Original Article

Journal of Iranian Medical Council, Volume 6, Issue no. 4
http://dx.doi.org/10.18502/jimc.v6i4.13442

Predicting Students' Illicit Drug Use Intentions: An Application of the Theory of Planned Behavior

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Received: 11 Nov 2022
Accepted: 15 May 2023

Citation to this article
Saleem M, Rizvi T. Predicting Students' Illicit Drug Use Intentions: An Application of the Theory of Planned Behavior. *J Iran Med Counc.* 2023;6 (4):632-43.

Abstract

Background: Substance use disorders are a significant global public health issue, causing considerable suffering, trauma, and financial burden. With the increasing prevalence of drug use and its detrimental consequences, it is crucial to identify predictors and implement preventive measures to address these problems. The main aim of the present study was to test the utility of the Theory of Planned Behaviour (TPB) to predict university students' illicit drug use intentions in the Indian context.

Method: The study used a cross-sectional research design and included a sample of 1254 students (male=473, female=81) aged 15-29 (Median age=22.61). Participants completed the measures of attitude, perceived norms, refusal self-efficacy and drug use intentions. Structural Equation Modeling was utilised to analyse the effectiveness of TPB constructs to predict university students' drug use intentions.

Results: The results indicated that positive attitude and perceived norms were positively related with drug use intentions, while refusal self-efficacy was negatively related. The proposed model accounted for (30%) of the variance in students' illicit drug use intentions. The analysis of Regression weight estimates and critical ratios represented that the perceived norms and perceived behavioural control significantly predicted drug use intention. However, contrary to expectations, attitude did not predict drug use intentions.

Conclusion: The findings of the present study highlighted the usefulness of TPB in predicting drug use intentions in the Indian context. These findings will benefit drug use intervention programmes.

Keywords: Illicit drug abuse, Intentions, Structural equation modeling, TPB, University students

Introduction

Drug use has a deep-rooted history in human society, dating back to the dawn of civilization. It has always been a component of all human communities throughout history. Humans have been taking numerous substances for recreational purposes to increase pleasure and relieve tension, in addition to their purported therapeutic advantages (1). Whether we like it or not, it appears that drugs are here to stay. Our relationship with drugs is constantly changing; an old pattern of drug use is now being replaced by new and often more harmful patterns of drug abuse. Recently, the use of substances has dramatically increased due to their easy availability worldwide, which has led to harmful consequences (2). According to World Health Organization (WHO) (3), "substance abuse is persistent or sporadic use of drugs inconsistent with or unrelated to acceptable medical practice". The term substance abuse is an umbrella term that includes the use of a broad range of substances comprising alcohol, tobacco, and other illicit drugs like opioids, heroin, and many more.

Drug use has evolved into a major concern in today's society. Drug use has recently increased dramatically throughout the world. According to the United Nations Office on Drugs and Crime (UNODC) (2), "around 271 million individuals used substances in the previous year, and it is estimated that 35 million people worldwide suffer from drug use disorders". In India, drug use is also on the rise. According to a recent National survey (4), alcohol was found to be the most widely used substance by Indians, which was followed by Cannabis and opioid use. Moreover, survey revealed that among opioids, heroin and pharmaceutical opioids have been used more often than natural forms (raw opium and poppy husk). In the younger population, inhalants have emerged as an important substance of use. The illicit use of opioids is significantly higher in India (2%) compared to the worldwide estimate (0.7%).

