

Autism Spectrum Disorder Severity and Generalized Anxiety Disorder among Mothers: A Comparative Study

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Science Step Journal / SSJ

2024/Volume 2 - Issue 7

To cite this article:

Fareh, A., & Kaddouri, O. (2024). Autism Spectrum Disorder Severity and Generalized Anxiety Disorder among Mothers: A Comparative Study. *Science Step Journal II* (7), 58-69. <https://doi.org/10.6084/m9.figshare.28121204>. ISSN: 3009-500X.

Abstract

Children diagnosed with autism spectrum disorder (ASD) commonly experience significant deficits in social communication, besides restricted and repetitive activities and patterns of behaviors. This neurodevelopmental disorder often has a negative impact on their family members, particularly their mothers. The likelihood of developing symptoms of Generalized Anxiety Disorder (GAD) among mothers of children with ASD is elevated due to the daily challenges they encounter in caregiving. The present study aims to evaluate the prevalence of generalized anxiety disorder among mothers of children with autism spectrum disorder. Using a case study approach, this comparative study included 45 mothers of children with ASD, including 15 mothers of children with mild ASD, 15 with moderate ASD, and 15 mothers of children with severe ASD, to answer the question; is there a relationship between the severity of ASD in children and GAD among their mothers? The ages of participants ranged between 26 and 39 years. This study was conducted in several associations dedicated to supporting children with neurodevelopmental disorders in the Beni Mellal region, where their mothers attend these associations frequently. The prevalence of GAD in this sample was assessed using the Mini International Neuropsychiatric Interview (MINI), in its Moroccan Arabic version. This study's outcomes confirmed the high prevalence of GAD among mothers of children with ASD, with a positive correlation between the severity of ASD among children and the probability of having generalized anxiety disorder in their mothers.

Keywords: Autism spectrum disorder (ASD); generalized anxiety disorder (GAD); prevalence

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Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder marked by persistent deficits in social interaction and communication, alongside a tendency towards restricted and repetitive behaviors, interests, and activities (Wang et al., 2023). These characteristics are present from early childhood and persist into adulthood, these specific difficulties and high comorbidity make ASD among the most disabling neurodevelopmental disorders (Talantseva et al., 2023). Early diagnosis in this case is crucial in facilitating intervention and improving long-term outcomes, while early diagnosis can also help families access appropriate support services and reduce parental stress, however, this increases the possibility of misdiagnosis (Okoye et al., 2023).

Currently, there are no accurate official statistics about ASD prevalence among Moroccan children. However, this neurodevelopmental disorder is not highly related to culture and social norms, so we can take into consideration the prevalence of this disorder in other countries. American Psychiatric Association (2022) reported that the prevalence of autism spectrum disorder (ASD) in the United States has been between 1% and 2% of the population, with no significant differences between adult and child samples, mentioning that male: female ratio in epidemiological samples appears to be 3:1, knowing that there are some concerns about under-recognition of ASD in women and girls. At the same time, the worldwide prevalence of this disorder is under 1%, while estimations are significantly higher in high-income countries (Lord et al., 2020).

Anxiety disorders (including generalized anxiety disorder) are generally characterized by symptoms including worry, anticipatory anxiety, social and performance fears, unexpected and/or triggered panic attacks, and avoidance behaviors, these symptoms are usually associated with physical symptoms, such as palpitations, shortness of breath, and dizziness (Szuhany & Simon, 2022). People usually experience symptoms of anxiety during crises and hard times, such as pandemics for healthcare providers (Monterrosa-Castro et al., 2020). Regarding the prevalence of Generalized Anxiety Disorder (GAD), the average 12-month prevalence around the world is 1.3% according to APA (2022). For the management of Generalized Anxiety Disorder (GAD), a meta-analysis study including 79 randomized controlled trials including 11.002 participants demonstrated a moderate to large effect of empirically supported psychotherapy interventions on outcomes for GAD, compared to small effect for medications on GAD outcomes (Mishra & Varma, 2023).

