

Substance use among university students and affecting factors in Central Morocco: a cross-sectional Study

Uso de sustancias entre estudiantes universitarias y factores que afectan en el centro de Marruecos: un estudio transversal

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Summary

Introduction: University is a period characterized by an absence of parental supervision and independence. Few research has been conducted in Morocco among this particular population, the aim of this study is to assess the prevalence to substance use among student, to develop knowledge of how and why substances are used and or abused.

Subjects and methods: This is a cross-sectional study, there were 1054 participants, divided into university student group (n=444) and non-student group (n=610) using a random sampling process for the university student group, and multistage stratified probability procedure for the other group. Data were collected using structured questionnaire from subjects.

Results: The current study revealed that tobacco use was found the most prevalent substance used among university student representing 65,1%. While the prevalence of cannabis use was 29,1%, and psychotropic drugs was 2,5%. university female were two times more likely to report substance use than non-university (OR 2,09 p<.001); occasional or regular physical activity were less likely to use substance compared to the other group (OR 0,26, p<.001). those who had an alcoholic parent were eight times more likely to report substance use than non-user (OR 8,71, p<.001). cannabis, pipe and more than 3 substances were more likely to be reported among non-university students than students (OR 2,51; p<.001), (OR 3,44,31; p<.001) and (OR 2,90; p<.001) respectively

Conclusion: This study has demonstrated a high prevalence of substance use among young educated adults who should be role models for their community, fighting substance use rather than using it.

Key words: Substance use, university students, substance-related disorders, illicit drugs.

Resumen

Introducción: La etapa universitaria se caracteriza por una ausencia de supervisión parental y una mayor independencia. A pesar de esto, existen pocos estudios realizados en Marruecos que se hayan centrado en esta población. El objetivo de este estudio es evaluar la prevalencia del consumo de sustancias entre los estudiantes, así como desarrollar el conocimiento sobre cómo y por qué se utilizan o abusan de ellas.

Sujetos y métodos: Se llevó a cabo un estudio transversal con 1054 participantes, divididos en un grupo de estudiantes universitarios (n = 444) y un grupo no universitario (n = 610). El grupo de estudiantes universitarios fue seleccionado mediante un proceso de muestreo aleatorio, mientras que el otro grupo se seleccionó mediante un procedimiento de probabilidad estratificado por múltiples etapas. Se recopilaron los datos a través de un cuestionario estructurado.

Resultados: El estudio actual ha revelado que el tabaco es la sustancia más utilizada entre los estudiantes universitarios, representando un 65,1% del consumo. Mientras tanto, la prevalencia del consumo de cannabis fue del 29,1%, y la de drogas psicotrópicas del 2,5%. Las mujeres universitarias fueron dos veces más propensas a informar el consumo de sustancias que las no universitarias (OR 2,09 p <.001), y aquellos que llevaban a cabo actividad física ocasional o regular eran menos propensos a consumir sustancias en comparación con el otro grupo (OR 0,26, p <.001). Aquellos que tenían un padre alcohólico tenían ocho veces más probabilidades de informar el consumo de sustancias que aquellos que no lo tenían (OR 8,71, p <.001). Además, el consumo de cannabis, la pipa y más de 3 sustancias fue más probable que se informara entre los estudiantes no universitarios que entre los universitarios (OR 2,51; p <.001), (OR 3,44,31; p <.001) y (OR 2,90; p <.001), respectivamente.

Conclusión: Este estudio ha demostrado una alta prevalencia de consumo de sustancias entre adultos jóvenes educados que deberían servir como modelos a seguir para su comunidad, combatiendo el consumo de sustancias en lugar de perpetuarlo.

Palabras clave: Consumo de sustancias, estudiantes universitarios, trastornos relacionados con sustancias, drogas ilícitas.

Introduction

Substance use and abuse is a major public health problem worldwide. According to the United Nations Office on Drugs and Crime (UNODC) report some 271 million people, or 5,5 percent of the world's population aged 15 - 64 have used either one or more of these substances- cannabis, cocaine, ecstasy, alcohol, tobacco, at least once in the last 12 months, and 35 million people worldwide suffer from substance use disorders¹.

University is a period characterized by a lack of parental supervision and newfound independence. At this special age, students try many new things. The initial factor that appears to influence adolescent substance use experiments is curiosity, social pressure and peer group influence, those are reported to be primary reasons for substance use, as well as to feel better, to lower stress, or to feel mature².

