

## Prevalence of stress, anxiety, depression, and reported self-esteem among mothers of children with autism spectrum disorder

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### ABSTRACT

**Background:** Mothers of children with autism spectrum disorder (ASD) have an increased risk of depression, anxiety, stress, and diminished self-esteem due to the numerous challenges involved in raising children with socio-behavioural difficulties.

**Objectives:** This study investigated the prevalence of depression, anxiety, stress, and low self-esteem among mothers of children with ASD.

**Materials and methods:** A cross-sectional descriptive study was conducted among 246 mothers of children with ASD. The prevalence of depression, anxiety, and stress was assessed using the Depression, Anxiety and Stress Scale-21 Items, and self-esteem was measured using Rosenberg's Self-Esteem Scale. Demographic data for both mothers and children were collected using a pro forma. Data are summarised as frequencies, means (M), standard deviations (SD), and percentages.

**Results:** The prevalence rates among mothers were as follows: depression, 84.14% (N=207); anxiety, 77.2% (N=190); stress, 74% (N=167); and diminished self-esteem, 67.9% (N=167). Mean severity scores indicated moderate levels of depression (M=17.26, SD=7.7), anxiety (M=12.7, SD=7.7), and stress (M=19.49, SD=8.0), and low self-esteem (M=23.25, SD=9.5).

**Conclusion:** Mothers of children with ASD had high prevalence rates of depression, anxiety, stress, and low self-esteem. These findings highlight the psychological challenges faced by mothers caring for children with ASD. Therapeutic interventions should therefore address the mental health needs of these mothers alongside the rehabilitation of their children.

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### Introduction

Parents of children with autism spectrum disorder (ASD) face numerous challenges, including supporting other family members, meeting the needs of siblings, and caring for the child with ASD. Additional difficulties include accessing appropriate health and childcare services, securing suitable educational opportunities

for their children with ASD, and managing the social impact on the family.<sup>1</sup> Mothers of children with ASD often experience greater challenges than fathers in raising their children, irrespective of the children's maladaptive behaviours, communication deficits, or social skill limitations, and have higher levels of stress, anxiety, and depression than the child's father.<sup>2</sup>

A meta-analysis on parenting stress indicated that parents of children with ASD experience higher levels of depression, anxiety, and stress than the parents of children with other developmental disorders.<sup>3</sup> Mothers raising children with ASD are often physically exhausted due to the constant supervision their children require.<sup>4</sup> They also report emotional difficulties such as denial, distress, sadness, and worry, while facing social challenges including criticism, isolation, and ignorance from family members and society in response to their child's atypical behaviour.<sup>5</sup> Furthermore, many parents are compelled to leave their jobs because of the demands of caring for a child with ASD. When combined with high healthcare costs, this loss of income creates significant economic challenges for families, further contributing to parental stress.<sup>6</sup>

A study conducted in Ghana reported that parents of children with ASD faced difficulties in holding meaningful conversations with their children, financial burdens related to their care, stigmatisation associated with autism, and the demands of their children.<sup>7</sup> Social stigma was particularly common among mothers of children with ASD, influenced by cultural factors, especially in Eastern and Middle Eastern countries.<sup>8</sup> Parental stress was primarily attributed to the burden of childcare, challenges in managing family relationships, limited support systems, financial pressures, and the social stigma surrounding childhood disability.<sup>9</sup> The high stress levels experienced by mothers also affected their physical health, psychological well-being, personal relationships, interactions with society, and financial circumstances.<sup>10</sup> Psychological well-being is a vital component of overall health for these mothers, encompassing dimensions such as stress, depression, anxiety, and self-esteem, which collectively affect an individual's mental health and quality of life.<sup>11</sup>

