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Association Between Psychiatric Disorders and Age of Onset: A Pilot Cross-Sectional Study of 50 Cases

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Abstract: ***Background**: Psychiatric disorders differ in their typical age of onset, but evidence describing onset patterns in small clinical samples from Kerala, India, is limited. This pilot study examined the association between diagnostic group and age of symptom onset and described the interval between symptom onset and first diagnosis. **Methods**: A cross-sectional observational study was conducted using 50 consecutively sampled patient records from psychiatric outpatient and inpatient services at VPSV Ayurveda College, Kottakkal, Kerala. Diagnoses were based on DSM-5 criteria. Data included age at symptom onset, age at first diagnosis, sex, source of onset information, family psychiatric history, comorbidity, and medical or neurological conditions. Descriptive statistics and non-parametric tests were used; inferential analyses were considered exploratory. **Results**: Participants included 30 males and 20 females; mean current age was 35.14 ± 15.36 years. Mean age at symptom onset was 26.02 ± 14.83 years (median 25.5; range 1–72), and 28% reported onset before age 18. Age of onset differed across ten diagnostic groups (Kruskal–Wallis $H = 28.58$, $df = 9$, $p < 0.001$). Median onset was earliest in neurodevelopmental disorders (3.5 years) and latest in neurocognitive disorders (66 years). Median onset-to-diagnosis interval was one year (interquartile range 0–4); 14% waited six years or longer. Earlier onset correlated with a longer interval to diagnosis (Spearman $\rho = -0.350$, $p = 0.013$). No significant sex difference in onset age was observed. **Conclusion**: The findings suggest distinct onset patterns across diagnostic groups in this clinical sample and indicate that some patients experience prolonged diagnostic delays. Larger, multicentre studies are required to confirm these exploratory results.*

Keywords: psychiatric disorders; age of onset; diagnostic delay; pilot study; cross-sectional study

1. Introduction

Age at symptom onset is an important clinical feature of psychiatric disorders because it can shape presentation, recognition, treatment planning, and prognosis. Neurodevelopmental disorders generally emerge during childhood, schizophrenia-spectrum and bipolar disorders often begin in adolescence or early adulthood, mood and anxiety disorders can emerge across adulthood, and neurocognitive disorders such as dementia are more common in later life [1,2].

Large epidemiological studies indicate that many mental disorders begin early in life. The National Comorbidity Survey Replication reported different onset distributions across disorder classes, with anxiety and impulse-control disorders tending to begin earlier than substance-use and mood disorders [3,4]. A worldwide meta-analysis of 192 epidemiological studies also found that onset is concentrated in adolescence and early adulthood, although distributions vary by diagnosis [5].

The onset of symptoms is not necessarily the same as the time of diagnosis or first treatment. Stigma, limited mental-health literacy, differences in symptom recognition, and barriers to care may contribute to delayed treatment contact [6,7]. In India, the National Mental Health Survey documented a substantial burden of mental morbidity and a treatment gap [8]. Local clinical data that jointly record symptom onset and diagnostic timing may help identify patterns relevant to early recognition and service planning.

Most widely cited age-of-onset evidence comes from community surveys or large pooled studies. Smaller clinical samples can complement this evidence by describing the patients who reach specialist services in a particular setting. The present pilot study therefore examined the association between psychiatric diagnostic group and age of symptom onset among 50 cases in psychiatric outpatient and inpatient services at VPSV Ayurveda College, Kottakkal, Kerala, and described the interval between symptom onset and first diagnosis.

2. Materials and Methods

2.1 Study design and setting

A quantitative, observational, pilot cross-sectional study was conducted using patient records from psychiatric outpatient and inpatient services at VPSV Ayurveda College, Kottakkal, Kerala, India. The records covered assessments dated February 2024 to May 2026.

2.2 Participants and sampling

The sample comprised 50 cases selected by consecutive sampling. Patients of any age with a clinician-confirmed psychiatric diagnosis were eligible. The patient or an informant had to be able to provide adequate information in the local language. Records with incomplete information were excluded.

