A Network Analysis of Substance Consumption Patterns among Students of Public Schools in Mozambique*

Análisis de Redes de los Patrones de Consumo de Sustancias de Estudiantes de Escuelas Públicas de Mozambique

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ABSTRACT

This study aimed to identify the main patterns of alcohol and tobacco consumption among adolescents and its risk factors. Participants were 208 eighth, ninth, and tenth-grade students (65.3% female, 34.7% male) in Maputo, Mozambique, whose ages ranged from 12 to 18 years old (M=14.88; SD=1.29). The study sought to investigate the association between sociodemographic features, academic performance, positive and negative beliefs about drugs, and its consumption patterns among teenagers in Mozambique through network analyses. The results showed high alcohol consumption with early-onset, in the age group ranging from 11 to 13 years old. The frequency of tobacco consumption is related to understanding the positive aspects of smoking, expansiveness, and confidence. The present study contributes to the knowledge of the prevalence of these substances' consumption in the school community. It may be useful to design strategies for prevention and intervention on alcohol and tobacco consumption by adolescents. The key limitations are the sample exclusively from Maputo and the cross-sectional design. Future studies should thus investigate the patterns of licit and illicit drug consumption among teenagers from other places and use a longitudinal design.

Keywords
Alcohol consumption; tobacco consumption; risk and protective factors; risk behavior; adolescence.

RESUMEN

El objetivo del estudio fue identificar patrones de consumo de alcohol y tabaco entre adolescentes y factores de riesgo. Han participado 208 estudiantes de octavo, noveno y décimo grado (65,3% mujeres, 34,7% hombres) de la ciudad de Maputo, Mozambique, cuyas edades oscilaron entre los 12 y los 18 años (M=14,88; DE=1,29). El estudio buscó investigar la asociación entre características sociodemográficas, rendimiento académico, creencias positivas y negativas sobre las drogas y patrones de consumo entre adolescentes mediante análisis de redes. Los resultados mostraron un alto consumo de alcohol de inicio precoz, en el grupo de edad de 11 a 13 años. La frecuencia del consumo de tabaco está relacionada con la comprensión de los aspectos positivos del tabaquismo y asociada con la expansividad y la confianza. El presente estudio agrega al conocimiento de la prevalencia del consumo de estas sustancias en la comunidad escolar y puede ser útil para diseñar estrategias de prevención e intervención sobre el consumo de alcohol y tabaco en adolescentes. Las limitaciones clave son la muestra exclusivamente de Maputo y el diseño transversal. Estudios futuros deben investigar los patrones de consumo de drogas lícitas e ilícitas entre adolescentes de otros lugares, así como utilizar un diseño longitudinal.

Palabras clave

Consumo de alcohol; consumo de tabaco; comportamiento de riesgo; factores de riesgo y protección; adolescencia.

Adolescence is characterized as a period of transition from infanthood to adulthood, which begins in puberty and finishes with teenagers' independence from their parents (Casey, 2015). This developmental process involves physical and psychological changes, including social interaction intensification and searches for approval (DiClemente et al., 2013). During their development, teenagers face many challenging choices regarding their friends, family, health, and autonomy and their expectations about their personal and professional future (DiClemente et al., 2013; Koller et al., 2018).

In adolescence, teenagers can be involved in many health-risky behaviors such as alcohol and tobacco consumption and the first experiences with psychoactive substances (Asbridge et al., 2016; Koller et al., 2018). There are many psychosocial factors (individual, familial, and peer-to-peer) associated with psychoactive substances consumption (Beato-Fernández, et al., 2005; McKay & Cole, 2017). For instance,

a Portuguese study reported that the risk factors associated with drug consumption are related to negative personal experience, peer consumption, and even curiosity about the effect of the drug (Trigo et al., 2015). Such experiences can influence many other dimensions of the teenagers' lives in either their physical health or social, academic, and relational aspects (Beato-Fernández et al., 2005).

