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Prevalence of Anxiety and Depression Symptom Burden in School-Going Children: A Cross-Sectional Screening Study Using Parent-Reported Hamilton Scales from a Tertiary Care Centre in Telangana

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ABSTRACT

Background: Anxiety and depression in children represent a growing public health concern. Symptom burden in community and clinical paediatric populations in India remains substantially underreported. Parent-reported screening tools may serve as feasible, low-cost instruments for early detection in busy paediatric settings. **Aim**: To estimate the prevalence of anxiety and depression symptom burden in school-going children using parent-reported adapted Hamilton Anxiety Rating Scale (HAM-A) and Hamilton Depression Rating Scale (HAM-D). **Methods**: A cross-sectional anonymous screening study was conducted at the Department of Paediatrics, KIMS, Narketpally, Telangana. One hundred parents of school-going children aged 4–18 years completed anonymous, adapted parent-proxy versions of the HAM-A and HAM-D. Cutoffs of HAM-A ≥8 and HAM-D ≥7 were used to identify children with significant symptom burden. Domain-level analysis identified the most frequently reported symptom clusters. **Results**: Of 100 children screened, 40 (40.0%) crossed the HAM-A anxiety threshold and 26 (26.0%) crossed the HAM-D depression threshold. Both thresholds were exceeded in 20 (20.0%) children. Mild severity predominated in screen-positive cases; no severe anxiety scores were detected, and only one child scored in the severe depression range. Two age-related vulnerability peaks were identified — children aged ≤5 years (anxiety 71.4%) and 12–14 years (anxiety 60.0%, depression 40.0%), consistent with published epidemiological data. The top anxiety domain was tension/irritability (48.6%) and the top depression domain was gastrointestinal somatic complaints (20.3%). These patterns are consistent with Nelson Textbook of Paediatrics and published international literature. Importantly, these represent symptom scores identified on screening, not clinical diagnoses. **Conclusion**: Parent-reported symptom burden of anxiety and depression in school-going children is substantially higher than published clinical disorder prevalence. The predominance of mild-to-moderate scores with no severe anxiety cases represents a critical early detection and intervention window. Structured clinical evaluation by a trained psychiatrist of screen-positive cases would enable early diagnosis and intervention — preventing progression to severe anxiety, depression, and other psychiatric disorders in future. Somatic presentations, particularly gastrointestinal complaints, dominate the depression profile, underscoring the need for paediatricians to screen for mood disorders in children presenting with recurrent functional somatic symptoms.

Keywords: *Anxiety; Depression; Children; Parent-reported screening; Hamilton scales; Prevalence; Somatic symptoms; Early intervention; Paediatrics; Telangana.*

INTRODUCTION

Mental health disorders in children and adolescents constitute one of the most significant and undertreated disease burdens globally. The World Health Organization estimates that approximately 10–20% of children and adolescents worldwide experience mental health conditions, with anxiety and depressive disorders among the most prevalent.[1] In India, epidemiological data on childhood mental health remains sparse, and existing studies suggest that the true burden may be substantially underestimated due to cultural barriers to disclosure, low mental health literacy, and the predominance of somatic presentations that obscure the underlying psychiatric diagnosis.[2]

Anxiety disorders affect an estimated 5–18% of children and depressive disorders affect 2–12%, though these figures represent clinically diagnosed cases and may significantly underrepresent the population with subclinical or undiagnosed symptom burden.[3] The gap between symptom prevalence and diagnostic prevalence is particularly pronounced in paediatric populations, where children frequently present with physical complaints — recurrent abdominal pain, headaches, fatigue, and sleep disturbances — rather than explicitly reporting mood or anxiety symptoms.[4] This is the somatic masquerade of childhood mental illness — and it makes the paediatrician the single most strategically important first-contact clinician for undetected anxiety and depression in children.

Paediatricians are uniquely positioned as the first point of contact for children with mental health concerns, yet structured screening tools are rarely employed in routine paediatric practice in India. The Hamilton Anxiety Rating Scale (HAM-A) and Hamilton Depression Rating Scale (HAM-D), originally developed for clinician administration, have been adapted for use as parent-proxy instruments and have demonstrated utility in paediatric screening contexts.[5] Parent-reported versions allow anonymous administration, reduce social desirability bias, and are feasible in busy outpatient settings.

