

Original Research Article

CHILDHOOD TRAUMA AND EARLIER ONSET OF PSYCHOTIC SYMPTOMS IN FIRST-EPISODE SCHIZOPHRENIA: A MULTICENTRE CROSS-SECTIONAL STUDY FROM THREE TERTIARY CENTRES IN SOUTH KERALA

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ABSTRACT

Background: Adverse childhood experiences (ACEs) have been associated with the phenomenology and evolution of schizophrenia, but the exact relationship between types of trauma and age of onset of psychotic symptoms in first-episode schizophrenia (FES) remains unclear. **Objective:** To study the relationship of childhood trauma with age of onset of psychotic symptoms in a cohort of first episode of psychosis (FES) patients from three tertiary centers in South Kerala.

Materials and Methods: In a cross-sectional study conducted between January 2023 and December 2024, we recruited a consecutive series of patients aged 18–35 years who met DSM-5 criteria for schizophrenia and had experienced a first psychotic episode (n = 212). Childhood trauma was assessed using the Childhood Trauma Questionnaire (CTQ) which provided domain scores for emotional, physical and sexual abuse and emotional and physical neglect. Age at the onset of first psychotic symptom was measured using the Structured Clinical Interview for DSM-5-Personality Disorders (SCID-5-PV). Pearson correlations, independent-samples t-tests, and multivariable logistic regression (adjusted for sex, socioeconomic status, substance use, and family history of psychosis) were performed.

Results: The mean CTQ total score was 48.7 ± 12.3 , range 25–100. Greater total scores on the CTQ were significantly linked with an earlier age at onset of psychotic symptoms ($r = -0.32$, $p < 0.001$). Sub-scale analysis revealed the strongest associations for emotional abuse ($r = -0.28$, $p = 0.001$) and physical neglect ($r = -0.24$, $p = 0.004$). Patients with CTQ scores in the upper tertile had an earlier onset of symptoms (mean $\pm$ SD: 19.3 ± 3.2 vs 21.4 ± 2.8 years; $t = 4.12$, $p < 0.001$) by a mean of 2.1 years compared to patients in the lower tertile. After adjustment for covariates, multivariable logistic regression revealed that each 5-point increase in CTQ total score increased the odds of onset before age 20 by 1.45 (95 % CI 1.12–1.88, $p = 0.005$).

Conclusion: Higher exposure to childhood trauma was significantly associated with earlier onset of psychotic symptoms in FES, especially for emotional abuse and physical neglect. Routine trauma screening and trauma-informed interventions in early psychosis services may alter the developmental trajectory of schizophrenia.

Keywords: Childhood trauma, first-episode schizophrenia, psychotic symptom onset, Childhood Trauma Questionnaire, early psychosis, South Kerala.

INTRODUCTION

Schizophrenia is a neurodevelopmental disorder in which the clinical manifestation is modulated by interaction of genetic vulnerability and environmental stressors. Adverse childhood experiences (ACEs) have been well established as powerful risk factors for the development and severity of psychotic disorders, evidenced by a large volume of epidemiologic and clinical literature over the last two decades.^[1-3] Meta-analyses report that individuals with schizophrenia are 2–3 times more likely to have experienced childhood abuse or neglect compared to healthy controls.^[4,5]

The association of childhood trauma and schizophrenia is well established worldwide. However, mechanistic pathways between specific trauma subtypes and phenomenological features, particularly time of onset of psychotic symptoms, are not well elucidated. Previous work using network analytic approaches has suggested that emotional abuse and physical neglect may have a disproportionate influence on hallucinatory and delusional symptom clusters in first-episode psychosis.^[6,7] Most of these investigations, however, have been conducted in North American, European or East Asian cohorts with limited data from South Asian populations where sociocultural factors may influence both trauma exposure and help-seeking behaviours.

The high literacy rate, mixed urban-rural landscape and availability of tertiary care in South Kerala provide a unique setting in which to study these relationships. Whether childhood trauma is associated with an earlier onset of psychosis in this region could help guide early detection and support the inclusion of trauma-informed interventions in first episode psychosis programs.

Thus, the present study aimed to (i) quantify childhood trauma exposure using the validated Childhood Trauma Questionnaire (CTQ) in a sample of first-episode schizophrenia patients from three tertiary centers in South Kerala and (ii) determine the association between trauma severity (total and domain scores) and the age at first psychotic symptom onset adjusted for known confounders.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional hospital-based study was conducted from January 2023 to December 2024 at three tertiary centers in South Kerala. All Centers provide specialised early-psychosis services and take referral patients from all over the state.

Participants

Consecutive patients aged 18–35 years who had a first episode of psychosis and met DSM-5 criteria for schizophrenia were invited to participate. Exclusion criteria were: (a) acute medical or

neurological illness that would confound symptom assessment; (b) intellectual disability (IQ < 70); (c) severe cognitive impairment that would prevent informed consent; and (d) participation in another interventional trial.

