Original Article

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ADOLESCENTS ATTENDING PUBLIC SCHOOLS: DRUG USE, SOCIAL DETERMINANTS OF HEALTH AND SPATIAL DISTRIBUTION

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ABSTRACT

Objective: to evaluate drug use among adolescents attending public schools and its association with the social determinants of health and spatial distribution.
Methods: a cross-sectional study carried out between 2020 and 2021 in which the Drug Use Screening Inventory (DUSI) and sociodemographic questionnaires were applied to 226 students attending 9th year of Fundamental Education in public schools from a city of Minas Gerais. A descriptive analysis was performed by means of Fisher's Exact Test.
Results: regarding alcohol consumption, only the "age" variable was significant. As for tobacco, the "age", "parents' marital status" and "who do you live with?" variables presented a significant association. The other psychoactive substances did not present significant associations. In relation to the spatial distribution, the highest intensity of problems was concentrated in leisure/recreational activities.
Conclusion: alcohol and tobacco use is associated with the social determinants referring to the social network and personal factors, such as age.

DESCRIPTORS: Adolescent. Alcohol and other drugs. Spatial distribution of the population. Social determinants of health. Cross-sectional studies.

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ADOLESCENTES DE ESCOLAS PÚBLICAS: USO DE DROGAS, DETERMINANTES SOCIAIS DE SAÚDE E DISTRIBUIÇÃO ESPACIAL

RESUMO

Objetivo: avaliar o uso de drogas por adolescentes de escolas públicas e sua associação com os determinantes sociais de saúde e distribuição espacial.
Métodos: estudo transversal realizado entre 2020 e 2021 em que se aplicaram os questionários *Drug Use Screening Inventory* (DUSI) e sociodemográfico em 226 estudantes do 9º ano do ensino fundamental de escolas públicas de uma cidade mineira. Realizou-se análise descritiva e por meio do Teste Exato de Fisher.
Resultados: sobre o consumo de álcool, apenas a variável idade foi significativa. Quanto ao tabaco tiveram associação significativa o uso de tabaco e as variáveis idade, estado civil dos pais e com quem mora. As demais substâncias psicoativas não tiveram associação significativa. No que se refere à distribuição espacial, a maior intensidade de problemas se concentrou em atividades de lazer/recreação.
Conclusão: o uso de álcool e tabaco estão associados aos determinantes sociais referentes a rede social e fatores pessoais, como idade.

DESCRITORES: Adolescente. Álcool e outras drogas. Distribuição espacial da população. Determinantes sociais de saúde. Estudos transversais.

ADOLESCENTES DE ESCUELAS PÚBLICAS: CONSUMO DE DROGAS, DETERMINANTES SOCIALES DE LA SALUD Y DISTRIBUCIÓN ESPACIAL

RESUMEN

Objetivo: evaluar el consumo de drogas entre adolescentes de escuelas públicas y su asociación con los determinantes sociales de la salud y la distribución espacial.
Métodos: estudio transversal realizado entre 2020 y 2021 en el que se aplicó el cuestionario *Drug Use Screening Inventory* (DUSI) y otro sociodemográfico a 226 estudiantes del 9º año de Educación Fundamental en escuelas públicas de una ciudad de Minas Gerais. Se realizó un análisis descriptivo y por medio de la Prueba Exacta de Fisher.
Resultados: en relación con el consumo de alcohol, solamente la variable “edad” se mostró significativa. En cuanto al tabaco, se registró una asociación significativa entre el uso de tabaco y las variables “edad”, “estado civil de los padres” y “con quién vive”. Las demás sustancias psicoactivas no presentaron ninguna asociación significativa. En lo que se refiere a la distribución espacial, la mayor intensidad de problemas se concentró en actividades de ocio/recreación.
Conclusión: el consumo de alcohol y tabaco está asociado a los determinantes sociales referentes a la red social y a factores personales, como la edad.

DESCRIPTORES: Adolescente. Alcohol y otras drogas. Distribución espacial de la población. Determinantes sociales de la salud. Estudios transversales.

INTRODUCTION

Consumption of alcoholic beverages and other drugs represents a public health problem in Brazil due to the health consequences of those who use those substances, in addition to financial and social expenses for the State[1]. Excessive alcohol consumption is one of the largest risk factors for global health, contributing to more than three million deaths each year, in addition to contributing with 7.1% and 2.2% of the world burden of diseases for men and women, respectively[2].

In Brazil, the last national School Health Survey (*Pesquisa Nacional de Saúde do Escolar*, PeNSE) was carried out in 2019 with students aged from 13 to 17 years old and showed percentages of experimentation with alcoholic beverages of 63.3% and 22.64% for tobacco, whereas 13.04% of the adolescents had experienced some illicit drug in their lives[3]. When compared to those from the last PeNSE survey conducted in 2015, these data show an increase in the consumption of alcoholic beverages and other drugs[4].

