

University Students' intention to quit substance abuse in Ethiopian: Application of Theory of Planned Behavior

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Abstract

Background Currently, substance abuse is one of the most burning public health problems in Ethiopia. However, the magnitude of substance abuse and intention to quit is not yet properly studied, Therefore, this study aims to assess University students' intention to quit substance abuse in Ethiopian:Application of Theory of Planned Behavior (TPB)

Methods Institution based cross-sectional study was conducted using self-administered questioners. A stratified sampling technique was used to select the study participants. Descriptive statistics were computed and a multivariate logistic regression model was fitted. A p-value of less than 0.05 was used to declare statistical significance.

Result From a total of 392 respondents, 175 (44.6%) were fulfilled the criteria of psychoactive substance abuse (CAGE \geq 2). Socio-demographic variables such as male respondents (Adjusted Odds Ratio (AOR) =2.34, 95% confidence interval, CI [1.22, 4.51]; P=0.000), Respondents among age category of 25-29 years (Adjusted Odds Ratio(AOR)=21.93, 95% confidence interval CI[16.19; 33.11]; P=0.000) and students with five and above years of study (Adjusted Odds Ratio (AOR)=5.71, 95% confidence interval, CI[2.41-13.52]; P=0.000) had significant association with the psychoactive substance abuse. Theory of Planned Behavior constructs such as positive attitude (Adjusted Odds Ratio[AOR]=1.81,95% confidence interval, CI[1.11,2.96]; P =0.018),supportive Subjective Norm (Adjusted Odds Ratio[AOR]=2.05, 95% confidence interval, CI[1.26,3.47]; P =0.004) and positive Perceived Behavioral Control (Adjusted Odds Ratio [AOR]=6.16, 95% confidence interval, CI[3.75,10.14]; P =0.000) had significant association with quitting psychoactive substance abuse.

Conclusion This study illustrated that intention to quit psychoactive substance abuse was predicted by a positive attitude, supportive subjective norm, and positive perceived behavioral control. Therefore, applying health communication strategies focusing on attitude, subjective norm and perceived behavioral control by segmenting students based on sex, age and years of studies are important to bring desired behavioral changes.

Background

Psychoactive substances are substances, when consumed, which can alter a person's consciousness, mood or thinking processes [1]. Many countries including Ethiopia recognize that substance abuse by young people is a serious health and social problem. Students are among the high-risk population of substance abusers [2]. Khat, also called *Catha edulis*, an amphetamine-like substance which is a bush native to East Africa and Arabian Peninsula for more than a thousand years is widely used in Ethiopia, Yemen, Somalia, and Kenya; it is consumed by chewing the leaves of the plant [3].

The death from tobacco alone is projected to be 8.4 million by 2020[4]. A study done at Trakya University, Turkey, students revealed that 30%, 29.9%, and 3.1% of the participants used alcohol, tobacco, and marijuana, respectively [5]. Another study was done at the University of Abuja, Nigeria, reported that

57.3%, 35.7%, 24.0%, 1.7% of undergraduate students used stimulants, alcohol, tobacco, and opium/heroin, respectively [6]. Some study reports showed that factors like students with a high amount of pocket money, being male, whose parents experienced more conflict in their relationship, and who belong to families with higher education and income level [5, 6] were leading the students to psychoactive substance abuse. However, a study reported that as a consequence of abusing psychoactive substance university students developed study difficulty, psychiatric morbidity, and brain fog syndrome [6].

One review study reported that between 0.3 to 64.7% of the population of Ethiopia consumed khat. Besides, the report showed that 3% of the population of Ethiopia had hazardous drinking. Both students and staff of higher institutions were at high risk of substance abuse. Thirty-one percent of students at the higher institute of Ethiopia were current alcohol users followed by 26.3% and 23.3% current cigarette smokers and khat chewers respectively [7]. Khat, alcohol, and tobacco are legal to use in Ethiopia even by the youths, except alcohol. Khat is a legal drug like cigarettes and alcohol in Ethiopia, openly sold at markets and chewed in streets.