In the Indian subcontinent, many parents have reported high levels of post-diagnosis stress, poorer parental functioning, increased marital conflict, difficulties with family socialisation, and feelings of inadequacy.<sup>12</sup> Among mothers of children with ASD, stress levels tend to rise as the caregiver's economic condition worsens.<sup>13</sup> In addition to financial pressures, most caregivers and mothers have expressed concern about a lack of family support.<sup>14</sup> A study conducted in India reported that mothers of children with ASD have an increased risk of psychological distress, which is often overlooked and insufficiently addressed when planning long-term child management.<sup>15</sup>

In summary, various factors such as psychological distress, financial concerns, lack of social and family

support along with feeling of isolation increases the care burden of the mothers contributing to concerns on their health and wellbeing. There is, therefore, a pressing need to develop health and well-being programmes for mothers of autistic children. However, before any local intervention can be designed, it is essential to understand the scope and extent of these problems in the local cultural context. This study determined the prevalence of depression, anxiety, stress, and low self-esteem among mothers of children diagnosed with ASD in an urban community in India. The findings of this study can provide clear and locally relevant data on their psychological well-being and can guide the creation of targeted strategies to support these mothers' mental health while also contributing to the effective rehabilitation of their children with ASD.

## Materials and methods

### Study design and setting

This cross-sectional descriptive study was conducted in and around Chennai, Tamil Nadu, India, between 2023 and 2024. A simple random sampling method was used to select 14 paediatric therapy centres and 5 special schools from a sampling frame of 45 major paediatric therapy centres and 7 government-aided special schools. The study information sheet and details of the procedures were provided to the managing directors of the centres and principals of the government-aided special schools to facilitate participant recruitment. Mothers who provided informed consent and agreed to participate were included in the study. Written consent was obtained from all participants before data collection. This study was approved by the university's institutional ethics committee (approval number: 004/06/2023/IEC/SMCH).

### Participant characteristics

This study recruited 246 mothers of children with ASD who met the specified inclusion and exclusion criteria. The inclusion criteria were as follows: 1) mothers of children with ASD, 2) age between 25 and 45 years for mothers, 3) age between 3 and 10 years for children with ASD, and 4) children with ASD who received occupational therapy and other therapies, and (5) Residing in and around Chennai. Mothers were excluded if they had severe physical health issues, a history of psychological disorders and were undergoing medication, were not accompanying their children with ASD, had discontinued therapy for their children, or were pregnant at the time of the survey. It was agreed that the final study report and a summary of the findings would be shared with the managing directors, principals, and participants because they would directly benefit from the results. The research findings would also be disseminated to all participating mothers and the occupational therapists providing therapy to the children through the creation of a closed community social media group.

### Measurement

A study proforma was developed to collect the demographic characteristics of the mothers and their children with ASD. For the children, information gathered included age, sex, education, number of siblings, duration of therapy sessions, time since ASD diagnosis, communication abilities, and level of dependence in activities of daily living (ADL). The severity of autism was assessed using the Indian Scale for Assessment of Autism (ISAA).<sup>16</sup> For the mothers, data collected included age, educational qualification, family structure, economic status based on the Standard of Living Index (SLI),<sup>17</sup> employment status, marital status, place of residence, exposure to social media, support from the husband and other family members, presence of trustworthy friends, and availability of personal time.

### Depression, Anxiety and Stress Scale-21 Items

The Depression, Anxiety, and Stress Scale-21 Items (DASS-21) was used to assess the levels of depression, anxiety, and stress experienced by mothers caring for their children with ASD. The DASS-21 consists of three self-report subscales, each comprising seven items, designed to measure depression, anxiety, and stress. The depression subscale evaluates constructs such as dysphoria, hopelessness, devaluation of life, self-deprecation, reduced interest or engagement, anhedonia, and inertia. The anxiety subscale assesses aspects including autonomic arousal, skeletal muscle tension, situational anxiety, and the subjective experience of anxious affect. The stress subscale measures chronic, non-specific arousal, including difficulty relaxing, nervous excitability, and a tendency to become easily distressed, agitated, irritable, overly reactive, or impatient. Scores for depression, anxiety, and stress are calculated by summing the relevant item scores, with results interpreted as normal, mild, moderate, or severe according to the established cutoffs.<sup>18</sup>

