Research Paper

Emotional Regulation Strategies, Alexithymia and Cravings in Alcohol Dependent Men

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ABSTRACT

Emotional regulation is the ability to exert control over one's own emotional state. The association between emotional regulation, alexithymia and cravings can be a contributing factor in alcohol use disorder. In the present work, we examined the relationship between various adaptive and maladaptive emotional regulation strategies with alexithymia and cravings in alcohol and non-alcohol dependent individuals. The study was conducted on 100 male patients with alcohol dependence along with a healthy control group of 100 males from the general population. Information was collected through the Severity of alcohol dependence questionnaire (SADQ), Emotion regulation questionnaire (ERQ), Cognitive emotion regulation questionnaire (CERQ), Brief experiential avoidance questionnaire (BEAQ), Toronto Alexithymia scale (TAS-20), Obsessive-compulsive drinking scale (OCDS) and General Health questionnaire (GHQ-12). The statistical analysis was done with the help oft-test and Pearson Correlation. A positive correlation was found between experiential avoidance and alexithymia ($r = 0.489$). A negative correlation was found between acceptance and alexithymia ($r = -0.254$). Cravings was found to have a positive correlation with rumination and experiential avoidance ($r = 0.281, 0.382$). All the observations indicate that exercises based on increasing the adaptive and decreasing maladaptive emotional regulation strategies may help in reducing cravings and alexithymia in alcohol dependence. Our study can also help in the non-pharmacological management of alcohol dependence.

Emotions are important and regardful aspect of human life. Emotions could be described as a state of mind which comes into existence without an individual's conscious effort along with certain bodily changes (Gillespie & Beech, 2017).

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Emotions help us in decision making; however, they can also stir a person (for example unpleasant states, sadness and frustration). Under dualistic and paradoxical situations, the emotional regulation (ER) comes into play. The ER is a set of processes that are heterogeneous in nature, this leads to modulate a person's emotions (Erber et al., 1996). The postulated definition of ER consists of both the up and down regulations because individuals can decrease, increase or may also maintain their positive and negative emotions (Canli et al., 2009). There are various aspects of emotion and nearly every aspect of an emotional experience could be regulated. Many researchers have emphasized on several strategies that help in ER (Canli et al., 2009). These strategies vary from an individual to individual in terms of choice and usage. Some factors like personality traits, environmental influencers and dispositions of an individual can play an important role in selection and utilization of emotion regulation strategies (ERS) (Mayer et al., 2004). ERS are related to alexithymia, coined by Sifneos in 1972. It refers to individuals who have difficulty describing their emotional state (Sifneos, 1972). It is a multifaceted personality construct that has been associated with various medical and psychiatric disorders. Alexithymia is represented by an individual's inability in imagination along with their lack of mental ability to represent and describe emotions (Krystal, 2015). Another important aspect related to ERS is cravings. Craving can be defined as a motivational state which is subjective in nature. Cravings have an emotional significance to individuals. It also has a close association with the maintenance of substance taking behavior and is one of the major causes of relapse in abstains and the individuals trying to quit alcohol and other drugs (Pickens & Johanson, 1992). Rapid increment in alcohol dependence (AD) among the individuals is the major concern for our society. Alcohol consumption can be related to long-term biological and social consequences through three intermediate outcomes: intoxication, dependence and direct biochemical effects (Bonnie, 2004). In case of alcohol dependent behavior of the individuals, ERS along with alexithymia and cravings play an important role. The dysfunction in ER can result into disturbances in interpersonal relations, which can further lead to alcohol drinking or relapse (Marlatt, 1996). The difficulties in regulation of emotions can be one of the major maintaining factors of alcohol related disorders, where underlying craving can be a vital contributor. Evidence provided by neuro-imaging suggests that the mechanisms involved in craving have the similar neural circuits that are found in ER (Kober et al., 2010). Alexithymia has been found to be associated with negative affect and emotional dysregulation (Connelly & Denney, 2007). Individuals high on alexithymia tend to use maladaptive ERS in comparison to the individuals without alexithymia (Swart & Aleman, 2009). Laloyaux et al. (2015) explored the link between alexithymia and various ERS. The results showed that alexithymia was associated to suppression, especially to difficulty in verbalizing emotions. The authors emphasized on the ability to communicate and to name one's emotions is a vital element in alexithymia. Naqvi et al. (2015) conducted a research in an attempt to study the role of cognitive reappraisal (CR) in cravings for AD patients and individuals that drank socially. The results showed that decrease in cravings by using cognitive regulation was more in social drinkers in comparison to the AD patients. Therefore, the authors concluded that AD is related to deficits in cognitive regulation of cravings that were cue induced. The results were not only applicable to alcohol cravings but also to regulation of food cravings. Ghorbani et al. (2017) researched on alexithymia, ER, difficulties in ER, positive, negative affect and suicidal risk in patients with AD. The study found that patients with AD were high on alexithymia along with high scores on the emotion regulation difficulties i.e., suppression. AD patients also scored high on negative affect and suicide ideation in comparison to the healthy control group. In the past, the most of studies have focused on cognitive reappraisal (CR) and expressive suppression (ES) in relation to alexithymia and craving. In the present study, we aimed to study five different ERS, namely,

