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Review Paper

The Causes and Challenges of Students' Drug Abuse in Higher Learning Institutions: a Comprehensive Review of Related Literature

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Abstract

A number of studies have been carried out on the causes, prevalence and challenges of drug abuse by college and/or university students. However, little literature has been attempted to comprehensively indicate the challenges of drug abuse among university students, strategies utilized to overcome the challenges and implications of the challenges for integrated prevention and intervention approaches. Thus, the objective of this comprehensive review of the literature was to assess and organize the literature on the causes, challenges of substance abuse among university students, develop guidelines and seek out alternative solutions that have implications for Adama Science and Technology University (ASTU) and beyond. The literature has been organized on the prevalence and challenges of drug abuse among college/university students' worldwide and specifically Ethiopian universities. Some criteria were set to review the most relevant local and international studies that are rigorous in design, adequate sample size, relevant sample selection procedures and those which have utilized data gathering instruments with high validity and reliability. The findings from the literature indicated that there is a high prevalence of drug abuse among university students worldwide and in Ethiopia. The problem is attributed to economic, social, psychological and health factors that demand integrated prevention and intervention approaches.

Keywords: - *Prevalence, drug abuse, university, students.*

1. Introduction

A number of surveys on substance use indicated that it has become a global phenomenon (Zaman et al., 2015). Globally, it is estimated that in 2012, between 162 million and 324 million people, corresponding to between 3.5 per cent and 7.0 per cent of the world population aged 15-64, had used an illicit drug — mainly a substance belonging to the cannabis, opioid, cocaine or amphetamine-type stimulants group — at least once in the previous year. Teka (2017) also highlighted that 243 million people which is about 5.2% of the world population abused illicit drugs in 2013 and 10% were problem drug abusers (UNDP, 2015). According to World Drug Report (2017) by United Nations Office on Drugs and Crime in the years 2006-2015 for world population aged 15-64, it was estimated that 208 million (4.9%) people were drug users out of which 26 million (0.6%) people had drug user disorders. This rose to 255 million (5.3%) drug users in 2015 out of which 29.5 million (0.6%) had drug user disorders which resulted in 5.4% burden of disease most of which caused life loss (Zaman et al., 2015). Society for the Study of Addiction (2018) also identified that in 2015, globally, the estimated prevalence among the adult population was 18.4% for heavy episodic alcohol use; 15.2% for daily tobacco smoking; and 3.8, 0.77, 0.37 and 0.35% for past-year cannabis, amphetamine, opioid and cocaine use, respectively. In 2016, it is estimated that globally, around 164 million people had an alcohol or drug use disorder. The global burden of disease attributable to alcohol and illicit drug accounts for 5.4%

of the total burden of disease. Another 3.7% of the global burden of disease is attributable to tobacco use.

According to United Nations Office on Drugs and Crime (2014) drug abuse continues to cause a significant toll, with valuable human lives and productive years of many persons being lost. It is associated with loss of about 20 million people globally, and alcohol contributes to a loss of another 17.6 million (Teka, 2017). Moreover, smoking causes around 5 million annual deaths worldwide.

About 250,000 worldwide die due to the use of illicit drugs, 2.5 million die from alcohol-related causes and 5.1 million due to tobacco (UNODC, 2011; Zanetti et al., 2012). Gezahegn et al. (2014) pointed out that the use of substances such as alcohol, khat, and tobacco has become one of the rising major public health and socioeconomic problems worldwide.

Students make up a substantial population of drug users and are known to use illicit substances as aid in academic efficiency, to cope with their difficult circumstances, for recreation, and to add excitement (Zaman et al. 2015). Alcohol consumption and the use of substances like heroin, marijuana and cannabis is dramatically increasing among university students both in developing and developed countries (Al'Absi et al., 2013). For instance, the prevalence of alcohol abuse is 46-62%, and the prevalence of cannabis abuse is 17-32% in Canadian students (Young et al, 2011). About 20% of university students in United State of America (USA) consume alcohol mixed energy drinks and abuse marijuana, ecstasy, and cocaine regularly (Snipes & Benotsch, 2013), and 20% of Russian university students abuse drugs that are not prescribed by doctors (Tsvetkova & Antonova, 2013).

