PREVELANCE OF ALCOHOL DEPENDENCE SYNDROME AMONG ADULTS AND ITS ASSOCIATED SOCIO DEMOGRAPHIC FACTORS - A CROSS SECTIONAL STUDY

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Abstract

Background: Alcohol dependence, as defined by American national Cancer Institute, is "A chronic disease in which a person craves drinks that contain alcohol and is unable to control his or her drinking. Alcohol dependence affects physical and mental health, and can cause problems with family, friends, and work. The Magnitude of Substance Use in India, 2019 (National Drug Use Survey 2019, NDUS) was the first-ever comprehensive attempt to document the extent and pattern of substance use at the level of states of India. The WHO ASSIST screening questionnaire was used to interview 200,111 households in 36 states and Union Territories (UTs). Alcohol emerged as the most prevalent psychoactive substance, with 14.6% of the population aged 10–75 using it, including 5.2% with problematic usage and 2.7% dependent. Men had notably higher usage rates at 27.3% compared to women at 1.6% and children aged 10–17 at 1.3%. Country liquor and spirits were the most consumed types. Most of the above findings have been demonstrated in various studies conducted in the West. However, such studies in India are very limited and whatever little has been published have got very limited scope.

Objective: This study was undertaken to assess the prevalence of Alcohol Dependance syndrome and to identify and enlist its various associated factors among adults in Bangalore.

Study Design: A cross sectional questionnaire-based study was conducted among the adults attending the Outpatient Department of a tertiary care hospital in Bengaluru.

Methods: After obtaining, informed written consent was taken from the study participants. A predesigned, pretested, validated questionnaire was used to collect the required data. For selection of the required sample size of 125 people from the above population, simple random sampling technique was followed. Socio demographic data, alcohol use history was collected using a semi structured pro-forma developed in the department of this study and validated with the help of subject experts. Levels of Alcohol Dependence among the patients was assessed using the Alcohol Use Disorders Identification Test (AUDIT) score, which is a 10-question screening tool for alcohol consumption. The same shall be further categorized into the Obsessive-Compulsive drinking categories using the Obsessive-Compulsive Drinking Scale.

Results: Among the 125 study subjects analysed, based on their AUDIT scores. 72.8% were "Alcohol dependant", 15.2% were on "Harmful drinking" and the remaining 12% were on "hazardous" levels of alcohol use. The factors significantly associated with alcohol dependence were Age, Income and Marital Status of the study subjects. Alcohol dependence among the study subjects was also significantly associated with obsession and compulsion towards alcohol intake, alcohol craving and stigmatisation of study subjects.

Conclusions: Majority of the adult population studied were "Alcohol dependent" and dfactors like Age, Income and Marital status of the study subjects were stastistically associated with Alocohol Dependence among them.

Introduction:-

Alcohol dependence, as defined by American national Cancer Institute, is "A chronic disease in which a person craves drinks that contain alcohol and is unable to control his or her drinking. Alcohol dependence affects physical and mental health, and can cause problems with family, friends, and work [1]." In May 2013, the American

Psychiatric Association issued the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM–5). DSM–5 integrates the two DSM–IV disorders, alcohol abuse and alcohol dependence, into a single disorder called alcohol use disorder (AUD) with mild, moderate, and severe sub-classifications [2]. Clinical studies demonstrated that alcohol-dependent people are more sensitive to relapse-provoking cues and stimuli than nondependent people, and similar observations have been made in animal models of alcohol dependence, withdrawal, and relapse [3]. In the dependent individual, this allostatic state is fueled by progressive dysregulation of the brain's reward and stress systems beyond their normal homeostatic limits [4].The Magnitude of Substance Use in India, 2019 (National Drug Use Survey 2019, NDUS) was the first-ever comprehensive attempt to document the extent and pattern of substance use at the level of states of India. The WHO ASSIST screening questionnaire was used to interview 200,111 households in 36 states and Union Territories (UTs). Alcohol emerged as the most prevalent psychoactive substance, with 14.6% of the population aged 10–75 using it, including 5.2% with problematic usage and 2.7% dependent. Men had notably higher usage rates at 27.3% compared to women at 1.6% and children aged 10–17 at 1.3%. Country liquor and spirits were the most consumed types [36].

