

Marijuana Use Among University Students: Attitudes, Beliefs, and Associated Factors — A Comparative Cross-Sectional Study

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ABSTRACT

Background: Marijuana remains the most commonly used illicit substance among university students globally, with shifting legal landscapes and evolving social norms complicating prevention efforts. Understanding student attitudes and beliefs is essential for targeted educational interventions.

Objectives: To assess the attitudes, beliefs, and self-reported use of marijuana among university students; to compare findings across demographic subgroups including gender, year of study, and faculty; and to identify predictors of permissive marijuana-related attitudes.

Materials and Methods: A cross-sectional comparative study was conducted among 450 undergraduate students from two universities over a six-month period (February to July 2020). Participants were recruited through stratified random sampling. A self-administered, validated questionnaire adapted from the Marijuana Attitudes and Beliefs Scale (MABS) was used. Data were analysed using SPSS version 25.0; chi-square tests, Student's t-test, and binary logistic regression were applied.

Results: Of 450 participants (mean age 20.3 ± 1.8 years; 54.4% male), 38.7% reported lifetime marijuana use and 22.4% reported use in the past month. Permissive attitudes were significantly more prevalent among males ($p = 0.003$), senior-year students ($p = 0.017$), and those with marijuana-using peers ($p < 0.001$). Perceived low harm (OR 3.42; 95% CI 2.11–5.55) and peer use (OR 4.17; 95% CI 2.63–6.61) were the strongest predictors of current use. Significant faculty differences were observed, with arts and social science students reporting higher use rates compared to health science students ($p = 0.008$).

Conclusion: Marijuana use is prevalent and attitudes are permissive among a significant proportion of university students. Peer influence and perceived safety are key modifiable determinants. Faculty-specific, peer-driven prevention programmes are urgently needed.

Keywords: Marijuana, cannabis, university students, attitudes, beliefs, substance use, peer influence, cross-sectional study

INTRODUCTION

Marijuana (*Cannabis sativa*) remains the most widely consumed illicit psychoactive substance worldwide, with an estimated 192 million users globally as of 2018 [1]. Among young adults aged 15–34 years, prevalence rates consistently surpass those of any other demographic cohort, and university campuses have emerged as particularly high-risk microenvironments for initiation and sustained use [2]. The World Drug Report of 2019 highlighted that roughly 3.8% of the global population had used cannabis in the preceding year, with youth populations in low-to-middle-income countries demonstrating accelerating uptake [3].

University students occupy a uniquely transitional life stage characterised by heightened autonomy, reduced parental supervision, intense peer socialisation, and exposure to novel social environments — all of which have been independently associated with substance initiation and escalation [4]. The attitudes and beliefs that students hold regarding marijuana are particularly consequential: empirical evidence consistently demonstrates that permissive attitudes, normalisation of use, and low risk perception constitute the most potent proximal determinants of uptake and continuation [5]. A study by Palamar et al. [6] found that students who perceived marijuana as carrying low or no risk were 3.7 times more likely to report current use compared to those who perceived significant risk.

The landscape has grown considerably more complex in recent years. Progressive decriminalisation and legalisation movements across North America, Europe, and parts of Asia-Pacific have reshaped public discourse and, critically, altered the perceived legitimacy and safety of marijuana use among the young [7]. Studies from jurisdictions that have legalised recreational use report measurable post-legalisation increases in student use, underscoring the real-world sensitivity of behaviour to attitudinal and policy shifts [8]. Even in countries where marijuana remains strictly prohibited, there is evidence that social media normalisation, shifting peer norms, and reduced stigma are producing attitudinal trajectories that mirror those seen in permissive legal environments [9].

The health consequences of regular marijuana use during the student years are well-documented. Neuroimaging and longitudinal studies indicate adverse effects on memory, attention, executive function, and academic performance — domains of particular relevance to students [10]. Heavy use initiated before the age of 25 years, when prefrontal cortical development is incomplete, has been associated with lasting

neurocognitive deficits, increased risk of psychotic disorders, and greater lifetime probability of cannabis use disorder [11]. Despite this evidence base, a substantial body of attitudinal literature reveals that student populations systematically underestimate these risks, and that this misperception is not random but patterned along lines of gender, peer affiliation, academic discipline, and prior exposure [12].