2.3 Data collection and variables

Information was abstracted into a structured, de-identified study-specific data sheet using anonymous study IDs. Case records were used to record the principal diagnosis, age at first diagnosis and treatment, comorbid psychiatric diagnoses, and medical or neurological conditions. Age at first symptoms attributable to the principal diagnosis was obtained from the patient or, where required, an informant and cross-checked against available records. The source of onset information was recorded. Diagnoses were based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [1]. The data sheet was designed for this study and was not a validated psychometric instrument.

2.4 Operational Definitions

Age at symptom onset was defined as age in completed years when symptoms attributable to the principal diagnosis first appeared. The onset-to-diagnosis interval was calculated as age at first professional diagnosis minus age at symptom onset. Early onset was defined as onset before 18 years. For descriptive summaries, onset was classified as childhood (≤12 years), adolescence (13–17 years), young adulthood (18–29 years), adulthood (30–59 years), and late life (≥60 years).

2.5 Statistical Analysis

Frequencies, percentages, means, standard deviations, medians, interquartile ranges, and ranges were used to summarise the data. The Kruskal–Wallis test compared onset age and onset-to-diagnosis interval across diagnostic groups. A chi-square test with a Monte Carlo permutation p-value was used for diagnostic group by onset-category associations because expected cell counts were small. Mann–Whitney U tests, Fisher's exact tests, and Spearman's rank correlation were used for selected comparisons and associations. Statistical significance was set at $p < 0.05$ (two-tailed). No adjustment for multiple comparisons was applied; therefore, inferential results were treated as exploratory. Analysis was conducted using Python with pandas and SciPy.

2.6 Ethical Considerations

The informed consent was obtained from participants or, where appropriate, a parent or legally authorised representative, and that identifying information was excluded from the analysis dataset.

3. Results and Discussion

3.1 Participant and diagnostic profile

The sample included 30 males (60%) and 20 females (40%), with a mean current age of 35.14 ± 15.36 years (range 9–75). Twenty-three distinct principal diagnoses were recorded. The largest diagnostic groups were schizophrenia-spectrum and other psychotic disorders (12/50, 24%), bipolar disorder (8/50, 16%), and depressive disorders (8/50, 16%). A family history of psychiatric illness was recorded in 31 participants (62%); 12 (24%) had another psychiatric diagnosis, and 13 (26%) had a medical or neurological condition.

Characteristic	n (%) or summary
Male	30 (60%)
Female	20 (40%)
Schizophrenia-spectrum/other psychotic disorders	12 (24%)
Bipolar disorder	8 (16%)
Depressive disorders	8 (16%)
Family history of psychiatric illness	31 (62%)
Comorbid psychiatric diagnosis	12 (24%)
Medical/neurological condition	13 (26%)

3.2 Overall age of onset

Mean age at symptom onset was 26.02 ± 14.83 years; the median was 25.5 years (range 1–72). Fourteen participants (28%) experienced onset before age 18. Young adulthood (18–29 years) was the most common onset category (23/50, 46%), followed by adulthood (30–59 years; 10/50, 20%), adolescence (13–17 years; 9/50, 18%), childhood (≤12 years; 5/50, 10%), and late life (≥60 years; 3/50, 6%).

Age-at-onset category	n (%)
Childhood (≤12 years)	5 (10%)
Adolescence (13–17 years)	9 (18%)
Young adulthood (18–29 years)	23 (46%)
Adulthood (30–59 years)	10 (20%)
Late life (≥60 years)	3 (6%)

3.3 Age of onset by diagnostic group

Age of onset differed across the ten diagnostic groups (Kruskal–Wallis $H = 28.58$, $df = 9$, $p < 0.001$; $\varepsilon^2 = 0.49$). Median onset was 3.5 years for neurodevelopmental disorders, 14 years for obsessive-compulsive disorder and personality/conduct disorders, 17.5 years for substance-related disorders, 20.5 years for bipolar disorder, 21 years for schizophrenia-spectrum and other psychotic disorders, 27 years for depressive disorders, 28 years for somatic symptom and related disorders, 40 years for generalized anxiety disorder, and 66 years for neurocognitive disorders. The association between diagnostic group and onset category was also statistically significant (permutation $\chi^2 = 102.69$, $df = 36$, $p < 0.001$; Cramér's $V = 0.72$).

