

Original article

Substance use and Suicidal ideation among Adolescents in Kerala

Anita Sharon Joshua, Mamman Joseph C, Sainaba P

Address for correspondence: Anita Sharon Joshua, Department of Applied Psychology, Central University of Tamil Nadu, Thiruvavur, India. Email: anitasharonj@gmail.com

Abstract

Background: Health-risk behaviours like substance use and suicidal ideation among adolescents is a widespread issue with serious health and social consequences.

Aim: The primary aim of this study was to explore the relationship between substance use and suicidal ideation among the adolescents in Kerala. Gender differences in substance use and suicidal ideation among adolescents was also studied.

Methods: 223 adolescents (151 males and 72 females) were selected from different higher secondary schools in Kerala and were assessed with Personal Experience Screening Questionnaire (PESQ) and Suicidal Ideation Scale (SIS). The data were analysed using Spearman's Rank order correlation and Mann-Whitney U-test.

Results: The results showed that substance use correlated positively with suicidal ideation with a correlation coefficient of 0.163*. Out of 223 participants, 32 students engaged in mild to moderate substance use and 10 students fell under the category of substance abuse or dependence. 75 students exhibited low suicidal ideation and 148 students had average to high suicidal ideation. Substance use was found to be more among males whereas suicidal ideation was more among females.

Conclusion: Findings imply the need to reduce substance use and suicidal ideation among adolescents. Reducing the rate of substance use among adolescents can help in bringing

down the rate of suicidal ideation. There is an urgent need for awareness programmes and preventive measures especially based on schools to reduce health-risk behaviours among adolescents. Future researchers need to monitor self-harming behaviours among adolescents and should conduct more researches in this area that will aid in implementing better interventions.

Keywords: Substance use, Suicidal ideation, Adolescents, Kerala

Introduction

Adolescence is a significant period in human development, during which many rapid changes take place within an individual biologically, psychologically, emotionally and socially. It is a time of independence and discovery; a time during which adolescents develop their sense of self, advance knowledge and skills, and learn to manage emotions and relationships [1-3].

In this dynamic period, adolescents experience a lot of stress and anxiety, which make them susceptible to health-risk behaviours [4], substance use disorders [5], mental disorders [6], suicidal behaviours [7] and physical injuries which will have adverse effects on their health and development [8].

Substance use among adolescents is a significant health problem around the world with many health and economic costs. Adolescence is a vulnerable age during which they engage in health risk behaviours such as smoking, experimenting illegal drugs and consumption of alcohol [9-11]. Often initiation of use of one substance end in poly substance use, which will have long-term detrimental effects on the health of adolescents [12,13]. Substance use among adolescents aggravates the risk for mood disorders and conduct disorders [14], problems in academics and social life [15,16] and deviant and violent behaviour [17-19].

In India, substance use among adolescents is increasing at a shocking rate [20]. Over the recent years, the age of initiation of substances is moving towards the preadolescence and childhood periods [21] with the most commonly used substances are tobacco and alcohol [22]. The state of Kerala has shown an alarming rate of substance use, especially alcohol [23]. Substance use among adolescents in Kerala is increasing rapidly and ranks top in the rate of alcohol use in the country. The prevalence of alcohol use in Kerala is 20 – 38%. A study conducted among youth in Central Kerala showed that 31.8% of students used or abused any of the substances like alcohol, smoking or pan. The age of initiation of alcohol use has also reduced from 19 years to 13 years [24]. Studies on substance use among adolescents in India and Kerala reports a male majority, but recent studies suggests that there is an upsurge in substance use among young females. In a study conducted among 5442 students from 58 colleges in Kerala, lifetime alcohol use was reported by 39% males and 12.6% females [25].

