

# Study of locus of control and readiness to change in patients of alcohol dependence syndrome with relation to severity of alcohol dependence

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## Abstract

**Background:** There is increased prevalence of substance dependence all over the world. Data regarding associations between locus of control, trans-theoretical stages of change and alcohol dependence in the Indian setting is limited. **Aim:** To correlate locus of control and trans-theoretical stages of change model with severity of alcohol dependence in alcohol dependence patients. **Objectives:** To measure the severity of alcohol dependence, locus of control and readiness to change, in patients suffering from alcohol dependence syndrome. To correlate drinking related locus of control with severity of alcohol dependence. To correlate trans-theoretical stages of change model with severity of alcohol dependence. To correlate locus of control with readiness to change in alcohol dependent patients. **Study Design:** Cross sectional, Hospital based study. Study place-Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Sangli; a tertiary care hospital. **Methods and Material:** Data was collected using semi structured interview and structured questionnaires- Alcohol Dependence Data Questionnaire (SADD), Stage of Change Readiness and Treatment Eagerness Scale (SOCRATES), Drinking Related Locus of Control Scale (DRIE). Statistical analysis: Fisher's Exact test, Pearson Chi-square test, Analysis of Variance and Spearman's Rank Correlations were used. **Results:** Of the 162 patients, 25.9% had low, 51.90% had moderate and 22.20% had high alcohol dependence. Patients with high alcohol dependence had higher scores on drinking-related locus of control, indicating a tendency toward external locus of control. Patients with high alcohol dependence also had higher scores than others in Recognition and Taking steps stage of transtheoretical stages of change model. **Conclusions:** Patients with high alcohol dependence recognise that they have a drinking problem and want to change this but those having external locus of control have difficulty taking responsibility of their problem and so they delay making changes in their drinking pattern. Therefore, clinicians can increase readiness to change problematic drinking by changing the locus of control to internal while conducting motivational interventions. **Key Words:** alcohol dependence, transtheoretical stages of change model, locus of control.

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## INTRODUCTION

Alcohol use is quite common in India with prevalence rates ranging from 23-74% in males and 24-48% in females as per various studies.<sup>1</sup> In 2005, the estimated number of people using alcohol in India was 62.5 million with 17.4% (10.6 million) having alcohol use disorder.<sup>2</sup> In DSM 5, the term 'alcohol use disorder' is an umbrella term that covers ICD 10 diagnosis of alcohol harmful use and alcohol dependence syndrome. Alcohol use is divided into mild, moderate and severe disorder according to the number of symptoms present at the time of diagnosis.

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Changes in severity of alcohol use disorder across time are also reflected by changes in frequency, dose of alcohol consumed across time. Diagnosis requires a problematic pattern of alcohol use leading to clinically significant impairment or distress within a 12 month period.<sup>3</sup> Alcohol dependence syndrome is defined as ‘a cluster of behavioral, cognitive and physiological phenomena that develop after repeated (alcohol) use and that typically include a strong desire to take (alcohol), difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.’<sup>4</sup> There is increased rate of liver cirrhosis, stomach/duodenal ulcers, pancreatitis, gastritis, cancer of organs of gastrointestinal tract, low grade hypertension, cardiomyopathy among those who drink very heavily.<sup>5</sup> Alcohol use disorders are also associated with an elevated risk of heart disease, cognitive deficits, memory impairment, degenerative changes in the cerebellum, suicide, mood disorders.<sup>5</sup> Alcohol use disorder consequently results in widespread losses due to money spent on medical management, socio-occupational deterioration, physical and mental health problems.<sup>4</sup> Psychological or cognitive factors like locus of control and readiness to change, which are associated with alcohol dependence/ use disorder need to be studied in detail to help manage alcohol related problems and to plan psycho-social interventions. Locus of control is the framework of Rotter’s (1954) social-learning theory of personality which considers the tendency of people to believe that control resides internally within them or with others or the situation.<sup>6</sup> Rotter (1990) describes internal locus of control as ‘the degree to which a person expects that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics’ while he describes external locus of control as ‘the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, fate, is under the control of powerful others or is simply unpredictable’.<sup>7</sup> Mariano *et al* compared the drinking-related locus of control between alcohol-dependent and social drinkers and found that alcohol dependent patients were more external in their drinking-related expectancies of control than non alcohol-dependent social drinkers.<sup>8</sup> Persons with a higher severity of drinking related externality were associated with compulsive drinking.<sup>8</sup> Prochaska and DiClemente<sup>9</sup> suggested the ‘readiness to change’ or the ‘Trans-theoretical stages of change model’ (TTM) for addictive behavior correction, in their research on the subjects who succeeded in smoking cessation. The TTM proposes five stages of change; pre-contemplation, contemplation, preparation,