CR, ES, acceptance, rumination and experiential avoidance (EA). To the best of our knowledge, this is the first study to explore these ERS in relation to alexithymia and craving. Also, most studies that have shown associations between alexithymia and ER with alcohol problems had been conducted on several clinical and non-clinical populations, except for alcoholic patients. Our study overcomes this research gap with extensive research on alcoholic patients too.

METHODOLOGY
Participants and Procedures
The present research is a cross sectional and quantitative study. The study was conducted on 100 male patients with AD from inpatient and outpatient department of Psychiatry of Dayanand Medical College & Hospital, Ludhiana, India. The study also included 100 males as a healthy control group from the general population. We did not choose any participant having comorbid psychiatric disorders, organic illness and any other substance dependence, except nicotine. The mean age of AD and Non-alcohol dependent (NAD) individuals obtained to be 39 (SD=9.47; range = 18-70) and 35 (SD=6.21; range = 18-70) respectively. In our total sample, 53% of the participants belonged to rural area and 47% belonged to urban area. Data collection was done through different questionnaires and performas. A written consent was duly signed by all the participants. The participants were well informed about the confidentiality of their information.

Inclusion Criteria for Study Group
1. Only males were selected.
2. The patients with principal diagnosis of AD.
3. The patients with a diagnosis/ severity of moderate AD.
4. The patients with a diagnosis/ severity of severe AD.
5. Patients undergoing treatment for AD from DMC&H, Ludhiana.

Exclusion Criteria for Study Group
1. The patients with a diagnosis of mild AD.
2. The study excluded females
3. Patients with any co-morbid psychiatric disorders.
4. Patients with any other substance dependence, except nicotine.
5. Patients with any organic illness or condition

Inclusion Criteria for Control Group
1. Subjects were selected from general population
2. Only males were be selected.
3. The patients without a diagnosis of AD.
4. The patients without a diagnosis of psychoactive substance use disorder.

Exclusion Criteria Control Group
1. The study excluded females
2. Males with any other major psychiatric illness
3. Males with any organic illness/ condition
4. The patients with a diagnosis of AD
5. The patients with a diagnosis of psychoactive substance use disorder

Measures

Information was collected through pre-designed socio-demographic proforma for each individual. The socio-demographic details included name, age, sex, marital status, religion, education, occupation, and socio-economic status, present complaints, past history of alcohol / drug abuse and psychiatric illness.

Severity of Alcohol Dependence Questionnaire (SADQ) was used to measure the severity of alcohol dependence. It consists of total of twenty items, developed by Stockwell et al. (1979). The SADQ is commonly used to measure the degree of severity of AD with good reliability and validity (Davidson, 1987).. It is a self-report measure and the 20 items are responded from never (0), sometimes (1), often (2) to nearly always (3). A score below 16 suggests mild AD in an individual. A score from 16 to 30 indicates moderate AD nature and the score of 31 or more than 31 shows that the individual has severe AD nature.

Emotion Regulation Questionnaire (ERQ) was developed by Gross & John (2003) which assesses the use of two emotion regulation strategies frequently used. It consists of 10 items that focus on CR and ES. The items are rated on a 7-point Likert scale marked from strongly disagree (01) to strongly agree (07). It is a self-report measure that requires 5 to 10 minutes for administration. Cronbach's alpha for CR was 0.79 and 0.73 for ES (Gross & John, 2003).

