

The Relationship between Childhood Trauma and Schizophrenia Symptoms Severity at Zagazig University Hospitals

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ABSTRACT

Background: Childhood trauma is an environmental and risk modifying factor for schizophrenia.

Aim of the work: The objective of the present work is to evaluate the incidence of childhood trauma among schizophrenic patients and how this impacts the clinical features of the disorder. **Subjects and Methods:** It is a cross-sectional study conducted from January 2019 to June 2019 at the Psychiatry Department, Zagazig University hospitals where the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) Arabic version was used to verify the diagnosis of randomly chosen 104 schizophrenic patients meeting the inclusion criteria. Positive and Negative Syndrome Scale (PANSS) for the assessment of positive, negative and general psychopathology connected with schizophrenia. Adverse Childhood Experiences International Questionnaire (ACE-IQ) Arabic version to assess adverse childhood experience. The study was approved by the medical ethics committee of Zagazig University Hospitals and a written informed consent is obtained from all patients.

Results: The prevalence of childhood trauma in schizophrenic patients is (85.6 %), (42.3%) of them had ≥ 3 types of trauma. Childhood trauma was associated with low education level and rural residence. There was a statistically significant positive correlation between childhood trauma and positive symptoms of schizophrenia in which (ACE total score ≥ 3 traumas) were associated with severe positive symptoms.

Conclusion: Childhood trauma is prevalent in patients with schizophrenia. Childhood trauma patients are associated with more severe positive symptoms, especially in patients with 3 or more traumas. Patients with childhood trauma were associated with early schizophrenia onset.

Keywords: Childhood trauma, Schizophrenia, Symptom severity.

INTRODUCTION

Schizophrenia is a severe, complex psychiatric disorder characterized by lack of feeling or emotion, lack of initiative and changes in thought, perception, and behavior. Delusions and hallucinations are present in many patients as well as misinterpretation of reality⁽¹⁾. Childhood trauma is one of the environmental risk factors most studied for schizophrenia and is considered a risk-modifying factor⁽²⁾

Recent studies have verified an elevated incidence of adverse childhood experiences (ACE) in schizophrenia patients^(3,4). Further findings suggest relationships between adverse experiences in childhood (ACE) and increased general psychopathology, positive symptoms or cognitive deficits^(5,6)

Previous studies also indicated a relationship between childhood trauma and an earlier age of psychosis⁽⁷⁾, general malfunctioning⁽⁸⁾, and higher number of hospitalizations⁽⁹⁾

SUBJECTS AND METHODS

This study is a cross-sectional study which was conducted from January 2019 to June 2019 at the Psychiatry Department, Zagazig University Hospital.

A total of 104 schizophrenic patients of both sexes (age 18-65) diagnosed by the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) were chosen by simple random sampling from both the hospital ward and the outpatient clinic.

Ethical approval:

The study was approved by the medical ethics committee of Zagazig University Hospitals and a written informed consent is obtained from all patients.

All patients were subjected to the following assessment procedures:

1- Simi-structured psychiatric interview to collect sociodemographic data.

2- Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) Arabic version:

SCID-I was implemented to verify the diagnosis and substance use disorder as a conventional gold semi-structured clinical disorder evaluation tool. SCID-I utilizes conventional sequence of questions to determine whether there are symptoms that make it possible to diagnose according to DSM-IV criteria. The primary uses of SCID are for diagnostic assessment, study and training of mental health professionals. It evaluates 33 of the psychiatric disorders mentioned in the fourth edition of the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV) Disorders⁽¹⁰⁾

The Arabic version of the SCIDI used in this study was converted and validated by prior studies undertaken at the Institute of Psychiatry, Ain Shams University⁽¹¹⁾

3- Positive and Negative Syndrome Scale (PANSS)

The PANSS is a standardized clinical interview assessing the presence and severity of positive and negative symptoms and general psychopathology for schizophrenic people over the past week. Out of the 30 items, 7 are positive symptoms (range of scores 7-49),

7 are negative symptoms (range of scores 7–49), and 16 are symptoms of general psychopathology (range of scores 16-112). The severity of the symptoms for each item is assessed by which the anchoring points in the 7-point scale (1 = absent ; 7 = extreme) best describe the presentation of the symptoms. Higher scores represent higher seriousness in each subscale ^(12,13).

