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Rates and Patterns of Relapse among Patient with Substance Use Disorder with and without Psychiatric Co-Morbidity During 1 Year Period Following Inpatient De-Addiction Treatment at Tertiary Care Hospital, Kolenchery, Kerala, India

Renju Sussan Baby
Ph.D. Scholar & Associate Professor, MOSC College of Nursing,
MOSC Medical College Hospital, Kolenchery, Ernakulum, Kerala, India
Dr. Sandhya Gupta
Head of the Department, Department of Psychiatric Nursing, College of Nursing AIIMS, New Delhi, India
Dr. Joseph Varghese
Professor and Head of the Department, Department of Psychiatry,
MOSC Medical College Hospital, Kolenchery, Ernakulam, Kerala, India

Abstract:
Introduction: Relapse is an inevitable phenomenon that arises in the course of substance use disorder that can be a frustrating experience for patients, caregivers and therapists. Co morbid psychiatric illness makes the individual more vulnerable to relapse. This study analyzed the rates, patterns of relapse and survival time before relapse among subjects with and without co-morbid psychiatric illness over a period of 1year after inpatient de-addiction treatment.
Subjects and Methods: Prospective cohort, comparative design in which 104 subjects admitted for 31days treatment programme for substance use disorder from January to June 2014 at tertiary care hospital in Kerala were studied for 1year post treatment period. Subjects were classified into co morbid SUD (n=56) and Non co morbid SUD (n=48) based on the presence of psychiatric illness diagnosed by the treating psychiatrist based on ICD 10 DCR. Relapse status were assessed during monthly follow up meetings, irregular follow-ups were tracked from the OPD record and followed up telephonically.
Results: Present study findings revealed that 53.8% SUD subjects had co morbid Psychiatric illness. More than one third of subjects (39.4%) relapsed within 1year period. At 1year, 43% percentage of subjects in the co-morbid group relapsed their substance use whereas only (29%) in the non co morbid SUD group relapsed their substance use (p=0.04). Among co morbid subjects 37 % of subjects with bipolar mania, 46%with Depression relapsed at 1year follow up. Kaplan Meir survival analysis revealed that non co morbid SUD had longer survival time compared to co morbid SUD before relapse (p=0.02*).*
Conclusion: Strong therapeutic alliance, close monitoring and regular follow up of these subjects with substance use disorder especially with co morbid mental disorders will lower the rates of relapse.

Keywords: *Rates, patterns of relapse, co morbid mental disorder, substance use disorder*

1. Introduction

Substance use disorders are chronic and relapsing in nature, consists of remissions and relapses. Short term treatment either inpatient or outpatient were found to be effective but a majority of such patients' relapse within a year of starting treatment, within the first three months being the most vulnerable period[i] .

Relapse is a complex and dynamic phenomenon that appears to be determined by both neurobiological and psychosocial processes. Relapse is defined as the resumption of substance use after a period of abstinence and the individual returns back to the previous levels of use for a period of 1month[ii].

Recent estimates from clinical treatment studies suggest that more than two thirds of individuals' relapse within weeks to months of initiating treatment. For 1-year outcomes across alcohol, nicotine and illicit substance abuse, studies show that more than 85% of individuals' relapse and return to substance use within 1 year of treatment[iii]. Several studies have shown relapse rates as high as 65%

to 70% in the 90-day period following treatment[i]. Co- morbid psychiatric illness leads to frequent relapses[iv]. Co- morbidity in substance use disorder refers to the concurrence of psychoactive substance use and other mental disorders[v].

Despite of the availability of many forms of effective treatment, the problem of relapse remains the major challenge to achieving sustained abstinence from substances. Furthermore, the relapse phenomenon may occur at any time during or after a course of treatment, and it may occur many times, leading to repeated cycles of substance use and abstinence. There is scarcity of literature that studied in depth about monthly relapse rates during the crucial 1year period and also the difference in relapse pattern among patients with and without co morbid psychiatric illness. This study was undertaken to analyze the rates and pattern of relapse among subjects with and without co-morbid psychiatric illness over a period of 1year after inpatient de-addiction treatment.