Adolescence then can be characterized as a vulnerability period concerning risky behaviors (Koller et al., 2018; Trigo et al., 2015) and is, therefore, a period in which the individual is more susceptible to consume alcohol and other drugs (Beato-Fernández et al., 2005; Spear, 2015; World Health Organization, 2006). A study conducted by the European School Survey Project on Alcohol and Other Drugs (ESPAD) involved European students from 36 countries, aged between 15 and 16. Approximately 28% of the individuals had consumed tobacco, and 7% of the students admitted they smoked daily since they were around 13 years old (Hibell et al., 2012). In the sample, 57% of the students had already consumed alcoholic drinks, and 43% reported an incidence of excessive consumption in the last 30 days (Hibell et al., 2012). Besides, a Brazilian study with more than a hundred thousand participants of the ninth year observed more drunkenness episodes among boys compared to girls (Malta et al., 2014).

In Mozambique and Africa in general, the information about patterns of alcohol, tobacco, and illicit drugs consumption among youths is scarce (Babor et al., 2015; Ferreira-Borges et al., 2017; Koller et al., 2018; Sixpence & Mutisse, 2008). A recent study with 16- to 24-year-old participants in Mozambique reported that alcohol consumption might be a motivating factor for committing crimes. Often, when they committed some crime, they were under this substance (Niquice et al., 2017). Nevertheless, the factors that may place the youth at risk of using alcohol, tobacco, and illicit drugs or what actions may protect and prevent these substances' young consumption in Mozambique are not clear (Sixpence & Mutisse, 2008). Therefore, the present study aimed to investigate

the relation between sociodemographic features, academic performance, beliefs about alcohol and drugs, and patterns of alcohol, tobacco, and illicit drug consumption among teenagers in Mozambique.

This study network analyses were conducted to investigate which sociodemographic features, academic performance, positive and negative beliefs about alcohol and drugs would be associated with patterns of alcohol, tobacco, and illicit drug consumption among teenagers in Mozambique (Epskamp et al., 2012). Furthermore, it was evaluated if the relations of licit and illicit drug consumption patterns showed different relations with sociodemographic features, academic performance, beliefs about alcohol and drugs due to gender (male and female) of teenagers.

Method

Participants

Two hundred and eight students took part in this study, 63.5% female (n=132), 35.5% male (n=76). They were enrolled in the eighth, ninth, and tenth grades in public schools in Maputo's city in Mozambique. The mean age was 14.88 (SD = 1.29), ranging from 12 to 18 years old. All students attended school during the afternoon.

Instruments

The questionnaire developed by Negreiros (2001) was applied. The criterion defined by international institutions such as the World Health Organization (WHO, 2006) about the patterns of alcohol consumption, tobacco and other drugs in school were used. The questionnaire was composed of 39 items. The assessed aspects related to the consumption of alcohol, tobacco, and illicit substances were: consumption prevalence throughout their lives, during the last 12 months and the last 30 days, the age of first consumption, and personal perception of

possible problems that could be caused by the improper consumption of those substances. Sociodemographic variables such as age, gender, parental level of instruction, schooling level, school grades, and the number of failing classes were also investigated (Negreiros, 2001). In this study, principal components analysis (PCA) were conducted with the item subsets concerning the perceived negative and positive consequences of smoking and drinking. For both the smoking-related and the drinking-related items, PCA indicated two components with eigenvalues greater than one, following the expectations of two groupings of items (positive and negative consequences). Reliability estimates (alpha) were 0.79 (positive consequences of smoking), 0.69 (negative consequences of smoking), 0.85 (positive consequences of drinking), and 0.85 (negative consequences of drinking).