In contrast to Brazil, a study carried out in Sweden showed a decline in the consumption of alcoholic beverages by adolescents and young people in recent years, with a mean consumption of 81% in 2000 and a reduction to 39% in 2018. In addition to Sweden, other European countries also showed this decline in consumption[5].

The motivations for the consumption of alcoholic beverages and other drugs are multifactorial, relating to individual and external factors such as the environment in which the young person circulates, family nucleus, school and even economic factors and spatial distribution of pubs and shops[6–7].

Among the many determinants is the space in which the adolescent lives and circulates; for example, a study showed that having pubs close to schools increases consumption of alcoholic beverages by students[8], as well as living close to these shops that sell alcoholic beverages[9].

Other relevant determinants for discussion include the family context. A study conducted in Brazil reports that conflicting families with low parenteral supervision and members who use drugs tend to have higher prevalence of alcohol consumption among adolescents[10]. As for young people studying in public or private schools, the data are divergent; however, a study conducted in Belo Horizonte showed no significant association between drinking and public or private schools[8].

In this sense, it is noticed that the consumption of alcoholic beverages and other drugs by adolescents is complex and important, as it is at this life phase that individuals are developing their social and emotional skills and consumption of such substances can delay these skills or lead to their loss. As well as the earlier consumption is initiated, it may result in abusive consumption in adulthood[2].

One way to analyze the phenomenon of the use of alcohol and other drugs is by means of the Social Determinants of Health (SDHs). One of the best known models to illustrate the SDHs is the one by Dahlgren and Whitehead, where the fixed determinants of each individual are noted in the center, such as age, gender and hereditary factors. At the first level are the factors related to these individuals' lifestyle; in other words, they are strongly affected according to their actions. In turn, at the outermost level, we have the social and community relationships, followed by the general socioeconomic, cultural and environmental conditions[11].

In this sense, knowledge of the association between the SDHs and consumption of alcoholic beverages and other drugs by adolescents becomes essential for establishing public policies aimed at preventing such consumption. By applying the SDHs, it is possible not only to understand the individual motivators for consumption but also to relate the places for such consumption, as well as economic, social and cultural factors that can contribute to it.

Based on the aforementioned, the objective of the current study is to evaluate use of alcohol and other drugs among adolescents attending public schools and its association with the SDHs. This discussion is necessary based on the complexity of the theme and in view of the attempts to understand

the phenomenon of increased consumption of alcoholic beverages and other drugs in Brazil, as shown in the last PeNSE in 2019. This is because, without delving into the theme and understanding which determinants can be related to consumption, there is no way to propose effective public policies.

METHOD

This is a quantitative and cross-sectional study with an exploratory-analytical nature, approved by the Research Ethics Committee of *Universidade Federal de São João del-Rei* (No.3,965,700).

The study took place in a city from the Midwest region of Minas Gerais that has a population of 213,016, 47 health institutions and 111 schools,82 Elementary and 29 High schools[12].

The individuals selected for the research were adolescents attending 9th year of Fundamental Education, with a mean age of 14 years old and attending public schools. Choice of this age group was due to being the one recommended by the World Health Organization for research with adolescents, as well as for being the one chosen by PeNSE. The estimated sample "n" was 226 participants from 21 public schools (fifteen municipal and six state schools), selected from a total of 82 high schools, by cluster sample in two stages (schools and classes), being stratified by the administrative regions of the municipality: Southeast, Southwest, West, Northeast and Northeast.

The sample of 226 participants was calculated according to the proportion of the adolescent population of the public schools of the administrative regions, being that it was of 30 students per classroom, each school had a mean of two 9th year classes. In order to have representation from all regions of the city, 2 schools from the Southeast region were drawn from a total of 6; as well as 2 schools from the Southwest region from a total of 3; 1 school from the West region from a total of 2; 1 school from the Northeast region from a total of 2; and 1 school from the Northwest region from a total of 2. The aforementioned following the criterion of those with the highest number of enrolled students.

Data collection took place after the researchers presented the research to the schools and, subsequently, to those responsible for the adolescents in order to fill out the Free and Informed Consent Form (FICF). After the guardians' consent, the researchers presented the research to the adolescents and, after completing the Assent Form (FIAF), the data collection instruments of the study were applied.

The data were collected through a sociodemographic questionnaire and the evaluation instrument called DUSI (Drug Use Screening Inventory), developed in the United States, adapted and validated by researchers from *Universidade Federal de São Paulo* to be used with the Brazilian population of adolescents[13].

This instrument is targeted at the adolescent population, is in the public domain and offers free use. It is also easy and quick to apply and is seen as an effective way to classify adolescents who may develop problems in relation to drug use, whether licit or illicit[14].

