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STUDY OF AUTONOETIC -NOETIC PERCEPTION IN PATIENTS WITH ALCOHOL DEPENDENCE USING REMEMBER AND KNOW PARADIGM (R-K PARADIGM)

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ABSTRACT

Introduction: Alcoholism affects the cognitive process including component of memory, episodic memory is the essential component for the management of alcohol dependence patients. In most of the study episodic measured through typical memory task, which entails providing spoken list and then asking them to recall or recognize the information they have been exposed to subsequently. The definition of this mind-brain system is the phenomenal subjective experience of the list's retrieval content. So Tulving postulated two distinct types of consciousness, which he called autonoetic (self-knowing) and noetic (knowing). An essential characteristic of episodic memory is autonoetic consciousness, which is associated with experiencing experiences in the mind and reinstating the knowledge that was there at the time. Noetic consciousness is just aware of one's familiarity with a situation; it has nothing to do with this type of self-recollection of knowledge. It is defined as "remember" and "know" (referring to two states of consciousness), clearly departing from earlier use. This paradigm is denoted the recollection of the whole episode of the event but familiarity is the feeling of knowing the particular episode of the event

Method: This study was carried out with a sample of 60 male (18 to 50 years) alcohol-dependence patients (ICD-10) selected through a purposive sampling method. All the patients were assessed for Autonoetic - Noetic perception with the R-K paradigm at the interval of 15 minutes and 24 hour. Data were analyzed using by Pearson correlation method by SPSS 26 software.

Result: This research found a significant statistical difference between experimental group (patients with alcohol group) at ($p<0.01$, $p<0.05$). It showed that experimental group made more errors in the recognition of the different types of stimulus comparatively to healthy control group. Result showed that there were significant main effect and interaction effect found between experimental group (patients with alcohol group) and healthy control group at significant ($p<0.01$, $p<0.05$) level .

Conclusion:

Patient with alcohol group exhibit episodic memory disorder that are characterised by impaired encoding and retrieval process as well as autonoetic consciousness is impaired for the all the emotional cues as well as alcohol related cue which leads to relapse but noetic consciousness (sense of familiarity) less impaired than autonoetic consciousness

Keywords: Autonoetic- Noetic Perception, Remember and Know Paradigm (R-K), Alcohol Dependence Patients

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1. INTRODUCTION

In alcohol patients exhibits the different level of structural and function changes in the brain and contributes to deficit in neuro-cognitive functioning. This changes leads to a difficulty in regulating emotion, and processing of information of environmental cues, planning, decision-making process and executive functioning, which determines further relapse into alcohol drinking. Previous research found that structural and functional damages are associated with the prefrontal and temporal brain area and related circuit. These areas are noteworthy for episodic memory memory, strategic planning,

working memory, goal selection, response inhibition and use of environmental cue (e.g., Cummings,1995; Goldman-Rakic, 1987; Luria, 1973). Neuro-cognitive impairment interferes with alcohol patient treatment, which affects the outcome of patients well (McCrady& Smith, 1986; Morgenstern & Bates, 1999; Roehrich & Goldman, 1993). So these collective observations have motivated the search for psychological assessment and neuro-imaging techniques, which are sensitive to understanding the degree of cognitive impairment of episodic memory.

If the individual is given the typical memory task, which entails providing a spoken list and then asking them to recall or recognize the information they have been exposed to subsequently. This kind of work merely evaluates the material's recurrence in a personal context; it does not test knowledge of the subject. Due to functional overlap in the mind-brain system, the hypothesis for episodic and semantic memory is therefore distinct. The definition of this mind-brain system is the phenomenal subjective experience of the list's retrieval content.

Tulving thus postulated two distinct types of consciousness, which he called autonoetic (self-knowing) and noetic (knowing). An essential characteristic of episodic memory is autonoetic consciousness, which is associated with experiencing experiences in the mind and reinstating the knowledge that was there at the time. Noetic consciousness is just aware of one's familiarity with a situation; it has nothing to do with this type of self-recollection of knowledge. It is defined as "remember" and "know" (referring to two states of consciousness), clearly departing from earlier use. This paradigm is denoted the recollection of the whole episode of the event but familiarity is the feeling of knowing the particular episode of the event

Recollection

Recollection is by definition episodic; it involves memory for details from specific study contexts. However, very similar forms of cued recall are semantic because they involve memory for factual information only. When/if cued recall eventually occurs in a 'butcher on the bus' situation, this provides a good example of a possible confusion between episodic and semantic memory. Recalling the butcher's name and/or occupation, without any recall of a particular episode where you met before, would be semantic cued recall rather than episodic recollection. To be classified as episodic recollection, you would need to recall details from a previous occasion on which you saw the butcher. Semantic and episodic memory recall systems can often interact, although how their underlying processing differs remains largely unexplored. It seems reasonable and probable to expect them to depend, at least in part, on similar underlying cognitive processes/neural substrates.