Africa now occupies second position worldwide in the trafficking and consumption of illegal drugs (Ndinda, 2013). According to United Nation (UN) statistics 37,000 people in Africa die annually from diseases associated with the consumption of illegal drugs. The UN estimates there are 28 million drug users in Africa, the figure for the United States and Canada is 32 million. The abuse of drugs in Africa is escalating rapidly from cannabis abuse to the more dangerous drugs and from limited groups of drug users to a wider range of people abusing drugs (Asuni & Pela, 1986). The most common and available drug of abuse is still cannabis, which is known to be a contributing factor to the occurrence of a schizophrenic-like psychosis. The trafficking in and abuse of cocaine and heroin are the most recent developments in some African countries that had had no previous experience with these drugs. Expressing the situation in Africa, Gezahegn et al. (2014) also pointed out that the rapid economic, social, and cultural transitions that most countries in Sub-Saharan Africa are experiencing have created a favorable condition for increased and socially disruptive use of drugs and alcohol. They further argue that substance misuse is a growing problem in Ethiopia, as in many developing countries. Alcohol and khat are the most frequent substances of abuse in Ethiopia. Substance abuse among Ethiopian university students is also a major problem. For example, the prevalence of substance abuse among undergraduate students at Axum University was 44.8% (Gebreslassie et al., 2013). It was also reported that there were 53.6% lifetime prevalence of substance abuse among students at Hawassa University (Kassa et al., 2014) while 24.6% of students at Bahir Dar University were khat chewers (Mulu et al., 2014), and 31% prevalence of lifetime alcohol abuse among medical students at Addis Ababa University (Deressa & Azazh, 2011). It was further observed that drinking alcohol, smoking cigarette, and chewing khat are extremely high among students at Hawassa University (Kassa & Deyno, 2014).

Substance abuse by university students result in high-risk behavior and have both economic and intellectual loss. Economically, unrest and consequently wide ranging destruction of life and property is common among drug abusing individuals (Ongwae, 2016). A study by Bennett and Holloway (2018) on the approximate prevalence of drug and alcohol-related crime among university students in seven universities in the United Kingdom (N= 7,855) showed that 10% of students who used drugs and about the same percentage who used alcohol had committed substance-related crimes. Drug abuse also results in financial deficit which is a global estimated turnover of $332 billion annually (CDA, 2013). Intellectually, drug abuse results in lack of morals and deteriorating learning standards. Continued use of drugs also reduces the ability to think logically and act rationally.

It has also health risks such as physical and personality deterioration, psychiatric problems, unsafe and early risky sexual practices, intellectual impairment, and a great threat to social, political, and security affairs of a society (McCabe & Teter, 2007). For instance, six percent of students at Hawassa University reported that they have been engaged in unprotected sex following substance abuse (Kassa et al., 2014), 8.2% of Jigjiga University students' respondents were drunk and 10.9% chewed khat during their last sexual engagement (Mavhandu-Mudzusi & Asgedom, 2016).

According to Martha (2016) recalcitrant of behavior of students, laissez faire attitudes of modern students, non-observance of rules and regulations of the university by the students and lack of skills and knowledge on how to protect themselves from drug abuse have made the problem more escalating. This entails the fact that students need appropriate personal and social skills to protect themselves against drug abuse and to achieve optimum benefits from the educational program. With this regard, no one can underestimate the role of integrated prevention and intervention approaches to curb the problem of drug addiction in the higher learning institutions.

In spite of the efforts made in provision of policies, rules and regulations, undertaking research projects, providing alternative solutions, and designing strategies to prevent substance abuse, its prevalence is still rising. Thus, academic institutions are responsible to prepare citizens on how to fight the current hurdles of drug abuse and overcome tomorrow's challenges. In their responsibility, universities are expected to prepare students to guard themselves from engaging in any undesirable behavior and activities that spoil their academic activities. In this regard, a number of studies have shown that drug abuse among students disrupt the success of education system as students encounter different personal/psychological, academic and socio-economic problems and/or maladjustment, which directly or indirectly affect the quality of their education. Nevertheless, the challenges of drug abuse and comprehensive intervention or prevention alternatives to be considered in Ethiopian universities have not been well described in prior studies and documents. Therefore, this comprehensive review of literature is intended to explore research findings related to university students' drug abuse, causes, challenges and risk factors associated with drug abuse, extract useful guidelines from the reviewed literature and offer solutions in overcoming the hurdles of drug abuse that have implications for ASTU.