The Theory of Planned Behavior (TPB) assumes that the best predictor of behavior is a behavioral intention which in turn determined by attitude toward the behavior, social normative perceptions regarding it and perceived behavioral control of performing the behavior. It constitutes a proficient framework for predicting behaviors and intentions. The TPB has been used successfully to predict and explain a wide range of health behaviors and intentions including health services utilization [8]. Studies have applied theoretical models to identify factors associated with the utilization of Voluntary Counseling and Testing services, while others have tested the applicability of the TPB to predict the intention of various sexual behaviors such as the intention to use a condom and intended use of contraception in Africa [9, 10, 11]. Studies conducted in Ethiopia [12, 13] and Uganda [14] showed that subjective norms were more important predictors than attitude and Perceived Behavioral Control (PBC). Finally, another Ethiopian study showed that the strongest predictor of reporting intention was PBC [15].

We believe that the applicability of socio-cognitive models to the African context in general and Ethiopian context, in particular, should be systematically addressed; considering the need to develop of theory-guided studies for explicit interventions programs for psychoactive substance abuse. To this end; there was no study conducted on this issue to test the applicability of TPB in predicting the intention to quit substance abuse in the country to the best of our knowledge. Therefore; this study aims to focus on intention to quit psychoactive substance abuse in the university student's application of the theory of planned behavior among University students in Ethiopia (Fig-1).

Methods And Materials

Study Setting and Period

The study was conducted from February to March 2018 among Arbaminch University, Arbaminch town Southern Ethiopia. Arbaminch town is located at 505 km from Addis Ababa, the capital city of Ethiopia. Arbaminch University has five campuses: Nech sar campus, Abaya campus, Chamo campus, kulfo campus, and main campus. Within all campuses, there are thirty-nine departments and 17,132 regular undergraduate students. There is no treatment and rehabilitation center and peer group counseling related to substance use within the whole campus.

Study design

An institution-based descriptive cross-sectional study design was used.

Participants and Sampling

From available departments, the study randomly selected 20 departments using the lottery method. To determine the sample size, single population proportion formula was used with the necessary assumptions of prevalence (p) 50% psychoactive substance abuse among undergraduate regular Arbaminch University Students with a 95% confidence level, 5% margin of error.

Considering the multistage nature of the sampling technique, a design effect of 2 was used to multiply the sample size as $384 \times 2 = 768$. Since the number of regular undergraduate students is 8966 ($< 10,000$) correction formula was employed. By considering a 10% non-response rate, 845 were taken as final study sample size.

A stratified simple random sampling technique was used to select the 845 study subjects from the entire regular undergraduate students currently learning in Arbaminch University. In this case, the students from the selected 20 departments were stratified by batch and sex. Finally, respondents were selected using simple random sampling.

Data quality control

An elicitation study was done on 15 samples of University students to explore the underlying behavioral beliefs, normative beliefs and control beliefs as per the recommendation by the creator of TPB. This was done before the development of the questionnaire. The pretest was done on 5% of the sample on University students selected outside of the study area to check the cultural sensitivity and clarity of the items which helps to address content validity. The training was given to data collectors and supervisors on roles and responsibilities of data collectors and supervisors, the purpose of the study, contents of questionnaires, data collection techniques, meanings of each question and data recording techniques. Exploratory principal component analysis (PCA) was done to address the construct of the issue of construct validity. The PCA; assumed Varimax rotation with Kaiser normalization for which factor loading less than 0.40 was considered to retain items on their respective factors. On top; a reliability test was conducted to ensure internal consistency. The Cronbach alpha value of greater than or equal to 0.7 was regarded as an acceptable level (Table 1).

Table 1

Principal component analysis (PCA) of constructs of theory of planned behavior assuming Varimax rotation with Kaiser Normalization and factor loading value greater than 0.40

Serial number	Factors	Number of items	Rotated % Variance explained	Factor loading	Cronbach's alpha	Overall % variance explained
1	PBC	9	22.16	0.83–0.92	0.95	79.88%
2	Intention	9	21.90	0.83–0.86	0.94	
3	Attitude	9	19.32	0.78–0.86	0.89	
4	Subjective norm	8	13.21	0.77–0.87	0.78	

Measurements and operational definitions

The study assessed demographic variables including age, sex, religion, class year, and group membership. A pre-tested semi-structured self-administered CAGE (Cut down, Annoyed, Guilty, and Eye-opener)-AID instrument was used to measure the respondent’s psychoactive substance abuse [16].