Familiarity

When Familiarity exists for stimulus–context associations, then it is episodic. If there is familiarity for factual information (i.e., feeling that a fact is true), then it is semantic. Familiarity is part of combination of semantic and episodic information but information is not easily classified as either, such as a face feels familiar. Familiarity is based on a signal that varies along a dimension of strength in a normally distributes fashion. When recognition of studied stimuli fails, the familiarity signal may often be stronger than the signal from unstudied stimuli, but still fall below the recognition criterion strength (Joordens, et al.,2010). This ceases to be the case at the limit when signal strength of studied and unstudied stimuli is the same (Atkinson and Juola, 1973; Jacoby and Dallas, 1981; Mandler, 1980, Yonelinas, 1994).

Therefore, it would be beneficial to modify the way of memory systems are measured and determine the cognitive processes that underlie alcohol patients' episodic memory in order to provide more insight.

2. METHOD AND MATERIALS

Methodology:

1.1 Venue of the study

This study was conducted at the Central Institute of Psychiatry, Ranchi. This institute has wide range of facility of patients. Here most of patients comes from the Orissa Jharkhand, Bihar, Uttar Pradesh. This institute has 5 inpatients ward for male patients and five wards for female patients as well as one ward for the de-addiction and child care unit. This institute has department of clinical psychology, department of psychiatric social worker and department of nursing. There is a lot facility in neuro-cognitive area such electroencephalography (EEG); Event related potential (ERP); Functional magnetic resonance imaging, repetitive (FMRI); Transcranial magnetic stimulation (rTMS). Clinical psychology department has wide range of psychological tools which assists in the patient's comprehensive psychometric assessments. These available resources help in conducting the good research in mental health area and other field also.

1.2 Sample Size:

Sample size calculation was performed using G*Power 3.1.9.2 software for 2 groups with 2 time points a priori sample size calculations with effect size kept as moderate too good, power as 95% and p value=0.05 level of performing multivariate analysis. Total size calculated was 59. Hence, sample size for the current study was calculated 60. The study was comprised with 60 participants in each group (study group and control group).

1.3 Sample selection:

This was a cross-sectional study conducted at the Central Institute of Psychiatry, Kanke Ranchi. The study was approved by the ethical committee of the Central Institute of Psychiatry Kanke, Ranchi. Patinets were selected through purposive sampling method from Central Institute of Psychiatry, Kanke Ranchi. Total 71 detoxified in patients of alcohol dependence over the period of time were recruited for the study, out of which, 7 patients did not meet the inclusion criteria and 2 patients did not give consent for study and 2 patients had been discharged before the post assessment. For healthy control group, I approached to CIP and Davis employees and their relatives who were matched to experimental group in terms of age and education. Initially, I took consent from 6 subject in which 1 was dropped due to incomplete of post assessment after that I approached to 10 subject who were completed the test. Again I took consent from 13 subject from the different ward 1 subject dropped due to incompleteness of post assessment. while 12 subject done the assessment. After that again I took consent from 11 patients in which 2 were dropped due to some urgent work, they were not able to participate in post assessment. after that 10 patient were approached, in which 2 were dropped because they were suffered from the corona. 6 subject were give their consent and they completed the whole assessment. after that 10 subject were give consent but 2 were dropped due to not completed the post assessment. 2 subject were approached to be finish the assessment, they gave consent and completed the test.

1.4 Tools used for the data collection

- Informed consent form
- Socio-demographic and Clinical Datasheet
- Sidedness Bias Schedule (SBS) (Mandai et al, 1992)
- Autonoetic (Remember)-Noetic (Know) task

1.5 Procedure

Patients with alcohol dependence were screened on regular basis in order to identify the potential participants for the study. Patients with alcohol dependence without any co-morbidity were selected except nicotine dependence and after detoxification. Such cases would have faced the difficulty in understanding the nature of instruction of study. Participants were debriefed about the study as well as their right as participants in a research study. They were encouraged to ask about any doubt regarding the study. The task was conducted in two sessions in order to avoid fatigue and interference. At first, informed consent was taken from participants that after that necessary socio-demographic and clinical information were collected by using a structured socio-demographic sheet. Participants were assessed on handed scale for measure the laterization (only right handed participants were included), severity of the alcohol dependence questionnaire for the assessed for the level of the dependency and standard progressive matrices used to rule out the mental retardation. Then, task 1 was administered on the participants, in encoding phase participants were shown to total 40 image of positive negative neutral and alcohol (10 in each category). They were asked to rate it on one to five likert scale according to the subjective feeling of pleasant and unpleasant. After the completion of rating, 15 minute of related task (Cancellation task) was given to them to reduce the chances of the rehearsal of stimulus. In recognition phase they were asked to identify the stimulus as old or new. If the response was old then they asked about remember response if they could consciously recollect the image which they studied and know response if the image feel familiar to them but not recollect information about the image. Second level of recognition test was done after 24 hour for word and image.