1.1. Methods

Design adopted for the study was prospective cohort, comparative design. Hundred and four subjects who were treated form the setting from January 2014 to June 2014 who met the inclusion criteria were enrolled in the study. Ethical clearance was obtained from the institutional ethics committee. Participants were informed about the purpose and natures of study, informed written consent were obtained from the study participants who fulfilled the selection criteria. Baseline demographic and substance use details were collected during their 31 days' inpatient de-addiction treatment period. The study subjects were classified into two groups at the baseline based on the presence and absence of co morbid psychiatric disorders diagnosed by the treating psychiatrist. 54 subjects with co- morbid psychiatric disorders are included in the co-morbid SUD group and 48 subjects without co-morbid psychiatric illness were included in non co-morbid SUD group. Monthly assessment was done to identify relapsed cases during their follow-up and the irregular follow up patients were followed up telephonically up to 1year after the treatment.

1.2. Statistical Analysis

The collected data were coded and entered into excel spread sheet, cleaned and checked for missing values. The excel data sheet were uploaded into R software. The variables were labelled and categorized as nominal, ordinal, interval and ratio levels. Nominal and ordinal variables were categorized as categorical and Interval and ratio level variables were categorized as continuous variables. Data were analyzed using descriptive statistics such as frequency, percentage for categorical variables and mean, median, mode, SD, SE, skewness, kurtosis were assessed for continuous variables. Inferential statistics used in the present study were Chi square test, Kaplan Meir survival analysis.

2. Results

2.1. Socio Demographic Profile of the Subjects

As per Table 1, Mean age of the subjects is the both the groups were comparable i.e.39±13.57 years in the co morbid SUD and 37.8±12.34 in the non co morbid SUD respectively. All the subjects were males. Majority (46.5%) of the co morbid groups were educated up to high school whereas 52.4% of the non co morbid group were educated up to senior secondary school respectively. Majority (67.4% % 64.5%) in both the group were married. Twenty-one percent in the co morbid group and 16.6%in the non co morbid group lost their job due to substance use. Majority of subjects (63.5%& 60.4%) in the both groups were living with their family.

Socio-Demographic Variables	Co-Morbid Sud (N=56)	Non Co-Morbid Sud (N=48)
Age of the subjects (in years)		
Mean± SD	39±13.57	37.8±12.34
Range	19-65	17-68
Gender		
Male	56(100%)	48(100%)
Educational status		
up to high school	26(46.5%)	12(25%)
Up to Senior secondary	22(39.3%)	25(52.4%)
Graduate and above	8(14.3%)	11(22.9%)
Marital status		
Married	38(67.9%)	31(64.5%)
Unmarried	14(25%)	15(31.2%)
Separated due to drug use	4(7.1%)	2(4.3%)
Occupational status		
Unskilled	16(28.6%)	15(31.25%)
Skilled	28(50%)	20(41.6%)
Unemployed due to substance use	12(21.4%)	8(16.6%)
Never employed	0	5(10.4%)
Religion		
Hindu	26(46.4%)	24(50%)
Muslim	2(3.6%)	6(12.4%)
Christian	28(50%)	18(37.5%)
Source of referral		
Self	3(5.32%)	6(12.4%)
Family	17(30.36%)	23(47.9%)
Social workers	7(12.5%)	6(12.4%)
Recovered addict	23(41%)	11(22.8%)
Police	2(3.6%)	0
physician	4(7.14%)	2(4.7%)
Living arrangements		
Living with spouse and children	36(64.3%)	29(60.4%)
Living with parents/friends/relatives	17(30.4%)	18(37.5%)
Living alone	3(5.4%)	1(02.3%)

Table 1: Socio Demographic Profile of Subjects N=104

2.2. Substance Use Profile of the Subjects

As shown in the Table: 2, Subjects in both the group started their alcohol use during their teen age. The non co morbid SUD group had longer duration of alcohol use with mean 21.07± SD of 12.5 years. Usual quantity of alcohol and maximum amount of alcohol consumption were higher in the non co morbid SUD group than in the co morbid SUD group. Morning use of alcohol was observed in majority of the subjects in both the groups. More than one third of subjects in both the group were binge drinkers.

