



Prevalence Of Psychological Distress At Different Stages Of Caregiving Trajectory Among Mothers Of Children With Neurodevelopmental Disorders In India: A Case-Control Study

E V Johny¹, S Padmasundari², M L Charan^{3*}

Abstract

Children with neurodevelopmental disorders (NDD) such as autism spectrum disorders (ASD), intellectual disability (ID) requires constant support and care. In most cases mothers are the primary caregivers for the children with NDD. Due to constant and prolonged caregiving, they may experience or develop psychological distress. However, the prevalence of psychological distress among the mothers of children with NDD particularly in India remains understudied. In this study, we aimed at deriving the prevalence rate of psychological distress among these mothers and also to study the differences in psychological distress in mothers of children with NDD, mothers of typically developing child (TD), mothers of children with NDD who are at different stages of caregiving trajectory and also based on other demographic characteristics. A total of 204 participants who met the recruitment criteria for the study were assessed using General Health Questionnaire -28. The participants were grouped on the basis of their child diagnosis, the group size are as follows: n₁ (ASD) = 51, n₂ (ID) = 53, n₃ (TD) = 100. The control group i.e., mothers of typically developing children were socio-demographically matched (in terms of mother's age, child age). The findings revealed no significant differences in the scores of GHQ among the mothers of children with autism spectrum disorder and intellectual disability, yet it indicated higher level of prevalence rates of psychological distress for mothers with ASD than ID. As hypothesized, there were significant differences in psychological distress among mothers of children with NDD and typically developing children. Also, younger mothers and mothers caring for younger children were experiencing marked level of psychological distress. The implications are discussed in the light of policy making, shift in treatment approach involving family-based interventions etc.,

Keywords: psychological distress, maternal mental health, autism spectrum disorder, intellectual disability, caregiver, neurodevelopmental disorders.

DOI Number: 10.48047/nq.2022.20.17.Nq88032

Neuroquantology 2022; 20(17):238-246

1. INTRODUCTION

Neurodevelopmental Disorders (NDD) are defined as a group of conditions that occur during the developmental period and cause deficits that impair functioning. NDD's include intellectual disability (ID), communication disorders, autism spectrum disorder (ASD), attention deficit/hyperactivity disorder

(ADHD), neurodevelopmental motor disorders, including tic disorders, and specific learning disorders (American Psychiatric Association, 2013). Due to the nature of these conditions, the individuals who are affected require constant attention, care and support from the caregiver. Individuals with NDD are living longer and in the community at a higher

***Corresponding Author:** M L Charan

Address:¹Department of Clinical Psychology, National Institute for Empowerment of Persons with Multiple Disabilities, Chennai, India. Email: drjohnyev@gmail.com ORCID: 0000-0002-7495-1381

²Department of Psychology, Government Arts College (Autonomous), Coimbatore, India. Email: padmasundaris@yahoo.in

³Department of Clinical Psychology, National Institute for Empowerment of Persons with Multiple Disabilities, Chennai, India. Email: charan.mahendran18@gmail.com ORCID: 0000-0002-4147-0063

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



rate in India which could be attributable to the country's major improvements in disability rehabilitation treatment and deinstitutionalization compared to the previous era. Though, this shift in advancement of disability and health care must be appreciated, but it has never reduced the burden to the parents and caregivers of children with NDD.

Particularly, in an Indian scenario where mothers are the primary caregivers of children while taking care of household needs and other requirements in a family unit. Caring for those in need frequently limits the caregiver's personal, social, and work career. Caregivers, for example, may have less time to spend with friends, fulfil other family obligations, or pursue leisure activities (Gilleard, Gilleard, Gledhill, & Whittick, 1984; Zarit, Reever, & Bach-Petersen, 1980). Furthermore, caregivers are frequently confronted with difficult caregiving tasks (Steinmetz, 1988) as well as care recipients' behavioural issues, such as verbal and physical aggression and confusion (Blacher & McIntyre, 2006; Griffith, Hastings, Nash, & Hill, 2010). Caregivers face increased uncertainty due to the severity of affected individuals' condition and the difficulty of anticipating their care needs (Poulshok & Deimling, 1984). Because of this extended caregiving role, parent caregivers of individuals with NDDs face unique challenges and have very different circumstances than those who come to care for relatives following the onset of illness or trauma-related disability (Innes et al. 2012). Caregivers of children with NDD require more information on education and treatment (Jackson et al. 2016), as well as assistance with parenting and coping (Douma et al. 2006; James 2013), especially if their child has difficult and complicated healthcare needs (Tan 2017).