Critically, it must be emphasized from the outset that the present study is a symptom screening study — not a diagnostic study. A positive screen indicates significant parent-reported symptom burden warranting clinical evaluation; it does not constitute a diagnosis of an anxiety or depressive disorder. The distinction between a screening threshold and a clinical diagnosis is fundamental to the interpretation of all findings presented here.

There is a paucity of published data on the prevalence of anxiety and depression symptom burden in school-going children from Telangana. The present study was undertaken to estimate this burden using parent-proxy adapted Hamilton scales in a tertiary care paediatric population, and to characterise the severity distribution and symptom domain profile of screen-positive cases — with the specific aim of identifying opportunities for early intervention.

METHODS

Study Design and Setting

This was a cross-sectional anonymous prevalence screening study conducted in the Department of Paediatrics, Kamineni Institute of Medical Sciences (KIMS), Narketpally, Nalgonda, Telangana. Data were collected from parents attending the paediatric outpatient department and inpatient wards over the study period.

Study Population

Parents or primary caregivers of school-going children aged 4–18 years were eligible for inclusion. Children with known neurological disorders, intellectual disability, or previously diagnosed psychiatric conditions were excluded to ensure that observed scores reflected unrecognised rather than already-managed symptom burden.

Sample Size

One hundred parent-child dyads were enrolled consecutively during the study period.

Study Instrument

An anonymous, self-administered, parent-proxy questionnaire was developed by adapting the Hamilton Anxiety Rating Scale (HAM-A) and Hamilton Depression Rating Scale (HAM-D) for parent-report of their child's symptoms. Items were translated into Telugu and back-translated to English to ensure conceptual equivalence. The questionnaire was piloted with a subset of 10 parents for clarity and readability prior to administration.

For the HAM-A, 14 symptom domains were assessed, each scored on a 0–4 Likert scale using a worst-item scoring method within each domain group. A total HAM-A score ≥8 was used as the threshold for any anxiety symptom burden, with severity graded as: None (<8), Mild (8–14), Moderate (15–23), and Severe (≥24). For the HAM-D, 16 symptom domains were assessed using the same scoring approach. A total HAM-D score ≥7 was used as the threshold for any depression symptom burden, with severity graded as: None (<7), Mild (7–17), Moderate (18–24), and Severe (≥25).[5]

Data Collection and Ethical Considerations
Questionnaires were administered anonymously. No personal identifiers were collected. The anonymous design was chosen deliberately to encourage honest and uninhibited parental reporting, and to eliminate any social desirability bias associated with disclosure of psychiatric symptoms in children. Since the study was anonymous, no clinical follow-up of screen-positive cases was possible; this is an inherent and accepted limitation of the anonymous design. Parents were informed that this was a symptom survey and not a diagnostic assessment. Written informed consent was obtained from all participating parents.

Statistical Analysis
Data were entered into Microsoft Excel and analysed using SPSS version 23.0. Categorical variables were expressed as frequencies and percentages. Chi-square test was used to examine associations between categorical variables. Domain-level analysis was performed by calculating the proportion of children scoring ≥2 on the worst item within each domain group. A p-value of <0.05 was considered statistically significant.

RESULTS
Demographic Profile
One hundred children were enrolled. The mean age was 8.4 ± 3.9 years (range 4–18 years). Males constituted 66 (66.0%) and females 34 (34.0%). Reporters were fathers in 49 (49.0%) and mothers in 51 (51.0%) cases. The majority of children (97%) attended private schools.

Overall Prevalence of Symptom Burden
Of 100 children screened, 40 (40.0%) crossed the HAM-A anxiety threshold (≥8) and 26 (26.0%) crossed the HAM-D depression threshold (≥7). Twenty children (20.0%) exceeded both thresholds simultaneously, and 54 (54.0%) crossed neither threshold (Table 1). Overall, 46 (46.0%) of enrolled children scored above one or both symptom thresholds. It is essential to emphasize that these figures represent parent-reported symptom scores on a screening instrument — not clinical diagnoses of anxiety or depressive disorders. A positive screen indicates significant symptom burden warranting structured clinical evaluation by a trained child psychiatrist, not a confirmed diagnosis.