University life is classified as a transitional phase, which is often characterized by experimentation and high risk-taking behaviour, such as drug abuse. Research suggests that drug use begins to rise throughout adolescence and reaches its highest point during early adulthood (5). Students, particularly those between the ages of 15 and 29, have shown substantial growth in drug use over the course of the last several decades. According to UNODC (2), around 12.6 million students were involved in drug abuse, with 11.3 million being frequent users of Cannabis. This frequency of cannabis use among students is greater than the proportion of cannabis use among the general population. Literature has consistently revealed that students are more vulnerable to engaging in drug abuse. Students in universities are in the process of exploring various aspects of their lives. Away from significant others-family and friends, to fill their belongingness need, students socialize with new others. The new relation forming and socialization, away from parental supervision and monitoring, grants students enough freedom and space to engage in risky behaviour, making them vulnerable to drug abuse. Research shows that significant environmental transition, including context and role changes, exposes students to an increased risk for drug abuse. Furthermore, research studies also revealed that due to increased parental expectations to outperform in academics, students sometimes use substances to relieve tension and avoid the hard realities of life. In turn, students become dependent on these substances (6). Studies conducted across the world have revealed drug use among students as a major concern (7). For example, Gupta *et al* (8) examined drug use among Indian students. The study revealed that 52% of the students within the age group of 19-21 were found to be active drug abusers, with which Alcohol found to be the most widely used substance (53.5%), which was followed by tobacco (8.2%) and Cannabis (6.8%). Another study by Raphael *et al* (9) found that out of the total collected sample, 31.8% of the students used substances. Similarly, other studies conducted on students' drug use in other parts of the world, such as the U.S. (10), Russia (11), Kenya (12), Cannada (13), *etc*., also found a significant increase in drug abuse.

The Theory of Planned Behaviour (TPB) (Figure 1) was developed by Fishbein and Ajzen (14) to provide an explanation of a wide variety of behaviours in different environments or conditions. The theory proposes that an individual's intention towards the behaviour is the significant predictor of subsequent behaviour, reflecting their motivation or willingness towards performing the behaviour (15). In addition, the theory posits that an individual's intentions result

