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Consequences Observed After The Change In Routine Of Children With ASD During The COVID-19 Pandemic: An Application Of Structural Equation Modeling

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Abstract:
Background*: The COVID-19 pandemic has presented unique challenges to children with Autism Spectrum Disorder (ASD) and their families, impacting various aspects of their lives, including interventions and routines.*
Materials and Methods*: This study utilized a quantitative and descriptive approach, collecting data from 96 families through a researcher-developed questionnaire. Structural equation modeling was employed to analyze the model.*
Results*: The disruption in routines due to the pandemic led to a decrease in behavior regression and an increase in antisocial behaviors among children with ASD. This disruption also had implications for the mental health of family members, with higher rates of anxiety and depression reported. Additionally, the child's participation in online classes was affected.*
Conclusion: *The COVID-19 pandemic has significantly affected children with ASD and their families, highlighting the importance of accessible healthcare and education services, as well as the need for multidisciplinary support. Preparedness and research are crucial for effectively managing similar crisis situations in the future.*
Key Word*: Autism Spectrum Disorder, COVID-19 pandemic, behavior regression, antisocial behaviors*

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I. Introduction

According to the DSM-5 (APA, 2014), Autism Spectrum Disorder (ASD) is characterized by deficits in social communication and interaction, as well as the presence of restricted and repetitive behaviors. Overall ASD prevalence estimates varied among sites, from 13.1–29.3 per 1,000 children aged 8 years (Baio et al., 2018).

Studies suggest that early diagnosis of ASD in children enhances the chances of reducing associated impairments, as the early years of a child's life offer significant opportunities for brain plasticity (Rogers & Vismara, 2008; Dawson et al, 2010; Estes et al., 2015; Zwaigenbaum et al., 2015; McGlade et al, 2023; Shaw et al., 2023). Consequently, Early Childhood Intervention (ECI) is recommended upon detecting any developmental deficits and can be conducted by professionals such as Occupational Therapists, Psychologists, Speech and Language Therapists, and Special Education teachers (Oono, Honey & Mcconachie, 2013; da Silva Reis & Pereira, 2016).

Proponents of ECI advocate for interventions to take place in the child's natural contexts, such as home or school. The daily situations experienced by the child contribute to their development, as the familiar environment provides numerous learning opportunities. This perspective is rooted in Family-Centered Practices, which acknowledge that families are experts in their child's development, understanding their weaknesses, preferences, and potentialities (Mcwilliam, 2003; Pereira & Serrano, 2015).

Thus, it is crucial to involve families in the process of fostering the development and education of children with ASD, as everyday activities provide support, strengthen the child's capabilities, and facilitate the acquisition of new skills (Dunst, 2006; McConachie & Diggle, 2007; Cheng et al. 2022; Kulasinghe et al., 2023).

The COVID-19 pandemic has had a profound impact on the provision of health and educational services, posing significant challenges in delivering support to children with Autism Spectrum Disorder (ASD) (Bellomo et al., 2020). Moreover, the implementation of lockdown measures has adversely affected the sleep patterns of individuals with ASD, resulting in increased difficulties in falling asleep, heightened anxiety at

bedtime, sleep terrors, and daytime sleepiness. Consequently, the outbreak of COVID-19 has exacerbated sleep disturbances in children with ASD (Bruni et al., 2022). Additionally, the disruptions in daily routines caused by the pandemic have contributed to emotional and behavioral changes in these children.

Regarding families of children with ASD, the social isolation and changes in routine have had a significant impact on their mental health. Balancing work and personal life has become more challenging, and they face economic difficulties and new obligations related to implementing special routines for their children with ASD (Alonso-Esteban et al., 2021; Amorim et al., 2020). Therefore, it is necessary to comprehensively understand and analyze the consequences of the altered routines for children with ASD and their families during the quarantine period of the COVID-19 pandemic..

II. Theoretical Framework

Autism Spectrum Disorder

The word "Autism" has Greek origins, derived from the term "Autos" meaning "self". With the suffix "ism", it refers to a condition or state in which someone appears absorbed in oneself (Marques, 2000). In this sense, Kanner (1943) described the characteristics of what he called "autistic disturbances of affective contact." He observed 11 children with unusual behavior, including difficulties in social interaction, lack of communication skills, and repetitive and ritualistic behaviors. These children showed a fundamental lack of interest in others and difficulty establishing normal affective relationships. They were highly sensitive to sensory stimuli, displaying peculiar and stereotyped behaviors.