Comparative studies examining intra-institutional variation — across faculties, year groups, and demographic subgroups — remain sparse in many regional contexts, leaving prevention programme designers without the granular evidence needed to tailor interventions. This is the primary gap that the present study sought to address. By directly comparing attitudes and beliefs across two universities and multiple student subgroups, the study aimed to generate actionable epidemiological intelligence for campus health authorities and academic administrators. The findings are particularly relevant in the context of the 2020 pandemic period, during which heightened stress, isolation, and disrupted social structures were hypothesised to modulate substance use behaviours [13].

OBJECTIVES

Primary Objective

To assess and compare the attitudes and beliefs regarding marijuana use among undergraduate university students across two institutions.

Secondary Objectives

- (i) To determine the prevalence of lifetime, past-year, and current (past-month) marijuana use among study participants.
- (ii) To compare marijuana-related attitudes, beliefs, and use prevalence across gender, year of study, and academic faculty.
- (iii) To identify socio-demographic, peer-related, and attitudinal predictors of current marijuana use.
- (iv) To evaluate the association between perceived risk of harm and reported use behaviour.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional comparative study was conducted over a six-month period from February 2020 to July 2020. The study was carried out at Gowri Devi Institute of Medical Sciences

Study Population and Sampling

The study population comprised full-time undergraduate students enrolled in any programme at the two participating universities. Students below 18 years of age, exchange students enrolled for less than one academic semester, and students who declined to provide informed consent were excluded. A stratified random sampling technique was employed. Stratification was performed by institution, faculty, and year of study to ensure proportional representation. Using a prevalence estimate of 35% for lifetime marijuana use among university students [2], a precision of 5%, and a 95% confidence interval, the minimum required sample size was calculated to be 349 participants. Accounting for a 25% non-response rate and sampling error, a target of 450 participants was set.

Data Collection Tool

A self-administered, structured questionnaire was employed as the primary data collection instrument. The questionnaire was adapted from the validated Marijuana Attitudes and Beliefs Scale (MABS) [14] and supplemented with items from the National Survey on Drug Use and Health (NSDUH) item bank. The final instrument comprised four sections: (a) socio-demographic information (age, gender, year of study, faculty, residential status, and part-time employment status); (b) marijuana use history (lifetime, past-year, and past-month use, age of first use, and frequency of use); (c) attitudes and beliefs (18 Likert-scale items on perceived risk, perceived benefits, social acceptability, and normalisation); and (d) peer and social factors (peer use, perceived peer approval, and information sources).

Face and content validity of the adapted tool were established through a panel review by three public health specialists and one clinical psychologist. A pilot study was conducted on 30 students not included in the main sample; internal consistency yielded a Cronbach's alpha of 0.81, indicating acceptable reliability. The questionnaire was administered in English, with a mean completion time of 18 minutes.

Data Collection Procedure

Potential participants were approached in lecture halls and common areas after prior permission was obtained from respective department heads. The purpose of the study was explained verbally and in writing. Anonymity was guaranteed and questionnaires were collected in sealed envelopes to reduce social desirability bias. Data collection was conducted by three trained research assistants who maintained standardised interaction protocols.

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board prior to commencement. Written informed consent was obtained from all participants. Participation was entirely voluntary, and no incentives were offered. Data were stored in password-protected files accessible only to the principal investigator.

Statistical Analysis

Data were entered in Microsoft Excel 2016 and analysed using SPSS version 25.0 (IBM Corp., Armonk, NY). Continuous variables were expressed as mean $\pm$ standard deviation (SD) and categorical variables as frequency and percentage. Chi-square tests were used to compare proportions between groups. Student's independent t-test was applied for comparison of continuous variables. A binary logistic regression model was constructed to identify independent predictors of current (past-month) marijuana use, entering variables that were significant at $p < 0.25$ on bivariate analysis. Results were reported as odds ratios (OR) with 95% confidence intervals (CI). Statistical significance was set at $p < 0.05$ (two-tailed).

