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Psychiatric Comorbidities and Familial Genetics in Children and Adolescents with Dissociative (Conversion) Disorder: A Cross-Sectional Study from Western Rajasthan.

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ABSTRACT

Background:
Dissociative (conversion) disorder (DCD) is a complex psychiatric condition characterized by disruptions in consciousness, identity, memory, or perception. It is commonly seen in children and adolescents in clinical settings, often accompanied by psychiatric comorbidities and influenced by familial psychiatric history. This study aimed to assess psychiatric comorbidities and genetic predispositions among pediatric DCD patients in Western Rajasthan.

Methods:
A cross-sectional study was conducted on 80 children and adolescents (ages 6–18) diagnosed with DCD at a tertiary care hospital in Jodhpur, Rajasthan, from July 2021 to July 2022. Psychiatric comorbidities were assessed using the Kiddie Schedule for Affective Disorders and Schizophrenia – Present and Lifetime Version (K-SADS-PL). Family psychiatric history was evaluated through the Family Interview for Genetic Studies (FIGS). Statistical analyses included chi-square and Spearman correlation tests using SPSS-23.

Results:
The mean age was 14.21 years; 82.5% were female. Most belonged to lower socioeconomic status and nuclear families. Convulsion-type DCD was the most common presentation (48.8%). Psychiatric comorbidities were found in 71.2% of participants, with anxiety disorders (25%) being the most prevalent, followed by somatoform (18.8%) and depressive disorders (17.5%). A positive family history of psychiatric illness was found in 58.8% of patients, most commonly anxiety disorders (10%) and DCD (8.8%). A statistically significant association was found between psychiatric comorbidities and positive family psychiatric history ($\chi^2 = 18.246$, $p < 0.001$).

Conclusions:
DCD in children and adolescents is frequently associated with psychiatric comorbidities and a family history of mental illness, suggesting both environmental and potential genetic contributions. Early identification and integrated family-based interventions are critical to improving outcomes.

Keywords: Dissociative conversion disorder, adolescents, psychiatric comorbidity, family history, genetic predisposition, K-SADS-PL, FIGS

Introduction: The dissociative disorders (DDs) are a disturbance in the organization of identity, memory, perception, or consciousness involving both restricted access of information to consciousness and disruptions of consciousness. DDs are not among the more common psychiatric illnesses, but are not rare. Few good epidemiological studies have been performed. Some estimate the prevalence at only 1 per 10,000 in the population [1], but far higher proportions are reported among psychiatric populations. More recently, there has been a rise in the number of reported cases of dissociation, which may be attributed to greater awareness of the diagnosis among mental health professionals. Other factors that may contribute to the apparent increase includes the availability of more specific diagnostic criteria and the fact that some cases may have been previously misdiagnosed as schizophrenia or borderline personality disorder (BPD). Conversion disorder causes major medical, social, and economic problems both in western and developing countries. However, relatively few studies evaluated outcome and long-term prognosis in children and adolescents. While many conversion symptoms remit spontaneously or with minimal intervention after a few days or weeks, some have a less benign prognosis [2]. A favourable outcome is generally reported in children and adolescents, with clinical

improvement rates varying from 56% to 100% [3-7]. Although variables predicting poor outcome in conversion disorder are not well defined, poly-symptomatic presentation, pseudo seizures, chronicity of the symptoms, comorbid psychiatric or medical disorders, poor capacity to gain insight, severe internal conflict, and serious family dysfunction are accepted as poor prognostic factors while younger age, early diagnosis, close liaison between paediatricians and child psychiatrists, good premorbid adjustment, where onset of symptoms occurs immediately following a stressor, or when a stressor is easily identifiable and removable, prognosis is very good[8]. Conversion disorder may be accompanied by a neurological or psychiatric disorder. Comorbidities significantly affect the prognosis and the treatment of CD symptoms. The most common psychiatric comorbidities for CD are mood disorders, anxiety disorders, dissociative disorders and somatoform disorders. In a study by Bowman et al, depressive disorders were reported to accompany CD at a rate of 88% [9]. Comorbidity rates for depression, anxiety disorders and dissociative disorders with CD were found to be 35.3%, 34.8% and 9.6%, respectively. [10]. Genetic load is the difference between the fitness of the theoretically optimal genotype and the fitness of the observed average genotype in a population. This means that populations with a low genetic load will tend to be healthier, have fitness that is less dispersed, and have offspring that are more likely to survive to reproduction [11]. The typological differences between high dissociates and virtually everyone else would have to lie in a strong genetic predisposition or a fundamentally different early developmental trajectory, or both, that essentially wires their brains differently. A convincing genetic difference remains to be demonstrated [12]. There is limited data suggest that conversion disorder frequently occurs in relatives of individuals with conversion disorder or with any other psychiatric disorder. Symptoms are often modeled from affected family members**.** Thus this study has its own importance.