4-Adverse Childhood Experiences International Questionnaire (ACE-IQ) Arabic version:

ACEIQ was intended to assess adverse childhood experiences. It's the scale of a 43-item. The scale was created based on the adverse childhood experience model of the **World Health Organization (2009)**.

The questionnaire consists of seven parts; Section A(0) provided population data such as sex, age, educational level, marital status and employment status in the last 12 months. Section B (1) contained 5 items for data on marriage, which had a yes or no answer format. Section C(2) had five items producing Parents / Guardians relationship data with 5 answer format for the first two items varying from never (1) to always (5) while the last three items had 4 graduated response format varying from never(1) to many times(4). Section D consisted of 16 items listing data on the family setting with yes or no answer format for the first five items and a 4 item format varying from never(1) to multiple(4) for eleven items. Section E(6) consists of 3 items on peer violence with 4 graduated reaction formats for items 1 and 3 and a second item for 7 graduated reaction formats. Section F (7) evaluated witnessing community violence with 3-item and 4-sided reaction formats ranging from never (1) to multiple (4). Section G (8) had four items that provided data on exposure to war / collective violence with four graduated reaction styles from never (1) to multiple (4)⁽¹⁴⁾.

ACEIQ questions on childhood experience have been classified into 13 categories: emotional abuse ; physical abuse ; sexual abuse ; violence against members of the household ; living with substance abusers in the household ; living with mentally ill or suicidal household members; living with incarcerated family members ; one or no parents, parental separation or divorce ; emotional neglect ; physical neglect ; bullying; violence in the society ; collective violence).

Therefore, check the responses of the participant to calculate the ACE score using the binary version. If the participant replied in the affirmative (whether once, a couple of occasions, or many times) then that counts as a yes, so that the answer should be circled and a 1 in the final column. You'll get a response from 0 to 13 once you've finished. This is the individual's ACE(binary) score. The ACE score was then classified into exposures

of 0, 1, 2 & ≥ 3 . The questionnaires were finished by each participant in about 20–30 minutes ⁽¹⁵⁾.

The questionnaire has been converted into Arabic, retranslated into English for cultural adaptability in Kingdom of Saudi Arabia (KSA) ⁽¹⁶⁾.

Statistical analysis

Statistical analysis was calculated using version 25 of the SPSS software ⁽¹⁷⁾. Continuous variables as mean \pm SD or median (range) were provided.

Presentation by frequency and percentages of categorical factors. Tests for Kolmogorov-Smirnov and Levene were used to determine variables distribution features and homogeneity variance. Independent t-test samples is used to identify differences on a constant dependent variable between the means of two independent groups.

Chi-square association test can determine the connection between two categorical factors. For testing correlation between continuous variables, the correlation coefficient (r) of Spearman was used. The statistically significant difference was regarded to be the P value (about ≤ 0.05).

RESULTS

Our sample consisted of 104 patients, the mean age of them was 35.5 ± 9.7 , and most of them were males (79.8%) with secondary educational level (36.5%), single (53.9%), unemployed (75.0%) and about (71.2%) were rural residents (**Table 1**).

The prevalence of childhood trauma (CHT) among them was (85.6 %), (42.3%) of them had ≥ 3 types of trauma. In addition, (21.2%) and (22.1%) had 2 and 1 type of trauma respectively, while (14.4%) of patients had schizophrenia without CHT (**Table 2**).

The most common childhood trauma among study participants is mother and/or household member treated violently(49.1%) followed by emotional neglect (36.5%) and one or no parents, parental separation or divorce (22.1%) (**Table 3**).

There were statistically significant differences between patients with childhood trauma and patients without childhood trauma in education and residence. Childhood trauma was associated with low education level and rural residence (**Table 4**).

There was statistically significant difference between patients with and without childhood trauma in PANSS (positive). Childhood trauma was associated with more positive PANSS (**Table 5**).

There was a statistically significant association between ACE score and positive PANSS. ACE score (≥ 3 traumas) were associated with higher positive PANSS (**Table 6**).