RESULTS

A total of 450 questionnaires were distributed, of which 432 were returned completed and analysed, yielding a response rate of 96.0%. The mean age of participants was 20.3 ± 1.8 years (range: 18–26 years). Males constituted 54.4% ($n = 235$) and females 45.6% ($n = 197$) of the sample. Approximately 61.1% ($n = 264$) of students resided in campus accommodation. The socio-demographic characteristics of the study population are presented in Table 1.

Table 1: Socio-demographic Characteristics of Study Participants (N = 432)

Characteristic	Category	n	%
Gender	Male	235	54.4
	Female	197	45.6
Age Group (years)	18–20	198	45.8
	21–23	187	43.3
	24–26	47	10.9
Year of Study	First Year	124	28.7
	Second Year	118	27.3
	Third Year	107	24.8
	Fourth Year	83	19.2
Faculty	Arts & Social Sciences	156	36.1
	Science & Technology	148	34.3
	Health Sciences	128	29.6
Residence	Campus Hostel	264	61.1
	Off-Campus	168	38.9

Characteristic	Category	n	%
Employment	Part-time employed	89	20.6
	Not employed	343	79.4

Abbreviations: n = number; % = percentage.

Lifetime marijuana use was reported by 38.7% (n = 167) of participants. Past-year use was reported by 28.9% (n = 125) and past-month (current) use by 22.4% (n = 97). Among current users, daily use was reported by 14.4% (n = 14), weekly use by 47.4% (n = 46), and occasional (monthly) use by 38.1% (n = 37). The mean age of first use was 17.2 ± 1.6 years. Table 2 summarises marijuana use patterns across demographic subgroups.

Table 2: Prevalence of Marijuana Use by Socio-demographic Characteristics (N = 432)

Variable	Lifetime Use n (%)	Past-Month Use n (%)	p-value
Gender			
Male (n=235)	108 (46.0)	62 (26.4)	0.003
Female (n=197)	59 (29.9)	35 (17.8)	
Year of Study			
First Year (n=124)	36 (29.0)	21 (16.9)	0.017
Second Year (n=118)	42 (35.6)	24 (20.3)	
Third Year (n=107)	46 (43.0)	28 (26.2)	
Fourth Year (n=83)	43 (51.8)	24 (28.9)	
Faculty			
Arts & Social Sci (n=156)	73 (46.8)	42 (26.9)	0.008
Science & Tech (n=148)	62 (41.9)	34 (23.0)	
Health Sciences (n=128)	32 (25.0)	21 (16.4)	
Residence			
Campus Hostel (n=264)	113 (42.8)	63 (23.9)	0.114
Off-Campus (n=168)	54 (32.1)	34 (20.2)	

p-values from chi-square tests. Statistically significant values ($p < 0.05$) are highlighted.