Statistical Analysis: After the scoring, analysis had been through computer program IBM SPSS 25. A Chi-square test was used to assess the percentage of demographic variables in the sample. The second analysis used the repeated measured Anova to determine the difference between the experimental and control group for Autonoetic - Noectic perception using the R-K paradigm.

3. RESULT

Socio- demographic profile

Table 4.1.1: Comparison of socio demographic variables (categorical) between patients with alcohol dependence and healthy control group (N=120) as measured by Chi square test.

Variables		Groups		fisher exact test/ X^2 (df)	p- value
		Alcohol group (n= 60)	Healthy control group (n=60)		
Religion	Hindu	50(83%)	39(65%)	11.269 (df =2)	.03*
	Muslim	4(6%)	18(30%)		
	Others	6(10%)	3(5%)		
Marital status	Married	49 (82%)	40(67%)	5.243(FE) (df=2)	.09
	Unmarried	10(17%)	20(33%)		
	Others	1 (2%)	0 (0%)		
Education	Secondary High school	3 (5%)	2(3%)	9.379(FE) (df=2)	.05*
	High school	6(10%)	18(30%)		
	Intermediate	29(48%)	19(32%)		
	Graduate	22(37%)	20(33%)		
	Postgraduate	0(0%)	1(2%)		
Occupation	Employed	12(20%)	45(75%)	23.081 (df=2)	<.001**
	Unemployed	19(32%)	2(3%)		
	Others	29(48%)	13(22%)		
Habitat	Rural	14(23%)	3(5%)	35.810 (df=3)	<.001***
	Semi urban	35(58%)	42(70%)		
	Urban	10(17%)	15(25%)		
Socio-economic condition	Lower	1(2%)	1(2%)	1.638(FE) (2)	.44
	Middle	50(83%)	53(88%)		
	Higher Middle	9(15%)	6(30%)		
Past history of medical illness	Present	21(28%)	11(18%)	4.261 (df=1)	.04*
	Absent	39(65%)	49(82%)		
Family history of medical illness	Present	38(63%)	23(38%)	7.502 (df=1)	.04*
	Absent	22(37%)	37(62%)		
Family history of Psychiatric illness	Present	32(53%)	11(18%)	15.983 (df=1)	<.001***
	Absent	28(46%)	49(82%)		

*=$p \leq .05$, ** = $p \leq .01$, ***= $p \leq .001$ FE= Fisher's Exact

Table 4.1.1 showed the comparison of experimental (alcohol patients group) and healthy control group on the socio demographic (categorical) variables using Chi square and Fisher Exact test. Table showed that out of 60 patients experimental group 50 (83%) were Hindu, while 4(6%) were Muslim and 6 (10%) belonged to others religion, 49 (82%) patients were married while 10 (17%) were unmarried and 1 (2%) was divorced, 3 (5%) were educated up to secondary high school, 6 (10%) were educated up to high school while 29 (48%) patients were educated up to intermediate and 22 (37%) were educated up to graduate level, 12 (20%) were employed, 19 (32%) were unemployed while 29(48%) were belonged to others occupation, 14 (23%) were from rural area, 35 (58%) were semi urban area while 10 (17%) from urban areas, 1(2%) patients was lower socioeconomic strata, while 50 (83%) were middle socioeconomic strata, 9 (15%) were from higher socioeconomic strata, 21(15%) patients have past history of medical illness, while 39(65%) did not have past history of medical illness, 38(63%) were have family history of medical illness 22(37%) did not have family history of medical illness, 32 (54%) have psychiatric family history while 38 (46 %) patients did not have the family history of psychiatric illness.

Similarly, Out of 60 healthy control subjects 39 (65%) were Hindu, while 18(30%) were Muslim and 3 (5%) belonged to others religion, 40 (67%) patients were married while 20 (33%) were unmarried, 2 (3%) were educated up to secondary high school, 18 (30%) were educated up to high school while 19 (32%) patients were educated up to intermediate and 20 (33%) were educated up to graduate level and 1 (2%) were educated up to post graduate level, 45 (75%) were employed, 2 (3%) were unemployed while 13(22%) were belonged to others occupation, 3 (5%) were from rural area, 42 (70%) were semi urban area while 15 (17%) from urban areas, 1(2%) patients was lower socioeconomic strata, while 53 (83%) were middle socioeconomic strata, 6 (30%) were from higher socioeconomic strata, 11 (18%) patients have past history of medical illness, while 49 (82%) did not have past history of medical illness, 23 (38%) were have family history of medical illness 37 (62%) did not have family history of medical illness, 11 (18%) have psychiatric family history while 49 (82 %) patients did not have the family history of psychiatric illness.

