Predictors of Inpatient Treatment Completion and Non Completion in Patients with Alcohol Dependence from a Tertiary Care Centre in Central India

Psychiatry/Mental Health Section

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ABSTRACT

Introduction: In India, millions of individuals are affected by alcohol dependence as evident by a recent national survey. Apart from the serious health consequences, the use of alcohol brings significant social and economic losses to individuals and society as well. The early treatment discontinuation for deaddiction of alcohol is a major challenge, therefore identification of predictors of treatment completion could be of use to reorganise treatment programs effectively.

Aim: To study the predictors of inpatient treatment completion of subjects with alcohol dependence in the deaddiction ward of a tertiary care centre and to compare the socio-demographic and clinical variables among completers and non completers.

Materials and Methods: The cross-sectional study was conducted at the Department of Psychiatry, MGM Medical College Indore, India. The convenient sample of 100 patients was recruited in a period of one year. Selected inpatients were assessed through semi-structured proforma consisting of socio-demographic variables, clinical variables, and clinical rating scales i.e., Severity of Alcohol Dependence Questionnaire (SADQ), Clinical Institute Withdrawal Assessment of Alcohol Scale (CIWA-Ar), and Readiness to Change Questionnaire (RCQ). CIWA and

SADQ scores were compared with student's t-test and RCQ categories were compared with Chi-square test. To identify the predictors of treatment completion, binary logistic regression analysis was used.

Results: The mean age of participants was 36.5 years. All patients were male. The majority of the enrolled participants were urban 80 (80%) and 20 (20%) were rural. Binary logistic regression was performed to identify the predictors of treatment completion and non completion, so the treatment completers/non completers were taken as dependent variables and other socio-demographic/clinical variables as independent variables. The analysis showed that the education (p=0.01), occupation (p=0.01), history of substance in family (p=0.037) and complicated withdrawal (p=0.024) were the significant predictors in the study.

Conclusion: The current study concludes that the education, occupation, history of substance in family, initiation of substance in younger age and complicated withdrawal, were the significant predictors of treatment completion in context of alcohol dependence. It was found that the stated readiness to change and treatment completion did not display a significantly positive correlation.

Keywords: Dropout, Relapse, Substance, Withdrawal

INTRODUCTION

Alcohol is one of the most abused substance on the planet. Globally, its use ranks among the top five risk factors for disease, disability, and death, each year it causes 3.3 million deaths [1,2]. In India. a national survey conducted by the Ministry of Social Justice and Empowerment in 2019 reported that about 2.7% of the population of India (~ 29 million individuals) are affected by alcohol dependence with approximately 5.2% of the population aged between 10-75 years (~ 57 million individuals) needing help for their alcohol use problems (i.e., they consume alcohol in a harmful or dependent pattern) [3]. The harmful use of alcohol brings significant social and economic losses to individuals and society apart from health consequences [4]. It is responsible for more than two hundred disease and injury conditions. Global burden of disease and injury due to alcohol measured in Disability Adjusted Life Years (DALYs) which is approximately 5.1% [4]. Death and disability caused by alcohol occur relatively early in life. Approximately 13.5 % of the total deaths are caused by alcohol in the age group 20-39 years and there is a significant relationship between harmful use of alcohol and a range of mental and behavioural disorders [4].

Treatment for drug abuse disorders is full of challenges. One of the most typical issues is early treatment discontinuation. As a result, many patients receive insufficient care, which has an impact on the outcome. Longer retention has been shown to indicate a better outcome. According to several American researchers, 30-35 percent of inpatients do not complete their whole stay [5]. There is a dearth of studies on this important aspect in India while there are significant mortality and morbidity related to alcoholism [6]. This information could be of use to reorganise treatment programs effectively. The novelty of this study is that it did not follow a retrospective study design and also assessed readiness to change as stage of motivation during deaddiction.

Thus, this study was planned with the objectives of studying the predictors of inpatient treatment completion of subjects with alcohol dependence in deaddiction ward of a tertiary care centre and also to compare the socio-demographic and clinical variables among completers and non completers.