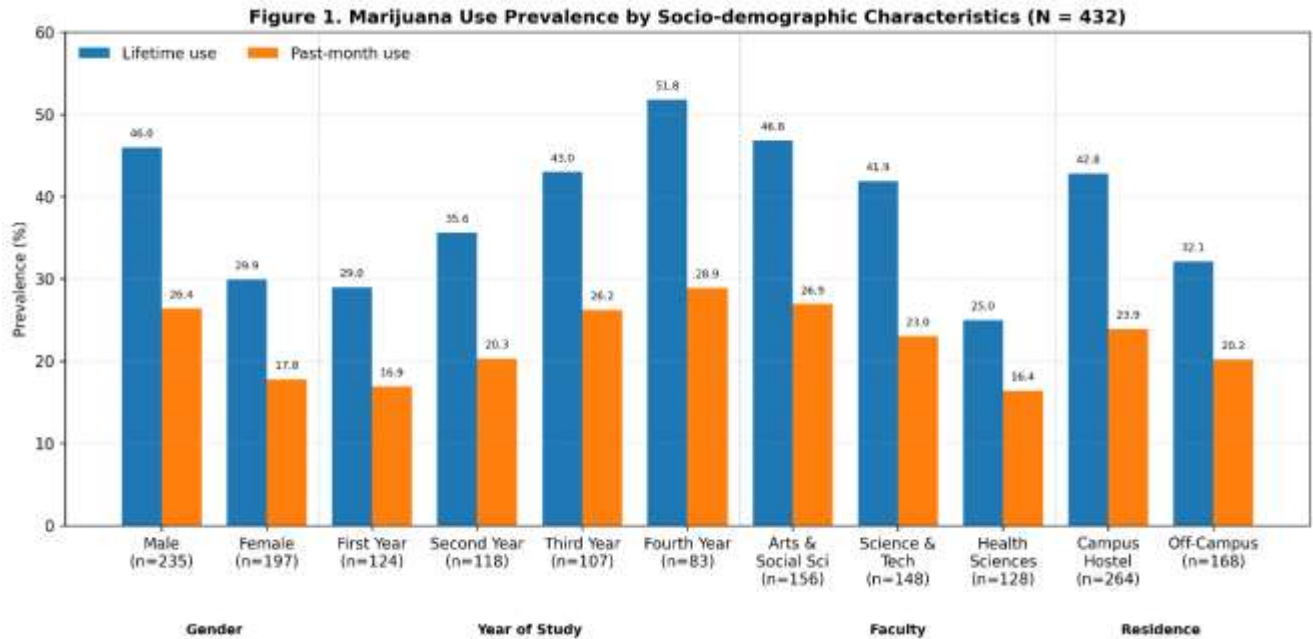
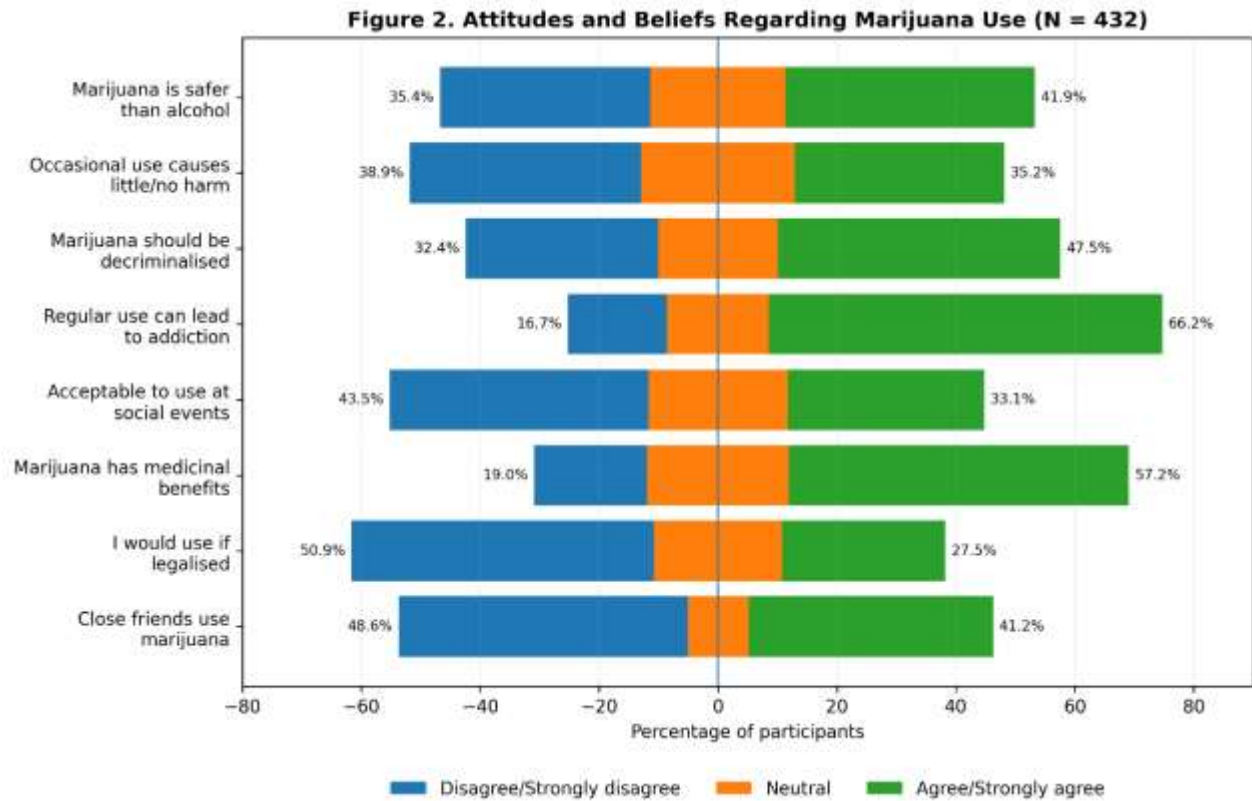