So, raising and attending to the needs of a child with NDD may possibly result in poor mental health when compared to others (Pinquart and Sørensen 2003). Research done in the past also suggests that these mothers have more depressive, anxiety and stress symptoms than the fathers (Singer 2006; Montes and Halterman 2007; Cairns et

al. 2012, 2014; Giallo et al. 2015). All of the above-mentioned factors may have different effects on mothers' mental health at different stages of the caregiving trajectory i.e., individuals who are in different stages of life (Emerson and Hatton 2011), but this is less clear in the research. Although caregiving for someone else can be a very gratifying and good experience (Scorgie and Sobsey 2000; Jokinen and Brown 2005), small-scale studies indicate that at some stages of the caregiving trajectory, it may also have an effect on parents' mental health (Chen et al. 2001; Cairns et al. 2014). A few studies have directly studied the effects of motherhood on mental health at various ages, but they haven't yet done so for mothers of children of different ages.

1.1 Problem Statement

The available pre-existing literatures findings are dominated by the data from the western samples. Also, due to the gap in the knowledge pertinent to the prevalence of maternal psychological distress, how the perceived distress is varying among mothers providing care to children with different neurodevelopmental disorders, and also the levels of distress experienced by mothers who are at different trajectories of caregiving. Therefore, the data and mechanism regarding these factors still remains inconsistent and it is very scarce, particularly in an Indian population.

1.2 Aim of the Present Study

Hence, the current study aimed to assess the prevalence of psychological distress including anxiety, depression of mothers in India who have children with neurodevelopmental disorders particularly autism spectrum disorders and intellectual disability. Also, to compare the levels of psychological distress experienced by the mothers of children with neurodevelopmental disorders and typically developing children. Other factors that may have an impact on mental health, such as age, employment and maternal education, were also investigated. We hypothesized that,

- i. the mothers of children with neurodevelopmental disorders will have higher prevalence of psychological distress than the mothers of children with typical development



- ii. the mothers of children with neurodevelopmental disorders will have clinically significant levels of psychological distress than the mothers of children with typical development.
- iii. there will be significant differences in the psychological distress of the mothers of children with neurodevelopmental disorders in terms of their characteristics such as age, education, occupation.
- iv. there will be significant differences in the psychological distress of the mothers of children with neurodevelopmental disorders who are at different stages of caregiving trajectories.

2. METHODS

The methods followed in this study are discussed in detail in the following subsections.

2.1 Participants

The inclusion criterion of this study was mothers aged 45 years or below having one biological child with autism spectrum disorder or intellectual disability who is aged less than 18 years. Mothers of children with neurodevelopmental disorders with other comorbid medical conditions, mothers who were facing distress by death of any first relative, mothers who are facing distress by any major physical illness which has a disabling nature and mothers who are undergoing treatment for any psychiatric illness were excluded from the study.

2.2 Sample Size Estimation

The sample size for the present study was calculated using G*Power 3.1.9.7 selecting the statistical test as ANOVA: fixed effects, one-way using the following configuration: effect size (d) = 0.5, β / α ratio = 1, non-centrality parameter = 37.50, critical t = 5.971, α error probability = 0.003, β error probability = 0.003 Power ($1 - \beta$ error prob) = 0.89. The analysis revealed a total sample size of 150 participants.

2.3 Recruitment and Sampling

Participants fulfilling the proposed criteria were first determined, and a total of 286 mothers whose children were diagnosed and availing treatment from the outpatient service clinic at a tertiary care disability rehabilitation center located in Chennai, India were

approached. The purpose of the study was explained to participants; written informed consent was taken from the participants who expressed willingness to volunteer, and consequently the data were collected individually from each participant. The data was collected from a total of 104 mothers (mother having ASD child = 51, mothers having ID child = 53) who consented to participate in the study. Then each sample of the NDD group were matched to mothers from the general population having a child with typical development (TD) with the following characteristics i.e., child age, mother age and child gender. Likewise, the data was collected from a total of 100 mothers of children with typical development whose sociodemographic variables are matched with the clinical group and consented to participate in the study. The researchers were clinicians who were trained in the administration of the questionnaires.