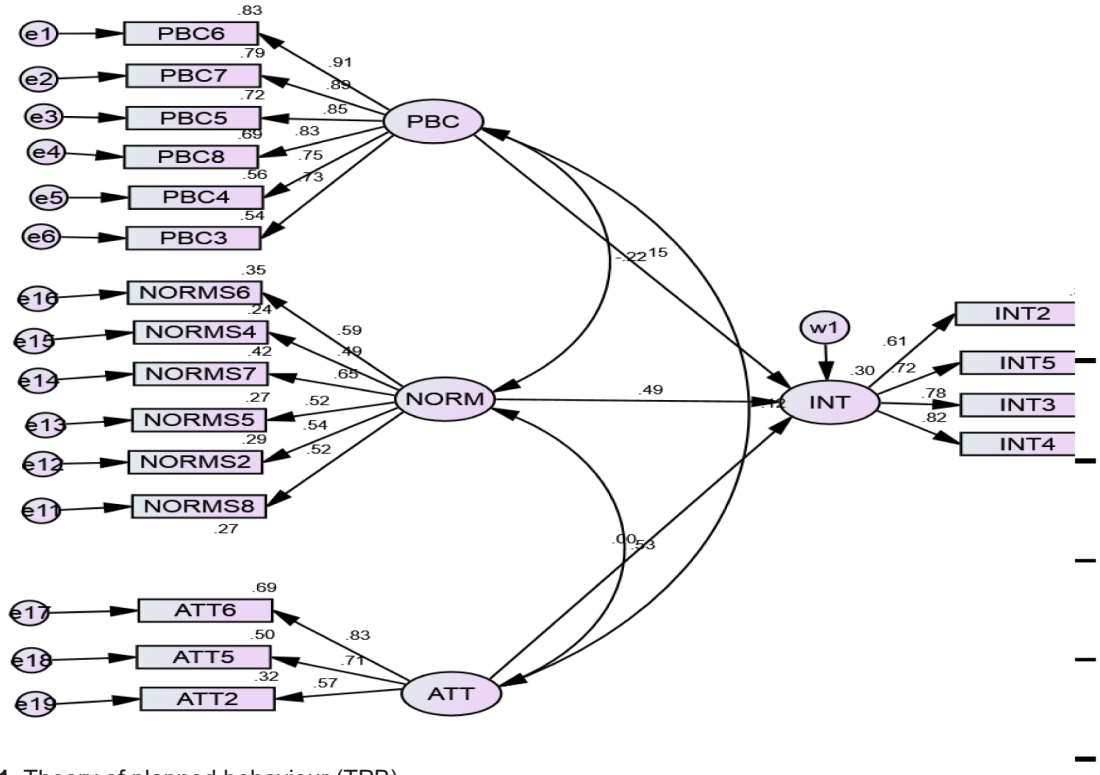

Figure 1. Theory of planned behaviour (TPB).
Note ATT=Attitude, NORMS=Perceived norms, PBC=Perceived Behavioural Control, INT=Intentions to engage in drug use.

from three important factors: attitude, perceived norms and PBC. Attitude incorporates the individual's overall assessment of the behaviour that is being targeted. Perceived norms include the perception of others' approval/disapproval of performing the behaviour (16), and PBC consists of an individual's belief that they have the capacity to perform a specific behaviour. Ajzen (14) defined PBC as an " individual's perception of how easy or difficult it is to perform the target behaviour". This concept is very similar to self-efficacy proposed by Albert Bandura (17). A meta-analytic study conducted by Armitage and Conner (18), revealed that self-efficacy is a more clearly defined concept than PBC. Therefore, the present study operationalized PBC in terms of self-efficacy to resist using substances. Thus, people with a favourable evaluation of using substances, positive perceived norms towards using substances and lower levels of refusal self-efficacy will develop stronger drug use intentions.

There is widespread evidence of using the TPB theoretical framework to investigate health behaviours, such as exercise (19,20), healthy eating (21), weight loss *etc*. (22). Moreover, TPB has also been used to examine problematic behaviour such as risky driving (23), binge drinking (24), cannabis use (25), and prescription drug use (26). Past research studies have highlighted the usability of TPB in identifying important beliefs that are the basis for a variety of behaviours among students, including predicting drug use (27-31). Furthermore, the literature has provided considerable research support for the model's overall explanatory power, which has been confirmed by subsequent research (23). Although the TPB is a widely used model to predict drug use intention in the Western context (32), research on drug use intentions in the Asian context and, more specifically, in the Indian context is very limited. Past research studies have analysed various psychological factors related to students' substance abuse intentions. However, the literature review indicated that with respect to the Indian context, there is a dearth of theory-driven research to predict drug abuse intentions. Therefore, theory-driven research needs to be conducted to better understand significant predictors of students' substance abuse intentions. In addition, it is important

to highlight that most of the past research studies predicting drug abuse intentions are based on small sample sizes (33-35), which restricts the applicability of the results to a wider population. The present study extends the literature by examining students' substance abuse intentions using the theoretical base of TPB. Based on the above discussion, we propose the following hypothesis.

H1: Attitude towards the behaviour will significantly predict students' drug use intentions.

H2: Perceived norms will significantly predict students' drug use intentions.

H3: Refusal self-efficacy will significantly predict students' drug use intentions

Materials and Methods

Study design

The present study was based on a cross-sectional research design and included a sample of university students. The present study was conducted at Kashmir University.

Study participants

The present study uses purposive sampling to include a sample of 1254 university students studying in different higher educational institutions. The total sample consisted of 37% males and 62% females while the ages of the respondents ranged from 15-28 years, and the mean age was 22.61. A total of 55.7% of participants lived in joint families, while 44.3% of the participants lived in nuclear families. The researcher approached the higher educational institutes/ coaching centres and invited students to participate. They were informed that the responses would be kept fully anonymous. The blended approach, which includes both (in-person and web-based) was adopted to ensure the participation of students in the survey. The blended approach enables students to participate with ease while also allowing the researcher to reach the students for whom a single form of the survey was not feasible (36). The participants who were present in the classroom were provided with the questionnaires in printed form, while the participants who were absent due to any reason were provided with web-based links. Participants were authorized to continue only after filling up the consent form and also received instructions from the investigator about how to respond to each section of the questionnaire.

