SUBSTANCE USE AMONGST HIGH SCHOOL LEARNERS
IN ATTERIDGEVILLE, PRETORIA:
PREVALENCE AND ASSOCIATED FACTORS

by

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DECLARATION

I, Saiendhra Vasudevan Moodley, declare that the dissertation that I am hereby submitting to the University of Pretoria for the degree Master of Medicine (Public Health Medicine) is my own work and I have never before submitted it to any other tertiary institution, either wholly or in part, for any degree or diploma.

_____   _____

Signature   Date

The research protocol entitled "Substance use amongst high school learners in Atteridgeville, Pretoria: Prevalence and associated factors", Number 59/2009, was considered by the Faculty of Health Sciences Research Ethics Committee, University of Pretoria on the 29 April 2009 and was found to be acceptable.

DEDICATION

This work is dedicated to my grandmother Punithavathi Vinayagum Moodley and my grandaunt Janaki Moodley for their immeasurable contribution to my life and their selfless and devoted service to their family and community.

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LIST OF ACRONYMS

SAPS　　　South African Police Service

UN　　　United Nations

USA　　　United States of America

WHO　　　World Health Organisation

DEFINITION OF TERMS

For the purposes of this study, the following definitions apply:

Substance use: Any use of a psychoactive substance, both legal e.g. alcohol or illegal e.g. heroine.

Past month substance use: The use of a substance within 30 days preceding the survey.

Lifetime substance use: The use of a substance at any point in time preceding the survey.

Substance misuse: Intoxication by, or regular excessive consumption of and/or dependence on psychoactive substances, leading to social, psychological, physical or legal problems. It includes problematic use of both legal and illegal drugs.[1]

Substance abuse: A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period: 1. recurrent substance use resulting in a failure to fulfil major role obligations at work, school or home, 2. recurrent substance use in situations in which it is physically hazardous, 3. recurrent substance-related legal problems, 4. continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance. The symptoms have never met the criteria for substance dependence.[2]

Substance dependence: A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period: 1. tolerance, 2. withdrawal, 3. the substance is often taken in larger amounts or over a longer period than was intended, 4. there is a persistent desire or unsuccessful efforts to cut down or control substance use,

5. a great deal of time is spent in activities to obtain the substance, use the substance, or recover from its effects, 6. important social, occupational or recreational activities are given up or reduced because of substance use, 7. the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance. [2]

Nyaope: The locally used term for a substance that contains cannabis, heroine and various cutting agents.

Life skills: The abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life.[3] These include skills related to decision making, assertiveness, communication and problem solving.

Shebeen: refers to a small, informal drinking establishment. Often used interchangeably with the term "tavern". A tavern, however, is usually larger and in a more formal setting.

ABSTRACT

Introduction. Anecdotal evidence suggested the existence of a serious substance use problem amongst learners in Atteridgeville. As substance use amongst this age group may have serious short and long term biological, psychological and social consequences, it was important that the extent of the problem in Atteridgeville be formally established and understood in order for it to be addressed. The primary objectives of this study were to determine the prevalence of substance use and the factors associated with alcohol and cannabis use amongst high school learners in Atteridgeville.

Methods: This was a cross-sectional study of learners and life-orientation teachers at the 9 secondary schools in Atteridgeville. A cluster sampling technique was employed. Twenty two (22) of the total of 191 grade 8 to grade 11 classes in Atteridgeville were randomly selected to participate. All of the 895 learners in the selected 22 classes were invited to participate in the learner survey and the life orientation teachers of the selected classes were invited to participate in the educator survey. Data was collected in August 2009 using self-administered questionnaires. Data collected from learners included their sociodemographic characteristics, socio-economic characteristics, scholastic characteristics, substance use, substance related knowledge, substance related attitudes and perceptions, life skills, and drug and alcohol use among family and friends. Data collected from teachers included their perceptions of substance use at their school, the resources currently available at their school to address the problem and the interventions they thought were needed to deal with substance use at their respective schools. Survey estimation commands in STATA 10.0 were used to obtain substance use prevalence rates. Pearson's chi squared test statistic and binary logistic regression were used to determine factors associated alcohol and cannabis use amongst the learners.

Results. Alcohol was found to be the most commonly used substance amongst learners in Atteridgeville. For alcohol use, a lifetime prevalence rate of 51.4% (95% confidence interval (CI) 41.5 – 61.5) and a past month prevalence rate of 18.1% (CI 10.8 – 25.4) were reported. Cigarette smoking was the second most prevalent form of substance use

with a lifetime prevalence rate of cigarette smoking in this study of 25.2% (CI 17.1 - 33.3) and past month prevalence of cigarette use of 12.4% (CI 6.8 – 17.9). Cannabis was found to be the most commonly used illicit drug amongst the learners, with a prevalence rate of lifetime use of cannabis of 13.2% (CI 8.3 – 18.2) and of past month use of cannabis of 5.3% (CI 2.2 – 8.4). Glue and nyaope had lifetime prevalence rates of 6.4% (CI 4.0 – 8.8) and 2.9% (CI 1.1 – 4.8) respectively. Alcohol was found to have the lowest mean age of initiation at 14.6 years (standard deviation (SD) = 2.0), followed by cigarette smoking at 14.8 years (SD = 2.3) and cannabis at 15.1 years (SD = 2.2). Following multivariate analysis, the factors found to be associated with significantly higher odds of lifetime alcohol use amongst learners were lifetime cigarette use (OR 6.64; CI 2.15 - 20.51), lifetime cannabis use (OR 11.16; CI 2.33 – 53.55), a history of one or both parents who consume alcohol regularly (OR 2.04; CI 1.07 - 3.91) and the number of alcohol users amongst the learners' five closest friends (OR 1.70; CI 1.49 -1.94). The factors found to be associated with significantly lower odds of lifetime alcohol use amongst learners were being absent from school for less than 3 days in the first 2 terms (OR 0.37; CI 0.20 – 0.69) and being in grade 8 (OR 0.29; CI 0.14 - 0.60). The factors found to be associated with lifetime use of cannabis following multivariate analysis were age category of 17 and older (OR 4.29; CI 1.83 – 10.04), male gender (OR 22.60; CI 7.17 – 71.27), history of drug use by an older sibling (OR 4.21; CI 1.55 – 11.43), number of illicit drug users amongst learners' 5 closest friends (OR 1.63; CI 1.17 – 2.27), lifetime alcohol use (OR 19.98; CI 6.64 – 60.06) and lifetime cigarette use (OR 6.80; CI 2.72 – 17.01).

Conclusion: The results of this study have confirmed that the concerns regarding substance use amongst learners in Atteridgeville are not unfounded. The clustering of alcohol, cannabis and cigarette use in the same individuals was found to be significant i.e. learners who use one of these substances are more likely to report use of the other substances. The study findings also confirm the important role peers play in substance use. The findings of the study suggest that preventative and therapeutic interventions are required to address the problem of substance use amongst learners in Atteridgeville.

CHAPTER 1
INTRODUCTION

1.1. Background

Atteridgeville, a township located southwest of the Pretoria Central Business District, forms part of the City of Tshwane Metropolitan Municipality. Established in 1939, by the then government as a township for black Africans, it is today the home to a community of approximately 250 000 people.[4] Children form a large proportion of the population. There are 6 primary and 9 high schools within Atteridgeville catering to several thousands of learners. A number of media reports since 2006 have highlighted the existence of substance use, particularly the use of nyaope, amongst learners in Atteridgeville.

1.2. Literature Review

The World Health Organisation has indicated that substance use poses a significant threat to health, social and economic fabric of families, communities and nations.[5] The extent of substance use worldwide is estimated at 2 billion alcohol users and 185 million drug users.[5,6] The most widely abused illicit drugs globally are cannabis which is used at least once a year by over 150 million people and amphetamine-type stimulants which is used by approximately 38 million users.[6] A joint UN-WHO assessment conducted in 2001 in several sites in South Africa, Tanzania and Zambia found that substance use was common in all sites with a wide range of substances being used.[7]

Adolescent substance use is of particular concern due to the negative implications for the health and well-being of the individual as well as the number of adverse social consequences.[8] Several studies in developed countries have found high substance use rates in adolescents. A 2003 survey of high school students in the United States found rates of past month alcohol use of above 41.8%, past month heavy alcohol use of

approximately 25.9% and past month cannabis use of 21.3%.[9] There is less information available for developing countries, particularly for countries in Africa, but there is some evidence to suggest high rates of adolescent substance use is a global problem. A study of students attending public schools in a city in Brazil, for example, found prevalence rates for the previous months of 48% for alcohol, 22,5% for cannabis, 14% for inhalants and 5% for cocaine.[10]

Over the last decade, there have been a few studies that have assessed the epidemiology of substance use amongst South African learners. Data collected from specialist treatment centres, trauma units, school students, rave party attendees and arrestees in Cape Town, Durban and Gauteng between 1997 and 2001 found high levels of alcohol misuse among high school students, with cannabis being the most frequently reported illicit drug of abuse.[8] Inhalants and methaqualone were the next most common drugs of use.[8] Cocaine and heroine were starting to emerge as drugs being used by adolescents.[8] In Cape Town specifically there were high rates of cannabis being smoked in combination with methaqualone.[8] The 1st South African National Youth Risk Behaviour Survey[11], conducted amongst grade 8-11 learners in 2002, found prevalence rates of 31.8% for past month alcohol use, 23.0% for past month binge drinking and 9.1% for past month cannabis use.[11]

Studies done at sub-provincial level in South Africa also indicate high rates of substance use amongst high school learners. High lifetime prevalence rates were reported amongst high school pupils in rural KwaZulu-Natal for alcohol, cannabis and inhalants with inhalant use exceeding that of cannabis.[12] Lifetime prevalence amongst township secondary school learners in four education districts of the Free State was found to be 42.7% for alcohol use and 5.4% for cannabis use.[13] No other substance had a lifetime prevalence of above 1%.[13] Prevalence rates for substance use for the previous month for grade 8 and 11 learners in Cape Town were found to be 31% for alcohol and 7% for cannabis.[14] A study amongst Grade 6 and 7 learners in four primary schools in an historically disadvantaged area in Tshwane found lifetime prevalence of alcohol and cannabis use of 27% and 7% respectively and past month prevalence rates of 14% for

alcohol and 4% for cannabis,[15] which indicates that that substance amongst high school learners in Tshwane is likely to be a significant problem.

The association between substance use in learners and several demographic, environmental, psychological and social factors has been studied. These include gender, age, race, family structure, socio-economic status, academic performance, parental influence, parenting style, peer influence and social skills.

South African studies have consistently found higher rates of substance use in male learners compared to female learners.[9,12] In the 2002 South African National Youth Risk Behaviour Survey[11], males were found to have prevalence rates of 38.5% for past month alcohol use, 29.3% for past month binge drinking and 20.2% for lifetime cannabis use while females recorded significantly lower prevalence rates of 26.4% for past month alcohol use, 17.9% for past month binge drinking and 7.0% for lifetime cannabis use.[11] The differences between males and females was particularly marked in a study done in rural KwaZulu-Natal which reported on lifetime use of substances. The lifetime use of alcohol, cannabis, benzene and thinners were 52.9%, 16.9%, 45.5% and 34.6% respectively for males compared to 25.5%, 2.3%, 18.8% and 10.8% respectively for females.[12] The South African findings regarding gender differences contrast with those in a developed country such as the United States where the differences in substance use rates between males and females are much narrower with females exceeding males on some measures of alcohol use.[9]

Differences in substance use prevalence rates between race or ethnic groups have been described in South Africa. Higher rates of lifetime and past month alcohol use were found amongst white learners in Cape Town when compared to black African and coloured learners.[14] Black African females specifically were found to have very low rates of alcohol and cannabis use when compared to coloured and white females.[14] Reddy et al[9], using a definition of black that included Black African, coloured and Indian learners, found that rates of past month alcohol use and past month binge drinking were significantly higher among white learners in South Africa than black learners but there

was no racial variation in past month cannabis use.[9] However black learners had a significantly higher lifetime illicit drug use than white learners.[9]

The rates of substance use in learners have been shown to vary by age and grade. Prevalence rates of past months alcohol use, binge drinking and cannabis use varied significantly by age amongst South African learners with higher rates in those 16 years and older compared to younger age group.[9] Cannabis, cocaine and crack use were reported more frequently in older learners in rural KwaZulu-Natal.[12] Amongst Cape Town learners there were higher lifetime and past month alcohol and cannabis use prevalence rates found in Grade 11 learners compared to Grade 8 learners.[14] Several studies in both developing and developed countries have found that older learners report significantly higher rates of drug use than younger ones.[9,10,16]

An association is thought to exist between substance use and academic and scholastic factors, although the temporal relationship is not clear. Reddy et al[9] found prevalence rates of past month alcohol use, binge drinking and cannabis use were significantly higher among learners with poor academic performance in South Africa.[9] Repeating a grade was significantly associated with past month alcohol use by coloured and black learners in Cape Town.[14] The number of days absent from school was significantly associated with recent use of alcohol and cannabis amongst black, coloured and white learners in Cape Town.[14] Gruber et al[17] identified poor school performance as one of the psychological factors that predated the onset of cannabis use.[17] Studies in Nigeria, Brazil and amongst urban African American learners all found that there was a significant association between substance use and poor academic performance.[10,18,19]

The association of family structure with substance use has not been studied extensively in South Africa. There is some evidence from a study in Cape Town that this may play a role.[14] Not being raised by both parents, in the Cape Town study, was found to be significantly associated with alcohol use by coloured students and cannabis use by female students.[14] Amongst black youth in USA it was found that family structure is a significant socio-demographic correlate of drug use with use being higher among students who do

not live with either of their parents than among those who live with at least one of their parents.[20] A study among learners in five European cities found that living with both parents was associated with reduced levels of drug use in four of the cities but was not associated with reduced levels of regular drinking.[21]

The association between substance use and socio-economic status is not straightforward. A study of 3 South African communities found that poverty-related stressors were associated with a history of alcohol and drug use[22] but data for South African learners specifically is limited. Flischer et al[14], in a study involving Cape Town learners, found no significant association between substance use and an indicator of socio-economic status viz the number of people sharing a room at night with the learner.[14] Brook et al[23] found that neither the degree of hunger experienced in the household nor the number of household amenities were related to drug use amongst Durban and Cape Town adolescents.[23] Current stimulant use was significantly associated with lower socio-economic status amongst secondary school students in Nigeria.[18] This is in contrast to research from Brazil and Turkey where rates of substance use were found to be higher in learners from families of higher socio-economic status.[24,25] In black youth in the USA the relationship between drug use and socioeconomic status was found to vary depending on the students grade and substance in question.[20]

Peer drug use is thought to be the single factor most likely to predict current drug use by an adolescent.[26] Adolescent substance use may coincide with peer substance use because associating with peers who use alcohol and illicit substances increases their availability, makes their use seem normative and reinforces their use.[27] However shared behaviour among close peers could be due to peer pressure or seeking out peers with similar behaviour.[27]

A number of studies have considered the influence of peers on substance use. Peers were found to have had a greater influence in learners initiating substance use than the family, siblings, school and media among learners in the Free State.[13] Adolescents with higher levels of drug use in Durban and Cape Town reported greater peer drinking, cannabis use

and other illegal drug use.[23] Peer drug use was found to be a significant predictor of alcohol and cannabis use among high risk African American youth.[19] Having friends who use drugs was significantly associated with drug use in Brazilian learners,[10] and in a multi-country survey of European learners.[28]

Several factors related to parents and parenting may be associated with substance use in learners. A few studies have demonstrated higher rates of substance use amongst learners whose parents abuse alcohol or use illicit substances.[24,29,30,31] Adolescents substance use was found to significantly related to maternal and paternal alcohol and cannabis use amongst 12 to 17 year olds in Durban and Cape Town.[23] There is evidence that positive parenting practices, including communication, knowledge and involvement, support, monitoring, expectations and norms, are protective against adolescent substance use and progression.[27] Parenting styles and family background that have been identified as risk factors for adolescent drug use include parental divorce, parental discord, family disruption, parental non-directiveness, negative communication, inconsistent parental discipline and lack of closeness.[26] In the study by Brook et al[23] amongst Durban and Cape Town adolescents, parental child-rearing practices were found to be related to adolescent substance use.[23] The correlations between maternal child-rearing variables and adolescent substance use were found to be larger than those for paternal child-rearing variables and adolescent substance use.[23]

Some studies have suggested the importance of personal attitudes e.g. expectations and perceived harm in predicting adolescent use of alcohol and illicit substances. Having positive attitudes towards drugs has been related to increased alcohol, inhalant and cannabis use in Mexican American youth.[32] According to findings by Barkin et al[33], students who reported a more positive attitude toward substance use were more likely to report current and anticipated use of drugs and alcohol.[33]

Social or life skills, including refusal assertiveness, decision making skills, anxiety-reducing skills, communication skills and drug resistance skills are the thought to be protective against substance use in adolescents. Most research on social or life skills has

taken place in the USA where life skills training has been extensively used as a school based intervention to reduce substance use. In a study of 5th grade learners it was found that the likelihood of male learners reporting ever having used one or more substances increased as they reported a greater willingness to use passive decision making e.g. going along and decreased as they reported greater refusal efficacy and a greater willingness to use active decision making.[34] It has been demonstrated that there is a an highly significant interaction effect when low refusal assertiveness is combined with friends' substance use resulting in a considerable increased risk of substance use.[35] Barkin et al[33] found statistically significant associations between adolescent substance use and refusal efficacy, drug-resistance skills and critical decision-making skills.[33] Based on these findings they extrapolated that building adolescents drug-resistance skills and self-efficacy while enhancing decision making capacity may lead to a reduction in substance use.[33]

The South African Department of Social Development has developed the National Drug Master Plan[36], which acknowledges and seeks to address the extent of substance use in the country.[36] The plan outlines nine priority areas.[36] One of these priority areas is addressing the problem of substance use amongst youth.[36] Young people are more easily influenced by peers and popular culture thus making them especially vulnerable.[36] They are more likely to use drugs and engage in binge drinking.[36] Although efforts have been made to address the problem amongst the youth, the authors of the National Drug Master Plan[36] suggest that major gaps still exist in intervention programmes for the youth.[36]

1.3. Study Rationale

Substance use is a significant public health problem. Excessive alcohol use, for example, has been associated with chronic diseases such as liver cirrhosis, pancreatitis, various cancers and psychological disorders as well as unintentional injuries and violence.[37] The health and social consequences of substance use result in considerable costs to individuals, families and communities . They also place a considerable burden on the

health system with a substantial amount of health resources being utilised in addressing substance use and its consequences.

There is evidence that some of the public health problems resulting from substance use are particularly prevalent in adolescents. Studies have shown that alcohol use by adolescents increases the risk of both fatal and nonfatal unintentional injuries as well homicide and suicide.[37] There is an increased risk of high risk sexual behaviour amongst those adolescents that use substances.[37] Research has also shown that youth who use alcohol before age 15 are five times more likely to become alcohol dependent than adults who begin drinking at age 21.[37] They are therefore more likely to develop chronic diseases. It is, therefore, important from a public health perspective that substance use research be conducted amongst adolescents.

There is anecdotal evidence that suggested the existence of a serious substance use problem amongst learners in the Tshwane townships of Atteridgeville, Mamelodi and Soshanguve. Interviews with local law enforcement, health and education officials indicated that substance use may be at alarming levels amongst Atteridgeville youth. The heterogonous nature of South African communities suggested that the results of substance use research amongst learners in other parts of the country may not necessarily apply to learners in Atteridgeville due to differences in environmental, cultural and social factors. In addition, as learner populations and drug availability trends are constantly changing, studies done only a few years ago may no longer be relevant. Given the biological, psychological and social consequences of substance use it was, therefore, important to formally establish and understand the extent of the problem in Atteridgeville in order for it to be addressed.

This study not only provides information on learners' rates of substance use but also on demographic and social factors associated with substance use. This helps to identify groups with high prevalence rates that need to be targeted for interventions. In addition, the information obtained regarding the substances being used as well as learners' life skills and substance related knowledge and attitudes will be useful in the development of interventions.

This study provides much needed information on substance use amongst learners in an underprivileged area, which would be useful to the Gauteng Department of Health and Social Development and the Gauteng Department of Education in developing strategies to address the problem.

CHAPTER 2
AIM AND OBJECTIVES

2.1. Aim

The aim of the study was to assess the extent of substance use and the factors associated with substance use amongst high school learners in Atteridgeville in order to make recommendations regarding intervention strategies.

2.2. Objectives

The primary objectives of the study were:

- To determine the prevalence of substance use amongst high school learners in Atteridgeville
- To describe the factors associated with alcohol use amongst high school learners in Atteridgeville
- To describe the factors associated with cannabis use amongst high school learners in Atteridgeville

The secondary objectives of the study were:

- To assess the life skills, substance related knowledge, attitudes and perceptions of high school learners in Atteridgeville
- To determine the perceptions of life-orientation teachers on the extent of substance use amongst high school learners in Atteridgeville and their capacity to address substance use amongst learners

CHAPTER 3
METHODS

3.1. Study Design

This was a cross-sectional study of learners and life orientation teachers at high schools in Atteridgeville.

3.2. Study Population

The study population consisted of learners attending the nine high schools in Atteridgeville and their life orientation teachers.