2.4 Ethical Consideration

This study was conducted in accordance with local legal and ethical regulations concerning scientific research involving human subjects. All participants who were identified to be highly distressed in this study were provided appropriate interventions and resources after the data collection phase.

2.5 Measures

The participants were measured using the General Health Questionnaire-28 (Goldberg, 1979) to assess their psychological distress. GHQ-28 is a reliable and valid self-report screening instrument rated on four-point scale which covers four areas: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. The original scoring system, i.e., the Likert scale of 0, 1, 2, 3, was used in this study. The GHQ-28 has a score range of 0 to 84. Higher GHQ-28 scores indicate more distress. The total score obtained on GHQ-28 is considered as measure of psychological distress. Participants with total scores of 23 or less should be classified as no marked level of psychological distress, while participants with scores greater than 24 may be classified as marked level of psychological distress, but this score is not an absolute cut-off. It is recommended that each researcher calculate a cut-off score based on the mean of



their respective sample. Hence, the cut-off for the presence of psychological distress was decided as the summated upper limit of mean and standard deviation for the mothers of children with neurodevelopmental disorders. Specifically, in this study GHQ-28 was used only to screen the presence of psychological distress but not to diagnose any psychiatric condition among the samples.

2.6 Data Analysis

The IBM SPSS 25.0 was used to analyze all data collected in this study. The demographic information of the participants was analyzed using descriptive analysis, and all data are presented as mean \pm standard deviation. The prevalence rates among the mothers of the clinical group were estimated based on the formula,

$$\text{Prevalence (\%)} = \frac{\text{Number of identified positive cases}}{\text{Total number of cases tested}} \times 100$$

The difference in somatic symptoms, anxiety/insomnia, social dysfunction, depression, and overall psychological distress between the groups was determined using independent samples t-test, one-way ANOVA, and the post-hoc test was performed using Tukey analysis. This study's statistical significance level was set at $p = 0.05$.

3. RESULTS AND DISCUSSION

3.1 General information and sociodemographic results of the samples

All the demographic characteristics of the samples are presented in the Table 1. Out of the 204 samples, the mean age of the mothers recruited in each group are as follows: 36.15 \pm 6.13 years (ASD group), 33.77 \pm 8.94 years (ID group), 35.39 \pm 7.07 years (TD group). The mean age of mothers (combined) was 35.10 \pm 7.38 years. In the total samples, about 165 (81%) were unemployed and 39 (19%) were employed. The breakup description for employment status for each group are as follows: 43 (84%) were unemployed and 8 (16%) of mothers were employed in ASD group, 41 (78%) were unemployed and 12 (22%) of mothers were employed in ID group, 165 (81%) were unemployed and 39 (19%) were employed in TD group.

The mean maternal education for each is as follows: 13.56 \pm 2.09 years (ASD group), 13.22 \pm 2.68 years (ID group), 13.40 \pm 2.38 years (TD

group). The gender composition of the children are as follows: there were 47 males (94%) and 4 females (6%) in the ASD group, 40 males (75%) and 13 females (25%) in the ID group, and 85 males (85%) and 15 females (15%) in the TD group.

3.2 Prevalence of psychological distress among mothers with neurodevelopmental disorders

Based on the positive cases identified from the data, the frequency analysis was performed (see Figure 1) to estimate the prevalence. The prevalence of distress assessed among the mothers of neurodevelopmental disorders (groups combined) from GHQ domains are: somatic symptoms (14.28%), anxiety/insomnia (21.4%), social dysfunction (14.28%), depression (17.87%), and overall psychological distress (17.87%). The analysis of the prevalence for maternal distress among the children with ASD group showed the following rates: somatic symptoms (15.78%), anxiety/insomnia (42%), social dysfunction (26.3%), depression (15.78%), and overall psychological distress (36.84%). The prevalence analysis for maternal distress among the children with ID group revealed the following rates: somatic symptoms (11.11%), anxiety/insomnia (33.33%), social dysfunction (22.22%), depression (22.22%), and overall psychological distress (22.22%).

