

# Substance use among university students and affecting factors in Marrakech region, Morocco: a cross-sectional Study

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## Research Article

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## Abstract

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.

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.

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%.

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.

## 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 disorders[1].

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 mature[2][3].

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 age [4]. But they are less likely to develop substance use disorders than their non-university-attending peers, the consequences of substance use are significant[5].

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 today[1]. 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 development[6].

Adolescence is a sensitive period of development, characterized by brain changes and high levels of emotion, motivation, and risk-taking, (National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health, 2014). the early exposure to substance uses often predicts future substance use and other psychiatric disorders[7]. 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 adolescence[8].

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, to develop knowledge that increases our understanding of how and why substances are used and or abused.

Additional purposes include helping to discover what types of young people are at greatest risk for developing various patterns of substance use, gaining a better understanding of the lifestyles, examining the aspects of the social environment that are associated with drug use and abuse.

## Subjects And Methods

### Study design and setting

The study was conducted at Cadi Ayyad University, Marrakech, Morocco, from February -July 2021. The university hosts students from Marrakech-Safi region, the latter accounts 4 504767 habitants, where only 4.3% reached university level[9].

The Cadi Ayyad university is a public research university, founded in 1978, located in Marrakech-Safi region, its main campus is located in Marrakech and extended in 3 other cities: Safi, Essaouira & Kelaa Sraghna, and operates 15 institutions such as: Faculty of Sciences Semlalia (first to be inaugurated 1978), Faculty of letters and Human Sciences, Faculty of Law, Economic and Social Sciences, Faculty of Medicine and Pharmacy...

The university contains more than 95186 students and 1591 professors [10].

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 Marrakech region.

### Sample size determination and sampling technique

In total, there were 1054 participants, divided into student group (n = 444) and non-student group (n = 610). Sample size was determined by using single proportion formula[11]:

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 center 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 Fifth Edition of 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 addiction[12].

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 dependence[13].

After obtaining informed consent from potential participants, 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  $22,15 \pm 2,79$  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 (Table1).

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 < 0,000).the marital status was strongly significant between the groups : marriage and divorce/widow status was more associated with non-university participants for substance use than university (OR 12,29[95% CI 7.13 to 21.19]; p < 0,000) and (OR 9,84[95% CI 2.27 to 42.53]; p < 0,000), number of children was also significant, where students were less likely to have children than the other group (OR 30,09[95% CI 9.46 to 95.72]; p < 0,000).

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 < 0,000).

Table 1  
students and non-students Socio demographic status

Modality	Variable	Students (n = 444) n(%)	Non Students (n = 610) n(%)	P Value	$\chi^2$	Unadjusted Odds ratio (CI 95%)	P Value
<b>Age</b>		22,15(17–30) ± 2,79	26,24(17–30) ± 3,51)	NS			
<b>Sexe</b>	Male	387(87,12%)	570(93,4%)	0,000***	12,13	2,09(1,37 – 3,20)	0,001***
	female	57(12,8%)	40(6,6%)			1	
<b>living</b>	urban	357(80,4%)	429(70,3%)	0,000***	34,16	1,72(1,28 – 2,30)	0,000***
<b>Education level</b>	illiterate	-	79(13%)	0,000***	565,576	124,10(30,19–510,057)	0,000***
	primary	-	95(15,6%)			133,97(32,63–550)	0,000***
	secondary	-	270(44,3%)			-	
	university	444(100%)	156(25,6%)			1	
<b>Marital status</b>	single	427(96,2%)	412(67,5%)	0,000***	130,97	1	
	married	15(3,4%)	178(29,2%)			12,29(7,13–21,19)	0,000***
	Divorced/widowed	2(0,4%)	20(3,3%)			9,84(2,27–42,53)	0,002**
<b>Number of children</b>	0	439(98,9%)	457(74,9%)	0,000***	115,77	1	
	1–2	3(0,7%)	94(15,4%)			30,09(9,46–95,72)	0,000***
	More than 3	2(0,5%)	59(9,6%)			23,53(5,68–97,36)	0,000***
<b>Living</b>	alone	313(70,49%)	507(83,11%)	0,000***	22,92	1	
	colocation	131(29,5%)	103(16,9%)			2,03(1,51 – 2,73)	0,000***
<b>Income</b>	none	351(79,1%)	145(23,8%)	0,000***	363,09	0,08(0,06 – 0,12)	0,000***
	MW	47(10,6%)	222(36,4%)			1	
	low	21(4,7%)	193(31,6%)			1,94(1,12 – 3,37)	0,01**
	Medium	-	38(6,2%)			ns	-
	High	25(5,6%)	12(2,0%)			0,10(0,04 – 0,21)	0,000***

Modality	Variable	Students (n = 444) n(%)	Non Students (n = 610) n(%)	P Value	$\chi^2$	Unadjusted Odds ratio (CI 95%)	P Value
NS non significant * p < .05; ** p < .01; *** p < .001.							