Although substance use is widely considered to be a normative part of the university experience, university students seems to be at a greater risk of substance use than other people of similar age². But they are less likely to develop substance use disorders than their non-university-attending peers, the consequences of substance use are significant³.

Substance use is becoming a major global public health and socioeconomic problem, widespread among high school and college students. These problems are emerging as one of the most threatening and challenging social and public health problems today¹. Especially in developing countries, it is a serious problem in its own right and has so far been an aggravating factor in the economic crisis, leading to under development⁴.

Adolescence is a sensitive period of development, characterized by brain changes and high levels of emotion, motivation, and risk-taking. The early exposure to substance uses often predicts future substance use and other psychiatric disorders⁵. Rohde and colleagues demonstrated that adolescent substance use disorder is associated with numerous functioning difficulties at age 30, some of which appears to be related to recurrent substance use disorder, co-morbid adolescent disorders, or functioning problems already evident in adolescence⁶.

Little research has been conducted in Morocco among this particular population, the aim of this study is to assess the prevalence to substance use among student and affecting factors, to develop knowledge that increases our understanding of how and why substances are (ab)used.

Subjects and methods

Study design and setting

The study was conducted at Cadi Ayyad University Marrakech city, Morocco, from February -July 2021. The university hosts students from central and south regions of Morocco country, from 07 region out of 12, representing 32,03% from the national general population⁷. In order to evaluate the difference, the second group consists of non-student (n=610), aged 17 to 30 years. These subjects come from different socio-economic strata, native or residents in Central Morocco.

Sample size determination and sampling technique

In total, there were 1054 participants, divided into student group (n=444) and non-student group (n=610), in order to have a representative sample to the entire target population. And to generalize the results⁸:

With an assumption of: P=15 (prevalence of Drug use) CI=95%, Marginal error=5%. Then the sample sizes become:

$$n = \frac{Z^2 \times P \times Q}{d^2} = \frac{(1,96)^2 \times (0,15) \times (100-0,15)}{5^2} = 185$$

Then 10% non-response rate and 1.5 design effects was considered, However, we decided to recruit a higher total sample of 500 students in order to be able to make meaningful analyses. The random sampling process for the university student group was adopted, where interviewer was near the central covid 19 vaccination centers placed by the university. It is based on the principle of random selection which considers that all target individuals have the same probability of being in the sample and that the results of the study are representative of the entire target population.

For the non-student group, a multistage stratified probability procedure was used, stage 1 the selection of particular geographic areas based on urban rural and preurban, stage 2 especially urban cities, stratified districts were chosen, and stage 3 randomly vaccine center was chosen.

Inclusion and exclusion criteria

Group students who were enrolled at the university during 2020-2021 at the specified faculties and consented to participate in the study were eligible and included in the present study. Antecedent of use of any psycho active substance during lifetime was considered an inclusion criterion for both groups. Those who refused or hesitated to participate in the study and those who submitted incomplete questionnaire were excluded from the present study.

Data collection method

The questionnaire created for this study consists of four parts: socio-demographic part, antecedent, family history of substance use and matters related to participant's substance use. The last section included the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) was used in order to diagnose psycho active substance addiction, when the patient has a score: <2: No addiction, 2-3 Low addiction, 4-5 moderate addiction, >6 severe addiction⁹.

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization, to easily detect alcohol-related problems in the last 12 months prior to the survey. a score of 7 or less denotes abstinence or low risk, scores of 7-12 indicates an alcohol misuse, and a score higher than 13 denote alcohol dependence¹⁰. One-on-one in-person interview was conducted in an isolated place using a self-designed structured questionnaire. During the survey, necessary clarification or instruction was provided promptly when needed.

Data Analysis

Data collected were encrypted, filtered and put into Excel software and exported to SPSS version 25 computer software for final analysis. Descriptive data was presented using tables. In order to identify associations between the dependent and independent variables a binary logistic regression was performed. Multivariable logistic regression to identify factors associated with substance use and to minimize confounders between variables at p-value of <0.02 were transported. The association between variables were measured using adjusted odds ratio with 95% confidence interval at significance level of <0.05.

Results

Among all participants (N=1054), the participation rate was 88,2% among students (500 participants and 444 was retained), and 87% among non-student (700 while 610 was retained). The mean age of university student was 22,15±2,79 ranged from 17-30 years, majority of university students were male (87,12%) from urban residency (80,4%). The major part of student group, were single during the study period (96,2%), Almost the majority of students doesn't have an income (79,1%), while out of those who exercised a remunerated activity, 10,6% had a salary less than the Moroccan minimum wage (**Table I**).