### Rosenberg Self-Esteem Scale

Self-esteem is defined as a positive or negative attitude towards oneself<sup>19</sup> and can also be described as an individual's sense of self-worth.<sup>20</sup> The Rosenberg Self-Esteem Scale (RSS), developed by Rosenberg, is used to assess an individual's level of self-esteem.<sup>21</sup> The RSS comprises 10 items, five expressed as positive statements and five as negative statements.

Participants respond by selecting one of four options: strongly disagree, disagree, agree, or strongly agree. Scores range from a minimum of 10 to a maximum of 40, with self-esteem levels categorised as low (10-25), medium (26-29), or high (30-40).<sup>22</sup>

### Statistical analysis

The sample size for the study was calculated using the Krejcie and Morgan table.<sup>23</sup> The sampling frame comprised approximately 700 mothers drawn from paediatric centres and special schools. Based on the Krejcie and Morgan table, a sample size of 248 was required. Data were analysed using SPSS version 26.0 (IBM, New York, USA). The Kolmogorov-Smirnov test confirmed the normality of the data distribution. Demographic data were summarised using frequencies and percentages. Descriptive statistics were applied to present the prevalence of depression, anxiety, stress, and self-esteem among mothers of children with ASD. Data on these variables were summarised in terms of frequency, mean (M), standard deviation (SD), and percentage.

### Results

Table 1. presents the demographic characteristics of the 246 mothers of children diagnosed with ASD. Of these, 116 (47%) were aged between 31 and 35 years, making this the largest age group. The majority, 194 (78.9%), held a degree-level qualification. In terms of family structure, 187 (76%) lived in a nuclear family. Economic status data revealed that 163 (66.3%) were classified as having a medium economic standing. Employment information revealed that 133 (54.1%) were homemakers, outnumbering those in active employment or those who had withdrawn from the workforce. Marital status data indicated that 237 (96.3%) were married, whereas nine were separated. Geographically, 203 (82.5%) lived in urban areas. Regarding social media use, 110 (44.7%) were passive observers, 25.6% were active participants, and 29.7% were inactive. Support networks appeared strong, with 211 (85.8%) receiving spousal support and 198 (80.5%) receiving additional family support. In terms of social connections, 175 (71.1%) reported having trustworthy friends. Personal time availability varied, with 156 (63.4%) stating they had time for themselves, whereas 90 (36.6%) reported having none. Awareness of their child's condition was present in 174 (70.7%) of the mothers.