Cognitive Emotion Regulation Questionnaire (CERQ) is a self-report measure, consisting of 36 items, developed by Garnefski et al. (2001). It measures different ERS used by different individuals in order to deal with stressful and emotion evoking situations. There are total nine emotional regulation strategies in CERQ including both adaptive and maladaptive. There are four items per ES. The adaptive strategies are acceptance, positive refocusing, and positive reappraisal, refocuses on planning and putting into perspective. The maladaptive strategies include self- blame, rumination, catastrophizing and other- blame. The responses are marked on a 5- point Likert scale ranging from almost never (01) to almost always (05). The cognitive ERS is frequently used when the subscale score is towards the higher side. In the present study, two cognitive emotion strategies were chosen from the questionnaire; acceptance and rumination. CERQ is known to have good psychometric properties, factorial validity, discriminative properties and construct validity (Garnefski et al., 2002).

The Brief Experiential Avoidance Questionnaire (BEAQ), developed by Gamez et al. (2014) is a self-report measure consisting of 15 items which measures EA. BEAQ is a briefer measure of EA and has been derived from the 62 items of Multidimensional experiential avoidance questionnaire (MEAQ). The responses are marked on a 6-point Likert scale ranging from strongly disagree (01) to strongly agree (06). The questionnaire exhibits good psychometric properties and it is not further divided into subscales.

Toronto Alexithymia Scale (TAS-20) developed by Bagby et al. (1994), is a self-report scale that measures alexithymia. TAS-20 has three subscales: Difficulty Describing Feelings (DDF), Difficulty Identifying Feelings (DIF) and Externally Oriented Thinking (EOT). A total score of less than 51 indicates no alexithymia, a score of 61 or more suggests alexithymia and scores between 52 and 60 indicates possible alexithymia. The scale exhibits good reliability and validity and has been well replicated in clinical as well as general population.

Obsessive Compulsive Drinking Scale (OCDS), developed by Anton et al. (1995) is a 14 item self-report scale that measures obsessive thoughts and compulsive drinking in individuals with alcohol use. It has two subscales: obsessive subscale and compulsive subscale. The OCDS is a modification of Yale Brown Obsessive Compulsive Scale- heavy drinkers (YBOCS-hd). The obsessive thoughts and compulsive drinking behavior are central elements of craving. The test and retest correlation for OCDS was 0.96 and the test-retest correlations between the subscales of OCDS were found to be 0.94 (obsessive subscale) and 0.86 (compulsive subscale). The internal consistency of OCDS items was obtained to be 0.86 (Anton et al., 1995)

The General Health Questionnaire- In 1988, Goldberg et al. developed the general health questionnaire-12 (GHQ-12). It is a self-administered test for detection of psychiatric morbidity in general outpatients. It is mainly focused on depression, anxiety, social life related problems and somatic related complaints. It consists of 12 items which help in identification of psychiatric morbidity of the individuals.

Statistical Analysis

Data was described in terms of mean ± standard deviation (±SD), frequencies (number of cases) as appropriate. T-test was used to calculate the significant difference between the AD and NAD group. Pearson's Correlation was used to evaluate the relationship among ERS, craving and alexithymia. A probability value (p- value) less than 0.05 and 0.01 was considered statistically significant. All statistical calculations were done with the help of Statistical Package for the Social Science (SPSS) software.

RESULTS AND DISCUSSION

Results

Table 1 shows the demographic characteristics which depicts the mean age and SD of the AD and NAD group; i.e., 39, SD= 9.47 and 35, SD= 6.21 respectively. Amongst the AD group, 15% were below 10th, 19% were between 10th to 12th and 66% were UG and above. Whereas, in the NAD group, 12% were below 10th, 22% were between 10th and 12th and 76% were UG and above. In the AD and NAD group 53% of the participants belonged to the rural background and 47% of the participants belonged to the urban region.