3.3. Subjects

3.3.1. Learners

The inclusion criteria were as follows:

1. Grade 8 – 11 learners attending Bokgoni Technical High School, David Hellen Peta Secondary School, Dr WF Nkomo Secondary School, Edward Phatudi Secondary School, Flavius Mareka Secondary School, Hofmeyr Secondary School, Phelindaba Secondary School, Saulridge Secondary School and Holy Trinity Secondary School

2. Learners present in school on the day of the survey

The exclusion criteria were as follows:

1. Grade 12 learners (in order not to disrupt their exam preparations)
2. Learners absent from school on the day of the survey

3.3.2 Teachers

The inclusion criteria were as follows:

1. Teachers who teach life orientation to a minimum of one class at Bokgoni Technical High School, David Hellen Peta Secondary School, Dr WF Nkomo Secondary School, Edward Phatudi Secondary School, Flavius Mareka Secondary School, Hofmeyr Secondary School, Phelindaba Secondary School, Saulridge Secondary School and Holy Trinity Secondary School

2. Teachers available on the day of the survey

The exclusion criteria were as follows:

1. All teachers who do not meet inclusion criteria

3.4. Sampling

3.4.1. Sample Size

The sample size calculation was based on a secondary school learner population in Atteridgeville of 9316, a desired confidence level of 95%, a desired confidence interval of +/- 5% and the expected prevalence of lifetime alcohol use of 40%. Lifetime alcohol use was used in the sample size calculation as it was expected to have the highest prevalence amongst all the substance use variables being measured, thus requiring the largest sample size. The expected prevalence of lifetime alcohol use of 40% was based on the findings by Madu et al[38] and Taylor et al[12]. Using Epi-info version 3.4.1 the minimum sample size required was estimated to be 355. However as cluster sampling was to be employed in the study, a design effect was expected. In addition it was expected that there would be some non-responders. Allowance was therefore made for a design effect of 2.0 and a non-response rate of 20%. This resulted in a minimum required sample size of 852 learners.

As cluster sampling was to be used with each class of learners being regarded as a cluster, the number of classes to be sampled was determined. In total there were 227 classes in the nine secondary schools in Atteridgeville. The average class size was determined and was found to be 41 learners. In order to reach the target of 852 learners approximately 21 classes needed to be sampled. To accommodate minor variation in class sizes, it was decided to sample 22 classes as a precautionary measure.

3.4.2. Sampling technique

A single stage cluster sampling technique was employed. A single sequential list was compiled of all 191 grade 8 to grade 11 classes in the 9 secondary schools in Atteridgeville. The 36 grade 12 classes were not included on the list. Twenty-two (22) classrooms were then selected randomly from this list using the Research Randomizer programme. All the learners in the selected 22 classrooms were invited to participate in the learner survey. All the life-orientation teachers of the selected classrooms were invited to participate in the educator survey.

3.5. Variables studied

The variables of interest in the study and their respective definitions are listed in table 1. The dependant variables in the study were lifetime alcohol use, lifetime cannabis use, current alcohol use, current binge drinking and current cannabis use. The independent variables included various socio-demographic variables, scholastic variables, peer and family alcohol use variables and peer and family illicit drug use variables.

Table 1. Variables studied and definitions

Substance use variables	
Lifetime alcohol use	The use of alcohol at any point in time preceding the survey
Lifetime cannabis use	The use of cannabis at any point in time preceding the survey
Lifetime cigarette use	The smoking of a cigarette at any point in time preceding the survey
Lifetime glue use	The inhalation of glue at any point in time preceding the survey
Lifetime nyaope use	The use of nyaope at any point in time preceding the survey
Lifetime heroine use	The use of heroine at any point in time preceding the survey
Lifetime cocaine use	The use of cocaine at any point in time preceding the survey
Lifetime mandrax use	The use of mandrax at any point in time preceding the survey
Lifetime tik use	The use of tik at any point in time preceding the survey
Lifetime LSD use	The use of LSD at any point in time preceding the survey
Past month alcohol use	The use of alcohol within 30 days preceding the survey
Past month binge drinking	The consumption of 5 or more units of alcohol on a single day during the past 30 days
Past month cannabis use	The use of cannabis within 30 days preceding the survey
Past month cigarette use	The smoking of a cigarette within 30 days preceding the survey
Past month nyaope use	The use of nyaope within 30 days preceding the survey
CRAFFT score	Score of 2 or more out of 6 indicates problem use of substances
Sociodemographic variables	
Age	Current age in years
Gender	Female or male
Grade	Current educational grade
Area of residence	Location where learner currently resides
Parental care status	The number of biological parents with whom the learner currently lives (ie 0,1 or 2)
Employment status of parents	The number of parents of the learner that are currently unemployed (ie 0,1, or 2)
Scholastic variables	
Repeated a grade	Having repeated a grade at any point since commencement of primary school
Number of days absent	Number of days learner absent from school during the first 2 terms of the year

Family and peer alcohol use variables	
Parental alcohol history	Having one or both parents who learner perceives to drink alcohol regularly
Older sibling alcohol history	Having one or more older siblings who learner perceives to drink alcohol regularly
Number of alcohol users amongst 5 closest friends	The number of the learner's five closest friends that drink alcohol
Family and peer drug use variables	
Parental illicit drug history	Having one or both parents who use any illicit drug
Older sibling illicit drug history	Having one or more older siblings who use any illicit drug
Number of illicit drug users amongst 5 closest friends	The number of the learner's five closest friends who use any illicit drug
Sites where substances usually obtained	
Sites where alcohol usually obtained in the past year	The usual location for obtaining alcohol amongst those learners that had used alcohol in the past year
Sites where cannabis or nyaope usually obtained in the past year	The usual location for obtaining cannabis or nyaope amongst those learners that had used either one of the substances in the past year
Knowledge	
Overall Score	The number of questions pertaining to alcohol and drug knowledge correctly answered (out of 17)
Alcohol Score	The number of questions pertaining to alcohol knowledge correctly answered (out of 6)
Cannabis Score	The number of questions pertaining to drug knowledge correctly answered (out of 6)
Knowledge of local services	Able to correctly identify one or more local services that assist learners with substance problems
Life skills	
Life skills score	Total score for 7 questions pertaining to life skills.

3.6. Measurement Tools

The measurement tool for learners was a self administered questionnaire (see Appendix 2), available in English and North Sotho (Sepedi), consisting of the following sections: sociodemographic characteristics, socio-economic characteristics, scholastic characteristics, use of alcohol, cigarettes, cannabis, nyaope and other illicit substances, the CRAFFT screen, sites where substances obtained, substance related knowledge, substance related attitudes and perceptions, life skills, and family and peer alcohol and drug use. The sections on life skills and substance related attitudes and perceptions were adapted from the Botvin Life Skills Training Questionnaire.[39] Questions were modified from the Botvin questionnaire, an instrument used in the USA, to ensure they were easy to understand and contextually relevant.

The CRAFFT substance abuse screening test is a validated instrument developed specifically for adolescent substance use, and provides an indication of whether intervention is required for substance use in an adolescent.[40] It consists of six questions. The 6 CRAFFT questions relate to having driven in a _car_ under the influence of alcohol or drugs or having ridden in a car driven by someone under the influence of alcohol or drugs, having used alcohol or drugs to _relax_, having used alcohol or drugs when _alone_, having _forgotten_ things while using alcohol or drugs, having been told by _family_ or friends to cut down on drinking or drug use and having gotten into _trouble_ while using alcohol or drugs. A score of two or more on the CRAFFT indicates problem use.[35] In a study by Knight et al[35], validity of the CRAFFT screening test was found not to be significantly affected by age, sex, or race. [40]

The questionnaire for educators (see Appendix 3) was also self administered and was available in English only. It consisted of both open and close ended questions regarding their perceptions of substance use at their school, their life skills training, the resources currently available at their school to address the problem as well as the interventions and resources they thought were needed to deal with substance use at their respective schools.

3.7. Pilot Study

The learner questionnaire was piloted on a grade 8 and a grade 11 class that had not been selected for the survey. All procedures that were envisaged for the survey were tested. Based on the pilot study, the time that needed to be allocated for learners to complete the questionnaire was determined. The learners who took the longest to complete the questionnaire during the pilot test still managed to complete it within 30 minutes and it was, therefore, decided that one class period of 40 minutes would be sufficient for questionnaire completion during the survey. Questions and instructions appearing on the questionnaire that the learners had problems understanding were identified during the pilot study. These questions and instructions were either refined on the questionnaire itself prior to the survey or identified as needing a verbal explanation during the survey.

3.8. Data Collection

Data collection was conducted during August 2009. A suitable date and time to conduct the survey was arranged with the life orientation head of department at each school. In virtually all cases a single life orientation period was set aside for questionnaire completion. If more than one class was selected from a single school, arrangements were made to administer the questionnaire to classes from the same school on the same day. Each of the 22 selected classes were visited at least a week prior to the survey to inform the learners and teachers of the study and to provide the learners with information leaflets for their parents.

The procedure followed for data collection was the same for each of the 22 classes. The life orientation teacher of the selected class was requested to complete the educator questionnaire in another room, while the researcher conducted the learner survey in the selected class. Those learners whose parents did not want them to participate were not given a questionnaire. All other learners in the class were given a questionnaire in their choice of either English or North Sotho. They were again given details of the study and

assured of their anonymity. Learners were asked to leave the questionnaire blank if they themselves wished not to participate. The researcher explained to the learners how the questionnaire needed to be completed. In addition those questions and instructions that the learners had struggled with in the pilot study were verbally clarified. The researcher was present throughout the class period that was used for data collection in order to deal with any issues which arose. Learner questionnaires were collected by the researcher once all learners in a class had completed filling them in.

3.9. Data Analysis

All data was analysed using the statistical package STATA version 10. As cluster sampling was employed in the study, statistical analysis needed to take intra-cluster correlation into account. This was accomplished by using the survey estimation commands in STATA with the variable "class" being identified as the sampling unit. Prevalence rates with 95% confidence intervals were calculated for lifetime and past month use of various substances. Frequency tables were also obtained for other discrete variables of interest. Summary statistics were obtained for continuous variables. Bivariate analysis of alcohol and cannabis use in relation to a number of independent variables was conducted and statistical significance was verified using the design based Pearson's chi squared test statistic.

A logistic regression model was developed for each of 5 outcome variables viz. lifetime alcohol use, past month alcohol use, past month binge drinking, lifetime cannabis use an and past month cannabis use. For each outcome variable, the independent variables that were significantly associated with it at a 90% significance level in bivariate analysis were entered into the initial full model. Backwards stepwise regression was then carried out, removing the least significant variable each time. For each outcome variable, a final logistic regression model with odds ratios was obtained.

Post regression analysis was then carried out to determine the adequacy of each of the models. The lstat procedure was used to determine the percentage of overall correct

classification, sensitivity and specificity. The lroc procedure was used to obtain Receiver Operating Characteristic (ROC) Curves, with an area under the curve of over 0.80 indicating good discriminatory power of the model. The Hosmer and Lemeshow goodness-of-fit (lfit) was used to test the adequacy of the model with a $p > 0.05$ indicating that null hypothesis, that there is not enough reason to doubt the adequacy of estimated model, should be accepted.

3.10. Ethical Considerations

The study received ethics approval from the Research and Ethics Committee of the University of Pretoria (see Appendix 4). Authorisation to conduct the study was granted by the Gauteng Department of Education. The principals and governing bodies of the 9 secondary schools were informed about the study both verbally and in writing and were invited to voluntarily participate.

The Research and Ethics Committee of the University of Pretoria was requested to waive active written informed parental consent for this study, which they agreed to do. This request was made as there was strong evidence to suggest that active written informed consent in school based substance use surveys results in low participation rates and selection bias. In adolescent risk behaviour research parental permission has typically been obtained for only 30% to 60% of learners when active parental consent was required.[41] Active parental consent has been shown to result in the exclusion of learners having problems in school and students already engaged in, or at risk for, problem behaviours.[41] There is evidence that active parental consent results in substantial self-selection bias towards a lower risk sample,[42,43,44] thereby compromising the external validity of prevalence estimates produced.[43] As the core objective of this study was to determine the prevalence rates of substance use in order to make recommendations to relevant government departments regarding additional services that may be required, it was of utmost importance that the prevalence estimates obtained in the study were a true reflection of the actual extent of the problem.

The National Department of Health acknowledges that the waiving of active written parental consent in adolescent research may be an option in certain circumstances when it states in its research ethics guidelines "it is arguable that adolescents may be capable of consenting themselves to certain types of research participation and that, for particular types of research, it may be desirable that they do so unassisted".[45] The guidelines also state that research involving adolescents who may consent unassisted should be approved only if the research places the adolescents at no more than minimal risk, the nature of the research is such that the parents or community at large are unlikely to object to the adolescent consenting himself/herself and the protocol must provide sufficient information to justify clearly why adolescents should be included as participants and why the adolescent participants should consent unassisted.[45] These criteria were met by this study as anonymous questions were used with no risk to participants, there was no reason to believe that the Atteridgeville community at large would object to adolescents consenting themselves, adolescent substance use has been a major cause of concern for some time and needed to be assessed and the active written parental consent requirement would in all likelihood have lead to low participation rates and selection bias.

Although the waiving of active written parental consent was deemed necessary for the study, parents were still included in the process. A "passive" parental consent procedure, that has been used previously in South Africa for school based survey research focusing on substance use or other risk behaviour,[46,47,48] was employed. An information leaflet (see Appendix 1), available in English and North Sotho, was sent to the parents of those learners selected to participate in the study. It gave them information about the nature of the research, their right to refuse their child's participation and provided them with instructions if they decided to refuse. Parents were given the options of refusing permission for the learner's participation either in writing on the form provided or telephonically. In the absence of such notification it was assumed that consent had been given.

Informed assent (see Appendix 2) was sought from those learners whose parents did not refuse to allow them to participate. They received both an information leaflet and a verbal

presentation on the purpose of the study, what the study entailed and confidentiality of the data. The information leaflet was available in English and North Sotho (Sepedi). It was emphasised both in the information leaflet and verbally that the learner had the right not to participate and that there was no penalty for non-participation. They were informed that the questionnaire was anonymous and it would not be possible to link the responses to the individual learner or school.

As the questionnaire was anonymous and it was to be completed by the learners themselves, it was not possible to identify individual learners who were using substances and required help with the problem. However following completion of the survey, each class of learners that participated in the research were provided with the details of local organisations and facilities they should contact if they needed help with a substance use problem. In addition the life orientation heads of department at the nine schools were requested to make this information available to all learners in their respective schools.

For the life orientation teacher survey, informed consent (see Appendix 3) was obtained from the life orientation teachers selected to participate in the study. They received an information leaflet containing the details of the study. They were assured of the anonymity and confidentiality of their responses.

CHAPTER 4
RESULTS

4.1. Response rates

A total of 22 classes comprising 895 learners were invited to participate in the study several days prior to data collection. Eight hundred and nine learners completed questionnaires which equates to a response rate of 90.4%. A total of 81 (9.1%) learners, who were invited to participate, were absent on the days of data collection. Excluding those that were absent the response rate would be 99.4% (809/814). Five learners were present but did not participate. In three of the cases this was due to parental refusal and in the other two cases the learners themselves chose not to participate. The 22 selected classes had 19 different life orientation teachers. Of the 19 teachers, 18 completed the educator questionnaire. This was a response rate of 94.7%.

4.2. Socio-demographic characteristics of the learners participating in the study

As the sample of classes was randomly selected, the participants were not evenly distributed by grade. The largest number of participants were drawn from Grade 11. The mean age of learners participating in the study was 16.2 years (standard deviation (SD) = 1.8). The sample consisted of marginally more females than males. The majority of the participants lived within greater Atteridgeville i.e. Atteridgeville, Atteridgeville Extensions and Saulsville. Approximately 10% lived in the neighbouring suburb of Lotus Gardens. One fifth of learners were from households where both parents were unemployed. The socio-demographic characteristics of the study participants are summarised in table 2.

Table 2. Socio-demographic characteristics of the study participants

Characteristic (N)		n	Percentage
Grade (809)	8	232	28.7
	9	101	12.5
	10	194	24.0
	11	282	34.9
Age (802)	13 years	34	4.2
	14 years	128	16.0
	15 years	134	16.7
	16 years	181	22.6
	17 years	128	16.0
	18 years	116	14.5
	19 years	53	6.6
	20 and older	28	3.5
Gender (800)	Female	406	50.8
	Male	394	49.3
Area of residence (803)	Atteridgeville	282	35.1
	Atteridgeville Extensions	89	11.1
	Saulsville	306	38.1
	Lotus Gardens	80	10.0
	Other	46	5.7
Employment status of parents (764)	Neither parent employed	146	19.1
	One parent employed	388	50.8
	Both parents employed	230	30.1

4.3. Lifetime substance use: Prevalence rates and age of first use

Over half of the study participants (51.4%, n = 415) had consumed alcohol at some point in their lives. Cigarettes and cannabis had lifetime prevalence rates amongst the participants of 25.2% (n = 198) and 13.2% (n = 105) respectively. All other substances

had lifetime prevalence rates of less than 10%. Table 3 details the lifetime prevalence of use of various substances with 95% confidence intervals taking into account intra-cluster correlation. Twenty two learners acknowledged having used a substance other than those asked about in the questionnaire and displayed in table 3. Nineteen of theses learners did not specify what these substances were, two had used benzene and one had used ecstasy.

Table 3. Prevalence rates of lifetime substance use

Substance (N)	n	Prevalence	95% Confidence Interval
Alcohol (806)	415	51.4	41.5 – 61.5
Cigarettes (787)	198	25.2	17.1 – 33.3
Cannabis (793)	105	13.2	8.3 – 18.2
Glue (720)	46	6.4	4.0 – 8.8
Nyaope (780)	23	2.9	1.1 – 4.8
Heroine (713)	7	1.0	0.3 – 1.6
Cocaine (711)	6	0.8	0.2 – 1.5
Mandrax (712)	5	0.7	0.1 – 1.3
Tik (712)	5	0.7	0.0 – 1.3
LSD (712)	5	0.7	0.1 – 1.3

When lifetime substance use was stratified by grade and gender, the highest prevalence rates amongst the participants for alcohol, cigarette and cannabis use was found amongst grade 11 males and was 77.5%, 57.0% and 44.5% respectively. For males there was a trend for alcohol, cannabis and cigarette lifetime use to increase with grade but with 95% confidence interval overlapping in many cases. For females there was a trend for alcohol lifetime use to increase by grade but there was no consistent trend for the other substances. For all grades males had higher lifetime alcohol, cigarettes and cannabis prevalence rates than females. There was overlapping of the 95% confidence intervals when comparing rates between males and females for alcohol in each of the grades. There was no overlapping of the 95% confidence intervals when comparing rates between males and females for cannabis and cigarettes in grades 9, 10 and 11. The lifetime prevalence rates for alcohol, cigarettes, cannabis, glue and nyaope stratified by

grade and gender are displayed in table 4 and for all the substances in Appendix 5 (Table 26).

Table 4. Prevalence rates (95% confidence intervals) of lifetime alcohol, cigarette, cannabis, glue and nyaope use, by grade and gender

		Grade 8	Grade 9	Grade 10	Grade 11	Overall
Alcohol	**Female**	28.3 (22.2 – 34.3)	32.7 (26.0 – 39.4)	42.0 (26.1 – 58.0)	63.4 (48.7 – 78.1)	45.1 (35.1 – 55.0)
	Male	31.0 (21.0 – 40.9)	55.3 (33.6 – 77.0)	65.7 (51.9 – 79.5)	77.5 (64.0 – 94.1)	58.3 (46.2 – 70.4)
Cigarettes	**Female**	8.3 (0.6 – 15.9)	8.2 (0.0 – 18.4)	4.8 (0.0 – 1.0)	30.6 (17.3 – 44.0)	15.9 (7.9 – 24.0)
	Male	10.4 (0.5 – 15.8)	27.1 (19.9 – 34.2)	34.3 (24.7 – 44.0)	57.0 (44.7 – 69.3)	33.8 (23.2 – 44.5)
Cannabis	**Female**	3.5 (0.7 – 7.8)	No observations	1.2 (0.0 – 3.7)	3.3 (0.0 – 7.1)	2.5 (0.4 – 4.5)
	Male	8.1 (3.4 – 12.8)	17.0 (12.8 – 21.3)	18.1 (8.1 – 28.3)	44.5 (33.0 – 56.1)	23.9 (15.3 – 32.6)
Glue	**Female**	3.1 (0.5 – 5.6)	No observations	1.2 (0.0 – 3.1)	0.7 (0.0 – 2.2)	1.4 (0.3 – 2.4)
	Male	3.8 (0.0 – 8.1)	15.2 (10.2 – 20.2)	13.6 (0.98 – 26.2)	14.7 (10.1 – 19.3)	11.3 (6.6 – 15.9)
Nyaope	**Female**	1.7 (0.0 – 5.7)	1.9 (0.0 – 5.2)	no observations	0.7 (0.0 – 2.1)	1.0 (0.0 – 2.3)
	Male	6.2 (0.0 – 12.9)	6.4 (0.2 – 12.5)	4.1 (0.0 – 10.0)	2.4 (0 – 5.1)	4.4 (1.6 – 7.2)

The mean age in years of first use of alcohol, cigarettes, cannabis and nyaope amongst the participants was 14.6 (SD = 2.0), 14.8 (SD = 2.3), 15.1 (SD = 2.2) and 15.8 (SD = 2.6) respectively. The distribution of age of first use of alcohol, cigarettes, cannabis and nyaope is displayed in Figure 1. Some of the participants first started using alcohol, cigarettes and cannabis whilst still at primary school. A significant number of participants who had ever used alcohol had had their first alcoholic drink by the age of 14 with the vast majority of participants having had their first drink by the age of 16. First use of cigarettes and cannabis amongst the participants occurred mainly between the ages 14-17

years and 15-17 years respectively. First time use of nyaope occurred most commonly at 17 years of age.
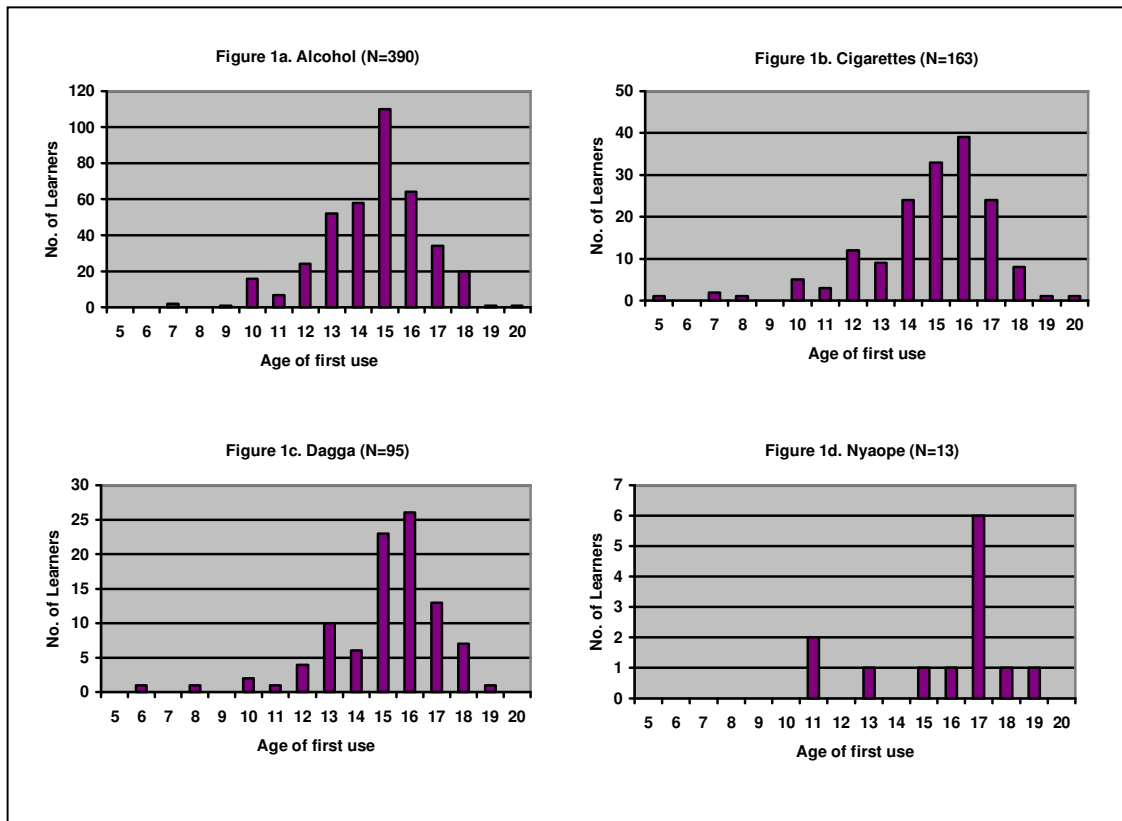
Figure 1. Distribution of age of first use of alcohol, cigarettes, cannabis and nyaope amongst study participants

4.4. Past month substance use: Prevalence rates

Amongst the participants the alcohol use prevalence for the past month was 18.1% (n = 146). Of the 146 learners that had used alcohol in the past month, 51.4% (n = 75) exhibited a binge drinking pattern on at least one day in the past month. The prevalence of past month cigarette, past month cannabis use and past month nyaope use among the participants were 12.4% (n = 97), 5.3% (n = 42) and 0.9% (n = 7) respectively. Table 5 details the past month prevalence of alcohol, cigarettes, cannabis and nyaope with 95% confidence intervals taking into account intra-cluster correlation.