Measures used

In order to measure the understudy variables of the present study, items were constructed according to the guideline proposed (37). All the measures used are verified by establishing the construct's reliability and validity (38). Following is the description of the measures used.

Attitude towards using substances

Attitude towards using substances was measured using 3 items, which measures the overall evaluation of using the substance. The participants responded to the items such as "using drugs makes it easier to express feelings", "using drugs helps to relax", and "using substances are harmful", using 7-point Likert scale ranging from (1= strongly agree) to (7= strongly disagree). Cronbach's alpha for attitude towards using substances was found to be 0.73.

Perceived norms

Perceived norms were measured using 6 items, which measure the students' perception of whether or not influential persons in their lives believe that they should or should not engage in substance use. The participants responded to the items such as "most of the people who are important to me think that using drugs reduces stress" and "friends who are close to me encourage me to use drugs", using a 7-point Likert scale ranging from (1= strongly agree) to (7= strongly disagree). Cronbach's alpha for the perceived norms was found to be 0.815.

Refusal self-efficacy (PBC)

Refusal self-efficacy was measured using 6 items, which measure whether or not a student believes that he or she has the ability to resist using substances in different situations. The participants responded to the items such as "I am capable enough to resist drug use even if my important relationship has just ended," "I believe I could resist using drugs at a party where many are using drugs," using a 7-point Likert scale ranging from (1= strongly agree) to (7= strongly disagree). Cronbach's alpha for refusal self-efficacy was found to be 0.92

Intentions to use substances

Intentions to use substances were measured using 4 items, which measure a student's motivation or likelihood to use substances. The participants responded to the items such as "I intend to do everything I can to try the drugs at least once" and "I intend to try drugs when I get the money," using 7-point Likert scale ranging from (1=strongly agree) to (7=strongly disagree). Cronbach's alpha for intentions to use substances was found to be 0.813

Statistical analysis

To accomplish the study's objectives, multiple statistical techniques were used in this study. The data collected by adopting a blended approach, which includes both (a web-based survey and a paper-pencil questionnaire) yielded 1262 responses. After utilizing the list-deletion method to remove incomplete responses, 1254 cases were found to be suitable for analysis. The data was analysed using SPSS (version 26) and AMOS (version 23). Initially, normality analysis was performed to examine the data's normality for descriptive analysis. In order to identify univariate outliers, Z-score frequency distributions were used with respect to nominal variables. To determine univariate normality, the skewness and kurtosis index were computed. As a general rule, values of a skewness index of more than 3 indicate considerably skewed data, while values of a kurtosis index greater than 10 indicate an excessive kurtosis (39). In this study, the highest acceptable limit of observation values for skewness is ±2, and for kurtosis ±5. Furthermore, Pallant's (40) criteria for trimmed mean have been chosen as requirements for the normal distribution of the sample group, which propose that the trimmed mean should not be greater than 0.20.

Once the normality of the data was established, descriptive analysis such as frequency, standard deviation, mean and percentage was conducted. Second, inferential statistics, such as Pearson's correlational analysis, was conducted to analyse the relationship between understudy variables. Third, Structural Equation Modeling (SEM) provides a systematic method for validating correlations between latent components and their indicators, as well as testing the size and direction of interactions between latent constructs in a single model (41). SEM was performed by employing a two-stage modeling approach. First, CFA was conducted to analyse the measurement model, and then the relationship between endogenous and exogenous variables was investigated using the structural model (42).

