina la mwana wanu siridzalembedwa pena pali ponse m'mafomuwa. Ma fomu amenewa adzaonongedwa m'zaka zisanu kafukufukuyu akatha. A sukulu ya ukachenjede ya Cape Town adzagwiritsanso ntchito zotsatira za kafukufukuyu posindikiza mapepala a zakafukufuku za maphunziro. Dzina la mwana wanu siridzaoneka paliponse pa zosindikizazi.

Kutengapo mbali
Kutengepo mbala ndi kosaumiriza. Mukhoza kusankha kuti mwana wanu atengepo mbali kapena ayi. Ndipo ngakhale atasankha kutengapo mbali, ndiololedwa kusiya nthawi ina iri yonse atafuna. Sipadzakhala chilango ngakhale atatero. Athanso kukana kuyankha mafunso ena ngati ataganiza zotero.

Chithandizo pa kafukufukuyu
Kafukufukuyu akuyendetsedwa ndi thandizo lochokera ku African Mental Health Research Initiative (Amari)

Dipo
Nthawi yomwe mwana wanu adzakhala akuyankha mafunsowa adzalandira zoziziritsa kukhosi.

Ufulu wa oyankha mafunsowa
Kafukufukuyu ndi ovomerezeka ndi a sukulu ya ukachenjede ya Cape Town mbali ya za kafukufuku ya Health Science Human Research Ethics Committee (HREC) komanso a bungwe la za kafukufuku la National Committee on Research in the Social Sciences and Humanities (NCRSH) muno m'Malawi. Kafukufukuyu adzayendetsedwa potsatira ndondomeko zovomerezeka za a International Declaration of Helsinki, The South African Guidelines for Good Clinical Practice ndinso ndondomeko zovomerezeka za kafukufuku muno m'Malawi.Ngati muli ndi mafunso, pa za ufulu wa mwana wanu, nkhawa kapena madando chonde yimbani lamya kwa: Wapampando National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, P/Bag B303, Capital

City, Lilongwe 3, Malawi E-mail address: ncrsh@ncst.mw ndi Wapampando, UCT ethics committee, Prof Blockman pa nambala iyi 021 406 6338 kapena email Lamees Emjedi at lamees.emjedi@uct.ac.za

Mafunso

Ngati muli ndi mafunso pa kafukufuku ameneyu chonde imbani lamya kwa Prof. Katherine Sorsdahl pa 021 650 4798 kapena lemberani Katherine.sorsdahl@uct.ac.za, , s.docrat@uct.ac.za kapena Fadia.Gamieldien@uct.ac.za.

Kusonyeza chivomerezo

Chonde tidziwitseni ngati muli ndi mafunso musanachonge mu chivomerezo chimenechi. Chongani nfundo iriyonse kusonyeza kugwirizana nayo (Ngati simukugwirizana nayo, siyani yosachonga)

Kuvomereza	
	Ndikuvomereza kuti mwana wanga atenge nawo mbali m'kafukufuku ameneyu amene ndafotokozeredwa bwino lomwe.
	Ndikudziwa kuti kutengapo mbali m'kafukufuku ameneyu sizowumiriza ndipo sipakhala chilango chirichonse ngati angasankhe kusachita nawo.

Kusayinira chivomerezo chimenechi kukusonyeza kuti mwawerenga kapena mwawerengeredwa chivomerezo chimenechi, mwayankhidwa ndipo mwakhutitsidwa ndi mayango onse ndipo kuti mwavomereza mosawumirizidwa kuti mwana wanu _____ (dzina la mwana) atenge nawo mbali pa kafukufukuyu. Mafomu a chivomerezowa alipo awiri ofanana ndipo mukuyenera kusunga chimodzi mukamaliza kusayina.