It is evident from the table (4.1.1), significant difference found between both groups in religion, Marital status, Education, Occupation, Habitat, Family income, Past history of psychiatric illness, Family history of medical illness and Family history of Psychiatric illness but not in marital status and socioeconomic condition.

Table 4.1.2: Comparison of socio demographic variables (continuous) between patients with alcohol dependence and healthy control group (N=120) as measured by t test.

Variables	Groups		t (df-118)	p- value
	Alcohol group n-60 (Mean±SD)	Healthy control group n-60 (Mean±SD)		
Age (in years)	35.066±6.401	33.566±7.002	1.349	.248

Table 4.1.2 above shows the distribution of continuous socio-demographic variables for the clinical group and the healthy control group, as well as a comparison of the means of the variables using the t-test. In terms of age (in years), the mean and standard deviation for patients with alcohol dependence disorder were 35.06±6.40, while for the Healthy Control group, the mean and standard deviation for individuals were 33.56±7.00. The t-value was computed, and the significance value of p=.24 indicated that the groups did not differ significantly in age.

Table 4.1.3: Comparison of IQ between patients with alcohol dependence and healthy control group (N=120) on Standard Progressive Matrices test as measured by t test.

Variables	Groups		t (df-118)	p - value
	Alcohol group (n=60) (Mean±SD)	Healthy control group (n=60) (Mean±SD)		
Standard Progressive Matrices (SPM)	73.331 ± 6.4552	75.004 ± 7.000	1.000	0.326

From the table, concerning to the intelligence level, the mean and standard deviation of the patients with alcohol dependence were 73.33 ± 6.455 and the Healthy Control group, the mean and standard deviation for the individuals was 75.00 ± 7.000. The t-value was computed and the significance value of p=0.326, indicating that the groups did not differ with respect to intelligence level on Standard Progressive Matrices.

Performance on Autnoetic and Noetic task Assessed through the Remember and Know paradigm

The present section deals with the main and interaction effect of the two groups of remember - know judgments on task -1 (image) and task -2 (word). This section deals with the performance of the two groups on the autonoetic -noetic awareness task assessed through the remember - know paradigm for the image. Here R response reflects autonoetic or conscious recollection of previous learned material. K responses denotes the noetic awareness or a sense of familiarity lacking the contextual details which is experienced while making remember response for previously learned image. this table exhibit the main effects of the comparison of the change in scores of remember and know analysis of task -1 (Image) and Task -2 (word) for the stimulus (P,N,NE,A) over the "time" (15 minutes to 24 hours) between the two "groups" (experimental and control group)

Table 4.2.1: This table shows main effect of the change in scores of remember and know analysis of task -1 (Image) for the stimulus (Positive, Negative, Neutral, Alcohol) over the "time" (15 minutes to 24 hours) between the two "groups" experimental and control group (N-120) as measured by repeated measure ANOVAs.

Variables		Groups		Pillai's Trace F (df= 118)	p-value
		Alcohol group n-60 (Mean±SD)	Healthy control group n-60 (Mean±SD)		
OLD IMAGE					
R Hits-P	15 Min	8.83±1.35	9.71±.58	40.233	<.001***
	24 Hour	6.91±2.60	8.10±.80		
R Hits-N	15 Min	8.10±1.29	9.50±.70	105.185	<.001***
	24 Hour	5.95±2.17	8.93±.79		
R Hits-NE	15 Min	9.48±.81	9.91±.64	33.891	<.001***
	24 Hour	8.00±2.22	8.74±.67		
R Hits-A	15 Min	8.05±1.41	9.68±.50	124.542	<.001***
	24 Hour	5.65±1.70	9.10±.87		
K Hits-P	15 Min	.56±.87	.06±.31	33.100	<.001***
	24 Hour	1.80±1.68	.16±.41		
K Hits-N	15 Min	1.23±1.09	.21±.52	25.938	<.001***
	24 Hour	2.43±1.74	.13±.38		
K Hits-NE	15 Min	.25±.47	.01±.12	29.892	<.001***
	24 Hour	1.00±1.00	.08±.27		
K Hits- A	15 Min	1.25±1.18	.10±.30	82.733	<.001***
	24 Hour	3.28±1.51	.23±.42		
FN -P	15 Min	1.50±1.69	.68±.83	132.38	<.001***
	24 Hour	4.25±2.42	2.05±1.32		
FN-N	15 Min	1.30±1.75	.45±.67	168.927	<.001***
	24 Hour	4.66±2.48	1.50±1.06		
FN-NE	15 Min	.45±1.08	.06±.25	76.087	<.001***
	24 Hour	2.73±2.36	.60±.92		
FN-A	15 Min	2.21±2.31	.61±.64	130.718	<.001***
	24 Hour	5.48±2.38	1.48±1.09		