action and maintenance stage that a person goes through for cessation of drug use. According to this model, alcohol-dependent patients who are in the pre-contemplation stage deny their drinking problem, use many excuses for drinking, and are unaware of a need to change. Individuals in the contemplation stage recognize they have a drinking problem and begin to consider doing something about the change; they have not yet made a commitment to take action and remain at this stage for long periods if they do not resolve their ambivalence to change. Once a person intending to take action actually tries to cut down on their alcohol consumption, they enter the taking action stage. In the maintenance stage people keep practicing for sustained behavioral change over a long time period, trying not to have recurrences<sup>9,10</sup>. Clinically the process can be divided into the precontemplation, the contemplation and the action stage. A study by Share *et al.* suggested that the degree of alcohol dependence is closely related to taking action to change problematic drinking.<sup>11</sup> Patients with heavier drinking behavior were less likely to engage in the taking action stage.<sup>11</sup> Therefore there is a need to study cognitive aspects like locus of control and readiness to change in patients of alcohol dependence syndrome to help devise treatment interventions.

### AIM

To correlate locus of control and trans-theoretical stages of change model with severity of alcohol dependence in alcohol dependence patients.

### OBJECTIVES

1. To measure the severity of alcohol dependence, locus of control and readiness to change, in patients suffering from alcohol dependence syndrome.
2. To correlate drinking related locus of control with severity of alcohol dependence.
3. To correlate transtheoretical stages of change model with severity of alcohol dependence.

### MATERIAL AND METHODS

A cross sectional, hospital based study was carried out at Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Sangli, from January 2018 to July 2018. Study population was patients with alcohol dependence syndrome attending the outpatient department or casualty and getting admitted in inpatient department run by Department of Psychiatry at Bharati Vidyapeeth Deemed to be University Medical College and Hospital in Sangli, India. Permission to conduct the study was taken from the Dean and Head of the department. Ethical clearance was given by the research review committee and the institutional ethics committee.

### Sample and eligibility criteria

162 patients were selected using convenience sampling for the study. Inclusion criteria were patients diagnosed with alcohol dependence syndrome according to ICD-10 diagnostic criteria, they had to be alert, able to read and answer appropriately the questions asked. All patients were receiving treatment for alcohol dependence and were in at least their third day of sobriety after hospitalization. Finally patients who gave written informed consent were allowed to participate in the study. Patients who were diagnosed with any other primary psychiatric disorder, had delirium tremens, complicated withdrawal and any personality disorders were excluded.

Patient's demographic data like age, education, employment, marital status were noted down by examiner during history taking and examination. Patients were also assessed using structured questionnaires. Severity of alcohol dependence was measured using 'Alcohol Dependence Data Questionnaire'. Patient's locus of control was decided using 'Drinking related locus of control scale'. Transtheoretical stages of change model was assessed using 'Stage of Change Readiness and Treatment Eagerness Scale'.