For data analysis, all the information collected was introduced into an electronic database created in Microsoft Excel and categorized into nominal and ordinal variables. Descriptive analyses were conducted, as well as of frequency and central tendency measures. Fisher's exact test was used in order to evaluate the association/independence between variables, as some levels of the variables under study had a low occurrence frequency. The Odds Ratio and the 95% confidence interval were also calculated.

Finally, the spatial distribution was prepared based on the schools' addresses by means of the geoprocessing technique in the Google Earth® program. Thus, it was possible to verify the spatial reference and the presence of social determinants of health, such as health services, basic sanitation, transportation, leisure and education, according to data from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), with data aggregated by administrative region.

For preparing the map, the shapefiles of the cartographic base were obtained from the Divinópolis Municipal Health Department, in which the territorial delimitation is digitized. This database includes geo-referenced common lands, as well as public spaces of interest (for example: streets, avenues, squares and community services). All variables of interest were projected in the municipality's registering database. Consequently, Google Earth® was used to store, build up and analyze the map. Finally, to capture the statistically significant local patterns of spatial autocorrelation, the "drug use" variable was employed as an indicator of spatial association from which different locations were related from the social determinants of health distributed spatially. Therefore, the data were mapped, which indicated the neighborhoods that had significant local correlations.

RESULTS

A total of 226 adolescents were interviewed, with a mean age of 15 years old (48.7%). They were mostly male (51.8%), attended municipal schools (77.4%), self-declared as brown-skinned (41.6%), and lived with both of their parents (60.2%) and in the city outskirts (48.2%).

The predominant family income among the participants was from one to two minimum wages (67.3%), with 29.6% of the adolescents reporting that they worked, 26.1% during the day and 3.5% at night. Regarding consumption of alcoholic beverages and other drugs, 32.7% of the adolescents said that their parents did not drink alcoholic beverages and 69.9% that their parents did not smoke cigarettes or use other types of drugs. The data are found in Table 1.

Table 1 – Sociodemographic characterization of the study participants in relation to the variables and to use of alcoholic beverages, tobacco, over-the-counter medications (Medications) and other illicit drugs (Other drugs). Divinópolis, MG, Brazil, 2022. (n=226)

Variable	Total		Alcohol		Tobacco		Medications		Other drugs	
	n	%	n	%	n	%	n	%	n	%
Age										
14 years old	95	40.7	21	22.1	1	1.1	23	24.2	7	7.4
15 years old	110	48.7	40	36.4	8	7.3	29	26.4	12	10.9
16 years old	16	7.1	10	62.5	4	25	6	37.5	1	6.2
17 years old	4	1.8	1	25	-	-	2	50	-	-
18 years old	1	0.4	1	100	-	-	-	-	1	100
Gender										
Female	109	48.2	41	37.6	8	7.3	35	32.1	8	7.3
Male	117	51.8	32	27.6	5	4.3	25	21.4	13	11.1
Skin color/Race†										
Asian	5	2.2	-	-	0	0	2	40	0	0
White	89	39.4	28	31.5	3	3.4	23	25.8	6	6.7
Indigenous	2	0.9	0	0	1	50	1	50	0	0
Brown	94	41.6	32	34.1	5	5.3	23	24.5	10	10.6
Black	34	15	11	32.4	2	5.9	9	26.5	3	8.8
Parents' marital status										
They live together	138	61.1	41	29.7	3	2.2	31	22.5	11	7.9
They do not live together	80	35.4	28	35	9	11.2	27	33.7	9	11.2
Widowed	8	3.5	4	50	1	12.5	2	25	1	12.5

Table 1 – Cont.

Variable	Total		Alcohol		Tobacco		Medications		Other drugs	
	n	%	n	%	n	%	n	%	n	%
Who do you live with?										
Mother	63	27.9	22	34.9	6	9.5	17	27	6	9.5
Father	17	7.5	8	47.1	0	0	8	47	1	5.9
Parents	136	60.2	38	27.9	3	2.2	32	23.5	11	8
Grandparents	4	1.8	2	50	1	25	1	25	1	25
Others	6	2.7	3	50	3	50	2	33.3	2	33.3
Family income‡										
Less than 1 minimum wage	15	6.6	5	33.3	2	13.3	3	20	2	13.3
1-2 minimum wages	152	67.3	45	29.6	6	3.9	39	25.7	10	6.6
2-3 minimum wages	29	12.8	11	37.9	2	6.9	9	31	3	10.3
3-4 minimum wages	16	7.1	4	25	1	6.2	4	25	1	6.2
4-5 minimum wages	5	2.2	2	40	0	0	0	0	1	20
More than 5 minimum wages	6	2.7	4	66.7	1	16.7	3	50	2	33.3
Location of the house§										
Outskirts	109	48.2	34	31.1	6	5.5	34	31.2	10	9.2
Central region	26	11.5	6	23.1	2	7.7	5	19.2	3	11.5
Expanded city center	27	11.9	11	40.7	0	0	6	22.2	3	11.1
Rural area	25	11.1	9	36	1	4	7	28	3	12
Condo	4	1.8	3	75	0	0	0	0	0	0
Others	29	12.8	9	31	3	10.3	7	24.1	1	3.4

Note: *One interviewee without information (0.4%); †Two interviewees without information (0.9%); ‡Three interviewees without information (1.3%); §Six interviewees without information (2.3%).

