

Effect of childhood trauma on cognitive functions in a sample of Chinese patients with schizophrenia

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Abstract

In this study, we aimed to determine the influence of various types of childhood trauma (CT) on cognitive functions in Chinese patients presented with schizophrenia. One hundred sixty-two patients were assessed with the Childhood Trauma Questionnaire-Short Form (CTQ-SF) and Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). We investigated the correlations between various types of CT, demographic characteristics, and cognitive functions. Significant negative correlations were observed in physical abuse (PA) and sexual abuse (SA) with the language score ($r = -0.190, -0.216$, respectively, $p < 0.05$). Similarly, physical neglect (PN) and the total score of CTQ were negatively correlated with the attention score ($r = -0.17, -0.206$, $p < 0.05$, respectively) as well as the total RBANS score ($r = -0.199, -0.223$, respectively $P < 0.05$). PN was also negatively correlated with delayed memory ($r = -0.167$, $p < 0.05$). Regressions analysis indicated significant negative correlations between PN and attention, as well as the cognitive total score ($p < 0.001$). Furthermore, demographic variables (years of education, family income) and clinical characteristics (type of anti-psychotics, duration of illness and times of recurrence) were correlated with cognitive functions. The current study showed that different types of CT could impact specific cognitive functions in Chinese schizophrenia patients. Therefore, we recommend that trauma-focused mental interventions for schizophrenia patients should be developed and routinely offered to patients.

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1. Introduction

Childhood trauma (CT) is a global health problem that is deeply rooted among different societies and has been shown to have long-term consequences [1,2]. Early CT is associated with increased risks for several psychopathological condi-

tions, including schizophrenia [3]. Although the exact mechanism for this association remains unclear, several studies have shown that exposure to CT could impact cognition in patients with schizophrenia [4]. In a study examining the relationship between neurocognitive functions and sexual abuse (SA) in schizophrenia patients, Lysaker et al. reported that SA is associated with processing speed and working memory [5]. Another report showed an association between CT and learning as well as visual context processing [6]. Also, Shannon et al. indicated that CT could affect the episodic narrative and working memory [7]. In addition, a recent British study observed that CT is correlated with worse cognitive performances in schizophrenia [8,9]. Further, their imaging data suggested that childhood abuse was associated with a decreased amygdala volume and the genetic analysis showed that 5-HTTLPR SS carriers with a history of CT had significantly poorer cognitive functions [8].

Conflict of interest: None declared.

Author contribution: CYW and XBL conceived and designed the experiments; XBL, CYW and ANL performed the experiments; XBL, QT and QJB analyzed the results and performed statistical analysis; XBL, JTL and ZMW contributed in acquiring the reagents/materials and data analysis. Finally, XBL, YLT and QJB drafted the manuscript.

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Taken together, these findings indicate that exposure to CT is usually associated with adverse effects on cognitive functions, in particular, working memory, information processing speed, visual–perceptual organization, episodic narrative memory, executive function, and verbal abilities [7]. However, results obtained from previous studies were inconsistent, relied on small numbers of patients and some studies also relied on non-standardized measures to assess trauma [5,10].

In China, existing CT laws are rather immature compared with those of western cultures [11]. There is a famous proverb in China, “no beating, no success”. This suggests that physical abuse (PA) may be viewed as a necessary behavior even by children [12]. Therefore, the impact of CT on cognitive function may vary between China and western countries due to cultural differences. However, the association between CT and cognitive function among Chinese schizophrenia patients was investigated by one study and the authors failed to find any significant association [10].

Therefore, in light of the existing literature and the limitations of previous studies, in this study we included 162 Chinese patients with schizophrenia. Further, we used standardized and validated instruments to assess the history of CT and cognitive function in order to evaluate the effect of different types of CT on a variety of cognitive functions in Chinese patients with schizophrenia.

2. Methods

2.1. Subjects

All participants enrolled in this study were in-patients or outpatients from Beijing Anding Hospital and Beijing Daxing Psychiatric Hospital in Beijing, China. The inclusion criteria for patients enrolled in this study included: (1) meeting the diagnosis of schizophrenia based on the criteria of the Structured Clinical Interview for DSM-IV (SCID), [13] (2) in a stable clinical condition, (3) age between 16 and 65 years, and (4) ability to sign the consent form, (5) IQ above 80 by Wechsler Adult Intelligence Scale (CWAIS) [14]. Patients were excluded if they had unstable medical conditions.

The protocol of this study was reviewed and approved by the ethics committees of the two hospitals. A total of 180 eligible patients were initially enrolled, and each patient signed an informed written consent form. However, 18 patients (10%) dropped out from the study.

2.2. Demographic features

In this study, we used self-designed demographic and personal data forms to collect the basic information from the enrolled patients (Table 1).

2.3. Childhood trauma questionnaire – Short form (CTQ-SF)

The CTQ-SF is a 28-item personal-reporting retrospective survey intended to measure CT of children 12 years and older [15]. The CTQ-SF contains five subdivisions: emotional abuse (EA), PA and SA, emotional neglect (EN) and physical neglect (PN). Each subdivision consisted of five items [16]. The Chinese version of CTQ-SF demonstrated good validity and reliability [17,18]. In the current study, to capture cases with even the lowest severity of childhood trauma, cut-off scores for low-to-moderate exposure were used to classify study participants according to specific trauma categories. The CTQ-SF cut-off scores were as follows: PA \geq 8, SA \geq 6, EA \geq 9, PN \geq 8, and EN \geq 10. The reported sensitivity and specificity for these cut-off scores reached 89% and 97%, respectively [19].

Table 1
Demographics and clinical feature of patients (n = 162).

Variables	n (%) or (mean \pm SE)
Age, years	37.82 \pm 10.16
Sex	
Male: Female	58(35.80): 104(64.20)
Education	
Year of education	11.40 \pm 2.99
Elementary school	3(1.9)
Middle/High school graduate	104(64.2)
College graduate	52(32.1)
Childhood living environment	
Urban: Rural	54(33.33): 108(66.67)
Family structure	
Single child family: Multiple children family	45(24.7): 137(75.3)
Annual per capital income (US dollars, per month)	
<100	12(7.4%)
100–200	20(12.3%)
200–400	81(50.0%)
400–700	28(17.3%)
>700	17(10.5%)
Clinical feature	
Duration of illness (months)	163.12 \pm 123.10
Times of recurrence	3.63 \pm 2.76
Previous admissions	3.00 \pm 2.84
Family history of mental illness	16(9.9%)
PANSS	55.76 \pm 22.87
Atypical: typical (antipsychotics)	55(34.0): 94(66)
The prevalence of childhood trauma	
Emotional abuse	41(26.5%)
Physical abuse	35(21.2%)
Sexual abuse	59(35.8%)
Emotional neglect	92(55.8%)
Physical neglect	109(66.5%)
The score of RBANS	
Immediate memory	70.21 \pm 62.31
Visuospatial construction	79.16 \pm 48.91
Language	80.85 \pm 14.56
Attention	93.03 \pm 15.63
Delayed memory	69.86 \pm 18.34
Total score	71.80 \pm 21.89

In some cases, the total number may not be 162 due to the patients' reluctance, PANSS: positive and negative symptom scale.

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