Kholo (Sindikizani sayini ndi dzina) Tsiku

Mboni (Sindikizani sayini ndi dzina) Tsiku

*Mboni ndiyofunikira ngati amene akufunika kutengapo mbali pa kafukufuku kapena womuyimira wovomerezeka sadziwa kuwerenga kapena ndi wa khungu. Mboni iyenera kukhalapo pa zokambirana ndi dongosolo lonse la kafukufuku. Posayinira chivomerezo chimenechi zikutanthauza kuti uthenga onse m'chivomerezo chimenechi wafotokozedwa kwa amene atengepo mbali pa kafukufuku ndipo munthuyu wamvetsetsa ndipo

Appendix D1: Form indicating acceptance by Adolescents

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Information letter and informed assent form for an AOD study

Activity	Self administered questionnaire
Participants	Secondary School Students aged 12 to 17 years of age
Principal Investigator:	Professor Katherine Sorsdahl: Alan J. Flisher Centre for Public Mental Health (021 650 4798), Fadia Gamieldien: (0210 650 5852) fadia.gamieldien@uct.ac.za Sumaiyah Docrat s.docrat@uct.ac.za and Zondiwe Banda (+265 888 312 885) zondiwechingati@gmail.com

Introduction
Hello. My name is Zondiwe Banda. I am from the Alan J. Flisher Centre for Public Mental Health at the University of Cape Town. We are asking you if you may take part in completing a questionnaire as part of our study. Before you accept, you should understand what it involves. This information sheet is to help you decide if you want to take part in this study. If you have any questions, please ask the project team. You should not agree to this request unless you are happy about all that is involved. The goal of this study is to find out how big the problem of alcohol substance use is and its associated risk factors amongst secondary school students aged 12 to 17 in Mzuzu. You qualify for this study as you are between 12 and 17 years old and you are a secondary school student.

What We're Asking of You
If you agree to take part in the study, you will be one of the secondary school students aged 12 to 17 years in Mzuzu who will take part in filling questionnaires relating to the study. The exercise will last about 45 minutes and will be scheduled the time that best suits you without disturbing your lessons.

Potential Risks and Discomforts
We do not foresee any risks for you participating in this study. There may however be a very slight risk of becoming emotional. In such cases appropriate referral will be made. You will never be pressured to answer the questions.

Potential Benefits of Taking Part in the Study

There are no direct benefits to your taking part in this study. Your participation will help us provide suggestions and recommendations to the Education sector in Mzuzu in relation to referral services pertaining to substance use and mental Health. In addition, if at any point any topics arise that we feel would require a referral, appropriate referrals will be made at no cost.

Confidentiality and Privacy
Any information that you give us will remain confidential. We will not share the information with anyone. Anyone who is working with any of the information you give us must sign an agreement not to share what you tell us. It will be disclosed only as required by law: (1) If you tell us that you are about to hurt yourself or someone else, (2) if you are being abused or neglected and (3) if you are involved in the neglect and/or abuse of a child. In these cases, we will handle and report that information to the appropriate authorities.

Your confidential information will be on the questionnaires and the consent forms, which will be stored in locked separately in filing cabinets. This will prevent the information to be linked to your identifying particulars. These forms will be destroyed after five years of completion of these activities. The University of Cape Town's ethics committee will have access to all the data. We will use the information you provide to write and publish papers in academic journals. Your child's name will not appear anywhere in any published material.

Participation and Withdrawal
Participation is voluntary. You can choose to or not to participate in this study. If you decide to participate, you may choose to stop your participation at any time. There will be no consequences. You may also decline to answer any questions you do not want to answer.

Who is funding the study?
The study is being funded by the African Mental Health Research Initiative (Amari)

Reimbursement
You will be provided with refreshments during the time you will be completing the questionnaire.

Rights of Participants. This study has been approved by the University of Cape Town, Faculty of Health Science Human Research Ethics Committee (HREC) and the National Committee on Research in the Social Sciences and Humanities (NCRSH) in Malawi. It will be conducted according to the ethical guidelines and principles of the International Declaration of Helsinki, the South African Guidelines for Good Clinical Practice and the Malawian research guidelines. . If you have any questions about your child's rights as a participant, concerns or complaints, please call the chairperson of the National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, P/Bag B303, Capital City, Lilongwe 3, Malawi E-mail address: ncrsh@ncst.mw and chairperson of the UCT ethics committee, Prof Blockman at 021 406 6338 or email Lamees Emjedi at lamees.emjedi@uct.ac.za

Who To Contact With Questions. If you have any questions or concerns about the research, please contact Prof. Katherine Sorsdahl at 021 650 4798 or write to Katherine.sorsdahl@uct.ac.za, s.docrat@uct.ac.za or Fadia.Gamieldien@uct.ac.za.