**Table 1. Demographic characteristics of Mothers of Children with ASD**

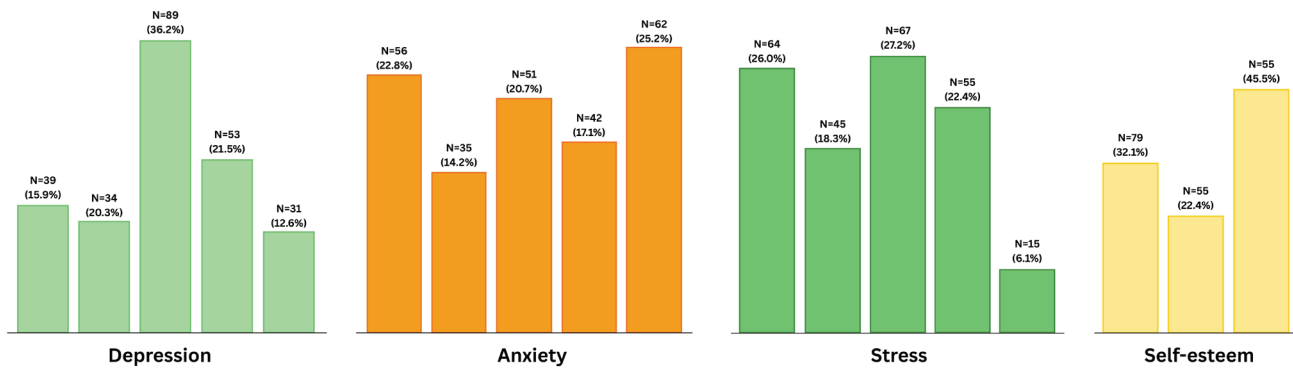
Total Number of participants (mothers), N=246			
		Nos	Percentage
Age of mother	25-30	88	36%
	31-35	116	47%
	36-40	42	17%
Educational qualification	School	52	21.1%
	Degree	194	78.9%
Family status	Joint family	59	24%
	Nuclear family	187	76%
Economic status (based on Standard of Living Index scale) (SLI)	Low	32	13%
	Medium	163	66.3%
	High	51	20.7%
Employment status	Working	71	28.9%
	Withdrawal	42	17.1%
	Home maker	133	54.1%
Marital status	Married	237	96.3%
	Separated	9	3.7%
Place of living	Rural	43	17.5%
	Urban	203	82.5%
Exposure to social media	Active	63	25.6%
	Inactive	73	29.7%
	Silent observer	110	44.7%
Husband's support to mother	Yes	211	85.8%
	No	35	14.2%
Other family member's Support	Yes	198	80.5%
	No	48	19.5%
Mother with trust worthy friends	Yes	175	71.1%
	No	71	28.9%
Mothers personal time	No time	90	36.6%
	Yes	156	63.4%
Mother's knowledge of child's condition	Known	174	70.7%
	Unknown	72	29.3%

Table 2. presents the demographic characteristics of the children diagnosed with ASD whose mothers participated in this study. The majority, 156 (63.4%), were aged between 3 and 5 years. Of the 246 children, 182 (74.0%) were boys. In terms of severity, 161 (65.5%) were classified as having a moderate level of autism. Educational settings varied widely, ranging from no formal schooling to inclusive education. A total of 206 (82.7%) children were receiving regular therapeutic interventions. Among the cohort, 104 (42.3%) had been diagnosed with ASD within the past year. Communication abilities were almost evenly distributed, with 122 (49.6%) exhibiting verbal communication and 125 (50.4%) demonstrating non-verbal communication. Furthermore, 188 children were reported to be the only child in their family. Regarding

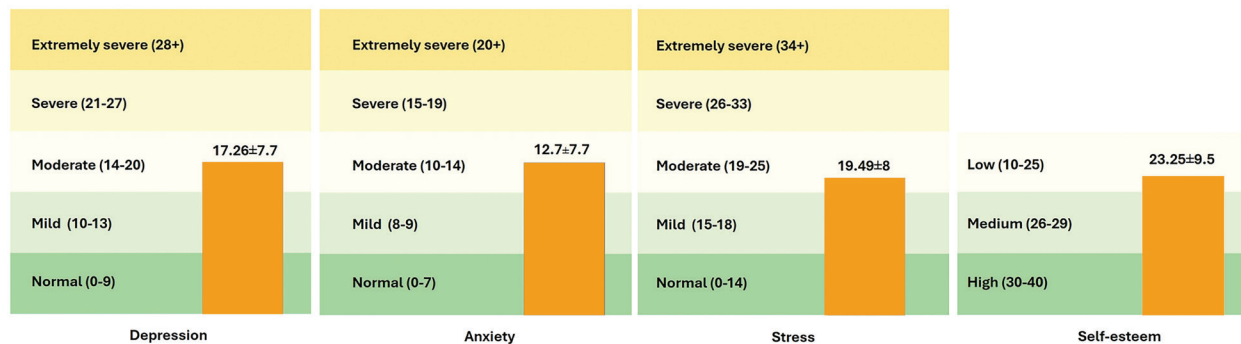
functional independence, 130 (52.8%) were fully dependent on their caregivers for ADL, whereas 116 (47.2%) were partially dependent. Figure 1 illustrates the prevalence rates of depression, anxiety, stress, and self-esteem among mothers of children with ASD. The rates observed were 84.14% (N=207) for depression, 77.2% (N=190) for anxiety, 74% (N=167) for stress, and 67.9% (N=167) for low self-esteem. Figure 2 presents the severity levels of depression, anxiety, stress, and self-esteem among the participants. Based on the DASS-21, the mothers demonstrated moderate levels of depression (M=17.26, SD=7.72), anxiety (M=12.70, SD=7.71), and stress (M=19.49, SD=8.09). According to the RSS, they exhibited decreased self-esteem (M=23.25, SD=9.59).