Table 2 shows Mean, standard deviation (SD) and t-test for individuals with AD and NAD for ERS and alexithymia. The results reveal that the NAD group (M=22.21, SD= 4.82) was significantly high on CR as compared to the AD group (M=16.58, SD= 4.91), t= -8.188, p<0.01 whereas the AD group (M= 19.06, SD= 3.51) was high on ES in comparison to the control group (M= 17.42, SD= 4.09). The AD group was found to be significantly high on rumination (M= 15.33, SD= 3.22) as compared to the control group (M=10.85, SD= 1.91), t= 11.961, p< 0.01. The AD group was also significantly high on EA (M=60.97, SD= 11.40) in comparison to the study group (M=53.78, SD= 10.56), t= 4.628, p < 0.01. The AD group was significantly high on the alexithymia total and its subscales. The AD group was significantly high on DIF (M= 21.49, SD=4.27) as compared to the NAD group (M= 20.00, SD= 4.99) t= 2.269, p< 0.05. The AD group was significantly high on DDF (M=20.64, SD= 2.95) as compared to the NAD group (M= 19.17, SD= 3.63) t= 3.146, p<0.01. The AD group was significantly high on EOT (M=25.67, SD= 4.19) as compared to the NAD group (M= 23.61, SD= 3.30) t= 3.865, p<0.01. The AD group was significantly high on overall alexithymia (TAS-20 Total) (M= 67.80, SD= 6.46) as compared to the NAD group (M= 62.78, SD=7.26). t= 5.167, p= 0.01.

Table 3 shows the correlation of ERS with craving and alexithymia in AD. Our results depict that CR had no significant correlation with cravings and alexithymia. There was no significant correlation found between ES and OT. Our results reveal that ES had a positive correlation with CD (r= 0.259, p<0.01) and overall craving (OCDS Total) (r= 0.248, p<0.05). ES was found to have a positive correlation with DIF (r= 0.442, p <0.01) and alexithymia overall (TAS-20 Total) (r=0.346, p<0.01). DDF and EOT were found to have no significant correlation with ES. There was a significant negative correlation between acceptance and CD subscale of cravings (r= -0.220, p <0.05). Acceptance was found to have a significant negative correlation with EOT (r= -0.238, p <0.05) and alexithymia overall (TAS-20 Total) (r= -0.254, p<0.05). Rumination had a significant positive correlation with OT (r= 0.273, p<0.01) CD (r= 0.256, p<0.01) and OCDS total (r= 0.281, p<0.01). Rumination had a significant positive correlation with DIF (r= 0.374, p<0.01) and TAS-20 Total (r= 0.368, p<0.01). EA was positively correlated to cravingsi.e., OT (r=0.383, p<0.01) CD (r= 0.340, p< 0.01) and OCDS Total(r= 0.382, p<0.01) There was a significant positive correlation between EA and alexithymia i.e., DIF (r= 0.273, p<0.01) DDF (r=0.281, p<0.01) EOT (r= 0.278, p< 0.01) and TAS-20 Total (r= 0.489, p<0.01).

Table 4 shows the correlation of emotional regulation strategies with craving and alexithymia in NAD. Our results indicate that there was a significant positive correlation between rumination and DDF (r= 0.217, p<0.05). Our findings indicated towards no significant correlation between other ERS, cravings and alexithymia.

DISCUSSION

The current study explored the relationship of various adaptive and maladaptive emotional regulation strategies with alexithymia and cravings in AD and NAD. According to the previous studies, the individuals with AD tend to be high on maladaptive ERS such as ES and EA; also, they are low on CR which is an adaptive ERS.

Norberg et al. (2016) concluded in their study that CR was negatively correlated to alcohol consumption and the problems related to alcohol consuming behavior while a positive correlation was reported between ES and alcohol consumption. Thus, indicating towards the importance of ERS in pre-gaming and problems associated with consumption of alcohol. The participants who used CR reported to have less alcohol associated problems. Whereas, the participants who used ES more frequently in order to deal with their emotions had more alcohol related problems and pre- gaming. On comparison of ERS in AD with the NAD group, the individuals with alcohol use were high on ES and low on CR. These results revealed that the individuals with alcohol use disorder had less tendency to re-interpret the situation and the emotional cues via using the mental processes. Such individuals inhibit their emotions and tend to lower their emotional expression whenever they encounter a stressful and emotionally arousing situation. While, the non- alcohol users had better tendency to rephrase the emotional situations by using cognitive processes Khalid et al., 2018). Consistent with the findings of previous studies, we found that the study group (AD) was significantly high on ES and low on CR. Our results depicted that there was no significant correlation between CR and cravings, which is in accordance with the findings of previous study by Jansen et al. (2019), where the authors had explored emotional processing, CR and cravings in alcohol dependent patients. They reported similar results and concluded that there was no significant correlation between CR and cravings in AD patients (Jansen et al., 2019). We also inferred from our results that there is no significant correlation between CR and alexithymia in AD as well as in NAD group. Our results are in line with the results of previous study by Stasiewicz et al. (2012), where the authors explored the