Kanner's article was pivotal in identifying and defining autism as a distinct condition, emphasizing the importance of a multidisciplinary approach in understanding and treating these children. He highlighted the need for future research to deepen the understanding of this developmental disorder. Kanner's work laid the foundation for the recognition and study of autism as a medical and psychological condition, with his observations and descriptions widely acknowledged and discussed in the field of autism.

In this sense, autism is characterized by impairments in two fundamental areas of development: communication and social interaction, along with the presence of restricted and repetitive behaviors, resulting in impairments in daily functioning (APA, 2014). Regarding the etiology of ASD, there is no consensus. It may be associated with non-specific risk factors such as advanced parental age, low birth weight, or fetal exposure to valproic acid. It is estimated that heritability accounts for 37% to 90%, with 15% potentially linked to genetic mutations (APA, 2014).

According to the principles of Early Childhood Intervention (ECI), diagnosis is conducted by a transdisciplinary team consisting of professionals from various fields, including psychologists, pediatricians, neurologists, teachers, and the child's family, among others. Multiple assessments are employed to interpret information about the child and determine if the presented symptoms correspond to ASD (Silva & Mulick, 2009). It is understood that symptoms can be recognized during the second year of life, although some may be detected before the child reaches 12 months of age (APA, 2014).

The treatment of ASD can encompass medication and support from professionals in different disciplines (e.g., psychology, occupational therapy, physiotherapy, speech therapy, neurology, among others), aiming to facilitate the child's development across various domains (Pajareya & Nopmaneejumruslers, 2011, Vasa et al, 2014; Zhou et al., 2021). Consequently, it is recommended that the child undergo continuous evaluation to monitor progress and assess the effectiveness of interventions received (Silva & Mulick, 2009).

On the other hand, the impairments associated with ASD have impacts on both the diagnosed child and their family. As stated by Minatel and Matsukura (2014), the daily life of families is significantly affected by the experience of having a child with ASD, as "family members undergo transformations throughout the life cycle, and often social inclusion, autonomy, and quality of life for these families are compromised."

The difficulties stemming from ASD can be considered significant stressors for parents, contingent upon interacting variables such as the severity of the child's characteristics, parental personalities, and the availability of community and social support, among others (Minatel & Matsukura, 2014). Therefore, in addition to providing information, promoting and safeguarding the mental health of the family is essential, as it directly impacts the quality of care provided to their children with ASD (McConachie & Diggle, 2007; Estes et al., 2009; Kulasinghe et al., 2023).

The COVID-19 Pandemic and Autism Spectrum Disorder (ASD)

The COVID-19 pandemic, caused by the novel coronavirus (SARS-CoV-2), has emerged as one of the greatest global health challenges of this century (Werneck & Carvalho, 2020). On January 30, 2020, the World Health Organization (WHO) classified COVID-19 as a Public Health Emergency of International Concern (PHEIC), representing the highest level of alert by the WHO (OPAS, 2020). In March of the same year, the WHO declared COVID-19 a pandemic (OPAS, 2020).

Data released by the Ministry of Health in March 2023 revealed that more than 700,000 deaths were attributed to the pandemic (Ministério da Saúde, 2023). In this context, over 1,400 children aged 0 to 11 years old lost their lives, and COVID-19 was considered the second leading cause of death among children in the 2020s (Instituto Butantan, 2022).

Meanwhile, the impacts of COVID-19 have amplified aspects of social vulnerability, particularly concerning children, such as increased food insecurity among families, financial setbacks including decreased family income, disruption of healthcare and educational services, among others. Therefore, ensuring the rights of children and adolescents has become a paramount task (Câmara dos Deputados, Brasil, 2021).

According to Bellomo et al. (2020), children with ASD have been significantly impacted by the containment measures implemented during the COVID-19 pandemic. These measures have resulted in a lack of educational and healthcare support for children with ASD. The article highlights how disruptions in daily routines, limited access to therapeutic and educational services, and the suspension or transition of in-person activities to virtual platforms have had negative consequences on the well-being and development of children with ASD. In this sense, families have faced reduced support during this time, placing a greater burden on them to care for their children with ASD (Alonso-Esteban et al., 2020).