3.3 Differences in psychological distress among mothers of children with neurodevelopmental disorders

The independent t-test analysis (see Table 2) showed no significant differences in the maternal measures of GHQ-28 domains for the ASD group and ID group ($p > 0.05$). However, there were significant differences in the maternal measures of GHQ-28 domains ($p < 0.05$) for mothers aged above 30 years and below 30 years (see Table 4) and also for mothers aged above 30 years and below 30 years (see Table 5) except for social dysfunction. However, there were no significant differences in the psychological distress among the mothers of children with neurodevelopmental disorders in terms of their employment status and their qualification ($p > 0.05$).



3.4 Differences in psychological distress among mothers of children with neurodevelopmental disorders and children with typical development

The results of the one-way ANOVA (see Table 5) indicated that there were significant differences ($p < 0.01$) between the mothers of children with autism spectrum disorders, intellectual disability and typically developing children. On post-hoc analysis, the data revealed that mothers of children with autism spectrum disorders had higher scores on somatic symptoms ($F = 26.032$, $p = 0.000$), anxiety/ insomnia ($F = 25.555$, $p = 0.000$), social dysfunction ($F = 34.348$, $p = 0.000$), depression ($F = 6.395$, $p = 0.003$) and overall psychological distress ($F = 44.332$, $p = 0.00$) than the mothers of intellectual disabled or typically developing children.

3.4 Discussion

We aimed at finding the prevalence rates of psychological distress, differences in psychological distress among mothers of neuro-developmental and typically developing children. Based on the results, it was understood that the prevalence of somatic symptoms, anxiety/insomnia, social dysfunction and overall psychological distress was higher for mothers of children with ASD but the prevalence of depression was higher for mothers of children with ID. In few studies from Low- and Middle-Income Countries (LMIC) including Kenya, Kuwait, Qatar, and India, the prevalence of psychological problems among these parents is reported to be between 47 and 50 percent (Mbugua et al., 2011; Dave et al., 2014; Fido & Saad, 2013). However, our results were not as much high as the results seen in these studies, but it is acknowledged that they experience increased level of distress.

As we hypothesized, the psychological distress levels were higher for mothers of children with neurodevelopmental conditions than the mothers of children with typically developing children. Although, the psychological distress was prominent for mothers of children with neurodevelopmental conditions it was seen that the mothers of children with ASD had higher levels of psychological distress than any other group. This may be because of increased behavioural problems among children with

ASD. Also, psychological distress was higher for younger mothers and mothers caring for younger children. It may be attributed to shock associated with diagnosis and lack of education about their child's condition. Additionally, they could feel guilty, stressed out over the child's behavioural issues, anxious about their future, and dejected about the hopes they had for their children. This may be due to reduced level of psychological acceptance towards the child's diagnosis. According to Feizi et al., (2014) parental psychological acceptance declines when a child's challenging behaviour worsens, which in turn causes parents' mental health problems to worsen. As per their findings, parents of children with challenging physical and mental disorders may find it difficult to accept their children's persistent problems on a psychological level. Many previous research has pointed out that age of the child was linked to their parent's stress and psychological suffering (for example, Khamis 2007). When their children were older, parents felt less stress and discomfort. This finding is consistent with the adaptation hypothesis, which postulates that parents continue to modify their coping mechanisms in order to accommodate the child with a disability (Dyson, 1993). Hence, they may be benefitted particularly mothers caring for younger children when provided with the psychological support to adapt with the situation through coping strategies.

4. CONCLUSION

The present study revealed that the prevalence of psychological distress is higher for mothers of children with neurodevelopmental disorders. As we highlighted, the typical Indian mother plays incredibly important roles in her family over the course of her child's life, irrespective of whether she is the primary caregiver, working parent, or both she holds. The mother-child relationship is vital for the healthy development of children. This particular research serves a greater implication, in addressing issues pertaining to maternal mental health in neurodevelopmental disorders. At present in India, the healthcare primarily focuses on individual approach by treating only the child with neurodevelopmental disorder. However, there should be a shift in the treatment by placing



holistic emphasis on the family especially the mothers as they may have psychological needs and concerns regarding the child condition.

It is understood from this study that younger mother with young children with neurodevelopmental disorders are having marked level of psychological distress, hence appropriate treatment and resources should be made available to them by the professionals and the service providing system. Another implication could be, need for introduction of policies and revision in the existing policies to contribute benefit to the family members of the disabled.