### Study tools

#### Alcohol Dependence Data Questionnaire<sup>12</sup> (SADD)-

The SADD is a 15-item self-reported questionnaire. It can also be used as a structured interview. Raistrick, Dunbar and Davidson published this questionnaire in 1983.<sup>12</sup> It has stability and validity and can be used to assess alcohol dependence in clinical samples. It was designed to assess alcohol dependence in the general adult substance-abusing population. The questionnaire is designed to measure current dependence, is sensitive across the full range of dependence and is relatively free of socio-cultural differences. It takes 2-5 minutes to administer and 1-2 minutes to score. Each question is rated on a 4-point scale from 0 to 3. The possible score range is 0-45, with higher scores indicating increased dependence. Raistrick *et al.* have suggested that scores of 0-9 points be considered low dependence; 10-19 medium dependence; and 20 or more as high dependence.<sup>12</sup> The Stages of Change Readiness and Treatment Eagerness Scale<sup>13</sup> (SOCRATES).

SOCRATES 19 item version 8 as developed by Miller and Tonigan was intended to categorize alcohol abusers according to their readiness to change.<sup>13</sup> The instrument

yields three factorially-derived scale scores: Recognition (Re), Ambivalence (Am), and Taking Steps (Ts). There are 19 questions in total. Each question is rated on a 5-point scale from 1 point (disagree very strongly) to 5 points (agree very strongly). Scoring is accomplished by transferring to the 'SOCRATES Scoring Form' the numbers circled by the respondent for each item. The sum of each column yields the three scale scores. There are eight questions in the dimension of taking action. Score range is from 8-40. The higher a patient's score the more readiness to change problematic drinking is indicated. Seven questions are in the dimension of recognition. Score range is from 7-35. A high score is positively correlated with recognition of problematic drinking. The rest i.e. 4 questions involve ambivalence. Score range is 4-20. A higher total score implies stronger uncertain views about one's drinking behavior as expected in the contemplation stage of change.

#### Drinking Related Internal-External Locus of Control Scale<sup>14</sup> (DRIE)-

This scale was developed by Donovan and O'Leary in 1987 for use in adult alcohol dependent and alcohol abuse patients. This scale is reliable and valid and consists of 25 items in a forced-choice paired format.<sup>14</sup> Each pairing has an alternative indicative of internal locus of control and external locus of control. Answers indicating internal locus of control are attributed 0 points and those indicating external locus of control are attributed 1 point. It can be administered by patient or staff. It takes 10 minutes to administer and 5-10 minutes to score. No training is required to administer the scale. The range of score is 0-25. Higher scores indicate a stronger tendency towards external locus of control.<sup>15</sup>

#### Statistical analysis

The data obtained were analyzed using SPSS-22.0 and Microsoft Office 2012. Qualitative data was grouped in the form of frequency and percentages. Comparisons were done using Fisher's exact test, Pearson Chi-square test, analysis of variance and Spearman's rank correlations. Comparison was done for finding correlations between data on severity of alcohol dependence, locus of control and readiness to change. The statistical significance level was defined as 0.05, two-tailed.

## RESULTS

The participants included 162 men. Their demographic data and details regarding alcohol consumption is presented in the table below.

**Table 1:** Subject details

Variables		Frequency (n=162)	Percentage (%)	
1.	Age (years)	<25	12	7.4
		25-50	132	81.5
		>50	18	11.1
2.	Religion	Hindu	156	96.3
		Muslim	6	3.7
3.	Marital status	Married	144	88.9
		Unmarried	18	11.1
4.	Education	Upto 10 <sup>th</sup> standard	66	40.7
		More than 10 <sup>th</sup> std.	96	59.3
5.	Employment	Employed	138	85.2
		Unemployed	24	14.8
6.	Family type	Joint	90	55.6
		Nuclear	72	44.4
7.	Residence	Rural	90	55.6
		Urban	72	44.4
8.	Age of starting alcohol consumption (years)	<21	54	33.3
		>21	108	66.7
9.	No. of admissions	1 <sup>st</sup> time admitted	126	77.8
		More than one	36	22.2