Clinical variables	Co morbid SUD (n=56)	Non co morbid SUD (n=48)
ALCOHOL		
Previous treatment for SUD Yes No	 **24(42.9%)** **32(57.1%)**	 **18(37.5%)** **30(62.5%)**
Age of initiation of alcohol use Mean age± SD Range	 **16.69± 4.32** **9-32**	 **16.9 ± 4.3** **7-30**
Duration of alcohol use Mean± SD Range	 **18.9± 4.22** **2-55**	 **21.07± 12.5** **2-54**
Duration of excessive use Mean ± SD Range	 **6.67±5.2** **1-25**	 **7.61± 7.6** **1-32**
Quantity of use: usual dose (ml) Mean ± SD Range	 **530 ±183.2** **180-1000**	 **539.09 ± 216** **120-1000**
Quantity of use: maximum dose (ml) Mean ± SD Range	 **985.7±386.6** **360-2000**	 **1000.4 ± 395.62** **360-2000**
Morning use Yes No	 **43(76.8%)** **13(23.2%)**	 **34(70.8%)** **14(29.2%)**
Reason for use Habit Family conflict Tension	 **43(76.8%)** **7(12.5%)** **6(11.7%)**	 **40(83.4%)** **6(12.5%)** **2(4.2%)**
Pattern of use Using alone With friends	 **49(87.5%)** **7(12.5%)**	 **40(83.4%)** **8(16.7%)**
Binge drinking Yes No	 **20(35.7%)** **36(64.3%)**	 **18(37.5%)** **30(62.5%)**
Periodicity Yes No	 **7(12.5%)** **49(87.5%)**	 **4(8.4%)** **44(91.6%)**
Black out Yes No	 **34(60.7%)** **22(39.3%)**	 **20(41.6%)** **28(58.4%)**
Withdrawal syndrome Complicated(DT) Uncomplicated	 **11(19.6%)** **45(80.4%)**	 **9(18.75%)** **39(81.3%)**
Addiction severity index Mean ± SD Range	 **6.32±1.63** **2.3-8.9**	 **6.13±1.7** **2.1-8.7**
TOBACCO		
Quantity of tobacco use (cigarette/beedi) Mean ± SD Range	 **20± 8.16** **10-30**	 **18.4 ±7.9** **10-30**
Age of initiation of tobacco use Mean age± SD Range	 **19.3 ± 3.5** **15-27**	 **17.1 ± 2.35** **14-20**
Duration of tobacco use Mean ± SD Range	 **18.3± 11.9** **0.5-50**	 19.2± 14.6 **1-54**
Years of excessive use Mean ± SD Range	 **5.72 ± 3.9** **1-20**	 5.9 **±6.3** **1-35**
Morning use Yes No	 **32(57.2%)** **22(43.8%)**	 **28(58.3%)** **20(41.6%)**
Reason for use Habit Family conflict	 **48(88.89%)** **6(11.11%)**	 **43(89.3%)** **1(10.4%)**

Table 2: Substance Use Profile of the Subjects

Majority (60.7%) in the co morbid SUD group experienced blackout which indicates increased amount of alcohol consumption. Addiction severity index (ASI) score was comparable in both the groups. Subjects in the co morbid SUD group had increased amount of tobacco use while compared to the other group. All other parameters related to tobacco use were comparable between the groups.

2.3. Results as Per the Objectives of the Study

- Objective no :1 to assess the rates of relapse among subjects having substance use disorder with and without co morbid psychiatric illness until 1year after inpatient de-addiction treatment.