Procedures

First, an approval sheet was sent to schools' head to get authorization to collect the data. It is important to note that there is no ethics committee in Mozambique that regulates research involving human beings; therefore, no consent terms were used. The data were collected in November 2010 by a group of psychologists trained in applying the questionnaire. The participants were informed there were no right or wrong answers and that their participation in the research was voluntary. The anonymity and confidentiality of the information that participants provided were guaranteed. The questionnaire was applied in the classrooms after a probabilistic sample of randomly selected students in each class (eighth, ninth, and tenth grades), considering exclusively the classes taught during the afternoon. During the afternoon, classes taught were assessed because this is the most common period for students aged between 12 to 15 years old to be found. Unfortunately, data about the educational stage of the parents were not collected.

Data Analysis

A descriptive frequency analysis was initially performed to assess different sociodemographic variables. Network analyses were then conducted to analyze how variables interact. Network analysis is a graphic-representation technique in which each variable is represented by a node and lines, paths, or arrows representing the relationship between these variables (Machado et al., 2015). Relationships of higher magnitude between the variables are displayed through connections between themselves and graphic closeness between them. Low-magnitude relations are repelled between themselves, in a way that variables without relations are graphically distant. The central node represents high-magnitude relations to other nodes (Machado et al., 2015). The advantage of network analysis is that it allows the observation of complex statistical relationships through graphic analysis without data reduction methods (Epskamp et al., 2012). Network analyses were conducted through qgraph R package version 1.4.3 (Epskamp et al., 2012; R Core Team, 2017).

First, the network analysis composed of bivariate correlations will be presented, which helps visualize general graphics patterns. However, it may produce spurious relations because all nodes are connected (Costa et al., 2017). Partial correlations obtained through the gLASSO algorithm for the construction of networks will thus be presented since it diminishes the effect of spurious relations and produces a more intelligible graphic (Machado et al., 2015).

Centrality measures provided by the qgraph package were also used to analyze the importance of the individual variables in the network (Epskamp et al., 2012). The connectivity shows the shortest way between the variables. The proximity of the variables informs how near one variable is to the others. The strength of the relations shows the nearest paths that connect the variables (Machado et al., 2015). According to the patterns visualized by the graphics in the networks, linear regressions were conducted.

Results

Prevalence of alcohol, tobacco, and illicit substances consumption

Different consumption prevalences were assessed, distinguishing the type of substance consumed in the last 30 days, in the last 12 months, and throughout life. The prevalence throughout their lives refers to at least one consumption, and it is an indicator of experiences with that substance. The prevalence in the last twelve months refers to consuming a particular substance at least once throughout the year. Prevalence in the last 30 days refers to the consumption of substances at least once in the last 30 days that preceded the questionnaire application and is an indicator of current consumption.

The data on Table 1 refers to the prevalence of alcohol, tobacco, and illicit substances consumption (never, throughout their lives, last twelve months and last thirty days), and intoxication. As observed, most students experimented with alcohol at least once in their lives (55%), and approximately one in every five consumed alcohol in the last month. The prevalence of intoxication throughout their lives shows that approximately 18% of the students had been drunk at least once. However, tobacco consumption was less frequent, as approximately 9% of the sample already consumed it at some moment of their lives. Considering the prevalence in other categories (last 12 months and last 30 days), the percentages decreased, peaking at 8% of people that reported drunkenness in the last 30 days (Table 1).

Table 1

Frequency of alcohol, illicit drugs and tobacco consumption and drunkenness

Category		Never	Throughout life	Never in Last Twelve Months	Last Twelve Months	Never in the Last Month	Last Month
Alcohol	n	87	108	111	82	151	41
	%	45	55	57	43	79	22
Drunkenness	n	133	29	137	23	147	12
	%	83	18	86	14	92	8
Tobacco	n	174	17	*	*	117	5
	%	91	9	*	*	89	4
Cocaine	n	91	2	*	*	*	*
	%	98	2	*	*	*	*
Stimulant Substances	n	92	1	*	*	*	*
	%	99	1	*	*	*	*
LSD	n	93	0	*	*	*	*
	%	100	0	*	*	*	*
Depressant Substances	n	91	2	*	*	*	*
	%	98	2	*	*	*	*
Heroin	n	92	1	*	*	*	*
	%	99	1	*	*	*	*
Relevim	n	93	0	*	*	*	*
	%	100	0	*	*	*	*
Ecstasy	n	91	2	*	*	*	*
	%	98	2	*	*	*	*
Inhaling Substances	n	92	1	*	*	*	*
	%	99	1	*	*	*	*