Study Aims and Importance

The current study aims to evaluate the presence of Generalized Anxiety Disorder (GAD) among mothers of children with Autism Spectrum Disorder (ASD), knowing that families of these children usually experience difficulties accepting their children's disorder, and probably live with social fears and anticipatory anxiety, while this population is supposed to deal with the idea that their children have a low probability of effective performing in their lives without their parents,

and more specifically, their mothers. Although it is obvious that generalized anxiety disorder represents a possible diagnosis for mothers of children with ASD in specialized associations and clinics in Morocco, there is a lack of scientific studies about this topic. Then, this study would probably provide clear information about this subject in order to facilitate the research about the prevalence rate of GAD among mothers of children with ASD and could help create clinical interventions for this population.

The aims of this study can be represented as follows:

- Identifying the relationship between Generalized Anxiety Disorder (GAD) among mothers of children with Autism Spectrum Disorder (ASD) and this disorder severity.
- Examining to what extent ASD diagnosis can contribute to generalized anxiety disorder presence among their mothers.
- Identifying some clinical directions for future studies.

Study Problematics

During 4 years of experience in specialized associations in service of children with neurodevelopmental disorders, we observed that parents of children with ASD, and specifically their mothers, usually find it hard to accept their children's diagnosis, especially when they know it is about a chronic disorder, as well as their experience of assisting their children with different day life simple tasks, and the responsibility associated with it, alongside with the high probability of doing so at the expense of their other children. The suffering of mothers of children with ASD starts when this diagnosis breaks their vision of their children's future. Knowing that children with ASD face multiple challenges, including the lack of social and educational support.

The current study focuses on the probability of having generalized anxiety disorder among mothers of children with ASD since parents of children with ASD have more psychiatric problems compared with other parents (of normal or with other neurodevelopmental disorders) (Eslami Shahrabaki et al., 2018).

Besides practical experience, the present study took into consideration some older studies' outcomes about generalized anxiety disorder among parents of children with ASD, as Demšar & Bakracevic (2023) conducted a study on a sample of 42 parents of children with autism spectrum disorder in a specialized clinic. The findings of this study demonstrated that coping strategies involving positive reinterpretation and growth were negatively associated with anxiety and depression, and Perceived social support showed a strong negative correlation with anxiety.

In their case-control study designed to examine stress, anxiety, and depression among parents of children with and without autism spectrum disorder in Oman, including a total of 122 ASD cases, Al-Farsi et al. (2016) showed that Stress and anxiety were higher in parents of children with ASD than other intellectual disabilities or typically developing children, knowing that

mothers suffer more of psychological morbidities than fathers among ASD cases. In the same vein, Bitsika & Sharpley (2004) conducted a study on a sample consisting of 107 parents, about the prevalence and the main contributing factors in anxiety, stress, and depression among Victorian parents of children with ASD. This study's outcomes showed that nearly half of the participants were severely anxious and nearly two-thirds were clinically depressed.

This study is basically dedicated to answering the following questions:

What is the incidence of generalized anxiety disorder among mothers of children with autism spectrum disorder (ASD)?

Are there any differences between the prevalence of generalized anxiety among mothers of children with mild ASD (Level 3) and mothers of children with moderate ASD (Level 2)?

Are there any differences between the prevalence of generalized anxiety among mothers of children with moderate ASD (Level 2) and mothers of children with severe ASD (Level 1)?

Study Hypotheses

We hypothesize that autism spectrum disorder in children is associated with the prevalence of generalized anxiety disorder among their mothers, with a positive correlation between the severity of ASD among children and the probability of having generalized anxiety disorder in their mothers, and more specifically, as the severity of ASD increases, the average incidence of generalized anxiety among mothers also increases. Then this study's operational hypotheses can be determined as follows:

- We assume that the average prevalence of generalized anxiety disorder among mothers of children with mild ASD (Level 1) is lower than among mothers of children with moderate ASD (Level 2).