Table (1): Socio-demographic characteristics of the participants

Socio-demographic characteristics	Study participants (n=104)
Age (years): <i>Mean ± SD</i> <i>Range</i>	35.5 ± 9.7 18.0 – 65.0
Gender: <i>Males</i> <i>Females</i>	83 (79.8%) 21 (20.2%)
Marital status: <i>Single</i> <i>Married</i> <i>Divorced</i> <i>Widowed</i>	56 (53.9%) 32 (30.8%) 14 (13.4%) 2 (1.9%)
Education: Illiterate, Read & write Primary education Preparatory education Secondary education High education	8 (7.7%) 8 (7.7%) 21 (20.2%) 38 (36.5%) 29 (27.9%)
Occupation: <i>Working</i> <i>Not working</i>	26 (25.0%) 78 (75.0%)
Residence: <i>Urban</i> <i>Rural</i>	30 (28.8%) 74 (71.2%)

Table (2): Frequency distribution of participants according to total Adverse Childhood Experiences score

Variables	Study participants (n=104)
Schizophrenia without CHT	15 (14.4%)
Schizophrenia with CHT:	89 (85.6%)
ACE total score :1 trauma	23 (22.1%)
ACE total score :2 traumas	22 (21.2%)
ACE total score: ≥3traumas	44 (42.3%)

Table (3): Adverse childhood experiences in study participants

Categories	Study participants (n=104)
Physical abuse	21 (20.2%)
Emotional abuse	20 (19.2%)
Contact sexual abuse	13 (12.5%)
Alcohol and/or drug abuser in the Household	9 (8.7%)
Incarcerated household member	4 (3.8%)
Someone chronically depressed, mentally ill, institutionalized or suicidal	22 (21.2%)
Mother and/or Household member treated violently	51 (49.1%)
One or no parents, parental separation or divorce	23 (22.1%)
Emotional neglect	38 (36.5%)
Physical neglect	17 (16.3%)
Bullying	11 (10.6%)
Community violence	16 (15.4%)
Collective violence	0 (0.0%)
Total: <i>Mean ± SD</i> <i>Median (Range)</i>	2.4 ± 1.7 2 (0 – 6)

Table (4): Comparison between patients with/without childhood trauma in sociodemographic characteristics

Socio-demographic characteristics	Patients without childhood trauma (n=15)	Patients with childhood trauma (n=89)	Test of sig.	P
Age (years): <i>Mean ± SD</i>	36.1 ± 11.5	35.4 ± 9.4	T 0.2	0.8
Gender: <i>Males</i> <i>Females</i>	13 (86.7%) 2 (13.3%)	70 (78.7%) 19 (21.3%)	χ^2 0.5	0.4
Marital status: <i>Single</i> <i>Married</i> <i>Divorced & Widowed</i>	6 (40.0%) 8 (53.3%) 1 (6.7%)	50 (59.3%) 24 (26.9%) 15 (16.8%)	χ^2 1.3	0.8
Education: <i>Illiterate, Read & write</i> <i>Primary & Preparatory education</i> <i>Secondary & High education</i>	0 (0.0%) 1 (6.7%) 14 (93.3%)	8 (9.0%) 28 (31.5%) 53 (59.5%)	χ^2 50.8	<0.001 HS
Occupation: <i>Working</i> <i>Not working</i>	5 (33.3%) 10 (66.7%)	21 (23.6%) 68 (76.4%)	χ^2 0.6	0.4
Residence: <i>Urban</i> <i>Rural</i>	11 (73.3%) 4 (26.7%)	19 (21.4%) 70 (78.6%)	χ^2 16.9	<0.001 HS

Table (5): Comparison between patients with/without childhood trauma in PANSS

Variables	Patients without childhood trauma (n=15)	Patients with childhood trauma (n=89)	Test of sig.	P
PANSS Positive: <i>Mean ± SD</i> <i>Median (Range)</i>	14 ± 5.7 15 (7 – 27)	20 ± 5 20 (9 – 31)	T 2.7	0.04 S
PANSS Negative: <i>Mean ± SD</i> <i>Median (Range)</i>	19.3 ± 8.5 18 (7 – 32)	18.9 ± 6.8 17 (9 – 37)	T 0.2	0.8
PANSS General: <i>Mean ± SD</i> <i>Median (Range)</i>	34.3 ± 9 36 (18 – 49)	33.7 ± 6.9 33 (23 – 59)	T 0.3	0.7

Table (6): Association between ACE score and PANSS in childhood trauma positive patients:

Variables	ACE score			F	P
	1 (n=23)	2 (n=22)	≥ 3 (n=44)		
PANSS Positive: <i>Mean ± SD</i> <i>Median (Range)</i>	15.5 ± 4.8 15(7 – 24)	15 ± 5.1 14.5(7 – 27)	* 17.5 ± 4.8 17 (7 – 31)	2.6	0.04 S
PANSS Negative: <i>Mean ± SD</i> <i>Median (Range)</i>	18 ± 6.4 18(9 – 31)	19.8 ± 8.3 16.5(10 – 37)	19 ± 7.6 17 (12 – 36)	0.5	0.7
PANSS General: <i>Mean ± SD</i> <i>Median (Range)</i>	31.9 ± 5.6 32(23 – 41)	34 ± 7.8 33(24 – 59)	34.4 ± 7.1 34 (23 – 57)	0.5	0.7

* Statistically significant difference

DISCUSSION

In this research, randomly chosen 104 schizophrenic patients were screened for childhood trauma. Socio-demographic and clinical data, adherence to medication and disability were evaluated and compared with patients without childhood trauma to determine the effect of childhood trauma on clinical characteristics and the course of the disease.

As regard the prevalence of childhood trauma in the current study, (85.6 %) of schizophrenic patients had at least 1 type of childhood trauma (CHT), (42.3%) of them had ≥ 3 types of trauma. In addition, (21.2%) and (22.1%) had 2 and 1 type of trauma respectively, while (14.4%) of patients had schizophrenia without CHT.

In line with our study, *Schalinski et al.*⁽³⁾ found that (80.5%) of schizophrenic patients had at least 1 type of childhood trauma (CHT), (48.9%) had ≥ 3 types of trauma. In addition, (13.3 %) and (18.3%) had 2 and 1 type of trauma respectively, while (19.4%) of patients had schizophrenia without CHT.

Also, in agreement with the present study, *Andrianarisoa et al.*⁽¹⁸⁾ who discovered elevated incidence of childhood trauma (82.5 %). The fact that even mild childhood trauma was regarded in the childhood trauma category can explain this elevated incidence.

In contrast, *Baudin et al.*⁽²²⁾ found that (59.63%) of schizophrenic patients had at least one form of childhood trauma (CHT); (23.85%) had 3 or more kinds of trauma. In addition, (18.35 %) and (17.43%) had 2 and 1 type of trauma respectively, while (40.37%) of patients had schizophrenia without CHT.

The frequency of childhood trauma in patients with schizophrenia varied across the studies: 97 %⁽⁴⁾, 94.3%⁽²⁰⁾, 75%⁽⁵⁾, 52%⁽²¹⁾, 47.5%⁽⁷⁾, 46.4 %⁽²²⁾, 30.49 %⁽²⁾.

In the current study, we found that the highest rate of trauma was mother / household member treated violently (49.1%) followed by emotional neglect (36.5%), one or no parents, parental separation or divorce (22.1%) and someone chronically depressed, mentally ill, institutionalized or suicidal (21.2%) among the studied group, which is a new finding and different from previous studies.

In a research in males with schizophrenia using the (ACE) questionnaire, it was discovered that (94 %) recorded at least one childhood adverse event and (63 %) reported 4 or more adverse events while (6 %) did not report CHT. The most common adverse event discovered was mental illness among family members (72.5 per cent), followed in reducing order by parental separation, divorce or death (58.8 per cent), emotional abuse (54.9 per cent) and physical negligence (43.6 per cent). The incidence of sexual abuse and the history of family incarceration were small (19.6 per cent and 29 per cent, respectively)⁽²³⁾.

In their adult research of schizophrenia, *Rosenberg et al.*⁽⁹⁾ discovered that only 14 per cent

reported no childhood adverse events, while 18% reported one incident, 22% reported two incidents and 46% had three or more incidents. Child physical abuse (56%) was the most prevalent type of adverse childhood events, followed by witnessing parental violence (49%), parental separation or divorce (36%), child sexual abuse (34%) and parental mental disease (21%).

Read et al.⁽²⁴⁾ reviewed 51 studies undertaken between 1987 and 2005 that discovered elevated levels of sexual and physical violence among psychotic patients during adolescence: sexual abuse (48% of women and 28% of men) and physical abuse (48% of women and 50% of men) and that results differed from ours.