2. Methods and Materials

International and national electronic documents were reviewed to design some integrated approaches and develop guidelines to mitigate the burden of substance abuse among university students in Ethiopia in general and Adama Science and Technology University in particular. While searching for relevant literature, the reviewer mainly used databases in Google scholar, Google search engine, and websites of different organizations. In searching for relevant literature, the following inclusion criteria were used:

1) Studies published from the year 2003 to 2018 in the electronic databases;
2) Studies published in English;
3) Studies that present the prevalence of substance abuse among university students;
4) Studies that present the consequences of substance abuse;
5) Studies and documents that present strategies and intervention options to mitigate the problem of drug abuse among university students;
6) Studies that directly or indirectly reflect the realities of drug abuse in Ethiopian universities; and
7) Studies that have standard authority, accuracy, and objectivity.

Rigorousness of the studies' design, the validity and reliability of instruments used, the sample size, and the sample selection procedures were also taken into account in the selection of the literature. Though the literature includes studies from 2003 to 2018, to provide a historical link to earlier work, a few literature published prior to 2003 was reviewed to provide background information on earlier findings. Accordingly, 62 research works and international documents were reviewed.

The meta-theoretical ground for this review of comprehensive literature is the Social Ecological Model which was developed in 1988 by McLeroy, Bibeau, Steckler, and Glanz based on Urie Brofenbrenner's

Multilevel Framework (Golden & Earp, 2012). According to this model, behavior is affected by multiple levels of influence including intrapersonal, interpersonal, institutional, community, and societal factors. Consequently, intervention mechanisms need to be multi-levels and integrative so as to consider multiple factors.

The cognitive model including knowledge of the consequence was also used as a theoretical framework. The cognitive model focuses primarily on influences of patient's own beliefs. The most important aspect of this model is the cognition or mental process which relates to perception, judgment and reasoning. It means finding out what core beliefs (conscious or unconscious) are allowing the addiction behavior to emerge. The cognitive model considers whether the person feels stress and believes the addictive behavior is a good solution. The former model focuses on the multiplicity of factors affecting drug abuse and the latter model focuses on the beliefs of the individual about the effect of drug abuse.

3. A review of the literature in global and Ethiopian context

Universities are crucial elements in producing a competent and a good citizen, and improving students' achievement through the provision of a quality education. Universities are also expected to provide supportive environment and protect their students from behaviors that interfere with their academic, career, personal as well as social development. However, this does not mean studying at university is free from experiencing different problems. Some of the problems experienced by university students are associated with transition from high school to university life, academic demands, personal relationships and drug use due to different reasons. Therefore, in the following sections, types of drugs commonly abused, empirical studies and experiences of different universities regarding the prevalence of drug abuse, challenges and options as intervention mechanisms were discussed.

3.1. Types of drugs most commonly abused and associated risk factors

Despite the availability of rules and regulations that protect holding and using drugs, it has been documented that the prevalence of drug abuse is increasing among university students. Although surveys have indicated high rate of misuse of illicit and prescription drugs among college students (Zaman et al., 2015), the most commonly abused drugs include stimulants, opioids, benzodiazepines, antihistamines and LSD. Alcohol, marijuana, amphetamine, MDMA, barbiturates, cocaine, mathaqualone, psychotherapeutics, hallucinogens, ecstasy, methamphetamine, inhalants, heroin, and prescription-type pain relievers, tranquilizers, , and sedatives used for non-medical purposes are also commonly abused drugs. Meseret et al. (2018) reported that the most commonly used substances in Ethiopia are cigarettes, khat, cannabis, cocaine, and alcohol. Marijuana is usually a gateway drug to other illicit drugs (Repp & Raich, 2014). Cannabis is also reportedly a common drug used by university students that usually results in substantially high prevalence of dependence and mental disorders requiring treatment next to alcohol-related disorders. Cannabis is a common drug of choice for university students due to its perceived easy availability, coupled with perceptions of a low risk of harm. Club drugs such as ecstasy, methamphetamine, cocaine, ketamine, LSD and GHB are used in high-income countries. Low price inhalants such as paint thinner, petrol, paint, correction fluid and glue that rapidly induce a sense of euphoria are commonly used in low income countries by young people living on the street.

Teka (2017), National Institute on Drug Abuse (2003), and Bennett and Holloway (2014) revealed that factors at individual, interpersonal, institutional, community and societal levels affect substance abuse among university students. Factors at individual level include having a family history of drug abuse, which may genetically predispose a person to drug abuse, curiosity (thirst for adventure), early experience with alcohol and drug use during adolescence–while the brain is still developing, personality characteristics such as conscientiousness and agreeableness, high level of emotional liability and impulsivity. The need to stay awake, suicidal tendencies, and mental illness, depression, anxiety, lack of self-control, and perceived low risk of drug use are the other contributing factors. Furthermore, the attitude that substance use increase concentration, self-confidence, creativity, imagination

and enhances academic performance at individual level are contributing factors to drug abuse.