Operational Definitions

Intention towards quitting psychoactive substance abuse

is respondent’s report of likely to quit psychoactive substance abuse. It was measured using nine items with five points of Likert scale. The nine items were summed up and used for analysis.

Attitude (A)

It is the evaluative feeling of respondents about the advantages, importance, and usefulness of quitting psychoactive substance abuse. It was measured by using nine items on five-point semantic differential scales. The nine direct attitude items were summed up and used for further analysis.

Subjective norm (SN)

It is the respondent’s perception of whether important individuals or groups approve/disapprove psychoactive substance abuse. It was measured by using nine items with a five-point Likert scale. But one item was removed through factor analysis. The remaining eight subjective norm items were summed up and used for further analysis.

Perceived behavioral control (PBC)

Any environmental or situational factors that inhibit or facilitate respondents to quit psychoactive substance abuse. This was measured using nine items with five points on the semantic differential scale. The nine items were summed up and used for further analysis.

Psychoactive Substance abuse (PSA)

Item responses on the CAGE were scored 0 for “no” and 1 for “yes”; with a higher score indicating substance use problems. A respondent with a CAGE-AID total score of ≥ 2 was considered to be psychoactive substance abuse.

Current Psychoactive Substance abuse

was referred to the proportion of students who abused Psychoactive Substance within 30 days before the study

Statistical data analysis

Data were checked for completeness, edited, coded, and carefully entered by the principal investigator for analysis using SPSS software (v 16.0; IBM Corporation, Armonk, NY, USA). Descriptive statistical

measures such as the means and standard deviations were undertaken. The principal and assumption of the theory of planned behavior were followed for analysis. Accordingly; a multiple logistic regression analysis was performed to predict intention to quit psychoactive substance abuse. A p-value of less than 0.05 was used to indicate a significant association.

Ethical Consideration

The study obtained ethical clearance from an institutional review board of Jimma University College of Health Sciences. A letter of support was obtained from Arbaminch University. An information sheet was attached to each questionnaire to provide the study details and rights of the study participants. Written informed consent was obtained from the study participants in their halls during data collection. A consent form was attached to the study questionnaire. The data collectors gave orientation to the study participants about the need to read the consent form and put their signature before proceeding to each item in the study questionnaire. Data were kept anonymous and confidential during all stages of the study.

Results

Background characteristics of psychoactive substance abusers

Data were obtained from a total of 778 study participants with a response rate of 92.07%. Table 2 shows the background characteristics of only those 392 participants with psychoactive abuse. The mean age of the respondents was 22.1 ± 1.9 Standard Deviation (SD) years. Around 238 (30.6%) of the respondents were Amhara followed by Oromo 24.5% by Ethnicity. Out of the total psychoactive substance users, 259(66.1%) were Orthodox followers. Of the total regular undergraduate students, 26.8% (105) were third-year students. Overall 16.3% (64) and 83.7% (328) females and males, respectively, participated in the study. The mean monthly pocket money of the students was 500 Ethiopian Birr (ETB) which meant 18.5 US dollars. Out of the total of psychoactive substance users, 285(72.7%) were engineering and technology students (Table 2).

Table 2
Background characteristics of University students (n = 392)

Variable	Category	Sex		Total (%) (n = 392)
		Male	Female	
Age	15–19	16	8	24(6.2)
	20–24	282	47	329(83.9)
	25–29	30	9	39(9.9)
Ethnicity	Amhara	99	21	120(30.6)
	Oromo	84	12	96(24.5)
	Gammo	39	11	50(12.8)
	Goffa	13	0	13(3.3)
	Tigray	34	6	40(10.2)
	Others*	59	14	73(18.6)
Religion	Orthodox	220	39	259(66.1)
	Muslim	50	13	63(16.1)
	Catholic	17	3	20(5.1)
	Protestant	16	3	19(4.8)
	Others**	25	6	31(7.9)
College	Engineering and technology	240	45	285(72.7)
	Medicine and other health science	28	7	35(8.9)
	Natural and computational sciences	27	2	29(7.4)
	Social sciences and humanities	17	4	21(5.4)
	Business and economics	12	5	17(4.3)
	Agricultural and life sciences	4	1	5(1.3)
Year of study	1st year	50	17	67(17.1)
	2nd year	59	9	68(17.3)
	3rd year	85	20	105(26.8)
	4th year	91	4	95(24.3)