relationship between alexithymia and ERS and reported an insignificant correlation between alexithymia and CR.

While, ES had a significant positive correlation with the CD and OCDS total, thus indicating that with increase in ES there is also an increase in cravings. Khosravani et al. (2018) examined the effects of CR and ES on craving subscales namely obsessive and compulsive by taking gender, depression and severity of alcohol as controlling groups. They concluded that high ES and low CR lead to obsessive and compulsive cravings in AD patients. ES was found to have a significant positive correlation with DIF and TAS-20 Total in AD group indicating that in AD, higher use of ES leads to elevated levels of alexithymia. In 2012, Stasiewicz et al. studied subscales of ERQ and represented a significant positive correlation between ES and alexithymia.

Acceptance was found to have a significant negative correlation with CD. Choopan et al. (2016) reported similar results and also found that higher the temptation (craving), weaker is the acceptance ERS in patient with AD. Acceptance was also found to have a significant negative correlation with EOT and total alexithymia construct in AD group. Our results show a significant correlation between alexithymia and acceptance ERS. Our observations are consistent with the findings of the previous study by Stasiewicz et.al (2012), where the authors concluded a significant relationship between alexithymia and mindfulness (acceptance as sub-scale). The AD group was also found to be significantly high on rumination and EA than the control group. In accordance with the previous studies, rumination acts as a crucial predictor in alcohol use disorder. Rumination as an ERS should be kept in perspective while planning the therapeutic treatment for individuals with alcohol use and related problems Caselli & Spada, 2010). There are various risk factors which may cause an individual to return to alcohol use. Rumination is comparatively a new concept which is generally associated with alcohol use and associated problems (Nolen-Hoeksema et al., 2008). Rumination was positively correlated to cravings and its subscales. Thus, indicating that higher rumination leads to higher craving. Our findings indicate that rumination ERS has significant correlation with cravings in AD which is supported by the findings of previous study by Wisco (2005) (Nolen-Hoeksema et al., 2008). Rumination was also positively correlated to DIF and TAS-20 Total. In 2016, Vecchiotti et al. reported similar results with a significant correlation between alexithymia and alcoholism. The authors further stated that alexithymia could also lead to depression, rumination and dissociation [34]. EA is a strong predictor of alcohol use. It is also a mediator between alcohol consumption and distress. Individuals with alcohol use disorder exhibit a higher tendency of EA. Whereas, in non-alcoholic individuals, EA was found to be comparatively low (Levin et al., 2012). Beadman et al. (2015) explored the association between EA and craving. They reported a significant decrease in cravings with decrease in the EA. We found similar results with a significant positive correlation between EA and cravings. EA also had a significant positive correlation with alexithymia and its subscales in AD. There is also a significant positive correlation between EA and alexithymia along with all its subscales in AD group. In 2002, Stewart et al. explored association of drinking alcohol with dispositional tendencies like alexithymia, sensitivity and EA. They observed a positive correlation between these variables (Stewart et al., 2002). In the control group, we observed a positive correlation between rumination and alexithymia. Our results are supported by the findings of previous study by Borrill.et al. (2009). They reported a strong association between rumination and alexithymia in college students.

Implications and Limitations

All the observations indicate that exercises based on increasing the adaptive and decreasing maladaptive emotional regulation strategies may help in reducing cravings and alexithymia in alcohol dependence. Our study can also help in the non-pharmacological management of alcohol dependence. This study has potential limitations. The sample size of the research was small and was restricted only to the male participants. The study relied on the self-report measures for the data collection. The future studies can target the limitations of the present study and use laboratory-based techniques for the test administration. Current study can be expanded in terms of participants and exploring the underlined mechanism that defines relationship between different variables.