Table 2 shows the analysis of the factors associated with the consumption of alcoholic beverages and tobacco. In relation to alcohol consumption, only the association between the “age” variable and consumption of beverages was significant, that is, with p-value below 0.05. In turn, regarding tobacco consumption, the following associations were significant (p<0.05): “age”, “parents’ marital status” and “who do you live with?”. In relation to the consumption of illicit drugs or over-the-counter medications, there was no statistical association with any of the study variables.

According to the results, 15-year-old adolescents are 1.98 times more likely (95% CI=1.03-3.91) to consume alcoholic beverages and 7.32 times more likely (95% CI=0.95-330.04) to use tobacco when compared to 14-year-old adolescents. When compared to 14 years old, in those aged 16 the probability increases to 5.68 (95% CI=1.65-21.42) times in relation to alcoholic beverages use and 29.55 (95% CI=2.65-1541.78) times in relation to tobacco.

Regarding the association between tobacco use and “parents’ marital status”, the results show that the adolescents who have separated parents are 5.66 times more likely (95% CI=1.36; 33.53) to use tobacco than those who have parents live together. In turn, the adolescents whose parents are widowed have this probability increased to 6.26 (95% CI=0.11; 90.83) times. Furthermore, the fact of living with other people, except the parents, showed an increased probability of tobacco use, being 3.09 (95% CI= 0.05-46.4) times if they live with their grandparents and 8.96 (95% CI= 0.98-83.59) times if they live with other people.

Table 2 – Sociodemographic characterization of the study participants and analysis of the factors associated with use of alcoholic beverages, tobacco, over-the-counter medications (Medications) and other illicit drugs (Other drugs). Divinópolis, MG, Brazil, 2022. (n=226)

Variable	N	%	Alcohol	Tobacco	Medications	Other drugs
Age			p-value: 0.004	p-value: 0.007	p-value: 0.5478	p-value: 0.179
14 years old	95	40.7	1	1	1	1
15 years old	110	48.7	1.98 [1.03; 3.91]	7.32 [0.95; 330.04]	1.12 [0.57; 2.23]	1.54 [0.53; 4.82]
16 years old	16	7.1	5.68 [1.65; 21.42]	29.55 [2.65; 1541.78]	1.87 [0.5; 6.43]	0.84 [0.02; 7.35]
17 years old	4	1.8	1.15 [0.02; 15.29]	0 [0; 913.05]	3.09 [0.21; 44.81]	0 [0; 22.42]
18 years old	1	0.4	∞ [0.09; ∞]	0 [0;3,502.30]	0 [0; 123.55]	∞ [0.28; ∞]
Gender			p-value: 0.1434	p-value: 0.4819	p-value: 0.0936	p-value: 0.4553
Female	109	48.2	1	1	1	1
Male	117	51.8	0.63 [0.35; 1.15]	0.57 [0.14; 2.03]	0.58 [0.30; 1.09]	1.57 [0.58; 4.58]
Skin color/Race†			p-value: 0.6084	p-value: 0.1837	p-value: 0.7679	p-value: 0.8135
Asian	5	2.2	1	1	1	1
White	89	39.4	∞ [0.39; ∞]	∞ [0.02; ∞]	0.53 [0.06; 6.68]	∞ [0.05; ∞]
Indigenous	2	0.9	0 [0, ∞]	∞ [0.06; ∞]	1.41 [0.01; 156.23]	0 [0, ∞]
Brown	94	41.6	∞ [0.45; ∞]	∞ [0.04; ∞]	0.49 [0.05; 6.20]	∞ [0.1; ∞]
Black	34	15	∞ [0.37; ∞]	∞ [0.03; ∞]	0.55 [0.53; 7.58]	∞ [0.05; ∞]
Parents' marital status			p-value: 0.2563	p-value: 0.01	p-value: 0.1796	p-value: 0.4982
They live together	138	61.1	1	1	1	1
They do not live together	80	35.4	1.27 [0.68; 2.38]	5.66 [1.36; 33.53]	1.75 [0.91; 3.39]	1.46 [0.51; 4.09]
Widowed	8	3.5	3.13 [0.50; 22.3]	6.26 [0.11; 90.83]	1.15 [0.11; 6.85]	1.64 [0.34; 14.89]
Who do you live with?			p-value: 0.1871	p-value: 0.0003	p-value: 0.2941	p-value: 0.1676
Mother	63	27.9	1	1	1	1
Father	17	7.5	1.65 [0.48; 5.6]	0 [0; 3.17]	2.38 [0.68; 8.29]	1.67 [0.18; 82.22]
Parents	136	60.2	0.72 [0.37; 1.45]	0.22 [0.03; 1.05]	0.83 [0.4; 1.77]	1.2 [0.35; 3.74]
Grandparents	4	1.8	3.65 [0.18; 224.8]	3.09 [0.05; 46.4]	0.9 [0.02; 12.16]	0.32 [0.02; 19.31]
Others	6	2.7	1.84 [0.23; 14.97]	8.96 [0.98; 83.59]	1.35 [0.11; 10.42]	0.22 [0.02; 2.88]

Table 2 – Cont.