Suicide among adolescents is increasing drastically and is a serious public health concern all over the world. Suicide is “death caused by self-inflicted injuries with the intent to die as a result of such actions”. Suicidal behaviour comprises of a range of activities ranging from suicidal ideation, suicidal plans, suicidal attempts and completed suicide [26]. Suicidal Ideation means thinking about or having plans for committing suicide, but does not include the act of suicide. Substance use is one of the important risk factors of suicide [27]. Studies have found that suicidal ideation is higher in substance users compared to non-users [28] and that the risk for developing suicidal ideation is 28 times higher among students with substance use [29].

According to the World Health Organisation (2019), suicide is the third leading cause of death among 15-19-year-olds and the second leading cause of death among 15 – 29 – year olds. Almost 8,00,000 people commit suicide worldwide with a global suicide rate of 10.5

(10.5 per 1 lakh population) [30]. In India, more than 1 lakh people commit suicide every year with a suicide rate of 10.4 in 2019, which is 0.2% more than the rate in 2018. In 2019, 1,39,123 people committed suicide in India, with an increase in 3.4% in the number of suicides than in 2018. A total of 4405 males and 5208 females below the age of 18 committed suicides in India in 2019. The prevalence of suicide risk behaviours among adolescents in India is rising at a rapid rate. Drug Abuse/Addiction accounts for 5.6% of the total suicides in India and ranks third in the causes of suicide after family problems and illness. The state of Kerala also witnesses a high number of suicides. The rate of suicide in Kerala is 24.3, which is more than double the suicide rate in India (10.2). Kerala stands in the third position in the suicide rate among states in India. Kerala witnessed a total of 8237 suicides in 2018 and 8556 suicides in 2019, which shows an 3.9% increase in the number. A total of 418 students (211 males and 207 females) committed suicides in Kerala in 2019. NCRB reports show that 792 people committed suicide in Kerala in 2019 due to Drug Abuse/ Alcohol Addiction [31].

Self-handicapping behaviours like substance use and suicidal ideation among adolescents affect the productivity and overall performance of an individual. The social cost of adolescent suicide is extremely great and it creates endless pain among family members, friends and significant others. Suicide also has financial and economic costs on the society and the nation as a whole. Non-utilisation of human resources and loss of productivity are indirect costs that impact the society and the nation. Substance use is one of the major risk factors that contribute to suicidal behaviour in adolescents. Adolescents, in spite of knowing about the harmful effects of substance use and that it is a criminal offence, continue taking up substances as a habit. Substance use and suicidal ideation is a serious concern among adolescents in Kerala and it is necessary to study more about the risk factors of suicidal ideation and its relationship with unhealthy behaviours like substance use. Since, there aren't

many studies conducted on these variables in Kerala, this study intended to find out the relationship between substance use and suicidal ideation and also the gender difference in substance use and suicidal ideation among adolescents in Kerala.

Methods

Participants

The present study tries to explore the relationship between substance use and suicidal ideation among adolescents. Hence, a correlational research design was used in the study. The sample of the present study comprised of 223 higher secondary students (151 boys and 72 girls) within the age group of 15 to 18 years. Sample size was calculated using the Yamane Formula. There are a total of 7,66,808 higher secondary school students in Kerala. The sample size calculated at 5% margin of error, 95% confidence level and 15% population proportion is 196. (Based on the reports of National Survey conducted by Ministry of Social Justice and Empowerment, Government of India, Alcohol is the most commonly used substance in India. In India, the prevalence of current alcohol use is 14.6% and in Kerala it is 12.4%. Hence, it was decided to keep the population proportion for sample size calculation as 15%) [32]. Data was collected from 250 students out of which 27 data were incomplete. Hence a total of 223 samples were included in the study.

Convenience sampling method was used to select the sample. Data was collected from two districts in Kerala (Kozhikode and Malappuram). A total of four schools were included in the sample; two schools from Kozhikode district and two schools from Malappuram district. Data was collected using survey method from the classes allotted by the Principal in each school. One class from each school was included in the sample and there were around 50-60 students in each class. The schools chosen were English medium schools and hence the questionnaires were administered in English. Regular students studying in Higher Secondary

Schools in Kerala between the age 15 and 18 were included and students studying via correspondence mode, and students of age >18 were excluded.