The univariate logistic regression revealed an association between substance use and gender, where university female were two times more likely to report substance use than non-university' (OR 2,09 [95% CI 1.37 to 3.20]; p=0,001). Also, urban residency was more associated with student than others (OR 1,72 [95% CI 1.28 to 2.30]; p<.001). Students living away from their parents were almost two times more likely to report substance use than the other group (OR 2,03 [95% CI 1.28 to 2.30]; p<.001).

An association between physical activity and use, where university student who practiced occasional or regular physical activity were less likely to use substance compared to the other group (OR 0,26 [95% CI 0,18 to 0.39]; p<.001) and (OR 0,27 [95% CI 0.20 to 0.36]; p<.001), also collective sports were less likely to be associated with substance (OR 0,18 [95% CI 0.12 to 0.25]; p<.001).

Table I: Students and non-students Socio demographic status.

Modality	Variable	Students (n=444) n (%)	Non Students (n=610) n (%)	P Value	χ^2	Unadjusted Odds ratio (CI 95%)	P Value
Age		22,15 (17-30) ±2,79	26,24 (17-30) ±3,51	NS			
Sexe	Male	387 (87,12%)	570 (93,4%)	<.001***	12,13	2,09 (1,37-3,20)	0,001***
	female	57 (12,8%)	40 (6,6%)				
living	urban	357 (80,4%)	429 (70,3%)	<.001***	34,16	1,72 (1,28-2,30)	<.001***
Education level	illiterate	-	79 (13%)	<.001***	565,576	124,10 (30,19-510,057)	<.001***
	primary	-	95 (15,6%)				
	secondary	-	270 (44,3%)				
	university	444 (100%)	156 (25,6%)				
Marital status	single	427 (96,2%)	412 (67,5%)	<.001***	130,97	1	<.001***
	married	15 (3,4%)	178 (29,2%)				
	Divorced/widowed	2 (0,4%)	20 (3,3%)				
Number of children	0	439 (98,9%)	457 (74,9%)	<.001***	115,77	1	<.001***
	1-feb	3 (0,7%)	94 (15,4%)				
	More than 3	2 (0,5%)	59 (9,6%)				
Living	alone	313 (70,49%)	507 (83,11%)	<.001***	22,92	1	<.001***
	colocation	131 (29,5%)	103 (16,9%)				
Income	none	351 (79,1%)	145 (23,8%)	<.001***	363,09	0,08 (0,06-0,12)	<.001***
	Minimum Wage	47 (10,6%)	222 (36,4%)				
	low	21 (4,7%)	193 (31,6%)				
	Medium	-	38 (6,2%)				
	High	25 (5,6%)	12 (2,0%)				
						1,94 (1,12-3,37)	0,01**
						ns	-
						0,10 (0,04-0,21)	<.001***

NS non significant *p < .05; **p < .01; ***p < .001.

The type of substance used by parents was also associated with use among participants, for those who had an alcoholic parent were eight times more likely to report substance use than non-user (OR 8,71 [95% CI 3.70 to 20.47]; $p < .001$). On the other hand, place of substance use by parents was associated with substance use, whom their parents used at home were at greater risk for substance use than others (OR 1,78 [95% CI 1.31 to 2.41]; $p < .001$) (Table III).

The univariate logistic regression revealed a negative correlation, where students were less likely than non-students to use substance at a lower age: (OR 0,46[95% CI 0.33 to 0.63]; $p < .001$) (Table IV).

The first substance used among university group was tobacco (65,1%), followed by Cannabis (15,5%) and alcohol (14,18%), while among non-university group,

tobacco was the most used (70%), followed by alcohol (15,57%) and cannabis (9,8).

Even though tobacco still the main current substance used by the two group (60,1%), the prevalence of cannabis has increased between first and current substance used, representing 29,1% among university student, and 22,8% among non-university student, while the opposite was observed in alcohol where it decreased, to be 8,3% and 5,6% out of university and non-university respectively. The use of cocaine as a principal substance was used among only 3 students (0,7%) while none of the other group had reported that use. on the other hand, psychotropic drugs, mainly clonazepam, were used by 4 students (0,9%) and 65 of non-students (10,7%). these latter are statistically different, as shown by the univariate logistic regression (OR 11,99 [95% CI 4.31 to 33.33]; $p < .001$).