### Results of Severity of alcohol dependence-

According to the SADD scores, out of the 162 male patients, 36 (22.20%) had high alcohol dependence, 42 (25.90%) had low alcohol dependence and 84 (51.90%) had medium alcohol dependence. On applying Fisher's exact test, it was found that association between SADD scores and age, religion and marital status was statistically significant. Medium alcohol dependence was significantly more in patients aged between 25-50, in married patients and in patients who were Hindu when compared to other age, marital status and religion patients. Pearson Chi-square test found statistical significance between SADD scores and type of family and number of admissions due to alcohol consumption. Medium alcohol dependence was present in 42 out of 90 patients of joint family and 42 out of 72 patients of nuclear family, which was statistically significant. Medium alcohol dependence was also statistically more in patients who got admitted for the first time due to alcohol consumption. There was no statistically significant correlation between SADD scores and education, employment, residence and age of starting alcohol consumption.

**Table 2:** Subject details and severity of alcohol dependence on SADD

Variables	Severity of dependence on SADD (n = 162)			Test	
	High (%)	Low (%)	Medium (%)		
1. Age (years)	<25	0 (0)	0 (0)	12 (100.0)	Fisher's Exact Test F 31.744 p 0.000
	25-50	23 (18.20)	43 (31.80)	66 (50.00)	
	>50	12 (66.70)	0 (0)	6 (33.30)	
2. Religion	Hindu	35 (21.54)	37 (24.66)	84(53.80%)	Fisher's Exact Test F 13.086 p 0.000
	Muslim	0 (0)	6 (100.0)	0 (0)	
3. Marital status	Married	36 (25.00)	37 (26.44)	71 (48.56)	Fisher's Exact Test F 7.029 p 0.030
	Unmarried	0 (0)	6 (33.30)	12 (66.70)	
4. Family type	Joint	13 (13.30)	35 (40.00)	42 (46.70)	Pearson Chi-Square F 23.721 p 0.000
	Nuclear	25 (33.30)	5 (8.30)	42 (58.30)	
5. No. of admissions	1	24 (19.00)	30 (23.80)	72 (57.10)	Pearson Chi-Square F 6.612 p 0.037
	More than 1	11 (32.94)	12 (33.30)	13 (33.66)	

p,0.05 – significant SADD- Alcohol Dependence Data Questionnaire

### Results for readiness to change according to SOCRATES-

Recognition (Re) scale score range was from 16-35 and median value was 25. According to SOCRATES scoring form, 17(11.1%) patients had high, 31 (18.5%) had medium, 36 (22.2%) had low and 78 (48.1%) had very low recognition. Ambivalence (Am) scores range was from 4 to 20, median was 14 and mode was 16. According to scoring, 24(14.8%) had very high, 24(14.8%) had high, 37 (22.2%) had medium, 41 (25.9%) had low and 36 (22.2%) had very low ambivalence. Score range was 17-40 for taking steps (Ts) measure. Median was 30 and mode was 36. Taking steps interpretation showed very high in 7 (5.3%), high in 41 (25.9%), medium in 24 (14.8%), low in 6 (3.7%) and very low in 54 (33.3%) patients.

### Locus of control interpretation from DRIE scores –

Range of scores was from 2 to 17, median score was 9. Around 41% (66 patients) had more internal locus of control while around 48% (78 patients) had more external locus of control. 18 that is around 11% patients had borderline scores.

### Correlation between SADD, SACRATES and DRIE scores-

To find out the significant associations between alcohol dependence severity, readiness to change and locus of control, ANOVA was applied which showed SADD scores to have statistically significant associations with DRIE scores, recognition (Re) scores and taking steps (Ts) scores. SADD scores were not significantly associated with ambivalence (Am) scores. DRIE score was significantly low (8.57 mean) in patients whose SADD score was also low. DRIE score was significantly high (11.00 mean) in the patients whose SADD score showed medium alcohol dependence. DRIE score was also significantly high (8.83 mean) in high alcohol dependence patients. Recognition (Re) scores were significantly low (22.24 mean) in patients whose SADD score was also low and it was significantly high (30.0 mean) in high alcohol dependence patients. Taking steps scores were also significantly low (29.14 mean) in low alcohol dependence and high (34.67 mean) in high alcohol dependence patients. Applying Spearman's Rank Correlations we found moderate positive correlation ( $r$  0.442) between SADD scores and recognition (Re) of alcohol problems. Weakly positive correlation ( $r$  0.315) was found between severity of alcohol dependence and taking steps (Ts) for alcohol problems. There was very weak positive correlation ( $r$  0.037) between locus of control and severity of alcohol dependence ( $r$  0.037).