N.B *= Somalia, Benshangul and Afar., **= No religion, ¹ =year 5 and 6

5th year and above	43	14	57(14.5)
N.B *= Somalia, Benshangul and Afar., **= No religion, ¹ =year 5 and 6			

The magnitude of Substance Abuse among the Study Participants

Among the total of the 778 participants, 392(50.4%) of them were reported as currently abusing at least one substance. Three hundred twenty-eight (83.7%) of the respondents were males and 64(16.3%) were females. Khat, alcohol and cigarette abusers were 40(22.9%), 27 (15.4%), 2(1.1%), respectively. The rest 239 participants were abusing two or more psychoactive substances in combination. Generally, from a total of 392 participants, 175 (44.6%) them fulfilled the criteria for psychoactive substance abuse of CAGE \geq 2.

Socio-demographic factors associated with Psychoactive Substance Abuse

After bivariate analysis, multiple logistic regression analysis was performed with all the socio-demographic variables significantly associated with the outcome variable. Crude Odds Ratio (COR) of the bivariate analysis is also displayed in Table 3. The socio-demographic variables which showed significant associations were age, sex, income, religion and year of study. Taking those variables to the Multiple Logistic Regression analysis results showed that age, sex and years of study of the respondents were found to be significantly associated with psychoactive substance abuse. Male students were two times more likely to abuse psychoactive substances than females (Adjusted Odds Ratio (AOR) = 2.34, 95% confidence interval, CI [1.22, 4.51]; P = 0.000). Older age participants had more than twenty times of abusing psychoactive substances compared to younger ones (Adjusted Odds Ratio(AOR) = 21.93, 95% confidence interval CI[16.19; 33.11]; P = 0.000). Similarly, participants, who were within the age range of 20 to 24, were six times more abused psychoactive substances than younger ones (Adjusted Odds Ratio (AOR) = 6.91, 95% confidence interval, CI[1.43; 33.31]; P = 0.000). On the other hand, the study years of the respondents had significantly associated with psychoactive substance abuse. That is, students with five and above study years had nearly six times more psychoactive substance abuse psychoactive when compared to freshman (Adjusted Odds Ratio (AOR) = 5.71, 95% confidence interval, CI[2.41– 13.52]; P = 0.000) (Table 3).

Table 3

Logistic Regression analysis on socio-demographic factors predicting intention to quit substance abuse of the participants (n = 392)

Socio-demographic factors	Category	PSA [% (N)]	COR(95% CI)	AOR(95% CI)	p-value
Age	15–19	8.3% (2)	1.00	1.00	
	20–24	44.1% (145)	8.67(2.01–37.47)	6.91 (1.43–33.31)	0.016
	25–29	71.8% (28)	28.0(5.62-139.63)	21.93(16.19; 33.11)	0.000*
Sex	Female	28.1% (18)	1.00	1.00	
	Male	47.9% (157)	2.35(1.31–4.22)	2.34(1.22–4.51)	0.011*
Year of study	1st year	19.4% (13)	1.00	1.00	
	2nd year	38.2% (26)	2.57 (1.18–5.60)	1.91(0.85–4.32)	0.118
	3rd year	45.7% (48)	3.51 (1.71–7.17)	2.74 (1.29–5.81)	0.009
	4th year	56.8% (54)	5.47 (2.64–11.34)	3.65(1.71–7.87)	0.001
	5th year & above	59.6% (34)	6.14 (2.75–13.72)	5.71(2.41–13.52)	0.000*
Constant= -3.89, Wald = 20.29, Reference = 1.00, PSA = Psychoactive Substance Abuse					

Theory of Planned Behavior Constructs (TPB) of the Respondents

About 86 (41.5%) participants had scored above the attitude mean value of 10.05 (SD = 2.62) which showed that they had a positive attitude toward quitting psychoactive substance abuse. On the other hand, 118 (45.6%) of participants had scored above the subjective norm mean score of 9.16 with SD = 2.44 which indicated that they had a negative intention to quit psychoactive substance abuse. Moreover, 119 (49.2%) students had above mean score = 10.26 (SD = 2.68) of Perceived Behavioral Control (PBC) over psychoactive substance abuse. Similarly, 131 (46.0%) university students had above mean intention score = 10.70 (SD = 2.53) which indicated that they had supportive intention to quit psychoactive substance abuse (Table 4).