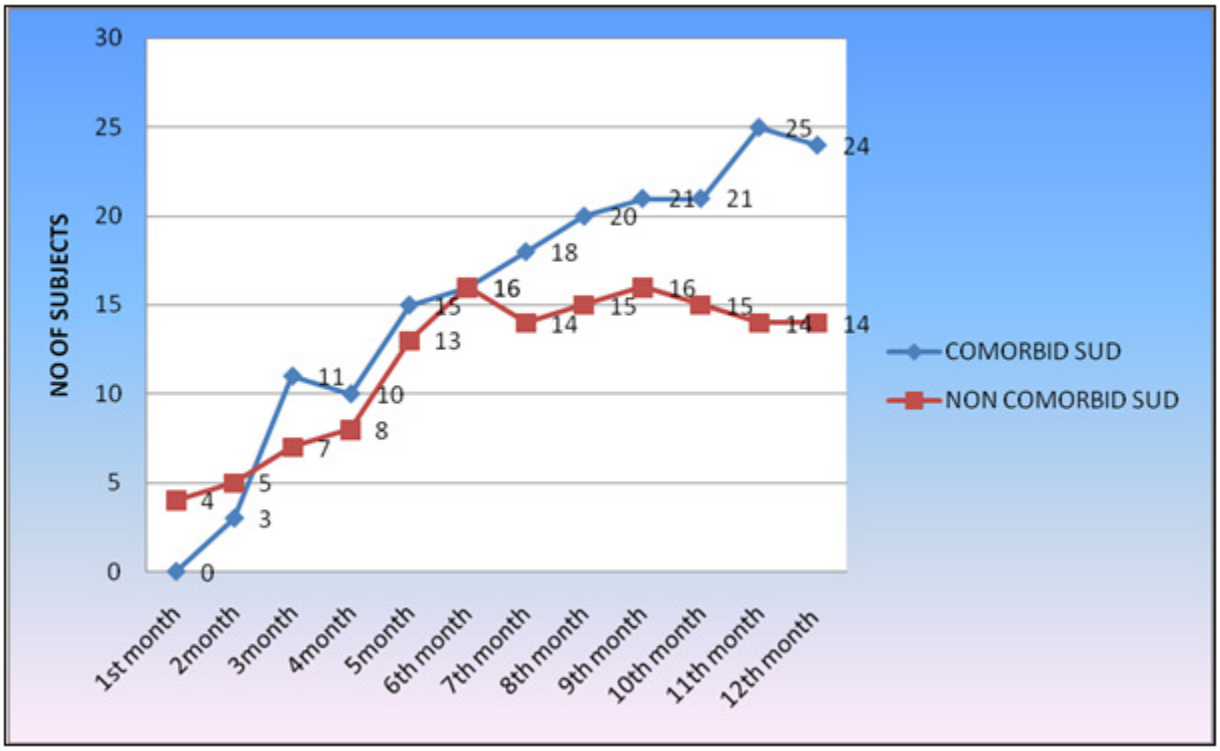

Figure 1: Pattern of Relapse among Sud Patients with and Without Psychiatric Comorbidity: 1year Follow-up after Deaddiction Treatment

Figure no: 1 Relapse rates among co-morbid SUD and non co-morbid SUD- monthly follow up until 1year after treatment
As per the Table 3 and figure no: 1 As per the figure no: 1 showing rates and pattern of relapse among co-morbid SUD (n=56) and non co-morbid SUD (n=48) after the monthly follow up till 1year post treatment, shows that rates of relapse were initially lower in the co morbid SUD group until first 2months after treatment. Thereafter there is a gradual increase in the relapse rates in the co morbid SUD group when compared with the non co morbid SUD group. At 6months of post treatment, 33% of the subjects in the non co morbid SUD group and 28% of subjects in the co morbid SUD group relapsed.
There was significant increase in the relapse rates among the co-morbid SUD group after 6months; at 1year, 43% percentage of subjects in the co-morbid SUD group relapsed their substance use whereas (29%) in the non co morbid SUD group relapsed their substance use(p=0.04*). The reduced relapse rate among non co morbid group at 1year was due to the resumption of treatment and follow up.

- Objective no: 2 to analyze the pattern of relapse among patients having substance use disorder as per their co morbid psychiatric illness until 1year after inpatient de-addiction treatment.