Procedure

The Principals of the selected schools were met and the permission to collect data was obtained. Standardised Questionnaires which assess Substance use and Suicidal Ideation along with Participant Information Sheet and socio-demographic proforma were given to the participants. Informed consent was taken from the school authorities and Informed assent was taken from the participants before conduction of the survey. The study was approved by the Internal Human Ethics Sub-Committee, Central University of Tamil Nadu (IHESC No: CUTN/IHESC/2021-011 R1 dated 21 April 2021). Following tools were used:

Personal Experience Screening Questionnaire (PESQ) by Winters (2004) is a self-report screening tool which screens adolescents for substance use. The questionnaire consists of 18 items which measures the extent of substance use with a 4-point scale from never to often. High scores indicated substance abuse/dependence. The total score ranges from 18 to 72. A score of 18-23 indicates non-abusive use; 24-44 indicates mild to moderate use and a score of 45-72 indicates substance abuse/dependence.

Suicidal Ideation Scale (SIS) by Sisodia and Bhatnagar (2011) is a 25-item self-administering scale to measure suicidal ideation. The scale is scored on a 5-point likert scale from strongly agree to strongly disagree. The total score ranges from 25 – 125 and high score indicates high suicidal ideation. A score of 25-30 indicates very low suicidal ideation; 31-45 indicates low suicidal ideation; 46-105 indicates average suicidal ideation; 106-120 indicates high suicidal ideation and a score of 121-125 indicates very high suicidal ideation.

Statistical Methods

Since the sample was collected using non-probability sampling method, non-parametric statistical tests were used for analysis. In addition to Descriptive statistics, Spearman's rank order correlation was used to explore the relationship between substance use and suicidal ideation and Mann-Whitney U test was used to find out the difference in substance use and suicidal ideation with respect to gender. Data was analysed using Statistical Package for the Social Sciences (SPSS), Version 21.

Results

223 adolescents participated in the study. The mean age of the sample was 16.55 years, with minimum age 15 and maximum age 18. The major substances abused by the sample were alcohol, tobacco and marijuana. Almost 19% (42) of the adolescents have mild to high substance abuse and 66% (148) of students have average to high level of suicidal Ideation, which is an alarming rate. This indicates an immediate need for reduction of suicidal ideation among adolescents (Table-1).

Table-1: Extent of substance use and suicidal ideation among adolescents

Variable	Category	Frequency (%)
Substance Use	Non-abusive use	181 (81.16)
	Mild to moderate use	32 (14.35)
	Substance abuse or dependent	10 (4.49)
Suicidal Ideation	Very low	0
	Low	75 (33.5)
	Average	147 (65.6)
	High	1 (0.4)
	Very high	0

Table-2 shows that there is a significant gender difference in substance use among adolescents. Males showed more substance use than females. Hence the hypothesis 'there will not be any significant gender difference in substance use among adolescents' is rejected. Suicidal ideation was found to be more in females than males. This indicates that there is a

significant gender difference in suicidal ideation among adolescents. Hence, the hypothesis ‘there will not be any significant gender difference in suicidal ideation among adolescents’ is rejected.

Table-2: Difference in Substance use and Suicidal ideation with respect to Gender

Variable	Group	N	Mean Rank	Sum of Ranks	U	P
Substance Use	Male	151	120.70	18225.0	4123.0	0.01
	Female	72	93.96	6751.0		
Suicidal Ideation	Male	151	96.77	14612.0	31.36.0	0.01
	Female	72	143.94	10364.0		

Discussion

Substance use and suicidal ideation among adolescents are significant problems that disturbs the growth and development of an individual. Substance use among adolescence will lead to a wide variety of health problems, both physical and psychological [33]. Suicide is a serious health concern which creates economic, social and psychological burden on the individuals and the society. This study aimed to find out the relationship between substance use and suicidal ideation among adolescents in Kerala.