Between university student, half of them (57%) practice regular physical activity, followed by occasional (20,7%), while no physical activity was observed in 22,3%, the opposite was in observed in non-university group where half of them (51,5%) don't practice any sport, and third of participants group (35,7%), were regularly practicing, on the other hand, type of sport also linked to substance use, collective sports was adopted in nearly half of university student ( 42,3%) against a minority in the non-university group ( 14,8%), this difference is statistically significant between the studied groups (P value < 0,000,  $\chi^2$ = 91,81) (Table 2).

The univariate logistic regression showed that 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 < 0,000) and (OR 0,27[95% CI 0,20 to 0,36]; p < 0,000), also collective sports were less likely to be associated with substance (OR 0,18[95% CI 0,12 to 0,25]; p < 0,000).

A bad Food lifestyle (unvaried and unbalanced) was adopted in 22,7% in university student against 8,2% in the second group, this significance is statistically significant (P value < 0,000,  $\chi^2$ = 22,51), in addition this mode was associated with substance use among university student than non-university group (OR 3,29[95% CI 2,29 to 4,74]; p < 0,000) (Tables 2).

Table 2  
students and non-students physical activity and alimentation

Modality	Variable	Students (n = 444)	Non- Students (n = 610)	P Value	$\chi^2$	Unadjusted Odds ratio (CI 95%)	P VALUE
<b>Physical activity</b>	no	99(22,3%)	314(51,5%)	0,000***	91,81	1	
	Occasional	92(20,7%)	78(12,8%)			0,26(0,183-0,39)	0,000***
	Regular	253(57%)	218(35,7%)			0,27(0,2 - 0,363)	0,000***
<b>Type of sport</b>	No	99(22,3%)	314(51,5%)	0,000***	63,51	1	
	individual	151(34,0%)	206(33,7%)			0,34(0,25 - 0,46)	0,000***
	collective	188(42,3%)	90(14,8%)			0,18(0,127-0,25)	0,000***
<b>Nutrition</b>	No	101(22,7%)	50(8,2%)	0,000***	22,51	3,29(2,29 - 4,74)	0,000***
	Yes	252(77,25%)	560(91,8%)			1	
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 < 0,000). 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 < 0,000) ( Table 3).

Table 3  
students and non-students parent' substance use status

Modality	Variable	Students (n = 444)	Non Students (n = 610)	P Value	$\chi^2$	Unadjusted Odds ratio (CI 95%)	P VALUE	
Parent' education	Illiterate	108(24,3%)	205(33,6%)	0,001***	19,20	1,65(1,15 - 2,37)	0,007**	
Parent' working status	No	33(7,4%)	147(24,1%)	0,000***	125,66	3,91(2,41 - 6,344)	0,000***	
	Yes	411(92,56%)	263(43,11%)			1		-
Parent' substance use	Yes	157(35,4%)	286(46,9%)	0,000***	14,00	1,61(1,25 - 2,07)	0,000***	
	No	287(64,6%)	324(53,1%)			1		
Parent' substance use	tobacco	115(25,9%)	198(32,5%)	0,000***	50,73	1,57(1,19 - 2,07)	0,001***	
	Cannabis	36(2,9%)	27(4,42%)			0,56(0,32 - 0,97)		0,04*
	Alcool	42(1,4%)	88(14,42%)			8,71(3,70 - 20,47)		0,000***
	Non user	287(64,6%)	324(53,3%)			1		
Place of use	House	44(10%)	166(27,2%)	0,000***	56,27	1,78(1,31 - 2,41)	0,000***	
	outside	76(17,1%)	120(19,6%)			1,41(1,01 - 1,97)		0,04*
	Non user	287(64,6%)	324(53,1%)			1		

NS non signifiant \* p < .05; \*\* p < .01; \*\*\* p < .001.

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 < 0,000) (Table 4),

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 tough 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 < 0,000).

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%.

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];  $p < 0,000$ ), (OR 3,44,31[95% CI 1.65 to 5.08];  $p < 0,000$ ) and (OR 2,90[95% CI 1.65 to 5.08];  $p < 0,000$ ) 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  $< 0,000$ ,  $\chi^2 = 90,87$ ). Daily use was strongly associated with non-student group (OR 10,26[95% CI 5.54 to 18.99];  $p < 0,000$ ).