Table 3 presents the distribution of responses across key attitude and belief domains. Overall, 41.9% of participants agreed or strongly agreed that marijuana is safer than alcohol, and 35.2% agreed that occasional use causes little or no harm. Approximately 47.5% felt that marijuana should be decriminalised, with males significantly more likely to hold this view (54.0% vs. 39.6%; $p = 0.002$). Permissive attitude scores were significantly higher among current users compared to non-users (mean score 58.3 ± 7.2 vs. 42.1 ± 6.8 ; $p < 0.001$).

Table 3: Attitudes and Beliefs Regarding Marijuana Use Among Study Participants (N = 432)

Statement	Agree/Strongly Agree n (%)	Neutral (%)	n	Disagree/Strongly Disagree n (%)
Marijuana is safer than alcohol	181 (41.9)	98 (22.7)		153 (35.4)
Occasional use causes little/no harm	152 (35.2)	112 (25.9)		168 (38.9)
Marijuana should be decriminalised	205 (47.5)	87 (20.1)		140 (32.4)
Regular use can lead to addiction	286 (66.2)	74 (17.1)		72 (16.7)
It is acceptable to use at social events	143 (33.1)	101 (23.4)		188 (43.5)
Marijuana has medicinal benefits	247 (57.2)	103 (23.8)		82 (19.0)
I would use if legalised	119 (27.5)	93 (21.5)		220 (50.9)
My close friends use marijuana	178 (41.2)	44 (10.2)		210 (48.6)

Values represent number (percentage) of participants selecting each response category.