The interpersonal factors involve freedom from adults' close supervision as university life liberates many university students from their parental control, making new friends, peer pressure, and lack of social disapproval (at least by their close friends). Early initiation of drug abuse and family background such as lack of mutual attachment and nurturing, ineffective parenting, a chaotic home environment and a caregiver who abuses substances also contribute to university students' drug abuse (National Institute on Drug Abuse, 2003).

Institutional related driving forces in drug abuse are transition from high school to university life and lack of proper information and orientation during their first arrival at university, inability to obtain departments of their choice, psychological stressors related to the demand to adapt to new environment, and educational challenges/academic dissatisfaction and lower educational attainment. The other institutional factors that place university students at a greater risk of substance abuse are lack of entertainment facilities, loopholes in the policies, guidelines, rules and regulations, puny control system, looseness of penalty for drug use, lack of devotion among scholars and administrators, and the availability of drugs around university premises.

Community and societal levels causes are norms and public policies at regional and federal levels, early use of drugs for healing purpose and religious ceremonies and the use of socially approved drugs (nicotine and caffeine) give way to high prevalence and mass addiction due to erosion of traditional theoretical boundaries which also affect the beliefs, value systems and perception towards use of drugs.

Zaman et al. (2015) provided a detailed account of the epidemiology of drug addiction including cultural values, beliefs, and attitudes to drug use. Zaman and his colleagues also pointed out that there are a number of biological, psychological, and social factors, called risk factors that can increase a person's likelihood of developing drug dependency disorder. These risk factors are eventually discussed.

3.1.1. Biological risk factors

Biological factors related to drug consumption include gender, genetic, neurological, and pharmacological components (Zanetti et al., 2012). An individual's sex continues to be a biological predisposing factor with respect to drug abuse and can be compounded by additional individual differences such as reactivity to novelty and impulsivity (Cummings et al., 2011). From a neurological perspective, the immature brains of adolescents can reveal why they engage in risky behaviors. At the same time, they have cognitive constraints including damaged decision-making ability, weak analytical ability, psychological barriers, or weak emotional control and expression.

From the pharmacological perspective, adolescent drug users are seen as having bodies that are malfunctioning with regard to the production of crucial neurotransmitters, so drugs are used as a form of self-medication and as a way of coping. The interaction between the pharmacological properties and the physical effects of the drugs habituates the adolescent drug user's central nervous system to the drug via a neurotransmitter malfunction, which then reinforces the desire to use the drug (Lee, 2011).

With regard to genetic predisposition, research has demonstrated that genetic makeup is a major factor in vulnerability to drug abuse (Volkow & Muenke, 2012). While drug abuse is the result of a complex interplay of biochemical, psychological, social and environmental factors, and genetic variance also plays an important role in the susceptibility of adolescents' drug use and abuse. It is also claimed that the more severe the abuse, the greater the role of genetic factors.

3.1.2. Psychological risk factors

According to Zanetti et al. (2012), the psychological factors associated with drug consumption are related to three principal areas: cognitive, behavioral and emotional.

Cognitive related factors include impairment in motivation, attention, memory, decision making and problem solving ability. The negative reinforcement model of drug addiction proposed that the escape and avoidance of negative affects is the principal motive for addictive drug use (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). The process of drug addiction is related

to the natural processes of reward, learning and memory, and their basis is in different neurotransmitter systems (dopamine and glutamate) (Kelley, 2004). Many drugs present principal effects on these pathways and are able to induce alterations in motivational network and thereby produce maladaptive behaviors. Relapse, recovery, and forgetfulness can be explained also as effects of drug use (Goldstein & Volkow, 2002).

Behavior related factors include aggressive and violent behavior, and mood swing. Bechara and Eileen (2004) found a relationship between impairments in working memory and decision-making. Impaired decision-making and/or inhibitory control process may explain the continuous risk behaviors common among drug users (Bechara & Martin, 2004).

Emotion related factors that are associated with drug use comprise personality aspects such as anxiety, depression, paranoia, panic, mania, difficulty in identifying feelings, and external oriented thought.

3.1.3. Social and environmental risk factors

The social factors include family, children, friends, and other social relationships as well as health, environmental, religion and legal factors. There are instances when family may contribute to negative behaviors based on the nature of parenting, involvement in drug use, and other negative behaviors (Zanetti et al., 2012). Dube (2007) stressed the importance of peers. He argues that peer group pressure is one of the major factors contributing to drug abuse particularly among the youth who may seek acceptance from peers.