These patterns broadly reflect established descriptions of age-related differences across psychiatric diagnoses [2–5]. However, the smallest diagnostic groups contained only two to four participants, and age of onset is partly embedded in the definitions of some diagnostic categories. The apparent group differences should therefore be interpreted cautiously. When analysis was restricted to the three largest groups-schizophrenia-spectrum, bipolar, and depressive disorders-the difference was not statistically significant ($H = 2.98$, $p = 0.226$), indicating substantial overlap in onset age within these groups.

Diagnostic group	n	Median age at onset (years)
Neurodevelopmental disorders	2	3.5
Obsessive-compulsive disorder	3	14
Personality/disruptive/conduct disorders	3	14
Substance-related disorders	4	17.5
Bipolar disorder	8	20.5
Schizophrenia-spectrum/other psychotic disorders	12	21
Depressive disorders	8	27
Somatic symptom and related disorders	4	28
Generalized anxiety disorder	3	40
Neurocognitive disorders (dementia)	3	66

3.4 Interval between symptom onset and diagnosis

The median onset-to-diagnosis interval was one year (interquartile range 0–4); the mean was reported as approximately 3.4 years, reflecting a right-skewed distribution. Diagnosis occurred in the same year as symptom onset in 17 participants (34%), within one to two years in 16 (32%), within three to five years in 10 (20%), and after six years or more in seven (14%). The longest recorded interval was 28 years in a participant with alcohol use disorder. The interval differed across diagnostic groups (Kruskal–Wallis $H = 17.50$, $p = 0.041$), with the longest interval observed in the substance-related group (median 9 years; $n = 4$). Because of the small group sizes, this result is tentative.

Earlier onset was associated with a longer interval to diagnosis (Spearman $\rho = -0.350$, $p = 0.013$). This finding may indicate that symptoms beginning in childhood or adolescence can remain unrecognised for extended periods in some cases. However, the retrospective assessment of onset and the small sample limit the precision of this estimate. Delayed recognition is a recognised concern in mental healthcare and can be influenced by stigma, awareness, and access to services [6–8].

3.5 Associations with sex and clinical characteristics

Age of onset did not differ significantly by sex (median 21.5 years in males and 26 years in females; $p = 0.585$). Participants with a family history of psychiatric illness had a lower median onset age than those without such a history (20 versus 28 years; $p = 0.013$), while those with a medical or neurological condition had a higher median onset age (31 versus 20 years; $p = 0.008$). These associations were not adjusted for diagnostic group and may reflect the diagnostic composition of the sample, including later-onset neurocognitive cases. Neither finding should be interpreted as an independent association without confirmation in a larger study. Early onset did not show statistically significant associations with the selected categorical variables in Fisher's exact tests.

3.6 Study implications and limitations

The study illustrates the feasibility of recording symptom onset, the source of onset information, and diagnostic timing in a structured clinical dataset. Clinicians may benefit from documenting age at first symptoms separately from age at first diagnosis and treatment, and from recording whether onset history was provided by the patient or an informant. The findings may inform the design of a larger, adequately powered study.

Important limitations include the single-centre consecutive sample, small overall sample size, sparse numbers in several diagnostic groups, recall bias in reported onset age, cross-sectional design, and absence of correction for multiple testing. Some observed associations may be expected from diagnostic definitions or may be confounded by diagnosis. The results are not representative of the general population and cannot establish causality.

4. Conclusion

In this pilot clinical sample of 50 cases, age of symptom onset differed across diagnostic groups, with the earliest median onset in neurodevelopmental disorders and the latest in neurocognitive disorders. The median interval from symptom onset to diagnosis was one year, but 14% of participants experienced a delay of six years or more. Earlier onset was associated with a longer diagnostic interval. Given the small, single-centre sample and exploratory analyses, these findings should be treated as preliminary. A larger multicentre study using standardised onset assessment and analyses adjusted for diagnostic group is needed to confirm the patterns.

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Conflict of Interest
The authors declare that they have no conflicts of interest

Ethics Approval and Consent to Participate
Informed consent was obtained from participants or legally authorised representatives, as applicable.

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