Researchers Amorim et al. (2020) conducted an observational, cross-sectional, and analytical study to measure the impact of COVID-19 on children with ASD. The study included 43 parents of children with ASD and 56 parents in the control group, utilizing a questionnaire as the data collection instrument. The results indicated changes in behavior in the majority of children (72.1%), with the causes of behavioral changes including anxiety (41.7%), irritability (16.7%), obsession (11.1%), hostility (5.6%), and impulsivity (2.8%). Furthermore, the majority of parents reported a negative impact on emotional management (55.8%), in contrast to parents in the control group who mainly reported a positive or neutral impact of the quarantine on emotional management (71.4%).

Another study related to COVID-19 was conducted by Alonso-Esteban et al., which involved a systematic review on the effects of confinement on children with ASD. The study revealed a decrease in physical activities and an increase in screen time. Similarly, there was an increase in psychological stress experienced by parents during the period of social isolation, resulting from both the pandemic situation itself and the challenges of balancing work and personal life (e.g., economic difficulties and new obligations related to the special routines of their children with ASD). However, the results regarding children with ASD were contradictory to those of their parents, as they showed a reduction in stress due to the limited variance in routine, leading to increased satisfaction and well-being (Alonso-Esteban et al., 2021).

In a Spanish study conducted by Mumbardó-Adam, Barnet-López and Balboni (2021), using a cross-sectional methodology, the aim was to describe the type of support utilized by families of 47 individuals with ASD to maintain contact with formal and informal supports during quarantine. Among the mentioned supports, 36.2% of parents referred to family support and online contact with relatives, followed by 23.4% for online psychological support. Regarding educational support, 61.7% of families stated that they received some form of educational support during quarantine, with 61.7% consisting of online classes and specific activities sent to students to work on at home, while 21.3% of schools provided general topics and guidance (Mumbardó-Adam, Barnet-López, & Balboni, 2021).

In terms of care for family members of individuals with ASD, a survey study by Manning et al. (2021) reported higher stress levels among caregivers of younger individuals with ASD. Stress was primarily due to the interruption of therapeutic services, financial concerns, and health issues (Manning et al., 2021). Similarly, in an experimental study by Colizzi et al. (2020) involving 527 families of individuals with ASD, approximately one in four parents stopped working due to COVID-19.

This financial perspective was also reported in a study by Fong et al. (2021), which analyzed families of children with ASD and families of typically developing children in Malaysia (72 families of children with ASD and 62 families of typically developing children). The results showed that almost all parents experienced changes in their lifestyle due to the pandemic, with 5% of all parents losing their jobs during this period. Additionally, 25% of caregivers of children with ASD and 13% of parents of typically developing children reported a loss of income due to the pandemic (Fong et al., 2021).

III. Material And Methods

Research Design

As a study method, a quantitative and descriptive methodology was chosen. According to Lakatos and Marconi (2003), quantitative-descriptive research consists of empirical investigations whose main purpose is to outline or analyze the characteristics of observed facts or phenomena. This study was previously approved by the Ethics Committee of the Federal University of Pelotas, following Resolution 466/2012 of the National Health Council. Participation was voluntary, and data collection occurred after the signing of the Informed Consent Form (ICF), following ethical parameters.

Participants

The target population of this study consisted of Brazilian families with children with ASD, aged 0 to 9 years. A total of 96 families participated in the study, with the majority being female (92%), identified as mothers of children with ASD (86%). Regarding their region of residence in Brazil, a large portion (47%) declared that they reside in the southern region, followed by the southeast region (23%). The remaining respondents indicated they belonged to the central-west region (12%), the northern region (10%), and finally (8%) from the northeastern region of the country.

Instrument

To address the research problem, a survey was conducted, which according to Fink (2015), is a method of collecting information about people's ideas, feelings, health, and beliefs. The questionnaire contained 37 questions about the routines of families with children with ASD during the pandemic period, as well as information regarding the ICF. It was made available through Google Forms and widely disseminated on social media throughout Brazil.

Analysis:

All statistical analysis was performed using Amos 7 software. Instruments filled with insufficient information and multivariate outliers were identified using the Hadi test and subsequently eliminated. The Hadi test was used because Hadi and Simonoff (1993) propose a methodology capable of detecting multiple multivariate outliers in a superior way to other methodologies. After eliminating the multivariate outliers, a total of 96 instruments were obtained.

To analyze the proposed model, the technique of structural equation modeling was applied since, according to Hair et al. (2010), it is the best multivariate procedure to test theoretical relationships between concepts represented by multiple measured variables.

