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Comparison between substance-induced psychosis and primary psychosis

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Background
Distinguishing between substance-induced psychosis (SIP) and primary psychosis is crucial for understanding illness and providing optimal treatment. Substance use is widespread and causes concern for many reasons, particularly the psychotogenic properties of many substances.
Aim
The purpose of this study was to differentiate SIP from primary psychosis.
Patients and methods
A cross-sectional comparative study on 100 patients of both genders who were divided into two groups: group I included those with SIP and group II included those with primary psychosis; 18–65 years old was collected from the Neuropsychiatry Department, Tanta University and from the Centre of Psychiatry, Neurology and Neurosurgery. The study was conducted from July 2016 to July 2017. Psychosis was assessed by positive and negative syndrome scale. Arabic version of the addiction severity index was used to assess the severity of addiction and drug screen of urine once the patient was admitted.
Results
There was a significantly older age among group II (primary psychosis) with a mean age of 34.540±10.017. There were more men in group I, all patients were men in group I. Group II shows significantly more unemployed patients (45 patients, 90%). Unmarried patients were significantly more among group II. There were more patients with a family history of addiction among group I (35 patients, 70%) and more patients with a family history of psychiatric disorders among group II (30 patients, 60%). The number of patients presented with visual hallucination was higher among group I (33 patients, 66%). The number of patients presented by negative symptoms in group II was higher (42 patients, 84%). The total score of positive and negative syndrome scale was higher among group II.
Conclusion
There is a great difference between SIP and primary psychosis.

Keywords:
addiction severity index, positive and negative syndrome scale, psychosis

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Introduction

Both the American psychiatric association (APA) [1] and the WHO [2] define psychosis narrowly by requiring the presence of hallucinations (without insight into their pathologic nature), delusions, or both hallucinations without insight and delusions.

Differentiating between substance-induced psychosis (SIP) and primary psychosis is crucial for understanding illness and providing optimal treatment. Substance use is widespread and causes concern for many reasons, particularly the psychotogenic properties of many substances [3].

Substance misuse is a well-recognized comorbidity in schizophrenia, and rates of substance use are significantly higher in psychiatric patients than in the general population [4].

Studies comparing substance users to nonsubstance users in psychosis have shown that persistent misuse in the early course of illness is linked to higher readmission rates and more severe psychopathology [5].

Substance use cessation has been associated with reduced negative symptoms in first-episode patients, highlighting the need for more research with regard to accurate diagnosis and treatment. SIP patients are more likely to be homeless, have antisocial personality disorder, poor family support, positive family history of mental illness, more insight, more traumas as well as forensic history, and more hallucinations [6].

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Several substances are linked to the development of psychosis and schizophrenia and diagnoses of SIP have been included in the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) and DSM-IV. The relationship between drug use and schizophrenia is probably complex, but meta-analysis of prospective population-based studies have estimated a doubling of risk of psychosis for cannabis, even after controlling for confounders such as reverse causation or intoxication effects. In amphetamine users, rates of psychotic symptoms range from 5.2 to 100%, with this variation attributed to the differences in sampling, methodology, and extent of use [7].

Determining the correct diagnosis can be challenging in early-phase psychosis and is further complicated by substance misuse. SIP in DSM-IV is defined as a condition in which psychotic symptoms are caused by psychoactive substances and resolve within a set time period. To fulfill the diagnosis, SIP must be more severe than expected from intoxication or abstinence and warrant the need for healthcare. The ICD-10 SIP diagnosis requires partial resolution of symptoms within 1 month and full resolution within 6 months, whereas the DSM-IV demands symptom remission within 1 month [8].

Aim

The aim was to differentiate SIP from primary psychosis.

Patients and methods

All participants' related data were kept confidential. All these ethical procedures were reviewed, approved, and monitored by the Faculty of Medicine Tanta University Research Ethics Committee.

This study was carried out at Neuropsychiatry Department, Tanta University and at Centre of Psychiatry, Neurology and Neurosurgery. The study was conducted from July 2016 through July 2017.