Note. *n* = number of participants;
* - The consumption frequency of this substance was not evaluated
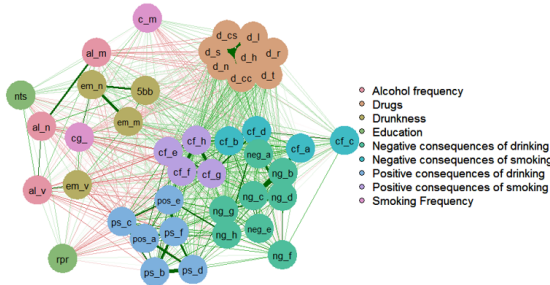
Network Analysis for Alcohol, Tobacco and Illicit Substances Consumption

Through network analysis it is possible to observe that the consequences of alcohol consumption (positive and negative) and the positive and negative consequences of tobacco consumption are related (Figure 1). The positive relations between the good aspects of alcohol consumption indicate the social importance of the consumption of alcohol.

Regarding negative consequences of tobacco consumption, the importance of the economic factor is displayed (through the variables '*smoking consequences: having problems with money*' [cf_d] and '*smoking consequences: becoming an addict*' [cf_c]), as well as the positive social importance of the consumption (through the variables '*positiveconsequences of smoking: having more fun*' [cf_f], '*positive consequences of smoking. being more confident and expansive*' [cf_h] and '*positive consequences of smoking: becoming more popular*' [cf_g]). These factors were weakly related to school grades, failing classes, frequency of alcohol and cigarette consumption, intoxication, or drug consumption. The variables that are moderately related are consumption of

alcohol in the last year (through the variable *positive consequences of smoking: feeling more relaxed* [cf_e]) and the variable '*have been drunk at least once in life*' [eem_vi] with the variable '*positive consequences of smoking: being more confident and expansive*' [cf_h]. These results show that knowing the positive consequences of alcohol consumption may be negatively associated with alcohol consumption. Alcohol consumption throughout life is related to school grades. These hypotheses will be further analyzed through regression analysis.

Figure 1.

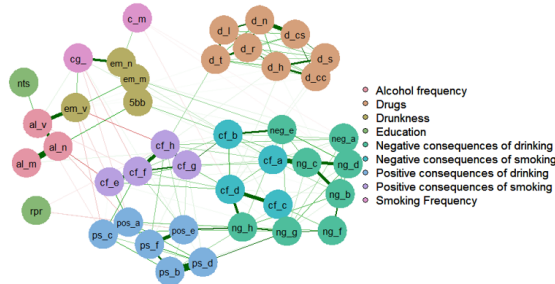*Bivariate correlations between of alcohol, tobacco and illicit substances consumption*