- We hypothesize that the average prevalence of generalized anxiety disorder among mothers of children with moderate ASD (Level 2) is lower than among mothers of children with severe ASD (Level 3).

Materials and Methods

Sample Characteristics

This study's sample consisted of 45 participants (mothers), divided into three groups, each including 15 participants based on the diagnosis severity of their children; the first group consisted of 15 mothers of children diagnosed with **mild** autism spectrum disorder (ASD), including 9 males and 6 females, the second consisted of 15 mothers of children diagnosed with **moderate** ASD,

including 10 males and 5 females, and the third group comprised 15 mothers of children diagnosed with **severe** ASD, 11 of them are males and 4 females.

To include only suitable participants for this study, we started by excluding the mothers who were already diagnosed with any disorders other than generalized anxiety disorder or had any psycho-social experiences that could lead to this diagnosis, besides mothers of children who were diagnosed with an intellectual disability or attention-deficit/hyperactivity disorder (ADHD) as comorbid disorders. Taking into consideration that the children of this study had already been diagnosed with ASD by a Pedo-Psychiatrist, their ages ranged between 5 and 13 years, and their mothers' ages ranged from 26 to 39 years.

The participants of this study were selected from four associations dedicated to supporting children with neurodevelopmental disorders in the Beni Mellal region and the Fquih Ben Salah province, where their children were getting academic and psychological services, and specifically from El-Youssoufia Federation of Associations for People with Motor Disabilities in Morocco; ER-Raihan Association for Special Needs in Souk Sebt Ouled Nemma; Sidi Aissa Association for Disabled Persons; and Al-Raafa Association for Special Needs.

Methodology

In this study, we used a case study approach to confirm the diagnosis and severity of children with autism spectrum disorder (ASD) based on the criteria determined in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders-text Revised (DSM-5-TR). In addition, we used the Mini International Neuropsychiatric Interview (MINI) Moroccan Arabic Version 5.0.0 to assess generalized anxiety among the mothers included in this study.

To evaluate the prevalence of generalized anxiety disorder among mothers of children with ASD about the severity of their children's cases, we calculated the average of mothers with generalized anxiety, using descriptive statistics to process the results. The current study aimed to determine the prevalence of generalized anxiety in each group of mothers according to the severity of their children's ASD severity, including those with mild, moderate, and severe ASD.

Tools and Techniques

The present study employed a variety of tools and techniques, detailed as follows:

Observation: using direct and indirect observation.

Medical files: we used these files of children with ASD to get medical information about these children.

Clinical Interview: to conduct MINI test, and collect case study data.

Mini International Neuropsychiatric Interview (MINI), Moroccan Arabic version 5.0.0: The Mini International Neuropsychiatric Interview (MINI) is a structured diagnostic tool designed for the assessment of psychiatric disorders. This test provides a concise, reliable, and efficient means of diagnosing a wide range of mental health conditions, including mood disorders, anxiety disorders, psychotic disorders, and substance use disorders, based on DSM-IV criteria.

The MINI is structured to facilitate the diagnosis process through a series of standardized questions and criteria. This test is available in multiple languages and culturally adapted to meet the needs of diverse populations. In this study, we used the Moroccan Arabic version of the MINI, which was translated and adapted by Kadri, Agoub, and El Gnaoui from the University Psychiatric Center Ibn Rochd, Casablanca, Morocco. This version is tailored to reflect linguistic and cultural nuances specific to Moroccan Arabic-speaking populations, including questions in the local Darija, ensuring accurate assessment and diagnosis within the local context.

