Factors Contributing to Alcohol Relapse in a Rural Population: Lessons from a Camp-Based De-Addiction Model from Rural Karnataka

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Abstract

Context: Alcohol consumption is the third largest risk factor for disease and disability in developing countries. Globally, 4% of all deaths are related to alcohol consumption every year. De-addiction measures and rehabilitation strategies can sometimes be challenging in rural population as there is a potential for a higher rate of relapse due to socio-cultural barriers such as unemployment, limited entrainment activities, and peer pressure during social events. **Methodology:** A cross-sectional study was conducted to determine the factors contributing to relapse in Bengaluru rural district. A total of 112 participants were interviewed, after attending de-addiction camp, using a semi-structured questionnaire containing instruments such as Penn Alcohol Craving Scale, self-efficacy scale, interpersonal support evaluation list, and presumptive stressful life events scale. Bivariate and multivariate logistic regression was done to determine the factors associated with relapse. **Results:** The relapse rate was 55.4% among the study participants. Education, self-efficacy, social support, and craving were associated with relapse in the bivariate analysis ($P < 0.05$). In multiple logistic regression model, craving (odds ratio [OR] – 1.8, confidence interval [CI]: 1.2–2.5), good interpersonal tangible support (OR – 0.09, CI: 0.01–0.5), and desirable life events (OR – 0.03, CI: 0.02–0.6) in the past were associated with relapse. **Conclusion:** Relapse rate was 55.4% among the study participants which is comparable to the findings of the other long-term studies. Increased craving, low-self-efficacy, and poor social support were associated with relapse hence need to be addressed in follow-up counseling sessions.

Keywords: Craving, de-addiction, relapse, self-efficacy, social support

INTRODUCTION

Globally, 4% of all deaths are related to alcohol consumption every year, and that is greater than the deaths caused by HIV/AIDS, violence, or tuberculosis.[1] Earlier, relapse was originally seen as a failure of the individual in recovery. However, recently, it has been defined as a process to going back to the same unhealthy actions that would entice the reusing of substance or drugs.[2] In the USA, short-term remission rates vary between 20% and 50% among the treated individuals depending on the severity of the disorder and criteria for remission.[3,4]

Studies from India and the US have shown that external factors such as older age, religion, marriage, poor literacy, unemployment, nuclear family, family history, early initiation, longer duration of abuse, and undesirable events are associated with relapse.[5,6] However, other studies from North India have cited internal

factors like were withdrawal symptoms (81.3%), inability to control urges (8%), and boredom or frustration (6.6%).[7,8] Cross-sectional studies from India and Sweden have concluded that long-term recovery is enhanced by maintenance factors such as high self-efficacy, more reliance on approach and less on avoidance coping, support from family members and friends, and positive life events.[8,9]

While the existing evidence is from de-addiction centers treating patients on ambulatory care, there is a lacuna in the

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literature which looked into the prevalence and risk factors among the attendees of community-based de-addiction program. The objectives of this study were to determine the prevalence and risk factors associated with relapse among participants in a community-based de-addiction program.

METHODOLOGY

This study was done by the Community Health Division (CHD) attached to a tertiary care hospital in Bengaluru. CHD works across 215 villages of Devanahalli taluk and provides primary care through a rural hospital and a network of mobile clinics. CHD initiated alcohol de-addiction camps in collaboration with alcoholic anonymous (AA) in response to the rampant alcoholism in these communities. Seven camps were conducted from January 2011 to November 2015. The 10-day camp followed a standard 12-step approach by AA team along with individual counseling, family counseling, medical therapy, exercise, and leisure activities. Regular monitoring of their health status was also done, and participants were given necessary medications such as thiamine and chlordiazepoxide. After this 10-day residential de-addiction program, participants are followed up in their homes by trained field assistants.

The participants for the study were visited at home and interviewed after an informed consent. Participants who have completed at least 3 months after the camp were included, and those who had shifted residence from the project area or died were excluded. Assuming the prevalence of relapse as 46.8% with 20% relative precision, the sample size was calculated as 112.[10] Of 233 camp attendees, 19 of them died and 50 had moved out from the project area. Of the remaining 164, we recruited 112 participants.

The participants were selected consecutively from the project list and visited at home and interviewed using a semi-structured questionnaire with validated instruments. People who were and moved out were excluded from the sampling list. The locked houses were visited twice. The questionnaire was translated into vernacular language back-translated for consistency and piloted. It was administered in Kannada by a Family medicine doctor in the respondent's home. Data were collected over 6 months, with an average of 20 interviews per month. Recruitment was stopped when the desired sample size was achieved.