Note. reprov = School failures; notas = School grades; cg_vi = Consumed tobacco at some point in life; ci_mes = Consumed tobacco at some point last month; cf_a = Negative Consequences of smoking: problems with parents; cf_b = Negative Consequences of smoking: problems with friends; cf_c = Negative Consequences of smoking: getting addicted; cf_d = Negative Consequences of smoking: problems with money; cf_e = Positive Consequences of smoking: feeling relaxed; cf_f = Positive Consequences of smoking: having fun; cf_g = Positive Consequences of smoking: becoming more popular; cf_h = Positive Consequences of smoking: being more confident and expansive; al_vi = Consumed alcohol at some point in life; al_ano = Consumed alcohol at some point last year; al_mes = Consumed alcohol at some point last month; neg_a = Consequences of drinking: having problems with the police; neg_b = Consequences of drinking: bad grades in school; neg_c = Consequences of drinking: having problems with parents; neg_d = Negative consequences of drinking: being expelled from school; neg_e = Negative consequences of drinking: having problems with friends; neg_f = Negative consequences of drinking: becoming addicted; neg_g = Negative consequences of drinking: having problems to find a job; neg_h = Negative consequences of drinking: having problems with money; pos_a = Positive consequences of drinking: feeling relaxed; pos_b = Positive consequences of drinking: having more friends; pos_c = Positive consequences of drinking: having more fun; pos_d = Positive consequences of drinking: becoming more popular; pos_e = Positive consequences of drinking: forgetting about problems; pos_f = Positive consequences of drinking: being more confident and expansive; 5beb = How many times drank more than 5 times last month ; em_vi = Have been drunk at least once in life; em_ano = Have been drunk at least once this year; em_mes = Have been drunk at least once this month; d_coca = Have ever consumed cocaine; d_est = Have ever consumed stimulant drugs (without medical prescription); d_lsd = Have ever consumed LSD; d_tranq = Have ever consumed depressant drugs without medical prescription; d_her = Have ever consumed heroin; d_relev = Have ever consumed relevim; d_ecs = Have ever consumed ecstasy; d_in = Have ever consumed inhaling drugs.

The centrality analysis (Figure 2) of the graph shows that the variable *'positive consequences of smoking: being more confident and expansive'* [cf_h] connects all other variables in the graph. This indicates that participants' belief that tobacco consumption makes them more confident and expansive which is of central importance to all other variables. In general, the items of the *'Perception of Positive Consequences Related to Tobacco Consumption'* subscale are closer when compared to other variables. The *'Perception of Positive Consequences Related to Tobacco Consumption'* also displays a central role in the variables' relations.

Figure 2.

Partial correlations – gLASSO between alcohol, tobacco and illicit substances consumption

Note. reprov = School failures; notas = School grades; cg_vi = Consumed tobacco at some point in life; ci_mes = Consumed tobacco at some point last month; cf_a = Negative Consequences of smoking: problems with parents; cf_b = Negative Consequences of smoking: problems with friends; cf_c = Negative Consequences of smoking: getting addicted; cf_d = Negative Consequences of smoking: problems with money; cf_e = Positive Consequences of smoking: feeling relaxed; cf_f = Positive Consequences of smoking: having fun; cf_g = Positive Consequences of smoking: becoming more popular; cf_h = Positive Consequences of smoking: being more confident and expansive; al_vi = Consumed alcohol at some point in life; al_ano = Consumed alcohol at some point last year; al_mes = Consumed alcohol at some point last month; neg_a = Consequences of drinking: having problems with the police; neg_b = Consequences of drinking: bad grades in school; neg_c = Consequences of drinking: having problems with parents; neg_d = Negative consequences of drinking: being expelled from school; neg_e = Negative consequences of drinking: having problems with friends; neg_f = Negative consequences of drinking: becoming addicted; neg_g = Negative consequences of drinking: having problems to find a job; neg_h = Negative consequences of drinking: having problems with money; pos_a = Positive consequences of drinking: feeling relaxed; pos_b = Positive consequences of drinking: having more friends; pos_c = Positive consequences of drinking: having more fun; pos_d = Positive consequences of drinking: becoming more popular; pos_e = Positive consequences of drinking: forgetting about problems; pos_f = Positive consequences of drinking: being more confident and expansive; 5beb = How many times drank more than 5 times last month ; em_vi = Have been drunk at least once in life; em_ano = Have been drunk at least once this year; em_mes = Have been drunk at least once this month; d_coca

Alcohol, tobacco, and illicit substances consumption can be explained by differences in gender, negative and positive consequences of smoking and drinking

Multiple linear regression analysis was conducted to investigate if the variable "gender" predicted the patterns of alcohol, tobacco, and illicit substances consumption by analyzing the adjusted R^2 value. The presented coefficients always concern the model with the highest R^2, which are displayed in Table 2. To verify whether the drug consumption can be predicted by the knowledge of the consequences of alcohol and cigarette consumption, a variable that is the sum of the consumption of all the different illicit drugs was computed. The variable gender was coded, so that male equals 0 and female equals 1. The variable grades were coded as if the highest score means highest grades (1 = Very Bad, 2 = Bad, 3 = Average, 4 = Good, 5 = Very good). The variables regarding the consequences of smoking and drinking were coded, so the higher the score, the higher the positive or negative consequences of smoking and drinking understanding.