Table 5. Prevalence rates of past month alcohol, cigarette, cannabis and nyaope use

	N	Prevalence	95% Confidence Interval
Past month alcohol use (N=805)	146	18.1	10.8 – 25.4
Past month binge drinking (N=800)	75	9.4	4.6 – 14.1
Past month cigarette use (N=785)	97	12.4	6.8 – 17.9
Past month cannabis use (N=790)	42	5.3	2.2 – 8.4
Past month nyaope use (N=779)	7	0.9	0.0 – 1.8

When stratifying by grade and gender, grade 11 male participants had the highest rates of past month alcohol use and past month binge drinking which were 44.1% and 30.7% respectively. In addition they had the highest rates of past month cigarette use and past month cannabis use of 31.5% and 21.4% respectively. For males there was a trend for past month alcohol use, past month binge drinking and past month cannabis use to increase with grade but with most of 95% confidence intervals overlapping. For males there was no trends in terms of grades for past month cigarette use and there were no consistent grade trends for females for any of the substances. With the exception of grade 8, males had higher past month alcohol use, past moth binge drinking and past month cigarette use rates than females. There was no overlapping of the 95% confidence intervals when comparing past month alcohol, binge drinking and cigarette use rates of grade 11 males and females and when comparing past month alcohol use rates of grade 10 males and females. The past month prevalence rates for alcohol, cigarettes, cannabis and nyaope stratified by grade and gender are displayed in table 6.

Table 6. Prevalence rates (95% confidence intervals) of past month alcohol, cigarette, cannabis and nyaope use, by grade and gender

		Grade 8	Grade 9	Grade 10	Grade 11	Overall
Past month alcohol use	**Female**	6.2 (1.4 – 11.0)	9.6 (5.3 – 13.8)	6.9 (2.8 – 11.0)	24.8 (16.4 – 33.3)	13.8 (8.3 – 19.3)
	Male	4.4 (0.0 – 10.0)	14.9 (8.4 – 21.4)	17.8 (11.2 – 24.5)	44.1 (28.5 – 59.8)	22.3 (12.5 – 32.0)
Past month binge drinking	**Female**	1.8 (0.0 – 4.1)	1.9 (0.0 – 5.2)	no observations	8.6 (2.1 – 15.0)	4.0 (1.0 – 7.0)
	Male	2.6 (0.0 – 6.1)	8.5 (1.8 – 15.3)	11.0 (6.5 – 15.4)	30.7 (20.5 – 40.9)	14.7 (7.8 – 21.6)
Past month cigarette use	**Female**	3.7 (0.0 – 8.1)	6.1 (0.0 – 12.9)	2.4 (0.0 – 7.7)	10.2 (4.6 – 15.8)	6.2 (2.8 – 9.6)
	Male	2.6 (0.0 – 6.2)	25.0 (16.9 – 33.1)	14.1 (0.0 – 30.2)	31.5 (21.5 – 41.5)	17.8 (9.7 – 25.8)
Past month cannabis use	**Female**	1.8 (0.0 – 5.7)	no observations	no observations	no observations	0.5 (0.0 – 1.6)
	Male	0.9 (0.0 – 2.6)	6.4 (0.0 – 12.9)	8.1 (1.1 – 15.1)	21.4 (10.2 – 32.6)	10.2 (4.3 – 16.2)
Past month nyaope use	**Female**	1.8 (0.0 – 5.7)	no observations	no observations	no observations	0.5 (0.0 – 1.6)
	Male	1.8 (0.0 – 5.2)	2.1 (0.0 – 5.9)	2.0 (0.0 - 6.1)	no observations	1.3 (0.0 – 2.9)

Prevalence of past month alcohol use, past month binge drinking, past month cigarette use and past month cannabis use all increased with increasing age of the participants as displayed graphically in figure 2. For all age categories alcohol was the substance with the highest past month prevalence except for the nineteen year and older group where 35.1% of participants had used cigarettes in the past month compared to the 34.6% that had used alcohol in the past month.
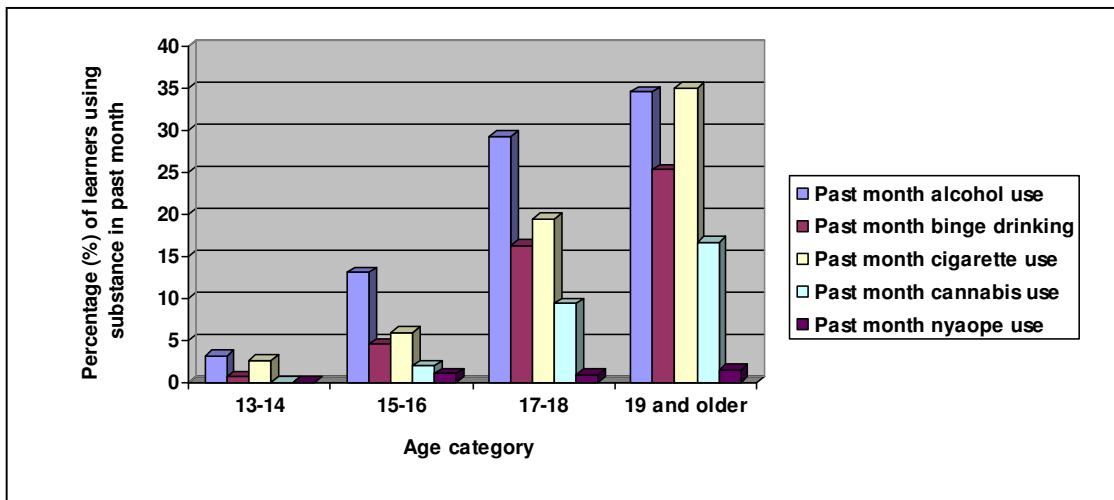
Figure 2. Prevalence rates of past month alcohol, cigarette, cannabis and nyaope use by age of learners

4.5. CRAFFT scores of learners

Distribution of CRAFFT scores of the learners who completed the CRAFFT component of the questionnaire are shown in figure 3. Of the learners who completed the CRAFFT component of the questionnaire, 322 (46.9%; 95% confidence interval (CI) 40.4% - 53.3%) scored 0 points and can be considered without risk in relation to alcohol and drugs. 164 (23.9%; CI 20.9% -26.8%) scored one point and fall into the low risk category. 211 (30.3%; CI 24.5% - 36.1%) scored two or more on the CRAFFT indicating a need for brief advice or intervention.
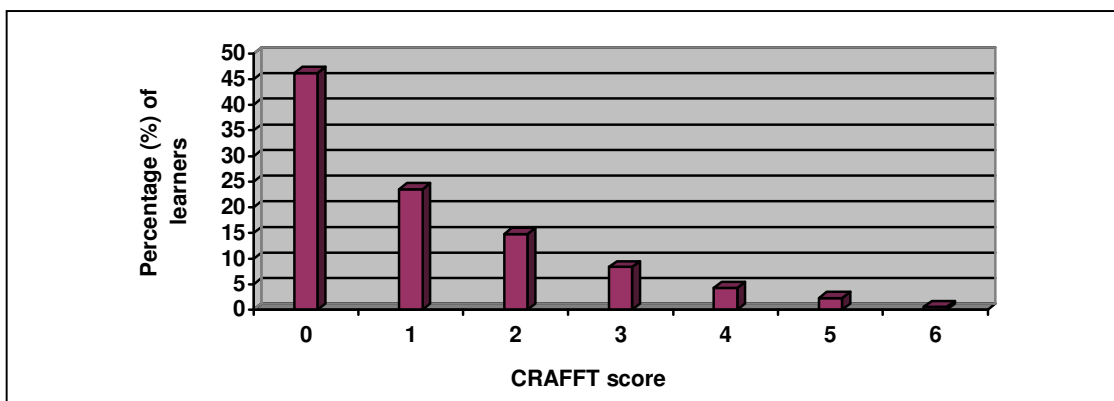
Figure 3. Distribution of CRAFFT score of participants (N=697)

Table 7 displays the proportion of participants who scored 2 or more for the CRAFFT and the 95% confidence intervals (taking into account intra-cluster correlation) when stratified by grade and gender. The highest proportion of CRAFFT scores of 2 or more amongst the participants were found amongst Grade 11 males. Overall significantly more males (37.5%) than females (22.7%) have CRAFFT scores more than 2 with a design based chi-square of 21.5072 and a p-value of 0.0001. The design based chi-square was 4.0824 with a p-value of 0.0153 for the association between CRAFFT score of 2 or more and grade.

Table 7. Proportion of participants (95% confidence interval) with a CRAFFT score of two or more, by grade and gender (N=697)

	Grade 8	Grade 9	Grade 10	Grade 11	Overall
Female	17.2	26.2	16.0	29.1	22.7
	(12.3 – 22.1)	(9.7 – 42.7)	(12.1 – 19.9)	(25.1 – 33.1)	(18.4 – 26.9)
Male	21.3	38.5	36.6	50.4	37.5
	(14.1 – 28.5)	(23.1 – 58.9)	(18.6 – 54.6)	(43.1 – 57.7)	(29.1 – 45.9)
Overall	19.6	31.7	28.1	39.2	30.3
	(14.5 – 24.7)	(14.3 – 49.1)	(17.6 – 38.5)	(33.4 – 45.0)	(24.5 – 36.1)

4.6. Sites where substances usually obtained

The sites where the study participants, who had used alcohol in the past year, usually obtained the alcohol is displayed in figure 4. The most common site for obtaining it was a shebeen or tavern. A quarter of the learners usually access alcohol at home. Almost one-fifth of learners usually obtain their alcohol at a bottle store. The mean age of those learners obtaining alcohol from a bottle store was 17.2 years (SD = 1.4). In comparison the mean age of those learners obtaining alcohol from a shebeen or tavern was 17.4 years (SD = 1.6) and from a restaurant was 16.9 years (SD = 1.6). The median age was 17 years for all 3 sites. The youngest learners to obtain alcohol from the bottle store and restaurant were 14 years and from a shebeen or tavern were 13 years of age.
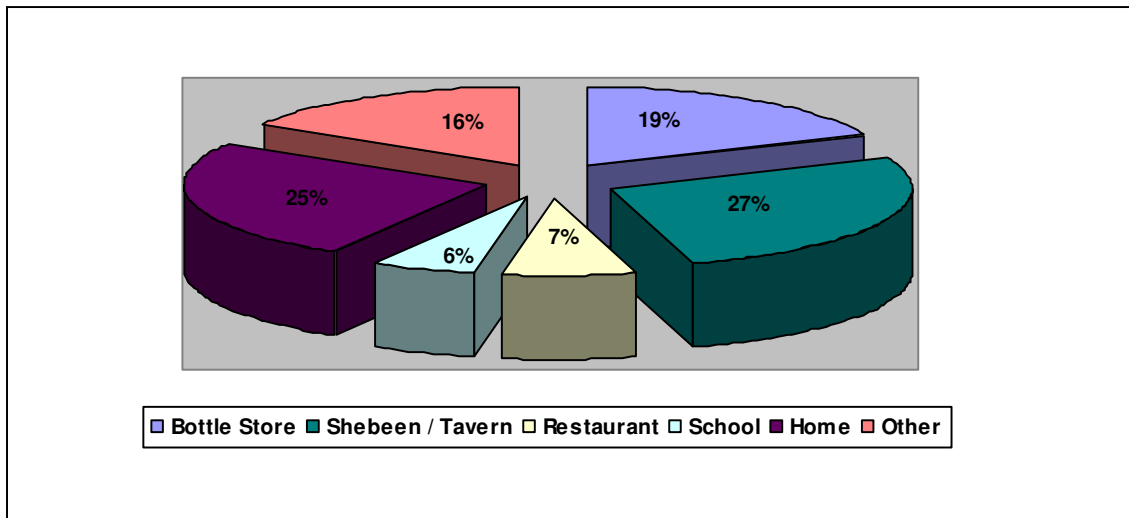
Figure 4. Sites where alcohol usually obtained in the past year (N=327)

The sites where cannabis or nyaope where obtained by those participants who had used it in the last year is displayed in figure 5. The most common site where either of these substances is obtained was a street or park within Atteridgeville. Six participants (10%) who had used cannabis or nyaope in the past year had obtained it on school property.
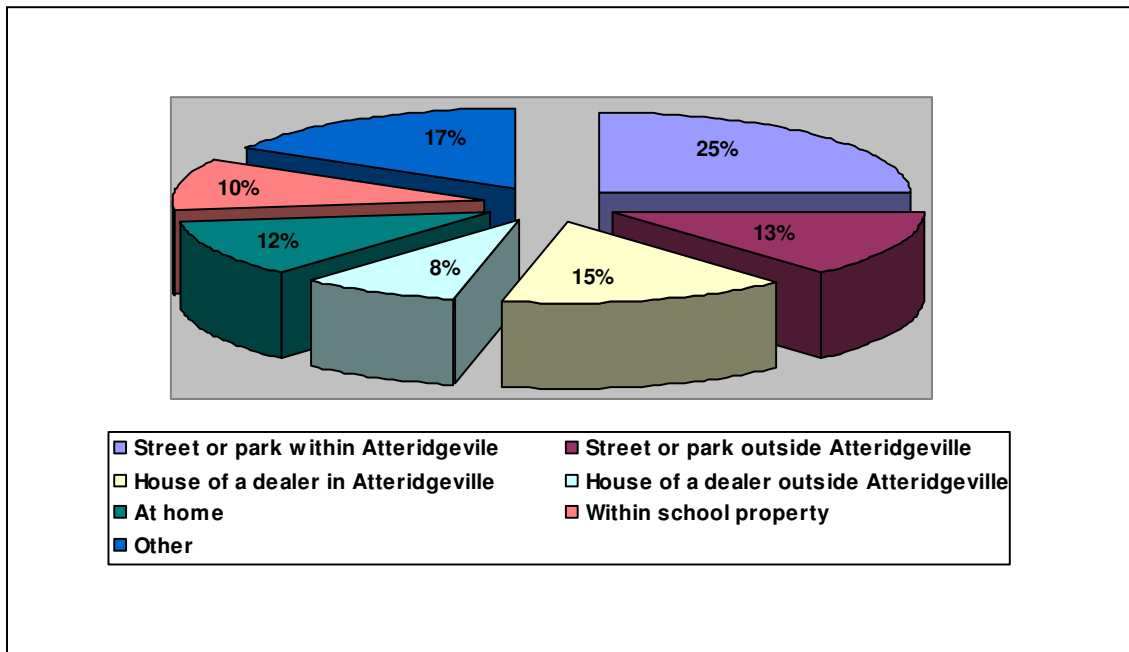
Figure 5. Sites where canabis/nyaope obtained in the past year (N = 60)

4.6. Factors associated with alcohol use

4.6.1. Bivariate analysis

Table 8 shows the bivariate analysis of alcohol use in relation to sociodemographic characteristics. Lifetime alcohol use was significantly associated ($p<0.05$) with grade, age group, gender, current parental care status and current employment status of parents. Past month alcohol use was associated with grade, age group, gender and employment status of parents. Past month binge drinking was associated with grade, age group and gender.

Table 8. Lifetime alcohol use, past month alcohol use and past month binge drinking, by sociodemographic characteristics

	Lifetime alcohol use		Past month alcohol use		Past month binge drinking	
	n/N	%	n/N	%	n/N	%
Grade						
8	68/230	29.6	12/231	5.2	5/231	2.2
9	43/100	43.0	12/100	12.0	5/100	5.0
10	107/194	55.2	27/192	14.1	13/190	6.8
11	197/282	69.9	95/282	33.7	52/279	18.6
P-value		**0.0001**		**<0.0001**		**<0.0001**
Age group						
13 – 16	193/474	40.7	46/475	9.7	15/475	3.16
17 and above	219/325	67.4	99/323	30.7	59/318	18.6
P-value		**0.0002**		**<0.0001**		**<0.0001**
Gender						
Female	183/406	45.1	56/405	13.8	16/403	4.0
Male	228/391	58.3	87/391	22.3	57/388	14.7
P-value		**0.0115**		**0.0014**		**<0.0001**
Residence						
Atteridgeville	152/280	54.3	61/280	21.8	31/277	11.2
Atteridgeville Ext	34/89	38.2	10/89	11.2	7/88	8.0
Saulsville	162/305	53.1	52/304	17.1	24/303	7.9
Lotus Gardens	46/80	57.5	16/80	20.0	8/80	10.0
Other	19/46	41.3	5/46	10.9	3/46	6.5
P-value		0.1030		0.2054		0.6390
Parental care status						
Live with 0/1 biological parent	274/492	55.7	97/491	19.8	49/488	10.0
Live with 2 biological parents	136/291	46.7	47/290	16.2	26/288	9.0
P-value		**0.0150**		0.1557		0.6411
Employment status of parents						
One or both parents employed	333/616	54.1	122/615	19.8	60/610	9.8
Both parents unemployed	62/145	42.1	15/145	10.3	8/145	5.5
P-value		**0.0206**		**0.0228**		0.102

Table 9 shows the bivariate analysis of alcohol use in relation to scholastic characteristics. Lifetime alcohol use, past month alcohol use and past month binge drinking were all was significantly associated ($p < 0.05$) with number of days absent from school in the first two terms and having previously repeated a grade.

Table 9. Lifetime alcohol use, past month alcohol use and past month binge drinking, by scholastic characteristics

	Lifetime Alcohol use		Past month alcohol use		Past month binge drinking	
	n/N	**%**	**n/N**	**%**	**n/N**	**%**
Number of days absent						
0-2 days	218/484	45.0	75/485	15.5	35/482	7.3
3-5 days	80/131	61.1	26/130	20.0	15/129	11.6
6 or more	51/64	79.7	25/64	39.1	15/64	23.4
P-value		**<0.0001**		**0.0023**		**0.0004**
Ever repeated a grade						
No	213/496	42.9	60/496	12.1	27/496	5.4
Yes	200/305	65.6	84/304	27.6	46/299	15.4
P-value		**0.0003**		**<0.000**		**<0.0001**

All p-values derived using design based Pearson's chi squared statistic

Table 10 shows the bivariate analysis of alcohol use in relation to family and peer alcohol use. Lifetime alcohol use and past month alcohol use were significantly associated ($p < 0.05$) with having one or both parents who drink alcohol regularly, an older sibling who drinks regularly and with the number of alcohol users amongst five closest friends. The greater the number of alcohol users amongst five closest friends, the higher the prevalence of lifetime alcohol use. Past month binge drinking was significantly associated ($p < 0.05$) with having an older sibling who drinks regularly and with the number of alcohol users amongst five closest friends.

The bivariate analysis of alcohol use in relation to cigarette use and cannabis use is displayed in table 11. Lifetime alcohol use was significantly associated ($p < 0.05$) with lifetime cannabis use and lifetime cigarette use. Past month alcohol use and past month binge drinking was significantly associated ($p < 0.05$) with lifetime and current cigarette use as well as lifetime and current cannabis use.