***= $p \leq .001$ R-Remember response, K- Know response, FN- False Negative, P-Positive Stimulus, N-Negative stimulus, NE - Neutral stimulus, A- Alcohol stimulus

Tables 4.3.1 exhibit the main effects of the comparison of the change in scores of remember and know analysis of task -1 (Image) for the stimulus (P, N, NE, A) over the "time" (15 minutes to 24 hours) between the two "groups" (experimental and control group). There was significant difference found in the score of R hit for the positive stimulus, it found that patients group made less Remember response ($F=40.233$, $p<0.001$), more Know ($F=33.100$, $p<0.001$) and false negative response ($F=132.38$, $p<0.001$) comparatively to healthy control group. In the context of negative stimulus, remember responses ($F= 105.185$, $p<0.001$) were less, know response ($F= 25.938$, $p<0.001$) and false response ($F=168.92$, $p<0.001$) were high in patients' group.

For neutral stimulus, remember response (F=33.891, p<0.001) were less, know response (F= 29.892, p<0.001) and false negative (F=76.087, p<0.001) were high. Similar result also found for alcohol stimulus, alcohol patients made less Remember response, (F=124.542, p<0.001) more know (F= 82.733, p<0.001) and false negative (F=130.718, p<0.001).

Table 4.2.2: This table shows interaction effect of the change in scores of remember and know analysis of task -1 (Image) for the stimulus (Positive, Negative, Neutral, Alcohol) over the "time" (15 minutes to 24 hours) between the two "groups" experimental and control group (N-120) as measured by repeated measure ANOVAs.

Variables		Pillai's Trace F (df= 118)	p-value	Partial Eta²	Observed Power
Old image					
R Hits-P	15 Min 24 Hour	16.623	<.001***	.123	.981
R Hits -N	15 Min 24 Hour	35.729	<.001***	.232	1.000
R Hits -NE	15 Min 24 Hour	10.171	.002**	.079	.886
R Hits-A	15 Min 24 Hour	46.184	<.001**	.281	1.000
K Hit-P	15 Min 24 Hour	23.911	<.001***	.169	.99
K Hit-N	15 Min 24 Hour	34.258	<.001***	0.225	1.000
K Hit-NE	15 Min 24 Hour	20.928	<.001***	.151	.995
K Hits-A	15 Min 24 Hour	63.621	.001***	.350	1.000
FN-P	15 Min 24 Hour	14.948	<.001***	.112	.970
FN-N	15 Min 24 Hour	46.477	<.001***	.289	1.000
FN-NE	15 Min 24 Hour	29.371	<.001***	.199	1.000
FN-A	15 Min 24 Hour	44.071	<.001***	.272	1.00

*=$p \leq .05$, ** = $p \leq .01$ ***= $p \leq .001$ R-Remember response, K- Know response, FN- False Negative, P-Positive Stimulus, N-Negative stimulus, NE - Neutral stimulus, A- Alcohol stimulus

Table 4.3.2 depicts about the interaction effects of groups (experimental and control group) over the time (15 minute to 24 hours) on the change score of autonoetic and noetic perception for the old image of positive, negative, neutral and alcohol stimulus. There was significant difference found in the score of R hit for the positive stimulus over the period of time and group (p=<.001, Pillai's trace F=16.623, Partial Eta² =.123). Similar result was also found for K response (p=<.001, Pillai's trace F=23.911, Partial Eta² =.169) as well as false positive response (p=<.001, Pillai's trace F=14.948, Partial Eta² =.11) for positive stimulus (Image).

For negative stimulus, there are significant interaction effect found over the period time with group for R response (p=<.001, Pillai's trace F=35.729, Partial Eta² =.232, K response (p=<.001, Pillai's trace F=34.258, Partial Eta² =.225 observed power =1.000) and false negative response (p=<.001, Pillai's trace F=46.477, Partial Eta² =.289). In the context of neutral stimulus, similar result found for R response (p=<.002, Pillai's trace F=10.171, Partial Eta² =.079), K response

(p=<.001, Pillai's trace F=20.928, Partial Eta^2 =.151) and false positive response p=<.001, Pillai's trace F=29.371, Partial Eta^2 =.199). There is significant difference found in R response (p=<.002, Pillai's trace F=46.184, Partial Eta^2 =.281), K response (p=<.002, Pillai's trace F=63.621, Partial Eta^2 =.350) and false positive response (p=<.001, F=44.071, Partial Eta^2 =.272) in group score over the period of time for alcohol stimulus. From the table, it is evident that partial Eta^2 0.06 to > .14, this suggest that a stronger impact of independent variable (Time) on the dependent variable (group) for the all the stimulus type.

Table 4.2.3: This table shows main effect of the change in scores of remember and know analysis of task-1 (New Image) for the stimulus (Positive, Negative, Neutral, Alcohol) over the "time" (15 minutes to 24 hours) between the two "groups" experimental and control group (N-120) as measured by repeated measure ANOVAs.