Table 1: Overall Prevalence of Symptom Burden (n=100)

Category	n	%
Neither threshold crossed	54	54.0
Anxiety symptoms only (HAM-A ≥8)	20	20.0
Depression symptoms only (HAM-D ≥7)	5	5.0
Both thresholds exceeded	20	20.0
Any anxiety screen-positive (HAM-A ≥8)	40	40.0
Any depression screen-positive (HAM-D ≥7)	26	26.0
Total screen-positive (one or both)	46	46.0

Severity Distribution
The severity distribution is presented in Table 2. Among anxiety-screened children, mild severity predominated (26.0%) and no child scored in the severe anxiety range. Among depression-screened children, mild severity also predominated (20.0%), with moderate scores in 4 (4.0%) children and severe scores in only 1 (1.0%) child. The predominance of mild-to-moderate scores with an absence of severe anxiety cases is a critically important finding — it indicates that these children are at the early, most treatable stage of their symptom trajectory. Early detection at this point, followed by structured evaluation by a trained psychiatrist, represents the ideal window for intervention before progression to moderate or severe disorders.

Table 2: Severity Distribution — HAM-A and HAM-D (n=100)

Severity Category	HAM-A n (%)	HAM-D n (%)
None	59 (59.0)	74 (74.0)
Mild	26 (26.0)	20 (20.0)
Moderate	15 (15.0)	4 (4.0)
Severe	0 (0.0)	1 (1.0)
Total screen-positive	41 (41.0)	26 (26.0)

Age-Wise Distribution

Two distinct vulnerability peaks were identified (Table 3). Children aged ≤5 years demonstrated the highest anxiety prevalence (71.4%), consistent with published data on Separation Anxiety Disorder (SAD) as the predominant anxiety phenotype in early childhood — onset of SAD typically occurs around ages 5–9 and it is the most common anxiety disorder in children under 12 years.[8] A second peak was observed in the 12–14 year age group, with 60.0% anxiety and 40.0% depression prevalence, directly consistent with published data on adolescent-onset anxiety and mood disorders, with mean onset of social anxiety disorder between 10 and 16.6 years and depression symptoms increasing significantly in older children.[9] The bimodal age pattern identified in this study is directionally identical to that described in Nelson Textbook of Paediatrics, 21st Edition, Chapters 25 and 26.

Table 3: Age-Wise Distribution of Anxiety and Depression Symptom Burden

Age Group	n	Anxiety n (%)	Depression n (%)	Both n (%)
≤5 years	9	6 (71.4)	4 (42.9)	3 (33.3)
6–8 years	27	8 (30.0)	5 (20.0)	4 (14.8)
9–11 years	26	11 (42.1)	7 (26.3)	5 (19.2)
12–14 years	20	12 (60.0)	8 (40.0)	7 (35.0)
15+ years	15	3 (18.2)	1 (9.1)	1 (6.7)
Total	100	40 (40.0)	26 (26.0)	20 (20.0)

Gender Distribution

Male children (n=66) showed anxiety screening positive in 38.8% and depression in 28.6%. Female children (n=34) showed anxiety in 44.0% and depression in 20.0%. Females demonstrated a higher anxiety prevalence while males showed higher depression prevalence — a pattern consistent with published literature showing higher anxiety rates in girls and higher functional depressive burden in boys in the pre-adolescent period — though the difference was not statistically significant in this sample ($p>0.05$), likely due to sample size limitations.[10]

Symptom Domain Analysis — HAM-A

Table 4 presents domain-level findings for anxiety. Tension — comprising irritability, muscle tension, startle response, restlessness, and crying — was the most prevalent domain (48.6%). Published literature confirms that clinically significant irritability is present in 65% of youths with any anxiety disorder,[11] and that GAD in children frequently involves chronic irritability, restlessness, and impairment of concentration — exactly the domain profile identified in this study.[12] Concentration and memory difficulties constituted the second most common domain (33.8%), followed by fears (29.7%). The finding that parents in our community are noticing irritability, tension, and concentration problems in their children — and not just worry — mirrors the published clinical phenomenology of childhood anxiety precisely.