**Table 2. Demographic characteristics of children with ASD of participating mothers**

		Number	Percentage
Child's age	3 to 5	156	63.4%
	5 to 7	90	36.6%
Child's Gender	Male	182	74%
	Female	64	26%
Severity of Autism (ISAA)	Mild	48	19.5%
	Moderate	161	65.5%
	Severe	37	15%
Child's education mode	Inclusive	68	27.6%
	No schooling	28	11.4%
	Regular stream	93	37.8%
	Special	57	23.2%
Therapy participation	Regular	206	83.7%
	Irregular	40	16.3%
Duration of Condition from Diagnosis	1 year	104	42.3%
	2 years	84	34.1%
	3 Years	41	16.7%
	4 Years	17	6.9%
Communication Level of the Child	Verbal	122	49.6%
	Non verbal	124	50.4%
Siblings for child	Any sibling	7	2.8%
	First child	51	20.7%
	Only child	188	76.5%
Child's dependency in ADLs on mother	Fully dependent	130	52.8%
	Partially dependent	116	47.2%



**Figure 1.** illustrates the prevalence rates of depression, anxiety, stress, and self-esteem among mothers of children with ASD.



**Figure 2.** presents the severity levels of depression, anxiety, stress, and self-esteem among the participants.

## Discussion

This cross-sectional study determined the prevalence of depression, anxiety, stress, and self-esteem among mothers of children diagnosed with autism spectrum disorder (ASD) and revealed substantial impacts on their psychological well-being. Notably, 84.14% (N=207) of participants experienced depression of varying severity, 77.2% (N=190) reported symptoms of anxiety, and 74% (N=182) experienced stress, as measured using the DASS-21. In addition, 67.9% (N=167) had self-esteem levels ranging from low to medium. Moderate to severe depression, anxiety, and stress were observed in 64%, 63%, and 55% of the cohort, respectively. These findings indicate the significant mental health challenges faced by mothers of children with ASD and highlight the complex interplay between caregiving responsibilities and psychological health.

The high prevalence of depression observed in this study, 84.14% (N=207) with a mean severity score of 17.26 (moderate level), is consistent with previous research. For example, Bramherereported moderate to severe depression among mothers of children with ASD, attributing it to the chronic emotional strain of caregiving.<sup>24</sup> Selvakumar *et al.*<sup>15</sup> similarly noted that the increased workload and stress associated with raising a child with ASD exacerbate depressive symptoms.<sup>15</sup>

In addition, Secinti *et al.* identified internalised stigmatisation and the behavioural characteristics of children with ASD as significant contributors to caregiver depression.<sup>25</sup> Collectively, these findings suggest that depression in this population result from both internal factors (such as caregiving demands) and external pressures (such as stigma), indicating the need for a multifaceted approach to intervention.

In the present study, anxiety was identified as a particularly prominent issue, affecting 77.2% of the mothers, with a mean severity score of 12.70. This finding is consistent with previous research. This high prevalence may be attributable to the unpredictable nature and intensity of ASD symptomatology, compounded by limited social support.<sup>26,27</sup> Similarly, Falk *et al.* reported that decreased social support and greater severity of ASD symptoms in children significantly increase maternal anxiety levels.<sup>27</sup> The findings of this study support these observations, suggesting that anxiety is a primary psychological response to the ongoing uncertainty and social isolation faced by these mothers.