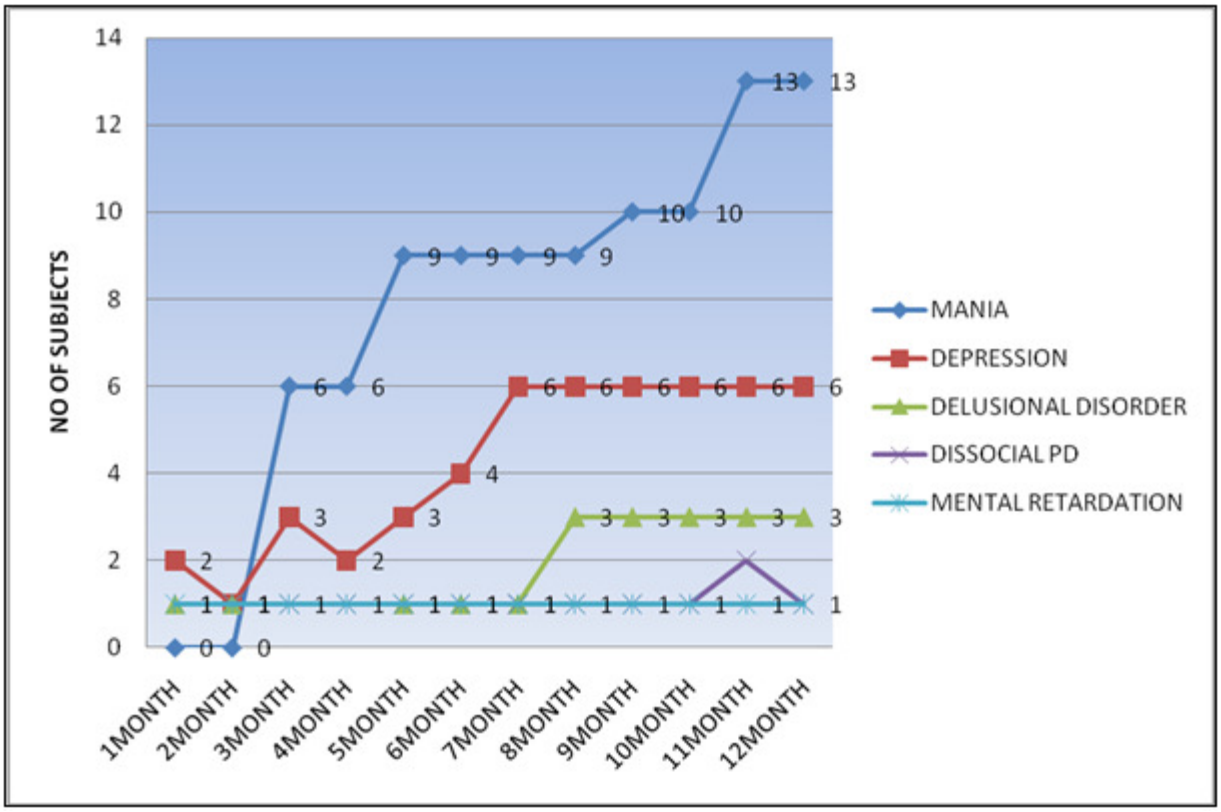

Figure 2: Pattern of Relapse among SUD Patients with Comorbid Psychiatric Illness

As per the line graph that plots the pattern of relapse among subjects with various psychiatric co morbid illness, rates of relapse are higher after 5 months of treatment irrespective of the psychiatric illness.

→ SUD with Bipolar Mania: there were 35 subjects who had bipolar mania in the co morbid SUD group. Among these, 17% of subjects relapsed at 3months, 25% subjects relapsed at 5months, 28% subjects relapsed at 9th month, and 37% of subjects relapsed substance use at 11th month following inpatient de-addiction treatment.

→ SUD with Depression: Among 13 SUD subjects with co morbid depressive disorder; 15% subjects relapsed immediately after discharge, 23% relapsed at 3months, 30% subjects relapsed at 6monthsand 46% subjects relapsed at 7th month didn't resumed treatment till 1year period. Among these relapsed subjects, 3 subjects committed suicide at 2month, 6month and 8month after treatment.

→ SUD with delusional disorder: among 4 subjects with delusional disorder, one subjects (25%) relapsed immediately after discharge, 75% of subjects relapsed at 8th month and did resume treatment till 1year period.

→ SUD with mild mental retardation: among 2subjects with mental retardation, 1subject (50%) relapsed immediately after discharge and never resumed treatment till 1yearperiod.

→ SUD with dissocial personality disorder: among 2subjects with mental retardation, 1subject (50%) relapsed immediately after discharge; remaining one subject relapsed at 11th month but resumed treatment immediately.

- Objective no:3 – to analyse the survival time before the occurrence of initial relapse(event) among co morbid and non co morbid SUD group subjects.