Table 2

Regression conducted to predict alcohol, tobacco and illicit substances consumption

	Predictors	Adjusted R²	B	SE	β
Frequency of alcohol consumption throughout life	Intercept		1.84	1.18	0
	Negative Smoking Consequences		0.44	0.44	0.15
	Positive Smoking Consequences	0.05	0.18	0.50	0.06
	Negative Drinking Consequences		-0.88	0.40	-0.34*
	Positive Drinking Consequences		0.67	0.21	0.22**
Frequency of alcohol consumption during last year	Intercept		2.69	0.90	0
	Negative Smoking Consequences		0.46	0.33	0.20
	Positive Smoking Consequences	0.11	0.40	0.38	0.18
	Negative Drinking Consequences		-1.01	0.30	-0.50**
	Positive Drinking Consequences		-0.01	0.41	-0.00
Frequency of Alcohol consumption during last month	Intercept		2.50	0.59	0.00
	Negative Smoking Consequences		0.23	0.22	0.16
	Positive Smoking Consequences	0.13	-0.19	0.25	-0.13
	Negative Drinking Consequences		-0.63	0.20	-0.48**
	Positive Drinking Consequences		0.18	0.27	0.11
School Grades	Intercept		3.62	0.10	0
	Alcohol Consumption Frequency in Life	0.08	-0.11	0.04	-0.30*
Drunkenness during life	Intercept		0.63	0.18	0
	Smoking Consequences: Being more confident and expansive	0.14	0.35	0.10	0.39*

Note. *p < 0.05; **p < 0.001.

A significant regression equation to predict the frequency of alcohol consumption throughout life was found (F(4, 66) = 2.493, p= 0.05), adjusted R² = 0.07. The frequency of alcohol consumption throughout life was negatively associated with higher scores of negative consequences of drinking (β = -0.34, p< 0.05). The variable gender has not represented any improvement in the model (adjusted ΔR² = -0.02). The results showed that the consumption of alcohol throughout one's life is less frequent; the better is the understanding of negative consequences of drinking.

The frequency of alcohol consumption during last year (F (4,66) = 3.078, p < 0.05, adjusted R² = 0.11) raised according to the decrease on the score of the negative consequences of drinking (β= -0.50, p < 0.01). The variable gender has not represented any improvement in the model (adjusted ΔR² = 0). This indicates that if alcohol consumption during the last year is less frequent, the better the understanding of the negative consequences of drinking.

The frequency of alcohol consumption during last month (F (4,66) = 3.655, p < 0.01, adjusted R² = 0.13) raised according to the decrease on the score of the negative consequences of drinking (β = -0.48, p< 0.01). The variable gender has not represented any improvement in the model (adjusted ΔR² = 0). This indicates that if alcohol consumption during the last month

is less frequent, the better the understanding of drinking negative consequences.

The variable school grades (F(1,91) = 9.166, .p< 0.01, adjusted R² = 0.08) can be predicted given the frequency of alcohol consumption throughout life, so that the increase of alcohol consumption throughout life (β= -0.30, p< 0.01) is associated with the decrease in school grades. The results indicate that alcohol consumption is associated with lower grades.

The variable drunkenness throughout life (F(1, 91) = 10.78, p < 0.01, adjusted R² = 0.10) was predicted by the variable 'Positive Consequences of smoking: being more confident and expansive' [cf_h] (. = 0.22, . < 0.01), implying that the search for confidence and expansiveness through tobacco is associated with an increase in the frequency of intoxication through alcohol. The variable gender did not show any improvement in the model (adjusted ΔR² = - 0.0098).

