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Original Research Article

CORRELATION OF RISKY SEXUAL BEHAVIOUR IN DUALDIAGNOSIS OF SUBSTSNCE ABUSE AND PSYCHIATRIC COMORBIDITIES BEFORE AND AFTER TREATMENT

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ABSTRACT

Background: Substance use disorders often coexist with psychiatric illnesses, and this dual diagnosis may increase vulnerability to risky sexual behaviour. This study evaluated changes in risky sexual behaviour following treatment among patients with substance use disorders and psychiatric comorbidities.

Materials and Methods: This prospective interventional follow-up study included 100 patients aged 18–45 years attending the psychiatry outpatient department of a tertiary healthcare centre in Navi Mumbai. Participants were assessed at baseline, three months and six months using the Alcohol Use Disorders Identification Test (AUDIT), Drug Abuse Screening Test (DAST) and Sexual Risk Survey (SRS). Scores were compared across psychiatric diagnoses.

Results: Schizophrenia was the most common psychiatric comorbidity (27%), followed by bipolar mood disorder (20%) and major depressive disorder (19%). Alcohol use was reported by all participants, while tobacco (71%) and cannabis (36%) were common additional substances. Mean AUDIT scores declined from 31.90 ± 4.80 at baseline to 17.16 ± 5.25 at three months and 8.44 ± 3.51 at six months. Mean DAST scores decreased from 21.15 ± 4.55 to 13.29 ± 3.34 and 7.10 ± 2.65, respectively. Mean SRS scores also declined from 40.22 ± 10.74 to 26.35 ± 8.80 and 16.46 ± 6.75. SRS scores differed significantly across psychiatric diagnoses at all assessments (p=0.0001), with bipolar mood disorder consistently showing the highest scores.

Conclusion: Continued treatment and follow-up were accompanied by progressive reductions in substance-use severity and risky sexual behaviour. Patients with bipolar mood disorder may require more intensive sexual-risk assessment and targeted counselling.

Keywords: Alcohol Use, Bipolar Mood Disorder, Dual Diagnosis, Psychiatric Comorbidity, Risky Sexual Behaviour, Substance Use Disorder.

INTRODUCTION

Comorbidity refers to the presence of two or more disorders in the same individual, occurring either simultaneously or sequentially. Importantly, these disorders may interact and influence the course, treatment response and prognosis of each other. Epidemiological and clinical studies have consistently demonstrated a high level of comorbidity between psychiatric disorders and substance use disorders (SUDs), commonly described as "dual diagnosis" or "co-occurring disorders."[1]

Approximately 27% of the general population is estimated to have at least one psychiatric disorder. Substance use disorders frequently coexist with borderline and antisocial personality disorders, bipolar disorder, psychotic disorders, depression and anxiety disorders.[2,3] The prevalence of dual diagnosis is considerably higher in clinical

populations. One survey reported that approximately 36%–40% of adults with a psychiatric disorder also met the diagnostic criteria for a substance use disorder. Individuals with co-occurring disorders generally experience more severe symptoms, greater functional impairment and poorer clinical outcomes than those with either condition alone.[4]

Individuals with substance use disorders are more likely to engage in risky sexual practices, including frequent sexual intercourse and sexual activity with unfamiliar partners while under the influence of alcohol or other substances. This risk may increase further when substance use is accompanied by a psychiatric disorder.[5]

Sexual behaviour is a normal aspect of human life; however, it becomes risky when it occurs under circumstances that may result in adverse health or social consequences. Risky sexual behaviour commonly includes unprotected sexual intercourse, having multiple sexual partners and engaging in sexual activity with unfamiliar or casual partners.[6-8]

The co-occurrence of substance use and psychiatric disorders has been associated with particularly high levels of such behaviour. A survey conducted by the Kaiser Family Foundation reported that more than five million individuals had engaged in unprotected sexual intercourse because of alcohol or other drug use.[9]

Previous studies have demonstrated associations between psychiatric disorders, substance use and risky sexual behaviour. However, most research in this area has focused mainly on substance use. The contribution of common psychiatric disorders—including depression, anxiety, schizophrenia and other psychotic illnesses—to the severity of risky sexual practices has received comparatively limited attention.[10]

So, present study was conducted with aim to study the correlation of risky sexual behavior in dual Diagnosis of substance abuse and psychiatric Comorbidities before and after treatment.