Indicating Consent
Please let us know if you have any questions before checking this consent form. Please check each item to show that you agree to what is required (leave blank if you do not agree):

Agree	
	I agree to take part in this study, which has been fully described to me.
	I understand that my participation in this study is completely voluntary, and there will be no penalty if I choose not to participate.

Signing this consent form indicates that you have read this consent form (or have had it read to you), that your questions have been answered to your satisfaction, and that you voluntarily agree

---

Student/ Adolescent (Signature and Printed Name) Date

Witness (Signature and Printed Name) Date

*A witness is required if the research patient or legal representative cannot read (e.g. blind or illiterate). The witness should participate in all of the discussions with regards to the participant research during the consent process. By signing this consent term, the witness guarantees that all the information within the consent has been explained to the participant, and that the consent seemed to have been understood and given by free will.

Appendix D2: Chichewa translation of Assent form for Interviews with Adolescents

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zondiwechingati@gmail.com

Kalaya ya chidziwitso ndi chivomerezo cha kafukufuku wa mowa ndi mankhwala ozunguza bongo

Ntchito	Mafunso owerenga ndi kuyankha panokha
Otengapo mbali	Ophunzira a m'sukulu za sekondale omwe ali ndi zaka za pakati pa 12 ndi 17 muno mu Mzuzu
Mkulu wa kafukufuku:	Professor Katherine Sorsdahl: Alan J. Flisher Centre for Public Mental Health (021 650 4798), Fadia Gamieldien: (0210 650 5852) fadia.gamieldien@uct.ac.za Sumaiyah Docrat s.docrat@uct.ac.za ndi Zondiwe Banda (+265 888 312 885) zondiwechingati@gmail.com

Mawu oyamba

Odi, Dzina langa ndine Zondiwe Banda. Ndikuchokera ku Alan J Flisher Centre ya zaumoyo wa anthu ku Sukulu ya u kachenjede ya Cape Town University. Tikupempha ngati mungatengepo mbali poyankha mafunso ngati mbali ya kafukufuku wanthu. Musanavomereze izi, muyenera kumvetsetsa kachitidwe kake. Kufotokozera uku ndi koti kukuthandizeni kupanga chiganizo ngati mungalore kutengapo mbali. Ngati muli ndi funso, chonde funsani mkulu wa kafukufukuyu. Musanavomereze, onetsetsani kuti mwakhutira ndi m'mene ziyendere.

Cholinga cha kafukufukuyu n'kuti tipeze kukula kwa vuto lakumwa mowa kapena kugwiritsa ntchito mankhwala osokoneza bongo pakati pa ophunzira a m'sukulu za sekondale omwe ali ndi zaka za pakati pa 12 ndi 17 muno mu Mzuzu. Mwana wanu ndioyenera chifukwa ali m'kati mwa zaka zimenezi komanso ali m'sukulu ya sekondale

Chimene tikupempha kwa inu

Ngati mungalole kuti mutenge nawo mbali pa kafukufukuyu, mukhala nawo m'gulu la achinyamata ambiri azaka za pakati pa 12 ndi 17 omwe akutenga nawo mbali pa kafukufukuyu pa sukulu yanu. Ntchitoyi ndiyotenga mphindi makumi anayi ndi mphambu zisanu (45) ndipo izi zidzachitika pa nthawi yoyenera kuti zisadzasokoneze ntchito yili yonse ya maphunziro anu

Zovuta pa kafukufukuyu

Ife sitikuonapo choopsa kapena chovuta chiri chonse chifukwa chotengapo mbali pa kafukufukuyu. Inu simudzaumilizidwa, kapena kuyikidwa pa mpani-pani poyankha mafunsowa.

Cholowa potengapo mbali pa kafukufukuyu
Palibe dipo la chindunji Kamba kotenga po mbali. Koma ngati mungadzapezeke ndi vuto loti ndilofunika kuti mukaonedwe ndi aukadaulo ena, ife tidzathandizira pa izi kuti mpaka muthandizidwe mwaulere. Zotsatira za kafukufuku ameneyu zidzatithandizira kuti tipeze nzeru ndi nfundo zopititsira patsogolo ntchito za maphunziro muno mu Mzuzu.