Moreover, model fit indices were used to determine the accuracy of data to predict the overall proposed model. The current study uses multiple fit indices, such as absolute fit indices, X2 (CMIN/DF), baseline comparisons fit indices of Normative Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). Once the measurement model was analysed using standardized estimates and met the acceptable criteria of model fit indices, the researcher analysed the relationship between the latent constructs of the measurement model by analysing path estimates and critical ratio (t-value). Path estimates of the measurement model were considered significant if the t-value was found to be above ±1.96. Moreover, in order to analyse the strength and nature of the relationship of the hypothesised path, regression weights and standardized path coefficients were evaluated. The standardized path coefficient's size was determined by following Cohen's criteria (43), which state that a value of path coefficient below 0.10 signifies a lower level of effect, while a value of path coefficient around 0.30 signifies a moderate level of effect and path coefficient around 0.50 signifies a higher level of effect.

Results

Descriptive results

The results of descriptive statistics and correlational analysis of study variables are represented in table 1. The results indicated that attitude (r=0.410**, p<0.01) and perceived norms (r=0.473**, p<0.01) are positively and significantly correlated with intention while perceived behavioural control is significantly and negatively correlated with attitude (r=-0.298**, p<0.01), perceived norms (r=-0.307**, p<0.01) and drug use intentions (r=-0.312**, p<0.01) indicating that students who evaluate drug use positively perceive that engaging in substance abuse is socially acceptable behaviour and also reflects a lower level

Table 1. Intercorrelation and descriptive statistics of the study variables

Constructs	Mean	SD	1	2	3	4
Attitude	2.16	0.84	**1.00**			
Perceived norms	2.00	0.81	0.545**	**1.00**		
Perceived behavioural control	5.51	1.34	-0.298**	-0.307**	**1.00**	
Intention	1.58	0.81	0.410**	0.473**	-0.312**	1.00

** p significant at ≤0.01

of refusal self-efficacy are more likely to develop strong intentions to use drugs.

Measurement model

The proposed hypothesized model fits the data very well results. The results indicated that the absolute fit indices, which measure whether the proposed theoretical model fits with the collected empirical data, by directly measuring the consistency of data with the hypothesised model, reveal a good fit. For instance, CMIN/DF is found within the acceptable threshold of less than 5, and other absolute fit indices, such as GFI (0.966), are found to be above the acceptable threshold of 0.90. Similarly, AGFI, with the obtained value of (0.955), RMSEA, with the obtained value of (0.037) and RMR, with the obtained value of (0.089) also fall within the acceptable limits. Moreover, incremental fit indices, which measure the accuracy of the hypothesized model by comparing it with the null model or baseline model, also reveal a good fit, e.g., CFI with the obtained value of (0.976) is found to be above the acceptable threshold of 0.90. and finally, the parsimony fit indices, which measure how effectively a hypothesised model measures fit and the parsimony by comparing it with a nested model. Results demonstrated that (PRATIO) with the obtained value of (0.842) is found to be greater than the minimum acceptable threshold. Thus, the above-discussed results indicate that the measurement model represents a good fit, which establishes the proposed research model's unidimensionality (44,45)

Structural model

The theoretical model proposed in this research consists of four latent constructs. Three causal paths were tested using a covariance matrix structure among four latent constructs. Results revealed that the conceptual model proposed in this study resulted in a (30%) variance in drug use intentions. As shown in table 2, regression weight estimates and critical ratios represented that the perceived norms significantly and positively determine the intention to abuse substances, while perceived behavioural control significantly and negatively determines the intention to abuse substances. Furthermore, the CR value of attitude is less than ±1.96 at a 0.05 significance level. As a result, attitude is not statistically significant. Therefore, our hypothesis (H_2: Perceived norm will significantly predict drug use intentions, H_3: Perceived behavioural control will significantly predict drug use intentions) is accepted, while hypothesis (H_1: Attitude will significantly predict drug use intentions) is not

Table 2. Represents path coefficients of the proposed research model

Causal path	SRW	Parameter estimate	S.E	t-value	Sig.	Hypothesis validation
P. Norm → Intention	0.492	0.732	0.076	9.624	***	Supported
PBC → Intention	-0.152	-0.073	0.014	-5.074	***	Supported
ATT → Intention	0.003	0.027	0.022	0.071	0.944	Not Supported

Note: SE=standard error, SRW= standardized Parameter regression Estimate weight (β) ,*p<0.05;**p<0.01;***p<0.001; P. Norm= perceived norm; PBC= perceived behavioural control; ATT= attitude.

found to be statistically significant.