Table II: Students and non-students physical activity and alimentation.

Modality	Variable	Students (n=444)	Non Students (n=610)	P Value	χ^2	Unadjusted Odds ratio (CI 95%)	P Value
Physical activity	no	99(22,3%)	314(51,5%)	<.001***	91,81	1 0,26(0,183-0,39) 0,27(0,2-0,363)	<.001*** <.001***
	Occasional	92(20,7%)	78(12,8%)				
	Regular	253(57%)	218(35,7%)				
Type of sport	No	99(22,3%)	314(51,5%)	<.001***	63,51	1 0,34(0,25-0,46) 0,18(0,127-0,25)	<.001*** <.001***
	individual	151(34,0%)	206(33,7%)				
	collective	188(42,3%)	90(14,8%)				
Nutrition	No	101(22,7%)	50(8,2%)	<.001***	22,51	3,29(2,29-4,74) 1	<.001***
	Yes	252(77,25%)	560(91,8%)				

NS non significant * $p < .05$; ** $p < .01$; *** $p < .001$.

Table III: Students and non-students parent' substance use status.

Modality	Variable	Students (n=444)	Non Students (n=610)	P Value	χ^2	Unadjusted Odds ratio (CI 95%)	P Value
Parent' education	Illiterate	108 (24,3%)	205 (33,6%)	0,001***	19,2	1,65 (1,15-2,37)	0,007**
Parent' working status	No	33 (7,4%)	147 (24,1%)	<.001***	125,66	3,91 (2,41-6,344) 1	<.001*** -
	Yes	411 (92,56%)	263 (43,11%)				
Parent' substance use	Yes	157 (35,4%)	286 (46,9%)	<.001***	14	1,61 (1,25-2,07) 1	<.001***
	No	287 (64,6%)	324 (53,1%)				
Parent' substance use	tobacco	115 (25,9%)	198 (32,5%)	<.001***	50,73	1,57 (1,19-2,07) 0,56 (0,32-0,97) 8,71 (3,70-20,47) 1	0,001*** 0,04* <.001***
	Cannabis	36 (2,9%)	27 (4,42%)				
	Alcohol	42 (1,4%)	88 (14,42%)				
	Non user	287 (64,6%)	324 (53,3%)				
Place of use	House	44 (10%)	166 (27,2%)	<.001***	56,27	1,78 (1,31-2,41) 1,41 (1,01-1,97) 1	<.001*** 0,04*
	outside	76 (17,1%)	120 (19,6%)				
	Non user	287 (64,6%)	324 (53,1%)				

NS non significant * $p < .05$; ** $p < .01$; *** $p < .001$.

Table V: Students and non-students DSM, and AUDIT scores.

Modality	Variable	Students (n=444)	Non Students (n=610)	P Value	χ^2	Unadjusted Odds ratio (CI 95%)	P Value
DSM 5	No addiction <2	148 (33,3%)	10 (1,6%)	<.001***	1313,84	1 9,60 (4,22-21,81) 13,09 (6,38-26,83) 41,45 (21,37-80,41)	<.001*** <.001*** <.001***
	low addiction 2-3	37 (8,3%)	24 (3,9%)				
	Moderate addiction 4-5	78 (17,6%)	69 (11,3%)				
	Severe addiction >6	181 (40,8%)	507 (83,1%)				
	DSM Score	4,09 (0-17) $\pm 3,38$	7,58 (0-11) $\pm 2,41$				
AUDIT	Low risk <7	393 (88,5%)	471 (77,2%)	<.001***	26,73	1 NS 2,08 (1,05-4,09)	0,03*
	Mis use 7-12	21 (4,7%)	34 (5,6%)				
	Alcohol dependance >13	30 (6,8%)	104 (17%)				
	AUDIT score	1,79 (0-32) $\pm 5,23$	4,23 (0-34) $\pm 8,24$				
Monthly expense (USD)		70,3 (10,-35,) ± 56	84,8 (10-500) ± 59	<.001***	ANOVA F 12,63		

NS non significant * $p < .05$; ** $p < .01$; *** $p < .001$.

Table IV: Students and non-students substance use.