MATERIALS AND METHODS

The cross-sectional study was conducted in MGM Medical College Indore, Madhya Pradesh, India. This study enrolled the sample of 100 patients recruited in a period of one year. Convenient sample was taken due to the prevailing COVID situation. The study protocol was approved by the Institutional Review Board and Ethics Committee {EC/MGM/May-20/82- dated 29.05.2020} and was conducted between 01.06.2020 to 31.05.2021.

Inclusion and Exclusion criteria: The study included inpatients fulfilling criteria of dependence syndrome (F10.2) as per International Classification of Diseases (ICD 10) [7]. Patients having a reliable informant, being major by age and, consenting to participate in the study were included. While outpatients and patients having dependence on other substances except tobacco were excluded.

Study Procedure

As per ICD 10, diagnosis of dependence should be made only if three or more of the following have been present together at some time during the previous year: a) strong desire or sense of compulsion to take the substance; (b) difficulties in controlling substance-taking behaviour in terms of its onset, termination, or levels of use (c) a physiological withdrawal state. (d) evidence of tolerance, such that increased doses of the psychoactive substance are required in order to achieve effects originally produced by lower doses. (e) progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects. (f) persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug related impairment of cognitive functioning [7].

Participants were assessed within 24 hours of admission through semi-structured proforma consisting of socio-demographic variables, clinical variables, and clinical rating scales i.e., Severity of Alcohol Dependence Questionnaire (SADQ), Clinical Institute Withdrawal Assessment of Alcohol Scale (CIWA-Ar) and Readiness to Change Questionnaire (RCQ) [8-10].

- Severity of alcohol dependence questionnaire: The SADQ was created by the Maudsley Hospital's addiction research unit. It measures the dependence in an individual. The following features of dependence syndrome are covered by the SADQ questions: 1. Symptoms of physical withdrawal 2. Symptoms of affective withdrawal 3. Drinking for relief 4. Alcohol consumption frequency 5. Time takes for withdrawal symptoms to appear. It has 20 questions, with each question score from 0 to +3. Total score of 31 or more indicates severe dependence, score between 16 and 30 have moderate dependence and a score less than 16 indicate mild dependence [8].
- Clinical institute withdrawal assessment of alcohol scale: The CIWA-Ar is a 10 item scale used in the assessment and management of alcohol withdrawal. Each item on the scale is scored separately, and the total of the scores provides an aggregate value that correlates to the severity of alcohol withdrawal. The highest score is 67; mild alcohol withdrawal is defined as a score of less than or equal to 10, moderate alcohol withdrawal is defined as a score of 11 to 15, and severe alcohol withdrawal is defined as a score of 16 or above [9].
- Readiness to change questionnaire: The RCQ was created by Prochaska and Di Clemente and defines the steps that a person goes through in order to overcome an addiction. It has 12 questions which are scored on a five point Likert scale ranging from -2 through 0 to +2. There are three types of subscales precontemplation, contemplation, and action. The range of each scale is -8 through 0 to +8. The highest score represents the state of change designation [10].

The patients were defined as completers if they have planned discharge, controlled withdrawal symptoms, and enrolled in a maintenance program. Non completers were those who absconded/ Left Against Medical Advice (LAMA), discharged prematurely due to other reasons [11].

During inpatient treatment, patients received usual management for detoxification like administration of benzodiazepines, thiamine, anticraving medications, etc, and psychosocial management like psychoeducation, motivational enhancement sessions, and occupational therapy [12].

STATISTICAL ANALYSIS

For continuous variables mean and standard deviations were calculated, and the percentage was calculated for categorical variables. Depending on the normal/non normal population Student's t-test, Chi-square test, and Binary logistic regression has been applied. Data obtained was analysed through Statistical Package for the Social Sciences (SPSS) version 26. p-value ≤0.05 was considered to be statistically significant.