Furthermore, the strength and nature of the relationship of hypothesised path effect, regression weights and standardized path coefficients were evaluated. The standardized path coefficient's size was determined by following the Cohen's criteria (43). The results reported in table 2 reflected that the effect of perceived norms on drug use intentions is found to be strong, with a β coefficient of 0.492, while the effect of PBC on intention to abuse substances is found to be small with a β coefficient of -0.152.

Discussion

The main aim of the present study was to examine university students' illicit drug use intentions by applying the theory of planned behaviour. Correlational analysis indicated that attitude towards drug use and perceived norms were positively related to drug use intentions, while perceived behavioural control was negatively related. These results align with previous research and the TPB model (33,46-50). Similarly, Pearson and Bravo (51) investigated students' refusal self-efficacy associated with marijuana use and found that increased levels of refusal self-efficacy were negatively related to students' intentions to use substances.

The findings from the current study represented that attitude did not significantly affect drug use intentions, which goes against the TPB model, which proposes attitude as a strong indicator of behavioural intentions. However, previous research has shown that the relationships between TPB factors and intentions vary depending on the behaviour and target sample (14). Huang *et al* (55) investigated drug use intentions and found that among TPB variables, only perceived behavioural control predicted drug use intentions.

Moreover, one of the explanations for our results comes from the study of David Trafimow and Triandis, who propose that people are either classified into collectivists or individualists (56,57). People from collectivist cultures evaluate the target behaviour based on expected outcomes. What is anticipated and how well one complies with those expectations determines whether one receives rewards or avoids penalties. Therefore, a person's behavioural intention is not only controlled by their views but also by the attitudes of significant others (57). In contrast, people's behavioural intentions in individualistic cultures are often affected by personal opinions or attitudes. Since the Indian family culture is a collectivist one, the behavioural intention will be influenced not only by one's views but also by the attitudes of significant individuals, including family members, peer groups, and the community. This helps to explain why attitude in the current study fails to predict drug use intentions.

The effect of perceived norms on students' drug use intentions was analyzed, with the hypothesis that peer pressure would positively affect intentions. The findings confirmed that perceived norms substantially affect students' drug use intentions, in agreement with the TPB model. Students are particularly receptive to normative pressure from their peer groups, leading to stronger intentions to use substances. This assumption is supported by previous research, such as Caputo's (58) study on adolescents' alcohol use, which found that subjective norms were the strongest predictor of the target behaviour. Similarly, Davis *et al* (26) investigated prescription opioid misuse and found that perceived norms significantly predicted intentions to misuse prescription drugs, exerting a greater effect than attitude and PBC. Therefore, the present study's results suggest that students greatly value the opinions and views of their peer group regarding substance use.

PBC's effect on students' drug use intentions was analysed, with the assumption that it would have a negative impact. The results showed that PBC does have a significant negative effect on students' intentions to use drugs, which is consistent with the TPB model's principles and supported by Bandura's self-efficacy theory (17) and other past research studies (59). For instance, Jalilian *et al* (33) found that a lack of trust in one's ability to abstain from using marijuana was a stronger predictor of intentions to use substances. Pearson and Bravo (51) also reported that increased refusal self-efficacy led to lower levels of drug abuse. Interventions targeting drug abusers should help individuals recall times they were able to abstain and provide emotional support while building refusal self-efficacy could prevent drug dependency.