Modality	Variable	Students (n=444)	Non Students (n=610)	P Value	Chi Square	Unadjusted Odds ratio (CI 95%)	P Value
Age at first use	<15 y/o	109 (24,54%)	243 (39,83%)	0,000***	27,49	1 0,51 (0,38-0,69) 0,46 (0,33-0,63)	0,000*** 0,000***
	15-18	194 (43,7%)	222 (36,4%)				
	>18	141 (31,75%)	145 (23,77%)				
First use	Curiosity	205 (46,2%)	407 (66,7%)	0,000***	58,2	4,36 (2,50-7,60) 2,16 (1,14-4,09) 2,30 (1,27-4,15) NS 1	
	Relax	26 (5,9%)	10 (1,6%)				
	Forget problems	60 (13,5%)	59 (9,7%)				
	Be with friends	109 (24,5%)	114 (18,7%)				
	Euphoria	44 (9,9%)	20 (3,3%)				
Current use	Stop	129 (29,05%)	09 (1,4%)	0,000***	229,13	1 35,78 (17,96-71,31) 45,61 (22,43-92,74) 12,27 (6,11-24,67) 13,98 (6,77-28,88)	0,000*** 0,000*** 0,000*** 0,000***
	Relax	86 (19,36%)	235 (38,52%)				
	Forget problems	55 (12,4%)	193 (31,6%)				
	Be with friends	108 (24,3%)	102 (16,7%)				
	"Addiction"	66 (14,9%)	71 (11,6%)				
1 st substance used	Tobacco	289 (65,1%)	427 (70%)	0,002**	21,33	1 0,58 (0,40-0,85) Ns Ns Ns 0,31 (0,12-0,78) 8,12 (1,05-62,80)	0,006** 0,01** 0,04*
	Cannabis	69 (15,5%)	60 (9,8%)				
	Alcohol	63 (14,18%)	95 (15,57%)				
	Psychotropic	5 (1,1%)	8 (1,3%)				
	Mdma	2 (0,5%)	1 (0,2%)				
	Cocaine	15 (3,4%)	7 (1,1%)				
	Inhalants	1 (0,2%)	12 (2,0%)				
Principal substance	Tobacco	271 (61,0%)	367 (60,2%)	0,000***	52,01	NS NS NS 11,99 (4,31-33,33) NS NS	0,000***
	Cannabis	129 (29,1%)	139 (22,8%)				
	Alcohol	37 (8,3%)	34 (5,6%)				
	Psychotropic	4 (0,9%)	65 (10,7%)				
	Cocaine-heroin	3 (0,7%)	0 (0%)				
	Inhalants	0 (0%)	5 (0,8%)				
Frequency	Daily	331 (74,5%)	565 (92,6%)	0,000***	69,85	27,31 (3,60-206,87) NS 1	0,000***
	Weekly	97 (21,8%)	44 (7,2%)				
	Monthly	16 (3,6%)	1 (0,2%)				
Associated substance	No	273 (61,5%)	277 (45,4%)	0,000***	67,75	1	

NS non significant *p < .05; **p < .01; ***p < .001.

The use of multiple substances was reported by more than half of participants, among university students' alcohol remain the most associated substance (18,2%), followed by cannabis (8,1%), while more than tree substances was reported among (4,1%), on the other hand among non-university students' cannabis was the most associated substance (15,1%), followed by alcohol (12%) and pipe (11,5%), while more than tree substances was used by 8,7% (Table IV, Supplementary material).

The univariate logistic regression showed that cannabis, pipe and more than 3 substances were more likely to be reported among non-university students than students (OR 2,51 [95% CI 1.65 to 3.83]; p<.001), (OR 3,44,31 [95% CI 1.65 to 5.08]; p<.001) and (OR 2,90 [95% CI 1.65 to 5.08]; p<.001) respectively. The frequency use of substance was significant among the studied group, where daily use represented 2,7% among university student, and 20,5% among non-university group (P value <.001, $\chi^2= 90,87$). Daily use was strongly associated with non-student group (OR 10,26[95% CI 5.54 to 18.99]; p<.001).

According to DSM 5 score, among university student no addiction to substance use was observed in 33,3%, low in 8,3%, moderate in 17,6% and severe

addiction among 40,8%, on the other hand, among non-university group, only 1,6% hadn't addiction, while almost the majority presented a severe addiction status (83,1%), while the rest was divided between low and moderate addiction by 3,9% and 11,3% respectively, a statically significant difference was noted between the two groups (P value <.001, $\chi^2= 1313,84$). The mean score of DSM 5 was 4,09 \pm 3,38 ranged from 0-17, among student group while it was 7,58 \pm 2,41 ranged from 0-11, this difference was also significant (ANOVA F=382,35) (Table V).