RESULTS

Out of 100 recruited participants of alcohol dependence, 63 were completers and 37 were non completers. 32 participants also had tobacco dependence. The majority of the enrolled participants were aged between 26-35 years 48 (48%) with a mean age of 36.5 years. All patients were males. Majority of the enrolled participants 94 (94%) were hindu, and 6 (6%) were muslim. Majority of the enrolled participants were urban 80 (80%) and 20 (20%) were rural.

On comparing socio-demographic characteristics of completers and non completers, participants with formal education (χ^2 =13.62, p=0.009), had joint family (χ^2 =5.0, p=0.025), better vocational skills (χ^2 =39.61, p<0.001), and who were married (χ^2 =14.05, p=0.003) had greater completion rate [Table/Fig-1].

Variables	Completers	Non completers	χ²	p-value		
Education						
Illiterate	0	7 (18.91%)		0.009**		
Up to 10 th grade	48 (76.19%)	24 (64.86%)	13.62			
Above 10 th grade	15 (23.80%)	6 (16.21%.)				
Family type						
Nuclear	28 (44.44%)	12 (32.34%)	5.00	0.025*		
Joint	35 (55.55%)	25 (67.56%)	5.00			
Occupation						
Professional/Semi- professional	23 (36.50%)	3 (8.10%)		<0.001**		
Skilled/Semiskilled	36 (57.14%)	13 (35.13%)	39.61			
Unskilled	4 (6.34%)	16 (43.24%)				
Unemployed	0	5 (13.51%)				
Marital status						
Married	51 (80.95%)	33 (89.18%)		0.003**		
Unmarried	4 (6.34%)	0	14.05			
Separated/Widowed	8 (12.69%)	4 (10.81%)				
[Table/Fig-1]: Socio-demographic characteristics of completers and non completers.						

On comparing clinical characteristics of completers and non completers, participants with medical co-morbidities like hypertension, diabetes, liver diseases (χ^2 =11.80, p=0.001), participants with a history of substance abuse in family (χ^2 =13.13 p<0.001) and participants who started substance in younger age had decreased completion rate (χ^2 =4.91, p<0.015) [Table/Fig-2]. Participants with a history of complicated withdrawal which includes seizures, delirium and hallucinations had higher completion rate (χ^2 =3.1, p=0.0.001). On comparing the CIWA score of completers (11.2±3.01) and non completers (7.8±6.65) by student's t-test, the t-value was found to be 2.1 and p-value was 0.05, which was statistically significant. It showed that completers had greater withdrawal as compared to non completers.

The mean SADQ score of completers (20.57±11.30) and non completers (11.11±7.24) were compared by student's t-test and the

Variables	Completers	Non completers	χ²	p-value		
Medical co-morbidity						
Present	10 (15.87%)	25 (67.56%)	11.00	0.001**		
Absent	53 (84.12%)	12 (32.43%)	11.80			
History of substance abuse in family						
Yes	12 (19.04%)	20 (54.05%)	10.10	<0.001**		
No	51 (80.95%)	17 (45.94%)	13.13			
Age of initiation of substance (years)						
<15	4 (6.34%)	10 (27.02%)		0.015*		
15-25	41 (65.07%)	18 (48.64%)	4.91			
25-40	18 (28.57%)	9 (24.32%)				
Complicated withdrawal						
Present	27 (42.85%)	2 (5.40%)	3.1	0.001*		
Absent	36 (57.14%)	35 (94.59%)	3.1			
Variables	Completers Non completers		't' statistics	p-value		
CIWA Score	11.2±3.01	7.8±6.65	2.1 0.05*			
SADQ Score	20.57±11.30	11.11± 7.24	4.57 0.001**			

[Table/Fig-2]: Clinical characteristics of CIWA and SADQ scores completers and non completers.

t value was found to be 4.57 and the p-value was in table is 0.001 which was statistically significant. This means that the completers had higher dependence.