- **Psychometric Properties of Mini International Neuropsychiatric Interview (MINI), Moroccan Arabic Version:** Based on the psychometric evaluation of the 'Mini International Neuropsychiatric Interview: Moroccan Arab Version 5.0.0', the results indicate that this tool exhibits high reliability and excellent stability. All kappa values measured were above 0.80, reflecting a high level of agreement among raters. Additionally, nine out of eleven kappa values were 0.90 or higher, indicating an outstanding level of agreement that exceeds random expectations. These results provide evidence that the translated version of the MINI possesses strong psychometric properties, enhancing its accuracy and reliability as an assessment tool. Thus, the Moroccan Arabic version of MINI offers a reliable instrument for use in research and practical contexts, contributing to precise and effective evaluations of psychiatric disorders within the Moroccan community.

Study Limits

Spatial Limits: The current study was conducted in some associations dedicated to children with neurodevelopmental disorders in the Beni Mellal region and the Fquih Ben Salah province, specifically within the following associations: Al-Youssoufia Federation of Associations for People with Motor Disabilities in Beni Mellal, Al-Raihan Association for Special Needs in Souk Sebt Oulad Nemma, Al-Ra'fa Association for Special Needs, and Sidi Aissa Association for Disabled Persons.

Temporal Limits: This study was conducted between February 01, 2024, and August 01, 2024. Starting with the diagnoses confirmation to ensure that the children included in this study met the criteria outlined in the revised Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR), and then we assessed the prevalence of generalized anxiety among mothers of children with autism spectrum disorder (ASD).

Human Limits: knowing that the larger the sample size is the more accurate and reliable the results can be, we could include 45 mothers of children with ASD. These mothers were distributed among those with children exhibiting mild, moderate, and severe ASD.

Results

In light of the clinical approach we used in the present study, and after collecting data using the case study method, including direct and indirect observation techniques and clinical interviews. Because of the sum of mothers enrolled in this study and the large database, we will address the results in two main sections; the first covers some data about mothers of children with ASD who were involved in this study, divided into 3 groups based on the severity of their children's diagnosis (mild, moderate, and severe ASD). The second section will represent the results of the MINI test for all groups of mothers. Then, through these results, we aim to come up with an accurate answer for our operational hypotheses, providing percentages that illustrate the prevalence of generalized anxiety disorder (GAD) among these participants according to their children's ASD severity. The main findings can be summarized as follows:

1. Case Study Data

1st Group: Mothers of children with mild ASD

This group consists of 15 mothers of children diagnosed with mild ASD (Level 1), with ages ranging from 26 to 33 years. These mothers share common characteristics such as being housewives, and unemployed, with a moderate household income. Their children benefit from the same psychological and educational services provided by associations for children with special needs.

During clinical interviews, these participants reported difficulties in accepting their children's differences compared with peers and other family members and expressed concerns about their children's future, and their desire to help their children develop autonomy and enhance their cognitive, social, and emotional skills. Most of these participants noted significant improvement in their children, which keeps them hopeful for the future despite the challenges they constantly face.

2nd Group: Mothers of children with moderate ASD

This group included 15 mothers of children with moderate ASD (Level 2), aged between 29 and 34 years. These participants share the same characteristics as the 1st group, and their children benefit from the same services.

Clinical interviews revealed that these participants face challenges in accepting their children's differences, and many of them frequently experience sleep disturbances due to chronic worry about their children's future. These mothers also expressed concerns about their children's

inability to achieve independence in the future and meet their emotional, educational, and social needs.

3rd Group: Mothers of children with severe ASD

This group consists of 15 mothers of children diagnosed with severe ASD (Level 3), aged between 28 and 39 years. These participants shared the same characteristics as the 1st and 2nd groups.

Clinical interviews with this group of participants showed that most of them expressed feelings of helplessness in managing child-related challenges in both domestic and public environments. These mothers found it difficult to accept their children's cases, although recognized it as a component of their fate. Many of these mothers reported experiencing frequent episodes of frustration and felt a lack of emotional control when interacting with their children, besides their concerns about how society generally treats children with severe ASD. These worries contributed to ongoing anxiety and pessimism about the future.