Environmentally, adolescents who are reared in communities with high levels of drug use and other negative behaviors tend to become drug users, and adopt and exhibit negative behaviors. Lack of access to education, high levels of unemployment and overcrowding, poverty as well as lack of economic opportunities can also contribute to negative behaviors such as drug use (WHO, 2003a).

Religious and spiritual beliefs based on faith and trust in God or a greater spiritual being tends to support development of inner strength and the development of a sense of meaning and purpose to life, thus providing an informal means of social control and reducing the likelihood of drug use among the youth (Gordon, 2004). Involvement in religious or spiritual factors could play a protective role for the adolescent (WHO, 2003b).

3.2. Higher learning institutions and drug abuse

The problem of drug addiction now becomes a major problem in Ethiopia. The most commonly used substances were alcohol, cigarettes, khat and cannabis which frequently lead to addiction (Kebede & Abula, 2005). This addiction tradition is often associated with the over growth of night clubs, bars and multiple sexual partnerships in Ethiopia (Kebede et al., 2005; Seme, Haile Mariam & Worku, 2005; Regasa & Kedir, 2011). University students are also vulnerable to involvement in both licit and illicit drugs as it is probable that youth culture will continue to play a key role in shaping drug use behavior (UNODC, 2011). For instance, from a survey (1975-2016) Schulenberg, Johnston, O'Malley, Bachman, Miech, and Patrick (2017) identified that the annual prevalence of using any illicit drugs by US college students was 43%.

Larimer, Kilmer and Lee (2005) noted that although alcohol is the primary drug of choice among college students, particularly those of traditional college age (i.e., 18 to 25 years); over half of all college students and young adults have tried an illicit drug at least once in their lifetime. Experimentation with substance use increases during this period, particularly for those enrolled full time in college. About 28% to 34% of college students and young adults (19 to 28 years old) have used an illicit drug other than marijuana at least once in their lifetime. In several studies, 28% to 34% of students reported using marijuana and 13% to 18% used illicit drugs other than marijuana.

In the study made by Palmer et al. (2012) on college students, it was found that marijuana was the most prevalent illicit drug (89%) and pain medication was the most commonly misused (22%). Approximately half (45%) of the sample reported lifetime use/misuse of only one substance, 19% reported two, 10% reported three, 8% reported four, 6% reported five, and 11% reported six or more different substances where male students abused substance more than female students. Similarly, a study made by Takahashi and Arakida (2016) on Japanese university students shows that 8.4% reported having friends who have used drugs and 2.3% have been invited to use drugs. They also identified that 36.8% of the students reported drugs are easily available. They further identified that 15.1% of the students have smoked cigarettes before starting college,

and 14.6% had been to a club or rave after being enrolled in college.

Skidmore, Kaufman, and Crowell (2016) also identified that college students experience unique challenges, which make them prone to use of alcohol, marijuana, and nonmedical use of prescription drugs. They reported that approximately 26% of male and 19.2% of female full-time college students use illicit drugs. Although alcohol is the most commonly used substance (contributor to morbidity and mortality) among college students, a variety of other drugs are also used during this developmental period. A study by Çakici et al. (2014) on university students in Turkish Republic of Northern Cyprus (TRNC) highlighted the lifetime use of cigarette was 69.5% (male students (73.3%) smoke more than female students (64.0%), use of alcoholic beverage was 81.0%, OPD use was 15.6% and use of any illicit drugs was 10.9%. Similarly, Webb et al. (1996) verified that alcohol and illicit drug use has been noted among ten UK university students. Binge drinking was declared by 28% of drinkers. 60% of the men and 55% of the women reported having used cannabis once or twice and 20% of the sample reported regular cannabis use. Experience with other illicit drugs was reported by 33% of the sample, most commonly LSD (lysergic acid diethylamide), amphetamines, Ecstasy (methylenedioxy, methamphetamine), and amyl/butyl nitrate which had each been used by 13-18% of students. 34% of these had used several drugs. Drug use had started at school in 46% of the sample; 13% began after entering university.

In a study by Nižić et al. (2013) on the prevalence of substance use among first-year students (N=420) from six faculties at the University of Mostar, Bosnia and Herzegovina, it was found that the most frequently used substance among students is alcohol; cigarettes are in second place and marijuana (as the only drug with significant frequency of consumption) in third. A study by Adibelli and Olgun (2016) was conducted on 238 nursing students related to drug abuse detected that 16.4% of the students smoked, 11.3% of them used alcohol, 2.5% of them had tried drug before. It is understood that although the students have positive attitudes about drug abuse, they do not have enough information.