The RCQ scale has three types of subscales, precontemplation, contemplation and action. In the present study, out of 63 completers, 61 (96.82%) were in the action phase and 2 (3.17%) were in contemplation. 37 participants were non completers, of which 34 (91.89%) were in action and 3 (8.10%) were in the contemplation phase. For comparing the results of the RCQ of completers and non completers, Chi-square test was used. The p-value was found to be 0.274 and no significant difference was found in treatment completion in terms of the level of motivation.

Binary logistic regression was performed to identify the predictors of treatment completion and non completion, so the treatment completers/non completers were taken as dependent variables and other socio-demographic/clinical variables as the independent variable. The analysis showed that education (p=0.01), occupation (p=0.01), history of substance in the family (p=0.037), and complicated withdrawal (p=0.024) were the significant predictors in the study [Table/Fig-3].

Dependent variables	Independent variables	В	p- value	95% CI
	Education	0.401	0.01	1.224-1.490
Completers/Non	Occupation	0.384	0.01	2.121-2.572
completers	History of substance in family	0.803	0.037	2.681-3.427
	Complicated withdrawal	2.654	0.024	4.984-5.849

[Table/Fig-3]: Logistic regression for predictors of treatment completers/non completers.

DISCUSSION

In the index study majority of the enrolled participants were aged between 26-35 years i.e 48% and whereas 36% were between 36-45 years. This finding portrays the medical help seeking behaviour and high prevalence of alcohol use in young adults which is in keeping with various studies and the socio-cultural background of the geographic region [13,14]. Participants' educational background was compared between completers and non completers, and it was observed that participants with formal education had a greater completion rate. The attainment of formal education in the majority amongst completers is possibly due to a better grasp of the understanding of the consequence of substance

use. And the psychoeducation provided to them had a greater impact secondary to their educational background. The present study finding was also similar to the study done by Sofin Y et al., and Basu D et al., where education was associated with an increased completion rate [15,16]. The majority of the enrolled participants belonged to joint families i.e 60% and participants with joint families were found to have a greater completion rate. This finding is in corroboration with study done by Sofin Y et al., where living with family or partner had an increased completion rate [15]. It was also found that participants with better vocational skills had a greater completion rate. This could possibly be due to better vocational skills corresponding to higher financial stability, which provides an ability to abstain from work for a longer duration as compared to daily wage workers or other groups with lower financial capability. This finding is also supported by Sofin Y et al., where being employed had greater rate of completion but Basu D et al., differ with the results, they found out that employment was associated with more dropouts [15,16]. Present study compared the marital status between completers and non completers, it was found that married participants had a greater completion rate. It is a very crucial finding in the context of treatment completion of alcohol use patients where a married status which usually translates to better social support and lesser relapse, this finding is supported by Sofin Y et al., [15].

In the term of clinical variables, it was found that participants with medical co-morbidities like diabetes, hypertension, or liver diseases had a lesser completion rate. This finding is similar to Kathiresan P et al., where medical concerns were the most prevalent reason for early discharge [17]. The present study assessed completion rates in terms of family history of substance and found that participants with a history of substance abuse had lower completion rate. Similar result was obtained by Grant BF [18].

The CIWA scores of patients with higher withdrawal ratings had better completion rates, the reason behind this could be that the greater the withdrawal symptoms greater the physical discomfort associated with it, which could be managed appropriately only in a hospital setting that might have served as a deterrent against non completion [19]. Greater withdrawal symptoms usually require inpatient treatment along with the use of parenteral fluids, thiamine supplementation, benzodiazepines, etc which in turn are gradually tapered with strict monitoring. This is not an option outside the hospital setup thus making inpatient care and treatment completion a more favourable choice than outpatient or non completion [19]. On comparing the SADQ score of completers and non completers, in addition to the factors of treatment completion associated with higher CIWA, the reason for patients with greater alcohol dependence having higher completion rates could be attributed possibly to the presence of inpatient settings which contributes to curbing procurement of substance which is essential for highly dependent patients. Patients with higher dependence usually have a substance seeking behavior even at expense of socio-occupational disruption which was lowered due to maintenance of a schedule during stay along with enrollment in occupational therapy, regular group therapy sessions, and various psychotherapy modalities which help them get over this seeking behavior as patients with lower dependence did not have to overcome this obstacle and were vested in such activities to a lesser extent [7]. It was also found that the stated readiness to change and treatment completion did not display a significantly positive association, so this reflects that treatment completion is a multidimensional entity and a singular factor of readiness to change cannot determine the outcome in patients of alcohol.

