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ORIGINAL ARTICLE

SCHIZOPHRENIA, SUBSTANCE USE AND AGGRESSIONS: WHAT ARE THE RELATIONSHIPS?

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Abstract

Objectives: **The objective of the study is to determine the prevalence of
substance abuse for alcohol, cannabis, opiates, stimulants, solvent and other
substances among patients with schizophrenia in Hospital Bahagia Ulu Kinta
(HBUK), Perak , Central Peninsular of Malaysia. This study also aims to
determine the association of substance abuse with aggression, the
demographic characteristics and total duration of hospitalization.** *Methods***:
This was a retrospective cross-sectional study whereby the first 194 subjects
diagnosed to have schizophrenia based on International Classification of
Disease, 10**th **edition (ICD-10) criteria were taken from data registry of
patients admitted to HBUK from January until February 2004. The subjects'
medical files were examined for documentation of substances abuse,
aggression and accumulative duration of hospitalization.** *Results***: The results
showed the prevalence of substances misuse among patients with
schizophrenia in general (including alcohol) was 24.7%. Cannabis 16.7%,
alcohol 13.4%, opiates(heroin) 6.7%, Amphetamine type stimulants
(amphetamine, metamphetamine, ecstacy) 5.7%, and other substances
(benzodiazepine, solvents) 1.5%.** *Conclusion:* **There is higher prevalence of
substance misuse in patients with schizophrenia as compared to general
population. Male patients with history of substance misuse are more likely to
have aggression than female. This group needs special precaution and
probably in need of specialist help.** *ASEAN Journal of Psychiatry, Vol. 11(1):
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Keywords: Schizophrenia, Aggression, Substance use

Introduction

The prevalence of substance abuse or dependence differs by demographic and psychosocial factors and also depends on the presence or absence of any medical and/or psychiatric co morbidity. According to Epidemiological Catchment Area (ECA) study, the prevalence of schizophrenia is approximately 1 to 2% of the general population [1]. However, substance abuse among patients with schizophrenia is believed to be higher than general population. The life time prevalence of substance use among schizophrenia was as high as 50% [1]. In the ECA study, the primary drugs of abuse were alcohol (37%), cannabis (23%), and stimulants (13%). These rates are significantly higher than the general population rate of 13.5% for lifetime alcohol problem and 6.1% for drug misuse. The odd of having a substance abuse diagnosis is 4.6 times higher among patients with schizophrenia as compared to the general population [1].

It is important to understand how substance-use disorders affect outcomes in this already impaired population. Recent studies showed that substance-use disorders occur most commonly in males, and are most prevalent in the young population [2-8]. Substance-use disorders are associated with adverse outcomes, including medication non-compliance, rehospitalization, homelessness, contact with the criminal justice system, medical morbidity and suicide, and these negative outcomes seem to be more likely among those patients who utilize multiple drugs rather than alcohol alone [2-8]. Impulsivity and aggression were higher in the group with substance abuse than in the group without substance abuse [9].

Methods

We conducted this study in Hospital Bahagia, Ulu Kinta , Ipoh in August 2004. Hospital Bahagia is the largest and the earliest psychiatric institution in Malaysia. It is situated in the middle part of Peninsular Malaysia. It received patients from northern, western and eastern coast of Peninsular Malaysia. This hospital manages inpatient psychiatric clients as well as outpatient cases and in the community. For the purpose of this study, we choose only inpatient cases admitted between January 2004 and February 2004. We selected samples from the data registry of patients admitted in Hospital Bahagia between January 2004 and February 2004.

The first 194 patients with a clinical consensus ICD-10 diagnosis of schizophrenia were included in the study (universal sampling) whereas those diagnosed as having schizophreniform disorder, substance induced psychosis and schizoaffective disorder were excluded from the study. The subjects' case notes were retreived and examined for the documentation of substance use for alcohol, cannabis, opiates (heroine/ morphine/ codeine), stimulants (amphetamine/met-amphetamine), ecstasy, solvent and other substances (benzodiazepine).