**Table 3:** Analysis of Variance (ANOVA) and Spearman's Rank Correlations

	SADD score	N	Mean (standard deviation)	ANOVA	Spearman's Rank Correlations
1.	DRIE score				
	Low	42	8.57 (4.36)	F 6.102	$r$ 0.037
	Medium	84	11.00 (4.22)	p 0.003	p 0.644
2.	Re score				
	Low	42	22.14 (5.29)	F 28.187	$r$ 0.442
	Medium	84	27.57 (5.45)	p 0.000	p 0.00
3.	Ts score				
	Low	42	29.14 (7.96)	F 9.254	$r$ 0.315
	Medium	84	33.36 (5.80)	p 0.00	p 0.00
	high	36	34.67 (4.33)		

Strength of correlation,  $r$ - correlation coefficient; 0.0-.19 –very weak, .20-.39 –weak, .40-.59 –moderate, 0.60-0.79 –strong, 0.80-1.0 – very strong; SADD- Alcohol Dependence Data Questionnaire; DRIE- Drinking Related Internal-External Locus of Control Scale; Re- Recognition, Ts- Taking Steps

Analysis of DRIE and SOCRATES scores revealed very weakly negative correlation ( $r$  -0.178) between locus of control and recognition (Re) of alcohol problem and weak negative ( $r$  -0.342) correlation between locus of control and taking steps (Ts) in readiness to change alcohol problem. Comparison of sub-scales of SOCRATES scores showed moderate positive correlation ( $r$  0.584) between recognition and ambivalence regarding alcohol problem. There was strong positive correlation ( $r$  0.736) between recognition of alcohol problem and taking steps for change in alcohol dependent patients. Ambivalence stage was moderately associated ( $r$  0.599) with taking steps for changing problematic drinking. Thus, positive correlation between all the three stages of change model

suggests that patients with high SOCRATES scores have acknowledged that they are having problems related to their drinking, tend to express a desire for change and to perceive that harm will continue if they do not change.<sup>13</sup>

### DISCUSSION

In this study almost half (51.90%) of the 162 patients showed moderate alcohol dependence. This can be due to the exclusion criteria where patients with complicated alcohol withdrawal who are more likely to have severe alcohol dependence were excluded. Also since the study was conducted in patients who were admitted for detoxification treatment, most of the low addiction patients were not included in the study as they did not get

admitted. A study in Taiwan measured severity of alcohol dependence in 160 patients (114 inpatients and 46 outpatients) who received detoxification treatment and found similar results to our study with 55.60% of patients having moderate alcohol dependence.<sup>16</sup> They however did not find any statistical significance between severity of alcohol dependence and age, religion, marital status while our study did.<sup>16</sup> We found that moderate alcohol dependence was significantly correlated with middle age group, married patients and patients who were Hindu. This finding can again be biased due to smaller sample size of low and high alcohol dependence patients. Readiness to change and severity of alcohol dependence- In the present sample, analysis of covariance indicated that the recognition and taking steps stage of drinking has significant differences across different dependence severity levels, but the ambivalence stage did not increase or decrease according to the degree of alcohol dependence. Our study found that high alcohol dependence was associated with high recognition of alcohol problem and also high motivation to change by taking steps. This finding was in contrast to other studies which showed that severe alcohol dependence patients tend to have poor recognition of problem and are reluctant to enter taking action stage.<sup>17,18</sup> Our present findings are appropriate if we consider that this study was conducted in a patient population who were admitted, mostly willingly for alcohol detoxification and deaddiction treatment. So most of them were already in the contemplation/ taking steps stage of transtherotical stages of change model. Jung indicated that when treatment fails, it is often attributed to the patient's lack of readiness to change.<sup>19</sup> In general, drinking severity is correlated with cost of change; there are more perceived benefits in the taking action stage than for the contemplation stage.<sup>9</sup> Therefore the patients are more likely to change when he is shown that, the disadvantages of continuing drinking are more than the advantages of continuing drinking. Our findings suggest that providing treatment appropriate to stage of change is an important strategy for a successful treatment outcome. In the clinical setting, most patients encountered are in the contemplation stage and have yet to enter the taking action stage.<sup>16</sup> Decreasing conflicting feelings from one's awareness and making efforts to reduce ambivalence can help patients prepare for readiness to change.<sup>20</sup> Locus of control and degree of alcohol dependence-Overall, the present findings suggest that low alcohol-dependent individuals have an internal locus of control, while moderate and severe alcohol-dependent individuals have more external locus of control. This is similar to other's findings that severely alcohol-dependent patients lean toward external locus of control.<sup>8,21</sup> External locus of