However, the limitation of the present study has to be addressed. Reliance on a single measure for estimating the prevalence of psychological distress. Though GHQ-28 is a reliable and valid tool, it is mostly used as a screening instrument. Because of this, the results found in this study may not be as accurate in relation to the use of diagnostic scales. Instead of translation and standardization of the tool in the regional language, the administration was done by the clinicians by translating the original English version to the regional language this could have contributed to some level of measurement bias in this particular study. Also, in this study only mild - moderate level of severity of neurodevelopmental disorders were included. Future studies should explore the psychological distress of mothers having children with all levels of severity and other types of neurodevelopmental disorders as we included only autism spectrum disorders and intellectual disabilities. Additionally, this study did not take into account the effect of the broader autism phenotype (BAP) on parental distress, which could affect parents' well-being either explicitly (e.g., due to an increased risk of anxiety or depression based on the shared genetic factors) or implicitly (e.g., due to parent behaviours) (Ingersoll and Hambrick 2011).

Acknowledgements

The authors like to acknowledge the significant contributions by the clinical trainees, Vardhini Krishnamurthy, Nivadas, Nazreen Fathima, Shama Anzum, S. Aruna, Tachira Kama Marak, M.K. Harishma, S. Nivetha, K. Rosmin Joy in participant recruitment and data collection process during their clinical training at the Department of Clinical Psychology, NIEPMD. The authors like to extend their gratitude

towards Dr. S. Karthikeyan, Head of the Department, Clinical Psychology and Medical Sciences, NIEPMD for their support.

REFERENCES

- Blacher, J., & McIntyre, L. L. (2006). Syndrome specificity and behavioural disorders in young adults with intellectual disability: Cultural differences in family impact. *Journal of Intellectual Disability Research*, 50(3), 184–198. <https://doi.org/10.1111/j.1365-2788.2005.00768.x>
- Cairns, D., Brown, J., Tolson, D., & Darbyshire, C. (2013). Caring for a child with learning disabilities over a prolonged period of time: An exploratory survey on the experiences and health of older parent carers living in Scotland. *Journal of Applied Research in Intellectual Disabilities*, 27(5), 471–480. <https://doi.org/10.1111/jar.12071>
- Cairns, D., Tolson, D., Brown, J., & Darbyshire, C. (2012). The need for future alternatives: An investigation of the experiences and future of older parents caring for offspring with learning disabilities over a prolonged period of time. *British Journal of Learning Disabilities*, 41(1), 73–82. <https://doi.org/10.1111/j.1468-3156.2012.00729.x>
- Chen, S. C., Ryan-Henry, S., Heller, T., & Chen, E. H. (2001). Health status of mothers of adults with intellectual disability. *Journal of Intellectual Disability Research*, 45(5), 439–449. <https://doi.org/10.1046/j.1365-2788.2001.00352.x>
- Dave, D., Mittal, S., Tiwari, D., Parmar, M., Gedam, S., & Patel, V. (2014). Study of anxiety and depression in caregivers of intellectually disabled children. *Journal of Research in Medical and Dental Science*, 2(1), 8. <https://doi.org/10.5455/jrmds.2014212>
- Diagnostic and statistical manual of mental disorders: DSM-5 (2013). Washington (D.C.): American Psychiatric Publishing.
- Douma, J. C. H., Dekker, M. C., De Ruiter, K. P., Verhulst, F. C., & Koot, H. M. (2006). Help-seeking process of parents for psychopathology in youth with moderate to borderline intellectual disabilities. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45(10), 1232–1242. <https://doi.org/10.1097/01.chi.0000230167.31246.d>
- Emerson, E., & Hatton, C. (2008, December 1). Estimating future need for adult social care for people with learning disabilities in England. Lancaster EPrints. Retrieved November 21, 2022, from <https://eprints.lancs.ac.uk/id/eprint/21049/>
- Fido, A., & Saad, S. A. (2013). Psychological effects of parenting children with autism: prospective study in Kuwait. *Open Journal of Psychiatry*, 03(02), 5–10. <https://doi.org/10.4236/ojpsych.2013.32a002>
- Giallo, R., Seymour, M., Matthews, J., Gavidia-Payne, S., Hudson, A., & Cameron, C. (2014). Risk factors associated with the mental health of fathers of children with an intellectual disability in Australia. *Journal of Intellectual Disability Research*, 59(3), 193–207. <https://doi.org/10.1111/jir.12127>
- Gilleard, C. J., Gilleard, E., Gledhill, K., & Whittick, J. (1984). Caring for the elderly mentally infirm at home: A survey of the supporters. *Journal of Epidemiology &*