To assess the adequacy of the proposed model to the sample data, the following absolute fit and incremental fit indices were used: the ratio of the chi-square to the number of degrees of freedom, Root Mean Square Residual (RMSR), Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI). The Normed Fit Index (NFI) was not used since the sample size influences the mathematical expectation (Bulhões, 2013). Alternatively, the Incremental Fit Index (IFI) was used as it is a proposal that aims to reduce the influence of sample size and the addition of parameters.

IV. Result

The results were analyzed using structural equation modeling with the maximum likelihood estimation method. Table 1 presents the values of the fit indices for the final model, along with the authors and reference values used to validate the model.

Table 1 - Fit index values, authors, and reference values

FIT INDICES	REFERENCE AUTHOR	REFERENCE	MODEL
Chi-square*	Carmines e Mciver (1981)	<3.00	0.70
GFI	Byrne (2013)	>0.95	0.95
CFI	Byrne (2013)	>0.95	1.00
TLI	Hu e Bentler (1999)	>0.95	1.11
IFI	Bollen (1989)	>0.90	1.08
RMR	Hooper et al. (2008)	<0.05	0.01
RMSEA	Hooper et al. (2008)	<0.05	0.00
Legend: * Chi-square ratio to degrees of freedom (df).			

Table 1 demonstrates the fit indices for the model used in this study in comparison to the reference thresholds. All fit indices met or exceeded the recommended thresholds. Specifically, the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), and Incremental Fit Index (IFI) were all greater than 0.95, indicating strong model fit. The Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) values were below 0.05, further supporting the goodness of fit. Additionally, the relative chi-square value was well below the reference threshold of 3.0.

For a visual representation of the model and its components, refer to Figure 1, which illustrates the initial step of the process involving the alteration in the routine of children with ASD.

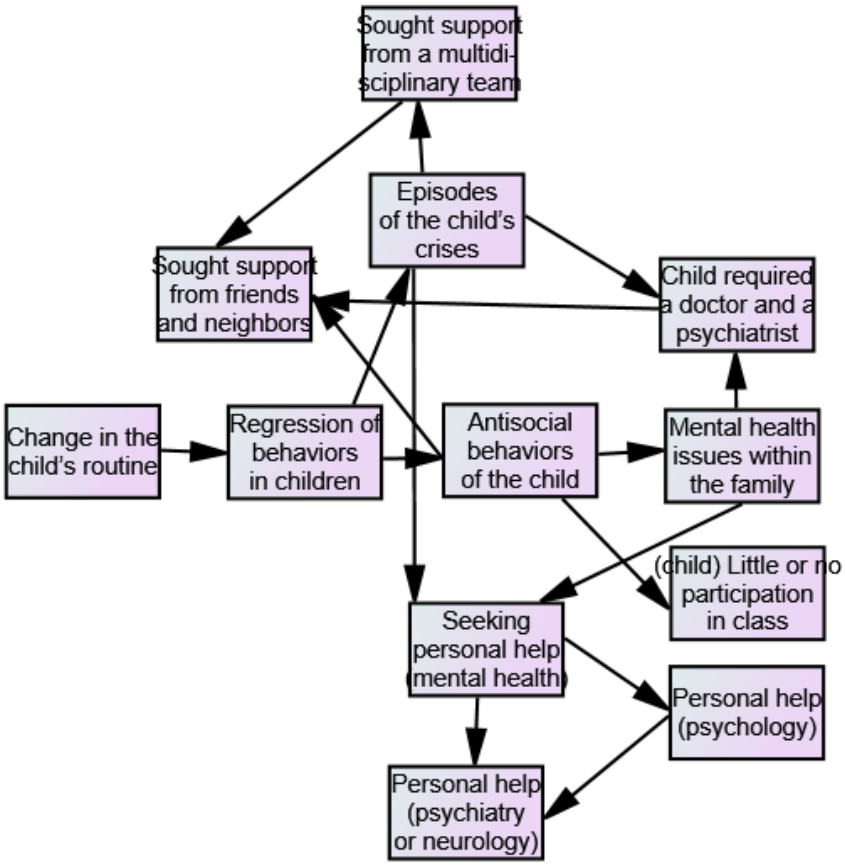

Figure 1: Effects of the Change in Routine of the Child with ASD on Behavior and Mental Health. Source: Authors

Figure 1 illustrates the various implications of the change in routine for both the family and the child with ASD. These implications encompassed behavior regressions, antisocial behaviors like isolation, increased crises, and limited or no participation in online classes. The change in routine also had significant effects on the mental health of the family and the child, necessitating support from multidisciplinary teams or specialized professionals such as doctors, psychiatrists, and psychologists, as well as seeking assistance from friends and neighbors. To provide further insight into the findings, Table 2 presents the estimated direct (standardized) loadings in the final model.