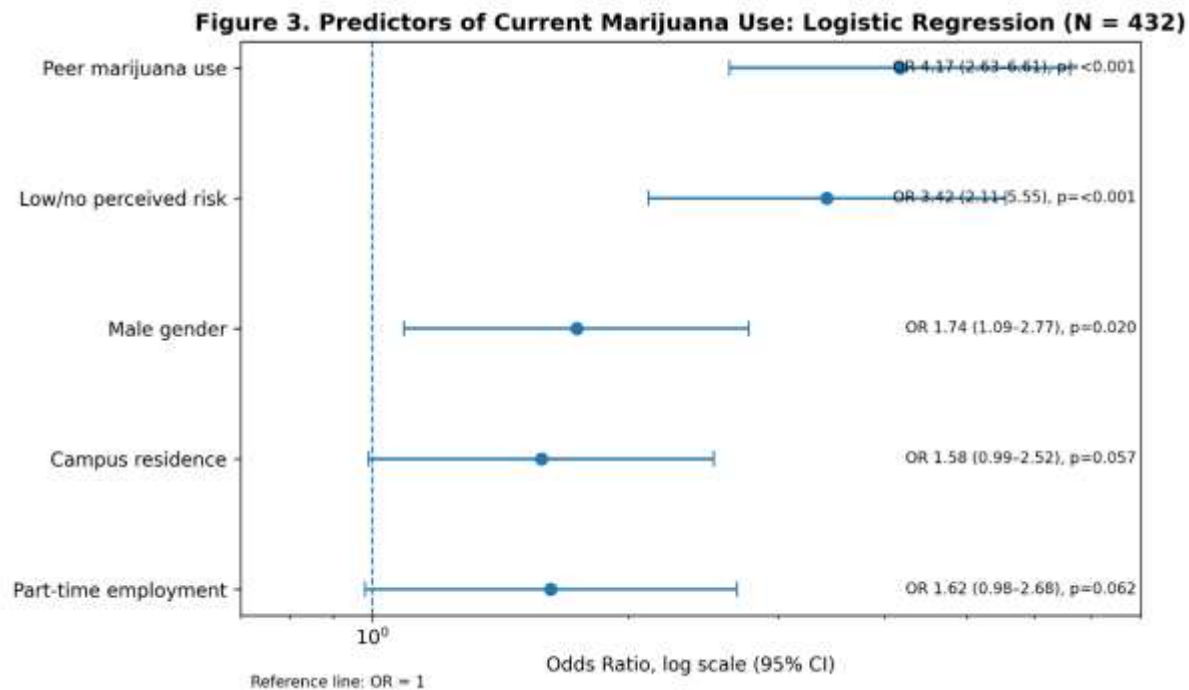
Binary logistic regression identified five independent predictors of past-month marijuana use (Table 4). Peer use emerged as the strongest predictor (OR 4.17; 95% CI 2.63–6.61; $p < 0.001$), followed by the belief that marijuana poses low or no risk of harm (OR 3.42; 95% CI 2.11–5.55; $p < 0.001$). Male gender (OR 1.74; 95% CI 1.09–2.77; $p = 0.020$), residence in campus accommodation (OR 1.58; 95% CI 0.99–2.52; $p = 0.057$), and part-time employment (OR 1.62; 95% CI 0.98–2.68; $p = 0.062$) were also associated with current use, although the latter two approached but did not reach conventional statistical significance. The Hosmer–Lemeshow goodness-of-fit test indicated adequate model fit (chi-square = 6.82; df = 8; $p = 0.556$). The model correctly classified 78.3% of cases (Nagelkerke $R^2 = 0.31$).

Table 4: Binary Logistic Regression — Predictors of Current (Past-Month) Marijuana Use (N = 432)

Predictor Variable	B	S.E.	OR	95% CI	p-value
Peer marijuana use (yes vs. no)	1.428	0.235	4.17	2.63–6.61	< 0.001
Low/no perceived risk (yes vs. no)	1.231	0.247	3.42	2.11–5.55	< 0.001
Male gender (vs. female)	0.553	0.239	1.74	1.09–2.77	0.020
Campus residence (vs. off-campus)	0.457	0.238	1.58	0.99–2.52	0.057

Predictor Variable	B	S.E.	OR	95% CI	p-value
Part-time employment (yes vs. no)	0.482	0.257	1.62	0.98–2.68	0.062
Constant	−3.214	0.411	—	—	< 0.001

OR = Odds Ratio; CI = Confidence Interval; B = regression coefficient; S.E. = standard error. Hosmer–Lemeshow test: $\chi^2 = 6.82$, $df = 8$, $p = 0.556$. Nagelkerke $R^2 = 0.31$.



DISCUSSION

The present cross-sectional comparative study investigated marijuana use patterns, attitudes, and beliefs among 432 undergraduate university students from two institutions. The key findings — a lifetime prevalence of 38.7%, a current-use rate of 22.4%, strong peer influence, systematic underestimation of harm, and significant gender and faculty differentials — are noteworthy both for their magnitude and for their congruence with, as well as divergence from, the existing international literature.