Extent of Substance use and Suicidal ideation among adolescents

Almost 19% of adolescents had mild or more level of substance use. There might be various factors responsible for substance use among adolescents. They engage in substance use behaviours out of curiosity and they think that use of substances would help them to feel good and to do better. Influence of peers with substance use also have a vital role. Adolescents may engage in such behaviours ‘to fit in’, to the social circle of their peers. Also, adolescents are biologically wired to experiment new things. They feel a constant need to be adventurous and find the use of substances to be thrilling and daring. They also engage in such activities to show that they are mature and independent. Many adolescents engage in substance use behavior as a coping mechanism to solve their problems, which in-turn ends

up aggravating the issue. Stressful life experiences, sexual and physical abuse and trauma, lack of care and supervision of parents and the presence of an abusive parent are all potential risk factors for adolescent substance use. 66% of the participants have average to high suicidal ideation. Like substance use, adverse experiences in life can predispose adolescents to suicidal ideation and behaviors. Child maltreatment, violence, childhood sexual and physical abuse are all antecedents for self-destructive behavior in adolescents [34].

Relationship between Substance use and Suicidal ideation

A significant positive relationship was found between substance use and suicidal ideation among adolescents ($r=0.163$, $p<0.05$). The value of the correlation coefficient though significant, is weak in strength. And the hypothesis which states that there will be a significant positive relationship between substance use and suicidal ideation is retained.

The finding is consistent with the findings of several other studies. There are significant associations between substance use disorder and suicide [35] and adolescents with substance use are three times more likely to make a suicide attempt, compared with non- users [36]. Individuals with substance use are more probable to have social, financial and family problems, which can again rise their vulnerability to suicidal ideation and suicide. Alcohol and other substances affect the neurotransmitters and in turn disturbs the cognitive functions of the brain. Continuous use of substances may impair judgements, reduce impulse control and disturbs the neurotransmitter pathways which in turn lead to suicidal tendencies through inhibition. Individuals with heavy alcohol use have five times more chances to die by suicide compared to social drinkers [37]. Drug intoxication also narrows down the ability to think rationally, which hinders their ability to find alternative solutions to problems [38]. Also, continuous use of substances can alter the levels of neurotransmitters such as serotonin (5-HT) which is connected with suicidal behavior [39].

According to Emile Durkheim's sociological theory of suicide, the risk for suicide increases

as the degree of social integration decreases. Substance use and abuse can create problems in one's family, society and workplace and can lead to loss of social relations. Alcohol and substance intoxication can be seen as a form of anomie which weakens the normal control mechanisms. This is a possible reason for suicidal ideation among individuals with substance use [36]. Interpersonal theory of suicide posits that only individuals with high tolerance for pain and less fear of death will shift from suicidal ideation to suicidal attempts. They acquire this capability of suicide when they experience painful and fearful events [40]. Intravenous drug users show high risk to attempt suicide as they will be more habituated with the pain associated with injecting drugs. Also, substance use by any means increases pain tolerance. Hence, individuals who inject drugs are more likely to have suicidal ideation and attempt suicide [41].

Gender differences in Substance use and Suicidal Ideation among adolescents

Significant gender differences were found for both the substance use and suicidal ideation. Substance use is more among boys than girls and this result is in line with the findings of previous studies [42,43]. Adolescent girls have less sensation-seeking and impulsive behavior than adolescent boys. This might be one possible reason for low substance use among girls compared to boys. The rate of suicidal ideation is found to be more in girls compared to boys. This finding is also supported by the findings of other studies [44,45]. This study indicates a need for reducing the rate of substance use and suicidal ideation among adolescents. Reducing the rate of substance use among adolescents will in turn aid in reducing suicidal ideation and tendencies. Identification of individuals with self-harming behaviours at the right time will save them from further physical and mental health issues. Usage of positive psychological approach will be helpful in developing and enhancing the potentials and talents of those individuals and thereby indirectly reducing substance use and suicidal ideation. Schools have an important role in the growth and development of

adolescents. There is a need for school-based policies and programmes to reduce the self-harming behaviours among students. Teachers and School counsellors can initiate and conduct individual and group-based strategies and programmes to bring changes in the identified individuals. It is necessary to ensure the availability of trained personnel and counsellors in schools.