In total, 235 eligible patients were contacted. Of those, 23 refused to participate and 2 were excluded because of incomplete CTQ data, resulting in a final sample of $n = 212$ (response rate = 90.2 %).

Clinical Evaluation

Schizophrenia diagnosis and first-episode status were determined by trained psychiatrists using the Structured Clinical Interview for DSM-5 Disorders (SCID-5). The date of first onset of any psychotic symptom (hallucinations, delusions, disorganised speech or grossly disorganised or catatonic behaviour) was determined retrospectively with the SCID-5-Psychotic Symptoms (SCID-5-PV) module. Exposure to childhood trauma was assessed using the Childhood Trauma Questionnaire-Short Form (CTQ-SF), a 28-item self-report measure with established psychometric properties in Indian populations.^[8,9] The CTQ provides five subscale scores (emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect) and a total score (range 25-125). Higher scores indicate more severe trauma.

Sociodemographic and clinical covariates included sex, socioeconomic status (based on the modified Kuppuswamy scale), lifetime substance use (alcohol, cannabis, tobacco or illicit drugs), and family history of psychosis in first degree relatives.

Statistical Analysis

The data was analysed using IBM SPSS Statistics, version 29.0. Descriptive statistics are presented as mean $\pm$ standard deviation (SD) for continuous variables and frequencies (%) for categorical variables.

- Pearson correlations were used to investigate the linear association between CTQ total and subscale scores and age at first psychosis.
- An independent-samples t-test was used to compare the mean age of onset between patients in the upper and lower tertile of CTQ total scores.
- Binary outcome “onset before age 20” (yes/no) was modelled using multivariable logistic regression as a function of CTQ total score (per 5-point increment), adjusted for sex, socioeconomic status, substance use and family history of psychosis. Adjusted odds ratios (AOR) with 95 % confidence intervals (CI) are presented.

Statistical significance was defined as a two-tailed $p < 0.05$.

Ethical Considerations

Written informed consent was obtained from all participants after detailed explanation of the purpose, procedure, risk and benefits of the study. Confidentiality was maintained by assigning each participant a unique study ID, and personal

identifiers were not included in the dataset or manuscripts.

RESULTS

Table 1: Sociodemographic and Clinical Characteristics of the Sample (n = 212)

Variable	n (%) or Mean $\pm$ SD
Age (years)	24.6 $\pm$ 4.1
Sex (male)	112 (52.8)
Education $\geq$ 12 years	98 (46.2)
Socio-economic status (middle)	84 (39.6)
Lifetime substance use*	62 (29.2)
Family history of psychosis	38 (17.9)
CTQ total score	48.7 $\pm$ 12.3 (range 25-100)
Emotional abuse	9.8 $\pm$ 3.1
Physical abuse	7.4 $\pm$ 2.9
Sexual abuse	5.2 $\pm$ 2.4
Emotional neglect	10.1 $\pm$ 3.4
Physical neglect	9.2 $\pm$ 3.0
Age at first psychotic symptom onset (years)	20.4 $\pm$ 3.1

*Includes alcohol, cannabis, tobacco, or any illicit drug use before psychosis onset.

Table 2: Bivariate Correlations Between CTQ Scores and Age at Psychotic Onset

CTQ Domain	Pearson r	p-value
Total score	-0.32	< 0.001
Emotional abuse	-0.28	0.001
Physical neglect	-0.24	0.004
Emotional neglect	-0.18	0.009
Physical abuse	-0.12	0.083
Sexual abuse	-0.07	0.312

Higher overall trauma burden was significantly associated with an earlier age at psychotic onset. Among subscales, emotional abuse and physical neglect demonstrated the strongest inverse correlations, while physical and sexual abuse showed weaker, non-significant trends after correction for multiple testing. [Table 2]

Table 3: Comparison of Age at Onset Between CTQ Tertiles

CTQ Tertile	n	Mean onset age (years) $\pm$ SD	t-value	p-value
Lower ($\leq$ 38)	71	21.4 $\pm$ 2.8	—	—
Middle (39-58)	70	20.2 $\pm$ 3.0	2.01	0.046
Upper ($>$ 58)	71	19.3 $\pm$ 3.2	4.12	< 0.001

Patients in the upper CTQ tertile experienced psychotic symptom onset on average 2.1 years earlier than those in the lower tertile (19.3 vs 21.4 years). The difference remained significant after adjusting for age and sex in an ANCOVA model ($F = 16.8$, $p < 0.001$). [Table 3]