The models showed that gender, positive and negative smoking consequences, positive and negative drinking consequences did not significantly contribute to explain frequency of tobacco consumption throughout life (F(4, 88) = 0.71, p > 0.05), frequency of tobacco consumption in the last month (F(3, 89) = 1.016, p > 0.05) and drug consumption (F(5, 65) = 0.33, p > 0.05). Also, positive and negative smoking consequences, positive and negative drinking consequences did not significantly contribute to explain the number of grades repeated (F(4, 66) = 0.97, p> 0.05).

Discussion

The results of this study showed that 55% of the assessed teenagers have already consumed alcohol at least once throughout their lives and that this number can be considered low when compared to similar studies from other countries (Almeida et al., 2012; Reis et al., 2011; Willhelm et al., 2015). Studies conducted in countries with the same native language (Portuguese) found different results, such as the research conducted by Reis et al. (2011) with

1061 teenagers in Portugal, which observed that 89.9% had already consumed alcoholic drinks at least once throughout their lives. Nevertheless, in the Brazilian studies, there is still disagreement since. In contrast, studies in the north of the country suggest a percentage of 40.7% of the consumption of licit drugs at least once (Nader et al., 2013), another study in the south of the country suggests a percentage of 55.9% on alcohol consumption (Willhelm, 2015). Hence, it is crucial to conduct researches on licit and illicit substances consumption prevalence, as it can bring relevant results to the country and supply an empirical basis for interventions in a range of situations on alcohol consumption and other drugs.

Besides alcohol consumption throughout their lives, it can be observed that many teenagers that consumed alcohol at least once did it in the last twelve months and some of them in the month before the questionnaire was applied. The literature suggests that the alcohol-experimenting process begins around 13 years old (Donovan & Molina, 2013; Elsayed et al., 2018; Willhelm et al., 2015), and the first instance of drunkenness tends to happen around 15 years old (Asbridge et al., 2016; Donovan & Molina, 2013). Those ages correspond to the sample of this study. It can be inferred that the observed consumption in the last twelve months or the last month can be due to the first experience, followed by more frequent use.

This study's drunkenness prevalence also rose as a concerning number since 14% of the sample had become drunk in the last year and 8% in the last month. Teenagers who are 15 years old or less being drunk are what makes this study's results concerning. Even though studies suggest higher rates (e.g., Asbridge et al. (2016), which showed that 73% of the sample had been drunk at least once throughout life). Drunkenness in this development phase can indicate future problems, with higher risky behaviors and even alcohol-related problems in adulthood (Asbridge et al., 2016; Casey, 2015).

Another point observed regarding alcohol consumption is that its prevalence throughout life is associated with bad performance in

school. However, this performance is not related to alcohol consumption in the last month or year. The literature also suggests some performance problems due to alcohol consumption and other drugs, such as low grades, not doing the homework, and attention issues (Donola Cardoso & Malbergier, 2014; McCabe et al., 2017). The results of this study support these results. It may be attributed to some cognitive functions impairment (such as memory and perception) due to the consumption of psychoactive substances, which negatively impacts academic performance (Carvalho Malta et al., 2014; Donola Cardoso & Malbergier, 2014).

A relationship between the consequences of alcohol and tobacco consumption has also been found. The positive consequences of alcohol and tobacco are related to the social importance of consumption. Just as it was discussed in Horta et al. (2007), the behavior of smoking or using other psychoactive substances cannot be explained through a unique association with a variable or a factor because it is a complex phenomenon. Therefore, this article intended to debate different variables associated with tobacco consumption by teenagers, such as gender and perceptions of positive aspects regarding substance consumption.

The understanding of the positive consequences of smoking had an impact on alcohol consumption, in which feeling more confident and expansive because the cigarette was related to becoming drunk. A study with smokers in Brazil showed equivalent results and showed that whoever smokes also consumes alcohol (Pinho & Oliva, 2007). Another study conducted among teenagers in the Algarve, Portugal, verified that alcohol consumption was directly related to regular tobacco consumption in the same way as drunkenness is related to smoking (Rocha et al., 2013).