Table 10. Lifetime alcohol use, past month alcohol use and past month binge drinking of learners, by family and peer alcohol use

	Lifetime alcohol use		Past month alcohol use		Past month binge drinking	
	n/N	**%**	**n/N**	**%**	**n/N**	**%**
Parent alcohol history						
No	154/355	43.4	56/355	15.8	28/352	8.0
Yes	139/234	59.4	53/233	22.8	23/231	10.0
P-value		**0.0008**		**0.0250**		0.5138
Older sibling alcohol history						
No	117/276	42.4	37/275	13.5	17/273	6.2
Yes	167/269	62.1	69/270	25.6	41/268	15.3
P-value		**0.0017**		**0.0035**		**0.0008**
Number of alcohol users amongst 5 closest friends						
None	55/246	22.4	7/245	2.9	2/245	0.8
One	35/82	42.7	6/82	7.3	2/81	2.5
Two	65/122	53.3	18/123	14.6	10/122	8.2
Three	74/94	78.7	29/94	30.9	13/94	13.8
Four	52/68	76.4	28/68	41.2	14/68	20.6
Five	112/132	84.9	53/131	40.5	31/129	24.0
P-value		**<0.0001**		**<0.0001**		**<0.0001**

All p-values derived using design based Pearson's chi squared statistic

Table 11. Lifetime alcohol use, past month alcohol use and past month binge drinking, by learners' cigarette use and cannabis use

	Lifetime alcohol use		Past month alcohol use		Past month binge drinking	
	n/N	%	n/N	%	n/N	%
Lifetime cigarette use						
No	222/586	37.9	48/585	8.2	20/585	3.4
Yes	178/198	89.9	94/198	47.5	55/194	28.4
P-value		**<0.0001**		**<0.0001**		**<0.0001**
Lifetime cannabis use						
No	308/687	44.83	88/687	12.8	32/682	4.7
Yes	99/105	94.3	56/105	53.3	43/105	41.0
P-value		**<0.0001**		**<0.0001**		**<0.0001**
Past month cigarette use						
No	-	-	80/684	11.7	34/683	5.0
Yes	-	-	62/97	63.9	41/94	43.6
P-value		-		**<0.0001**		**<0.0001**
Past month cannabis use						
No	-	-	112/747	15.0	49/742	6.6
Yes	-	-	30/42	71.4	25/42	59.5
P-value		-		**<0.0001**		**<0.0001**

All p-values derived using design based Pearson's chi squared statistic

4.6.2. Multivariate analysis

4.6.2.1. Factors associated with lifetime use of alcohol

The variables entered into the logistic regression model were the grade categories, age category, gender, parental care status, employment status of parents, number of days absent categories, repeated a grade, lifetime cannabis use, lifetime cigarette use, parental alcohol history, sibling alcohol history and number of alcohol users amongst five closest friends. The variables that maintained a significant association with lifetime alcohol use following logistic regression are displayed in table 12. Lifetime cigarette use, lifetime cannabis use, and parent alcohol use were associated with significantly higher odds of lifetime alcohol use. An increase in the number of alcohol users amongst five closest friends significantly increased the odds of lifetime alcohol use. Learners in grade 8 had significantly lower odds of lifetime alcohol use, as did those learners that had been absent for less than three days in the first two terms.

Table 12. Multivariate analysis of factors associated with lifetime use of alcohol

Variable	Odds Ratio (95% Confidence Interval)	P-value
Grade 8		0.002
No	1	
Yes	0.29 (0.14 – 0.60)	
Parent alcohol history		0.032
No	1	
Yes	2.04 (1.07 -3.91)	
Number of alcohol users amongst 5 closest friends		<0.001
(continuous variable)	1.70(1.49 – 1.94)	
Lifetime cigarette use		0.002
No	1	
Yes	6.64 (2.15 – 20.51)	
Lifetime cannabis use		0.004
No	1	
Yes	11.16 (2.33 – 53.55)	
Absent for less than 3 days in first 2 terms		0.003
No	1	
Yes	0.37 (0.20 – 0.69)	

Post regression analysis confirmed that this was an adequate model. The area under the ROC curve was 88.8% (see Appendix 6). Based on the lstat procedure, the model

correctly classified 80.3% of outcomes with a sensitivity of 69.4% and specificity of. 90.8%. The p-value of the Hosmer and Lemeshow goodness-of- fit test was 1.000. Since $p > 0.05$ the null hypothesis is accepted i.e. there is not enough reason to doubt the adequacy of the estimated model.

4.6.2.1. Factors associated with past month use of alcohol

The variables entered into the logistic regression model were the grade categories, age category, gender, employment status of parents, number of days absent categories, repeated a grade, lifetime cannabis use, past month cannabis use, lifetime cigarette use, past month cigarette use, parental alcohol history, sibling alcohol history and number of alcohol users amongst five closest friends. The variables that maintained a significant association with past month alcohol use following logistic regression are displayed in table 13. Past month cigarette use was associated with significantly higher odds of past month alcohol use. An increase in the number of alcohol users amongst five closest friends significantly increased the odds of past month alcohol use. Learners in grade 11 had significantly higher odds of past month alcohol use.

Table 13. Multivariate analysis of factors associated with past month alcohol use

Variable	Odds Ratio (95% Confidence Interval)	P-value
Grade 11		0.003
No	1	
Yes	2.59 (1.43 – 4.70)	
Number of 5 alcohol users amongst 5 closest friends		<0.001
(continuous variable)	1.65 (1.47 – 1.85)	
Past month cigarette use		<0.001
No	1	
Yes	8.09 (4.15 – 15.80)	

Post regression analysis was carried out to assess the adequacy of the model. The area under the ROC curve was 85.1% (see Appendix 6). Based on the lstat procedure, the model correctly classified 85.0% of outcomes with a sensitivity of 29.2% and specificity of. 98.1%. The p-value of the Hosmer and Lemeshow goodness-of- fit test was 0.0494.

Since p<0.05 the null hypothesis is rejected i.e. there is enough reason to doubt the adequacy of the estimated model.

4.6.2.1. Factors associated with past month binge drinking

The variables entered into the logistic regression model were the grade categories, age category, gender, number of days absent categories, repeated a grade, lifetime cannabis use, past month cannabis use, lifetime cigarette use, past month cigarette use, sibling alcohol history and number of alcohol users amongst five closest friends. The variables that maintained a significant association with past month binge drinking following logistic regression are displayed in table 14. Past month cigarette use, lifetime cannabis use and being 17 years of age and older was associated with significantly higher odds of past month binge drinking. An increase in the number of alcohol users amongst five closest friends significantly increased the odds of past month binge drinking.

Table 14. Multivariate analysis of factors associated with past month binge drinking

Variable	Odds Ratio (95% Confidence Interval)	P-value
Age group		0.007
13-16	1	
17 and above	3.01 (1.41-6.43)	
Number of alcohol users amongst 5 closest friends		0.001
(continuous variable)	1.50 (1.22 – 1.86)	
Lifetime cannabis use		0.000
No	1	
Yes	3.88(2.23 – 6.73)	
Past month cigarette use		0.000
No	1	
Yes	3.97 (2.15 – 7.32)	

Post regression analysis was carried out to assess the adequacy of the model. The area under the ROC curve was 87.8% (see Appendix 6). Based on the lstat procedure, the model correctly classified 91.8% of outcomes with a sensitivity of 25.4% and specificity of. 99.2%. The p-value of the Hosmer and Lemeshow goodness-of- fit test was 1.0000. Since p > 0.05 the null hypothesis is accepted i.e. there is not enough reason to doubt the adequacy of the estimated model.

4.7 Factors associated with cannabis use

4.7.1. Bivariate analysis

Table 15 shows the bivariate analysis of cannabis use in relation to sociodemographic characteristics. Lifetime and past month cannabis use were significantly associated ($p < 0.05$) with grade, age group and gender but were not associated with area of residence, parental care status or employment status of parents.

Table 15. Lifetime cannabis use and past month cannabis use, by sociodemographic characteristics

	Lifetime Cannabis use			Past month Cannabis use		
	n/N	%	p-value	n/N	%	p-value
Grade			**0.0009**			**0.0199**
8	13/227	5.7		3/226	1.3	
9	8/100	8.0		3/100	3.0	
10	22/188	11.7		9/188	4.8	
11	62/278	22.3		27/276	9.8	
Age group			**<0.0001**			**0.0002**
13 – 16	30/470	6.4		6/469	1.3	
17 and above	72/316	22.8		35/314	11.2	
Gender			**<0.0001**			**0.0006**
Female	10/400	2.5		2/400	0.5	
Male	92/385	23.9		39/382	10.2	
Residence			0.2483			0.2019
Atteridgeville	39/277	14.1		15/277	5.4	
Atteridgeville Ext	10/87	11.5		2/87	2.3	
Saulsville	31/300	10.3		14/298	4.7	
Lotus Gardens	14/79	17.8		8/79	10.1	
Other	9/45	20.0		2/44	4.6	
Parental care status			0.1613			0.0767
Live with 0/1 biological parent	74/485	15.3		33/483	6.8	
Live with both biological parent	30/286	10.5		9/285	3.2	
Employment status of parents			0.6913			0.7933
One or both parents employed	80/606	13.2		33/605	5.5	
Both parents unemployed	17/143	11.9		7/143	4.9	

All p-values derived using designed based Pearson's chi-squared statistic for survey data analysis

Table 16 shows the bivariate analysis of cannabis use in relation to scholastic characteristics. Lifetime and past month cannabis use were significantly associated ($p <$

0.05) with number of days absent in the first two school terms and having previously repeated a grade.

Table 16. Lifetime cannabis use and past month cannabis use, by scholastic characteristics

	Lifetime Cannabis use			Past month Cannabis use		
	n/N	%	p-value	n/N	%	p-value
Number of days absent			**0.0001**			**0.0363**
0-2 days	44/476	9.2		18/475	3.8	
3-5 days	21/130	16.2		7/129	5.4	
6 or more	19/63	30.2		9/63	14.3	
Repeated a grade			**<0.0001**			**0.0001**
No	38/490	7.8		13/490	2.7	
Yes	65/298	21.8		28/296	9.5	

All p-values derived using designed based Pearson's chi-squared statistic for survey data analysis

Table 17 shows the bivariate analysis of cannabis use in relation to family and peer drug use. Lifetime cannabis use was significantly associated (p < 0.05) with parent drug history, older sibling drug history and the number of illicit drug users amongst five closest friends. Past month cannabis use was significantly associated (p < 0.05) with older sibling drug history and the number of drug users amongst five closest friends.

Table 17. Cannabis use of learners, by illicit drug use of family and peers

	Lifetime Cannabis use			Past month Cannabis use		
	n/N	%	p-value	n/N	%	p-value
Parent illicit drug history			**0.0428**			0.2979
No	67/571	11.7		28/570	4.9	
Yes	7/31	22.6		3/31	9.7	
Older sibling illicit drug history			**0.0002**			**0.0003**
No	51/471	10.8		21/469	4.5	
Yes	25/83	30.1		12/83	14.5	
Number of illicit drug users amongst 5 closest friends			**<0.0001**			**<0.0001**
None	44/570	7.7		13/567	2.3	
One	15/51	29.4		3/51	5.9	
Two	9/32	28.1		6/32	18.8	
Three	18/24	75		11/24	45.8	
Four	-	-		-	-	
Five	12/20	60		7/20	35	

All p-values derived using designed based Pearson's chi-squared statistic for survey data analysis

Table 18 shows the bivariate analysis of cannabis use in relation to cigarette and alcohol use. Lifetime cannabis use was significantly associated ($p < 0.05$) with lifetime alcohol use and lifetime cigarette use. Past month cannabis use was significantly associated ($p < 0.05$) with lifetime and past month alcohol use and lifetime and past month cigarette use.

Table 18. Lifetime cannabis use and past month cannabis use, by learners' alcohol and cigarette use

	Lifetime Cannabis use			Past month cannabis use		
	n/N	%	p-value	n/N	%	p-value
Lifetime alcohol use			**<0.0001**			**<0.0001**
No	6/385	1.6		1/384	0.3	
Yes	99/407	24.3		41/405	10.1	
Lifetime cigarette use			**<0.0001**			**<0.0001**
No	26/579	4.5		5/578	0.9	
Yes	79/194	40.7		37/192	19.3	
Past month alcohol use			-			**<0.0001**
No	-	-		12/647	1.9	
Yes	-	-		30/142	21.1	
Past month cigarette use			-			**<0.0001**
No	-	-		14/673	2.1	
Yes	-	-		28/95	29.5	

All p-values derived using designed based Pearson's chi-squared statistic for survey data analysis

4.7.2. Multivariate analysis

4.7.2.1. Factors associated with lifetime use of cannabis

The variables entered into the logistic regression model were the grade categories, age category, gender, number of days absent categories, repeated a grade, lifetime alcohol use, lifetime cigarette use, parental illicit drug history, sibling illicit drug history and number of illicit drug users amongst five closest friends. The variables that maintained a significant association with lifetime cannabis use following logistic regression are displayed in table 19. Male gender, age 17 and older, lifetime cigarette use, lifetime alcohol use, and sibling illicit drug use were associated with significantly higher odds of lifetime cannabis use. An increase in the number of illicit drug users amongst five closest friends significantly increased the odds of lifetime cannabis use.

Table 19. Multivariate analysis of factors associated with lifetime use of cannabis

Variable	Odds Ratio (95% Confidence Interval)	P-value
Age group		0.002
13-16	1	
17 and above	4.29 (1.83 – 10.04)	
Gender		<0.001
Female	1	
Male	22.60 (7.17 – 71.27)	
Older sibling illicit drug history		0.007
No	1	
Yes	4.21 (1.55 – 11.43)	
Number of illicit drug users amongst 5 closest friends		0.006
(continuous variable)	1.63 (1.17 – 2.27)	
Lifetime alcohol use		<0.001
No	1	
Yes	19.98 (6.64 – 60.06)	
Lifetime cigarette use		<0.001
No	1	
Yes	6.80 (2.72 – 17.01)	

Post regression analysis confirmed that this was an adequate model. The area under the ROC curve was 95.4% (see Appendix 7). Based on the lstat procedure, the model correctly classified 91.6% of outcomes with a sensitivity of 66.7% and specificity of. 96.1%. The p-value of the Hosmer and Lemeshow goodness-of- fit test was 0.2280. Since p > 0.05 the null hypothesis is accepted i.e. there is not enough reason to doubt the adequacy of the estimated model.

4.7.2.1. Factors associated with past month cannabis use

The variables entered into the logistic regression model were the grade categories, age category, gender, current parental care status, number of days absent categories, repeated a grade, lifetime alcohol use, past month alcohol use, lifetime cigarette use, past month cigarette use, sibling drug history and the number of illicit drug users amongst five closest friends. The variables that maintained a significant association with past month cannabis use following logistic regression are displayed in table 20. Male gender, past month alcohol use and past month cigarette use were associated with significantly higher

odds of past month cannabis use. An increase in the number of illicit drug users amongst five closest friends significantly increased the odds of past month cannabis use.

Table 20. Multivariate analysis of factors associated with past month cannabis use

Variable	Odds Ratio (95% Confidence Interval)	P-value
Gender		0.009
Female	1	
Male	24.55 (2.43 – 247.88)	
Number of illicit drug users amongst 5 closest friends		0.002
(continuous variable)	1.68 (1.24 – 2.28)	
Past month alcohol use		<0.001
No	1	
Yes	7.36 (2.84 – 19.06)	
Past month cigarette use		0.001
No	1	
Yes	4.88 (2.14 – 11.17)	

Post regression analysis was carried out to assess the adequacy of the model. The area under the ROC curve was 94.2% (see Appendix 7). Based on the lstat procedure, the model correctly classified 95.5% of outcomes with a sensitivity of 33.3% and specificity of. 99.4%. The p-value of the Hosmer and Lemeshow goodness-of- fit test was 0.9215. Since p>0.05 the null hypothesis is accepted i.e. there is not enough reason to doubt the adequacy of the estimated model.

4.8. Learners' substance related knowledge, attitudes and perceptions

4.8.1. Knowledge of properties and effects of substances

The responses of learners to individual questions related to the properties and effects of various substances are displayed in table 21. Only 12.5% (n = 101) of learners correctly identified the constituents of nyaope. Less than 50% of learners thought that cigarettes, alcohol, cannabis, heroine and cocaine were addictive. The highest proportion of correct answers for an individual question was 71.3% (n = 577) and was obtained for the question on whether change in behaviour was an effect of drinking alcohol.

Table 21. Proportion of learners that were able to correctly answer questions related to the properties and effects of substances

	Grade 8 (N=232)	Grade 9 (N=101)	Grade 10 (N=194)	Grade 11 (N=282)	All (N=809)
What are the 2 major drugs contained in nyaope?	3.9% (9)	7.9% (8)	12.4% (24)	21.3% (60)	12.5% (101)
Are each of the following substances addictive?					
Cigarettes	27.6% (64)	49.5% (50)	50.0% (97)	58.2% (164)	46.4% (375)
Alcohol	31.9% (74)	47.5% (48)	47.4% (92)	58.9% (166)	47.0% (380)
Cannabis	34.1% (79)	50.5% (51)	44.3% (86)	52.5% (148)	45.0% (364)
Heroine	24.6% (57)	40.6% (41)	38.1% (74)	45.7% (129)	37.2% (301)
Nyaope	36.2% (84)	52.5% (53)	52.6% (102)	59.9% (169)	50.4% (408)
Cocaine	30.2% (70)	45.5% (46)	43.8% (85)	55.7% (157)	44.3% (358)
Can drinking alcohol cause the following harmful effects?					
Liver damage	37.5% (87)	57.4% (58)	58.8% (114)	62.8% (177)	53.9% (436)
Loss of judgement	25.4% (59)	31.7% (32)	37.6% (73)	39.4% (111)	34.0% (275)
Lung Cancer	16.4% (38)	17.8% (18)	12.4% (24)	15.6% (44)	15.3% (124)
Change in behaviour	57.3% (133)	69.3% (70)	72.2% (140)	83.0% (234)	71.3% (577)
Slowing of reactions	30.2% (70)	44.6% (45)	42.3% (82)	45.4% (128)	40.2% (325)
Can smoking cannabis cause the following symptoms or effects?					
Poor concentration	38.8% (90)	54.5% (55)	59.8% (116)	66.7% (188)	55.5% (449)
Loss of balance	46.5% (108)	55.5% (56)	57.7% (112)	57.8% (163)	54.3% (439)
Liver damage	15.1% (35)	10.9% (11)	5.2% (10)	10.6% (30)	10.6% (86)
Lung problems	52.2% (121)	67.3% (68)	71.7% (139)	75.9% (214)	67.0% (542)
Mental health problems	44.4% (103)	63.4% (64)	59.8% (116)	67.0% (189)	58.3% (472)

Based on a scoring system where every correct answer was allocated 1 point and every incorrect answer, "don't know" or unanswered question was allocated 0 points, the mean points scored for the 17 questions was 7.8. Overall 54.9% of learners got more than half the questions wrong. For each of alcohol and cannabis, a score was calculated based on the five questions on the harmful effects and the one question on whether it is addictive. Just above half (53.6%) of the learners managed to get at least three out of the six alcohol related questions correct and 62.2% of the learners managed to get at least three out of the six cannabis related questions correct. Table 22 summarises the scores for questions on the properties and effects of substances by grade.

Table 22. Summary of scores for questions on the properties and effects of substances, by grade

	Grade 8 (N=232)	Grade 9 (N=101)	Grade 10 (N=194)	Grade 11 (N=282)	All (N=809)
Overall Score (17 questions)					
Mean (SD)	5.5 (4.2)	7.7 (4.6)	7.7 (4.5)	8.8 (4.1)	7.8 (4.4)
Proportion of learners scoring more than 50% (95% CI)	28.4% (24.0 – 32.8)	49.5% (36.8 – 62.2)	46.4% (35.3 – 57.5)	56.4% (44.8 – 68.0)	45.1% (37.8 – 52.4)
Alcohol Score (6 questions)					
Mean (SD)	2.0 (1.5)	2.7 (1.6)	2.7(1.6)	3.1 (1.5)	2.6 (1,6)
Proportion of learners scoring 50% or more (95% CI)	36.6% (34.4 – 38.9)	55.4% (49.5 – 61.4)	56.1% (46.1 – 66.3)	65.2% (56.9 – 73.6)	53.6% (47.2 – 60.1)
Cannabis Score (6 questions)					
Mean (SD)	2.3 (1.7)	3.0 (1.8)	3.0 (1.8)	3.3 (1.6)	2.9 (1.8)
Proportion of learners scoring 50% or more (95% CI)	47.8% (41.9 – 53.8)	66.3% (56.2 – 76.5)	64.4% (56.3 – 72.6)	70.9% (65.9 – 76.0)	62.2% (56.7 – 67.7)

4.8.2 Knowledge of local services that assist learners with substance problems

Figure 6 displays the proportion of learners that were able to identify one or more service that could assist learners with substance problems. Of those learners that were able to identify local services, the most commonly identified were the police, Vezukhule Youth Group, Atteridgeville clinic and local social workers.
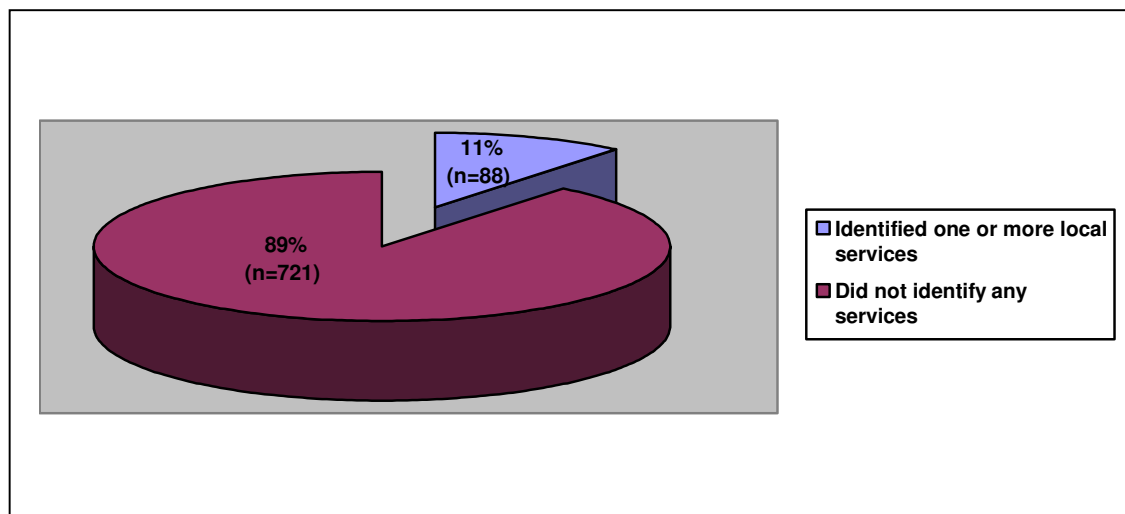
Figure 6: Learners' knowledge of local services (N=809)

4.8.3. Learners' substance use perceptions and attitudes

The responses of the participants regarding their substance use perceptions and attitudes is displayed in table 23. For eight of the ten statements, the number of participants that had a unfavourable attitude or perception towards alcohol or drug use significantly exceeded those that had a favourable attitude or perception towards alcohol or drug use. The two statements that were the exception were "learners who drink alcohol have more friends" and "drinking alcohol lets people have more fun" with 45.3% (n = 355) and 31.4% (n = 244) of the participants agreeing with these statements respectively.