S. No.	Author's name and year	Place of study	Number of subjects	Mean age (years)	Parameters assessed	Conclusion
1.	Sidana A et al., (2019) [21]	Government medical college and hospital, Chandigarh, India	85 patients of SUD	32	Age of the patient, duration of use, withdrawal severity, duration of stay	Older patients, increased severity of withdrawals, and longer duration of stay are good predictors
2.	Sofin Y et al., 2017 [15]	Charit school of medicine, Berlin, Germany	832 alcohol dependent individuals	44 (±13)	Motivation, impulsivity related variables, medical history, and addiction severity on treatment outcome was examined.	Being female, living in a partnership, having children, being employed, and having good education were predictive for a positive outcome
3.	Basu D et al., 2017 [16]	Postgraduate institute of medical education and research, Chandigarh, India	7991 patients records were obtained	35.0±11.4	Socio-demographic and clinical characteristics of initial dropouts and those retained in treatment	Dropout is linked to older age, marital status, lower educational level, employment, rural origin, low earnings, shorter period of substance use and dependency.
4.	Sarkar S et al., (2016) [20]	National drug dependence treatment centre in Ghaziabad, India,	942 patient of SUD	32.7	Socio-demographic and clinical variables were assessed	Non completion was associated with a shorter ward stay and a higher average age.
5.	Dayal P et al., (2017) [22]	National drug dependence treatment centre in Ghaziabad,India	72 female of OUD		Socio-demographic and clinical variables	Most women taking drug for relief from pain, having medical morbidity, and onset of opioids at age 25 years or more had a significantly greater likelihood for being treatment completers.
6.	Present study	MGM medical college, Indore, India	100 patients of alcohol dependence	36.5	Socio-demographic and clinical variables were assessed	Education, occupation, history of substance in family, initiation of substance in younger age and complicated withdrawal, were the significant predictors of treatment completion.

[Table/Fig-4]: Summary of important studies in review [15,16,20-22]

The dropout rate in the present study was found to be 37% which is similar to the study done by Sofin Y et al., (36.9%) whereas Basu D et al., found a much higher dropout rate of 61%. In a study done by Sarkar S et al., [15,16,20], the non completers were less than in the present study which was 17.3%. Similar studies have been tabulated in [Table/Fig-4] [15,16,20-22]. The last set of results to discuss are the predictors of treatment completion and non completion which were obtained with the help of logistic regression. The factors which were the predictors of completion rate were being educated, being in occupation, absence of substance use in family, initiation of substance in later age, and history of complicated withdrawal. Which are similar to the results obtained by Sofin Y et al., and Basu D et al., [15,16].

Thus, the present study has established a few significant parameters that will differentiate between inpatient treatment program completers and non completers and this information could be of use to reorganise treatment programs effectively.

Limitation(s)

Despite taking all necessary precautions and a rigorous methodology there are a few limitations to the present study. The study was conducted at a single centre; thus results cannot be generalised. There is a lack of longitudinal follow-up, which could be utilised to ascertain more valid reasons for non completion. Since the information was collected based on self reporting using a semi-structured proforma, there is a possibility of response bias in reporting. Female patients were not included in the present study due to non availability and the available participants did not give consent to participate in the study.

CONCLUSION(S)

The current study concludes that the education, occupation, history of substance in the family, initiation of substance in younger age, and complicated withdrawal, were the significant predictors of treatment completion in the context of alcohol dependence. It was also found that the stated readiness to change and treatment completion did not display a significantly positive association. Further randomised studies with a larger sample size and a prospective design are required to understand the interplay of various factors in treatment completion and non completion. Clinicians in the field of deaddiction also need to be aware of these factors to deliver effective treatment programs.

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