Chinsinsi
Zonse zimene mudzatiuze zidzakhala za chinsinsi. Sitidzakambira ndi aliyense pa zimene mungatiwuze ndipo aliyense amene adzatengepo mbali pa kafukufukuyu adzasiyinira pangano losunga chinsinsi. Izi zikhoza kungosisintha pokhapkha lamulo la dziko lino litatero monga: (1) Ngati mutatiwuza kuti mukufuna kudzivulaza kapena kuvulaza wina (2) Ngati mukuzunzidwa kapena kutayiriridwa (3) Ngati mukhudzidwa ndi kuzunza kapena kuphwanya ufulu wa achichepere. Koma m'zonsenzi nkhani yake yidza tengedwa mwa u kadaulo nkuyipereka kwa adindo oyenerera.
Mayankho onse adzakhala pa mafomu omwe azidzatsekeredwa/ azidzakhomeredwa m'bokosi losungiramo. Mafomuwa adzatsekeredwa malo osiyana ndi kalata ya chivomerezo kuti pasazdakhale kulumikizana kuli konse. Dzina lanu silidzalembedwa pena pali ponse m'mafomuwa. Ma fomu amenewa adzaonongedwa m'zaka zisanu kafukufukuyu akatha. A sukulu ya ukachenjede ya Cape Town adzagwiritsanso ntchito zotsatiri za kafukufukuyu posindikiza mapepala a zakafukufuku za maphunziro. Dzina lanu silidzaoneka paliponse pa zosindikizazi.

Kutengapo mbali ndi kusiya
Kutengepo mbala ndi kosaumiriza. Mukhoza kusankha kuti mutengepo mbali kapena iyayi. Ndipo ngakhale mutasankha kutengapo mbali, ndinu ololedwa kusiya nthawi ina iri yonse mutafuna kutero. Sipadzakhala charango chiri chonse ngakhale mutatero. Muthanso kukana kuyankha mafunso ena ngati mutaganiza zotero.

Chithandizo pa kafukufukuyu
Kafukufukuyu akuyendetsedwa ndi thandizo lochokera ku African Mental Health Research Initiative (Amari)

Dipo
Nthawi yomwe mudzakhale mukuyankha mafunsowa mudzalandira zoziziritsa kukhosi.

Ufulu wa oyankha mafunsowa
Kafukufukuyu ndi ovomerezeka ndi a sukulu ya ukachenjede ya Cape Town mbali ya za kafukufuku ya Health Science Human Research Ethics Committee (HREC) komanso a bungwe la za kafukufuku la National Committee on Research in the Social Sciences and Humanities (NCRSH) muno m'Malawi. Kafukufukuyu adzayendetsedwa potsatira ndondomeko zovomerezeka za a International Declaration of Helsinki, The South African Guidelines for Good Clinical Practice ndinso ndondomeko zovomerezeka za kafukufuku muno m'Malawi.Ngati muli ndi mafunso, pa za ufulu wa mwana wanu, nkhawa kapena madando chonde yimbani lamya kwa: Wapampando National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, P/Bag B303, Capital City, Lilongwe 3, Malawi E-mail address: ncrsh@ncst.mw ndi Wapampando, UCT ethics committee, Prof Blockman pa nambala iyi 021 406 6338 kapena email Lamees Emjedi at lamees.emjedi@uct.ac.za
Mafunso

Ngati muli ndi mafunso pa kafukufuku ameneyu chonde imbani lamya kwa Prof. Katherine Sorsdahl pa 021 650 4798 kapena lemberani Katherine.sorsdahl@uct.ac.za.

Kusonyeza chivomerezo
Chonde tidziwitseni ngati mulindi funso musanachonge mu chivomerezo chimenechi. Chongani nfundo iriyonse kusonyeza kugwirizana nayo (Ngati simukugwirizana nayo, siyani yosachonga)

Kuvomereza	
	Ndikuvomereza kuti nditenga nawo mbali m'kafukufuku ameneyu amene ndafotokozeredwa bwino lomwe.
	Ndikudziwa kuti kutengapo mbali m'kafukufuku ameneyu sikowumiriza ndipo sipakhala chilango chirichonse ngati ndingasankhe kusachita nawo.