Variables		Groups		Pillai's Trace F (df= 118)	p- value
		Alcohol group G1, N-60 (Mean±SD)	Healthy control group G2, N-60 (Mean±SD)		
New image					
R Hits-P	15 Min	.53±.74	.50±.70	111.751	.001***
	24 Hour	2.36±1.70	1.65±1.20		
R Hits-N	15 Min	.43±.72	.33±.57	104.650	<.001***
	24 Hour	2.43±1.90	1.03±.88		
R Hit-NE	15 Min	.15±.44	.05±.21	60.354	<.001***
	24 Hour	1.26±1.27	.48±.79		
R Hits -A	15 Min	.86±1.40	.38±.52	50.148	<.001***
	24 Hour	2.30±1.77	1.03±.82		
K Hits-P	15 Min	.97±1.49	.18±.39	19.043	<.001***
	24 Hour	1.88±1.70	.40±.66		
K Hits-N	15 Min	.86±1.59	.11±.32	59.414	<.001***
	24 Hour	2.23±1.45	.46±.67		
K Hits-NE	15 Min	.30±.90	.01±.12	41.845	<.001***
	24 Hour	1.46±1.58	.11±.32		
K Hits-A	15 Minutes	1.35±1.81	.23±.42	51.208	<.001***
	24 Hour	3.18±1.94	.45±.67		
FP-P	15 Minutes	.63±1.00	.21±.45	10.178	.002**
	24 Hour	1.30±2.11	.533±.700		
FP-N	15 Minutes	.633±1.00	.21±.45	39.035	<.001***
	24 Hour	1.30±2.11	.533±.700		
FP-NE	15 Minutes	.28±.61	.06±.25	14.890	<.001***
	24 Hour	1.01±1.97	.43±.59		
FP-A	15 Min	.75±.93	.20±.44	17.963	<.001***
	24 Hour	1.06±1.10	.65±.77		
CR-P	15 Min	8.48±1.66	9.30±.82	12.272	<.001***
	24 Hour	5.75±2.42	7.96±1.32		
CR-N	15 Min	8.70±1.75	9.51±.72	16.513	<.001***
	24 Hour	5.35±2.48	8.50±1.06		
CR-NE	15 Min	9.38±1.63	9.93±.25	48.442	<.001***
	24 Hour	7.26±2.36	9.40±.92		
CR-A	15 Min	7.83±2.32	9.41±.64	131.003	.001***
	24 Hour	4.45±2.26	8.50±1.09		

***= $p \leq .001$, R-Remember response, K- Know response, FP- False Positive, CR- Correct Rejection, P-Positive Stimulus, N-Negative stimulus, NE - Neutral stimulus, A- Alcohol stimulus

This table showed the Remember and know analysis for the new image, in which found that for positive stimulus, remember (F=111.75, p≤0.001) and correct rejection response (F= 12.272, p<0.001) made less know (F=19.043, ≤0.001), false positive response (F=10.178, p≤0.002) were more in patients with alcohol dependence comparatively to healthy control group. In the context of negative response, there are significant difference in remember (F=104.650, p<0.001), Know (F=59.414, p<0.001), false positive response (F=39.035, p≤0.001) and correct rejection (F=16.513, p≤0.001) found between alcohol patients and healthy control subject. For neutral stimulus, it evident from the table, remember response (F=60.354, ≤0.00101) and correction rejection (F=48.442, p<0.001) made less but more know (F=41.845, p<0.001) and false positive response (F=14.890, p<0.001) by alcohol patients comparatively to healthy control group. Similarly result found for the alcohol stimulus, remember response (F=50.148, p≤0.001) and correction rejection (F=131.003, p≤0.001) made less but more know (F=51.208, p≤0.001) and false positive response (F=17.963, p≤0.001) by alcohol patients comparatively to healthy control group.

Table 4.2.4: This table shows interaction effect of the change in scores of remember and know analysis of task-1 (New Image) for the stimulus (Positive, Negative, Neutral, Alcohol) over the "time" (15 minutes to 24 hours) between the two "groups" experimental and control group (N-120) as measured by repeated measure ANOVAs.