Variable	N	%	Alcohol	Tobacco	Medications	Other drugs
Family income‡			p-value: 0.4527	p-value: 0.2251	p-value: 0.5699	p-value: 0.1261
Less than 1 minimum wage	15	6.6	1	1	1	1
1-2 minimum wages	152	67.3	0.85 [0.25; 3.35]	0.18 [0.15; 0.32]	1.38 [0.35; 8]	0.46 [0.08; 4.76]
2-3 minimum wages	29	12.8	1.22 [0.28; 5.8]	0.53 [0.6; 0.88]	1.78 [0.35; 12.22]	0.76 [0.08; 10.09]
3-4 minimum wages	16	7.1	0.68 [0.1; 4.13]	0.58 [0.6; 0.95]	1.32 [0.18; 11.04]	0.44 [0.01; 9.48]
4-5 minimum wages	5	2.2	1.31 [0.08; 16.01]	0.55 [1; 1]	0 [0; 7.75]	1.58 [0.02; 38.86]
More than 5 minimum wages	6	2.7	3.72 [0.38; 55]	0.84 [1; 1]	3.7 [0.33; 46.7]	3.04 [0.17; 55.71]
Location of the house§			p-value: 0.3932	p-value: 0.3932	p-value: 0.7077	p-value: 0.8294
Outskirts	109	48.2	1	1	1	1
Central region	26	11.5	0.65 [0.2; 1.89]	1.43 [0.13; 8.64]	0.53 [0.14; 1.60]	1.29 [0.21; 5.56]
Expanded city center	27	11.9	1.49 [0.56; 3.86]	0 [0; 3.45]	0.63 [0.19; 1.81]	1.24 [0.2; 5.31]
Rural area	25	11.1	1.22 [0.43; 3.3]	0.72 [0.01; 6.35]	0.86 [0.28; 2.41]	1.35 [0.22; 5.84]
Condo	4	1.8	6.41 [0.49; 346.56]	0 [0; 31.35]	0 [0; 3.52]	0 [0; 16.83]
Others	29	12.8	0.98 [0.35; 2.54]	1.97 [0.3; 9.98]	0.7 [0.23; 1.92]	0.36 [0.01; 2.7]

Note: *One interviewee without information (0.4%); †Two interviewees without information (0.9%); ‡Three interviewees without information (1.3%); §Six interviewees without information (2.7%).

When assessing the adolescents with the DUSI questionnaire, it was possible to identify the profile of the intensity of the problems in relation to drug use. The absolute density of problems was established, which indicates the intensity in each area of the adolescent's life in isolation; as well as the relative density, which indicates the percentage contribution of each area in the total number of problems. The formula for calculating these densities is described in the DUSI instrument itself, where the absolute density is found by dividing the number of affirmative answers in each area by the number of questions in the area and multiplying this value by 100; and the relative density is the value of the absolute density in each area over the sum of the absolute densities of all areas times 100. The leisure/recreation area stands out, which investigates access and quality of the activities, as it reached higher numbers both in the absolute and in relative density of problems. The data are presented in Figure 1.

To investigate the geospatial context, geoprocessing was performed based on the results of the use of alcoholic beverages and other drugs in relation to the participating schools, shown in Figure 2. The spatial distribution presents the 21 participating schools, with those that do not have adolescents who the use of alcoholic beverages and other drugs marked in green, yellow for those that had use by up to 60% of the participants, and red corresponding to above 60% of the total students enrolled. This approach allows for a better identification and analysis of the SDHs and their relationship with drug use or non-use.