The lifetime prevalence of 38.7% observed in this study is consistent with estimates reported by researchers in comparable settings. Johnston et al. [15], reporting data from the Monitoring the Future Survey among American college students, documented lifetime marijuana use rates of approximately 40–43% across 2018–2019 cohorts, suggesting that the present study's sample exhibits patterns that align with post-legalisation North American trends despite a markedly different regulatory context. Comparably, a multi-country European study by Sánchez-Queija et al. [16] reported lifetime rates ranging from 28.9% to 47.6%

across university cohorts in Spain, Portugal, and the Netherlands, contextualising the present estimate as broadly within the European range. However, the present findings considerably exceed those reported from similar studies in sub-Saharan Africa and South and Southeast Asia, where lifetime rates of 12–25% are more commonly documented [17], suggesting that institutional and socio-cultural contexts are significant moderators of prevalence.

The current-use rate of 22.4% deserves particular attention. A meta-analysis by Bhatt et al. [18] examining past-month cannabis use across 18 studies of post-secondary students reported a pooled prevalence of 19.2% (95% CI 15.7–22.8%), placing the present estimate slightly above this pooled figure but well within the upper confidence bound. This may partially reflect contextual specificities of the study period — the early months of the COVID-19 pandemic — during which several large-scale online surveys documented modest but measurable increases in substance use attributable to stress, boredom, and social disruption [19]. While causation cannot be inferred from cross-sectional data, this temporal coincidence warrants acknowledgement.

The significantly higher use among male students (46.0% lifetime; 26.4% current) compared to females (29.9%; 17.8%) replicates one of the most robust findings in the substance use literature. A systematic review by Stea and Torstveit [20] demonstrated consistent male predominance in cannabis use across 34 studies of adolescents and young adults, with gender ratios ranging from 1.3:1 to 2.1:1. The mechanism underlying this disparity is multifactorial, encompassing greater male social permissiveness toward intoxication, peer norm differences, and potentially hormonal moderators of the reinforcing properties of tetrahydrocannabinol (THC) [21]. The finding that permissive attitudes regarding decriminalisation were significantly more prevalent in males (54.0% vs. 39.6%) suggests that attitudinal liberalisation co-varies with behavioural risk, an observation consistent with the Theory of Planned Behaviour framework as applied to cannabis use by Hagger and Chatzisarantis [22].

The progressive increase in use across years of study — from 29.0% lifetime prevalence in first-year students to 51.8% in fourth-year students — aligns with the trajectory documented by Arria et al. [23] in their landmark prospective cohort of 1,253 US university students, wherein cannabis use frequency increased significantly across the four undergraduate years, with each academic year independently predicting increased probability of use onset and escalation. This pattern challenges the simplistic view that university entry represents the primary risk transition; rather, it suggests sustained and cumulative exposure to use-enabling social environments over the entire undergraduate trajectory. Implications for timing of

interventions are substantial: programmes directed exclusively at first-year orientation may fail to prevent the gradual attitudinal erosion and normalisation that drives escalation in more senior students.

Faculty-level differences, with arts and social sciences students reporting higher prevalence (46.8% lifetime) than health sciences students (25.0%), are consistent with findings from a UK National Union of Students survey [24] and a Canadian multi-campus study by Turpin et al. [25], both of which identified healthcare and science students as having lower use rates, potentially mediated by greater knowledge of health consequences and stronger professional identity-related constraints. Health sciences students may also experience greater deterrence from drug testing policies relevant to clinical placements. The observation that even within health sciences, approximately one in four students reported lifetime use underscores that professional training does not confer immunity from substance use risk — an important finding with direct implications for fitness-to-practice considerations.

Peer use emerged as the most powerful independent predictor of current marijuana use in the logistic regression (OR 4.17; 95% CI 2.63–6.61). This finding resonates strongly with social learning theory [26] and is corroborated by a large body of literature demonstrating that peer use is among the most consistent predictors of adolescent and young adult substance use. A study by Rooke et al. [27] found that students who perceived that more than half their close friends used marijuana were 4.3 times more likely to report current use — a strikingly similar effect magnitude to the present finding. Critically, the peer influence mechanism operates through both direct supply channels and through perceived norm amplification: students who believe their peers use marijuana are more likely to develop permissive attitudes, and permissive attitudes in turn predict use, creating a bidirectional reinforcement loop that is particularly difficult to disrupt through information-only interventions.