Kusayinira chivomerezo chimenechi kukusonyeza kuti mwawerenga kapena mwawerengeredwa chivomerezo chimenechi, mwayankhidwa mafunso ndipo mwakhutitsidwa ndi mayango onse komanso kuti mwavomereza mosawumirizidwa.

Wophunzira (Sindikizani sayini ndi dzina) **Tsiku**

Mboni (Sindikizani sayini ndi dzina) **Tsiku**

*Mboni ndiyofunikira ngati amene akufunika kutengapo mbali pa kafukufuku kapena womuyimira wovomerezeka sadziwa kuwerenga kapena ndi wa khungu. Mboni iyenera kukhalapo pa zokambirana ndi dongosolo lonse la kafukufuku. Posayinira chivomerezo chimenechi zikutanthauza kuti uthenga onse m'chivomerezo chimenechi wafotokozedwa kwa amene atengepo mbali pa kafukufuku ndipo munthuyu wamvetsetsa ndipo wavomerezedwa mosawumirizidwa.

Appendix E: Questionnaire

Instructions

This study has been designed to understand the practice of the secondary school learners in relation to alcohol and other drugs (substance) use here in Mzuzu. This is a study questionnaire. It is not a test or examination. Your responses will not reflect on your academic grades. As such, please be sincere, and write down responses that are to the best of your knowledge true. To ensure anonymity, please do not write down your name. Responses in this questionnaire will not be taken personally on you. In addition to it not bearing your name, the filled questionnaires will be treated as private and confidential. No-one other than the researcher conducting this study will have access to the responses in the questionnaire. In areas where you have circles "0" at the beginning of the statement, tick in the circle corresponding to your response of choice. If you have any questions or concerns, please do not hesitate to ask the individual who gave you this questionnaire.

Please complete all the seven sections of this questionnaire. Section A is on demographic factors, B: people you are living with, C: alcohol use, D: drug use, E: tobacco use, F: social support and G: on bullying.

SECTION A: Demographic factors

First, we would like to ask some questions about you. Throughout the questionnaire, when there are answer options, with a circle "0" at the beginning of the statement, tick "√" in the circle corresponding to your response of choice.

1. **How old are you? _____**

2. **What is the name of your school?**

3. **What class (form) are you in?**
   - ○ Form 1
   - ○ Form 2
   - ○ Form 3
   - ○ Form 4

4. **What is your sex (male or female)?**
   - ○ Female
   - ○ Male

5. **How often do you attend religious services or activities (such as going to church, temple, or mosque, or taking part in religious youth groups)? (choose one)**
   - ○ Never
   - ○ Rarely
   - ○ 1 – 2 times
   - ○ Weekly

6. **What is the name of the area that you live in? _____**

7. **Which of the following describes your home best?**
   - ○ Back yard dwelling/ quarters
   - ○ Tent or traditional dwelling
   - ○ Brick house or flat
   - ○ Other
   - ○ Not applicable

8. **Which ONE of the following best describes how things are in your home?**
   - ○ We don't have enough money for food
   - ○ We have enough money for food but not for other basic items such as clothes
   - ○ We have enough money for food and clothes but we are short of many other things
   - ○ We have the important things, but few luxury goods
   - ○ We have money for luxury goods and extra things
   - ○ Not applicable

SECTION B: The people you live with

9. **Please indicate all the people you live with:**
   - ○ Mother
   - ○ Father
   - ○ Uncle
   - ○ Aunt

- ○ Grand mother
- ○ Grand Father
- ○ Sister
- ○ Brother
- ○ Female Guardian
- ○ Male guardian

_____

10. How many people sleep in the same room with you at night when you are home?

- ○ None
- ○ One
- ○ Two
- ○ Three
- ○ More than three

11. What is the highest level of education your father has? (choose one)

- ○ No formal education
- ○ Less than primary education
- ○ Secondary education
- ○ College/ University
- ○ I don't know
- ○ I don't have a father