Self-harming behaviours among adolescents not only affect the individual, but also affects the family and community as a whole. Family and community-based strategies can be implemented including the various stakeholders and members in the community and preventive, curative and rehabilitative actions can be taken. A comprehensive plan by integrating teachers, counsellors, parents, police and community can be introduced, which may help increase identification of adolescents at risk, which can in turn aid in addressing the risk factors for self-harming behaviours, resulting in improved prevention strategies.

The study has certain limitations as sample was selected conveniently and also only the classes allotted by the school authorities were included. Data was collected from only two districts and the sample size was quite small which restricts the generalizability of results. Also, the tools used for screening substance use and suicidal ideation were self-report measures. Despite these limitations, the study shed light on the magnitude and extent of substance use and suicidal ideation among adolescents in Kerala.

To conclude, the extent of substance use and suicidal ideation among adolescents is alarmingly high. Substance use was found to be more in males, whereas females reported suicidal ideation more. Also, a significant positive relationship was found between substance use and suicidal ideation among adolescents. Substance use and suicidal ideation are behaviours that increase the risk for physical and mental health issues in adolescents. Hence, it is important to control and prevent such self-harming behaviours among adolescents. The early recognition of self-harming behaviours will aid in implementing effective strategies to

curb such behaviours.

Acknowledgements: Nil

Source(s) of funding for the study: Nil

Conflict of interest: None declared

References

1. Office of Population Affairs. Adolescent Health [Internet]. Washington DC: Department of Health & Human Services; 2020 [cited 2021 Jan 20]. Available from: <https://opa.hhs.gov/adolescenthealth?adolescentdevelopment%2Fmentalhealth%2Fadolescent-mental-health-basics%2Findex.html>.
2. Silitonga RS, Pardede JA. Parenting Patterns Related to Emotional Development of Adolescents. *Indones J Nurs*. 2018, 5(2):470.
3. World Health Organization. Adolescent health and development [Internet]. World Health Organization; 2020 [cited 2021 Jan 14]. Available from: https://www.who.int/maternal_child_adolescent/topics/adolescence/development/en/
4. Hale DR, Viner RM. The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*. 2016, 16(1):1-2.
5. McNaughton N. The neurobiology of anxiety: Potential for co-morbidity of anxiety and substance use disorders. In *Anxiety and substance use disorders*. Springer, Boston, MA. 2008, (19-33).
6. Anthenelli RM. Focus on: Comorbid mental health disorders. *Alcohol Res Health*. 2010, 33(1-2):109.
7. Quarshie EN, Onyeaka HK, Asante KO. Suicidal behaviours among adolescents in Liberia. *BMC Psychiatry*. 2020, 20(1):1-2.
8. Kim S, Kimber M, Boyle MH, Georgiades K. Sex differences in the association between cyberbullying victimization and mental health, substance use, and suicidal ideation in adolescents. *Can J Psychiatry*. 2019, 64(2):126-35.
9. Loke AY, Mak YW. Family process and peer influences on substance use by adolescents. *Int J Environ Res Public Health*. 2013, 10(9):3868-85.