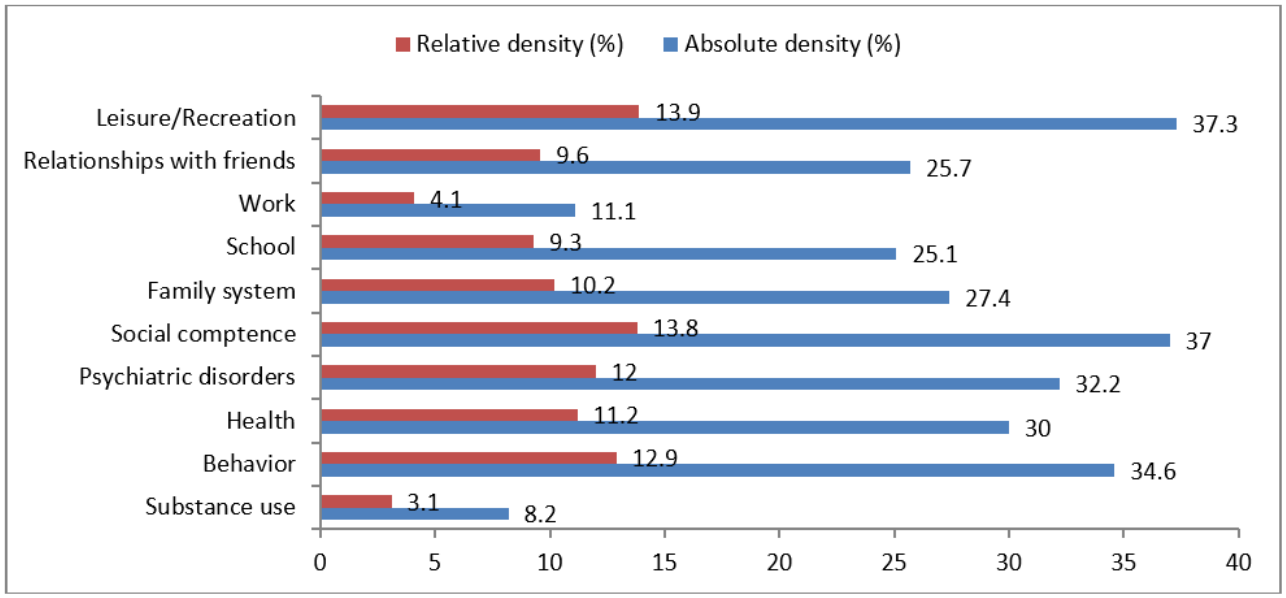

Figure 1 – Absolute and relative frequency, in percentage, of the DUSI study areas. Divinópolis, MG, Brazil, 2022. (n=226)

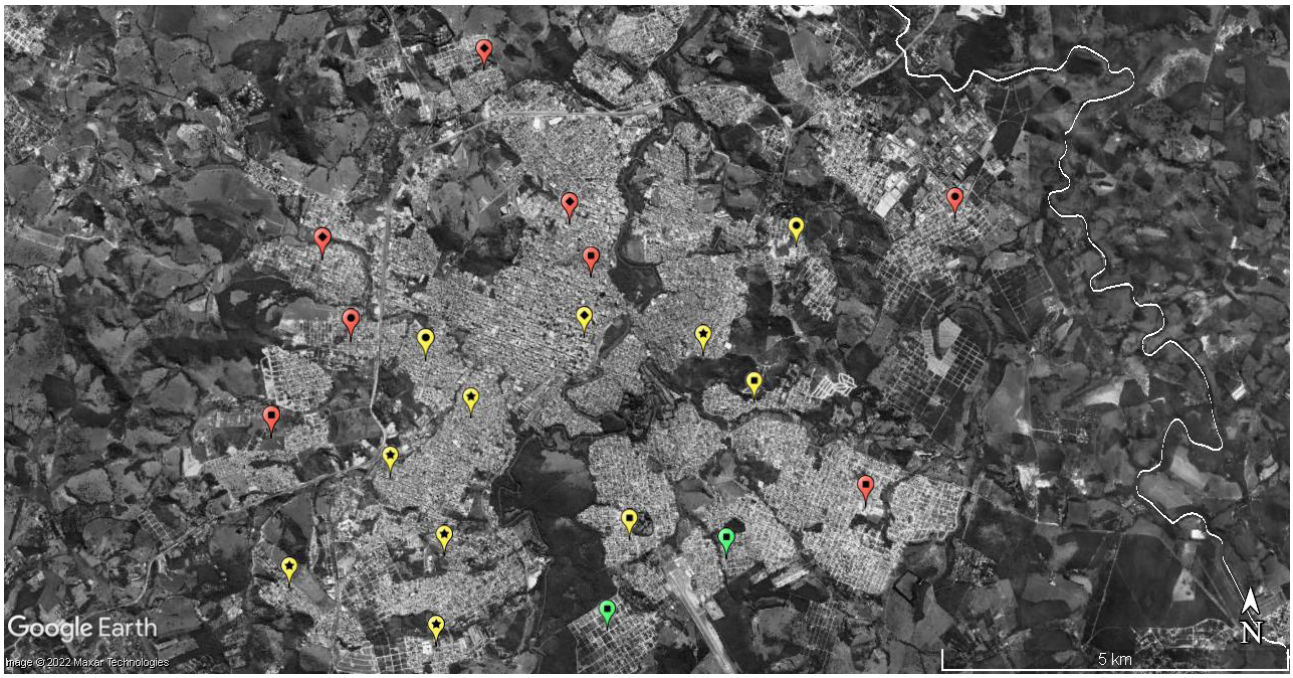

Figure 2 – Spatial distribution of all 21 participating schools, according to their addresses, 2022.