12. What is the highest level of education your mother has? (choose one)

- ○ No formal education
- ○ Less than primary education
- ○ Secondary education
- ○ College/ University
- ○ I don't know
- ○ I don't have a mother

13. What does your male parent do for a living?

- ○ Nothing
- ○ Piece works
- ○ Subsistent farming
- ○ Business
- ○ Formal employment

14. What does your female parent do for a living?

- ○ Nothing
- ○ Piece works
- ○ Subsistent farming
- ○ Business
- ○ Formal employment

15. Among the people you stay with is there anybody who uses:

- ○ Alcohol?
- ○ Tobacco
- ○ Other drugs?

SECTION C: Alcohol Use

In your life, have you ever used Alcohol?

- ○ Yes
- ○ No

*If yes, answer the questions below. If no, move to SECTION D.

The next questions are about drinking any kind of alcohol in the past 12 months (e.g. beer, wine, spirits, ciders). Please remember that your answers are completely confidential. Use standard drink pictures.

1	How often do you have a drink containing alcohol? *(circle one)*	4 or more times a week	4
		2 to 3 times a week	3
		2 to 4 times a month	2
		Monthly or Less	1
		Never	0
Show participants the picture of the standard drinks. ***Explain:*** Different alcohol containers have different amounts of alcohol. E.g. One drink is equivalent to one can or bottle of beer, cider or cooler, one glass of wine, or one tot of spirits. The next few questions ask about the number of standard drinks you usually drink.			
2	How many drinks containing alcohol do you have on a typical day when you are drinking? (One drink is equivalent to one can or bottle of beer, cider or cooler, one glass of wine, or one tot of spirits).	10 or more	4
		7 to 9	3
		5 or 6	2
		3 or 4	1
		1 or 2	0

Below is a list of questions about your drinking behavior. Please choose the option that best reflects your behavior.

		Daily or almost daily	Weekly	Monthly	Less than monthly	Never
3	How often do you have four or more drinks on one occasion?	4	3	2	1	0
4	How often during the last year have you found that you were not able to stop drinking once you have started?	4	3	2	1	0
5	How often during the last year have you failed to do what was normally expected from you because of drinking?	4	3	2	1	0
6	How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	4	3	2	1	0
7	How often during the last year have you had a feeling of guilt or remorse after drinking?	4	3	2	1	0
8	How often during the last year have you been unable to remember what happened the night before because you had been drinking?	4	3	2	1	0

		Yes, during the last year	Yes, but not in the last year	No
9	Have you or someone else been injured as a result of your drinking?	4	2	0
10	Has a relative, friend, or a doctor or another health worker been concerned about your drinking or suggested you cut down?	4	2	0

SECTION D: The Drug Use Disorders Identification Test

Have you ever used other drugs such as cannabis (chamba), cocaine, solvents/ inhailants (e.g. petrol) Anticholinergic compounds (e.g. Artane) sleeping pills, painkillers, Kuber etc.?

- ○ Yes
- ○ No

If yes, continue answering the questions below by ticking in the box which best describes you.

If No, skip to Section E.

1.	How often do you use drugs other than alcohol?	Never	Once a month or	2-4 times	2-3 times a week	4 times

	(See list of drugs on back side.)		less often	a month		a week or more often
2.	Do you use more than one type of drug on the same occasion?	Never	Once a month or less often	2-4 times a month	2-3 times a week	4 times a week or more often
3.	How many times do you take drugs on a typical day when you use drugs?	0	1-2	3-4	5-6	7 or more
4.	How often are you influenced heavily by drugs?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
5.	Over the past year, have you felt that your longing for drugs was so strong that you could not resist it?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
6.	Has it happened, over the past year that you have not been able to stop taking drugs once you started?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
7.	How often over the past year have you taken drugs and then neglected to do something you should have done?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
8.	How often over the past year have you needed to take a drug the morning after heavy drug use the day before?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
9.	How often over the past year have you had guilt feelings or a bad conscience because you used drugs?	Never	Less often than once a month	Every month	Every Week	Daily or almost every day
10	Have you or anyone else been hurt (mentally or physically) because you used drugs?	No	Yes, but not over the past year	Yes, over the past year		
11	Has a relative or a friend, a doctor or a nurse, or anyone else, been worried about your drug use or said to you that you should stop using drugs?	No	Yes, over the past year	Yes, over the past year		

SECTION E: Fagerström Test for Nicotine Dependence

Instructions: Please tick one circle that best describes your answer

Do you currently smoke cigarettes?