A cross-sectional comparative study on 100 patients of both genders, divided into two groups, group I included those with SIP and group II included those with primary psychosis. The 18–65 years old was collected from the Neuropsychiatry Department, Tanta University and from the Centre of Psychiatry, Neurology and Neurosurgery. The study was conducted from July 2016 to July 2017. We selected patients who met the DSM 5 diagnostic criteria for acute psychosis. The participants were aged 18–65 years, and both men and women were included in this study. Patients with intellectual disabilities, traumatic brain injuries, epilepsy, dementia and other neurological disorders, general medical condition were included and for group 1 those with a history of schizophrenia or schizophreniform disorder were excluded from the study.

Tools and instruments

(1) Demographic data: name, age, sex, marital state, occupation, residence, and special habits.
(2) Psychosis was diagnosed using The Mini-International Neuropsychiatric Interview [9]. The Arabic version of Mini-International Neuropsychiatric Interview interview was used [10,11]. It is a short structured clinical interview which enables the researchers to make diagnoses of psychiatric disorders according to DSM-IV. The administration time of the interview is ~15 min and was designed for epidemiological studies and multicenter clinical trials (Appendix I).
(3) The Positive and Negative Syndrome Scale (PANSS) was used for the assessment of psychosis. The PANSS is a medical scale used for measuring symptom severity of patients with schizophrenia and was published in 1987 [12]. The scale is a 30-item, seven-point rating instrument. Of the 30 parameters assessed, seven were chosen to constitute a positive scale (score range 7–49), seven a negative scale (7–49), and the remaining 16 a general psychopathology scale (16–112) (Appendix II).
(4) Addiction severity index (ASI) [13]: Arabic version was used [14], only patients who had SIP and their drug screen of urine was positive were assessed by the ASI. The ASI introduced and explained the seven potential problem areas, the seven domains are Medical, Employment/Support Status, Drug and Alcohol Use, Legal, Family/Social, and Psychiatric (Appendix III).
(5) Assessment of socioeconomic status of the studied participants was done using the Fahmy and El-Sherbini scale [15] (Appendix IV).
This scale includes seven domains with a total score of 84.
Socioeconomic level: to be classified into very low, low, middle, and high levels depending on the quartiles of the score calculated. Education and cultural domain (for both husband and wife) (score=30). Occupation domain for both husband and wife (score=10). Family domain (score=10). Family possessions domain (score=12). Home sanitation domain (score=12). Economic domain (score=5). Healthcare domain (score=5).

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(6) Drug screen in urine once the patient was admitted.

Statistical analysis

The following statistical methods were used for the analysis of results of the present study. The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition. Data were checked, entered, and analyzed using the SPSS version 22 for windows (IBM Inc.) for data processing and statistical analysis.

Descriptive statistics

Data were expressed as number and percentage.

The comparison was done using the χ^2-test to find the association between row and column variables.

For all statistical tests done, the threshold of significance was fixed at 5% level (*P* value).

(1) *P* value of greater than 0.05 indicates nonsignificant results.
(2) *P* value of less than 0.05 indicates significant results.

The smaller the *P* value obtained the more significant are the results.

Results

The following results were obtained:

(1) Age: there was a significant difference between the two groups with significantly older age among group II (primary psychosis) (P=0.015) with a mean age of 34.540±10.017.
(2) Gender: there was significant difference between the two groups (P<0.001), with significantly more men in group I; all patients were men in group I (SIP group).
(3) Employment: there was significant difference between the two groups (P<0.001), as group II shows significantly more unemployed patients (45 patients, 90%) (Table 1).
(4) Marital status: there was a significant difference between the two groups (P<0.001), the unmarried patients were significantly more among group II (44 patients) (Table 1).
(5) Family history of addiction: there was significant difference between the two groups (P<0.001); there was significantly more patients with a family history of addiction among group I (35 patients, 70%).
(6) Family history of psychiatric disorders (P=0.001), there was significantly more patients with a family history of psychiatric disorders among group II (30 patients, 60%).
(7) Visual hallucination: there was significant difference between the two groups (P=0.005); the number of patients presented by visual hallucination was higher among group I (33 patients, 66%) (Table 1).
(8) Negative symptoms: there was significant difference between the two groups (P<0.001); the number of patients presented by negative symptoms in group II were 42 (84%) patients.
(9) Total score of positive and negative syndrome scale: there was significant difference between the two groups (P<0.001); the total score was higher among group II (Table 1).