2. Results of Generalized Anxiety Disorder (GAD) Test Among the Three Groups

1st Group: Mothers of children with mild ASD

The generalized anxiety disorder (GAD) test included in the Mini International Neuropsychiatric Interview (MINI), in its Moroccan Arabic version, showed that only one out of 15 mothers (6.67%) can be diagnosed with GAD. This indicates a low probability of GAD among mothers of children with mild ASD. Despite the low probability of having GAD, many mothers reported symptoms such as difficulty managing fear, psychological fatigue, and concentration issues.

2nd Group: Mothers of children with moderate ASD

Out of 15 participants included in this group, 3 mothers (20%) were diagnosed with GAD according to the MINI test. Although the overall rate of GAD is relatively low, it is still higher than the first group. Mothers in this group also experienced symptoms such as psychological and muscular fatigue, sleep and concentration difficulties, and difficulties managing their emotions.

3rd Group: Mothers of children with severe ASD

7 mothers of children with severe ASD out of 15 participants (46.67%) were diagnosed with GAD. These findings suggest that almost half of the mothers in this group suffer from GAD, which is significantly higher than the other two groups. Besides these participants, all mothers in this group reported symptoms such as decision-making difficulties, persistent anxiety, fatigue, concentration, and sleep disturbance.

3. findings analysis

The findings mentioned in the previous section, indicate that mothers of children with ASD, regardless of severity (mild, moderate, or severe), express clear concerns about their children's future. Knowing that mothers of children diagnosed with mild ASD are more hopeful, and believe in the potential improvement of their children, which could allow them to integrate into society and attain a considerable level of self-sufficiency. Mothers of children with moderate and severe ASD experienced more difficulties worrying about their children's future, in addition to more generalized anxiety disorder-related symptoms. Generally, concerning the prevalence of GAD, the results show that 11 out of 45 participants (24.44%) were diagnosed with GAD, and while this prevalence is relatively low, it represents a significant percentage of the sample.

The study outcomes confirm the study's hypotheses, while the percentage of mothers of children with severe ASD who suffer from GAD is higher than those with moderate ASD, with rates of 46.67% for mothers of children with severe ASD, and 20% for mothers of children with moderate ASD. Likewise, mothers of children with moderate ASD show a higher prevalence of GAD compared to mothers of children with mild ASD (6.67%). These findings support both operational hypotheses of this study. While these findings confirm the operational hypotheses, this further validates the general hypothesis of the study which states: "We hypothesize that the severity of ASD in children is positively associated with the prevalence of generalized anxiety among their mothers".

Discussion

The current study results can be discussed from several perspectives; the first of which relates to the hypotheses we mentioned earlier, which were confirmed by the evidence indicating that the mean number of mothers of children with mild autism spectrum disorder (ASD) who suffer from generalized anxiety disorder (GAD) is lower than the mean number of mothers of children with moderate ASD suffering from the same disorder, exhibiting a difference of approximately 14%. This provides strong evidence supporting the correlation between the severity of ASD in children and the prevalence of generalized anxiety disorder among their mothers, thus confirming the first operational hypothesis of this study, which states: We hypothesize that the average prevalence of generalized anxiety among mothers of children with mild ASD (Level 1) is lower than that observed among mothers of children with moderate ASD (Level 2).

On the other hand, it was also found that the average number of mothers of children with moderate ASD who suffer from generalized anxiety disorder is significantly lower than mothers of children with severe ASD, with a difference exceeding 26%, which highlights the notable increase in anxiety levels within this group, thereby confirming the second operational hypothesis which states: We hypothesize that the average prevalence of generalized anxiety among mothers of children with moderate ASD (Level 2) is lower than that among mothers of children with severe

ASD (Level 3). These findings provide strong support for the principal hypothesis of this study, which asserts: We hypothesize that the severity of autism spectrum disorder (ASD) in children is positively associated with the prevalence of generalized anxiety among their mothers.