- ○ Yes
- ○ No

If yes, continue answering the questions below. If No, skip to Section E.

1. How soon after you wake do you smoke your first cigarette?

- ○ Within the first 5 minutes

- ○ Within 6 - 30 minutes
- ○ Within 31 – 60 minutes
- ○ After 60 minutes

2. Do you find it difficult to refrain from smoking in places where it is forbidden (church, library, movies, etc.)?

- ○ Yes
- ○ No

3. Which cigarette would you hate to give up?

- ○ First cigarette in the morning
- ○ Any other

4. How many cigarettes a day do you smoke?

- ○ 10 or less cigarettes a day
- ○ 11 - 20 cigarettes a day
- ○ 21 – 30 cigarettes a day
- ○ 31 or more cigarettes a day

5. Do you smoke frequently in the morning?

- ○ Yes (1)
- ○ No (0)

6. Do you smoke if you are so ill that you are in bed most of the day?

- ○ Yes
- ○ No

SECTION F: Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
Circle the "1" if you **Very Strongly Disagree**
Circle the "2" if you **Strongly Disagree**
Circle the "3" if you **Mildly Disagree**
Circle the "4" if you are **Neutral**
Circle the "5" if you **Mildly Agree**
Circle the "6" if you **Strongly Agree**
Circle the "7" if you **Very Strongly Agree**

1	There is a special person who is around when I am in need	1	2	3	4	5	6	7
2	There is a special person with whom I can share joys and sorrows	1	2	3	4	5	6	7
3	My family really tries to help me	1	2	3	4	5	6	7
4	I get the emotional help & support I need from my family	1	2	3	4	5	6	7
5	I have a special person who is a real source of comfort to me	1	2	3	4	5	6	7
6	My friends really try to help me	1	2	3	4	5	6	7
7	I can count on my friends when things go wrong	1	2	3	4	5	6	7

8	I can talk about my problems with my family	1	2	3	4	5	6	7
9	I have friends with whom I can share my joys and sorrows	1	2	3	4	5	6	7
10	There is a special person in my life who cares about my feelings	1	2	3	4	5	6	7
11	My family is willing to help me make decisions	1	2	3	4	5	6	7
12	I can talk about my problems with my friends	1	2	3	4	5	6	7

SECTION G: Forms of Bullying Scale

Victimization Version (FBS-V)

Instructions:

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement by circling the box that best describes it.

Circle the "1" if **This did not happen to you**
Circle the "2" if **It happened once or twice**
Circle the "3" if **It happened every few weeks**
Circle the "4" if **It happened about once a week**
Circle the "5" if **If it happened several times a week or more**

Last term, how often were you bullied (including cyberbullying) by one or more young people in the following ways?

A	I was TEASED in nasty ways	1	2	3	4	5
B	SECRETS were told about me to others to hurt me	1	2	3	4	5
C	I was hurt by someone trying to BREAK UP A FRIENDSHIP	1	2	3	4	5
D	I was MADE TO FEEL AFRAID by what someone said he/she would do to me	1	2	3	4	5
E	I was deliberately HURT PHYSICALLY by someone and/or by a group GANGING UP on me	1	2	3	4	5
F	I was CALLED NAMES in nasty ways	1	2	3	4	5

G	Someone told me he/she WOULDN'T LIKE ME UNLESS I DID what he/she said	1	2	3	4	5
H	My THINGS were deliberately DAMAGED, DESTROYED or STOLEN	1	2	3	4	5
I	Others tried to hurt me by LEAVING ME OUT of a group or NOT TALKING TO ME	1	2	3	4	5
J	LIES were told and/or FALSE RUMOURS spread about me by someone, to make my friends or others NOT LIKE me	1	2	3	4	5