Overall, the mean monthly expenses among university student was 70,3 \pm 5,60 ranged from 10-350 United states Dollar (USD), while among non-university student the mean was 84,8 \pm 59,3 ranged from 10-500 USD, this difference is statistically significant (P value <.001, F= 12,63) (Table V).

Discussion

The current study revealed that tobacco use was found to be the most prevalent form as a first and principal substance use among university student representing 65,1% and 60,1% respectively, this use remain doubled compared to a study conducted among Moroccan

student (Fes), where tobacco was used by 29,5% of students¹¹, while in Casablanca, 37,4% university students had reported tobacco use¹², cigarettes are cheaper and more accessible for students with little financial resources, this could explain this high prevalence.

But the cannabis use was higher (37,9%), among Casablanca, followed by Marrakech (current study) and Fes' student representing 29,1% and 16,1% respectively. Alcohol use was quite similar between our study (8,3%), and Zarrouq and collaborators finding (7,4%), on the other hand it remained very high among Soubhi and collaborators, where it was reported by 35,2% university students^{11,12}.

The current lifetime prevalence of smoking remains high, compared to others, a study conducted among Ethiopian student was 22%¹³, and a study in Saudi university students was 14%¹⁴, but quite lower than a study conducted among Kenyan university student where the prevalence was 69,1%¹⁵.

However, the prevalence of lifetime substance use among female university student was high compared to non-university student 12,8% versus 6,6% respectively, as this topic is considered taboo in conservative communities. Still substance use among male is higher, probably due to the high level of substance exposure.

According to DSM 5, two in every five student had a severe addiction, those results are consistent with a study conducted in the US among university and non-university student where it was 39,6%, but on the other hand, the non-student group of this current study had much higher severe addiction compared to non-university student among US representing 83,1% against 44,5% respectively⁹, the World Health Organization World Mental health surveys that conducted in 21 low and middle income countries, found that substance disorders was 58% among male, and 24,9% among female¹⁶.

Alcohol dependence was diagnosed among 6,8% of students according to AUDIT, this rate remained very low compared to other findings, Naguib et al (2021) found that alcohol was the only and most substance abused among students (50%) it could be explained by the physical and psychological tolerance of alcohol abuse¹⁷. Early use of alcohol may be the consequence of this current dependence, a study conducted in Morocco among adolescents found that, the rate of alcohol consumption is positively associated with age: among students aged 12 to 14 years old and 15 to 18 years old were respectively 1.6% and 9.7%, while among students aged over 18 years old, the prevalence of consumption was 15.6%¹⁸.

In our sample the prevalence of psychotropic drugs was 2,5% of all time, mainly benzodiazepine, this finding is consistent with another study conducted in Nepal, where 3,5% medical student had reported its use¹⁹.

The prevalence of life time cocaine use among student was 5,7%, this rate remains higher than the findings of university students in Nigeria where it was 2,1%²⁰, and also among US students where it was 4,8%³.

There was a high prevalence of multiple substance use among respondent, with 38,5% reported using more than one type of substance, these findings are in line with those of Egyptian (41,3%)¹⁷, Turkish (31,2%)²¹. Multiple drug use has been associated with higher rates of complications such as rule-breaking behavior²², sexual and physical abuse²³, and some psychiatric disorders²⁴. While this present study did not assess the links between drug use and those risky behaviors, a high prevalence of multiple drug use may be an indication that this population is a high-risk group for complications of drug abuse.

Substance use initiation age was also significant in this current study where out of 3 students, 2 had used a substance before age of 18 years, which is consistent with other studies^{15,20}. The development of cognitive, emotional, and social abilities in children and adolescents get affected by substance use may compromise later functioning in important adult domains such as marriage, parenting, and gainful employment²⁰.

In this study, most respondents indicated that curiosity was the main reason of first initiation to substance use, subsequently being with friends and to relax become the main reasons. Similar finding has been reported in other studies, a survey among medical student in the US found similar reasons, including to relax, to have a good time, to feel good and even to experiment²⁵.

Student drug use is influenced by various features associated with youth development, including living away from the control of parents, maintaining contact with same age peer groups, opportunities for obtaining and using drugs, and freedom from the responsibilities associated with employment, that was found in the current study and it has been argued in the literature^{26,27}.

Having a parent who used substances had a statistically significant effect of their offspring, such findings confirm similar results reported among Saudi university students, UAE and Bahrain too, indicating that having a substance user in family was an important predictor^{14,28}.