Table 23. Learners' responses to statements on their substance use perceptions and attitudes

Statement	Disagree	Undecided	Agree	Mean*(SD)
Learners who drink alcohol are more cool (N=789)	72.5% (572)	18.3% (144)	9.3% (73)	1.6 (0.7)
Learners my age should not try alcohol (N=789)	11.5% (91)	11.2% (88)	77.3% (610)	1.7 (0.7)
Drinking alcohol lets people have more fun (N=776)	42.0% (326)	26.6% (206)	31.4% (244)	1.1 (0.9)
Drinking alcohol helps people to relax (N=779)	60.2% (469)	26.3% (205)	13.5% (105)	1.5 (0.7)
Learners who drink alcohol have more friends (N=784)	26.3% (206)	28.4% (223)	45.3% (355)	0.8 (0.8)
Learners my age should not experiment with drugs (N=776)	10.6% (82)	15.3% (119)	74.1% (575)	1.6 (0.7)
Drugs help people to relax (N=781)	67.8% (529)	25.6% (200)	6.7% (52)	1.6 (0.6)
People who smoke cannabis should be arrested (N=785)	13.9% (109)	15.3% (120)	70.8% (556)	1.6 (0.7)
Smoking cannabis lets people have more fun (N=785)	56.9% (447)	30.3% (238)	12.7% (100)	1.4 (0.7)
Learners who use drugs are more cool (N=787)	74.8% (589)	19.8% (156)	5.3% (42)	1.7 (0.6)

* favourable attitude/perception of substance use = 0, undecided = 1, unfavourable attitude/perception of substance use = 2

4.9 Life skills of learners

Table 24 displays learners responses to individual questions on their life skills. Learners fared worst on one of the questions relating to assertiveness viz "how often would you tell someone to go to the end of the line if they try to cut in line ahead of you?" with 50.7% (n = 381) of responses being never. Table 25 summarises the life skills score by grade. The maximum possible life skills score was 21 which was achieved by only one participant. The mean life skills score was 10.8 (SD = 3.6). Almost half of the learners (48.2%, n = 345) obtained a life skills score of less than 50%.

Table 24. Learners' responses to questions related to their life skills

	Never	Some-Times	Most of the time	Always	Mean (SD)
When you need to make a decision, how often do you think about your choices and what will happen? (N=781)	13.8% (108)	35.9% (280)	26.0% (203)	24.3% (190)	1.6* (1.0)
When you feel nervous or stressed out, how often do you take deep breaths to relax? (N=776)	19.6% (152)	40.9% (317)	24.0% (186)	15.6% (121)	1.4* (1.0)
How often do you ask questions when you don't understand something? (N=779)	8.2% (64)	42.9% (334)	23.2% (181)	25.7% (200)	1.7* (0.9)
If you find that something is really difficult, how often do you get frustrated and give up? (N=782)	40.0% (313)	41.3% (323)	13.8% (108)	4.9% (38)	2.2# (0.8)
When solving problems, how often do you compare each possible solution with the others to find the best one? (N=782)	14.8% (116)	36.2% (283)	27.2% (213)	21.8% (170)	1.6* (1.0)
How often would you tell someone to go to the end of the line if they try to cut in line ahead of you? (N=752)	50.7% (381)	23.4% (176)	10.4% (78)	15.6% (117)	0.9* (1.1)
How often would you tell people your opinion even if you know they will not agree with you?(N=784)	20.7% (162)	37.2% (292)	17.7% (139)	24.4% (191)	1.5* (1.1)

* based on never=0, sometimes=1, most of the time=2, always=3
\# based on always=0, most of the time=1, sometimes=2, never=3

Table 25. Summary of life skills score, by grade (7 questions, max score 21)

	Grade 8 (N=192)	Grade 9 (N=86)	Grade 10 (N=164)	Grade 11 (N=273)	All (N=716)
Mean (SD)	9.8 (3.8)	9.4 (3.1)	10.8 (3.4)	11.8 (3.3)	10.8 (3.6)
Proportion of learners scoring more than 50% (95% CI)	37.3% (23.1–51.5)	37.2% (30.8–43.6)	53.0% (44.3–61.8)	65.9% (61.3–70.6)	51.8% (44.0–59.6)

4.10. Life orientation teacher survey results

Seventeen of the eighteen teachers (94.4%) surveyed felt there was a substance use problem amongst learners at there their respective schools (see Appendix 8 – Table 27). In terms of their perceptions of the percentage of their learners using substances 11 of the 18 teachers (61.1%) thought that is was more than 20% of learners. Amongst the eighteen teachers the two substances most frequently identified as being responsible for the substance problem were cannabis and nyaope which were identified by eight and six teachers respectively.

The responses by life orientation teachers to questions regarding the life orientation syllabus and their knowledge and training in terms of substance use are displayed in Appendix 8 (Table 28). The teachers were approximately evenly divided amongst those who believed the life orientation syllabus contained sufficient factual information for learners on drugs and alcohol and those who did not, as well as those that believed the life orientation syllabus contains sufficient life skills training for learners to prevent substance use and those who did not. Eight of the eighteen teachers (44.4%) did not think they possessed sufficient factual knowledge to teach learners about alcohol and drugs. Fifteen of the eighteen (83.3%) teachers indicated they had some training on life skills but of the 15 who had had some training, seven felt that it was not sufficient to enable them to impart the skills to the learners.

Fifteen of the eighteen (83.3%) teachers believed that their school did not have sufficient resources to address the problem of substance use amongst learners. Interventions that

have been implemented at some of the schools include talks by NGO's and drug searches by the police. Only one school had peer counselling in place. The additional interventions that are required according to the teachers include workshops for educators, more audiovisual and reading material on the subject for learners, the establishment of a network between school, rehabilitation centres and NGO's and the appointment of professional counsellors at schools. All the teacher responses to questions regarding resources and interventions at schools to address substance use are displayed in Appendix 8 (Table 29).

Twelve out of the eighteen (66.6%) life orientation teachers were not aware of any community resources in Atteridgeville that could assist them with the substance use problem at their school. Amongst those teachers that were aware of one or more community resources, the resources cited included the South African Police Service, local social services, NICRO, Lovelife and Atteridgeville Clinic.

CHAPTER 5
DISCUSSION

This study investigated the prevalence of substance use and the factors associated with substance use amongst high school learners in Atteridgeville. The study participants were grade 8 to grade 11 learners with the majority of participants aged between 14 and 18 years. The results of the study indicate that substance use is a problem amongst high school learners in Atteridgeville with alcohol, cigarettes and cannabis being the substance most commonly used. There was significant clustering in the use of the 3 substances. A consistent finding with both alcohol and cannabis use was the association with peer use of that particular substance.

5.1. Prevalence of Substance Use

5.1.1. Alcohol

Alcohol is the substance with the highest lifetime and past month prevalence rates amongst learners in Atteridgeville. Both lifetime and past month alcohol use show a trend to increase with grade, with grade 11 learners having significantly higher past month alcohol prevalence rates than grade 8, 9 and 10 learners. The finding that alcohol is the most commonly used substance amongst learners in Atteridgeville is consistent with the other recent studies conducted amongst learners in South Africa, that have all found alcohol to be the most commonly used substance.[11,12,14,38] For alcohol use, a lifetime prevalence rate of 51.4% (95% confidence interval (CI) 41.5 – 61.5) and past month prevalence rate of 18.1% (CI 10.8 – 25.4) were obtained in this study. Direct comparison of these results with most of the other surveys conducted in South Africa is problematic as most of these focussed on specific grades and used different sampling strategies. The 2002 South African National Youth Survey[11] did, however, sample grade 8 – 11 learners, and found a lifetime prevalence of alcohol use of 44.0% (CI 41.1 – 47.0) and a past month prevalence of 27.3% (CI 25.0 -29.6) amongst black learners.[11] The trend for

lifetime and past month alcohol use to increase with grade that was observed in the Atteridgeville study is consistent with the findings of the 2002 South African National Youth Survey[11] and the survey conducted by Flisher et al[14] in the Western Cape where learners from grade 8 and grade 11 were included in the sample.[11,14]

When considering alcohol use by gender, males in the study had higher lifetime and past month prevalence rates than females. This is consistent with the findings of other studies conducted amongst high school learners in South Africa.[11,12,14] A striking finding of the Atteridgeville study, though, is the high lifetime prevalence of alcohol use of 45.1% (CI 35.1 – 55.0) found in female learners when compared to black female learners in other studies. A study amongst Grade 10 learners in rural Kwazulu-Natal found a lifetime alcohol use prevalence rate amongst the female learners of 25.5% (CI 17.6 – 35.3) compared to 42.0% (CI 26.1 – 58.0) for grade 10 learners in the Atteridgeville study.[12] Flisher et al[14] in their survey of Western Cape grade 8 and grade 11 learners found lifetime alcohol prevalence rates of 16.2% (CI 8.8 - 23.6) amongst black grade 8 female learners and 18.3% (CI 14.1 – 22.4) amongst black grade 11 female learners.[14] This is much lower than the lifetime prevalence rates of 28.3% (CI 22.2 – 24.3) for grade 8 female learners and 63.4% (CI 48.7 – 78.1) for grade 11 female learners obtained in the Atteridgeville study. As the KwaZulu-Natal and Western Cape studies were conducted in the early part of the decade, the higher rates of lifetime alcohol use in female learners in Atteridgeville may be part of a national trend of increased use of alcohol amongst black female learners in the period since those studies were conducted. An alternative explanation is that the protective factors that prevent black female adolescents from high rates of alcohol use are only present in some communities.

Although the prevalence of past month binge drinking of 9.4% (CI 4.6 - 14.1) in this study is lower than the rate of 20.7% (CI 18.5 – 22.8) obtained in the 2002 South African National Youth Risk Behaviour Survey[11], it is still a serious concern.[11] Past month binge drinking was found to be more prevalent in male than females, and there was a trend for past month binge drinking in males to increase with grade. The rate of past month binge

drinking of 30.7% (CI 20.5 – 40.9) amongst grade 11 male learners in this study was especially alarming.

The past month binge drinking rates obtained in this study should be viewed in the context of mounting evidence that adolescents are especially vulnerable to the medical and social consequences of binge drinking. Severe alcohol toxicity, manifested as coma, occurs at lower blood alcohol concentrations in young teenagers than in adults.[49] Adolescents with binge drinking histories have been found to have compromised white matter integrity, which may affect cognitive abilities such as learning, memory and executive functions.[50] Binge drinking and alcohol intoxication have been shown to increase the risk of injury and death due to interpersonal violence, road traffic accidents, drowning and suicide.[51] An association has been shown between binge drinking and high risk sexual behaviour.[51] In addition there is evidence binge drinking in adolescence is associated with increased risk of a number of problems in adulthood including alcohol dependence and harmful drinking, illicit drug use, psychological problems, criminal convictions and lower socio-economic status.[52] These consequences of binge drinking highlight the need for urgent intervention amongst learners in Atteridgeville to reduce and prevent binge drinking.

5.1.2 Cigarette Smoking

Cigarette smoking was the second most prevalent form of substance use, when considering both lifetime and past month substance use. The lifetime prevalence rate of cigarette smoking in this study of 25.2% (CI 17.1 - 33.3) was comparable to the prevalence of 23.9% (CI 21.3 – 26.4) found amongst black learners in the 1st South African National Youth Risk Behaviour Survey.[11] However the past month prevalence of cigarette use of 12.4% (CI 6.8 – 17.9) in the Atteridgeville survey was lower than the past month cigarette smoking prevalence rates of 21.1% (CI 19.5 – 22.8) and 17.3% (CI 15.8 – 18.9) found for all learners and black learners respectively in the 1st South African National Youth Risk Behaviour Survey.[11] While these findings might only apply to Atteridgeville, it is possible this is a reflection of unchanged experimental use of

cigarettes but declining long term cigarette use amongst South African learners due to stricter tobacco control legislation. This hypothesis would need to be researched further.

In this study, male learners had a significantly higher past month cigarette smoking prevalence rate of 17.8% (CI 9.7 – 25.8) when compared to female learners amongst whom the prevalence rate was 6.2% (CI 2.8 – 9.6). This is consistent with the findings of other similar studies which have found significant gender differences in current cigarette smoking in black learners but not in learners of other race groups.[11,13] The difference in past month cigarette smoking prevalence rates between male and females was particularly significant at Grade 11 level in the Atteridgeville study with a prevalence amongst male learners of 31.5% (CI 21.5 – 41.5) compared to a prevalence amongst female learners of 10.2% (CI 4.6 – 15.8).

Even though the past month prevalence rates of cigarette smoking amongst learners in Atteridgeville are lower than those found in the 1st South African National Youth Risk Behaviour Survey[11], there is still reason to be concerned given the potential consequences of cigarette smoking in adolescence. Cigarette smoking during adolescence has a detrimental health impact on young people, accelerating as they grow into adults.[53] There is some evidence that smoking during adolescence inhibits the rate of lung growth and inhibits full lung function.[53] Adolescents who are cigarette smokers are less likely to be physically fit than non smokers and are more likely to suffer from shortness of breath and respiratory problems.[53] Smoking during adolescence sets the stage for threats to adult health. Health problems associated with smoking are a function of duration and amount of cigarette smoking, therefore the younger one starts smoking, the more serious the long term health outcomes.[53] There is evidence that smoking during adolescence leads to increased risk of early atherosclerotic lesions.[53]

5.1.3. Cannabis

In this study, cannabis was found to be the most commonly used illicit drug amongst the learners. This is consistent with the findings of South African and international research.[8,9,13,38] The prevalence rate of lifetime use of cannabis was 13.2% (CI 8.3 – 18.2)

in this study, which is not dissimilar from the findings of the 1st South African National Youth Risk Behaviour Survey[11] where the lifetime prevalence rates for all learners and black learners were 12.8% (CI 11.4 – 14.2) and 11.2% (CI 9.9 – 12.6) respectively.[11] Past month cannabis use in the national survey was 9.1% (CI 7.7 – 10.5) for all learners with no significant race variation, compared to 5.3% (CI 2.2 – 8.4) in the Atteridgeville study.[11]

The lifetime and past month cannabis prevalence rates in this study are markedly higher for male than female learners. Almost one-quarter of male learners (23.9%, CI 15.3 – 32.6) had ever used cannabis compared to 2.5% (CI 0.4 – 4.5) of female learners. With respect to past month cannabis use, the prevalence was 10.2% (CI 4.3 – 16.2) amongst male learners compared to 0.5% (CI 0.0 – 1.6) amongst female learners. The wide gender difference in cannabis use for black learners has been demonstrated previously in other studies.[11,12,14] The gender differences seen for cannabis use may be related to social roles and social expectations of male and female behaviour.[54]

According to Masitsa[13], the use of substances, particularly cannabis, by females has traditionally been considered unacceptable amongst black people.[13]

In this study, there was a trend for lifetime and past month cannabis use prevalence to increase with grade for male learners but there was no consistent trend for female learners. This is in keeping with the findings by Flisher et al[14] for black male and female learners in the Western Cape study.[14] Grade 11 male learners in Atteridgeville have particularly high rates of lifetime and past month cannabis use of 44.5% (CI 33.0 – 56.1) and 21.4% (CI 10.2 – 32.6) respectively. In comparison black male learners in Grade 11 in the Western Cape were found to have lifetime prevalence rates of 23.0% (CI 12.3 - 33.8) and past month prevalence rates of 6.0% (CI 2.3 – 9.8).[14]

The prevalence of cannabis use amongst learners in Atteridgeville warrants urgent attention. While there are sections of society that believe the use of cannabis is relatively benign, there is evidence to the contrary. As cannabis is usually inhaled, the smoke suspension that enters the young persons' lungs is unfiltered, often contains contaminants

and may also carry other psychoactive products.[55] There is some evidence that cannabis use impairs certain cognitive functions.[55] Amongst learners, lack of motivation, declining academic performance, chronic absenteeism and dropping out of school are well-recognized clinical presentations of cannabis use.[55] Cannabis use has been found to be associated with sexually transmitted diseases, unsafe sex practices and other risky behaviour in adolescents.[55] This is particularly concerning in the context of high HIV prevalence rates in South Africa. Those adolescents who use cannabis more than once weekly are more likely to develop dependence, use other illicit drugs and develop psychotic symptoms and psychosis.[56] The earlier the age a young person begins to use cannabis, the higher the risk of dependence.[56] According to Parry et al[8], the adolescent treatment demand, trauma and arrestee data obtained from three sentinel sites in South Africa is a reflection of the potential that cannabis use has to burden the health, social welfare and criminal justice systems.[8]

5.1.4 Inhalants

The use of glue was the only inhalant that was specifically investigated in this study. The prevalence rate of lifetime glue inhalation of 6.4% (CI 4.0 – 8.8) amongst learners in this study is higher than the rate of 1.6% found for grade 9-12 learners in Limpopo.[38] Significantly more male learners had ever used glue than female learners in the Atteridgeville study. Taylor et al[12] focussed on grade 10 learners in KwaZulu-Natal and found prevalence rates of glue inhalation of 17.0% (CI 14.3 – 20.1) for males and 6.6% (CI 4.6 – 9.4) for females.[12] In comparison, the male grade 10 learners in the Atteridgeville study had lifetime prevalence rates of glue inhalation of 13.6% (CI 0.98 – 26.2) and the female learners 1.2% (CI 0.0 – 3.1). Although glue sniffing sounds relatively innocuous, it has been linked to sudden death and chronic damage to the heart, lungs, kidneys, liver, peripheral nerves, and brain.[57] It is also associated with other risks such as polysubstance abuse and violent behaviours.[58] The dangers associated with sniffing glue and its relatively easy accessibility underlines the need to address the problem in Atteridgeville.

Taylor et al[12] found very high rates of use benzene, thinners and petrol in their study.[12] The rate for benzene use amongst grade 10 male learners in their study was 45.5% (CI 38.6 – 52.6). In the Atteridgeville study, two learners acknowledged using benzene when asked to specify "other drugs" being used. As the Atteridgeville questionnaire did not include specific questions about benzene, petrol and thinners, it is possible the use of these substances were underreported. Assuming this was not the case, the difference between the findings in inhalant use between learners in rural KwaZulu-Natal and those in Atteridgeville may indicate community or urban-rural differences in types of substances being used. This, however, would need to be researched further.

5.1.5. Nyaope

The study also investigated the use of nyaope, a mixture of heroine and cannabis, amongst learners in Atteridgeville. As there had been much media coverage and anecdotal evidence suggesting high rates of nyaope use in townships in the Gauteng Province, it was decided to include specific questions regarding nyaope use in the learner questionnaire. The lifetime and past month prevalence rates of nyaope use of 2.9% (CI 1.1 – 4.8) and 0.9% (CI 0.0 – 1.8) respectively were lower than anticipated given the anecdotal evidence and the fact that six of the eighteen life orientation teachers who participated in the educator survey identified it as the substance most responsible for the substance use problem at their school. There is no scientific evidence to which these results can be compared, thus making interpretation difficult. Given the nature of nyaope, the learners using the substance may be more symptomatic and may be more likely to come to the attention of their teachers and the community than those using other substances. This may have led to an overestimation of nyaope use on their part. Alternatively the study may have underestimated nyaope use due to underreporting by the learners who completed the questionnaire and/or a large proportion of nyaope users being absent on the day the survey was conducted at their respective schools. The use of biological markers (which were not part of this study) may have provided a more accurate picture on the extent of nyaope use amongst the learners.

Notwithstanding the lower levels of nyaope use relative to that of other substances, the mere use of this heroin-containing drug mixture among high school learners is cause for concern. The components of nyaope viz. low grade heroine, cannabis and the various cutting agents including rat poison makes the use of the substance potentially extremely harmful. There is the risk of addiction and increasing tolerance as well as physical dependence due to the heroin. There is also the potential of poisoning as a result of the contaminants that are added to "cut" or dilute heroin.[59] In addition there may be a number of psychosocial consequences including an increase in criminal behaviour and decreased social functioning.[60] These potential consequences of nyaope use highlight the urgent need for interventions that can assist those learners using the substance to stop, as well as interventions that prevent learners from initiating use of this substance in the first place.

5.1.6. Other substances

In this study, cocaine, mandrax, Tik, LSD and "pure" heroine had lifetime prevalence rates of 0.8% (CI 0.2 – 1.5), 0.7% (CI 0.1 – 1.3), 0.7% (CI 0.0 – 1.3), 0.7% (CI 0.1 – 1.3) and 1.0% (CI 0.3– 1.6) respectively. The rates for mandrax, cocaine and heroine in this study were significantly lower than the comparable lifetime prevalence rates obtained for those substances in the 1st South African National Youth Risk Behaviour Survey.[11] The prevalence rates obtained in the national survey were 6.0% (CI 4.8 – 7.2) for mandrax, 6.4% (CI 5.1–7 .6) for cocaine and 11.5% (CI 9.8–13.2) for heroine.[11] The differences in prevalence rates could be a result of underreporting in the Atteridgeville study. Alternatively it could suggest a change in substance use behaviour amongst learners since the national survey was conducted or community differences in substance use.

5.2. Age of initiation of substance use

The age of initiation of substance use was examined in this study. Of all the substances, alcohol was found to have the lowest mean age of initiation at 14.6 years (standard deviation (SD) = 2.0), followed by cigarette smoking at 14.8 years (SD = 2.3) and cannabis at 15.1 years (SD = 2.2). This is contrary to the findings of Madu and Matla et

al[38] in Limpopo, where the mean age for initiation of cigarette smoking of 14.5 years (SD = 1.8) was lower than that for alcohol use of 15.3 years (SD = 1.9).[38] This may suggest a change of pattern with learners now experimenting first with alcohol before moving on to other substances, while in the past cigarettes may have been the first substance to be experimented with.