When analyzing the regions marked in red, it is noticed that they are on the outskirts of the city, places with few offers of leisure and recreation and without adequate basic infrastructure, which do not have places for practicing sports, also lacking governmental programs to promote and access cultural activities[15]. It is noted that they are regions with many families in a situation of poverty and with criminality rates, with drug trafficking and consumption standing out[15].

The yellow regions, in turn, are characterized by recent socioeconomic development, with improved infrastructure, having most of the homes with access to treated water, electricity, basic sanitation and paved streets[12]. However, as well as the regions indicated in red, they lack infrastructure for leisure/recreation and access to cultural activities[15].

The regions in green present similar problems to those faces by the regions in red[15]. However, a notable characteristic is that they are areas considered as rural peripheries, that is, with prevalence of economic activities related to family farming, as well as leisure/recreation activities typical of the countryside, such as animal management, religious celebrations and interaction with nature[15].

DISCUSSION

Use of alcoholic beverages and other drugs is a complex and multifactorial phenomenon. When it comes to this consumption in adolescence, the concerns are greater, as this use not only leads to family conflicts and school difficulties, but also to complications in adulthood, such as difficulties relating, abusive use and development of diseases[2,16].

The research showed a significant percentage of alcoholic beverage use from 14 years old, with a gradual increase with age, representing the only significant association regarding alcoholic beverages use by adolescents in this study. This fact is not only corroborated by Brazilian studies but also by international ones[7,10,17]. The reality is that alcoholic beverages are considered a socializing element, representing part of mankind's history, whether by means of rituals or for celebrations[10,17]. The increase in their use is related to the fact that young people want to feel and be more mature when their consumption is welcomed in the social environment[6].

Consumption of alcoholic beverages or other drugs is a learned social behavior and takes place through mimicking and primary interactions with friends and family members. In Brazil, as already presented by a Chinese study, consumption of alcoholic beverages is encouraged by family members as adolescents grow older, as a way to teach the individuals how to drink and incorporate them to the adult group[6,18].

The rates found among adolescents aged 14/15 years old are consistent with other Brazilian studies, one of which shows 23.1% prevalence of alcohol use in the last 30 days among the adolescents[15]. In turn, the research conducted in Belo Horizonte/MG showed 23.8% prevalence, and Diadema/SP reached 22.6%[19–21]. Consumption in countries considered as developing ones has similar and even alarming results, such as Mexico, which obtained percentages of 60.6% of beverage use by adolescents aged 13/14 years old, and Uganda, with 39% of university students with a mean age of 22 years old who had drunk alcoholic beverages in the last 12 months[17]. However, countries like Sweden show changes in the consumption of alcoholic beverages, with a significant reduction in the last ten years, just as part of China also shows stability in consumption[5,18].

Another significant association was in relation to tobacco use and "parents' marital status" and "who do you live with?". A number of research studies show the importance of the family ties and of a context free of violence, such as quarrels or arguments between parents and children[6]. In addition, the presence of both parents would ease good communication and imposition of limits[22]. However, to better analyze the results, such as the fact that tobacco use is higher among the adolescents who live with their grandparents and other people, it would be necessary to understand why these adolescents are not living with their parents, for example. Which other factors that the research questions were not sensitive enough to capture are influencing tobacco consumption?

When considering the SDHs, individual and community determinants are important, although the environment in which this adolescent circulates should be considered, whether it is a violent space in which there is lack of infrastructure, access to leisure and drug circulation. A study conducted in a region with presence of drug circulation showed greater use of illicit substances and tobacco among the adolescents than in a region with less circulation of these substances[10]. Even if this adolescent lives in healthy spaces, it would be necessary to understand what kind of relationship this young person has with grandparents or third parties, and if these people with whom the young person lives would not have the habit of smoking, which was very common a few decades ago[6].

Habits are built since childhood through observation and mimicking of the surrounding behaviors. In childhood it would be the family and in adolescence the friends, a need of the adolescents to feel that they belong to a group[6–7]. The research showed that more than 60% of the parents drink alcoholic beverages, and that such use is often performed at home or witnessed by the adolescents at family parties; therefore, when seeing consumption as something standardized in the family, young people tend to repeat this habit. A study conducted in South Korea reports that having a good relationship with parents was not associated with the use of alcoholic beverages, but that encouraging consumption of alcoholic beverages at home under family supervision does, as it creates in young people the false idea of permission to drink in other places[7].

Another interesting data is the percentage of adolescents who work. The research did not present a significant association between the "work" and "use of alcoholic beverages and other drugs" variables; however, other studies conducted in Brazil showed a positive association between the variables, which can be explained by the fact that adolescents who work know a new environment, sometimes even outside their usual circulation space, which will lead to new social learning[10,16]. Another reason that associates consumption of alcoholic beverages and working for young people is placing them on the adult level, guaranteeing them the possibility of consuming goods, with alcoholic beverages among them[23].