Most of the above findings have been demonstrated in various studies conducted in the West. However such studies in India are very limited and whatever little has been published have got very limited scope. Hence this study was undertaken to assess the effect of stigma in alcohol dependent male patients and also to assess the association between Serum Calcium levels and Intensity of craving in such dependent patients.

Methods:-

This is a descriptive cross- sectional study which was carried out in the Dept of Psychiatry, RajaRajeswari Medical College Hospital in a period of 1.5 years. The Dept of Psychaitry has an average OP strength of 412 patients monthly. For selection of the required sample size of 125 people from the above population, simple random sampling technique was followed. After establishing a rapport with the patient, an informed written consent with signature or thumb impression was obtained from each individual prior to administering the semi-structured questionnaire using Interview method. Questions were also asked regarding use of alcohol, duration, factors influencing, history of quitting etc. Socio demographic data, alcohol use history will be collected using a semi structured proforma developed in the department for this study. The categorization of alcohol use among patients shall be done using the Alcohol Use Disorders Identification Test (AUDIT) score, which is a 10-question screening tool for alcohol consumption. The same shall be further categorized into the Obsessive Compulsive drinking categories using the Obsessive Compulsive Drinking Scale. The OCDS is composed of 14 items, and each item has a 5-point response (from 0 to 4 by self-report). The total score of 14 items ranges from 0 to 56. Four pairs of original items are calculated into four adjusted scores: the higher score between items 1 and 2, the higher score between items 7 and 8, the higher score between items 9 and 10, and the higher score between items 13 and 14 are identified as representing scores of the item pairs, respectively. Therefore, the adjusted total score is calculated by adding up 10 of all 14 items together, including 6 original item scores (item 3 to 6, item 11, item 12) and four adjusted item scores from the four pairs of original items (item pair 1 and 2, item pair 7 and 8, item pair 9 and 10, and item pair 13 and 14). The adjusted total score ranges from 0 to 40, and the higher total score indicates more obsessive thoughts or compulsive behaviors regarding alcohol use.

Ethics

The Institutional Ethical Committee of RajaRajeswari medical College Hospital has reviewed and approved this study at each stage.

Statistics

All the data was entered into, coded and decoded in MS EXCEL. It was analyzed using SPSS version 20.0 in which statistical significance was determined with Pearson Chi-Square test. A p value less than 0.05 was taken as statistically significant.

Results:-

90% of the study subjects belonged to the younger age group (<50 years of age) and 10% belonged to the age group above 50 years. There was no significant skew in the data with respect to the Education distribution of study subjects. 31.2 % of study subjects had an education only up to the level of 10th standard. 70.4% of the study subjects

were married and almost 20% were single. 27.2% of study participants were self employed, 24.8 % were semi skilled workers, 20.8% were professionally employed and the remaining were either not employed or unskilled workers. Almost 65% of the study subjects had a moderate income <5,000 Indian rupees per month and only 5% had a monthly income >1 lakh Indian rupees per month. Almost 60% of the study subjects reported that they were light drinkers who consumed alcohol only 1-2 days / week whereas 4% of study subjects reported that their drinking habits were daily and uncontrolled. Correspondingly, 66% of the study subjects reported that they did not consider themselves "Alcoholics" whereas 19% claimed that they are "Alcoholics". 15% of the study subjects were unsure if they were an alcoholic. Almost 50% of the study subjects agreed that they were in the habit of using alcohol since more than ten years in varying quantities and proportions. However, none of the study subjects attempted to quit alcohol at any stage.75.2% of the study subjects admitted that they were using other psycho-active substances along with alcohol of which almost 3% admitted that they were into various forms of addictive substances including Cigarette / Tobacco / Inhalational substances and intravenous substances.