This study confirms the findings of 1st South African National Youth Risk Behaviour Survey[11] and a study by Visser and Moleko[15] amongst primary school learners in the Tshwane Metropolitan Area, both of which reported that a significant number of learners use alcohol and cigarettes for the first time while still at primary school.[11,15] In addition the Atteridgeville study found that some learners had used cannabis while still at primary school, which is also consistent with the findings of Visser and Moleko.[15] These findings are particularly concerning as there is evidence that those who start drinking, smoking and using cannabis at an early age are more likely to turn to more dangerous substances than those who start later.[61] The findings of the Atteridgeville study with regard to age of initiation of substance use have important implications for the planning of interventions.

5.3. CRAFFT Scores

This study did not specifically address the frequency and amount of each substance being used but instead used the CRAFFT score to differentiate between those that may have just experimented with a substance from those that may have a substance use problem. Of learners who completed the CRAFFT screening tool 30.3% (CI 24.5 – 36.1) scored two or more, indicating they have a substance use problem needing some form of intervention. Significantly more males than females fell within this category with a particularly high proportion of 50.4% (CI 43.1 – 57.7) of grade 11 male learners scoring more than two. The CRAFFT screening tool has not been used in this context in South Africa previously. In a study in the USA, 25% of 14 to 18 year olds were found to have a CRAFFT score of two or more,[40] and in a similar study in the Czech Republic 30.4% of 11 to 19 year olds were found to have a CRAFFT score of 2 or more.[62] The CRAFFT screening test results for Atteridgeville suggest that that a number of learners would meet the criteria for problem use, abuse and dependence. This is even more alarming when one

considers the recent evidence that those learners who screen positive on the CRAFFT screen for substance use problems have significantly greater odds of having sexual contact after using alcohol or drugs, of having sex without a condom and of having multiple sexual partners.[63]

5.4. Sites where substances obtained

The sites where alcohol, cannabis and nyaope were being obtained were examined in this study, as this was thought to be important when planning interventions. The Liquor Act, 2003 (Act No. 59, 2003) prohibits the sale or supply of liquor to persons under the age of 18 and it is required that reasonable measures be taken to determine accurately whether or not a person is a minor before selling or supplying him or her with liquor.[64] In addition it is an offence for persons under the age of 18 to make a false claim about age in order to induce a person to sell him or her liquor.[64] Despite these regulations, 53% of learners in the study that had used alcohol in the previous year, had acquired their alcohol from either a bottle store, shebeen, tavern or restaurant. The mean age of learners obtaining alcohol from the bottle store, shebeen/tavern and restaurant were 17.2 years (SD 1.4), 17.4 years (SD 1.6) and 16.9 years (SD 1.6) respectively with learners as young as 13-14 years of age acquiring alcohol at these sites. This suggests the Liquor Act, 2003 is not being properly enforced in Atteridgeville. The majority of learners using cannabis and nyaope in the last year, acquired it within Atteridgeville, indicating there is relatively easy access should learners want to obtain either of the substances.

5.5. Factors associated with alcohol and cannabis use

The relationships of two scholastic characteristics with substance use were investigated in this study. Both characteristics viz. ever repeated a grade and number of days absent in the first two school terms were found to be significantly associated with both alcohol and cannabis use on bivariate analysis. However the only significant association on multivariate analysis was between lifetime alcohol use and being absent for less than three days in the first two terms i.e. the fewer days you were absent the smaller your odds

of ever having used alcohol. Flisher et al[14], in their study amongst learners in the Western Cape, found a significant association between recent alcohol use and the number of days absent from school amongst learners in the Western Cape.[14] The direction of the relationship between substance use and school absenteeism is debateable i.e. it is possible that absenteeism is a consequence of substance abuse or, alternatively being frequently absent from school and playing truant might increase the chances of one being exposed to substance use.[14] More research, particularly cohort studies, examining the association between scholastic characteristics and substance use is required in South Africa.

The relationship between alcohol use by learners and the use of alcohol by their parents, siblings and friends was investigated in this study. Following multivariate analysis, lifetime alcohol use was found to be significantly associated with the learners' perception that one or both of their parents drink alcohol regularly. Lifetime alcohol use , past month alcohol use and past month binge drinking were all significantly associated with the number of alcohol users amongst the learners' five closest friends. The finding of the association between lifetime alcohol use and parental alcohol use is consistent with the finding by Tot et al[24] that the prevalence of alcohol use was higher in adolescents whose mothers and fathers drink alcohol.[24] Increased alcohol use amongst adolescent offspring of alcoholic parents has been reported.[26] Swadi[26] suggests that this may be a result of the parenting style and the family environment that results from parental use of alcohol or other substances.[26] The finding of the significant associations between alcohol use and number of the five closest friends who drink alcohol is similar to the findings of Simons-Morton[27] that the number of alcohol using friends predicted adolescent alcohol use.[27]

This study also examined the relationship between cannabis use by learners and illicit drug use by parents, siblings and friends. Following multivariate analysis lifetime use of cannabis was found to be significantly associated with having one or more older siblings who use illicit drugs and both lifetime and past month cannabis use were found to be associated with the number of illicit drug users amongst the learners' five closest friends. A strong correlation between adolescent cannabis and illicit drug use and having older

siblings who use those substances was found in a cross-national study in Europe.[28] There is evidence for the role older siblings play in learners substance use with one study in Scotland finding that half of cannabis users aged 13-15 years had their cannabis related behaviour shaped by older siblings, with the older sibling having introduced the learner to cannabis in some cases.[65] It was also found that older siblings supplied the cannabis on an ongoing basis in many cases.[65] The significant association between cannabis use by learners and the number of illicit drug users amongst their five closest friends is consistent with the findings of Chabrol et al[66] viz. the number peers using cannabis is a risk factor for cannabis use in adolescents.[66]

The associations found in this study between alcohol and cannabis use and the number of the five closest friends that use that substance confirms the importance of peer use of substances in adolescent substance use behaviour that has been established in previous studies.[17,23,24,26,27] There may be a number of explanations for these findings including learners inclined to use substances seeking out similar peers, sub-cultural conformity or direct and active peer influence.[26,27] Peer influence is thought to be particularly important for initiation of use into cannabis.[26] In addition, Chabrol et al[66] found that the number of peers opposed to cannabis is a protective factor for cannabis use.[66] The findings in the Atteridgeville study regarding peer substance use, therefore, have important implication for prevention strategies.

This study examined the relationship between alcohol use and the use of other substances as well as the relationship between cannabis use and the use of other substances. Based on the findings of the study, following multivariate analysis, it is apparent that those learners who have used cannabis or cigarettes have much greater odds of ever using alcohol. In addition those that have used alcohol or cigarettes have much greater odds of ever using cannabis. This is consistent with the findings of Taylor et al[12] and Flisher et al[67] that have found substantial associations between many forms of substance use in KwaZulu-Natal and the Western Cape respectively.[12,67] These findings are also in keeping with those of Faeh et al[16] that smoking, alcohol drinking and cannabis use tend to cluster in adolescents i.e. there is high proportion of adolescents that use two or more of

these substances.[16] Due to cross sectional nature of the study in Atteridgeville, the direction of the relationship of the three substances is difficult to definitively establish. Previous studies have indicated that smoking often precedes alcohol drinking and cannabis use.[68,69] However the mean age and age distributions of initiation of the various substances in this study, may indicate that alcohol is the "gateway" drug amongst Atteridgeville learners.

5.6 Learners substance related knowledge, perceptions and attitudes

Learners' knowledge related to properties and effects of substances as well as their knowledge regarding local services that assist learners with substance use problems were investigated in this study. Learners' knowledge of properties and effects of substance was poor with less than half of learners able to answer more than 50% of the questions correctly. Only 1 in 8 learners were able to correctly identify the constituents of nyaope, which suggests there is the potential for some learners to unwittingly use the substance thinking it is relatively harmless. Although there was a trend for learners' knowledge of substance use properties and effects to increase with grade, significant deficits in knowledge were present even in the senior grades.   Even though alcohol and drug education is part of the life orientation syllabus, the overall poor performance of the learners suggests that adequate attention is not being given to this issue during formal teaching. With regards to knowledge of local substance use services, only 11% of learners could identify any local service that assisted learners with substance use problems. This suggests many learners would have no idea where to seek help if they had a problem. It points to a failure of local services to get their message across to learners.

Learners' attitudes and perceptions with regard to substance use were examined in this study. Generally the learners tended to have unfavourable attitudes and perceptions towards alcohol and illicit drug use. This, however, did not necessarily translate into behaviour amongst the study participants e.g. 77.3% of the participants believed that learners their age should not try alcohol, yet lifetime prevalence of alcohol use for the participants was 51.4%. Significantly a relatively high proportion of learners (45.3%)

thought that learners who drink alcohol have more friends. This suggests many learners might engage in alcohol use, which they perceive to be risky, in order to be accepted by their peer groups.[54] There were significant numbers of learners that were undecided for each of the questions on attitudes and perception. For five of the questions there were over 25% of learners that were undecided. This suggests that there is a large group of learners that could potentially be swayed in either direction.

5.7. Life skills of learners

Based on the findings of this study there appears to be a deficiency in life skills of a high proportion of learners in Atteridgeville. Grade 8 and 9 learners faired particularly poorly in the life skills assessment. In addition, a significant number of grade 10 and 11 learners also performed less than satisfactorily. Of all the life skills domains assessed, assertiveness appeared to be the most deficient. This could make these learners more vulnerable to peer influence. A number of studies have demonstrated the protective effect of life skills with regard to substance use in adolescents.[33,34,35] There may, therefore, be some value in strengthening the life skills component of the life orientation syllabus or introducing a new life skills programme in secondary schools in Atteridgeville.

5.8 Life orientation educator survey

A survey of life orientation teachers was conducted to determine their perceptions of the substance use and life skills content of the life orientation syllabus as well as their perceptions of their own capacity and that of their respective schools to deal with substance use amongst learners. In addition their perceptions of additional resources and interventions to deal with the problem were elicited. There were a significant number of teachers who thought the material covered in the life orientation syllabus was lacking with regards to substance use and life skills. In addition a number of them felt they did not have the capacity to educate learners on substance use and life skills. Based on the teacher survey, it is apparent that at most schools the response to substance use amongst learners has been disjointed, with insufficient resources being allocated to address the

problem. It is also very alarming that the majority of teachers were not aware of any community resources that could assist with substance use problems amongst learners. The findings of the teacher survey indicate that a vast improvement is required in the current response to the substance use problem amongst learners in Atteridgeville.

5.9. Limitations of the study

This study relied on self reporting by learners. It has been suggested that in survey research on drugs where questions are asked about socially disapproved or illegal behaviours, there may have been a tendency towards underreporting.[70] More stigmatised substances have been found to be less validly reported and respondents have been found to be more willing to report lifetime use of substances and less willing to report use from the recent past.[70] In order to maximise reporting in this study, guarantees of confidentiality were given to the participants and an anonymous self-administered questionnaire was used. Nevertheless the possibility of underreporting of substance use cannot be ruled out. In addition to the substance use variables, several other variables may have been affected by inaccurate reporting. This may have been deliberate or a result of not being able to recall certain events. A variable that may have been under reported is the number of days absent from school in the previous two terms as this relied entirely on the learners recall.

Only those learners present on the day the survey was carried out in their respective classes were included in the study. Eighty one (9.1%) of learners from the selected classes were absent on the day the survey was carried out in their respective classes. The exclusion of these learners may have resulted in an underestimate of the prevalence of substance use as a higher rate of absenteeism has been shown in those who use substances.[14] It is possible that those learners that were absent on the day of the survey were more likely to be using "hard" drugs, which might partially explain the lower than anticipated prevalence rates obtained for nyaope use. Using class registers to verify this hypothesis would have been ethically questionable, as the anonymity of some learners would have been compromised. It was also felt that repeated visits to a class to allow for

the inclusion of those learners that were not present on the day of the survey would be too disruptive. In addition there responses could have been contaminated from having discussed the questionnaire with learners that had completed it earlier.

The cross-sectional design of the learner survey limits the inferences that can be drawn from the results. For some of the associations found in the study, a causal association cannot be established due to uncertainty about the temporal relationship. These include the associations between substance use and scholastic characteristics and the associations between the different forms of substance use. Longitudinal data from a cohort study design would be required for this purpose.

In this study, a cluster sampling technique was used for the learner survey. Cluster sampling is less statistically efficient than simple random sampling with the standard errors of estimates obtained by cluster sampling usually being higher than those obtained by simple random sampling.[71] In this study, wider confidence intervals were obtained than would have been the case had simple random sampling been used. However cluster sampling was selected for this study, as simple random sampling was not feasible for practical and logistic reasons.

In this study no data was collected on the frequency and quantity of use of the various substances, as it was important that the learner questionnaire was kept short as possible for practical reasons. Had the questionnaire been lengthy, it would have meant using more than one class period. In addition a longer questionnaire might have led to learners becoming frustrated and leaving questions unanswered or answering questions randomly. Instead of using frequency and quantity to identify problem substance use, the CRAFFT screening test was used. The CRAFFT screening test consisted of 6 questions that covered alcohol and illicit drug use and was therefore more practical than asking the frequency and quantity of each substance used. The CRAFFT screening test itself, however, does have limitations of its own. Although the validity of the CRAFFT has been tested in international studies,[40,72] no validation studies have been conducted amongst South African adolescents. The CRAFFT results may not have been

representative of the learners' recent substance use as the questions refer to lifetime behaviour.

The generalisation of the findings of this study are limited. As grade 12 learners were not included in the study as it was felt this might disrupt their exam preparations, the findings of this study only apply to grade 8 – 11 learners in Atteridgeville. Applying to findings to all high school learners in Atteridgeville i.e. grade 8 – 12 learners will probably underestimate the true prevalence of substance use, as grade 12 learners are likely to have higher prevalence rates of substance use. The generalisation of these findings to learner populations in other communities should be done with caution, as there is likely to be variation in substance use patterns between communities. Due to sampling technique that was used to select life orientation teachers for the educator survey, it is possible that it was not a representative sample and therefore the findings may not be generalisable to all life orientation teachers in Atteridgeville.

5.10. Public health significance of the study findings

The study has considerable public health significance. The study has found high rates of alcohol use amongst the learners. The association between adolescent alcohol use and road traffic accidents, violence and high risk sexual behaviour is well documented.[37,51] The high rates of alcohol use amongst the study population could, therefore, result in high rates of morbidity and mortality due to intentional and unintentional injuries and HIV. In addition there is evidence that excessive alcohol use in adolescence leads to alcohol dependence, illicit drug use and criminal convictions in adulthood.[37,52] Alcohol dependence increases the risk for chronic physical and psychological disorders.[37] The finding of high rates of alcohol use amongst learners in this study is an important finding given the potential short and long term public health consequences of alcohol use.

The study also found significant numbers of learners who smoked cigarettes and cannabis. From a public health perspective, these findings are also important. The younger one starts smoking, the more serious the long term health outcomes.[53] Potential

long term consequences for those who start smoking in adolescence and continue through adulthood include cardiovascular disease and lung cancer. Short term consequences of cannabis use include high risk sexual behaviour and an increase in sexually transmitted infections.[55] Frequent use of cannabis can result in dependence and psychosis.[56]

The rates of substance use that were found amongst learners in Atteridgeville suggest that there could be serious public health consequences if the problem is not addressed. The findings of the study are, therefore, important as they highlight the need for intervention from all relevant stakeholders including the Gauteng Department of Education and the Gauteng Department of Health and Social Development.

5.11. Implications of study findings for intervention strategies

The findings of this study have a number of implications for potential intervention strategies. The study has found that there is a spectrum of substance use behaviour amongst learners, ranging from never having used any substances to harmful use of multiple substances. Intervention strategies should, therefore, incorporate the prevention of initiation of substance use amongst those learners who have not used substances as well as the reduction and elimination of substance use in those learners currently using substances.

The study findings have important implications for the timing of interventions. It is apparent from the study that many learners start experimenting with substances at a very early age. By grade 8, approximately 30% of learners have a lifetime history of alcohol use. Extremely concerning is that almost one-fifth of grade 8 learners have a CRAFFT score of two or more, indicating potentially problematic substance use. The study findings provide indisputable evidence that interventions to prevent substance use should start at primary school level. At secondary school level intensive preventative strategies should be targeted at learners in their first year of secondary school.

The study findings provide strong evidence that peers play an important role in the substance use behaviour of learners. Both alcohol use and cannabis use amongst learners were found to be strongly associated with the number of friends who use the substance. It is therefore critical to introduce interventions that have been shown to be effective in countering the effect of peer pressure. In addition the use of peers in delivering interventions, where appropriate, should be considered.

The number of learners with CRAFFT scores of two and above suggest that a significant number of learners may meet the criteria for substance abuse or substance dependence. These learners would need to be identified and referred appropriately for therapeutic interventions. The referral system therefore needs to be strengthened. Health workers in the area have to be equipped to address the problem. Inpatient treatment facilities should be made available for those learners who require it.

Some of the other findings of this study may be useful when planning preventative and treatment programmes to reduce substance use amongst learners in Atteridgeville. These include the deficiencies identified in substance related knowledge and life skills of the learners, the resource deficiencies identified by the life orientation teachers and the high proportion of alcohol users obtaining their alcohol from bottle stores, shebeens and taverns.

CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

This study has confirmed some important findings from previous South African and international substance use research amongst adolescents. The significant association between learners' substance use and the use of substances by their friends, once again, underlines the important role of peers in an adolescent's life. The clustering of alcohol, cannabis and cigarette use in the same individuals was found to be significant i.e. learners who use one of these substances are more likely to report use of the other substances. Both these findings have important implications for intervention strategies.

From a local perspective, the results of this study have confirmed that the concerns regarding substance use amongst learners in Atteridgeville are not unfounded. While nyaope use has grabbed the community and media's attention, the use of alcohol, cannabis and cigarettes continues at alarmingly high rates. The high prevalence rates, combined with the short and long term medical and psychosocial consequences of using these substances, highlights the public health importance of substance use amongst learners in Atteridgeville and the need for urgent intervention.

6.2. Recommendations

6.2.1. National and provincial initiatives to reduce substance use amongst learners should be strengthened

In order to create an enabling environment to reduce substance use amongst learners in communities such as Atteridgeville, action is needed at national and provincial level in addition to local level. The National Drug Master Plan[36] should be fully implemented. Government should consider introducing additional measures that could reduce exposure of the youth to substances such as restricting alcohol advertising and reducing economic

availability through higher taxes on alcohol. Government and civil society organisations need to jointly develop and implement interventions at national and provincial level to reduce substance use amongst learners. Both national and regional media should be used extensively in initiatives to reduce substance use.

6.2.2. A community drug action committee should be set up

Based on the available evidence, the response by the relevant authorities to substance use amongst learners in Atteridgeville appears to have been uncoordinated and generally ineffective. A community drug action committee should be set up as a matter of urgency in order to ensure a coordinated and integrated approach in addressing the substance use problem in Atteridgeville. The committee should comprise officials responsible for Atteridgeville from the Gauteng Department of Health and Social Development and Gauteng Department of Education, a high ranking officer from the Atteridgeville branch of the South African Police Services, representatives of non-governmental organisations working in the area as well as community leaders and youth representatives. The community drug action committee should draw up an action plan to tackle the substance use problem in Atteridgeville. The local action plan should be based on the National Drug Master Plan[36]. The committee should meet on a regular basis and members should ensure that there is constant communication with, and monitoring of, those responsible for implementation of the action plan.

6.2.3. The Atteridgeville community should be mobilised to actively participate in initiatives to reduce substance use amongst learners

The strategy to address substance use amongst learners should be comprehensive and have multiple components not only directed at the learners themselves but at their families, peers, schools and the Atteridgeville community as a whole. Local media including the community radio station should be used extensively to educate the community, raise public awareness and develop community support for the initiatives to reduce substance use amongst learners. Members of the community should be encouraged to come forward with information if they are aware of individuals or establishments involved in supplying alcohol to minors or dealing in illicit substances.

They should be given the option of doing so anonymously if that is there preference. Community support and participation is crucial for successful reduction in the prevalence of substance use amongst adolescents to be achieved.[73,74]

6.2.4. Parents should be given practical advice on their role in preventing substance use amongst their children

Parents of learners have a valuable role to play in preventing substance use amongst their children. The National Drug Master Plan[36] highlights the need for information on substance abuse to be accessible to the parents of learners and for mechanisms for disseminating information to be identified and streamlined.[36] The interventions aimed at parents that have been implemented in other countries to reduce substance use amongst adolescents may not be feasible in Atteridgeville. An option might be to use the local media to engage parents in Atteridgeville. They need to be made aware that their own substance use patterns may contribute to their children using substances. They should therefore use alcohol in moderation and not use illicit drugs. In addition practical advice related to provision of consistent discipline as well as the monitoring of their children's activities during adolescence should be conveyed to them.[73]

6.2.5. The Liquor Act, 2003 and other relevant legislation should be enforced by the Atteridgeville SAPS

An important component of intervention at community level should be the targeting of the sites where learners are obtaining substances. The National Drug Master Plan[36] highlights the need for the rigorous enforcement of the law in respect of the sale of alcohol, tobacco and other drugs to the youth.[36] The Atteridgeville study has found that that the majority of learners either obtain their alcohol from bottle stores, shebeens, taverns or restaurants in contravention of the Liquor Act, 2003.[64] As a first step these alcohol-retail establishments should receive training on the Act and their responsibilities in preventing sales to minors as well as information on the dangers of alcohol use amongst the youth. This should be followed by regular compliance checks by the Atteridgeville SAPS to ensure these establishments are not supplying alcohol to minors. If these establishments are found to be contravening the Liquor Act[64], then the penalties

stipulated in the Act should be strictly enforced.[64] The police in Atteridgeville should also ensure there are no unlicensed liquor establishments operating within the Atteridgeville. As learners are obtaining cannabis and nyaope within Atteridgeville, the capacity of the local police to conduct narcotics investigations should be improved.

6.2.6. Security measures at schools should be improved

As there is evidence from this study that some learners were obtaining there illicit substances on school property, increased security measures should be employed at schools in Atteridgeville to ensure that those supplying illicit drugs are unable to enter school property. In addition regular searches should be conducted of the school premises by the South African Police Services with drug-sniffing dogs.