Table 2 - Estimated direct (standardized) loadings in the final model.

VARIABLE	DIRECTION	VARIABLE	LOAD	PROB.
Regression of behaviors in children	<---	Change in the child's routine	-0.291	0.003
Antisocial behaviors of the child (isolation)	<---	Regression of behaviors in children	0.236	0.018
Increased episodes of the child's crises	<---	Regression of behaviors in children	0.335	0.000
Mental health issues within the family	<---	Antisocial behaviors of the child (isolation)	0.260	0.009
Seeking personal help (mental health)	<---	Increased episodes of the child's crises	0.227	0.017
Seeking personal help (mental health)	<---	Mental health issues within the family	0.310	0.001
Seeking personal help (psychology)	<---	Seeking personal help (mental health)	0.517	0.000
The child required a doctor and a psychiatrist	<---	Mental health issues within the family	0.221	0.023
Sought support from a multidisciplinary team	<---	Increased episodes of the child's crises	0.251	0.012
The child required a doctor and a psychiatrist	<---	Increased episodes of the child's crises	0.226	0.020
Sought personal help (psychiatry or neurology)	<---	Sought personal help (psychology)	-0.823	0.000
Sought support from friends	<---	Sought support from a	-0.212	0.028

and neighbors		multidisciplinary team		
Little or no participation of the child in class	<---	Antisocial behaviors of the child (isolation)	0.245	0.014
Sought support from friends and neighbors	<---	Antisocial behaviors (isolation)	0.256	0.007
Sought personal help (psychiatry or neurology)	<---	Seeking personal help (mental health)	0.943	0.000
Sought support from friends and neighbors	<---	The child required a doctor and a psychiatrist	0.214	0.025
Source: Authors				

Table 2 reveals a noteworthy decline in the regression of the child's behaviors (with a standardized load of -0.291). This finding aligns with the studies conducted by Bellomo (2020) and Colizzi et al. (2020), which emphasize the heightened vulnerability of children with Autism Spectrum Disorder (ASD) to the adverse effects of the COVID-19 pandemic. Both studies demonstrate that the imposed restrictions and consequential changes during the pandemic significantly impacted children with ASD and their families. Correspondingly, Esteban et al. (2021) found that social distancing and environmental stability (maintaining an unchallenging familial context) had a positive impact on certain individuals with ASD. These conditions led to a reduction in social stress and, consequently, an increase in satisfaction and overall well-being.

The analysis presented in Table 2 demonstrates a significant and positive relationship (with a load of 0.236) between the regression of a child's behavior and their antisocial behavior, specifically isolation. Notably, this finding aligns with the research conducted by Werner & Dawson, G. (2005), which emphasizes that autistic regression is an actual phenomenon rather than merely a subjective perception of parents. The researchers observed substantial changes in behavior, language, and social skills during regression, providing objective evidence of this phenomenon. Similarly, McGovern & Sigman (2005) revealed that certain children with ASD experience a significant regression in social and communication skills, particularly during complex periods like the transition to adolescence, resulting in heightened social isolation.

The evidence suggests that regression, whether positive or negative, in the behaviors of children with ASD contributes to variations in their antisocial behaviors, such as isolation. This finding further corroborates the observational, cross-sectional, and analytical study conducted by Amorim et al. (2020), involving 99 parents of school-aged children with Autism Spectrum Disorder (ASD). Their research aimed to examine the impact of social isolation during the COVID-19 pandemic on various aspects of daily life for both children and parents. The study highlighted significant challenges reported by parents, including social isolation (41.4%), restricted outdoor play (13.1%), changes in routine (11.1%), boredom (9.1%), and remote learning (7.1%).

These findings can be attributed to the inherent difficulties that children with ASD encounter in social communication and their reliance on environments that foster their social development, often provided through educational and therapeutic contexts. Consequently, social isolation severely limits opportunities for engagement in these vital social developmental activities with individuals beyond immediate family members, as underscored by Bellomo et al. (2020).