As can be seen in Figure 1, there is a very significant association between age group of the study participants and the frequency of their use. Among the study participants aged less than 50 years, 43 aged between 31 -40 years and among them, almost 53.4% were reported to be drinking only one - two days per week and 46.6% were drinking > 3 days per week. None of them reported that their drinking was uncontrolled.

As is noted in table No. 1, there is a very significant association between educational status of the study participants and the frequency of their alcohol use. Among the 31 study participants who were schooled till High School and among the 31 who were educated till Higher Secondary Class, 61.5% and 42% reported to be drinking only one - two days per week respectively and 30.7% and 50.8% respectively were drinking > 3 days per week. None of the study subjects who studied till Higher Secondary School reported that their drinking was uncontrolled.
It is to also be noted that among the 5 study subjects who reported daily uncontrolled drinking were, 20% were schooled till High School level and 40% were either Post Graduates of PhD holders.

As is seen in Table No. 2, Among the 125 study subjects analysed one of the study subjects had an Alcohol Use Disorders Identification Test (AUDIT) score less than 7 i.e., none of the study participants were at "low risk" for alcohol dependence based on their AUDIT scores. 72.8% were "Alcohol dependant", 15.2% were on "Harmful drinking" and the remaining 12% were on "hazardous" levels of alcohol use. Among the 91 study subjects who were "Alcohol dependant", 37.4% were aged 31-40 years, 29.7% were 18-30 years and 23% were aged 41-50 years. All of the above study subjects were aged less than 50 years which indicates that their alcohol abuse could have a long time bearing on their health pursuits. Among the 91 "alcohol dependant" study subjects, 71.4% were married, and almost 21% were single. Among the "Alcohol dependant" study subjects, 65.9% were earning between 10 – 50,000 INR per month and 16.5% were earning between 50,000 – 1 lakh INR per month. However, no association between the AUDIT scores and Age group, Income and Marital Status of the study subjects was not found to be statistically significant.

As is seen in Table No.3, there is a very significant statistical association between monthly income of the study participants and the frequency of their alcohol use. The proportion of study subjects who were drinking 1-2days / week were 61.7% among the 81 study subjects who earned between 10,000 – 50,000 per month; 47.8% among the 23 study subjects who earned between 50,000 – 1 Lakh per month and 66.7% among the 06 study participants who earned more than 1 Lakh per month.In comparison, the proportion of study subjects who were drinking > 3 days / week were 37.0% among the 81 study subjects who earned between 10,000 – 50,000 per month; 43.5% among the 23 study subjects who earned between 50,000 – 1 Lakh per month and 33.3% among the 06 study participants who earned more than 1 Lakh per month. On employing the Spearman's Correlation analysis, this inverse correlation between the increase in income per month and decrease in use of alcohol was found to be statistically significant.

According to Fig. No. 2, there is a very significant association between age group of the study participants and the frequency of their use. Among the study participants aged less than 50 years, 43 aged between 31 -40 years and among them, almost 53.4% were reported to be drinking only one - two days per week and 46.6% were drinking > 3 days per week. None of them reported that their drinking was uncontrolled. It is to also be noted that among the 5 study subjects who reported daily uncontrolled drinking were, 60% were aged > 60 years and 40% were aged <31 years. The Chi square test results state that this association between age and frequency of alcohol consumption is statistically very significant (p value <0.0005). On applying Linear regression, it was found that the linear relation

ween the dependent variable (age) and the independent variable (frequency of alcohol consumption) was very highly significant (p value>0.001).

Discussion:-

In our study it was observed that almost 90% of the study subjects belonged to the younger age group (<50 years of age) and 10% belonged to the age group above 50 years. There was no significant skew in the data with respect to the Education distribution of study subjects. 70.4% of the study subjects were married and almost 20% were single. 27.2% of study participants were self employed, 24.8 % were semi skilled workers, 20.8% were professionally employed and the remaining were either not employed or unskilled workers. Almost 65% of the study subjects had a moderate income <50,000 Indian rupees per month and only 5% had a monthly income >1 lakh Indian rupees per month.