Table 4  
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
<b>Age at first use</b>	< 15 y/o	109(24,54%)	243(39,83%)	0,000***	27,49	1	
	15-18	194(43,7%)	222(36,4%)			0,51(0,38 - 0,69)	0,000***
	> 18	141(31,75%)	145(23,77%)			0,46(0,33 - 0,63)	0,000***
<b>First use</b>	curiosity	205(46,2%)	407(66,7%)	0,000***	58,20	4,36(2,50 - 7,60)	
	relax	26(5,9%)	10(1,6%)			2,16(1,14 - 4,09)	
	Forget problems	60(13,5%)	59(9,7%)			2,30(1,27 - 4,15)	
	Be with friends	109(24,5%)	114(18,7%)			NS	
	Euphoria	44(9,9%)	20(3,3%)			1	
<b>Current use</b>	stop	129(29,05%)	09(1,4%)	0,000***	229,13	1	
	relax	86(19,36%)	235(38,52%)			35,78(17,96 - 71,31)	0,000***
	Forget problems	55(12,4%)	193(31,6%)			45,61(22,43-92,74)	0,000***
	Be with friends	108(24,3%)	102(16,7%)			12,27(6,11-24,67)	0,000***
	"Addiction"	66(14,9%)	71(11,6%)			13,98(6,77 - 28,88)	0,000***
<b>1st substance used</b>	Tobacco	289(65,1%)	427(70%)	0,002**	21,33	1	
	Cannabis	69(15,5%)	60(9,8%)			0,58(0,40 - 0,85)	0,006**
	Alcohol	63(14,18%)	95(15,57%)			Ns	
	psychotropic	5(1,1%)	8(1,3%)			Ns	
	Mdma	2(0,5%)	1(0,2%)			Ns	
	cocaine	15(3,4%)	7(1,1%)			0,31(0,12 - 0,78)	0,01**
	inhalants	1(0,2%)	12(2,0%)			8,12(1,05-62,80)	0,04*
<b>Principal substance</b>	tobacco	271(61,0%)	367(60,2%)	0,000***	52,01	NS	
	Cannabis	129(29,1%)	139(22,8%)			NS	
	alcohol	37(8,3%)	34(5,6%)			NS	

Modality	Variable	Students (n = 444)	Non- Students (n = 610)	P Value	Chi Square	Unajusted Odds ratio (CI 95%)	P VALUE
	psychotropic	4(0,9%)	65(10,7%)			11,99(4,31 – 33,33)	0,000***
	Cocaine- heroine	3(0,7%)	0(0%)			NS	
	inhalants	0(0%)	5(0,8%)			NS	
<b>frequency</b>	daily	331(74,5%)	565(92,6%)	0,000***	69,85	27,31(3,60 – 206,87)	0,000***
	weekly	97(21,8%)	44(7,2%)			NS	
	Monthly	16(3,6%)	1(0,2%)			1	
<b>Associated substance</b>	No	273(61,5%)	277(45,4%)	0,000***	67,75	1	
	Alcohol	81(18,2%)	73(12%)			NS	
	Cannabis	36(8,1%)	92(15,1%)			2,51(1,65 – 3,83)	0,000***
	Tobacco	7(1,6%)	23(3,8%)			3,23(1,36 – 7,67)	0,008**
	psychotropic	2(0,5%)	16(2,6%)			7,88(1,79 – 34,61)	0,006**
	Mdma	-	-			-	
	inhalants	-	2(0,3%)			-	
	Cocaine	7(1,6%)	4(0,7%)			NS	
	Water pipe	20(4,5%)	70(11,5%)			3,449(2,04 – 5,827)	0,000***
	Multi user	18(4,1%)	53(8,7%)			2,90(1,65 – 5,08)	0,000***
<b>frequency</b>	No	273(61,5%)	277(45,4%)	0,000***	90,87	1	
	daily	12(2,7%)	125(20,5%)			10,26(5,54 – 18,99)	0,000***
	weekly	129(29,1%)	196(32,1%)			0,39(0,19 – 0,78)	0,008**
	Monthly	30(6,8%)	12(2%)			1,49(1,13 – 1,97)	0,004**
NS non signifiant * p < .05; ** p < .01; *** 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 < 0,000,  $\chi^2 = 1313,84$ ). 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).

The univariate logistic regression revealed a strong association between severe addiction and non-student group (OR 41,58[95% CI 21,37 to 80.41];  $p < 0,000$ ).