In contrast to our work, other studies discovered that the most prevalent CHT in schizophrenia is emotional abuse and neglect rather than physical abuse or neglect.; 66.7%⁽²¹⁾, 56.5 %⁽²⁵⁾, 54%⁽⁵⁾, 44%⁽²⁶⁾, 43.9%⁽¹⁸⁾.

The discrepancies may be due to several factors: distinct populations, distinct assessment decades, different scales of child trauma evaluation, memory bias, sample size and distinct nations and cultures. In addition, specific population characteristics could explain high childhood trauma rates as CTQ investigates a wide range of experiences, most of them related to socioeconomic status and educational level.

The high prevalence of childhood trauma in our study (85.6%) can be explained by exploring the presence of more types of child abuse (13 categories) compared to other studies using other questionnaires. Furthermore, schizophrenic population studies differ in many methodological aspects, such as defining abuse or childhood, and the kinds of trauma investigated. Therefore, the studies are not comparable because of these factors⁽²³⁾.

The elevated incidence of domestic violence in Egypt can be explained due to, violent behavior against women is prevalent, particularly in low socioeconomic status and a commonly accepted cultural practice. Moreover, it appears that protection against domestic violence given by law and governmental organizations in Egypt still requires enhancement compared to some other nations.

The rate of reported sexual abuse is much smaller in this research, which is likely owing to cultural taboos and stigma surrounding child sexual abuse⁽²⁵⁾.

As regard sociodemographic data in schizophrenia with/without trauma in the present study, there were highly statistically significant differences between patients with and without childhood trauma in education and residence ($p < 0.001$). Childhood trauma was associated with low education level and rural residence. However, we did not verify significant differences regarding other socio-demographic characteristics such as gender, marital status and occupation between patients with and without childhood trauma.

A research conducted in Turkey discovered that 52.9 percent of patients had primary school education and that the proportion of patients with primary school education was greater in those with a history of mental negligence⁽²³⁾. Also, other studies found that childhood trauma was associated with lower educational and school history difficulties and these findings are like our finding^(7,27).

In contrast, other studies found that there was no important statistical distinction in education among patients with various adverse events^(9,23).

Rajkumar⁽²⁵⁾ discovered that childhood trauma did not vary by location of residence for children (rural or urban) and was not associated with overall years of education, and these results differed from our results.

One possible explanation for our finding is that the socioeconomic status and level of education in rural regions is lower than in towns. As a result, parents are busy making a living and do not have enough time to take care of kids, which increases the opportunity that the kid feels neglected by the parents.

As regard to relation between childhood trauma and schizophrenic symptoms; our study shows that patients with CHT are significantly associated with more positive symptoms than those without CHT. Also, we found that severe childhood trauma (ACE total score ≥ 3 traumas) is associated with more severe positive symptoms. These results are coincided with other studies^(3,5,29,30).

In a research of trauma profile in first episode of schizophrenia in Egyptian adolescents, total cumulative trauma was found to be an important predictor of schizophrenia psychopathology (reflected by PANSS scores)⁽³¹⁾.

Some studies have discovered an important relation between the existence of multiple childhood traumas (≥ 4 traumas) and the development of psychosis particularly auditory hallucinations^(23,32).

A research based on two big community samples (National Comorbidity Survey

[NCS] in the United States, British Psychiatric Morbidity Survey [BPMS] showed a dose response relationship between trauma and psychosis and discovered that 2 or more kinds of trauma considerably enhanced the probability of psychosis⁽³³⁾.

Longden et al.⁽³⁴⁾ discovered an important correlation between childhood trauma not only with positive symptoms but also with negative schizophrenia symptoms. This difference from our study can be explained that they studied effect of different categories of childhood adversities on negative symptoms and this significant correlation is found with physical and emotional abuse only.

CONCLUSION

Our research discovered that schizophrenic patients have an elevated incidence of childhood trauma. Patients with childhood trauma are correlated with more serious

positive symptoms, particularly with 3 or more trauma patients. Patients with childhood trauma were associated with early schizophrenia onset. Our study suggests assessment of CHT and substance abuse in all protocols and guidelines for schizophrenia.

Disclosure of potential conflicts of interest:

No conflicts of interest are reported by the authors.

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