6.2.7. Police, healthcare workers and representatives of NGOs should be used on an ongoing basis at schools to raise awareness regarding the dangers of substance use

Several different approaches should be considered in raising awareness amongst both primary and secondary school learners of the dangers of substance use. The "Adopt-a-cop" project, where a specific police officer is adopted by a school in order to promote trust between the police and the learners,[75] provides a platform for education on the dangers of crime and substance use and should be implemented at all schools in Atteridgeville. Consideration should be given to using a similar approach for health i.e. a nurse or health promoter from the nearest clinic or community health centre should be "adopted" by each of the schools in Atteridgeville. Representatives of non-governmental organisations and former addicts should also be included in school based awareness raising programmes on the dangers of substance use. Learners may be more inclined to take cognisance of information received from an authority in the field than he or she would be if the same information was given by a teacher. These approaches are likely to be most effective if engagement with learners takes place on an ongoing basis throughout the year and not as a once-off event.

6.2.8. The capacity of life orientation teachers should be developed in order to empower them to teach effectively on substance use and to deal appropriately with learners using substances

The educator survey component of this study found that a number of life orientation teachers themselves felt that they did not have sufficient knowledge and training with regards to substance use and life skills respectively. It is therefore important that the capacity of life orientation teachers with regard to these competencies be improved, in order that they are able to effectively impart the knowledge and skills to their learners. Workshops should be held for life orientation teachers in Atteridgeville. These workshops should cover, amongst other topics, the properties and effects of the substances commonly being used in Atteridgeville, the resources available in the community and how they should deal with learners they suspect of using alcohol or illicit substances. These workshops could be conducted by the relevant departments from local tertiary institutions as part of their community engagement requirements as well as non-governmental organisations operating in the Tshwane area.

6.2.9. Life skills training of learners should be strengthened

This study has found a deficiency in learners' life skills. In addition a significant number of life orientation teachers felt that life skills were not sufficiently covered in the life orientation syllabus. As life skills have been shown to be protective against substance use,[33,34,35] there is need to develop the life skills of the learners. This can be done either by strengthening the life skills component of the current syllabus or introducing a formal life skills programme. The Life Skills Training programme developed by Gilbert Botvin consists of 15 sessions during the first year, 10 booster sessions during the second year, and 5 sessions during the third year, and is taught either in grades 6, 7, and 8 or grades 7, 8, and 9.[76] It covers drug resistance skills and information, self-management skills, and general social skills.[76] As there is considerable evidence to support the effectiveness of this programme with reduction in the prevalence of tobacco, alcohol, and illicit drug use of between 50 to 87 percent being achieved relative to controls,[76] consideration should be given to implementing an adaptation of this programme in primary and secondary schools in Atteridgeville.

6.2.10. A system of peer support should be introduced at schools

The capacity of schools in Atteridgeville to prevent and reduce substance use amongst its learners may be further enhanced by a system of peer support. Only one of the 9 schools in the study had a system of peer support in place, despite youth empowerment and the use of peers to assist in addressing substance use problems being highlighted in the National Drug Master Plan.[36] Consideration should be given to introducing a programme in Atteridgeville similar to the one trialled in 13 schools in Tshwane during 2002-2003.[77] In that project, learners were selected from each of the schools to undergo training that focused on group cohesion, team building and personal growth, understanding the experiences and problems of their peers, communication skills such as listening and empathy, problem-solving skills, organizational skills and understanding substance abuse as a psycho-social issue.[77] Once they had competed their training, these peer supporters then engaged in various activities at their schools including providing support to learners with personal problems and enhancing learners' knowledge and awareness of substance use.[77] The peer supporters received ongoing support from psychology students from the local university.[77]

6.2.11. Schools should receive appropriate materials and resources to assist them in addressing substance use issues

Each school should receive formal guidelines on prevention of substance use as well protocols for dealing with learners who are suspected of substance use. Audiovisual and written material on substance use that could assist educators in engaging learners should be made available to all schools in Atteridgeville. All the schools should receive a directory of community resources that they can approach for support with substance use prevention activities and assistance with those learners that may be affected. As some learners may not want to reveal their substance use problems to educators, copies of these directories should be made available to all learners so they can approach the community resources directly, should they prefer.

6.2.12. The referral system in Atteridgeville for learners that are using substances should be strengthened

The referral pathway for those parents wanting and able to afford care in the private health sector for their children should commence with a visit their general practitioner. The general practitioner has the options of managing the learner him or herself, referring the learner to a private psychiatrist or psychologist for further assessment and management, or referring the learner directly to Castle Carey Clinic (SANCA Soshanguvue) for inpatient rehabilitation.

In terms of the public health sector referral pathway, the closest clinic should be the first point of call for those learners using substances. Here a history should be taken and the problem assessed by a professional nurse. This should be supplemented by a screening questionnaire such as the CRAFFT. Based on the findings, a decision should be made on whether the learner requires information and advice only, a brief motivational intervention or needs to be referred on. Learners that might need to be referred for further assessment are those suspected of substance dependence. These referrals should be made to a clinic with extended mental health services viz. Bophelong Clinic or Atteridgeville Clinic where a multi-disciplinary assessment can be conducted to determine the further management of the learner. If the learner requires inpatient rehabilitation, a referral to Dr Fabian and Florence Ribiero Rehabilitation Centre can then be made.

6.2.13. The capacity of nurses at clinics in Atteridgeville should be strengthened with regards to the assessment of adolescents with substance use issues as well as brief motivational interviewing techniques

Training nurses in assessment and screening can be conducted by psychiatrists and psychologists based in the region. There are a number of private service providers that would be able to conduct workshops on brief motivational interviewing. The importance of building capacity amongst nurses in brief motivational interviewing is highlighted by the evidence of it effectiveness in reducing substance use in adolescents.[78] As brief motivational interviewing can be used for a variety of risk behaviours amongst all age groups, it is a particularly useful skill for primary care nurses to possess.

6.2.14. Inpatient treatment should be made available for those learners who require it

The findings of this study suggest that there might be a number of learners in Atteridgeville who meet the criteria for substance dependence and who would require inpatient rehabilitation. Efforts should, therefore, be made by the Gauteng Department of Health and Social Development to ensure that the number of inpatient rehabilitation beds available for adolescents are adequate.

6.2.15. Further research should be conducted

This study has identified a number of areas that require further research. A cohort study would be useful in establishing the relationship between substance use and scholastic characteristics. A longitudinal study will also be able to establish the temporal sequence in which substances are used in adolescence. Validation studies should be carried out on the various screening tools for alcohol and illicit drug use to determine which is the most appropriate to use for adolescent substance use in South Africa. Similar studies to the one conducted in Atteridgeville should be conducted amongst learners in other communities in Gauteng to determine if the findings of this study are consistent across communities.

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APPENDICES

APPENDIX 1

PARENT INFORMATION LEAFLET

STUDY TITLE: Substance use amongst high school learners in Atteridgeville, Pretoria: Prevalence and associated factors

INVESTIGATOR: DR SV Moodley

INSTITUTION: University of Pretoria

Dear Parent

1. Introduction
This information leaflet will help you to decide if you want or do not want your child to take part in the study. Before you agree or refuse to allow your child to take part you should fully understand what is involved. If you have any questions that this leaflet does not fully explain, please contact the researcher, Dr Moodley on 012 354 087.

2. The nature and purpose of the study
The aim of this study is to find out about the drug and alcohol use and drug and alcohol knowledge and attitudes amongst high school learners in Atteridgeville. The information we get about the learners alcohol and drug knowledge and attitudes as well as the social skills they lack will help the departments of health and education in developing programmes to assist learners.

3. Explanation of procedures to be followed and content of questionnaire
This study involves the completion of a questionnaire only. The questionnaire will take about 30 minutes to complete and will be completed by your child during his/her life orientation class. The questionnaire has 13 sections. These include questions on your child's upbringing, living and economic circumstances, school performance, use of alcohol, nyaope, dagga and other drugs and social factors. There are also sections to assess your child's general knowledge of alcohol and drugs and his/her attitude towards alcohol and drugs as well a section that helps us to check whether your child has the necessary social skills to protect him/her from using alcohol and drugs.

4. Risk and Discomfort involved
There are no risks for your child in taking part in the study.

5. Possible benefits of the study
Information we get from the study will be used to advise the departments of education and health on how they can assist in improving the mental health of learners in Atteridgeville.

6. Rights as a parent

It is up to you to decide whether or not to allow your child to take part in this study. Your child's participation is entirely voluntary. You can refuse to allow your child to participate. There is no penalty to you or your child for not letting him/her to take part in the study.

7. Has the study received ethical approval

This study has received written approval from the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria and the Gauteng Department of Education. Copies of the approval letters are available should you wish to have one.

8. Information and contact person

The contact person for the study is **Dr Saiendhra Moodley**. If you have any questions regarding the study please contact him at 012 354 1087.

9. Compensation

Your child's participation is voluntary. He/she will not receive any payment for participating.

10. Confidentiality

All information will be kept strictly confidential. The questionnaire that your child will complete is anonymous. He/she will not write his/her name on the questionnaire so there is no way of identifying him/her. The name of the school will also not appear on the questionnaire so there is no way of identifying anyone that takes part in the study.

If you <u>do not</u> want your child to take part in this study, please contact the researcher on 012 354 1087 to inform him of your decision <u>OR</u> return the form below to your child's school within 3 days. If you want your child to take part in the study, there is no need for you to do anything.

Thank you very much for your cooperation.

I have received, read and understood the above written information (Information Leaflet) regarding the study on substance use amongst high school learners in Atteridgeville. I have decided that I **<u>do not</u>** want my child to take part in the study.

Child's name ……... (Please print)

Parent's name ....…………………….... (Please print)

Parents's signature ……...........................……………Date……......................

APPENDIX 2

LEARNER INFORMATION LEAFLET AND INFORMED ASSENT

Dr Saiendhra Moodley
Student Number: 26582386
Department of Community Health
University of Pretoria

Dear Learner

Study Title: Substance use amongst high school learners in Atteridgeville, Pretoria: Prevalence and associated factors

I am a Masters student in Community Health in the Department of Community Health, University of Pretoria. You are invited to take part in our research project on alcohol and drug use amongst high school learners in Atteridgeville.

The letter gives you information to help you decide if you want to take part in this study. Before you agree you should know what it is about. If there is something that is not clear or if you have any other questions, please ask me. You should not agree to take part unless you are happy about what we expect of you.

The purpose of this study is to get information about alcohol and drug use in high schools in Atteridgeville and to help us understand the problem. This will help us to find ways to solve the problem.

I would like you to complete a questionnaire. This may take about 30 minutes. I will collect the questionnaire from you before you leave the class. It will be kept in a safe place so only the people working on the project will see it. Please do not write your name on the questionnaire.

One of the project team or myself will be in class to help you with the questionnaire. There may be some questions that make you feel uncomfortable but you do not need to answer them if you don't want to.

The Research Ethics Committee of the University of Pretoria, Faculty of Health Sciences granted written approval for this study.

It is up to you if you want to take part in the study or not. Nothing will happen to you if you don't want to take part. **There is no penalty for not taking part.** You can stop filling the questionnaire at any time without giving any reason. As you do not write your name on the questionnaire, you give us the information anonymously. We do not know which questionnaire belongs to which learner. Once you have given the questionnaire back to us, you cannot change your mind about taking part. We will not be able to find your questionnaire because the learners name and school name does not appear on the questionnaire. Your name and your schools name will also not be identified as taking part in this study in any article that comes from this study.

We thank you for your help.

Yours truly,
Dr S.V. Moodley

Questionnaire Number	

Instructions for completing questionnaire:

1. **Please answer each question as thoughtfully and honestly as possible Remember your answers are totally confidential and anonymous.**
2. **If there are any questions that you would prefer not to answer, just leave it blank**
3. **This is not a test. There are no right or wrong answers. If you do not find an answer that fits exactly, mark the one that comes closest.**
4. **If the question requires you to choose an answer, please tick(√) the appropriate box. Please ignore the number that appears in the box, as this is to help us capture the data.**

   e.g. Are you currently attending a secondary school?

No	0
Yes	√ 1

5. **If you have a question please raise your hand and researcher or research assistant will help you.**

Thank you for participating in the survey!

_____

Section 1

1.1. How old are you?_____ years

1.2. What grade are you currently in? _____

1.3. Gender *(please tick the correct box)*

Male	1
Female	2

1.4. Where do you live?

Atteridgeville	1
Atteridgeville Extensions	2
Saulsville	3
Lotus Gardens	4
Other (please specify)	5

1.5. Which of the following people currently live in the same house as you? *(Tick all that are applicable)*

Biological father	1
Biological mother	2
One or more of your grandparents	3
Other adult family member/s	4
Other adult non-family member/s	5

1.6. With whom have you lived for most of the time over the last 10 years? *(Please tick only one response)*

I have lived together with both my mother and father in the same house	1
I have lived with my mother, not my father	2
I have lived with my father, not my mother	3
I have lived with adults other than my parents	4
Other	5

Section 2

2.1. How many people besides yourself sleep in the same room as you at night when you are at home? _____

2.2. What is the current employment status of your parents?

Both parents unemployed	1
Only mother employed	2
Only father employed	3
Both parents employed	4

2.2. How often do you go hungry or have no food to eat at home?

Never	0
Sometimes	1
Often	2

Section 3

3.1. How many days have you been absent from school so far this year? _____

3.2. Have you ever repeated a grade?

No	0
Yes	1

Section 4

4.1. Have you ever drunk alcohol e.g. beer, wine, cider?

No	0
Yes	1

If you answered No please proceed to Section 5

4.2. How old were you when you first drank alcohol? _____ years

4.3. Did you drink alcohol during the past 30 days?

No	0
Yes	1

If you answered No please proceed to section 5

4.5. Did you drink 5 or more drinks with alcohol on one day during the past 30 days?

No	0
Yes	1

Section 5

5.1. Have you ever smoked dagga?

No	0
Yes	1

If you answered No please proceed to Section 6

5.2. How old were you when you first smoked dagga? _____ years

5.3. Did you smoke dagga during the past 30 days?

No	0
Yes	1

Section 6

6.1. Have you ever used nyaope?

No	0
Yes	1

If you answered No please proceed to Section 7

6.2. How old were you when you first used nyaope? _____ years

6.3. Did you use nyaope during the past 30 days?

No	0
Yes	1

Section 7

7.1. Have you ever used any of the following drugs? *(Please tick either no or yes for each drug)*

	No	Yes
Mandrax	0	1
Tik	0	1
Heroine	0	1
Cocaine	0	1
LSD	0	1
Glue	0	1
Other (please specify)	0	1

7.2. Have you ever smoked cigarettes?

No	0
Yes	1

If you answered No please proceed to Section 8

7.3. How old were you when you first smoked cigarettes? _____ years

7.4. Have you smoked cigarettes in the past 30 days?

No	0
Yes	1

If you answered No please proceed to Section 8

7.5. During the past 30 days, on how many days did you smoke cigarettes? _____days

7.6. During the past 30 days, on the days you did smoke, how many cigarettes did you smoke per a day?

1 cigarette per day	1
2 to 5 cigarettes per day	2
6 to 10 cigarettes per day	3
More than 10 cigarettes per day	4

Section 8

8.1. What are the 2 major drugs contained in nyaope?

Cocaine and Mandrax	1
Dagga and Heroine	2
LSD and Dagga	3
Don't Know	4

8.2. Are the following drugs addictive? *(Please tick either no or yes or don't know for each drug)*

	No	Yes	Don't know
Cigarettes	0	1	2
Alcohol	0	1	2
Kilp	0	1	2
Dagga	0	1	2
Heroine	0	1	2
Nyaope	0	1	2
Cocaine	0	1	2

8.3. Can drinking alcohol cause the following harmful effects? *(Please tick either no or yes or don't know for each effect)*

	No	Yes	Don't know
Liver damage	0	1	2
Loss of judgment	0	1	2
Lung Cancer	0	1	2
Change in behavior	0	1	2
Slows reactions	0	1	2

8.4. Can smoking dagga cause the following symptoms or effects? *(Please tick either no or yes or don't know for each effect)*

	No	Yes	Don't know
Poor concentration	0	1	2
Loss of balance	0	1	2
Liver damage	0	1	2
Lung problems	0	1	2
Mental health problems	0	1	2

Section 9

Below are some statements that people have made about drugs and alcohol. <u>Do you agree</u> with each of the statements? *(Please tick either no or yes or not sure for each statement)*

	No	Yes	Not Sure
1. Learners who drink alcohol are more cool	0	1	2
2. Learners my age should not try alcohol	0	1	2
3. Drinking alcohol lets people have more fun	0	1	2
4. Drinking alcohol helps people to relax	0	1	2
5. Learners who drink alcohol have more friends	0	1	2
6. Learners my age should not experiment with drugs	0	1	2
7. Drugs help people to relax	0	1	2
8. People who smoke dagga should be arrested	0	1	2
9. Smoking dagga lets people have more fun	0	1	2
10. Learners who use drugs are more cool	0	1	2

Section 10

10.1. <u>How **often** do you do the following things?</u> *(Tick either Never, Sometimes or Most of the time for each question)*

	Never	Sometimes	Most of the time	Always
1. When you need to make a decision, how often do you think about your choices and what will happen?	0	1	2	3
2. When you feel nervous or stressed out, how often do you take deep breaths to relax?	0	1	2	3
3. How often do you ask questions when you don't understand something?	0	1	2	3
4. If you find that something is really difficult, how often do you get frustrated and give up?	0	1	2	3
5. When solving problems, how often do you compare each possible solution with the others to find the best one	0	1	2	3

10.2. How **often** would you do the following things*? (Tick either Never, Sometimes or Most of the time or Always for each question)*

	Never	Sometimes	Most of the time	Always
1. Accept when someone offers you a cigarette	0	1	2	3
2. Accept when someone offers you beer, wine or liquor	0	1	2	3
3. Accept when someone offers you dagga or nyaope	0	1	2	3
4. Tell someone to go to the end of the line if they try to cut in line ahead of you	0	1	2	3
5. Tell people your opinion even if you know they will not agree with you	0	1	2	3

Section 11

11.1. Do any of the following people drink alcohol regularly? *(Tick either Not applicable, No, Yes or Don't know for each person)*

	Not applicable	No	Yes	Don't know
Father	9	0	1	2
Mother	9	0	1	2
An older brother	9	0	1	2
An older sister	9	0	1	2
Best friend	9	0	1	2
An adult you live with other than your parents	9	0	1	2

11.2. Do any of the following people use drugs e.g. dagga, nyaope? *(Tick either Not applicable, No, Yes or Don't know for each person)*

	Not applicable	No	Yes	Don't know
Father	9	0	1	2
Mother	9	0	1	2
An older brother	9	0	1	2
An older sister	9	0	1	2
Best friend	9	0	1	2
An adult you live with other than your parents	9	0	1	2

11.3. How many of your 5 closest friends drink alcohol? _____

11.4. How many of your 5 closest friends use drugs? _____

11.5. Have you ever been influenced by a friend to drink alcohol or use dagga or nyaope when you did want to?

No	0
Yes	1

11.6. If you have used alcohol or drugs in the last 30 days, do you think you need help to stop?

I have not used drugs or alcohol in the last 30 days	0
No, I do not need any help	1
Yes, I need help	2
I don't know	3

11.7. Do you have someone you can count on to listen to you when you need to talk?

No	0
Yes	1
Don't know	2

11.8. Are you aware of any services in Atteridgeville that assist learners with alcohol and drug problems?

No	0
Yes	1

If yes, please list them.

_____
_____
_____

Section 12

12.1 If you have drunk alcohol in the past year, where did you usually obtain it? *(Please tick only one response)*

I have not drunk alcohol in the past year	0
Bottle store	1
Shebeen / Tavern	2
Home	3
School	4
Restaurant	5
Other	6

12.2. If you have used nyaope or dagga in the past year, where did you usually obtain it? (*Please tick only one response*)

I have not used nyaope or dagga in the past year	0
Within school property	1
Street or park within Atteridgeville	2
Street or park outside Atteridgeville	3
House of a dealer within Atteridgeville	4
House of a dealer outside Atteridgeville	5
At home	6
Other	7

12.3. Have you participated in gambling on school property in the last 3 months?

No	0
Yes	1

Section 13

13. Please answer each of the questions below by placing a tick in the appropriate box

	No	Yes
13.1. Do you ever use alcohol or drugs to relax, feel better about yourself or fit in?	0	1
13.2. Do you ever use alcohol or drugs while you are by yourself?	0	1
13.3. Do you ever forget things you did while using alcohol or drugs?	0	1
13.4. Have you ever gotten into trouble while you were using alcohol or drugs?	0	1
13.5. Do your family or friends ever tell you that you should cut down on your drinking or drug use?	0	1
13.6. Have you ever ridden in a car driven by someone (including yourself) who was under the influence of alcohol or drugs?	0	1

APPENDIX 3
EDUCATOR INFORMATION LEAFLET AND INFORMED CONSENT

STUDY TITLE: Substance use amongst high school learners in Atteridgeville, Pretoria: Prevalence and associated factors

INVESTIGATOR: DR SV Moodley

INSTITUTION: University of Pretoria

Dear Participant

1. Introduction
We invite you to participate in a research study. This information leaflet will help you to decide if you want to participate. Before you agree to take part you should fully understand what is involved. If you have any questions that this leaflet does not fully explain, please do not hesitate to ask the researcher, Dr Moodley.

2. The nature and purpose of the study
The aim of this study is to assess the extent of substance use amongst high school learners in Atteridgeville. The information obtained regarding substances being used, learners alcohol and drug knowledge and attitudes as well as the life skills they lack will be useful in the development of interventions.

You as a life orientation teacher are a very important source of information on substance use and intervention strategies pertaining to your school.

3. Explanation of procedures to be followed
This study involves the completion of a questionnaire. The questions will be related to the extent of the substance misuse, the capacity available to deal with the problem and intervention strategies.

4. Risk and Discomfort involved
There are no risks in participating in the study.

5. Possible benefits of the study
Information obtained in the study will be used to make recommendations regarding intervention strategies which may in the long term lead to a reduction of substance use amongst learners at your school..