These findings provide important insights into the psychological well-being of mothers of children with ASD, particularly regarding the impact of children's ASD severity on the mothers' mental health. This contributes to previous studies in the field, such as the study conducted by Al-Farsi et al. (2016), which examined the levels of stress, anxiety, and depression among parents of children with and without ASD in Oman, which confirmed that parents of children with ASD experience higher levels of stress and anxiety compared to parents of typically developing children, while also noting that mothers exhibit a higher prevalence of psychological disorders compared to fathers in cases of ASD.

Similarly, the study conducted by Bitsika and Sharpley (2004) on the incidence of anxiety, depression, and stress among parents of children with ASD found that almost half of the participants suffered from severe anxiety, while about two-thirds were clinically depressed. In the same vein, the study carried out by Demšar and Bakracevic (2023) among parents of children with ASD showed that coping strategies involving positive reinterpretation and growth were negatively associated with anxiety and depression, while perceived social support was strongly negatively related to anxiety.

The previous studies consistently demonstrate that a significant number of mothers suffer from psychological disorders (such as anxiety, depression, and stress) due to their children's ASD diagnosis, aligning with our study's findings on the correlation between ASD in children and generalized anxiety disorder in their mothers. However, the current study introduces new scientific insights, specifically regarding the influence of ASD severity on mothers' mental health. This comparative study across the three levels of ASD severity—mild (Level 1), moderate (Level 2), and severe (Level 3)—reveals additional findings about common symptoms among mothers based on severity levels, such as distress about their children's future, concerns about their ability to adapt and being accepted in society, and pessimistic perspectives regarding their child's and society's prospects.

Moreover, this study identified common pathological symptoms among mothers based on the test conducted, such as difficulty overcoming fears, negative impacts on concentration, psychological and physical fatigue, persistent tension, and issues with focus and sleep. These symptoms varied according to the severity of the child's ASD. This study provides comprehensive and innovative findings that can be used in order to enhance scientific research focused on understanding these mothers and providing tailored support for them based on their unique needs.

Conclusion

The aim of this investigation was to identify the prevalence of generalized anxiety disorder (GAD) among mothers of children diagnosed with autism spectrum disorder (ASD) and to determine if there is a positive correlation between the severity of ASD among children and the probability of having generalized anxiety disorder in their mothers. Using a clinical approach, we conducted this study within several associations dedicated to children with neurodevelopmental disorders. This study started with the confirmation of diagnosis severity among children already diagnosed with autism spectrum disorder (ASD) by a pedo-psychiatrist and excluded other neurodevelopmental disorders such as attention-deficit/hyperactivity disorder (ADHD), intellectual disability, and communication disorder.

This study sample consisted of 45 mothers of children with ASD, divided into three groups: 15 mothers of children with mild ASD, 15 mothers of children with moderate ASD, and 15 with severe ASD. These participants were aged between 26 and 39 years.

While using the clinical approach, case studies, and Mini International Neuropsychiatric Interview (MINI), in its Moroccan Arabic version outcomes confirmed the general and operational hypotheses we assumed in the current study. The findings support the fact that autism spectrum disorder in children is associated with the prevalence of generalized anxiety disorder among their mothers. In addition, as the severity of ASD increases (mild, moderate, and severe ASD), the average incidence of generalized anxiety among mothers also increases.

Although the small sample size of the current study focuses on assessing the prevalence of Generalized Anxiety Disorder (GAD) among mothers of children with Autism Spectrum Disorder (ASD) according to its severity, we hypothesize that the findings of the current study will significantly contribute to understanding the relationship between (ASD) in children and (GAD) in their mothers.

Moving forward, future studies conducted under more favorable conditions (larger sample size) may yield even more reliable and practical outcomes, and this, in turn, would facilitate the development of more appropriate therapeutic services for this population.

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