MATERIALS AND METHODS

This prospective interventional follow-up study was conducted at a tertiary healthcare centre in Navi Mumbai over one year, from 2019 to 2020 after ethical permission of Institutional Ethical Committee. The study included patients with a dual diagnosis of substance use disorder and psychiatric comorbidity who attended the Psychiatry outpatient department.

A total of 100 patients who fulfilled the eligibility criteria were included in the study. The thesis describes participant selection as a manual random selection method. All participants underwent a detailed clinical assessment, including socio-demographic information, medical and psychiatric history, substance-use history, sexual history and mental status examination. Inclusion criteria were patients diagnosed with substance abuse or dependence along with a psychiatric comorbidity, age between 18 and 45 years, reported risky sexual behaviour during the preceding year & provided written informed consent to participate. Exclusion criteria were patients with significant medical comorbidity, had moderate or severe intellectual disability, unable or unwilling to provide the required information or participate in follow-up assessments.

Study instruments

The following instruments were administered to assess substance use and risky sexual behaviour:

1. Sexual Risk Survey

The Sexual Risk Survey (SRS) is a 23-item instrument used to assess the frequency of different risky sexual behaviours during the previous six months. It assesses behaviours such as sexual activity with multiple or uncommitted partners, impulsive sexual encounters, intercourse under the influence of alcohol or drugs and unprotected vaginal, oral or anal intercourse. Each item is scored from 0 to 4, with a total possible score ranging from 0 to 96. A higher score indicates a greater level of risky sexual behaviour.[11]

2. Alcohol Use Disorders Identification Test

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item screening instrument developed by the World Health Organization to assess alcohol consumption, drinking behaviour and alcohol-related problems. The total score ranges from 0 to 40. A score of 1–7 indicates low-risk alcohol consumption, 8–14 indicates hazardous or harmful alcohol use and a score of 15 or more suggests the likelihood of alcohol dependence.[12]

3. Drug Abuse Screening Test

The Drug Abuse Screening Test (DAST) was used to assess the severity of drug-related problems. It consists of 28 questions with "yes" or "no" responses. A score of 1 is assigned to each "yes" response, except for items 4, 5 and 7, for which a "no" response receives a score of 1. Higher scores indicate greater severity of drug-related problems.[13]

Study procedure

Eligible participants were assessed at the first visit using the SRS, AUDIT and DAST. Scores recorded at this visit were considered the baseline scores. Following the initial assessment, participants received appropriate treatment for substance use disorder and psychiatric comorbidity under the supervision of the treating psychiatrist.

The participants were followed for six months and reviewed at monthly intervals. During each follow-up visit, their substance-use pattern, psychiatric condition and involvement in risky sexual behaviour were reassessed. For the analysis presented in the research paper, AUDIT, DAST and SRS scores recorded at baseline, three months and six months were compared to determine changes following treatment.

The primary outcome was the change in risky sexual behaviour, measured using the SRS score, from baseline to three and six months after treatment. Secondary outcomes included changes in the severity of alcohol use measured by AUDIT and other

substance use measured by DAST. The relationship between risky sexual behaviour, substance-use severity and different psychiatric comorbidities was also examined.

The collected data were entered into a computer database and analysed using descriptive and inferential statistics. Continuous variables were summarized using mean, standard deviation, minimum and maximum values, while categorical variables were presented as frequencies and percentages. Paired *t*-tests were used to compare AUDIT, DAST and SRS scores before and after treatment. Analysis of variance was used to compare mean scores across different psychiatric diagnostic groups. A *p*-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1: Clinico-social parameters of study participants [N=100]

Parameter	Number	%
Age Group (in years)		
<20	9	9
21-30	41	41
31-40	34	34
>40	16	16
Gender		
Male	70	70
Female	30	30
Marital Status		
Married	41	41
Unmarried	59	59
Residence		
Rural	49	49
Urban	51	51
Psychiatric Co-morbidity		
BMD	20	20
GAD	4	4
MDD	19	19
OCD	12	12
PDD	14	14
Schizoaffective	4	4
Schizophrenia	27	27
Substance Abused		
Alcohol	100	100
Tobacco	71	71
Cannabis	36	36
Coccaine	19	19
BZD	17	17
Morphine	2	2
LSD	7	7
Inhalant	5	5
Marijuana	6	6
Others	3	3