Standard definitions and instruments used
Definition of relapse
Relapse was defined as a return to drinking alcohol after a period of abstinence, often accompanied by reinstatement of dependence symptoms, for the purpose of the study.[11]

Operational definition: A person is considered to be relapsed based on self-report which is verified by family reports and the field assistant.

Instruments
Penn Alcohol Craving Scale
The Penn Alcohol Craving Scale (PACS) is five items, self-report measure that includes questions about the frequency, intensity, and duration of craving, the ability to resist drinking, and asks for an overall rating of craving for alcohol for the previous week. Each question is scaled from 0 to 6. Each scale is scored from 0 to 5 and the maximum score that can be obtained is 30.[12]

Self-efficacy scale
It is designed for ages 12 and above and was created to assess perceived self-efficacy regarding coping and adaptation abilities in both daily activities and isolated stressful events. This scale consists of ten items, and each item refers to successful coping and implies an internal-stable attribution of success. Each item is scored between 1 and 4, and the score ranges from 1 to 40.[13]

Interpersonal support evaluation list
This questionnaire is a shortened version of original Interpersonal support evaluation list (ISEL) consists of 12 questions which measure perceptions of social support. This questionnaire has three different subscales designed to measure three dimensions of perceived social support. These dimensions are as follows: (a) appraisal Support (a measure of perception of having someone to talk to), (b) belonging Support (perception of doing things with others), and (c) tangible support (availability of material help). Each dimension is measured by four items on a four-point scale ranging from "Definitely True" to "Definitely False." The score ranges from 1 to 16 in each dimension.[14]

Presumptive stressful life events scale
This is a 51-item scale developed by Gurmeet Sing *et al*. in 1984 for a particular application to the Indian culture. The 51 items could be broadly pertaining to family, social, work, financial, marital, sexual, health, and bereavement aspects. Presumptive stressful life events scale (PSLS) measures two aspects, first being the type of event happened and the second being the stress associated with the events.

In this study, the patients were assessed if they had experienced any life event from the 51 items in the past 1 year prior to their interview, and each life event was rated as present or absent. Scale items were classified into (a) desirable, undesirable, or ambiguous and (b) personal or impersonal. Each event was given a score of zero or one. The presence of the event was given a score of one, and the absence was given a score of zero. The mean score was calculated for further analysis.

PSLS gives have assigned weights for mean stress experienced to each event ranging from 0 to 100, and the same were given to the reported events. Further, individual stress score was calculated.[15]

Statistical analysis
The data were coded and analyzed using the statistical software Statistical Package for Social Sciences (SPSS for Windows, Version 16.0. Chicago, USA, SPSS Inc.). Socio-demographic characters were dichotomized, and bivariate analysis was done to assess the factor associated with relapse. Independent student *t*-test was done to compare the mean score of PACS,

Table 1: Multiple logistic regression on factors associated with relapse

Factors	Category	B	Adjusted OR	95% CI		P
				Lower	Upper	
Craving	High	0.58	1.788	1.25	2.54	0.001[†]
	Low*					
Interpersonal tangible support	Good	−2.3	0.09	0.01	0.59	0.01[†]
	Poor*					
Self-efficacy	Good	0.29	1.34	0.93	1.95	0.11
	Poor*					
Social support	Good	−1.09	0.33	0.14	0.79	0.13
	Poor*					
Desirable life events	Yes	−3.43	0.03	0.02	0.64	0.02[†]
	No*					

*Reference, [†]Significant *P* value, R^2=0.67 (Cox and Snell), 0.90 (Nagelkerke), Model χ^2 (8)=5.52. OR: Odds ratio, CI: Confidence interval

Table 2: Sociodemographic factors (*n*=112)

Variables	Category	Frequency (%)
Age (years)	21-30	19 (17.0)
	31-40	51 (45.5)
	41-50	24 (21.4)
	51-60	11 (9.8)
	>60	7 (6.3)
Marital status	Married	99 (88.4)
	Single	9 (8.0)
	Separated/divorced	2 (1.8)
	Widow/widower	2 (1.8)
Education	None	28 (25)
	Primary school	26 (23.2)
	Middle school	33 (29.5)
	High school and above	25 (22.3)
Age at onset of drinking (years)	7-10	5 (4.5)
	11-15	15 (13.4)
	16-20	44 (39.3)
	21-25	25 (22.3)
	26-30	19 (17.0)
	>30	4 (3.6)
Reason for initiation (multiple responses)	Curiosity	85 (75.9)
	Peer pressure	82 (73.2)
	Boredom	2 (1.8)
	Worries	21 (18.8)

Self-efficacy scale, ISEL, PSLS with participants with relapse and abstinence. Significant factors from independent's test were dichotomized, and multiple logistic regression was done to determine the independent factors associated with relapse and to adjust for confounders. The goodness of fit was assessed using Hosmer–Lemeshow statistic, Cox and Snell R^2, and Nagelkerke R^2 which are described at the bottom of the Table 1. The model accounted for 90% of the reasons for relapse ($R^2 = 0.9$). This study was approved by the Institutional Review Board of Bangalore Baptist Hospital.