Those who were living in urban area were associated to substance use among student compared to non-student, the same finding was reported in a study conducted among Egyptian university student, where they two times more risk for use¹⁷.

The marital status was found to be statistically significant predictor of substance use, those students who were ever married were likely to use substance than never married, same finding was found by among Ethiopian university

students¹³. Married university students may suffer the effect of marital condition and own family departure on their day-to-day campus life that may lead them to use substances more than single students who were relatively at a low stress level.

Physical activity provides numerous benefits, besides improving cardiovascular endurance, and the prevention of obesity it is considered to an encouraging mechanism for pro-social behavior²⁹, in consequence the current study showed that university students who practiced physical activity were less likely to report substance use (OR 0,27 [95% CI 0,20 to 0,36]; $p < .001$), the same finding was found among Kenyan students, hence physical health represent a protective factor¹⁵.

Having a higher monthly income, and bad nourishment are factors associated with substance use, this results in consistent with another study conducted among another group of Ethiopian university student³⁰.

Conclusion

This study has demonstrated a high prevalence of substance use among university and non-university students in a low-income country, among young educated adults who should be role models for their community, fighting substance use rather than using it. Substance use are affected by complex factors at individual, family, school social and environmental factors, and the risk of substance dependence, mental and physical problems is elevated in this population.

Strategies and interventions are recommended to alleviate this issue, starting with families and peers where they should be role models to their children by keeping away from substance use, school/university health policies should be adjusted to include programs toward substance use education and prevention, providing on-campus special services which could assist users efficiently quit this addictive habit, interventions focusing on reducing access to substance should be implemented at different levels.

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Competing interests

All authors declare that there are no conflicts of interest.