Table 1 Difference between the two groups regarding employment, marital status, visual hallucination, and total score of Positive and Negative Syndrome Scale

	Groups [*n* (%)]		Total [*n* (%)]	χ^2	*P* value
	Group I	Group II			
Employment					
Employed	26 (52.00)	5 (10.00)	31 (31.00)	20.617	<0.001*
Unemployed	24 (48.00)	45 (90.00)	69 (69.00)		
Total	50 (100.00)	50 (100.00)	100 (100.00)		
Marital status					
Single	30 (60.00)	32 (64.00)	62 (62.00)	19.603	<0.001*
Married	20 (40.00)	6 (12.00)	26 (26.00)		
Divorced	0 (0.00)	11 (22.00)	11 (11.00)		
Widower	0 (0.00)	1 (2.00)	1 (1.00)		
Total	50 (100.00)	50 (100.00)	100 (100.00)		
Visual hallucination					
Yes	33 (66.00)	19 (38.00)	52 (52.00)	7.853	0.005*
No	17 (34.00)	31 (62.00)	48 (48.00)		
Total score					
Range	66–102	70–133		*t*=–6.185	<0.001*
Mean±SD	81.240±7.286	96.220±15.500			

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(10) Positive subscale of PANSS: there was significant difference between the two groups ($P<0.001$*), with higher positive subscale score among group II.
(11) Negative subscale of PANSS: there was significant difference between the two groups ($P<0.001$*), with higher negative subscale score among group II.
(12) General psychopathology subscale of PANSS: there was significant difference between the two groups ($P<0.001$*), with higher psychopathology subscale score among group II.

Discussion

This study was carried at the Neuropsychiatry Department, Tanta University and at the Centre of Psychiatry, Neurology, and Neurosurgery.

The study was conducted from July 2016 through July 2017 on 100 psychotic patients; group 1: 50 patients diagnosed as SIP aged 30.540±5.489 and group 2 and 50 patients diagnosed as primary psychosis aged 34.540±10.07.

Regarding age

In our study, SIP patients were younger in age (30.540 ±5.489), but in the primary psychosis group age was 34.540±10.017. This comes in agreement with Okasha *et al.* [16] who found that the mean age of the SIP group was 24.6±5.3 years compared with 27.7±9.2 years in brief psychotic episode group. But Caton *et al.* [17] found that participants in the primary psychotic group were younger, having a median age of 25.0 years compared with 29.0 years for participants in the substance-induced group. This may be due to the younger age groups becoming drug addicts nowadays. Also Mauri *et al.* [18] found that mean ages was 25.60 ±5.65 and 28.39±7.60 years for the primary psychotic group and drug-induced psychosis group, respectively.

Regarding gender difference

There was a higher male number in group 1 (SIP); all patients were men in group 1 but in group 2 (primary psychosis) 38 (88%) patients were men and 12 (24%) patients were women. This comes in agreement with Sim *et al.* [19] who found that nearly three quarters of participants in both groups were men, reflecting the fact that in both groups substance use and substance use disorders are more common among men both in the general population and in the population with severe mental illness; also in our culture in Egypt more men abuse drugs and some of them are referred to hospitals for treatment. Moreover, in our culture there is difficulties for women to be admitted in hospitals.

Regarding marital status

There was a significant difference between the two groups. SIP group had a higher number of married patients than the primary psychosis group. This comes in agreement with Caton *et al.* [17] who found that a greater proportion of those with a diagnosis of SIP had been involved in a marital or conjugal relationship (15.6%) compared with the primary psychosis group (7.0%). This may be due to the impact of primary psychosis on relationships and oddities of behavior.

Regarding employment

There was a significant difference between the two groups, SIP group had a higher number of employed patients than the primary psychosis group. This comes in agreement with Purty [20], who found that patients of first-episode psychosis without substance use disorder were significantly less employed in comparison with patients of first-episode psychosis without substance abuse. This difference might be due to the fact that the substance use disorder group patients presented at an earlier age were more likely to be still pursuing their study. Also, primary psychosis shows more deterioration of career, but Ceynowa [21] found that the two groups did not differ significantly on employment and also Okasha *et al.* [16] found that there was no statistical significant difference between the two groups.