Table 4

Mean score of the study participants on the Theory of Planned Behavior constructs vs psychoactive substance abuse (n = 175)

Variable	Mean	SD	PSA participants Above mean: N (%)	SA participants Below mean: N (%)
Perceived behavioral control	10.26	2.68	119 (49.2)	56 (37.3)
Subjective Norm	9.16	2.44	118 (45.6)	57 (42.9)
Attitude to SA	10.05	2.62	86 (41.5)	89 (48.1)
Intention to quit SA	10.70	2.53	131 (46.0)	44 (41.1)
SA = substance abuse, SD = standard deviation				

Factors Associated with intention to quit substance abuse (Psychoactive substance use)

Attitude towards psychoactive substance abuse significantly predicted the study student's intention to quit psychoactive substance abuse (Adjusted Odds Ratio (AOR) = 1.81, 95% confidence interval, CI [1.11, 2.96], P = 0.018). Student's with a positive attitude to quit psychoactive substance abuse had almost two times the chance of quitting it than those students with negative attitude ones. On the other hand, subjective norms of the participants had a significant association with intention to quit psychoactive substance abuse (Adjusted Odds Ratio (AOR) = 2.09, 95% confidence interval, CI [1.26; 3.47], P = 0.004). Respondents with supportive subjective norms to quitting psychoactive substance abuse were more than two times likely to intended quitting it than those respondents with unsupportive subjective norms. Besides, the participants' intentions to quit psychoactive substance abuse were also significantly associated with positive Perceived Behavioral Control (PBC). Respondents who had positive PBC were six times more likely to quit psychoactive substance abuse (Adjusted Odds Ratio (AOR) = 6.16, 95% confidence intervals, CI [3.75, 10.14], P = 0.000) when compared with those respondents with negative PBC (Table 5).

Table 5

Multiple Logistic Regression analysis on the Theory of Planned Behavior (TPB) constructs predicting the study participant's intention to quit substance abuse (n = 392)

TPB constructs	Category	Intention to quit SA (%)		Crude Odds Ratio(COR)[95% CI]	Adjusted Odds Ratio(AOR) [95% CI]	p-value
		Yes [N (%)]	No [N (%)]			
Attitude towards quitting PSA	Below mean	125(67.6)	60(32.4)	1.00	1.00	
	Above mean	160(77.3)	47(22.7)	2.15(1.35,3.78)	1.81(1.11–2.96)	0.018*
Subjective norm to quitting PSA	Below mean	86(64.7)	47(35.3)	1.00	1.00	
	Above mean	199(76.8)	60(23.2)	3.01(0.09,6.99)	2.09(1.26–3.47)	0.004*
PBC to quitting PSA	Below mean	77(51.3)	73(48.7)	1.00	1.00	
	Above mean	208(86.0)	34(14.0)	4.33(2.33,10.25)	6.16(3.75–10.14)	0.000*
Constant= -2.41, Wald = 81.30, Reference = 1.00, SA = Substance Abuse, PBC = Perceived Behavioral Control						
Figure						

In this study, the current prevalence rate for overall psychoactive abuse among undergraduate students was 44.6%. This finding is similar to previous studies conducted among Debremarkos and Hawassa universities (35.5%); which are situated in southern and North-west of Ethiopia, respectively [17, 18]. However, the psychoactive abuse prevalence of this study is lower than the studies done among students of Haramaya (62.4%) and Diredawa (60%) universities, which are located in South-Eastern and Eastern parts of Ethiopia [19, 20].

In this study, 15.4%, 22.9%, and 1.1% of students were alcohol, Khat, and Cigarette abusers, respectively. This finding is lower than previous researchers conducted among undergraduate students of Hawassa university [alcohol (40.8%), cigarette abusers (11.9%)], Diredawa university [alcohol (60%), khat (59.9%) and tobacco (56.5%)], Debremarkos [khat (28.5%), alcohol (33.8%) and cigarette smoking (10%)], and Haramaya university [Khat (41.0%), alcohol drinking (50.2%), smoked cigarettes (10.8%) (17–20)]. However, the study's magnitude of Khat abuse prevalence is similar to the previous study done among Hawassa University students (khat (20.3%) [17].