For many years, five classes of illicitly used drugs are marijuana, amphetamines, cocaine, LSD, and inhalants. These drugs had an impact on appreciable proportions of young Americans in their late teens and 20s. Among college students in 2016, the annual prevalence level was 39.3% (Schulenberg et al., 2017).

A document on Substance Abuse and Mental Health Services Administration (2014) indicated that among full-time college students aged 18 to 22 in 2013, the rate of illicit drug use was 9.4 % for Asians, 19.7% for blacks, 21.5% for Hispanics, and 25.1% for whites. It was also indicated that 59.4% were current drinkers, 39% were binge drinkers, and 12.7% were heavy drinkers. In the same year, the illicit drugs used initiated among persons aged 12 or older were marijuana (2.4 million), nonmedical use of pain relievers (1.5 million), nonmedical use of tranquilizers (1.2 million), Ecstasy (0.8 million), stimulants, cocaine, and inhalants (0.6 million each) in declining order.

Sarkar, Roy and Singh (2018) illustrated that substance use is more common during college days due to academic pressure, peer group effects, popularity and easy access to common substances. This was supposed to be more common in hostels. The use of tobacco product was found to be 66% for government engineering college students and 22% for private engineering college students. The use of alcoholic beverage was 72% for government engineering college students and 26% for private engineering college students. The use of cannabis was 46% and 14% for students of government and private engineering college students respectively. In USA, it was found that alcohol, followed by marijuana, causes the greatest harm (Ross, Virginia & DeJong, 2009).

Yi et al. (2017) study on illicit drug use among university students in the Association of Southeast Asian Nations (ASEAN) elucidated that of 7,923 students, the overall prevalence of frequent (≥10 times) and infrequent (1–9 times) and ever (at least once) illicit drug use was 2.2%, 14.7%, and 16.9% respectively. Compared to those living with parents/guardians, students living away from parents/guardians were significantly less likely to be frequent (≥10 times vs. never) and infrequent users. This study also identified that the protective factors include older age, higher level of religiosity, and living with parents.

From quasi-experimental study baseline survey involving 473 first year undergraduate students from two public universities in the coastal region of Kenya, Mbuthia et al. (2017) have found high prevalence of substance use, with alcohol being the most commonly used substance at both baseline and end-line surveys. Despite the intervention being made in one university, the prevalence of drug use increased from 38.9% to 48.9% in the control university and 31.3 % to 55.2% in the intervention university. Ongwae (2016) also noted that in Kenya some of the commonly abused substances include tobacco, miraa (khat), bhang, alcohol, cocaine, mandrax and heroine.

3.3. The problem of drug abuse in Ethiopian universities

A study by Gezahegn et al. (2014) titled: Substance Use and Associated Factors among University Students in Ethiopia revealed that of the young segment of the Ethiopian population, college and university students are at the highest risk of substance use. Substance use among Ethiopian (Haramaya University in focus, N=1023) adolescents is considerably rising. About two-thirds (62.4%) of the participants used at least one substance. The most commonly used substance was alcohol (50.2%). The odds of substance use behavior are higher among third year students. Joining university often leads to new opportunities, independence from family control, self-decision making, and peer-pressures to use or abuse alcohol or other drugs. Out of those who have used drug at least once in their life time, the majority of them started before joining university and the rest after joining university. Different reasons were mentioned by students for the use of drugs. The reasons mentioned for drug abuse by the respondents were to increase academic performance, get personal pleasure, and get relief from tension and to stay awake. The other reasons were due to peer influence, academic dissatisfaction, to get acceptance by others, to be sociable, to increase pleasure during sex, and due to religious practice. Being a follower of Muslim and Protestant religions was shown to be protective of substance use. Married and depressed students were more likely to use substances than others.

The same study identified in Axum University a lifetime prevalence of khat chewing (28.7%), alcohol drinking (34.5%), and cigarette smoking (9.5%). A study in Debre Markos found a lifetime prevalence of substance used to be 14.1%. A study done among college students in Gonder University revealed a lifetime prevalence of 13.1% for cigarette smoking and 26.7% for khat chewing. Moreover, a study in Addis Ababa University showed that 31.4% of students' ever drunk alcohol, 14.1% ever chewed khat, and 8.7% ever smoked cigarette. Similarly, a study in Jimma University showed prevalence of khat chewing, cigarette smoking, and alcohol intake to be 33.1%, 21.3%, and 36.4% respectively. Regarding the pattern of drinking, 135 (66.2%) drink sometimes and 69 (33.8%) drink always. Among the current smokers, 107 (81.1%) smoke sometimes and the rest 25 (18.9%) smoke always. Regarding the frequency of using illicit drugs, from those who use illicit drugs 79 (44.4%) use sometimes and 15 (55.6%) use always.