The results show that alcohol consumption throughout life is less frequent when there is a greater understanding of smoking and drinking negative consequences. Consequently, consumption is more frequent when teenagers believe there are positive consequences in

drinking. A Portuguese study that evaluated smoking habits of teenagers in the ninth grade (most of them between 14 and 15 years old) also observed that the knowledge of the adverse health outcomes associated with tobacco consumption could prevent the consumption of this licit drug (Ferreira et al., 2013). In the literature, it can also be observed that alcohol and tobacco consumption can be associated with sadness. Teenagers drink to minimize this feeling (Vieira et al., 2008). In this case, such behavior can be faced as a positive consequence of these substances consumption.

It was observed that tobacco consumption was more frequent throughout life when teenagers had the belief that they can become more confident using tobacco. The variables of expansiveness and confidence related to tobacco consumption are the most impressive in the results since they connect a range of different variables, such as other drug consumption and alcohol consumption frequency. This means that this feeling of being more confident and more expansive or more talkative is the issue that contributes the most to make teenagers consume tobacco, and maybe the belief that contributes the most to other substances consumption and abuse. A Portuguese study that evaluated more than 3.000 teenagers showed that tobacco consumption makes socialization and self-confidence easier at this age (Ferreira et al., 2013). Besides, tobacco is considered the first or one of the first drugs to be consumed by teenagers, facilitating the social integration, making them look more like an adult and consequently reinforcing the self-esteem (Currie, 2008).

It is important to note that the literature discussed in this study was international, mostly Brazilian and Portuguese. This was due to the lack of empirical and theoretical studies in Mozambique. The study by Pacala (2015) that also assessed adolescents in Mozambique reported a lack of studies about alcohol consumption in this phase of development. Therefore, the present manuscript is of extreme importance for the community of Mozambique. Furthermore, it may contribute to a global level

since the behaviors of the teenagers from Maputo may be similar to other adolescents in other countries, making it essential to consider the stimuli given to adolescents about alcohol and drugs on a global level.

Final Considerations

The data analysis that refers to alcohol and other drug consumption showed a high prevalence of alcohol consumption in the three categories (prevalence throughout life, last twelve months, and last month). This study also supported evidence that was previously reported, such as the association between the consumption and the age, suggesting that the older teenagers are, the more they tend to consume larger quantities of alcoholic drinks. Regarding the first consumption age, a quarter of the sample reported having started to consume alcohol at the age of 11 majorly. It can be observed that in the context of Mozambique, it is important to think about preventive actions with the school community because the premature consumption of any substance by the teenagers is itself a risk factor for the harmful consumption in the future.

Another critical aspect to consider is the episodes of alcoholic intoxication, which showed to be prevalent among the school community in Maputo. It is important to note that the problems associated with alcoholic intoxication are usually associated with developmental issues characteristic of the age, such as the need for group acceptance. Besides, teenagers who understand that alcohol or tobacco consumption can be positive in some aspects, such as disinhibition and confidence, tend to consume it more. Those that understand the negative aspects of that consumers tend not to consume it or consume less frequently. Therefore, we need to have a public policy to make teenagers aware of substances' consumption.

The present study successfully contributes to the knowledge regarding the problems of licit and illicit drugs in Mozambique. It is important to refer to some limitations of this study. The first is related to the fact that all the

samples concentrated in only one city, Maputo, making it difficult to generalize the results to other Mozambican cities. Another limitation is the cross-sectional design of the study, making the inference in the causality of the variables impossible. Finally, as it was not part of the present study's objective, all variables considered in Table 2 were not thoroughly considered (i.e., mediation and moderation models using them), so future studies should address them in a more detailed manner. Future studies should investigate the patterns of licit and illicit drug consumption among teenagers and Mozambican teenagers from other places.

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Notes

*   Research article.