Almost 60% of the study subjects reported that they were light drinkers who consumed alcohol only 1-2 days / week whereas 4% of study subjects reported that their drinking habits were daily and uncontrolled. Correspondingly, 66% of the study subjects reported that they did not consider themselves "Alcoholics" whereas 19% claimed that they are "Alcoholics". 15% of the study subjects were unsure if they were an alcoholic. Almost 50% of the study subjects agreed that they were in the habit of using alcohol since more than ten years in varying quantities and proportions. However, none of the study subjects attempted to quit alcohol at any stage. 75.2% of the study subjects admitted that they were using other psycho-active substances along with alcohol of which almost 3% admitted that they were into various forms of addictive substances including Cigarette / Tobacco / Inhalational substances and intravenous substances. The 12-month prevalence of AUDs in India in the year 2010 was 2.6% and that of alcohol dependence was 2.1%. The National Mental Health Survey of India 2015–16 found the prevalence of AUDs to be 9% in adult men [22]. As per a study conducted in Madhya Pradesh by Hamagle et al [23] ,Of the 3586 study participants, about 434 (12.10%) were found to have an ADS i.e. 7.96% of the total strength were found to be problem drinkers [23]. India used to be one of those countries which had lowest consumers of alcohol but now there are about 14 million people who are alcohol dependent and require help. As per the National Family Health Survey (NFHS)-4, 29.2% men and 1.2% women, whereas in NFHS -5, 18.8% men and 1.3% women consume alcohol. After comparing the trends from NFHS-4 and 5, it is evident that there is a gradual decrease in this practice. While NFHS findings indicate a decreasing trend, WHO's report on Status on Alcohol Use and Health at Global level (2018) indicates a 38 per cent increase in APC among those aged ≥15 years in India from 2010-2017. The introduction of flavoured alcoholic drinks has increased its consumption by attracting new consumers who were previously non-drinkers [24].

In the current study it was observed that there is a very significant association between age group of the study participants and the frequency of their use. Among the study participants aged less than 50 years, 43 aged between 31 -40 years and among them, almost 53.4% were reported to be drinking only one - two days per week and 46.6% were drinking > 3 days per week. None of them reported that their drinking was uncontrolled. It is to also be noted that among the 5 study subjects who reported daily uncontrolled drinking were, 60% were aged > 60 years and 40% were aged <31 years. It was also found that the linear relation between age of the study subjects and the frequency of alcohol consumption was very highly significant.

In another study conducted by Nitu Malik et al [6], it was seen that the mean duration of illness was 11.87 years (±2.51) for patients with alcohol dependence and 10.12 (±3.22) years for patients with opioid dependence. The mean age of onset of substance abuse in AD group was 20.60 years (±3.91) which was less than the mean age of onset in the OD group (21.98±5.83 years). However, this difference was not significant. However, not all studies reflect similar ideas. A study conducted in India by Raekha Prasad et al published results which are alarming. The study found out that that the "average age of initiation" had dropped from 19 years to 13 years in the past two decades. The shifting composition of Indian drinkers has seen a rise in the number of Indian youth drinking regularly and heavily. It is all about getting young people to start early and be life-long consumers. [16]. Similarly according to studies conducted by Alcohol and Drugs Information Centre India, a non-governmental organization (NGO) in Kerala, there has been an increase from 2% to more than 14% in the drinking population aged under 21 years [24] .

In the current study, it was observed that 38.6% of the 88 study participants who were married and 12.0% of the 25 study subjects who were single were drinking > 3 days per week. However, this association was not found to be statistically significant.

In a study conducted by Nitu Malik et al [6], it was seen that the Alcohol Dependant group had more number of married subjects (83.3%). The Schizophrenic group patients had more of unmarried subjects (56.7%). The Opioid Dependant group comprised of equal number of patients (50%) with the married and

unmarried status. As per the Chi-square test these differences between the 3 groups were significant. Ajit Kumar Lenka et al [24] in their study titled "Prevalence of Alcohol use among the Indian Population and its Impact on Public Health" are of the opinion that NFHS-3 (2005- 6) has indicated that the experience of spousal physical or sexual violence varies with level of the husband's alcohol consumption. 69% of women whose husbands got drunk often had experienced spousal violence, as compared with 30% of women whose husbands did not drink alcohol. These numbers were much higher compared to our observations.