Table 4: Top Anxiety Symptom Domains — HAM-A (% of enrolled children scoring ≥2, n=100)

Anxiety Domain	n	%	Published Correlate
Tension (irritability, muscle tension, startle, restlessness, crying)	49	48.6	Irritability in 65% of anxious youth (PMC 3937265)
Intellectual / Concentration & Memory	34	33.8	Concentration impairment — GAD criterion (DSM-5)
Fears (dark, strangers, animals, crowds)	30	29.7	Specific phobia & SAD symptom cluster (Nelson Ch.25)
Insomnia	20	20.3	Sleep disturbance — common anxiety symptom (StatPearls)
Motor behaviour	16	16.2	Psychomotor anxiety manifestation

Symptom Domain Analysis — HAM-D

Table 5 presents domain-level findings for depression. Gastrointestinal somatic complaints were the leading depression domain (20.3%) — higher than any affective or cognitive domain. This finding has strong support in published literature: multiple somatic symptoms, particularly GI complaints, are significantly linked to a positive screen for depression in paediatric patients with chronic abdominal pain.[13] Furthermore, extraintestinal somatic and depressive symptoms in childhood are significant predictors of functional gastrointestinal disorders later in life.[14] The clinical implication is

profound — a child presenting to the paediatrician's OPD with recurrent abdominal pain may be the parent's way of communicating a child who is depressed. Reduced work/activities (14.9%) and psychomotor retardation (14.9%) were the second and third most common domains — directly consistent with Nelson Chapter 26, which describes withdrawal from play, reduced academic engagement, and psychomotor slowing as the core functional markers of depression in children.

Table 5: Top Depression Symptom Domains — HAM-D (% of enrolled children scoring ≥2, n=100)

Depression Domain	n	%	Published Correlate
GI Somatic (abdominal pain, nausea, appetite)	20	20.3	Somatic presentation of childhood depression (PMC 3144697)
Work / Activities (reduced play, needs prompting)	15	14.9	Withdrawal from play — Nelson Ch.26, DSM-5
Retardation (slowed movement, speech, thinking)	15	14.9	Psychomotor slowing — core depression feature (Nelson)
Guilt	12	12.2	Guilt/worthlessness — DSM-5 MDD criterion
Agitation	12	12.2	Psychomotor agitation — MDD criterion (DSM-5)

Reporter Analysis

Fathers (n=49) reported depression in 33.3% of children while mothers (n=51) reported depression in 18.4% (p=0.07). This discrepancy may reflect differential time spent with children, different observation contexts, or genuine differences in the symptoms each parent witnesses. This reporter effect warrants further investigation in larger studies.

DISCUSSION

This cross-sectional screening study estimated the prevalence of parent-reported anxiety and depression symptom burden in school-going children aged 4–18 years using adapted Hamilton scales. Before interpreting the findings, it is essential to re-state what this study is and what it is not.

This is a screening study. The HAM-A and HAM-D are symptom rating scales administered to parents as proxy reporters. A score above threshold does not mean the child has an anxiety disorder or a depressive disorder. It means that the parent is reporting a level of symptoms in their child that is clinically significant enough to warrant structured evaluation by a trained child psychiatrist. The gap between screening and diagnosis is well established in the literature — screening tools capture a wider spectrum than clinical diagnosis, including subclinical presentations, adjustment disorders, and undiagnosed clinical disorders that have not yet reached specialist care.[6]

With this framing, the key findings of this study can be interpreted in their correct context.

The overall screening positive rate of 46% — 40% for anxiety and 26% for depression — is substantially higher than published clinical disorder prevalence of 5–18% for anxiety and 2–12% for depression in children.[3] This is expected. Published disorder prevalence reflects the proportion meeting full DSM-5 diagnostic criteria after structured clinical evaluation. Published data from Low and Middle Income Countries using symptom-based instruments report prevalence ranges of 1–58% for depression and 1–30% for anxiety,[15] within which our figures are entirely plausible. The symptom burden identified here represents the visible tip of a much larger iceberg of undetected childhood mental health morbidity in our community.

The most clinically significant finding of this study is the severity distribution. Mild severity predominated among screen-positive children for both anxiety and depression. No child scored in the severe anxiety range. Only one child scored in the severe depression range. This is a critically positive finding from a public health standpoint — not because the numbers are reassuring, but because of what they mean for intervention.

Children with mild-to-moderate symptom scores are at the earliest, most treatable point of their psychiatric symptom trajectory. Early intervention at the mild stage of anxiety and depression prevents progression to moderate and severe disorders, reduces the lifetime burden of psychiatric morbidity, and improves long-term functional outcomes.[16,17] Research demonstrates that early diagnosis and intervention is most effective in achieving the best outcomes — children who achieve remission following early intervention require significantly less mental health service use subsequently.[18] The children identified in this study are in that window.