CONCLUSIONS

To conclude, studies presented in current work depict a significant relationship between adaptive, maladaptive emotion regulation strategies, alexithymia and craving. In correlation analysis, ES was found to have a positive correlation with CD and overall cravings. ES also had a positive correlation with DIF and overall alexithymia. Acceptance had significant negative correlation with CD, EOT and alexithymia total. Rumination was found to have a significant positive correlation with cravings, DIF and overall alexithymia. EA had a significant positive correlation with cravings and alexithymia. We have successfully studied adaptive and maladaptive emotional regulation strategies and their relationship with alexithymia and cravings in AD.

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Table 1: Demographic details of alcohol and non-alcohol dependent individuals (N=100 each).

S.No.	Characteristics	Alcohol	Non-Alcohol
1.	Age	39, SD= 9.47	35, SD= 6.21
2.	Qualification	Below 10th = 15% 10th to 12th = 19% UG & Above = 66%	Below 10th = 12% 10th to 12th = 22% UG & Above = 76%
3.	Locality	Rural = 53%, Urban = 47%	Rural = 53%, Urban = 47%

Table 2: Mean, standard deviation (SD) and t-test for individuals with alcohol dependence (AD) and non-alcohol dependence (NAD) for emotional regulation strategies: cognitive reappraisal (CR), expressive suppression (ES), acceptance (A), rumination (R) and experiential avoidance (EA), alexithymia (TAS-20 Total) and its subscales such as Difficulty Describing Feelings (DDF), Difficulty Identifying Feelings (DIF) and Externally Oriented Thinking (EOT), where N=100 each.

	Alcohol Dependence		Non-Alcohol Dependence		t-value	p-value
	Mean	SD	Mean	SD		
CR	16.58	4.91	22.21	4.82	-8.188	0.000**
ES	19.06	3.51	17.42	4.09	3.045	0.003**
A	12.22	3.42	13.09	3.06	-1.897	0.059
R	15.33	3.22	10.85	1.91	11.961	0.000**
EA	60.97	11.40	53.78	10.56	4.628	0.000**
DIF	21.49	4.27	20.00	4.99	2.269	0.024*
DDF	20.64	2.95	19.17	3.63	3.146	0.002**
EOT	25.67	4.19	23.61	3.30	3.865	0.000**
TAS-20 Total	67.8	6.46	62.78	7.26	5.167	0.000**

*p<0.05; **p<0.01

Table 3: Correlation of emotional regulation strategies: cognitive reappraisal (CR), expressive suppression (ES), acceptance (A), rumination (R) and experiential avoidance (EA) with craving and its subscales *i.e* obsessive thinking (OT), compulsive drinking (CD) and alexithymia (TAS-20 Total) its subscales *i.e* Difficulty Describing Feelings (DDF), Difficulty Identifying Feelings (DIF) and Externally Oriented Thinking (EOT) and in alcohol dependence (N=100).

	OT	CD	OCDS Total	DIF	DDF	EOT	TAS-20 Total
CR	-0.123	-0.014	-0.064	-0.013	-0.193	-0.152	-0.195
ES	0.195	0.259**	0.248*	0.442**	0.052	0.047	0.346**
A	-0.115	-0.22*	-0.188	-0.046	-0.151	-0.238*	-0.254*
R	0.273**	0.256**	0.281**	0.374**	0.104	0.114	0.368**
EA	0.383**	0.340**	0.382**	0.273**	0.281**	0.278**	0.489**

*p<0.05; **p<0.01

Table 4: Correlation of emotional regulation strategies: cognitive reappraisal (CR), expressive suppression (ES), acceptance (A), rumination (R) and experiential avoidance (EA) with alexithymia (TAS-20 Total) and its subscales *i.e* Difficulty Describing Feelings (DDF), Difficulty Identifying Feelings (DIF) and Externally Oriented Thinking (EOT) in non-alcohol dependence (N=100).

	DIF	DDF	EOT	TAS-20 Total
CR	-0.03	0.015	0.088	0.027
ES	-0.101	-0.012	0.128	-0.018
A	-0.087	0.136	0.096	0.052
R	-0.024	0.217*	-0.069	0.06
EA	0.047	0.08	0.024	0.083

*p<0.05