In the current study, it was observed that, among the 91 study subjects who were "Alcohol dependant", 37.4% were aged 31-40 years, 29.7% were 18-30 years and 23% were aged 41-50 years. All of the above study subjects were aged less than 50 years which indicates that their alcohol abuse could have a long time bearing on their health pursuits. This association between age of the study participants and frequency of their alcohol use was found to be statistically significant. It was also seen that there is a very significant association between occupation of the study participants, monthly income of the study participants and the frequency of their alcohol use.

However, in a study conducted by Bhattacharya R, Nitu Mallik et al titled "Burden and Coping of Caregivers of Men with Alcohol and Opioid Dependence [6]" it was seen that significant differences in alcohol consumption were only obtained on the variable of marital status. None of the other variables like age, family income, locality or family type were significantly associated with alcohol use. The World Report on "Alcohol Use on the rise in India [19]" as authored by R Prasad states that, officially, Indians are still among the world's lowest consumers of alcohol— government statistics show only 21% of adult men and around 2% of women drink. But up to a fifth of this group—about 14 million people—are dependent drinkers requiring "help". The concern is that there has been a rapid change in patterns and trends of alcohol use in India. Chief among them is people are beginning to drink at ever-younger ages. There is evidence even to suggest that the poor are beginning to drink more than they earn—a deadly spiral of alcohol and debt. The study also reports that the average monthly expenditure on alcohol of patients with alcohol addiction is more than the average monthly salary. These results proposes what the currently study directly hints - that age and income are factors that are associated with alcohol use among the public.

Figures:

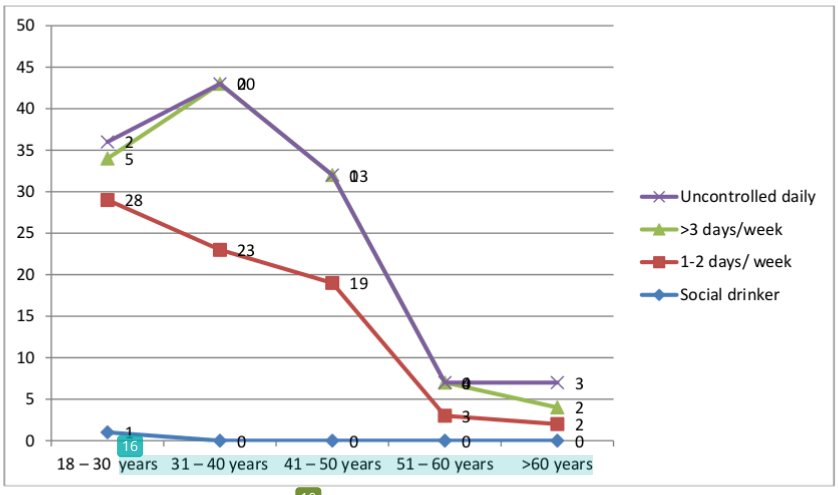

Fig No. 1:- Line diagram depicting the distribution of study subjects on the basis of Age and Frequency of Alcohol use (n = 125).

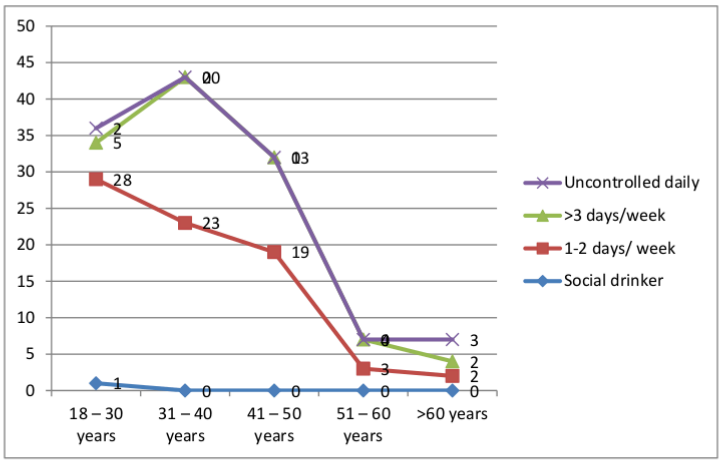

Figure 2: Line diagram depicting the distribution of study subjects on the basis of Age and Frequency of Alcohol use (n = 125)