Community Health, 38(4), 319–325. <https://doi.org/10.1136/jech.38.4.319>

Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine*, 9(1), 139–145. <https://doi.org/10.1017/s0033291700021644>

Griffith, G. M., Hastings, R. P., Nash, S., & Hill, C. (2009). Using matched groups to explore child behavior problems and maternal well-being in children with down syndrome and autism. *Journal of Autism and Developmental Disorders*, 40(5), 610–619. <https://doi.org/10.1007/s10803-009-0906-1>

Innes, A., McCabe, L., & Watchman, K. (2012). Caring for older people with an intellectual disability: A systematic review. *Maturitas*, 72(4), 286–295. <https://doi.org/10.1016/j.maturitas.2012.05.008>

Jackson, A. C., Liang, R. P.-T., Frydenberg, E., Higgins, R. O., & Murphy, B. M. (2016). Parent education programmes for Special Health Care Needs Children: A systematic review. *Journal of Clinical Nursing*, 25(11-12), 1528–1547. <https://doi.org/10.1111/jocn.13178>

James, N. (2013). The formal support experiences of family carers of people with an intellectual disability who also display challenging behaviour and/or mental health issues. *Journal of Intellectual Disabilities*, 17(1), 6–23. <https://doi.org/10.1177/1744629512472610>

Jokinen, N. S., & Brown, R. I. (2005). Family quality of life from the perspective of older parents. *Journal of Intellectual Disability Research*, 49(10), 789–793. <https://doi.org/10.1111/j.1365-2788.2005.00753.x>

Khamis, V. (2007) "Psychological distress among parents of children with mental retardation in the United Arab Emirates," *Social Science & Medicine*, 64(4), pp. 850–857. Available at: <https://doi.org/10.1016/j.socscimed.2006.10.022>.

Mbugua, M. N., Kuria, M. W., & Ndeti, D. M. (2011). The prevalence of depression among family caregivers of children with intellectual disability in a rural setting in Kenya. *International Journal of Family Medicine*, 2011, 1–5. <https://doi.org/10.1155/2011/534513>.

Montes, G., & Halterman, J. S. (2007). Psychological functioning and coping among mothers of children with autism: A population-based study. *Pediatrics*, 119(5). <https://doi.org/10.1542/peds.2006-2819>

Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in Psychological Health and Physical Health: A meta-analysis. *Psychology and Aging*, 18(2), 250–267. <https://doi.org/10.1037/0882-7974.18.2.250>

Poulshock, S. W., & Deimling, G. T. (1984). Families caring for elders in residence: Issues in the measurement of burden. *Journal of Gerontology*, 39(2), 230–239. <https://doi.org/10.1093/geronj/39.2.230>

Scorgie, K., & Sobsey, D. (2000). Transformational outcomes associated with parenting children who have disabilities. *Mental Retardation*, 38(3), 195–206. [https://doi.org/10.1352/0047-6765\(2000\)038<0195:toawpc>2.0.co;2](https://doi.org/10.1352/0047-6765(2000)038<0195:toawpc>2.0.co;2)

Singer, G. H. (2006). Meta-analysis of comparative studies of depression in mothers of children with and without developmental disabilities. *American Journal on Mental Retardation*, 111(3), 155. [https://doi.org/10.1352/0895-8017\(2006\)111\[155:mocsod\]2.0.co;2](https://doi.org/10.1352/0895-8017(2006)111[155:mocsod]2.0.co;2)

Tan, S. H. (2016). Assessing the needs of caregivers of children with disabilities in Penang, Malaysia. *Health & Social Care in the Community*, 25(2), 447–457. <https://doi.org/10.1111/hsc.12325>

Ingersoll, B., & Hambrick, D. Z. (2011). The relationship between the broader autism phenotype, child severity, and stress and depression in parents of children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 5(1), 337–344. <https://doi.org/10.1016/j.rasd.2010.04.017>