The demographic profiles, the evidence of aggression, urine drugs status (cannabis and opiates) and the duration of hospital stays (latest admission only) were also determined from the case note. All the patients' records were examined by only one investigator within 2 weeks duration. The data was recorded and analysed at the end of the study using epi info statistical analysis. The patients with schizophrenia with co-morbid

substance abuse and without substance abuse are compared in terms of their correlation with bio demographic profiles, aggression and duration of hospital stays. The comparison between the two groups was analysed using chi-squared test together with calculation of odds ratios and confidence intervals. Significant differences at the 5% level are determined. The study was done by the approval of the director of the hospital. We used epi info version 3.2.2 for the analyses of data.

Results

The lifetime prevalence of substances misuse in general (including alcohol) was 24.7%. The lifetime prevalence for each specific substance showed that the highest prevalence for Cannabis was 16.7%, followed by alcohol (13.4%), opiates [heroin] (6.7%), Amphetamine Type Stimulants [ATS or amphetamine, metamphetamine, ecstacy] (5.7%), and other substances [solvents and benzodiazepines] (1.5%).

The comparison between patients with schizophrenia co-morbid with substance use and without co morbid substance use in term of social and demographic data are given in Table 1. Their correlations were examined by statistical methods using student t-test for continuous data and chi-square test for categorical data at 95% confidence interval (CI).

Table 1: Characteristics of patients with schizophrenia and their association with substance use.

Independent variables	Schizophrenia with substance use(N=48)		Schizophrenia without substance use (N=146)		Crude OR	(95% C.I.)
	No.	(%)	No.	(%)		
Gender*						
Male	46	(95.8)	86	(58.9)	15.5	(3.6 - 66.4)
Female	2	(4.2)	60	(41.1)		
Ethnic group						
Chinese	10	(20.8)	46	(31.0)	1.0	
Malay	28	(58.3)	80	(54.3)	1.6	(0.72 - 3.62)
Indian	9	(18.8)	16	(11.0)	2.2	(0.73 - 6.40)
Others	1	(2.1)	4	(2.7)	1.2	(0.12 -11.42)
Education status						
Primary	12	(25.0)	53	(54.8)	1.0	
Secondary	34	(70.8)	88	(60.3)	1.9	(0.89-4.05)
Tertiary	2	(4.2)	5	(3.4)	2.0	(0.34-11.45)
Marital status						
Divorced/ Widowed	90	(68.7)	114	(70.4)	1.0	
Married	3	(2.3)	6	(3.7)	0.4	(0.80-1.90)
Single	34	(26.0)	37	(22.8)	1.0	(0.26-4.10)

Evidence of aggression*						
Yes	39	(81.3)	85	(58.2)	3.00	(3.62-66.42)
No	9	(18.7)	61	(41.8)		
Employment status						
Employed	9	(18.8)	22	(15.1)		
Unemployed	39	(81.2)	124	(84.9)		
Age average (years)**	33.1		39.1		t test=0.93 (0.90-0.97)	
Duration of hospital stays(Months)	2.6		2.3		t test =1.02, p=0.31	

(**OR** = Odds Ratio, **CI** = Confidence Interval; *P<0.05, **P<0.01, *** P<0.001)
*P<0.05, **P<0.01, *** P<0.001

It was found that younger and male patients with schizophrenia were associated with substance use. Males were 15 times more likely to have history of any substance misuse as compared to female, Odds ratio=15.52, 95% confidence interval(3.62-66.42), p<0.001. However, there were no significant difference associations in between this 2 group in term of marital status, education level and employment. However, higher proportion of patient involved in substance use clearly seen in single or separated/divorcee.

We conducted multiple logistic regressions on every significant variable listed and found the significant logistic regression for each variable as shows in table 2.