Tables

Table No. 1 – Distribution of study subjects on the basis of Education and Frequency of Alcohol use (n =125)

Education Grade	Frequency of Use				Total
	Social drinker	1-2 days/ week	>3 days/week	Uncontrolled daily	
No formal Education	0	8	0	0	8
Primary School	0	3	3	0	6
High School	0	24	12	3	39
Higher Secondary School	0	13	18	0	31
Degree / Diploma	0	16	9	0	25
Post graduate / Ph D	0	5	2	2	9
Professional Education	1	6	0	0	7
Total	**1**	**75**	**44**	**5**	**125**

Pearson Chi-Square value – 44.450 df:18 p value <0.001

Table No. 2 – Distribution of study subjects on the basis of demographic factors and AUDIT scores (n =125)

Age Group	AUDIT score			Total	Chi square value	P value
	Hazardous Drinking	Harmful Drinking	Alcohol Dependence			
18 – 30 years	3	6	27	36	3.903	0.866
31 – 40 years	4	5	34	43		
41-50 years	6	5	21	32		
51- 60 years	1	2	4	7		
>60 years	1	1	5	7		
Total	**15**	**19**	**91**	**125**		
Education	**AUDIT score**			**Total**	**Chi square value**	**P value**
	Hazardous Drinking	Harmful Drinking	Alcohol Dependence			
No formal Education	2	1	5	8	6.441	0.892
Primary School	1	0	5	6		
High School	3	7	29	39		
Higher Secondary School	5	5	21	31		
Degree / Diploma	3	4	18	25		
Post graduate / Ph D	0	2	7	9		
Professional Education	1	0	6	7		
Total	**15**	**19**	**91**	**125**		
Marital Status	**AUDIT score**			**Total**	**Chi square value**	**P value**
	Hazardous Drinking	Harmful Drinking	Alcohol Dependence			
Single	1	5	19	25	7.222	0.513
Committed	2	1	4	7		
Married	12	11	65	88		
Divorced	0	1	2	3		
Spouse Deceased	0	1	1	2		
Total	**15**	**19**	**91**	**125**		
Monthly Income (in INR)	**AUDIT score**			**Total**	**Chi square value**	**P value**
	Hazardous Drinking	Harmful Drinking	Alcohol Dependence			
1 – 10,000.00	1	0	6	7	14.078	0.080
10 – 50,000.00	13	8	60	81		
50,000.00 – 1 Lakh	0	8	15	23		
>1 Lakh	0	1	5	6		
Prefer Not to Say	1	2	5	8		
Total	**15**	**19**	**91**	**125**		

Table No. 3 – Distribution of study subjects on the basis of monthly income and Frequency of Alcohol use (n =125)

Monthly Income (in INR)	Frequency of Use				Total
	Social drinker	1-2 days/ week	>3 days/week	Uncontrolled daily	
1 – 10,000.00	0	4	0	3	7
10 – 50,000.00	1	50	30	0	81
50,000.00 – 1 Lakh	0	11	10	2	23
>1 lakh	0	4	2	0	6
Prefer Not to Say	0	6	2	0	8
Total	**1**	**75**	**44**	**5**	125

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Declarations

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Conflict of interest:

The authors have no conflicts of interest associated with the material presented in this paper.

Ethical approval:

Obtained from the Institutional Ethics Committee, RajaRAjeswari Medical College Hospital, Bengaluru.

Author Contributions:

Conceptualization- JP, VV, NSN.; Formal analysis-NSN.; Methodology-VV,JP.; Visualization-VM,SJ,JP.; Writing—original draft-JP, VV, NSN; Writing—NSN; Review and editing-NSN, VV, VM

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