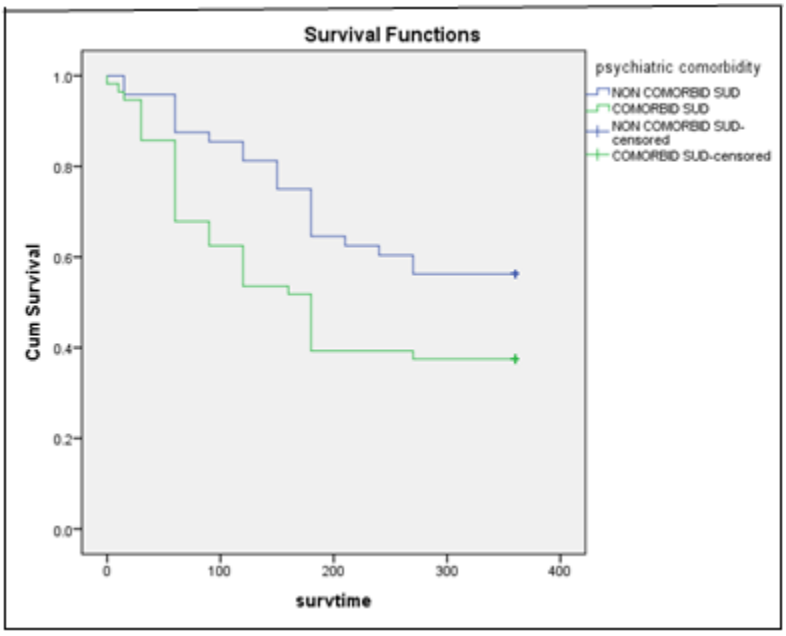

Figure 3

Figure 3 Plots of Kaplan-Meier survival analysis - product limit estimates of survival of a non co-morbid SUD and co-morbid SUD group after 31days inpatient de-addiction treatment

Co-morbid group SUD subjects had lower survival time that means they relapsed early when compared to the Non Co-morbid SUD group, i.e. their sobriety time was less while comparing with the non co-morbid SUD group.

GROUPS	ESTIMATE Mean survival time (in days)	Std. Error	Test statistic
NON COMORBID SUD(n=48)	263.750	17.291	Log rank (Mantel Cox) Chi-square(df=1)= 5.263 p =0.02*
COMORBID SUD(n=56)	194.554	18.423	

Table 5: Kaplan-Meier product limit estimates of survival of a non co-morbid SUD and co-morbid SUD group after 31days inpatient de-addiction treatment N=104

Mantel Cox log rank test showed that there is significant difference in the mean survival time between the two groups, i.e. non co morbid SUD had longer survival time compared to co morbid SUD before the occurrence of the event i.e. relapse(p=0.02*).

3. Discussion

Present study findings revealed that among the study subjects (n=104) with substance use disorder who took 31days inpatient de-addiction treatment, alcohol and tobacco were the substances of dependence. Among the study sample, 56(53.8%) subjects who had co morbid psychiatric illnesses were grouped as co morbid SUD subjects and remaining 48(46.2%) subjects didn't have any other co morbid psychiatric illnesses were grouped as non co morbid SUD subjects.

The most commonly reported co morbid disorders are other substance use disorders, nicotine addiction, antisocial personality disorder, mood disorders, and anxiety disorders[vi]. Present study findings revealed that 53.8% SUD subjects had co morbid Psychiatric illness which is higher that the study done in northern part of India i.e.12.5% - 46%. Indian studies showed the prevalence of co morbid psychiatric disorders in alcohol ranges from mood disorder from 27.5%- 48.6%, depressive disorder from 8.8%- 23.6% and psychosis from 10%- 29.2%[vii]. Among the co morbid SUD group (n=56), 62% of subjects were diagnosed as bipolar affective disorder-mania, 23.5% of subjects were diagnosed as depressive disorder,7% of subjects were diagnosed as having delusional disorder, 3.5% subjects as mild mental retardation, 3.5% subjects as having dissocial personality disorder by the treating psychiatrist based on ICD -10 diagnostic criteria for mental and behavioural disorder. Present study shows a higher proportion of co morbid psychiatric illness while comparing with previous findings may be because of geographical difference in the sample characteristics, these findings can be generalized to subjects seeking help to a tertiary care hospital.

Recent estimates from clinical treatment studies suggest that more than two thirds of individuals' relapse within weeks to months of initiating treatment. For 1-year outcomes across alcohol, nicotine and illicit substance abuse, studies show that more than 85% of individuals' relapse and return to substance use within 1 year of treatment[3]; present study findings revealed that more than one third of subjects 39.4% relapsed within 1year period. Several studies have shown relapse rates as high as 65% to 70% in the 90-day period following treatment[1]; in our study overall relapse rate during 1st 3months were16.3%. group wise comparison revealed that only Twenty two percentage of subjects in the non co morbid SUD, 19.6% of co morbid SUD subjects relapsed within first 3month

following treatment This may be because of the fact that illicit substance use were not studied only alcohol and tobacco use disorder were studied, and this tertiary care setting establishes strong therapeutic alliance with patients and treatment team, free treatment, routine home visits, strong AA partnerships thereby minimizing the relapse rates.