6. Rights as a participant in the study
It is up to you to decide whether or not to take part in this study. Your participation is entirely voluntary. You can refuse to participate or stop at any time during the study without giving any reason. There is no penalty for-non participation.

7. Has the study received ethical approval

This study has received written approval from the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria and the Gauteng Department of Education. Copies of the approval letters are available should you wish to have one.

8. Information and contact person

The contact person for the study is **Dr Saiendhra Moodley**. If you have any questions regarding the study please contact him at 012 354 1087.

9. Compensation

Your participation is voluntary. You will not receive any compensation for participating.

10. Confidentiality

All information that you give will be kept strictly confidential. Once we have analysed the information no one will be able to identify you. Research reports and articles in scientific journals will not include any information that may identify you.

CONSENT TO PARTICIPATE IN THIS STUDY

I confirm that the person asking my consent to take part in this study has told me about nature, process, risks, discomforts and benefits of the study. I have also received, read and understood the above written information (Information Leaflet and Informed Consent) regarding the study. I am aware that the results of the study, including personal details, will be anonymously processed into research reports. I am participating willingly. I have had time to ask questions and have no objection to participate in the study. I understand that there is no penalty should I wish to discontinue with the study..

I have received and signed a copy of this informed consent agreement.

Participant's name ……... (Please print)

Participant's signature: ....……………   Date............................

Investigator's name ....………………………….. (Please print)

Investigator's signature ....……………Date…......................

Witness's Name ....………………….................. (Please print)

Witness's signature ....…………………... Date…......................

EDUCATOR QUESTIONNAIRE

STUDY TITLE: An assessment of the extent of substance use amongst high school learners in Atteridgeville, and its implications for intervention strategies

School Code	
Questionnaire Number	

Instructions:

If the question requires you to select an answer, please tick (√) the appropriate box e.g. Do you teach life orientation?

No		0
Yes	√	1

Thank you for participating in the survey!
_____

1. Which grades do you teach life orientation? Please tick all that are applicable.

Grade 7	7
Grade 8	8
Grade 9	9
Grade 10	10
Grade 11	11
Grade 12	12

2. How would you describe the current drug and alcohol problem at your school?

There is no drug and alcohol problem at my school	0
There is a minor drug and alcohol problem at my school	1
There is a moderate drug and alcohol problem at my school	2
There is a serious drug and alcohol problem at my school	3
There is a very serious drug and alcohol problem at my school	4

3. What percentage of learners at your school do you think are using alcohol and drugs?

0% to 20%		1
21% to 40%		2
41% to 60%		3
61% to 80%		4
81% to 100%		5

4. Please list the substances that you believe are responsible for the alcohol and drug problem at your school. Please list them in order of importance, starting with the most important.

A)	
B)	
C)	
D)	
E)	

5. Do you believe that the 'Life Orientation' syllabus contains sufficient factual information for learners on drugs and alcohol?

No	0
Yes	1

6. Do you believe that the 'Life Orientation' syllabus contains sufficient life skills training for learners that may help prevent alcohol and drug use? (*Lifeskills include skills related to decision making, assertiveness, communication and problem solving*)

No	0
Yes	1

7. Do you believe you possess sufficient factual knowledge to teach learners about alcohol and drugs?

No	0
Yes	1

8. Have you had any training on the teaching of life skills?

No	0
Yes	1

If yes, do you believe this training has been sufficient to enable you to impart the skills to the learners?

No	0
Yes	1

9. Are there guidelines available at your school for dealing with substance use amongst learners?

No	0
Yes	1

10. Do you believe that your school has sufficient resources to deal with the problem of drug and alcohol use?

No	0
Yes	1

If No, what additional resources do you think are necessary?

11. What interventions, if any, have been implemented at your school to deal with the alcohol and drug problem?

12. What additional interventions do you believe need to be implemented at your school to deal with the alcohol and drug problem?

13. Are you aware of any community resources in Atteridgeville that can assist you with the drug and alcohol problem at your school?

No	0
Yes	1

If yes, please list these resources.

APPENDIX 4

...y of Health Sciences Research Ethics Committee
...esondheidswetenskappe Navorsingsetiekkomitee

DATE: 20/05/2009

PROTOCOL NO.	**59/2009**
PROTOCOL TITLE	Substance use amongst high school learners in Atteridgeville, Pretoria: Prevalence and associated factors.
INVESTIGATOR	**Principal Investigator:** Dr S V Moodley
SUBINVESTIGATOR	n/a
SUPERVISOR	Prof M J Matjila / Prof MYH Moosa john.matjila@up.ac.za
DEPARTMENT	**Dept:** School of Health Systems and Public Health
	E-Mail: saiendhra.moodley@up.ac.za **Cell:** 0825796985
STUDY DEGREE	MMed (Community Health)
MEETING DATE OF THIS STUDY	29/04/2009

The Faculty of Health Sciences Research Ethics Committee, University of Pretoria has considered this Protocol on 29/04/2009 and **approval** herewith given.

Members attended & Feedback at the meeting .

*Prof A Nienaber	(female) BA (Hons) (Wits); LLB; LLM (UP); PhD; Dipl.Datametrics (UNISA)
*Prof V.O.L. Karusseit	MBChB; MFGP (SA); MMed (Chir); FCS (SA)
*Prof M Kruger	(female) MB.ChB. (Pta); MMed. Paed. (Pret); M.Phil (Stellenboch) cum laude; PhD. (Leuven)
Dr N K Likibi	MB.BCh; Med.Adviser (Gauteng Dept.of Health)
Dr T S Marcus	(female) BSc (LSE), PhD (University of Lodz, Poland)
Snr Sr J. Phatoli	(female) BCur (Eet.A) BTec (Oncology Nursing Science)
Dr L Schoeman	(female) B.Pharm, BA Hons (PSy), PhD
*Dr R Sommers	(female) MBChB; MMed (Int); MPharMed;
*Mr Y Sikweyiya	MPH; SARETI Fellowship in Research Ethics; SARETI ERCTP; BSC (Health Promotion) Postgraduate Dip in Health Promotion
Prof TJP Swart	BChD, MSc (Odont), MChD (Oral Path), PGCHE
*Dr A P van Der Walt	BChD, DGA (Pret) Director: Clinical Services of the Steve Biko Academic Hospital
*Prof C W van Staden	MBChB; MMed (Psych); MD; FCPsych; FTCL; UPLM; Dept of Psychiatry

DR R SOMMERS; MBChB; MMed (Int); MPharMed.
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria
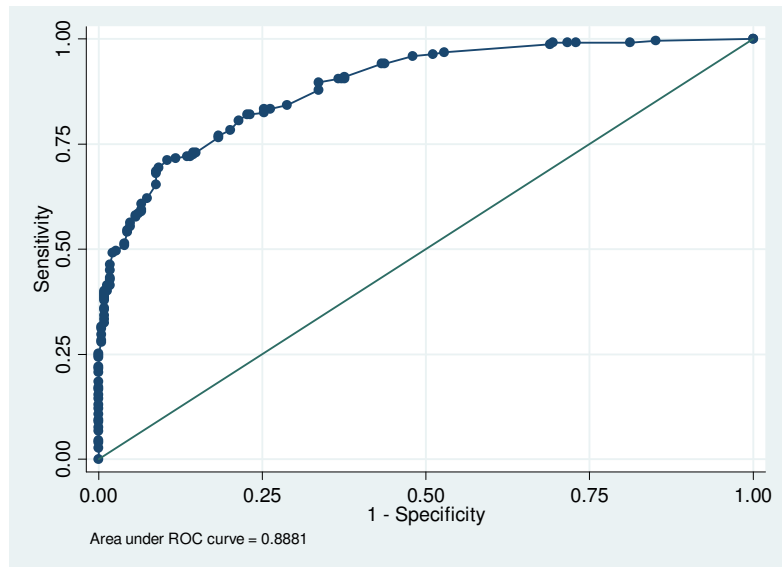
APPENDIX 5

Table 26. Prevalence rates (95% confidence intervals) of lifetime substance use by grade and gender

		Grade 8 (female N =113) (male N = 115)	Grade 9 (female N = 52) (male N = 48)	Grade 10 (female N = 88) (male N = 102)	Grade 11 (female N =153) (male N = 129)
Alcohol	**Female**	28.3 (22.2 – 34.3)	32.7 (26.0 – 39.4)	42.0 (26.1 – 58.0)	63.4 (48.7 – 78.1)
	Male	31.0 (21.0 – 40.9)	55.3 (33.6 – 77.0)	65.7 (51.9 – 79.5)	77.5 (64.0 – 94.1)
Cigarettes	**Female**	8.3 (0.6 – 15.9)	8.2 (0.0 – 18.4)	4.8 (0.0 – 1.0)	30.6 (17.3 – 44.0)
	Male	10.4 (0.5 – 15.8)	27.1 (19.9 – 34.2)	34.3 (24.7 – 44.0)	57.0 (44.7 – 69.3)
Cannabis	**Female**	3.5 (0.7 – 7.8)	No observations	1.2 (0.0 – 3.7)	3.3 (0.0 – 7.1)
	Male	8.1 (3.4 – 12.8)	17.0 (12.8 – 21.3)	18.1 (8.1 – 28.3)	44.5 (33.0 – 56.1)
Glue	**Female**	3.1 (0.5 – 5.6)	No observations	1.2 (0.0 – 3.1)	0.7 (0.0 – 2.2)
	Male	3.8 (0.0 – 8.1)	15.2 (10.2 – 20.2)	13.6 (0.98 – 26.2)	14.7 (10.1 – 19.3)
Nyaope	**Female**	1.7 (0.0 – 5.7)	1.9 (0.0 – 5.2)	no observations	0.7 (0.0 – 2.1)
	Male	6.2 (0.0 – 12.9)	6.4 (0.2 – 12.5)	4.1 (0.0 – 10.0)	2.4 (0 – 5.1)
Heroine	**Female**	1.0 (0.0 – 2.8)	No observations	no observations	0.8 (0.0 – 2.3)
	Male	1.9 (0.0 – 4.7)	4.5 (1.0 – 8.0)	no observations	0.9 (0.0 – 2.5)
Cocaine	**Female**	2.0 (0.0 – 4.0)	no observations	no observations	no observations
	Male	1.9 (0.0 – 4.8)	2.3 (0.0 – 6.1)	no observations	0.9 (0.0 – 2.6)
Mandrax	**Female**	1.0 (0.0 – 2.9)	no observations	no observations	no observations
	Male	1.9 (0.0 – 4.7)	no observations	no observations	no observations

Tik	**Female**	3.1 (0.39 – 5.8)	no observations	no observations	No observations
	Male	0.9 (0.0 – 3.1)	2.3 (0.0 – 6.1)	no observations	no observations
LSD	**Female**	1.0 (0.0 – 2.9)	no observations	no observations	no observations
	Male	1.0 (0.0 – 3.1)	2.3 (0.0 – 6.4)	1.1 (0.0 – 3.5)	no observations

APPENDIX 6
ROC curves – alcohol use

ROC curve for final logistic regression model for lifetime alcohol use
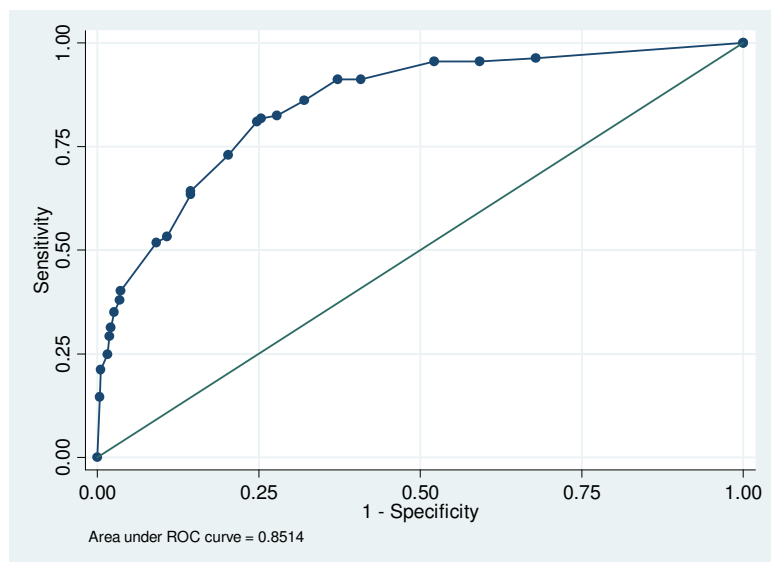
Area under ROC curve = 0.8881

ROC curve for final logistic regression model for past month alcohol use.

Area under ROC curve = 0.8514

ROC curve for final logistic regression model for past month binge drinking

Area under ROC curve = 0.8776
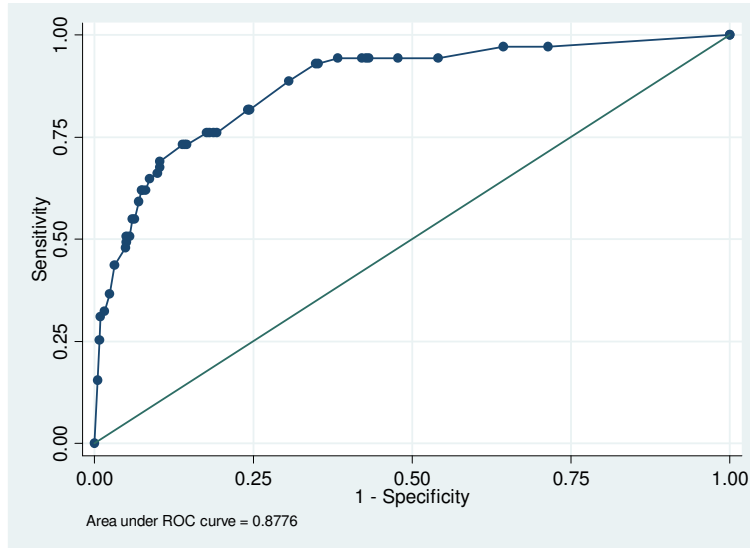
APPENDIX 7.
ROC curves – cannabis use

ROC curve for final logistic regression model for lifetime cannabis use
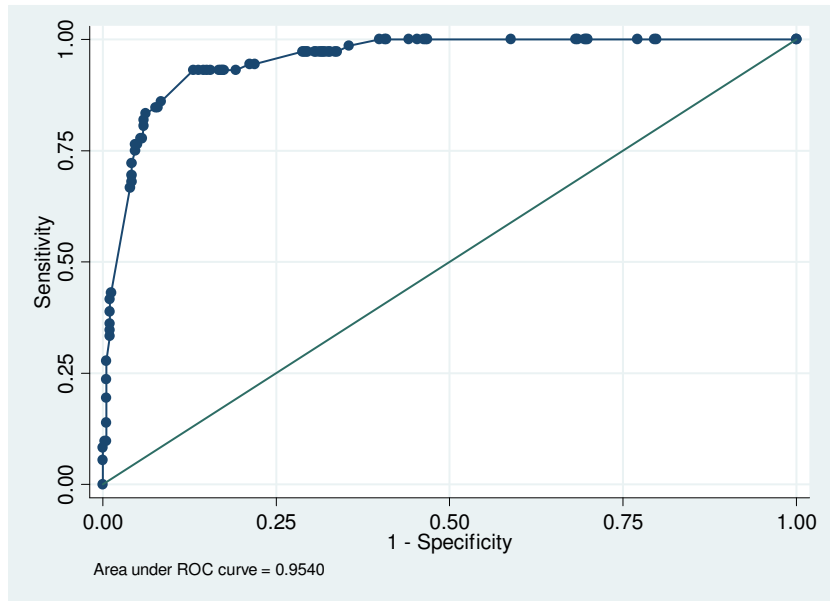
Area under ROC curve = 0.9540

ROC curve for final logistic regression model for past month cannabis use

Area under ROC curve = 0.9423
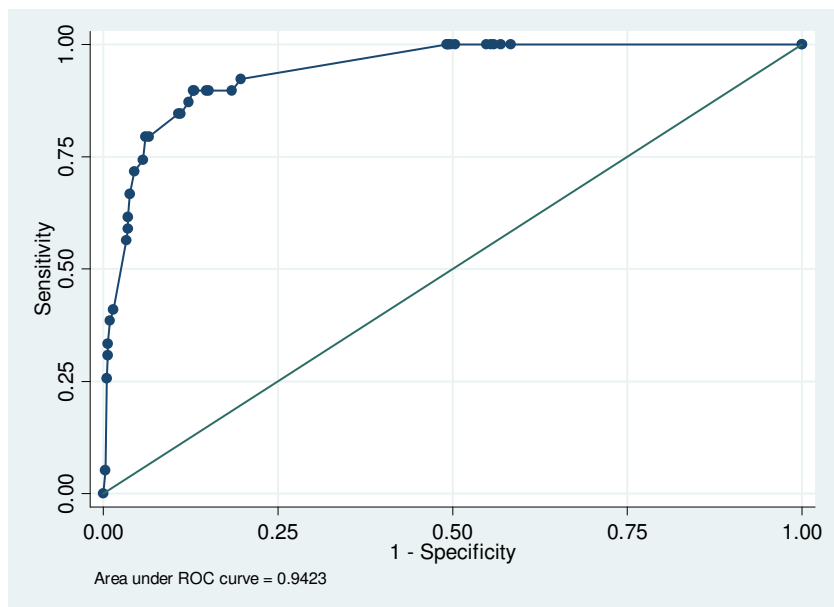
APPENDIX 8

Results of life orientation teacher survey

Table 27. Teacher perceptions of learners substance use at their respective schools

School	Teacher	Perception of drug and alcohol problem at their school	Percentage of learners they believe are using drugs	Substance most responsible for problem at their school
A	1	minor problem	21% - 40%	Nyaope
	2	moderate problem	6 – 20%	Cannabis
B	1	serious problem	21 – 40%	Nyaope
	2	very serious problem	more than 60%	Nyaope
	3	very serious problem	21 – 40%	-
	4	moderate problem	6 – 20%	Cannabis
C	1	minor problem	6 – 20%	Cannabis
D	1	moderate problem	21 – 40%	Alcohol
E	1	No problem	0 – 5%	Cigarettes
F	1	very serious problem	21 – 40%	Nyaope
	2	serious problem	41 – 60%	Nyaope
G	1	moderate problem	21 – 40%	Cannabis
	2	serious problem	41 – 60%	Nyaope
	3	minor problem	0 – 5 %	cannabis
H	1	moderate problem	6 – 20%	-
	2	moderate problem	6-20%	Cannabis
	3	moderate problem	21 – 40%	Cannabis
	4	moderate problem	41 – 60%	Cannabis
I	-	-	-	-

Table 28. Teacher responses to questions regarding the Life Orientation syllabus, their knowledge and training

School	Teacher	Do you believe that the life orientation syllabus contains sufficient factual information for learners on drugs and alcohol?	Do you believe that the life orientation syllabus contains sufficient life skills training for learners that may help prevent substance use?	Do you believe you possess sufficient factual knowledge to teach learners about alcohol and drugs?	Have you had any training on the teaching of life skills?
A	1	Yes	Yes	No	Yes
	2	Yes	Yes	No	No
B	1	No	Yes	Yes	No
	2	No	No	No	Yes
	3	-	Yes	No	Yes
	4	Yes	No	Yes	No
C	1	Yes	Yes	Yes	Yes
D	1	Yes	Yes	Yes	Yes
E	1	No	No	No	Yes
F	1	No	No	No	Yes
	2	No	No	No	Yes
G	1	Yes	Yes	No	Yes
	2	No	No	Yes	Yes
	3	No	No	Yes	Yes
H	1	Yes	Yes	Yes	Yes
	2	Yes	Yes	Yes	Yes
	3	No	No	Yes	Yes
	4	No	No	Yes	Yes
I	-	-	-	-	-

Table 29. Teacher responses to questions regarding resources and interventions at their school to address substance use

School	Teacher	Are there guidelines available at your school for dealing with substance use amongst learners?	Do you believe your school has sufficient resources to deal with substance use amongst learners?	What interventions have been implemented at your school to deal with substance use amongst learners?	What additional resources and interventions do you think are necessary to deal with substance use amongst learners at your school?
A	1	Yes	No	None	Learning support from the dept. Workshops.
	2	Yes	No	Rehabilitation	Training centre. Specialists in teaching learners about drugs. Lectures on drug.
B	1	No	No	One day visits by NGO's	Specialists in rehab, support and prevention. Proper networks with the correct resources and facilities.
	2	Yes	No	Lessons. Talks by NGO's	Networking
	3	No	No	Referral to local doctors and police. Life skills training in Life Orientation classes	Local intervention programmes. Inexpensive or free rehab centres.
	4	No	No	None	Specialists in substance abuse. Visits by AA. Programmes for learners.
C	1	Yes	Yes	Parents informed, learners counselled. Police invited.	Talks by former users.
D	1	Yes	Yes	Random searches by police	Regular searches by the police.
E	1	Yes	No	Peer counselling	Partnerships with rehab centres and NGO's. Visits by professionals dealing with substance use. More peer counselling.
F	1	Yes	No	Talks by NGOs and health services.	Workshops for educators to enable identification, assistance and referral of learners

	2	No	Yes	-	-
G	1	Yes	No	Life Orientation lessons	Counsellors, psychologists, welfare officials, community representatives, Police involvement e.g. adopt a cop. Information booklets for all the learners. Youth action groups to address the learners.
	2	Yes	No	-	Good communication between the police and community. More workshops. More books and audiovisual material on the subject for learners.
	3	No	No	Visits by NGO's SAPS and religious groups.	Literature. Peer support. More intervention from external sources.
H	1	No	No	Visits by social workers, police and NGO's.	Sports equipment. Peer counselling.
	2	No	No	School based support team. Visits by police. Police doing random searches.	Psychologists. Regular visits by health workers. Training of educators. Involving parents in relevant committees.
	3	No	No	Drug awareness campaigns. Visits by police. Drug searches.	More workshops for educators as well as those learners who are peer supporters. Well trained counsellors.
	4	No	No	Drug searches by police.	Professional school counsellor. More books, posters, charts, handouts and audiovisual material on the subject. Regular drug searches. Free rehabilitation and counselling.
I	-	-	-	-	-