Regarding family history of addiction

There was a significant difference between the two groups. SIP group had more family history of addiction than the primary psychosis group. This comes in agreement with Caton *et al.* [17] who found that the SIP group had a greater proportion of parents with alcohol and other drug problems (40.7 vs. 29.2%) and also our results come in agreement with Okasha *et al.* [16]who found that SIP group had a family history of substance use.

Regarding family history of psychosis

There was a significant difference between the two groups: SIP group had less family history of psychosis than the primary psychosis group. This comes in agreement with Fraser *et al.* [6] who found that individuals with SIP patients were significantly less likely to have a family history of psychosis than those with primary psychosis.

Regarding visual hallucination

There was a significant difference between the two groups: the SIP group had more visual hallucination

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than the primary psychosis group. This comes in agreement with Crebbin *et al.* [22]who found that visual hallucinations have been suggested as a predicting factor for SIP patients.

Regarding negative symptoms

There was a significant difference between the two groups: SIP group had fewer negative symptoms than the primary psychosis group. This comes in agreement with Dragogna *et al.* [23] who found that SIP patients had significantly fewer negative symptoms compared with primary psychosis but Weibell *et al.* [8] found no difference between the two groups.

Regarding total score of PANSS total

There was a significant difference between the two groups: SIP group had a lower total score of PANSS than the primary psychosis group. This comes in agreement with Caton *et al.* [17] who found that compared with SIP the primary psychosis group had significantly higher mean scores on the positive symptom subscale (18.62 vs. 14.30), the negative symptom subscale (14.16 vs. 11.67), and the general psychopathology subscale (33.29 vs. 28.44). On the contrary, Medhus *et al.* [24] compared PANSS scores for those patients who received a diagnosis of schizophrenia and were negatives for amphetamine/methamphetamine in blood and/or urine with scores of patients who were positive for amphetamine/methamphetamine in blood (amphetamine- induced psychosis) and found no differences in PANSS scores between the 2 groups. This may be due to the difference in sample size and methodology.

Regarding the positive subscale score of PANSS

As regards the positive subscale of PANSS, there was a significant difference between the two groups, SIP group had a lower positive subscale score of PANSS than the primary psychosis group. This comes in agreement with Wilson *et al.* [25] who found that individuals with SIP have fewer positive symptoms compared with individuals with primary psychotic disorder. On the contrary, Weibell *et al.* [8] reported that individuals with SIP had significantly more positive symptoms on the PANSS compared with those with primary psychosis.

Regarding negative subscale score of PANSS

As regards negative subscale of PANSS, there was significant difference between the two groups: SIP group had a lower negative subscale of PANSS than the primary psychosis group. This comes in agreement with Wilson *et al.* [25] who found that individuals with SIP have fewer negative symptoms compared with individuals with primary psychotic disorder, but Weibell *et al.* [8] found that there was no significant difference between the two groups according to negative subscale score of PANSS. Also Okasha *et al.* [16] found no significant difference between the two groups and indicated a similar rate of negative symptoms in the SIP group and primary psychosis group.

Regarding general psychopathology subscale of PANSS

As regards general psychopathology subscale of PANSS, there was significant difference between the two groups: SIP group had lower general psychopathology subscale of PANSS than primary psychosis. This comes in agreement with Caton *et al.* [17], who found that compared with SIP the primary psychosis group had significantly higher mean scores on general psychopathology subscale (33.29 vs. 28.44), but Weibell *et al.* [8] found that there was no significant difference between the two groups according to the general psychopathology subscale score of PANSS.

Finally, differentiating the two groups helps us a lot in determining the duration of hospitalization and the prognosis of patients as SIP patients need a short duration of treatment and a good prognosis.

Limitations

The main limitation is the cross-sectional design, which makes the present study unable to determine the change of diagnosis from SIP to primary psychosis that may occur over time.

Conclusion

There is a great difference between SIP and primary psychosis.

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Conflicts of interest

There are no conflicts of interest.

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Appendix 1

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Appendix 2

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Appendix 3

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Appendix 4

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