Variables		Pillai's Trace F (df= 118)	p-value	Partial Eta²	Observed Power
New image					
R Hit-P	15 Min 24 Hour	6.161	.012**	.050	.693
R Hit-N	15 Min 24 Hour	24.260	<.001***	.172	.991
R Hit-NE	15 Min 24 Hour	11.730	<.001***	11.737	.925
R Hits-A	15 Min 24 Hour	7.090	.009**	.057	.752
K Hit-P	15 Min 24 Hour	7.262	.013**	.058	.726
K Hit-N	15 Min 24 Hour	20.839	<.001***	.150	.995
K Hit-NE	15 Min 24 Hour	29.674	<.001***	.201	1.000
K Hits-A	15 Min 24 Hour	31.847	<.001***	.213	1.000
FP-P	15 Min 24 Hour	1.289	.258	.079	.201
FP-N	15 Min 24 Hour	1.967	.163	.016	.285
FP-NE	15 Minutes 24 Hour	1.654	.201	.011	.248
FP-A	15 Min 24 Hour	.543	.463	.005	.113
CR-P	15 Min 24 Hour	14.541	<.001***	.115	.96
CR-N	15 Min 24 Hour	47.234	<.001***	.283	1.000
CR-NE	15 Min 24 Hour	17.292	<.001***	.124	.981

CR-A	15 Min 24 Hour	45.116	<.001***	.273	1.000

*=*p*≤.05, ** = *p* ≤.01, ***= *p*≤.001, R-Remember response, K- Know response, FP- False Positive, CR- Correct Rejection, P-Positive Stimulus, N-Negative stimulus, NE - Neutral stimulus, A- Alcohol stimulus

Table 4.3.4 depicts about the interaction effects of groups (experimental and control group) over the time (15 minute to 24 hours) on the change score of autonoetic and noetic perception for the new image of positive, negative, neutral and alcohol stimulus. There was significant difference found in the score of R hit for the positive stimulus over the period of time and group (p=≤.012, Pillai's trace F=6.161, Partial Eta^2 =.050). Similar result was also found for K response (p=<.01, Pillai's trace F=7.262, Partial Eta$^{2)}$ and false positive response for positive stimulus (p=<.258, Pillai's trace F=1.289, Partial Eta^2 =.058) and correct rejection (p=≤.001, Pillai's trace F=14.541, Partial Eta^2 =.115) for positive stimulus (Image).

For negative stimulus, there are significant interaction effect found over the period time with group for R response (p=≤.001, Pillai's trace F=24.260, Partial Eta^2 =.172), K response (p=≤.001, Pillai's trace F=20.839, Partial Eta^2 =.150), false negative response (p=<.002, Pillai's trace F=1.967, Patial Eta^2 =.016) and correct rejection (p=≤.001, Pillai's trace F=47.234, Partial Eta^2 =.283). In the context of neutral stimulus, similar result found for R response (p=≤.001, Pillai's trace F=11.730, Partial Eta^2 =11.737), K response (p=≤.001, Pillai's trace F=29.674, Partial Eta^2 =.201) and correct rejection (p=≤.001, Pillai's trace F=17.292, Partial Eta^2 =.124). There is significant difference found in R response (p=≤.01, Pillai's trace F=7.090, Partial Eta^2 =.057), K response (p=≤001, Pillai's trace F=31.847, Partial Eta^2 =.213) and correct rejection response (p=≤.001, Pillai's trace F=45.116, Partial Eta^2 =.273) in group score over the period of time for alcohol stimulus. From the table, it is evident that partial Eta^2 0.06 to > .14, this suggest that a stronger impact of independent variable (time) on the dependent variable (group) for the all the stimulus type.

DISCUSSION:

In the current study, a total of 120 participants completed the research, with 60 assigned to the experimental group (patients with alcohol dependence) and 60 to the control group (healthy controls).

Clinical Characteristic (Continuous variable -Age and IQ):

In the present study the mean age of subjects of experimental group was 35.06 ±6.40 years (Table: 4.1.2 & 4.1.3) and healthy control group 33.56 ±7.00. the t value was computed but there is no significant difference found between the groups in terms of age. This finding consistent with previous studies (Flannery et al., 2001). According to research finding it showed that in this age group increased sensitivity and decreased tolerance to alcohol leads to consumption of alcohol (Rosin and Glatt, 1971). Another study showed some factors responsible for excessive drinking among young adults include; the fact that alcohol had an important cultural role in offering one of the few occasions in their lives for fun making, maintaining friendships and group bonding and young adults did not worry about the health risks of alcohol (Seaman and Ikegwuonu.,2010).

With respect to IQ, in current study, subject's mean of IQ in experimental group was 73.33 ± 6.45 years and healthy control group 75.00 ±7.00. the t value was computed but there is no significant difference found between the groups in terms of age. This finding consistent with previous studies (Flannery et al., 2001).

Evaluation of Paradigm of Autonoetic – Noetic Awareness

The present task was based upon the Autonoetic and Noetic awareness conceptualization for the episodic memory given by Tulving (1985) . He also developed the remember -know model for the assessment of the two states of awareness. the experimental procedure for the administration of the present task was based upon the remember -know paradigm developed by Yoneliness et al. (1998) computation of the outcome variable was based upon hit and false alarm. However, higher level computation were performed by dual process signal detection (DPSD) model. one such study Danial et al (2003) where they compared the effect of emotional valence of words (positive, negative neutral and alcohol) it was not precisely assessment of the not alcohol related stimuli.