Stress was reported by 74% of participants, with a mean severity score of 19.49 (moderate level), highlighting the considerable demands of caregiving. Hill *et al.* observed that challenging behaviours in children with ASD, such as tantrums or aggression, significantly



increase parental stress,<sup>28</sup> a finding supported by Miranda *et al.* who reported an association of higher ASD symptom severity and behavioural difficulties with increased stress levels.<sup>29</sup> In this study, 55.7% of mothers experienced moderate to extreme stress, reflecting the cumulative effects of these factors and suggesting that stress in this population both precedes and results from depression and anxiety.

The finding that 67.9% of mothers had low to medium self-esteem, with a mean score of 23.25 (low level), adds an important dimension to this research. The ongoing demands of caregiving and the societal stigma associated with raising a child with ASD may erode maternal self-worth, particularly in the absence of adequate support or when faced with judgement. This observation is consistent with the wider literature on caregiver burden, which indicates that prolonged stress and social isolation frequently reduce self-esteem.<sup>25</sup> Similarly, Bawalesh reported decreased self-esteem among parents of children with ASD, with notably lower levels among older parents (aged 50-59 years) and those with highly educated children.<sup>30</sup> Cultural expectations can further complicate these dynamics; in many societies, children are regarded as essential to family completeness and a source of happiness. When a child is born with a disability or developmental challenge such as ASD, these expectations are disrupted, often leading to negative effects on family well-being.<sup>31</sup> In such circumstances, the home environment may become characterised by stress and dissatisfaction.<sup>27</sup> Thus, decreased self-esteem among parents may be an expected outcome of raising a child with ASD.<sup>33</sup> These findings are in line with previous studies, including those by Perumal *et al.* and Verte *et al.* both of which highlight the adverse effects of an ASD diagnosis on parents' psychological well-being and overall family functioning.<sup>31,32</sup>

This study has a few limitations. It relied exclusively on two self-report questionnaires to determine the psychological well-being of mothers of children with ASD. However, these instruments were valid and produced reliable findings on the psychological health of mothers caring for children with ASD. A key strength of the study is that it offers an accurate representation and locally contextualised evidence on the psychological health of mothers caring for children with ASD. Furthermore, it establishes baseline data that can inform the development of psychological health interventions for mothers. Future research could broaden the scope by incorporating a wider range of assessment tools, exploring mothers' experiences through qualitative methods, and extending the investigation to include fathers, who are also affected by their child's behaviours.

## Conclusion

Mothers caring for children with ASD in an urban community in India exhibited high prevalence

rates of stress, anxiety, depression, and low self-esteem. In the Indian context, multiple factors were identified as contributing to these psychological challenges. However, the underlying causes driving the observed increases in stress, anxiety, depression, and reduced self-esteem remain insufficiently explored. Further research may benefit from employing inferential statistical analyses to investigate potential relationships and identify significant predictors. Future research is needed to examine the risk factors that affect the psychological health and well-being of these mothers. Additional studies should also aim to generate evidence to strengthen their psychological well-being. Such work would support the development of tailored interventions to improve mental health, enabling mothers to lead more fulfilling lives and provide better support to their children with ASD.

## Ethical approval

This study has been approved by the Institutional Ethics Committee, Saveetha Medical College Hospital, Saveetha Institute of Medical and Technical Sciences, number- 004/06/2023/IEC/SMCH.

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## Conflict of interest

The authors declare no conflict of interest.

## CRedit authorship contribution statement

All authors contributed to the study design and interpretation of results, reviewed and approved the final manuscript; **Punitha Poyyaamozhi**: data collection, drafted of the manuscript and coordinated revisions.

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