Table 1 shows that 9%, 41%, 34% and 16% of the study participants belonged to the age groups of <20 years, 21–30 years, 31–40 years and >40 years, respectively. Almost 70% of the participants were males and 30% were females. Regarding marital status, 41% were married and 59% were unmarried. Nearly equal proportions belonged to rural (49%) and urban (51%) areas. Among the psychiatric comorbidities, 27%, 20%, 19%, 14%, 12%, 4% & 4% study participants noted with bipolar mood disorder, major depressive disorder, persistent depressive disorder, obsessive-compulsive disorder, generalized anxiety disorder and schizoaffective disorder respectively. Regarding substance use, 100%, 71%, 36%, 19%, 17%, 7%, 6%, 5%, 3% and 2% of the study participants reported the use of alcohol, tobacco, cannabis, cocaine, benzodiazepines, LSD, marijuana, inhalants, other substances and morphine, respectively.

Table 2: AUDIT, DAST, SRS system score at 1st visit, at 3 months and at 6 months [N=100]

Score System	Mean	SD
AUDIT Score		
@1st Visit	31.90	4.80
@ 3 Month	17.16	5.25
@6 Month	8.44	3.51
Mean Difference @ 3 Month	14.74	5.29
Mean Difference @ 6 Month	23.46	5.03
DAST Score		
@1st Visit	21.15	4.55

@ 3 Month	13.29	3.34
@6 Month	7.10	2.65
Mean Difference @ 3 Month	7.86	3.05
Mean Difference @ 6 Month	14.05	4.23
SRS Score		
@1st Visit	40.22	10.74
@ 3 Month	26.35	8.80
@6 Month	16.46	6.75
Mean Difference @ 3 Month	13.87	5.25
Mean Difference @ 6 Month	23.76	6.78

Table 2 shows that the mean AUDIT scores at baseline, three months and six months were 31.90 ± 4.80, 17.16 ± 5.25 and 8.44 ± 3.51, respectively. The mean reductions in AUDIT scores at three and six months were 14.74 ± 5.29 and 23.46 ± 5.03, respectively. The mean DAST scores at baseline, three months and six months were 21.15 ± 4.55, 13.29 ± 3.34 and 7.10 ± 2.65, respectively. The mean reductions in DAST scores at three and six months were 7.86 ± 3.05 and 14.05 ± 4.23, respectively. The mean SRS scores at baseline, three months and six months were 40.22 ± 10.74, 26.35 ± 8.80 and 16.46 ± 6.75, respectively. The mean reductions in SRS scores at three and six months were 13.87 ± 5.25 and 23.76 ± 6.78, respectively.

Table 3: AUDIT, DAST, SRS system scores according to psychiatric illness at 1st visit, at 3 months and at 6 months [N=100]

Scoring System	BMD	GAD	MDD	OCD	PDD	Schizo-affective	Schizo-phrenia	P value*
AUDIT								
@1st Visit	33	27.5	31.89	32.17	32.57	33	31.11	0.47
@ 3 Month	14.4	11	15.05	16.67	15	18.5	13.78	0.36
@6 Month	24.05	20.5	24.74	24.67	22.86	25.75	22	0.34
DAST								
@1st Visit	22.35	19.5	21.37	19.42	20.43	22	21.37	0.66
@ 3 Month	8.7	7.75	7.95	6.92	7.86	7.5	7.67	0.83
@6 Month	15.55	14	14.21	12.75	13.36	14	13.78	0.67
SRS								
@1 Visit	51.95	28.5	39.84	31.17	35.5	38.75	40.22	0.001
@ 3 Month	33.25	20	27.53	18.67	22.79	24.75	26.85	0.001
@ 6 Month	21.25	13	16.74	10.5	14.36	16.75	16.93	0.001