This study found that male undergraduate students were two times more likely to abuse psychoactive substances than females. This finding is supported by previous researchers [17, 18, 20]. On the other

hand, the study showed that older age participants had more than twenty times of odds of abusing psychoactive substances compared to younger ones; which is supported by a study done in Nigerian University students [6]. Moreover, this study reported that compared to first-year students, year two, year three, year four and year five and above students had almost two, three, four, and six times, respectively, significant odds of psychoactive substance abuse. This shows that the rate of psychoactive substance abuse increases as the student's year of study increases. The result is supported by a study done among Haramaya University students [20]. However, this finding is contradicted by studies done among Sao Paulo University students [25] which indicated that a significant magnitude of psychoactive abuse was observed among first-year students. This difference could have resulted from cultural differences.

In this study, the constructs of the theory of planned behavior were found as significant predictors of the study participants' intentions to quit Psychoactive Substance Abuse (PSA). That is students with a positive attitude to quit PSA were almost two times more likely to quit PSA than those students with negative attitude ones. This finding is similar to studies done in the UK and South Africa [21, 22]. This implies that changing attitude serves as a baseline for making the intention of the students to quit psychoactive substance abuse successfully. Moreover, students with a negative attitude toward quitting PSA experience difficulty to quit PSA.

On the other hand, the study found that undergraduate students, who reported supportive subjective norms to quit psychoactive substance abuse, had more than two times odds of intention to quit PSA than those students with unsupportive subjective norms, which is supported by previous researches done in developed countries [21, 22, 23]. This indicates that unless students develop effective or supportive subjective norms to quitting PSA, their effort to quit PSA would not be effective. Furthermore, in this study, undergraduate students with poor Perceived Behavior Control (PBC) were six times less likely to quit PSA compared to those students who had better PBC. This is similar to previous studies done among the USA, UK, Norway, and South African undergraduate students [21, 22, 23, 24]. This result shows that, as one helps PSA students to increase PBC, their likelihood to quit PSA would be possible.

Conclusions

Therefore, the study concluded that psychoactive substance abuse is common among males, older age, senior years of study students. Besides, those university students with a positive attitude, supportive subjective norm and positive perceived behavioral control toward quitting psychoactive substance abuse are more likely to quit abusing the psychoactive substance.

The ways forward based on the finding of this study are as follow; Behavioral change communication strategy should be developed focusing toward developing a positive attitude, supportive subjective norm, and positive perceived behavioral control by segmenting audiences based on their age, sex and years of study in the university.

This implies that changing attitude serves as a baseline for making the intention of the students to quit substance abuse successfully. Moreover, students with the negative attitude toward quitting substance

abuse experience difficulty to quit substance abuse than positive intender. This study also shows that increase in perceived behavioral control contribute to increasing the intention to quit smoking.

Abbreviations

AOR: Adjusted Odds Ratio, COR: Crude Odds Ratio, CI: Confidence Interval, ETB: Ethiopian Birr, OR: Odds Ratio, PBC: Perceived Behavioral Control, PSA: Psychoactive Substance Abuse, SD: Standard Deviation, SPSS: Statistical Package for Social Sciences, TPB: Theory of Planned Behavior

Declarations

Acknowledgment

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Availability of data and materials

All data have been included in the manuscript, however, upon request, we can offer SPSS data are available both hard copy and electronically.

Authors' contributions

The authors' responsibilities were as follows: MSM formulated the study hypothesis together with LAG ATG, GKA and HHW performed the statistical analyses and contributed to the first and final draft of the manuscript. MS, LAG, GKA HHW, and ATG contributed to the interpretation of the study results and the first and final draft of the manuscript.