Material and Methods:

Study Design and Site: This cross sectional study was conducted on children and adolescent patients diagnosed with Dissociative (conversion) disorder at a tertiary health care centre of Western Rajasthan, India seeking treatment as outpatient or admitted as in patient at Psychiatry Department of Mathura Das Mathur Hospital Jodhpur, Rajasthan. The hospital is attached teaching hospital of Dr. S.N. Medical College Jodhpur.

Instruments: A self-designed **semi-structured proforma** was used to gather information regarding sociodemographic variables (age, sex, religion, background, type of family and socioeconomic status) and history of birth complications. **Kiddie-SADS- Lifetime Version** (K-SADS-PL) developed by Kauffman et al. [13] was used to assess comorbidities. The K-SADS-PL is a semi-structured diagnostic interview designed to assess psychopathology in children and adolescents. This evaluation consists of three parts. The first part is an unstructured initial interview. The second component is a diagnostic screening interview that assesses approximately 200 symptoms. If there are positive symptoms present in this section, further scoring is conducted to validate the diagnosis in the fields of affective disorders, psychotic disorders, anxiety disorders, behavioral disorders, drug abuse disorders, and other disorders . A validity and reliability study of the Turkish version of K-SADS-PL was conducted by Bahar G et al. The K-SADS-PL is administered by interviewing the parent(s), the child. The majority of the items in the K-SADS-PL are scored using a 0-3 point rating scale. Scores of 0 indicate no information is available; scores of 1 suggest the symptom is not present; scores of 2 indicate sub threshold levels of symptomatology, and scores of 3 represent threshold criteria. The remaining items are rated on a 0-2 point rating scale on which 0 implies no information; 1 implies the symptom is not present; and 2 implies the symptom is present. When determining whether a symptom meets threshold vs. subthreshold level, it is important to assess the severity, frequency, and duration of the symptom, as well as impairment from the symptom. **Family Instrument for Genetic Studies (FIGS)** was originally developed by Nurnberger et al. [14] We used its ,,, version to detect psychiatric illness in the first degree relatives.[15] It is a guide for gathering diagnostic information about relatives in a pedigree finder study. FIGS has 3 parts: General screening questions, the face sheet, and Symptoms check list. The information about each person on the pedigree is pooled from the interview of all available relatives. The investigator rates the ability of the information provided by each person, based on his own judgement, on a scale of 1-3 i.e. from good to poor. Only first degree relatives were interviewed in the current study.

Study Population: The study population included all the children and adolescent patients diagnosed with Dissociative (conversion) disorder seeking treatment as outpatient or admitted as in patient at Psychiatry Department of Mathura Das Mathur Hospital Jodhpur, Rajasthan who consented to participate and fulfilled inclusion criteria. Children and adolescent patients aged between 6 to 18 years diagnosed as Dissociative (conversion) disorder according to ICD-10 independently by two psychiatrists were included in the study. Those having any comorbid diagnosed medical illness or mental retardation or who were not willing to participate were excluded.

Study Procedure: The study was approved by Institutional Ethics Committee of the Institute. The study sample was 80 participants. The method of sampling was purposive sampling. The study was done from July 2021 to July 2022. Informed consent/assent was taken from the patients or parents using a standard proforma after explaining them about the objectives of the study. Dissociative (conversion) disorder was diagnosed according to ICD-10 independently by two psychiatrists. Subjects were asked about details including various socio-demographic variables and history of birth complications. Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-present and lifetime (K-SADS-PL) was applied to assess psychiatric comorbidities, and Family Instrument for Genetic Studies (FIGS) was applied to assess presence of psychiatric illness in first degree relatives.

Statistical Analysis: Statistical analysis was done using Statistical Packages for Social Sciences, Version 23 [SPSS-23]. Descriptive analysis, independent sample t-test, Chi-square test, Fisher's Exact Test, spearman rho correlation was applied for the analysis.

Results:

Mean age of the sample was 14.21 years (two standard deviation= ±2.846). Table 1 shows sociodemographic variables and history of birth complications in the participants.