* -ANNOVA Test

Table 3 shows that the mean baseline AUDIT scores among participants with bipolar mood disorder, generalized anxiety disorder, major depressive disorder, obsessive-compulsive disorder, persistent depressive disorder, schizoaffective disorder and schizophrenia were 33.00, 27.50, 31.89, 32.17, 32.57, 33.00 and 31.11, respectively. The corresponding mean reductions in AUDIT scores at three months were 14.40, 11.00, 15.05, 16.67, 15.00, 18.50 and 13.78, while those at six months were 24.05, 20.50, 24.74, 24.67, 22.86, 25.75 and 22.00, respectively. The differences across psychiatric diagnostic groups were not statistically significant at baseline, three months or six months (P>0.05).

The mean baseline DAST scores across the respective psychiatric diagnostic groups were 22.35, 19.50, 21.37, 19.42, 20.43, 22.00 and 21.37. The corresponding mean reductions at three months were 8.70, 7.75, 7.95, 6.92, 7.86, 7.50 and 7.67, while those at six months were 15.55, 14.00, 14.21, 12.75, 13.36, 14.00 and 13.78, respectively. No statistically significant differences were observed across psychiatric diagnostic groups at baseline, three months or six months (P>0.05).

The mean baseline SRS scores among participants with bipolar mood disorder, generalized anxiety disorder, major depressive disorder, obsessive-compulsive disorder, persistent depressive disorder, schizoaffective disorder and schizophrenia were 51.95, 28.50, 39.84, 31.17, 35.50, 38.75 and 40.22, respectively. The corresponding mean scores at three months were 33.25, 20.00, 27.53, 18.67, 22.79, 24.75 and 26.85, while those at six months were 21.25, 13.00, 16.74, 10.50, 14.36, 16.75 and 16.93, respectively. Participants with bipolar mood disorder consistently recorded the highest mean SRS scores. The differences in SRS scores across psychiatric diagnostic groups were statistically significant at baseline, three months and six months (P>0.05).

DISCUSSION

Schizophrenia was the most frequently observed psychiatric comorbidity, affecting 27% of participants, followed by bipolar mood disorder (20%), major depressive disorder (19%), persistent depressive disorder (14%) and obsessive-compulsive disorder (12%). Generalized anxiety disorder and schizoaffective disorder were each present in 4% of participants. Thus, severe mental illnesses and mood disorders constituted a substantial proportion of the psychiatric comorbidities among patients with substance use disorders. Kelly et al,[1] similarly observed that substance use disorders frequently

coexist with mood, anxiety and psychotic disorders. They also emphasized that dual diagnosis is associated with greater clinical complexity, poorer treatment adherence and increased psychosocial impairment.

Alcohol use was reported by all participants, making it the predominant substance used in the study. Tobacco was the most common additional substance, reported by 71% of participants, followed by cannabis (36%), cocaine (19%) and benzodiazepines (17%). As several participants used more than one substance, the combined percentages exceeded 100%. The frequent coexistence of alcohol use with tobacco, cannabis and other substances illustrates the complex pattern of polysubstance use among individuals with psychiatric comorbidities. The use of multiple substances may further impair judgement and behavioural control, thereby increasing vulnerability to risky sexual practices.

Chawla et al,[6] reported that alcohol and other psychoactive substances may contribute to risky sexual behaviour by impairing judgement, reducing behavioural inhibition and decreasing the likelihood of condom use. Similarly, Gerbi et al,[9] found that alcohol consumption before sexual intercourse was significantly associated with unprotected sex, while greater alcohol consumption was associated with having multiple sexual partners.

The mean AUDIT score declined from 31.90 ± 4.80 at baseline to 17.16 ± 5.25 at three months and 8.44 ± 3.51 at six months. This corresponded to mean reductions of 14.74 points at three months and 23.46 points at six months, representing decreases of approximately 46.2% and 73.5% from baseline, respectively. This progressive decline indicates a substantial reduction in the severity of alcohol use during the follow-up period. The greater improvement observed at six months further suggests that continued treatment and regular follow-up may provide additional benefits over a shorter duration of treatment. These findings are consistent with the review by Kelly et al,[1] which concluded that coordinated treatment addressing both psychiatric illness and substance use generally produces better outcomes than treating these conditions separately.