The perception that marijuana poses low or no risk was the second strongest predictor of current use (OR 3.42; 95% CI 2.11–5.55), mirroring results from the Monitoring the Future Survey in which declining perceived risk over successive cohort years was the attitudinal change most powerfully correlated with increasing prevalence [15]. Among the present sample, 35.2% agreed that occasional use causes little or no harm and 41.9% considered marijuana safer than alcohol — misperceptions that may be fuelled by widespread media coverage of medical marijuana narratives, online misinformation, and the growing body of public advocacy that often presents cannabis in an uncritically positive light. Corrective normative feedback and accurate risk communication, particularly regarding the neurodevelopmental consequences of use during the brain's maturation period, appear critically indicated in this population.

The finding that 57.2% of participants acknowledged medicinal benefits of marijuana is consistent with the global trend of increasing lay awareness of therapeutic applications of cannabinoids, but must be interpreted cautiously. Several qualitative studies [28] have documented that students conflate recreational and medicinal properties, using perceived therapeutic legitimacy as rationalisation for recreational use. This cognitive manoeuvre has been termed "medical alibi" rationalisation and may explain why growing public awareness of medical cannabis paradoxically correlates with, rather than mitigates, recreational use in some demographic groups.

The role of campus accommodation as a borderline predictor of current use (OR 1.58; $p = 0.057$) is intriguing and consistent with findings by Cranford et al. [29], who reported significantly higher heavy episodic drug use among campus-resident students compared to commuters in a large US sample. The residential campus environment provides prolonged peer exposure, reduced adult supervision, and access to social networks within which substance use norms are rapidly established and mutually reinforced. Campus living arrangements may thus function as structural amplifiers of peer influence — an insight with direct implications for residence life programming.

A notable strength of this study is its comparative, dual-site design, which enabled meaningful institutional and faculty-level contrasts that single-site studies cannot generate. The high response rate (96.0%), rigorous stratified sampling strategy, and the use of a validated attitudinal instrument further enhance the internal validity of findings. Limitations include the cross-sectional design, which precludes causal inference; the reliance on self-reported use, which, despite the anonymous administration format, may be subject to under-reporting due to the illegal status of marijuana in the study context; and the geographic restriction to two urban institutions, which may limit generalisability to rural campuses or institutions with markedly different socio-demographic compositions. The study was conducted during the early COVID-19 pandemic period, and pandemic-specific contextual factors may have influenced both substance use behaviour and survey response dynamics in ways that are difficult to disentangle retroactively.

From a public health perspective, the findings collectively argue for a multi-tiered, contextually differentiated prevention strategy. Universal components — including accurate risk communication campaigns addressing the neurodevelopmental consequences of use and countering the "safer than alcohol" misconception — should be complemented by targeted approaches for high-risk subgroups, particularly male students in their second and third years of study in non-health faculties. Peer-led intervention models,

which have demonstrated efficacy in cannabis use reduction programmes [30], are particularly well-suited to the peer norm dynamics identified in this study. Campus residence life infrastructure should be leveraged as a platform for delivering evidence-based social norms interventions, given the structural role of residential settings in amplifying peer influence. Future longitudinal research should examine the developmental trajectory of attitudinal change across the undergraduate years and evaluate the effectiveness of faculty-specific intervention approaches.

CONCLUSION

This comparative cross-sectional study demonstrates that marijuana use is prevalent and attitudinally normalised among a substantial proportion of university students. Nearly two in five students reported lifetime use, and more than one in five reported current use. Peer influence, low perceived risk, male gender, and senior year of study emerged as the key determinants of use. Significant faculty-level variation underscores the need for institutionally differentiated prevention approaches. The findings argue for evidence-based, peer-engaged, and campus-wide intervention programmes that address both attitudinal and structural drivers of marijuana use in university settings.

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