Relapse rate in the non co morbid SUD reached its peak at 6month period, 33.3% subjects relapsed at 6months, after 6month the relapse rate reduced by resuming treatment, at the end of one year 29% of subjects continued their substance use. The reduced relapse rate among non co morbid group at the end of 1year follow up was due to the resumption of treatment and regular follow up. Among patients with co-morbid In mental disorder after attaining initial remission, nearly32% of subjects relapsed within six months, and nearly half (48%) of the subjects relapsed within one year, even while the participants were engaged in treatment[5]. Present study supports the previous study findings but with a lesser relapse rates. In our study; At 6month period 28.5% of co-morbid SUD subjects relapsed thereafter there was sudden increase in the relapse rate and at the end of 1year, 42.8 percentage of subjects in the co-morbid SUD group relapsed their substance use. There was significant increase in the relapse rate in the co morbid SUD subjects when compared with the non co morbid SUD subjects at the end of one year follow up ($p=0.04$*).

There was significant increase in the relapse rates among the co-morbid SUD group after 6months following treatment. Co-morbid SUD subjects tend to discontinue psychiatric medications after 5 to 6 months. Majority of the subjects in the co-morbid SUD group attain remission by 5-6months, when there is a visible positive change in their level of functioning and quality of life as they remain sober and complaint with treatment. On remission patients as well as family member believe that they don't require further medication or follow up and tend to discontinue treatment. It was noticed that the relapsed subjects in the co-morbid SUD group had difficulty in accepting mental illness and requirement of long term treatment for mental illness. Similarly, there was noticeable denial among spouses also was observed that their husband not only had substance use disorder but also psychiatric illness that requires long term medications.

There is real scarcity of literature that studies in depth about the rates of relapse among various co morbid psychiatric illnesses. Majority of studies identified various co morbid psychiatric disorders as predictors of relapse such as Symptoms of mental illness such as dysphoria, depressive mood[viii]. Manic episodes, bipolar depression[ix], borderline personality disorder[x] and severe anxiety are particularly likely to precipitate relapse[xi].

Patients with major depression[xii] and bipolar mania[9] had significantly higher relapse risk than individuals without co-occurring mental disorders. In the present study among the patient diagnosed with bipolar mania, 17% of subjects relapsed at 3 months, 25% subjects relapsed at 5months, 28% subjects relapsed at 9th month, and 37% of subjects relapsed substance use at 1year follow up period. Among patients diagnosed with depressive disorder; 15% subjects relapsed immediately after discharge, 23% relapsed at 3months, 30% subjects relapsed at 6monthsand 46% subjects relapsed at 7th month didn't resumed treatment till 1year period. Among subjects with major depression, 3 subjects (23%) committed suicide at 2month, 6month and 8month after treatment.

3.1. Strength

- Attrition bias was handled by constant follow up. Monthly assessment of patients' outpatient registers, Regular periodical assessment of regular follow up subjects and relapsed subjects seeking help. Substance use status of irregular follow up subjects were done telephonically or during home visits done by AA pear leader.
- Study findings are unique because present study conducted in depth monthly assessment of relapse rates up to 1year after SUD treatment having various co morbid psychiatric illnesses.

3.2. Limitations

- Study findings can be generalized only to patients seeking services from tertiary care delivery centres.
- Relapse rates among other co morbid psychiatric illness such as delusional disorder, dissocial personality disorder, and mild mental retardation cannot be generalized because of very less no of subjects in each group.

3.3. Future Recommendations

- Large Community based study can be conducted for generalizability of findings.
- Larger sample size in each co morbid psychiatric illnesses can be studied.

4. Conclusion

Being first 1-year period after the de addiction treatment is the most vulnerable time for relapse; strong therapeutic alliance, close monitoring and mandatory monthly follow up of these subjects with substance use disorder especially with co morbid mental disorders will lower the rates of relapse. Initial remission makes co morbid SUD more prone for treatment non adherence thereby increases rates of relapse of not only the SUD but also their psychiatric disorder itself. Family members should be made more responsible member in monitoring the medication adherence, constant support and encouragement during the initial remissions and relapses. Strong therapeutic alliance and AA partnership will help the patient as well as family to reach ultimate recovery.

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