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Table 1: Demographic characteristics of the samples

Groups	N	Mother Age	Child Age	Child Gender	Education (In years)	Occupation
ASD	51	36.15 ± 6.13 years	11.68 ± 4.79 years	Males – 94% Females – 6%	13.56 ± 2.09 years	Unemployed – 84% Employed – 16%
ID	53	33.77 ± 8.94 years	10.17 ± 6.48 years	Males – 75% Females – 25%	13.22 ± 2.68 years	Unemployed – 78% Employed – 22%
TD	100	35.39 ± 7.07 years	10.93 ± 5.64 years	Males – 85% Females – 15%	13.40 ± 2.38 years	Unemployed – 81% Employed – 19%
Total	204	35.10 ± 7.38	10.92 ± 5.63 years	Males – 85% Females – 15%	13.38 ± 2.38 years	Unemployed – 81% Employed – 19%

Table 2: Independent sample t-test for child diagnosis and maternal psychological distress.

Maternal Measures	Child Diagnosis	N	Mean ± SD	t	Sig.
Somatic Symptoms	ASD	51	6.15 ± 3.62	.579	.568
	ID	53	5.33 ± 3.27		
Anxiety / Insomnia	ASD	51	8.15 ± 5.60	.777	.444
	ID	53	6.55 ± 3.71		



Social Dysfunction	ASD	51	6.05 ± 3.11	-.047	.963
	ID	53	6.11 ± 3.01		
Depression	ASD	51	4.10 ± 4.58	.949	.351
	ID	53	2.44 ± 3.68		
Psychological Distress (GHQ - 28)	ASD	51	24.47 ± 11.84	.909	.372
	ID	53	20.44 ± 8.60		

Table 3: Independent sample t-test for child age and maternal psychological distress in neurodevelopmental disorders.

Maternal Measures	Child Age	N	Mean ± SD	t	Sig.
Somatic Symptoms	3 – 10 years	47	9.95 ± 5.23	2.960	.005
	Above 10 years	57	5.46 ± 3.33		
Anxiety / Insomnia	3 – 10 years	47	11.04 ± 5.05	3.031	.004
	Above 10 years	57	6.33 ± 4.11		
Social Dysfunction	3 – 10 years	47	6.04 ± 2.11	-1.101	.920
	Above 10 years	57	6.13 ± 3.54		
Depression	3 – 10 years	47	7.12 ± 5.82	2.436	.020
	Above 10 years	57	3.06 ± 3.45		
Psychological Distress (GHQ - 28)	3 – 10 years	47	34.16 ± 13.48	3.344	.002
	Above 10 years	57	21 ± 8.90		

Table 4: Independent sample t-test for mothers' age and maternal psychological distress in neurodevelopmental disorders.

Maternal Measures	Mothers' Age	N	Mean ± SD	t	Sig.
Somatic Symptoms	> 30 years	51	10.23 ± 5.43	2.93	.006
	< 30 years	53	5.88 ± 3.41		
Anxiety / Insomnia	> 30 years	51	11.33 ± 5.28	2.98	.005
	< 30 years	53	6.77 ± 3.97		
Social Dysfunction	> 30 years	51	6.14 ± 2.19	.162	.872
	< 30 years	53	6.00 ± 3.27		
Depression	> 30 years	51	7.90 ± 5.75	3.29	.002
	< 30 years	53	2.83 ± 3.32		
Psychological Distress (GHQ - 28)	> 30 years	51	35.61 ± 13.77	3.79	.001
	< 30 years	53	21.50 ± 8.29		

Table 5: One-way ANOVA for maternal GHQ measures and child diagnosis.

Maternal Measures	Child Diagnosis	N	Mean ± SD	F	Sig.
Somatic Symptoms	ASD	51	6.15 ± 3.62	26.032	.000
	ID	53	5.33 ± 3.27		
	TD	100	1.2 ± .80		
Anxiety / Insomnia	ASD	51	8.15 ± 5.60	25.555	.000
	ID	53	6.55 ± 3.71		
	TD	100	1.03 ± .88		
Social Dysfunction	ASD	51	6.05 ± 3.11	34.348	.000
	ID	53	6.11 ± 3.01		
	TD	100	1.26 ± .82		
Depression	ASD	51	4.10 ± 4.58	6.395	.003
	ID	53	2.44 ± 3.68		
	TD	100	.93 ± .82		
Psychological Distress (GHQ - 28)	ASD	51	24.47 ± 11.84	44.332	.000
	ID	53	20.44 ± 8.60		
	TD	100	4.43 ± 1.85		

List of Figures

Figure 1 – Maternal psychological distress prevalence rates across the clinical groups.