References

- World Drug Report 2019: 35 million people worldwide suffer from drug use disorders while only 1 in 7 people receive treatment [Internet]. United Nations : Office on Drugs and Crime. [cited 2021 Oct 30]. Available from: http://www.unodc.org/unodc/en/frontpage/2019/June/world-drug-report-2019_-35-million-people-worldwide-suffer-from-drug-use-disorders-while-only-1-in-7-people-receive-treatment.html
- Johnston FH, Henderson SB, Chen Y, Randerson JT, Marlier M, Defries RS, et al. Estimated global mortality attributable to smoke from landscape fires. *Environ Health Perspect*. 2012;120:695-701.
- Skidmore C, Kaufman E, Crowell S. Substance Use Among College Students. *Child Adolesc Psychiatr Clin N Am*. 2016;25:735-53.
- Oshodi O, Aina O, Onajole A. Substance use among secondary school students in an urban setting in Nigeria: prevalence and associated factors. *Afr J Psychiatry* [Internet]. 2010 Apr 6 [cited 2021 Aug 17];13(1). Available from: <http://www.ajol.info/index.php/ajpsy/article/view/53430>
- Gil AG, Wagner EF, Tubman JG. Associations Between Early-Adolescent Substance Use and Subsequent Young-Adult Substance Use Disorders and Psychiatric Disorders Among a Multiethnic Male Sample in South Florida. *Am J Public Health*. 2004;94:1603-9.
- Rohde P, Lewinsohn PM, Seeley JR, Klein DN, Andrews JA, Small JW. Psychosocial Functioning of Adults who Experienced Substance Use Disorders as Adolescents. *Psychol Addict Behav J Soc Psychol Addict Behav*. 2007;21:155-64.
- RGPH 2014 [Internet]. [cited 2020 May 23]. Available from: <http://rgphentableaux.hcp.ma/Default1/>
- Zarrouq B, Bendaou B, El Asri A, Achour S, Rammouz I, Aalouane R, et al. Psychoactive substances use and associated factors among middle and high school students in the North Center of Morocco: a cross-sectional questionnaire survey. *BMC Public Health*. 2016;16:468.
- Arterberry B, Boyd C, West B, Schepis T, McCabe S. DSM-5 Substance Use Disorders Among College-Age Young Adults in the United States: Prevalence, Remission and Treatment. *J Am Coll Health J ACH*. 2020;68:650-7.
- Hallgren MA, Sjolund T, Kallmen H, Andreasson S. Modifying Alcohol Consumption among High School Students: An Efficacy Trial of an Alcohol Risk Reduction Program (PRIME for Life). *Health Educ*. 2011;111:216-29.
- Zarrouqa B, El Asri A, Chaib A, L'Kima H, El Hayame K, El Amine Ragala M, et al. Épidémiologie de l'usage des substances psychoactives chez les étudiants marocains. *Rev D'Épidémiologie Santé Publique*. 2017;65:S88.
- Soubhi FZ, El Berjaoui MEM, Touri B, Lima L, Talbi M. Substance Use in College Students: A Comparative Study on French and Moroccan Students. *J Educ Soc Res*. 2020;10:47.
- Tesfaye G, Derese A, Hambisa MT. Substance Use and Associated Factors among University Students in Ethiopia: A Cross-Sectional Study. *J Addict*. 2014;2014:1-8.
- Mandil A, Bin Saeed A, Dabbagh R, Shaikh SA, Al Saadi M, Khan M. Smoking among Saudi university students: consumption patterns and risk factors. *East Mediterr Health J*. 2011;17:309-16.
- Atwoli L, Mungla PA, Ndung'u MN, Kinoti KC, Ogot EM. Prevalence of substance use among college students in Eldoret, western Kenya. *BMC Psychiatry*. 2011;11:34.
- Auerbach RP, Alonso J, Axinn WG, Cuijpers P, Ebert DD, Green JG, et al. Mental disorders among college students in the WHO World Mental Health Surveys. *Psychol Med*. 2016 ;46:2955-70.
- Naguib YM, Sherif HA, Elbalsby AT, Edrees EA, Sabry AE, Sharif AF, et al. Prevalence and associated risk factors of cannabinoid abuse among Egyptian university students: a cross-sectional study. *Environ Sci Pollut Res Int*. 2021;1-11.
- Ben El Jilali L, Benazzouz B, El Hessni A, Ouichou A, Mesfioui A. Prevalence of alcohol consumption and alcohol use disorders among middle and high school students in the province of Khemisset, Morocco: a cross-sectional study. *Int J Adolesc Youth*. 2020 ;25:638-48.
- Khanal P, Ghimire RH, Gautam B, Dhungana SK, Parajuli P, Jaiswal AK, et al. Substance use among medical students in Kathmandu valley. *JNMA J Nepal Med Assoc*. 2010 ;50:267-72.
- Onifade PO, Somoye EB, Ogunwobi OO, Fadipe B, Fela-Thomas AL, Adeniji MA. Drug use, consequences and perceived accessibility in three Nigerian universities. *Open J Psychiatry*. 2014;4:60-7.
- Besli GE, Ikiz MA, Yildirim S, Saltik S. Synthetic Cannabinoid Abuse in Adolescents: A Case Series. *J Emerg Med*. 2015;49:644-50.
- McClelland GM, Elkington KS, Teplin LA, Abram km. multiple substance use disorders in juvenile detainees. *J Am Acad Child Adolesc Psychiatry*. 2004;43:1215-24.
- Phorano O, Nthomang K, Ntseane D. Alcohol abuse, gender-based violence and HIV/AIDS in Botswana: establishing the link based on empirical evidence. *SAHARA J J Soc Asp HIVAIDS Res Alliance*. 2005;2:188-202.
- Olashore AA, Ogunwobi O, Totego E, Opondo PR. Psychoactive substance use among first-year students in a Botswana University: pattern and demographic correlates. *BMC Psychiatry*. 2018;18:270.
- Baldwin DC Jr, Hughes PH, Conard SE, Storr CL, Sheehan DV. Substance Use Among Senior Medical Students: A Survey of 23 Medical Schools. *JAMA*. 1991;265:2074-8.
- Bennett TH, Holloway KR. Drug use among college and university students: findings from a national survey. *J Subst Use*. 2015;20:50-5.
- White Hr, Mcmorris Bj, Catalano Rf, Fleming Cb, Haggerty Kp, Abbott Rd. Increases in Alcohol and Marijuana Use During the Transition Out of High School Into Emerging Adulthood: The Effects of Leaving Home, Going to College, and High School Protective Factors. *J Stud Alcohol*. 2006 ;67:810-22.
- Al Haddad AH, Hamadeh, H. Smoking among secondary-school boys in Bahrain: prevalence and risk factors. 2003;78-86.
- Eime RM, Young JA, Harvey JT, Charity MJ, Payne WR. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *Int J Behav Nutr Phys Act*. 2013;10:98.
- Gebremariam TB, Mruts KB, Neway TK. Substance use and associated factors among Debre Berhan University students, Central Ethiopia. *Subst Abuse Treat Prev Policy*. 2018;13:13.