Appendix F: HREC Approval

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room G50- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: hrec-enquiries@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

17 September 2020

HREC REF: 119/2020

Prof K Sorsdahl
Alan J Flisher Centre for Public Mental Health
46 Sawkins Road, Rondebosch
Email: katherine.sorsdahl@uct.ac.za
Student: zondiwechingati@gmail.com

Dear Prof Sorsdahl

PROJECT TITLE: PREVALENCE OF SUBSTANCE USE AND ITS ASSOCIATED RISK FACTORS AMONGST SECONDARY SCHOOL STUDENTS AGED 12-17 YEARS IN MZUZU (MASTERS MR ZONDIWE BANDA)

Thank you for your response letter, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, dated 17 March 2020 & 06 July 2020.

Approval is granted for one year until the 30 September 2021.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that the student: Mr Zondiwe Banda will also be involved in this study.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB0000 1938
NHREC-registration number: REC-210208-007

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

HREC/REF 119/2020sa

Appendix F: NCST Approval

NATIONAL COMMISSION FOR SCIENCE & TECHNOLOGY
Lingadzi House
Robert Mugabe Crescent
P/Bag B303
City Centre
Lilongwe
Tel: +265 1 771 550
+265 1 774 189
+265 1 774 869
Fax: +265 1772 431
Email:directorgeneral@ncst.mw
Website:http://www.ncst.mw

NATIONAL COMMITTEE ON RESEARCH IN THE SOCIAL SCIENCES AND HUMANITIES

Ref No: NCST/RTT/2/6 **7th June 2021**

Mr Zondiwe Lyson G.G. Banda,

Principal Investigator,

St John of God Community Service,

Box 744,

Mzuzu.

Email: zondiwechingati@gmail.com

Dear Mr Banda,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL NO. P.05/21/574: PREVALENCE OF SUBSTANCE USE AND ITS ASSOCIATED RISK FACTORS AMONGST SECONDARY SCHOOL STUDENTS AGED 12 TO 17 YEARS IN MZUZU

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the National Committee on Research in the Social Sciences and Humanities (NCRSH) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee and the Commission with a final report of the study. The committee reserves the right to carry out compliance

Committee Address:
Secretariat, National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, Lingadzi House, City Centre, P/Bag B303, Capital City, Lilongwe3, Malawi. Telephone Nos: +265 771 550/774869; E-mail address: ncrsh@ncst.mw

inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Wishing you a successful implementation of your study.

Yours Sincerely,

Yalonda .I. Mwanza
NCRSH ADMINISTRATOR
HEALTH, SOCIAL SCIENCES AND HUMANITIES DIVISION

For: CHAIRPERSON OF NCRSH

Committee Address:
Secretariat, National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, Lingadzi House, City Centre, P/Bag B303, Capital City, Lilongwe3, Malawi. Telephone Nos: +265 771 550/774869; E-mail address: ncrsh@ncst.mw

Appendix G: Education Division Manager (North) Approval

Telephone: +265 1 312 144
+265 1 312 107
Fax: +265 1 312 640
In reply please quote:-Mzuzu

Communications should be addressed to
MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY
EDUCATION DIVISION MANAGER (NORTH)
P.O. BOX 133

Ref No: NED/2/1A

23rd February, 2021

Zondiwe LGG Banda

CC: Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health
University of Cape Town

46 Sawkins Road, Rondebosch, 7700
Cape Town,
South Africa

Dear Sir,

RE: PERMISSION TO CONDUCT A STUDY IN MZUZU CITY SECONDARY SCHOOLS

Communication requesting for permission to conduct an academic study in secondary schools within the Mzuzu city refers.

I am gland to inform you that you have been granted permission for the activity on condition that:

1. All the Covid-19 protocols should be followed during the study.
2. Parents/ guardians of the learners who will be involved in the study should sign consent forms.
3. Learners who will be involved in the study should also sign assent forms.
4. The study is purely for academic purposes

For any further clarification please contact the undersigned.

EDUCATION DIVISION MANAGER
17 MAR 2021
P.O. BOX 133

M.W. Moyo
EDUCATION DIVISIONAL MANAGER (NORTH)