Table 1. Sociodemographic variables and history of birth complications (N=80)

S. No.	Variable	Frequency- N, (%)
1.	Age group Children (age <12 years) Adolescents (age ≥12)	 13 (16) 67 (84)
2.	Sex Male Female	 14 (17.5) 66 (82.5)
3.	Religion Hindu Muslim	 44 (55) 36 (45)
4.	Background Rural Urban	 35 (43.8) 45 (56.2)
5.	Type of family Nuclear Joint Extended nuclear	 51 (63.8) 27 (33.8) 2 (2.4)
6.	Socioeconomic status Upper Middle lower	 4 (5) 28 (35) 48 (60)
6.	Reported history of birth complications, if any	14 (17.5)

Table 1 shows that majority of participants were adolescents, female, Hindu by religion, hailing from urban background, living in nuclear families and belonging to lower socioeconomic status. Of all, 17.5% participants had history of birth complications.

Table 2. Presentation of dissociative (conversion) disorder

S. No.	Presentation	Frequency- N, (%)
1.	Convulsion type	39 (48.8)
2.	Motor type	17 (21.3)
3.	Trance and possession	8 (10.0)
4.	Mixed type	13 (16.3)
5.	Unspecified type	3 (3.8)

Table 2 shows that presentation of dissociative (conversion) disorder was convulsion type in majority of cases (48.8%) that was followed by motor type, mixed type, trance and possession type, and unspecified types.

Table 3. Psychiatric comorbidities in patients with dissociative (conversion) disorder (N= 80)

S. No.	Psychiatric comorbidities	Frequency- N, Percentage (%)
1.	Anxiety disorder	20 (25)
2.	Somatoform disorders	15 (18.8)
3.	Depressive disorders	14 (17.5)
4.	Obsessive compulsive disorder	5 (6.3)
5.	Psychosis	3 (3.8)
6.	Absent (Non psychiatric comorbidities)	23 (28.8)

Table 3 shows that 25% cases were having comorbid anxiety disorder which was followed by somatoform disorders, depressive disorders, obsessive compulsive disorder and psychosis. Twenty three cases i.e. 28.8% were having no comorbid psychiatric disorder.

Table 4. History of psychiatric illness in first degree relatives of patients with dissociative (conversion) disorder

S. No.	History of psychiatric illness in first degree relatives	Frequency- N, Percentage (%)
1.	Depressive disorder	6 (7.5)
2.	Bipolar affective disorder	4 (5)
3.	Psychosis	5 (6.3)
4.	Addiction	5 (6.3)
5.	Personality disorder	2 (2.5)
6.	Anxiety disorder	8 (10)
7.	Somatoform disorder	6 (7.5)
8.	Dissociative (Conversion) disorder	7 (8.8)
9.	Obsessive compulsive disorder	2 (2.5)
10.	Others	2 (2.5)
11.	No family history of psychiatric illness	33 (41.3)

Table shows that 10% first degree relatives of patients with dissociative (conversion) disorder had anxiety disorder followed by dissociative (Conversion) disorder, depressive disorder and somatoform disorder while 33 (41.3%) first degree relatives of the patients had no family history of psychiatric illness.

Table 5. Comparison of family history of psychiatric illness in first degree relatives with psychiatric comorbidities in the patient

Patient type (N=80)		Positive family history of psychiatric illness in first degree relatives (N= 47)	Negative family history of psychiatric illness in first degree relatives (N= 33)	χ^2	df	*P*
Psychiatric comorbidity in the patient	Present	42	15	18.246	1	<0.001*
	Absent	5	18			

* Significant at the 0.01 level (2-tailed).

Table shows that out of 57 patients with psychiatric comorbidity 42 were also having positive history of psychiatric illness in first degree relatives while 15 had negative history of psychiatric illness in first degree relatives, and the Chi-square test showed significant difference among the groups [χ^2-18.246, df-1, p<0.001]

Discussion:

Current cross sectional study was conducted to identify psychiatric comorbidities and family genetics in children and adolescent patients with Dissociative (conversion) disorder at a tertiary care center of Western Rajasthan. In the current study the mean age of the sample was 14.21 years (two standard deviation= ±2.846) and, Study by Maloney et al., showed that age of onset is typically from late childhood to early adulthood. Onset is rare before the age of 10 years [16].One study in Australia by Grattan-Smith et al showed that the disorder is rare before 8 yrs. of age [17] This study also supports these findings. Study by Pehlivantürk B et al., the average age of onset for the conversion symptoms was 12 years (S.D.=2.0, range 8–15.5)[18] also relatable with is study.Majority of participants were adolescents, female, Hindu by religion, hailing from urban background, living in nuclear families and belonging to lower socioeconomic status. In virtually all