Implications of the present study

The results obtained in the present study have a

number of implications. The present study adopted a TPB model to predict students' drug use intentions. This makes it a unique attempt, as very few studies have used the TPB model to predict students' drug use intentions in the Indian context. The current study offers a comprehensive insight into factors that are crucial in students' drug use intentions and thus are likely to have utility in developing an intervention to target students' drug use intentions and prevent them from using substances.

The findings from the present study revealed that students' intentions to use substances are strongly influenced by perceived norms. These results can be used to develop culturally relevant effective intervention and prevention programmes. Literature has clearly defined the significance of the psychosocial components of drug use among students. It thus helps to promote the argument that more study and intervention are needed in this segment of the population. This study contributes to the literature that identifies the influence of peers as a possible source of risk for students' intentions to engage in risky behaviours such as drug addiction. This highlights the need to place a greater emphasis on actively supervising and managing the activities and behaviour of the students with their peers.

Another major finding of this study is that PBC significantly predicted students' drug use intentions and the relationship is inversely related reflecting that students with increased refusal self-efficacy reflected lower levels of drug use intentions. This indicates a substantial impact of refusal self-efficacy in drug use intentions. Since this research provides the foundation for developing anti-drug programmes, intervention and preventive developers can gain from these findings. Therefore, to prevent students from using drugs, educators, researchers, and policymakers should concentrate on changing their intentions and enhancing their refusal self-efficacy abilities. One of the important components of many intervention programmes is that they strongly emphasise providing information about the consequences of using substances, *i.e.*, they focus on changing the attitude towards using substances. The present findings indicated that while designing an intervention programme, the researchers need to focus on changing the students' attitude towards using substances, building participants' refusal self-efficacy, and helping the students develop strategies to deal with peer pressure.

Limitations

The present has some limitations that must be considered while interpreting the results. First, the present study uses a cross-sectional design which limits the researcher to draw conclusions about cause and effect relationships that can be drawn from the current study about students' drug use intentions. It allows the researchers to gather the data at a single moment in time, forcing them to investigate the students' intentions about drug use at a single point in time. Thus, the researcher could not examine whether the drug use intentions are translated into the actual behaviour. Ideally, studies examining drug use intentions should utilize a time series design that allows the researcher to study the translation of drug use intention into actual behaviour. Second, the current study uses self-report measures to collect the responses from the participants, which is prone to social desirability bias and may result in an underestimation of the students' drug use intentions. Furthermore, the use of substances is religiously and culturally unacceptable in our society. Therefore, it is possible that the respondents were hesitant to offer honest and accurate information regarding their intentions to use substances. Third, even though the current study had adequate power and contained a sample of 1254 students, it relied on the purposive sampling method, preventing us from generalizing our findings to a more extensive population. Finally, the present study utilized the TPB model as a theoretical base to predict drug use intentions. However, the TPB model has been found to be successful in predicting drug use intentions. The model has some limitations. It does not include environmental and socio-economic factors that have been demonstrated to be crucial in predicting drug use intentions (60,61).

Conclusion

The present study's findings highlighted the usefulness of TPB in predicting drug use intentions in the Indian context. More specifically, the study indicated that peer pressure to engage in drug use and lower levels of refusal self-efficacy are important

predictors of student drug use intentions. The findings of the present study will benefit drug use intervention programmes. These results can be used to develop culturally relevant effective intervention and prevention programs. Furthermore, the present study contributes to the existing body of research that identifies the influence of peers as a possible source of risk for students' intentions to engage in risky behaviours such as drug addiction.

Funding

The present research is an independent work and has not been funded by any agency.

Acknowledgements

The researchers thank and appreciate the University of Kashmir staff for cooperating while conducting research and providing all the necessary facilities. Moreover, the researchers thank the students who participated in the research study. This study was accepted by the Board of Research Studies, University of Kashmir.

Conflict of Interest

The authors of the current study declare no conflict of interest.

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