Results

A total of 112 were recruited among which 110 were men and two were women. The mean age of the participants was 40.5+/ 11.3 years ranging from 21 to 71 years. Most of them were married (88.4%) and nearly two-third of the study population (64.3%) were daily wage laborers. A quarter of them were uneducated [Table 2].

Most of the participants (39.3%) started consuming alcohol between the ages of 16–20 years. The lowest age of having the first drink was 7 years, and the highest was 45 years with a mean of 20.9+/6.3 years. Curiosity (75.9%) and peer pressure (73.2%) were the most common reasons to start the consumption of alcohol.

More than half of the study population had relapsed (55.4%). Relapse rate was significantly higher among people who had no formal education or studied only up to primary school compared to those who were educated (68.5% versus 43.1%). Age, occupation, marital status, and age at onset of drinking were not associated with relapse [Table 3].

The study population had scored 0–30 (interquartile range: 0–29) in PACS with mean of 12.9 (standard deviation [SD] - 13.2) and self-efficacy score ranging from 21 to 39 with a mean of 35 (SD - 5.1). Similarly, appraisal support score (10+/0.9), belonging (10+/1.0) and tangible support (10+/9.9) scores had ranged from 7 to 13 in each category.

High craving, low self-efficacy, and poor social and tangible interpersonal support were significantly associated with relapse ($P < 0.05$). A series of desirable events such as purchase of a land or house, marriage of a daughter or sister in the past 1 year had a significant impact on abstinence [Table 4].

A logistic regression was performed to ascertain the effects of craving, self-efficacy, social support, tangible support, and desirable life events on relapse. Craving (odds ratio [OR] 1.8 [1.2–2.5]), tangible support (OR – 0.09 [0.01–0.5]), and desirable life events (OR-0.03 [0.02–0.6]) were found to be independent factors associated with relapse. People with high level of craving have 1.8 times chance of relapse as compared to people with low craving. People with good interpersonal tangible support and desirable life events have

Table 3: Sociodemographic factors associated with relapse

Factors	Category	Relapse (*n*=62)	Abstinence (*n*=50)	χ^2	*P*
Age (years)	<40	37 (52.9)	33 (47.1)	0.47	0.49
	>40	25 (59.5)	17 (40.5)		
Education	Primary/none	37 (68.5)	17 (31.5)	7.30	0.007*
	> Primary	25 (43.1)	33 (56.9)		
Occupation	Laborer	44 (61.1)	23 (38.9)	2.70	0.1
	Others	18 (45)	22 (55)		
Marital status	Married	57 (57.6)	42 (42.4)	0.169	0.19
	Others	5 (38.5)	8 (61.5)		
Age at onset of drinking (years)	<20	35 (54.7)	29 (45.3)	0.027	0.86
	>20	27 (56.2)	21 (43.8)		

*Significant *P* value

Table 4: Factors associated with relapse

	Relapse		Abstinence		*t*-statistics	*P*
	Mean	**SD**	**Mean**	**SD**		
Penn Alcohol Craving Scale	22.7	9.41	8.2	4.06	16.51	<0.05*
Self-efficacy	28.95	4.30	36.6	1.99	−12.9	<0.05*
Social support score	30.3	3.9	37.2	2.8	−10.3	<0.05*
Interpersonal support evaluation list						
Appraisal support score	10.27	0.99	10.52	0.97	−1.31	0.8
Belonging support score	10.19	1.15	10.04	0.98	0.74	0.14
Tangible support score	10.59	0.85	10.72	1.14	−0.65	0.7
Presumptive stressful life event scale						
Desirable events	0.25	0.51	0.46	0.57	−1.96	0.01*
Undesirable events	0.46	0.80	0.50	0.81	−2.10	0.90
Total events	2.4	1.7	2.3	1.6	0.31	0.45
Individual stress score	116.6	88.21	112.2	87.09	0.26	0.78

*Significant *P* value. SD: Standard deviation

91% (OR – 0.09 [0.01–0.5]) and 97% (OR – 0.03 [0.02–0.64]) protection from relapse, respectively [Table 1].