Table 2: Multiple logistic regressions for significant independent variables from Table 1

Variables	Adjusted Odds Ratio	95% Confidence interval(CI)	Probability
Gender Male vs. female	13.76	3.119-59.084	P<0.001***
Age [group(years)] Younger vs. Elder group	0.941	0.91-0.98	P=0.002**
Evidence of aggression Substance use vs. no substance use	2.54	1.07-5.99	P=0.034*

*P<0.05, **P<0.01, *** P<0.001

In term of aggression, subjects with substance misuse were 3 times more likely to present with aggressive behavior, Odds ratio= 3.00, 95% Confidence Interval (93.62-66.42) and *P*=0.002 . Multiple logistic regression also showed significant correlation with history of substance use as shown in Table 2.

There was no significant difference of mean duration of hospitalization between the group with history of substance misuse and the group without substance.

Discussion

Existing research points to a high prevalence of substance abuse among patients with severe mental illness [1] which negatively affects prognosis and outcome. The prevalence of substance use among patients admitted in HBUK was noted to be lower than Epidemiological Catchment Area (ECA) prevalence study (24.7% vs. 47%). We expected an increasing prevalence of substance use after 10 years of ECA report. The most common substance use was cannabis followed by alcohol, opiates, stimulant, ecstacy, solvent and other substances eg. Benzodiazepines. Alcohol was not a major substance abuse as reported by ECA study. It seems that different demographic area have different pattern of substance abuse. The probable explanation for unexpected lower prevalence of substance use in this study include different setting or places eg. inpatient vs. outpatient and methodological issues.

This study is solely based on information gathered from case notes whereby the history taking done by various doctors led to unstandardized data and sometimes under reporting. Those patients without history of substance abuse were consider as non substance group. Exclusion of drug induced psychosis and schizophreniform disorder could also reduce the true prevalence of substance use in patients with schizophrenia as psychiatrists tend to label the two earlier diagnoses in patients first presented with psychosis. Those patients with less prominent psychotic symptoms probably were not brought to hospital and treated in community or even in drug rehabilitation centre. However, if compared to the general population, our prevalence of substance use among patients with schizophrenia were higher (24.7 vs. 6.1%).

There was higher prevalence of substance use in schizophrenic patients as compared to general population. Several theories postulated include "self-medication hypothesis." [9-11]. Based on this idea, one would expect that patients chose specific drugs based on their symptoms-for example, those experiencing high anxiety may preferentially use alcohol and anti-anxiety pills, whereas those who are depressed might choose stimulants like cocaine or methamphetamine. Unfortunately, this premise did not hold up to systematic investigations. In fact, patients with schizophrenia, despite their anxiety and psychosis, have been reported to be more likely to use drugs like psycho stimulants, even though this can exacerbate their psychotic and anxiety symptoms. Thus, it is difficult to explain the higher rates of substance abuse by patients with schizophrenia using only the self-medication hypothesis. Second, they might be trying to relieve uncomfortable antipsychotic-induced side effects. Thirdly, drug use might facilitate entry into drug abusing peer groups, albeit at substantial personal costs. Fourth, as in the general population, high levels of impulsivity and sensation seeking are associated with substance abuse in patients with schizophrenia. Fifth, for many patients, availability seems to be the key

issue. For example, between 1983 and 1986, cannabis was the most popular drug among patients with schizophrenia. However, in 1990, cocaine became the most commonly used illicit drug, a change in pattern that was similar to that seen in the general population [12]. Finally, continued use may simply be due to the reinforcing effects of the addictive substance, which may be just as powerful, or even more so, in individuals with schizophrenia as in the general population.

Demographic characteristic of the schizophrenic patients such as young, male gender, aggressive and impulsive were more likely to be involved with substance abuse. As in the general population, high levels of impulsivity and sensation seeking are associated with substance abuse in patients with schizophrenia. Other demographic data e.g. marital status, education level, race, employment and duration for hospitalization did not show statistical significant correlations.

Clinical implications

There was higher prevalence of substance misuse in schizophrenic patients as compared to general population. Those male schizophrenic patients with history of substance misuse were more likely to have aggression. These group needs special precaution and probably in need of additional approach of treatment.

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