control can cause severe alcohol dependence because these people have less control over their alcohol consumption. An external locus of control is associated with more physical, social and psychological impairment from drinking.<sup>22</sup> Individuals with more external perceptions are also more likely to drop out of treatment prematurely. Patients with drinking related external locus of control are more likely to relapse, drink more and are more likely to have a more prolonged drinking episode if they do relapse.<sup>22</sup> A more rapid return to drinking, more drinking during the initial lapse episode, a greater likelihood of an initial lapse escalating into a more serious relapse, and overall poorer drinking-related outcomes following treatment is seen in patients with external locus of control.<sup>23</sup> Thus, therapists should make an effort to promote internal locus of control for alcohol-dependent patients. Sharp *et al.* claimed that using 'autogenic relaxation' training to facilitate acquisition of self-control by biofeedback, increased personal responsibility and fostered an internal locus of control in alcohol dependence treatment.<sup>24</sup> Saini *et al* found that relapsed alcohol dependence subjects were more external in their locus.<sup>25</sup> Patients with internal locus of control had a favorable outcome in comparison with patients having external locus of control. This can be used as a prognostic factor in patients of alcohol dependence.<sup>26</sup> In addition to motivating and encouraging patients to participate and maintain treatment, physician should strengthen their internal locus of control. Individuals with an external locus of control who tend to relapse may need psychotherapy with more emphasis on personal control and dealing with their interpersonal pressures. Locus of control and readiness to change-Our findings state that when perceived control is internal, an alcohol-dependent person tends to recognise his alcohol problem better and orient toward taking action to change. Conversely, the more external the locus of control less chances of the patient accepting and less likely to express a desire for change. Thus as seen in this study, even if a high alcohol dependent patient has good recognition, he will have difficulty making a positive change in his drinking, and may experience treatment failure due to his external locus of control. A possible intervention would be to modify the perception of control through cognitive-behavioral approaches, with an anticipated shift toward a more internal locus of control.<sup>27</sup> There are certain limitations of this research to consider. All participants were male, it was a hospital based study, with only inpatients included. This causes problems in generalization of our findings to other settings. The data is cross-sectional rather than longitudinal so the findings cannot be used to explain causal relationships.

## CONCLUSION

Our study found that high alcohol dependence patients acknowledge that they have problems related to drinking and are more likely to want help to prevent it from worsening. Also that high alcohol dependent patients had mainly attributed problematic drinking, to external factors. However patients with external locus of control were in general less likely to recognize their problem and less likely to change drinking pattern. Therefore, this subset of severe alcohol dependent patients with external locus of control would benefit most if their locus was shifted to internal because readiness to make changes in them would be strengthened. We suggest, in the clinical setting, professionals should prepare realistic treatment plans by reviewing patient characteristics (locus of control and readiness to change) and facilitate change in their behaviour through favourable interventions.

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