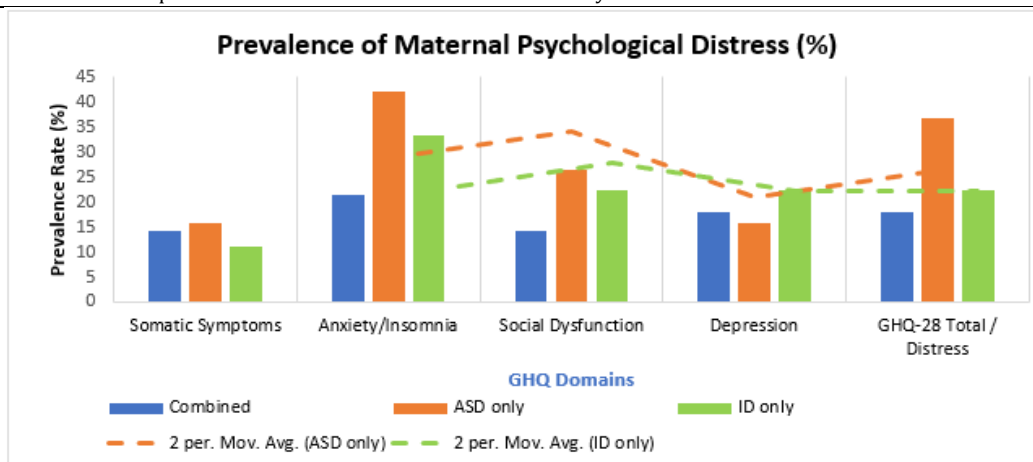


Figure 2 – Maternal psychological distress across the age trajectories of the samples.

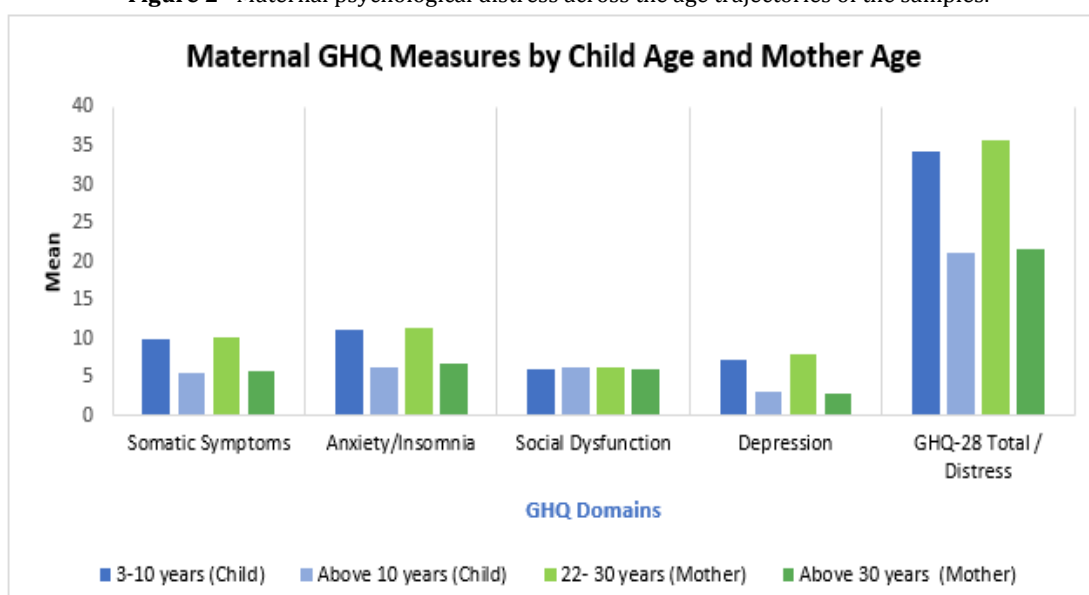


Figure 3 – Maternal psychological distress across the diagnosis of the child.