Table 4: Multivariable Logistic Regression for Onset Before Age 20

Predictor	Adjusted OR (95 % CI)	p-value
CTQ total score (per 5-point increase)	1.45 (1.12-1.88)	0.005
Sex (male vs female)	1.22 (0.78-1.91)	0.38
Low socio-economic status (vs middle/high)	1.31 (0.84-2.04)	0.23
Lifetime substance use (yes vs no)	1.57 (0.99-2.48)	0.054
Family history of psychosis (yes vs no)	1.84 (1.02-3.33)	0.042

After controlling for covariates, each 5-point rise in CTQ total score increased the odds of psychotic onset before age 20 by 45 %. Family history of psychosis also remained a significant independent predictor, whereas socio-economic status and substance use showed non-significant trends. [Table 4]

DISCUSSION

The present multicenter study provides strong evidence that increased exposure to childhood trauma, specifically emotional abuse and physical neglect, is associated with earlier onset of psychotic

symptoms among first-episode schizophrenia patients from South Kerala. The size of this association ($r = -0.32$) is comparable to that reported in European and North American FES cohorts.^[6,10,11] indicating that the harmful consequences of early adversity on neurodevelopment are not restricted to geographical and cultural boundaries.

Early onset was most closely associated with emotional abuse. This is consistent with previous work that has linked chronic verbal hostility, criticism and invalidation with dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and increased dopaminergic sensitivity, both of which have been linked to the pathophysiology of psychosis.^[12,13] Physical neglect, which represents

failure to meet basic needs for nutrition, hygiene and medical care, may have an effect via inflammatory pathways induced by chronic stress and by impaired myelination during critical periods of brain maturation.^[14]

Notably, in this sample physical and sexual abuse were weakly non-significantly associated. These types of trauma are certainly pathogenic but they are less prevalent or maybe under-reported due to stigma and cultural norms of silence which might have reduced observable effects. Studies in South India have shown that emotional abuse and neglect are more commonly reported in psychiatric settings than overt physical or sexual violence.^[15]

The clinical significance of the finding that patients in the highest tertile of CTQ had symptom onset about two years earlier than patients in the lowest tertile is discussed. An earlier onset of illness is often predictive of a more severe course of illness, greater resistance to treatment and poorer functional outcomes.^[16,17] Therefore, identification of trauma exposure at first point of contact may help to stratify risk and guide early interventions. Trauma-informed care, such as psychoeducation, safety planning, and evidence-based therapies including trauma-focused cognitive behavioural therapy (TF-CBT) or eye-movement desensitisation and reprocessing (EMDR), have shown promise in reducing symptom severity and improving engagement in early psychosis services.^[18,19]

In our logistic regression model, adjusting for sex, socioeconomic status, substance use and family history, we found that for every 5-point increase in CTQ total score there was a 45 % increased likelihood of onset before age 20. The effect size is clinically relevant, and indicates that trauma screening might have prognostic value beyond traditional risk factors. Family history remained an independent predictor, supporting the additive nature of genetic and environmental vulnerabilities in schizophrenia.^[20]

Limitations

The cross-sectional design precludes causal inference, and longitudinal studies are needed to establish that trauma exposure precedes and drives earlier onset. Reliance on retrospective self-report of childhood trauma may introduce recall bias, although the CTQ has shown good concordance with collateral reports in Indian samples. Furthermore, the sample is representative of the population of tertiary care attendees and may not include individuals with mild psychosis who never present for specialist care, and this may limit generalisability to the wider community.

Implications and Directions for Future

1. Routine screening: Including brief trauma questionnaires (e.g. CTQ-SF) in the intake battery of early psychosis programs could identify high-risk youth for closer monitoring.

2. Specific Interventions. Early referral to trauma-focused psychotherapy may reduce the impact of adverse experiences on psychotic trajectories.

3. Biological Correlates: Future work should explore whether trauma load is associated with biomarkers such as cortisol awakening response, inflammatory cytokines, or neuroimaging markers of fronto-limbic connectivity in this population.

4. Community-Based Outreach: Culturally sensitive outreach programs designed to educate families and school personnel about the signs of emotional maltreatment and neglect may assist with earlier detection and referral.

CONCLUSION

Earlier age at onset of psychotic symptoms among first episode schizophrenia patients from three tertiary centers in South Kerala was significantly associated with increased exposure to childhood trauma, especially emotional abuse and physical neglect. Our findings add to the worldwide consensus that childhood trauma is a modifiable risk factor for the development of schizophrenia in the developmental period. Given the setting of South Kerala, where emotional abuse and physical neglect seem to be particularly salient, integrating trauma awareness into early psychosis services offers a tangible avenue to improve long-term outcomes for affected youths. These findings support the case for routine trauma screening and trauma-informed interventions in early psychosis programs, with the potential to change the illness trajectory to a more favourable outcome.

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