The AUDIT score showed that low risk of alcohol use was dominant among university student and non-student by 88,5% and 77,2% respectively, the mean Audit score was  $1,70 \pm 4,23$  among university group, against  $4,23 \pm 8,24$  among non-student group. The univariate logistic regression showed that alcohol dependance was more associated to non-student group than student group (OR 2,08[95% CI 1,05 to 4.09];  $p = 0,03$ ).

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  $< 0,000$ , Anova  $F = 12,63$ ).

Table 5  
students and non-students DSM, and AUDIT scores

Modality	Variable	Students (n = 444)	Non-Students (n = 610)	P Value	Chi Square	Unajusted Odds ratio (CI 95%)	P Value
DSM 5	No addiction < 2	148(33,3%)	10(1,6%)	0,000***	1313,84	1	
	low addiction 2–3	37(8,3%)	24(3,9%)			9,60(4,22 – 21,81)	0,000***
	Moderate addiction 4–5	78(17,6%)	69(11,3%)			13,09(6,38 – 26,83)	0,000***
	Severe addiction > 6	181(40,8%)	507(83,1%)			41,45(21,37– 80,41)	0,000***
	DSM SCORE	4,09(0–17) $\pm 3,38$	7,58(0–11) $\pm 2,41$	0,000***	ANOVA F 382,35		
AUDIT	Low risk < 7	393(88,5%)	471(77,2%)	0,000***	26,73	1	
	Mis use 7–12	21(4,7%)	34(5,6%)			NS	
	Alcohol dependance > 13	30(6,8%)	104(17%)			2,08(1,05 – 4,09)	0,03*
	AUDIT score	1,79(0–32) $\pm 5,23$	4,23 (0–34) $\pm 8,24$	0,000***	ANOVA F30,12		
Monthly expense (USD)		70,3(10,-35) $\pm 56$	84,8(10–500) $\pm 59$	0,000***	ANOVA F 12,63		
NS non signifiant * $p < .05$ ; ** $p < .01$ ; *** $p < .001$ .							

## 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 students[14], while in Casablanca,37,4% university students had reported tobacco use[15], 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 end collaborators finding (7,4%), on the other hand it remained very high among Soubhi end collaborators, where it was reported by 35,2% university students[14], [15].

The current lifetime prevalence of smoking remains high, compared to others, a study conducted among Ethiopian student was 22%[16], and a study in Saudi university students was 14%[17], but quite lower than a study conducted among Kenyan university student where the prevalence was 69,1%[2].

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% respectively[12], 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 female[18].

Alcohol dependance 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 abuse[19]. 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%[20].

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 use[21].

The prevalence of life time cocaine use among student was 5,7%, this rate remain higher than the findings of university students in Nigeria where it was 2,1%[22], and also among US students where it was 4,8%[5].

There was a high prevalence of multiple substance use among respondent, with 38,5% reported using more than one type of substance, these finding are in line with those of Egyptian (41,3%) [19], Turkish (31,2%) [23]. Multiple drug use has been associated with higher rates of complications such as rule-breaking behavior[24], sexual and physical abuse[25], and some psychiatric disorders[26]. While this present study did not assess the link s 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[2], [22]. 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 employment[22].

In this study, most respondents indicated that curiosity was the mean 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 experiment[27].

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[28], [29].

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[17], [30].

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 use[19].

The marital status was found to be statistically significant predictor of substance use, those students who were ever married was likely to use substance than never married, same finding was found by among Ethiopian university students[16]. 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 behavior[31],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];  $p < 0,000$ ), the same finding was found among Kenyan students, hence physical health represent a protective factor[2].

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 student[32].

## 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 dependance, 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.

Finally, sporting and exercise facilities should be availed to allow for dissipating energy, relieve stress and use their time more productively would reduce the incidence of substance use.

## Declarations

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## Competing interests

All authors declare that there are no conflicts of interest.

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## Author contributions

BAM contributed to the study protocol, data collection and analysis and interpretation of the results, he also written the manuscript. KH, MS,AR contributed to interpretation of results and revised the manuscript. BS and CA developed the study design and tracked progress during the research. All authors read and approved the final version of the manuscript.

## Ethical standards

The study was authorized by ethic comity of Cadi Ayyad university, formal study permission was taken from respective authority. procedures were carried out according to the guidelines of the Declaration of Helsinki. All participants were informed prior to data collection about the purpose of the study.

## consent to participate

Consent forms were given orally by the participants prior to data collection. anonymity and confidentiality of data were ensured, and the right to withdraw their data from the study.

## consent for publication

all authors have given consent for publication.

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