Finally, the memory performance was analyzed on the signal detection model for the four types of stimuli i.e, positive, negative, neutral, and alcohol. (Snodgrass & Corwin, 1988; Crown 1994). the analysis was done to see the sensitivity of the recognition of Image and word for the four types of stimuli positive negative neutral and alcohol.

Autonoetic noetic Awareness in patient with Alcohol dependence for image and word stimuli:

Human memory is an intricate system of cognition which plays a vital role in the conscious awareness of the self and world around us. It stores past events, relates it with present that leads to a phenomenal experience of both the self and the world around the recognition memory which leads to conscious awareness of the past events about their occurrence is known as autonoetic awareness (Tulving 1985). when the element of past of conscious awareness is lacking but the individual has a sense of familiarity with it, it leads to another aspects of memory recognition which is called as noetic awareness. So, there is two level of recollection of events, where the latter is considered to be relatively weak. Different models have been developed to measure the this two type recognition memory system, R-K paradigm is one of them.

In present study (table no 4.2.1 to 4.2.4) found significant difference was seen between both groups at domain's of remember-know paradigm for image. In our study found that R hit response was less given by patients with alcohol dependence compare to healthy control group for all the stimulus (Positive, Negative, Neutral, Alcohol). But in contrast K hit response was more given by alcohol patients comparatively to healthy control group for all the type of stimulus (Positive, Negative, Neutral, Alcohol). Alcohol patients group have the difficulty to identifying the stimuli. This finding consistent with the previous study which was done by Pitel et., al (2007), found more K response and less R response by patients with alcohol dependence.

In the context of new image and word patients with alcohol group made more R hit and K hit response comparatively to healthy control group as well as false positive response, patients group made more false positive response it means they had difficulty in extracting the new image as new from the encoding phase old image. These result are in the line with previous studies which showing a deficit in the recognition of emotional expression in patients of alcohol dependence (Gardiner et al.,1998; Philippot et al.,1999; Frigerio et al., 2002; Townshend and Duka 2003).

An explanation of these findings is that remember response are made to false recognition, which suggested that subject either recollect details of the recent encounters and mistakenly attribute to the study context, or recollect details from the study context but incorrectly associate them with that particular items. This type of enhanced remember response to new image may reflect source misattribution which leads to high response of K for old image and R or K response for the new image (Gardiner et al.,1998). In other study found the deficit of spatial and temporal context in patients with alcohol dependence which leads to difficulty in recall of complete episodic or correct factual information (Kapur et al., 1994; Kopelman et al., 1997; Postma et al., 2006).

Previous study found that Alcohol affects the encoding rather than retrieval (Curran1991; Polster 1993) argue that encoding of contextual information involve in the dissociation between recognition accompanied by conscious awareness (remember response) and recognition in the absence of conscious recollection (K response). For the R response subjects need the recall of item with context but for K response it does not require it. Thus, it seems plausible that increased R response to new image of all the stimulus type due to impairment in encoding the contextual information at the study. This false recognition has been associates with poor memory for contextual details (Norman and Schacter 1997; Schacter et al.1997). This conscious awareness process are initiated intentionally and are influenced by encoding strategies and depth of processing (Craik & Tulving, 1975).

It has been suggested that inefficient encoding of study list context is a major reason for impaired performance in explicit memory tasks (Johnson, Hashtroudi, & Lindsay, 1993) as well as diminished ability to encode context information and to engage in elaborative processing of individual words during study are thought to be critical reasons for explicit memory impairment observed following alcohol challenge (Hashtroudi, Parker, DeLisi, & Wyatt, 1983; Hashtroudi, Parker, DeLisi, Wyatt, & Mutter, 1984) and in alcoholic Korsakoff patients (Brunfaut & d'Ydewalle, 1996; Phaf et al., 2000). Other than the R-K paradigm most of the alcohol users have reported impairment in autobiographical memory which based on recall of cue words (Fitzgerald & Shifley-Grove, 1999) and prospective memory (I forget to pass on a message to someone) in alcohol patients (Heffernan et al. 2002; Ling et al. 2003). These changes in the memory

somewhere related to reduce activation in the area of prefrontal lobe, anterior cingulated, thalamus, and ventral striatum but prefrontal lobe has been most frequently suggested to contribute to performance in the recognition task which requires an effortful recollection process (Wheeler et al., 1997; Eskes et al., 2003).

4. CONCLUSION:

- Patient with alcohol group exhibit episodic memory disorder that are characterised by impaired encoding and retrieval process. Thus patients fail to retrieve the past events with autonoetic consciousness and thus their memory is based on the sense of familiarity.
- They have impaired memory system because they are not able to retrieve the past events with autonoetic consciousness, due to this deficit they are not able to correct their behaviour which leads to lapse.
- Autonoetic consciousness is impaired for all the stimulus which shows that they have difficulty in processing and remembering the emotional cues.

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