Likewise, according to Ephrem et al. (2018) the life time, in the last 12 months and current prevalence of substance use among Medical Interns of Jimma University students was 48.4%, 47.8%, and 43.0% respectively. The major reasons reported were to get personal pleasure, peer pressure and to get relief from tension. Ethnicity, religion and having friends who use substance/s were significantly associated with the current use of substance/s. Likewise, residence, ethnicity, having friends who use substance/s and coming from an area where substance/s is/are commonly used were significantly associated with the lifetime use of substances. Early exposure to substances often predicts future substance use, abuse and dependence with its medical, psycho-social and economic consequences. From Ethiopian Demographic and Health Survey (EDHS) (2011), Ephrem et al. (2018) also identified that the prevalence of alcohol use among men and women was 53% and 45% respectively, and that 11% of women and 28% of men ever chewed khat.

A study conducted by Meseret et al. (2018) on the prevalence, trends, and consequences of substance use among students of four universities (N=1156), namely, Bahir Dar, Mekelle, Jimma, and Arba Minch universities discerned that on the average 70% of respondents were users of tobacco, 79% were khat users, and 99% were alcoholic beverage users. The mean plots indicated that Bahir Dar University students

are the most affected followed by Jimma University students. This might be due to the availability of chat in these areas. It is found that there was a statistically significant difference across college, choice of department, and year of the study among students in their experience of substance abuse prevalence, frequency, trend, and consequence. Those students belonged to the college of social science are the most affected followed by those belonged to the college of business and economics. Those students joined their department with their last choice are also at the most risk and also the mean plots indicated that fourth-year and above students are the most vulnerable.

The same study revealed that there was a strong, negative correlation between the prevalence and duty accomplishment, with high levels of substance intake associated with lower levels of duty accomplishment. There was also a negative correlation between the prevalence and academic records, with high levels of substance intake associated with lower levels of academic records. Unemployment, lack of social support from families, and the puny drug control system that presently exists in the country have been taken as the main factors that predispose individuals to become substance abuser, whereas lack of curriculum, the looseness of penalty for drug use, lack of devoted scholars, the presence of model scholars for drug abusing, and lack of awareness about the impact of substance use are the contributing factors.

4. Essential criteria of relevance to mitigate the burden of substance abuse among university students

The following are essential criteria/guideline that have been extracted from the reviewed literatures that might be useful in establishing a relevant model to mitigate the burden of substance abuse among university students in Ethiopia, in general and ASTU, in particular.

1. Orientation towards the principle that no one should choose prevention or protection and treatment approach without careful clients' assessment and adequate information, under the guidance of competent personnel. The following risk and protective factors for substance abuse should be assessed as a prevention program to help decrease unhealthy behavior.
    a. Individual protective factors, such as engagement in positive meaningful activities, positive self-concept, and religious or spiritual beliefs (religiosity) as they inhibit students' substance abuse.
    b. Peer protective factors, such as positive peer role models and life skills trainings to protect them from peer pressure.
    c. Family factors that are found to be protective for students' substance abuse such as family attachment, positive parenting style, living in a two parent family, higher parent education, and higher parental expectations about school and university.
    d. University protective factors including being connected to university or attachment through involvement in different clubs and other university affairs, safe, supportive and caring university climate.
    e. Rewards for prosocial involvement.
2. Keeping in mind the multiplicity of personal and environmental influences, ranging from immediate family and institutions (microsystem) to the wider community (macrosystem) that determine the general psychological makeup of students that directly or indirectly affect whether they abuse drug or not;
3. Bringing into mind the interrelationship between personal factors (genetic predispositions perception, attitude and personality), family factors, institutional factors (policy and academic pressures) and social factors (culture and availability of drug of abuse) in students' drug abuse prevention and treatment;
4. Understanding the psychological, social, economic, health and academic effects of drug abuse;
5. Keeping in mind the flexibility to understand that more than one intervention approach can fit for different students, and also that an individual student may demand a mix of approaches for the same problem;
6. Being developmentally orientated and remembering that protection and treatment of drug abuse are continuous, sometimes require long process, and

that it is the result of a combination of interacting determinants;