Regarding the adolescents' spatial distribution, higher alcohol consumption was verified among the adolescents that live in peripheral areas and without infrastructure. A research study carried out in the inland of São Paulo showed greater consumption of alcoholic beverages and other drugs by adolescents who lived in regions considered vulnerable, mainly due to the large circulation of drugs[10], which corroborates this study. In turn, a study carried out in three Brazilian capitals (Fortaleza, Porto Alegre and Rio de Janeiro) showed inverse results, and locations with good infrastructure, such as presence of curbs, lighting and access ramps had greater use of alcoholic beverages, while regions with structural problems obtained less use (dissertation). A study conducted in China also shows that living in areas with less infrastructure can lead to an increase in alcohol consumption[18]. This same study also reports that living in peripheral rural areas is a protective factor against alcohol consumption, which corroborates the current research.

Although use is higher in the peripheral regions, the city of the research generally presents lack of green and leisure areas, with the search for pubs as the only fun activity during the weekends, a fact corroborated by the DUSI results, in which the leisure/recreation issue had a strong contribution to consumption of alcoholic beverages and other drugs among adolescents.

Thus, when analyzing that, although there is greater use of alcoholic beverages among the students from the outskirts, there was no association between the "income" and "use of alcoholic beverages or other drugs" variables: a possible explanation for this is that, due to this absence of alternatives, the adolescents who want to drink alcoholic beverages go to the same social places[9]. The highest concentration of pubs is in the city center and, for being a medium-sized municipality, commutes are not an obstacle. Thus, as shown in another study conducted in the city, young people from all social classes attend the same places that sell alcoholic beverages, which are the doors of the 24-hour convenience stores, considered leisure places in the city and which bring together a range of adolescents from different social classes.

The spatial distribution of pubs and convenience stores exerts an influence on alcoholic beverages consumption among the adolescents. A number of studies show that living close to pubs and walking close to these places would favor the purchase of alcoholic beverages[9,24]. This fact is aggravated by non-supervision in the sale of alcoholic beverages to children under 18 years of age, which occurs due to the fact that alcohol is a socially accepted drug, which causes laws or policies alone to fail to prevent social practices[25].

Thus, use of alcoholic beverages and other drugs cannot be analyzed by means of isolated factors, as all the spheres are inter-related to substance use or non-use. What needs to be evaluated and the question to be answered is why the use percentages among Brazilian adolescents has increased, according to the 2019 PeNSE. To obtain this answer, it is necessary to understand the SDHs and invest in public policies with real impact on disease prevention and health promotion. Based on this, it can be stated that the issue about use of alcoholic beverages and other drugs is a public health problem and that it should involve several sectors, such as infrastructure, with the construction of more leisure and culture areas in the cities, use of educational technologies that dialog with adolescents, without a prohibitionist bias and effective supervision, but that it should be carried out in conjunction with a social discussion on the reasons for this consumption of alcoholic beverages and other drugs by young people.

The limitations of this study are related to targeting the adolescent population that attends public schools, not including those who are not enrolled and students from private institutions. In addition, the fact that it was developed in only one municipality may not show the national reality, although the results converge with several other studies, as presented.

Regarding the data analysis, despite being a significant sample for the target audience, it was a local sample and there were low frequencies in some classes, which explains the wide range of confidence intervals, as well as the non-association between use of substances other than alcoholic beverages and tobacco, with drugs considered the first to be tested.

CONCLUSION

In Brazil it is prohibited to sell alcoholic beverages to adolescents. According to the numbers of this and other studies presented, it is noted that, along with the high percentage of alcohol consumption, there is also non-supervision. In addition, it is easily accessible and sometimes even encouraged by society, mainly through the media that shows consumption of alcoholic beverages related to satisfaction, beauty and well-being.

The parents' influence on the consumption of alcoholic beverages and other drugs by the adolescents was verified, as it is seen as the first social and knowledge holder institution. In addition to the influence of age with the use of alcohol and other drugs, adolescents aged 15 and 16 years old are more likely to drink alcoholic beverages and smoke tobacco than those aged 14 years old.

It was possible to notice that the SDHs can exert an impact on the use of alcohol and other drugs. In vulnerable areas, without water and sewage networks and with failures in community and social networks, in addition to few leisure/recreation areas, there may be greater use of alcoholic beverages and other drugs.

The results of this study indicate failures in the system and point out the essentiality of the SDHs for the drug use issue. Because of this, more research studies on these associations should be carried out, as well as health policies need to be implemented and the existing ones inspected.

For this, a partnership between family, school and health is necessary, as they are the main institutions at this time of life, fundamental for knowledge acquisition by children and adolescents.

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NOTES

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CONTRIBUTION OF AUTHORITY

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CONFLICT OF INTEREST

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