DISCUSSION

In our study, the most common age group was 31–40 years. According to York, alcohol consumption peaks near the age of 40 years.[16] However, according to the World Health Organization (WHO) and the International Society for Biomedical Research on Alcoholism (ISBRA), alcohol consumption increases with age.[17] Suzuki *et al.* in a cohort study from Japan studied factors that promote adolescent drinking, and it was observed that lower age at the first drink, not refusing friends' temptations to drink and less communication with parents were the three significant factors that led to adolescents developing early alcohol dependence syndrome.[18]

Lower attendance of women in these camps can be explained by stigma and familial responsibilities in the rural area.[18] The relapse rate in our study was 55.4%, and it is comparable to longitudinal studies across the globe which typically range from 20% to 50%.[3,19]

Educational status appears to be a significant factor for the outcome after our de-addiction camp[17,20] However, our finding was in contrast to the report of the WHO and ISBRA which revealed that heavy drinkers (>210 g alcohol/week) and individuals undergoing treatment for dependence belong to lower level of education (lower than university or postgraduate education).[17] According to an Indian study, the prevalence of alcohol use disorder was high among illiterates (25.6%) and those with primary education (27.1%) as compared to those with college education (18.1%).[20]

The most common age when the participants had their first drink was found to be between 16 and 20 years and the reasons to start alcohol consumption were identified as curiosity and peer pressure. A study done by Ghulam *et al.* reported that friends (93%) were the most common reason to start alcohol consumption, followed by being sociable (62%).[21] Similarly, Meena *et al.* in her study with 4691 people aged between 14 and 44 years noticed that 26% consumed alcohol to overcome worries, 15% to think and work better, 14% for cheering up and 8% to relax.[22] Singh *et al.* observed that three-fourths of the men consumed alcohol more to be in the social company of their friends.[23] A similar study from Chandigarh reported that the most common reason for starting alcohol consumption was curiosity (67%) followed by depression (27%).[24] However, in our study, the age of onset of drinking appears to be an

insignificant factor for the outcome after the de-addiction program.

We have found self-efficacy as an important factor for remaining abstinent after de-addiction. Self-efficacy is the belief that one has the ability to implement the behaviors needed to produce a desired effect. Bandura noted that self-efficacy can affect actions irrespective of the past behavior, and cited numerous studies in which perceived self-efficacy predicted future behavior better than the past performance.[25] Many studies have concluded that self-efficacy is a predictor of treatment outcome in substance abuse and alcohol, which corroborate with findings of our study.[26,27]

Bandura suggested four principal sources of efficacy beliefs which are performance attainments, vicarious experiences of observing the performance of others, verbal persuasion to try to convince people that they possess certain capabilities, and physiological states based on which people judge their capabilities, strengths, and vulnerabilities.[25] It has been identified that among these four "performance accomplishment" is the most influential source of self-efficacy, and increasing levels of self-efficacy gave rise to progressively higher accomplishments and this self-efficacy and performance enhance one another. Treatments designed to improve performance accomplishments and provide a sense of mastery will have the best chance of improving self-efficacy.[28] A meta-analysis has also found that physical activity is also one of the best influential factors to enhance self-efficacy.[27]

Desirable life events in the past year have emerged as an independent predictor for relapse in the logistic regression model. Marriage of a daughter, purchase of a land, and financial gain were few positive life events that were associated with abstinence. Few undesirable events that were assessed in the study were lack of a son, debt, loss of job, and trouble by the neighbors. Mattoo *et al*. observed similar findings among opioid dependents in a de-addiction center in Chandigarh. However, the relapse rate was higher among participants with high stress from undesirable life events in the past year.[29] This observation does not corroborate with our findings.

Moak and Agrawal concluded that individuals with a low perceived social support were more prone to have poor mental and general health outcome. This could possibly explain the tangible social support that was observed as an independent predictor of relapse. This indirectly means that when a participant perceives that he has access to social and material aid during stressful events in his/her, he/she is able to remain abstinent.[30] The perception of material aid available during the crisis may reduce the stress and eventually prevent the person from relapse. The associations between financial stress, low tangible social support, and ill health among men have been studied.[31] Having a good company of friends and peer group who could probably offer tangible social support in the time of need and crisis may play a vital role in preventing from relapse among future participants. In addition to this, financial security through income generation programs during the follow-up will also prevent financial crisis and thereby relapse.

Limitations

Few camp attendees were not able to be interviewed as they were not traceable. The possibility of relapse among them cannot be ruled out. Even the questionnaire was translated into the vernacular, explaining a few scales and questions to the participants was a challenging task. We were not able to comment on the effect of gender on relapse due to the low participation of women in the camps. We did not collect information on when the participants relapsed after attending the camp. Hence, we are unable to comment on how much of time had elapsed after participants attended the camp.

Conclusion

The relapse rate was 55.4% among people who attended our de-addiction camps in Bengaluru Rural District. Increased craving and poor social support were the main factors associated with relapse. Individual and family counseling should emphasize on improving self-efficacy and promoting social support. These would probably contribute to the overall success rate of de-addiction programs.

Conflicts of interest

There are no conflicts of interest.

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