10. Barnes GM, Welte JW, Hoffman JH. Relationship of alcohol use to delinquency and illicit drug use in adolescents: Gender, age, and racial/ethnic differences. *J. Drug Issues*. 2002, 32(1):153-78.
11. Tripathi BM, Lal R. Substance abuse in children and adolescents. *Indian J Pediatr*. 1999, 66(4):569-75.
12. Henderson M, Nixon C, McKee MJ, Smith D, Wight D, Elliott L. Poly-substance use and sexual risk behaviours: a cross-sectional comparison of adolescents in mainstream and alternative education settings. *BMC Public Health*. 2019, 19(1):1-25.
13. Zuckermann AM, Williams G, Battista K, de Groh M, Jiang Y, Leatherdale ST. Trends of poly-substance use among Canadian youth. *Addict Behav Rep*. 2019, 10:100189.
14. Doran N, Luczak SE, Bekman N, Koutsenok I, Brown SA. Adolescent substance use and aggression: A review. *Crim Justice Behav*. 2012, 39(6):748-69.
15. Dhawan A, Pattanayak RD, Chopra A, Tikoo VK, Kumar R. Pattern and profile of children using substances in India: Insights and recommendations. *Natl Med J India*. 2017, 30(4):224.
16. Squeglia LM, Jacobus J, Tapert SF. The influence of substance use on adolescent brain development. *Clin EEG Neurosci*. 2009, 40(1):31-8.
17. Nowak M, Papiernik M, Mikulska A, Czarkowska-Paczek B. Smoking, alcohol consumption, and illicit substances use among adolescents in Poland. *Subst Abuse Treat Prev Policy*. 2018, 13(1):1-8.
18. Alwan H, Viswanathan B, Rousson V, Paccaud F, Bovet P. Association between substance use and psychosocial characteristics among adolescents of the Seychelles. *BMC Pediatr*. 2011, 11(1):1-8.
19. Bellis MA, Phillips-Howard PA, Hughes K, Hughes S, Cook PA, Morleo M, et al. Teenage drinking, alcohol availability and pricing: a cross-sectional study of risk and protective factors for alcohol-related harms in school children. *BMC Public Health*. 2009, 9(1):1-2.
20. Jasani PK, Jadeja YM, Patel NM, Jadeja DY, Shrimali JB, Purani SK. Prevalence of substance abuse among adolescents of urban and rural community in Surendranagar district, Gujarat. *Int J Community Med Public Health*. 2019, 6(5):1970-4.
21. Jiloha RC. Prevention, early intervention, and harm reduction of substance use in adolescents. *Indian J Psychiatry*. 2017, 59(1):111.

22. Kokiwar PR, Jogdand GR. Prevalence of substance use among male adolescents in an urban slum area of Karimnagar district, Andhra Pradesh. *Indian J Public Health*. 2011, 55(1):42.
23. Jaisoorya TS, Beena KV, Ravi GS, Thennarasu K, Benegal V. Alcohol harm to adolescents from others' drinking: A study from Kerala, India. *Indian J Psychiatry*. 2018, 60(1):90.
24. Raphael L, Raveendran R, Sajna MV. Prevalence and determinants of substance abuse among youth in Central Kerala, India. *International journal of community medicine and public health (Gujarat)*. 2017, 4(3):747-51.
25. Raveendranathan D, Jaisoorya TS, Nair BS, Menon PG, Rani A, Thennarasu K, Murthy P. Gender-Specific Correlates of Alcohol Use Among College Students in Kerala, India. *Indian Journal of Psychological Medicine*. 2020, 42(4):341-5.
26. Nunez D, Fresno A, van Borkulo CD, Courtet P, Arias V, Garrido V, et al. Examining relationships between psychotic experiences and suicidal ideation in adolescents using a network approach. *Schizophr Res*. 2018, 201:54-61.
27. Agrawal A, Tillman R, Grucza RA, Nelson EC, McCutcheon VV, Few L, et al. Reciprocal relationships between substance use and disorders and suicidal ideation and suicide attempts in the Collaborative Study of the Genetics of Alcoholism. *J Affect Disord*. 2017, 213:96-104.
28. Zhang X, Wu LT. Suicidal ideation and substance use among adolescents and young adults: A bidirectional relation? *Drug Alcohol Depend*. 2014, 142:63-73.
29. Osama M, Islam MY, Hussain SA, Masroor SM, Burney MU, Masood MA, et al. Suicidal ideation among medical students of Pakistan: a cross-sectional study. *J Forensic Leg Med*. 2014, 27:65-8.
30. World Health Organisation. Suicide [Internet]. World Health Organization; 2019 [cited 2020 Jul 15]. Available from: <https://www.who.int/news-room/fact-sheets/detail/suicide>
31. National Crime Records Bureau. Accidental Deaths & Suicides in India - 2019 [Internet]. New Delhi: Ministry of Home Affairs; 2020 [cited 2020 Dec 30]. Available from: https://ncrb.gov.in/sites/default/files/ADSI_2019_FULL%20REPORT_updated.pdf
32. Ministry of Social Justice and Empowerment, Government of India. Magnitude of Substance Use in India 2019 [Internet]. New Delhi: Ministry of Social Justice and Empowerment; 2019 [cited 2021 June 25]. Available from:

http://socialjustice.nic.in/writereaddata/UploadFile/Magnitude_Substance_Use_India_REPORT.pdf

33. Tarantino N, Kuperminc GP, Parrott DJ, Latzman RD. Family support mediates the association between substance use severity and suicidal ideation in early adult emergency department patients. *Int J Ment Health Addict*. 2013, 11(6):672-81.
34. Thompson R, Proctor LJ, English DJ, Dubowitz H, Narasimhan S, Everson MD. Suicidal ideation in adolescence: Examining the role of recent adverse experiences. *J Adolesc*. 2012, 35(1):175-86.
35. Poorolajal J, Haghtalab T, Farhadi M, Darvishi N. Substance use disorder and risk of suicidal ideation, suicide attempt and suicide death: a meta-analysis. *J Public Health*. 2016, 38(3): e282-91.
36. Berman AL, Schwartz RH. Suicide attempts among adolescent drug users. *Am J Dis Child*. 1990, 144(3):310-4.
37. Esang M, Ahmed S. A closer look at substance use and suicide. *Am J Psychiatry Resid J*. 2018.
38. Norstrom T, Rossow I. Alcohol consumption as a risk factor for suicidal behavior: a systematic review of associations at the individual and at the population level. *Arch Suicide Res*. 2016, 20(4):489-506.
39. Borges G, Loera CR. Alcohol and drug use in suicidal behaviour. *Curr Opin Psychiatry*. 2010, 23(3):195-204.
40. Van Orden KA, Witte TK, Cukrowicz KC, Braithwaite SR, Selby EA, Joiner Jr TE. The interpersonal theory of suicide. *Psychol Rev*. 2010, 117(2):575.
41. Cheek SM, Nestor BA, Liu RT. Substance use and suicidality: Specificity of substance use by injection to suicide attempts in a nationally representative sample of adults with major depression. *Depress Anxiety*. 2016, 33(6):541-8.
42. Lal R, Deb KS, Kedia S. Substance use in women: Current status and future directions. *Indian J Psychiatry*. 2015, 57(Suppl 2): S275.
43. Chen P, Jacobson KC. Developmental trajectories of substance use from early adolescence to young adulthood: Gender and racial/ethnic differences. *J Adolesc Health*. 2012, 50(2):154-63.
44. Wang PW, Yen CF. Adolescent substance use behavior and suicidal behavior for boys and girls: a cross-sectional study by latent analysis approach. *BMC Psychiatry*. 2017, 17(1):1-7.

45. Husky MM, Olfson M, He JP, Nock MK, Swanson SA, Merikangas KR. Twelve-month suicidal symptoms and use of services among adolescents: results from the National Comorbidity Survey. *Psychiatr Serv.* 2012, 63(10):989-96.
-

Anita Sharon Joshua, Research Scholar, Dr. Mamman Joseph C, Assistant Professor and Head in charge, Sainaba P, Research Scholar, Department of Applied Psychology, Central University of Tamil Nadu, Thiruvarur, India.