A similar pattern was observed for drug-related problems. The mean DAST score decreased from 21.15 ± 4.55 at baseline to 13.29 ± 3.34 at three months and 7.10 ± 2.65 at six months. These changes represented mean reductions of 7.86 points and 14.05 points, equivalent to decreases of approximately 37.2% and 66.4%, respectively. The findings therefore indicate a progressive reduction in the severity of drug-related problems over the six-month follow-up period.

Risky sexual behaviour also declined steadily following treatment. The mean SRS score decreased from 40.22 ± 10.74 at baseline to 26.35 ± 8.80 at three months and 16.46 ± 6.75 at six months. The corresponding mean reductions were 13.87 points at three months and 23.76 points at six months, representing decreases of approximately 34.5% and 59.1%, respectively. This progressive reduction suggests that improvement in substance use and psychiatric symptoms was accompanied by a decline in risky sexual behaviour. However, in the absence of a control group, this finding should be interpreted as an association rather than definitive evidence of a treatment effect.

At baseline, mean AUDIT scores were broadly comparable across the psychiatric diagnostic groups, ranging from 27.50 among participants with generalized anxiety disorder to 33.00 among those with bipolar mood disorder and schizoaffective disorder. These differences were not statistically significant (p=0.471). Similarly, baseline DAST scores ranged from 19.42 among participants with obsessive-compulsive disorder to 22.35 among those with bipolar mood disorder, with no statistically significant difference across the diagnostic groups (p=0.652). The reductions in AUDIT and DAST scores at three and six months also did not differ significantly across psychiatric diagnoses. This indicates that the severity of alcohol and drug use, as well as the extent of improvement during follow-up, was generally comparable across the different psychiatric conditions.

In contrast, risky sexual behaviour varied significantly according to psychiatric diagnosis. Participants with bipolar mood disorder consistently recorded the highest mean SRS scores at baseline (51.95), three months (33.25) and six months (21.25). This suggests that individuals with bipolar mood disorder engaged in greater risky sexual behaviour than those with other psychiatric comorbidities, although their scores also declined considerably during follow-up. Participants with generalized anxiety disorder had the lowest mean SRS score at baseline, whereas those with obsessive-compulsive disorder had the lowest scores at three and six months. Differences in SRS scores across the psychiatric diagnostic groups were statistically significant at baseline, three months and six months (p=0.0001 for each comparison). Thus, unlike alcohol- and drug-use severity, risky sexual behaviour appeared to vary according to the type of psychiatric comorbidity.

The reduction in risky sexual behaviour observed in the present study is comparable with the findings of Parry et al,[14] who evaluated a community-level risk-reduction intervention among drug users in Durban. Their intervention was associated with reductions in alcohol use, the number of sexual partners and substance use during sexual activity, although improvement in condom use was less consistent.

Similar findings have been reported among younger populations with bipolar disorder. Bakare et al,[15] found that 45.7% of adolescents with bipolar disorder exhibited risky sexual behaviour and that this behaviour was significantly associated with psychiatric or substance use comorbidity. Krantz et al,[16] also observed that substance use among young people with bipolar disorder was associated with earlier initiation of sexual activity and greater sexual

risk. In addition, periods of hypomanic symptoms were temporally associated with increased risky sexual behaviour. These findings support the present observation that individuals with bipolar mood disorder may represent a particularly vulnerable group and may require more intensive sexual-risk assessment and counselling. The study was conducted at a single tertiary-care centre with a relatively small sample size and absences of a control group are the limitations of present study.

CONCLUSION

Alcohol was used by all participants, while tobacco, cannabis, cocaine and benzodiazepines were also frequently used, indicating a considerable burden of polysubstance use. Schizophrenia was the most common psychiatric comorbidity, followed by bipolar mood disorder and major depressive disorder. A progressive reduction was observed in alcohol use, drug use and risky sexual behaviour following treatment. The sustained treatment and follow-up may help reduce both substance-use severity and associated risky sexual behaviour. Although improvement was observed across all psychiatric diagnoses, participants with bipolar mood disorder consistently demonstrated the highest sexual-risk scores. Such patients may therefore require more intensive assessment and targeted risk-reduction counselling.

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