studies, an excess of women reported conversion symptoms relative to men (Ljunberg, 1957; Raskin et al., 1966; Stefansson et al., 1976)[19-21] . In part, this may relate to the simple fact that women seek medical evaluation more often than men do, but it is unlikely that this fully accounts for the sex difference. Different studies reported that there is a predilection for lower socioeconomic status and rural populations are overrepresented (Veith, 1965; Weinstein et al., 1969; Lazare, 1981; Folks et al., 1984)[22-25]. In this study dissociative [conversion] disorders were found more commonly in patients from urban background, that does not match with the above mentioned findings. Chandrasekhar *et al*.reported that fewer patients from rural families sought hospitalization when compared to urban families because of the existing joint family structure.[26]In the current study nearly one sixth (17.5%) participants had history of birth complications. So, this study shows that there is increased incidence of dissociative[conversion] disorder in those who had some form of birth complications

In the current study one fourth cases were having comorbid anxiety disorder followed by somatoform disorders, depressive disorders, obsessive compulsive disorder and psychosis. In one study, Dissociative convulsions (63%) were the most common presentation followed by dissociative motor disorder (24%), mixed dissociative disorder (8%), dissociative anesthesia and sensory symptoms (4%) and trance and possession disorder (1%)[27].

In one study of the 72 patients with conversion disorders,21(29%)presented with pseudoseizures, 15 (20.8%) suffered from psychogenic anesthesia and/or sensory loss, and 16 (22%) had movement disorders. The remaining 20 patients (28%) had a combination of at least two conversion disorders (e.g., paralysis and anesthesia)[28].

In the current study twenty three cases i.e. 28.8% were having no comorbid psychiatric disorder. The most common psychiatric comorbidities for CD are mood disorders, anxiety disorders, dissociative disorders and somatoform disorders. In a study by Bowman et al, depressive disorders were reported to accompany CD at a rate of 88% (Bowman & Markand, 1996)[29].

In another study by Kuloglu et al, comorbidity rates for depression, anxiety disorders and dissociative disorders with CD were found to be 35.3%, 34.8% and 9.6%, respectively (Kuloglu, Atmaca, & Tezcan, 2003)[30].

Kaygisiz et al reported that 83.6% of the patients with CD had at least one psychiatric comorbidity and rates for depressive disorders were reported to be between 34.3% and 50% (Kaygisiz & Alkin, 1999)[31].

In the current study 10% first degree relatives of patients with dissociative (conversion) disorder had anxiety disorder followed by dissociative (Conversion) disorder, depressive disorder and somatoform disorder while 33 (41.3%) first degree relatives of the patients had no family history of psychiatric illness.

In the current study out of 57 patients with psychiatric comorbidity 42 were also having positive history of psychiatric illness in first degree relatives while 15 had negative history of psychiatric illness in first degree relatives, and the Chi-square test showed significant difference among the groups [χ^2-18.246, df-1, p<0.001]

Conclusions:

In this study it appears that dissociative [conversion] disorder occured more commonly in adolescent age group compared to children and among the children male were more commonly affected, among adolescents female were more commonly affected and as a whole increased incidence in female compared to male[a ratio of F:M=4.7:1].

There was increased incidence of dissociative [conversion] disorder in those who had some form of birth complications.

In this study findings shows that there was increased incidence of dissociative[conversion] disorder in nuclear family,in middle and lower socio economic ststus, in patients from urban background.In this study,among most common presentation was convulsion type, followed by motor type, mixed type, trance and possession type and other type in sequence.

Among the cases almost 1/3rd had no comorbid psychiatric illness.Most common co morbidity being anxiety disorder followed by somatoform disorder,depressive disorder,OCD,psychosis respectively.

Among the cases approx 40% had no family history in their first degree relatives,most common family history being anxiety disorder followed by D[C]D, somatoform, depressive disorder, addiction, psychosis, BPAD, OCD, personality disorder, other mental disorder respectively.

From this study it also appears that there is strong relation between presence of comorbidity and family history of psychiatric illness in first degree relatives.

Implications of the Study:

This study emphasizes the importance of early screening for psychiatric comorbidities and family psychiatric history in children and adolescents with Dissociative (Conversion) Disorder. It highlights the need for integrated, family-based interventions, especially targeting adolescents and females from lower socioeconomic and urban backgrounds. Awareness and training for healthcare providers are crucial for improving diagnosis and treatment outcomes in this population.morbidity in adolescent compared to the children.

Limitations and future Directions: Small sample size and referral bias which is inherent of hospital based studies and the cross sectional nature of the study. In consecutive sampling the sample population does not representative of the true community picture.

Conflict of interest: No conflict of interest declared.

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