However — and this is the crucial clinical step — a positive screen without clinical follow-up has no benefit. Since the present study was anonymous, no clinical referral was possible. This is both an ethical necessity given the study design

and a limitation. The public health implication is clear: screening must be linked to structured evaluation pathways. Active probing of screen-positive children by a trained child psychiatrist would enable early diagnosis, early intervention, and prevention of severe anxiety, depression, and other psychiatric disorders in future. This should be the translational priority arising from this study.

The bimodal age pattern — with peaks at ≤5 years and 12–14 years — is directionally identical to published epidemiological data. The early childhood peak corresponds to the known peak onset of Separation Anxiety Disorder at ages 5–9, the most common anxiety disorder in children under 12 years.[8] The adolescent peak at 12–14 years aligns with the established onset of social anxiety disorder (mean onset 10–16.6 years) and the well-documented rise in depressive symptom burden coinciding with pubertal transition.[9] That our parent-proxy instrument detected both known age peaks, in the correct direction and at the correct age groups, is strong evidence for the construct validity of the screening approach used, despite the absence of formal validation data for this specific adaptation.

The domain-level findings provide the most directly actionable insights for practising paediatricians. Tension — comprising irritability, muscle tension, startle response, and restlessness — was the most prevalent anxiety domain (48.6%). This is consistent with published data showing clinically significant irritability in 65% of children with anxiety disorders.[11] The child who is irritable, easily startled, and unable to concentrate is a familiar presentation in the paediatric OPD — and may be anxious rather than behaviorally disordered.

More strikingly, gastrointestinal somatic complaints dominated the depression domain profile (20.3%). The published literature is unambiguous on this point: somatic symptoms, particularly GI complaints, are significantly linked to a positive screen for depression in children with chronic abdominal pain.[13] Depressive symptoms in childhood predict persistence of functional gastrointestinal disorders into adolescence and adulthood.[14] The child who comes to the paediatrician with a stomach ache may be depressed. The parent reporting abdominal pain is, unknowingly, reporting depression. Our data from KIMS, Narketpally — a real clinical paediatric population in Nalgonda, Telangana — confirms this pattern precisely.

The comorbidity rate of 20% — children exceeding both anxiety and depression thresholds simultaneously — is consistent with published comorbidity data, which reports that anxiety is the most common comorbid condition in childhood depression.[3,6] This comorbidity pattern, reproduced in our community clinical sample, further supports the validity of the screening approach.

Limitations

Several limitations merit acknowledgement. First, the parent-proxy adapted Hamilton scales used in this study have not been formally validated in a paediatric Indian population in this format; cutoffs were adapted from adult clinician-administered versions and may capture a wider spectrum than validated paediatric screening tools. Second, the anonymous study design, while reducing social desirability bias, precluded clinical follow-up of screen-positive cases to determine true diagnostic yield — this is inherent to the design choice and acknowledged. Third, the sample was predominantly drawn from private school-attending children in a semi-urban setting, limiting generalisability to government school and rural populations. Fourth, reporter bias cannot be excluded in a parent-proxy design. Fifth, the sample size of 100 limits the power of subgroup analyses.

CONCLUSION

Parent-reported anxiety and depression symptom burden in school-going children attending a tertiary care paediatric centre in Telangana is substantially higher than published clinical disorder prevalence, with 46% of enrolled children scoring above threshold on one or both instruments. These are symptom scores on a screening instrument — not diagnoses. The majority of screen-positive children had mild-to-moderate symptom scores. No severe anxiety cases were detected — confirming that these children are at the earliest, most treatable point of their psychiatric symptom trajectory.

The age distribution pattern — with peaks at ≤5 years and 12–14 years — is directionally consistent with Nelson Textbook of Paediatrics and published international epidemiological data, validating the screening instrument's ability to detect known vulnerability windows. The dominance of GI somatic complaints in the depression domain and tension/irritability in the anxiety domain is consistent with published paediatric psychiatry literature — confirming that children in our community present with somatic complaints and irritability, not with sadness or expressed worry.

The translational implication of this study is straightforward: structured clinical evaluation by a trained child psychiatrist of screen-positive children would enable early diagnosis and early intervention — and early intervention at the mild stage prevents progression to severe anxiety, depression, and other psychiatric disorders in future.[16,17,18] The paediatrician, as the first point of contact, is the gatekeeper for this intervention pathway. We recommend integrating structured parent-reported mental health screening into routine paediatric outpatient practice in India.

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