Ethics approval and consent to participate

Ethical clearance was obtained from the Institutional Review Board of the Jimma University (Ref. No: JU797/06/14). An official permission letter was secured from Arbaminch University. The participants are requested to sign the consent form for participation. The rights of participants to withdraw from the study

at any time without any precondition were disclosed unequivocally. Moreover, records were locked and code numbers rather than personal identifiers were used to maintain the confidentiality of information.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Figures

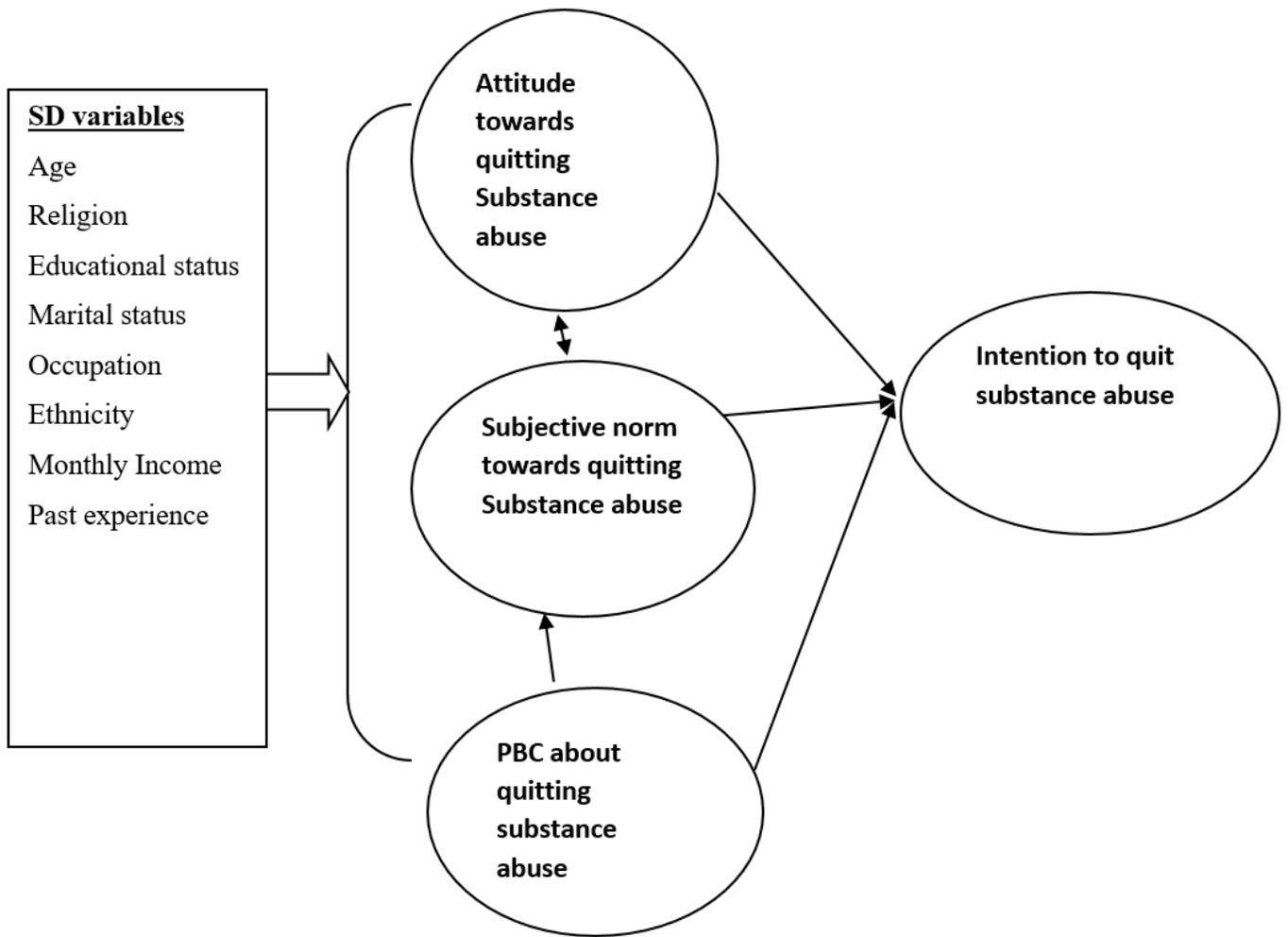


Figure 1

Conceptual frame work as applied to the present study. Abbreviations: SD variables=sociodemographic variables, PBC=perceived behavioral control