7. Providing individuals with a broad survey of options to protect themselves from drug abuse, and not simply slotting them into convenient or accidental decisions;
8. Exposing students to individuals who have experienced the same problems by assisting them in conducting an interview with someone who already solved problems related to drug abuse, or by doing shadow working;
9. Being mindful of the influences of past learning experiences that can influence an individual's levels of confidence, hope and volition to take up certain paths of life when treating drug abuse;
10. Focusing on the process of prevention and treatment, as much as on the outcome, because, in the process, personal growth occurs that might benefit the individual;
11. Having well established drug policy, integrating drug prevention programs into education/ curriculum, allocating budget and establish drug free recreation facilities, rehabilitation centre, guidance and counselling service provided that competent counsellors are assigned, awareness raising programs are in place, students have positive attitude towards the service, university commitment and support are realized, all of which will ultimately contribute to the prevention and treatment of drug abuse.

5. Conclusion

University students are adolescents and young adults who face tremendous pressure and challenges to adjust to the new learning environment. Students who join universities face different challenges. Adapting to the social and the physical environment constitutes one of the main challenges. Adjustment to new peer groups, academic atmosphere, loose family contact, and financial problems are some of the specific challenges. These challenges possibly lead students to personal crisis, mainly emotional disturbance, stress, and other social crisis. These mainly lead to academic failure, drug addiction, social isolation, suicidal attempts and so forth. Along with these problems, the need for educating students with desirable life skills and adaptive behavior is crucial which Universities have to implement. However, the findings from the literature indicated that the implementation of prevention of drug abuse carries several challenges. These challenges include personal, institutional, social, global, policy and policy implementation factors. Increased levels of substance abuse interfere with the development of cognitive, emotional, and social competencies in children and adolescents and may compromise later functioning in important adult domains such as marriage, parenting, and gainful employment. Regarding the alternatives to overcome these challenges, we do have many options to address the needs of students in the universities in relation to drug abuse. These alternatives are discussed below.

6. Alternatives to be followed

Today's college students face a range of drug temptations never envisioned by earlier generations of students. Campus administrators have a responsibility to minimize the temptation and opportunity for drug abuse and to help students navigate the new world they inhabit and an opportunity to guide them toward options for a healthier life. A comprehensive approach grounded in environmental management offers a solution to student drug abuse, thereby helping protect students' health, safety, and educational future. On the basis of the literature reviewed, conclusions made and personal observation, the following recommendations are drawn in the context of Ethiopian universities including ASTU.

1. Offer financial support and promote social, affordable drug-free recreational options that do not include alcohol and other drugs, and extracurricular activities (e.g., anti-substance clubs and peer education program) at the university campus.
2. The Ministry of Education and Ministry of Science and Higher Education need to integrate research based and developmentally oriented drug abuse courses (life skills education) in the curriculum in all education levels from primary to the university targeting resistance to peer pressure, decision making skills, goal setting abilities, stress management techniques, communication skills, social skills, assertive skills, avoiding the misconception that substances such as khat and other drugs could enhance mental capability and the teaching of normal behavior so

that students can make and defend themselves and their sobriety.

3. Students need to know about federal, regional, and local laws and the penalties for various violations.
4. Modifying the students' clinic so that students who are affected by substance abuse disorder can get the right treatment and support that involve assessment, intensive case management, motivational interventions, final treatment, rehabilitation and refer students if treatment resources are unavailable on campus.
5. Restrict marketing of illicit drugs on and off campus with active participation from law enforcement agencies; arrest and prosecute dealers; and take action against local business whose premises are used to sell drugs.
6. As a comprehensive intervention, develop and enforce campus policy and enforce local, regional, and federal laws to respond to specific drugs of abuse as Ethiopia doesn't have strong policy regarding the abuse of substances such as tobacco, khat, and alcohol. Furthermore, the college or university should not be a haven where students think they are immune from the consequences of their actions, and students should be made aware that they will not be protected from legal liability. Added to that the government needs to design an economic policy that can replace the economic and livelihood activities that are dependent on substances such as tobacco, khat, and alcohol. Besides strategies that aim at reducing substance abuse among students should also consider the universities' instructors as a large number of instructors in universities abuse substances buying from the same market where the students buy and some of the instructors sit with students to abuse substances. All parties who aim at reducing substance abuse among university students need to pay attention to the cultural background of the students (e.g., khat consumption in the east and alcohol consumption in the north). There is also a need to consider the influence of the social network (people close to them including family members, peers, and relatives) in substance abuse.

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