Regarding the child's crises, this study observed that the regression of behaviors in children with Autism Spectrum Disorder (ASD) leads to an increase in crises (with a load of 0.335). This result was also found in a quantitative cross-sectional study conducted by Ataíde et al. (2021), which involved 65 caregivers of children and/or adolescents diagnosed with ASD, aged between 2 and 19 years. The effects of social isolation during the pandemic contributed to an increase in the frequency of self-injurious behaviors (30.76%), aggressive behaviors towards others (20%), and tantrums (10.76%).

These findings highlight the importance of understanding and addressing the crises and challenging behaviors associated with the regression of behaviors in children with ASD. The context of social isolation during the pandemic has proven to be particularly challenging, with significant impacts on the well-being and quality of life of children and their families.

The increase in the child's crises resulted in a higher demand for personal mental health support (loading equal to 0.227) and an increased need for medical and psychiatric care for the child (loading equal to 0.226). Similarly, Colizzi et al. (2020) investigated the impact of the COVID-19 pandemic on individuals with ASD through an online questionnaire involving 527 parents and caregivers. The study revealed that a portion of parents sought support from local healthcare services (27.7%), received direct (70.1%) or indirect (84%) school support, and relied on assistance from private therapists (73.3%) during the pandemic.

Regarding mental health issues within the family (loading equal to 0.260), similar observations were made in the study by Wang et al. (2021). The study compared families of individuals with ASD to families with typically developing individuals and found higher rates of anxiety and depression symptoms in the former group. Reported anxiety levels were 12.2% versus 6.6%, and depression levels were 31% versus 21.7%.

Fortes, Vieira, and Machado (2020) obtained similar results in their cross-sectional, observational, and quantitative study involving 77 residents from municipalities in the southern region of the state of Rio de Janeiro, divided into groups A and B. The Depression Anxiety Stress Scales (DASS-21) were used as the instrument, and 60% of participants in group A and 44.68% in group B showed signs of depression.

These findings support the study conducted by Manning et al. (2021) in Michigan, United States, involving 471 family members and caregivers of individuals with Autism Spectrum Disorder (ASD) aged between 2 and 46 years. The data revealed several concerns among the respondents. Approximately 54.5% expressed worry about individuals with ASD spending excessive time at home due to isolation. Additionally, 52.1% expressed concerns about their own or the individual with ASD's health, while 30.7% reported stress related to financial issues. Furthermore, 22.2% expressed concerns about the lack of care provided by others for individuals with ASD, and 5% indicated stress from being separated from them. Respondents also noted that they experienced higher levels of stress when the individual with ASD was younger, while older individuals with ASD experienced more stress.

The presence of mental health issues in the family increased the need for medical and psychiatric support for the child (loading equal to 0.221). This finding aligns with the study by Wang et al. (2021), which indicated that parents of children with ASD displayed low levels of resilience and positive coping strategies, directly affecting their ability to manage the challenges faced by their children.

Due to the child's requirement for medical and psychiatric support, there was an increased need for assistance from friends and neighbors (loading equal to 0.214). This result can be partly explained by the potential need for help with transportation to medical appointments or maintaining household routines during the child's treatment.

Similar results were identified in the quantitative study conducted by da Silva, Couto, and Baptista (2021) involving 77 family caregivers of children aged 5 to 8 years. The study revealed that 34% of the participants experienced increased support from their networks during the pandemic.

The need for support from a multidisciplinary team for their child also increased (loading equal to 0.251). This is likely because, in the pre-pandemic context, children received support from various therapists. Ataíde et al. (2021) reported that all participants in their study experienced significant interruptions in therapy sessions. Among the participants with ASD who missed therapy, 56.92% confirmed the absence, 33.84% did not miss therapy, and 9.23% were uncertain.

Concerning the need for support from friends and neighbors, the occurrence of antisocial behaviors in children (such as isolation) led to an increased reliance on support from friends and neighbors (loading equal to 0.256). These findings align with the study by Manning et al. (2021), where a considerable number of participants reported increased support from family, friends, and other sources. Additionally, support from school (43.9%), therapy centers (19.7%), community mental health services (6.1%), and parent support groups (2.9%) were mentioned.

Similarly, Mumbardó-Adam, Barnet-López, and Balboni (2021) conducted a study in northern Spain involving 47 families of children with ASD aged between 2 and 17 years. They found that online contact with relatives and online psychological support were strategies employed to manage the quarantine.

On the other hand, the need for personal assistance related to mental health (loading equal to 0.221) increased the necessity for help in the field of psychology (loading equal to 0.517). Furthermore, there was an increased demand for personal help from psychiatrists and neurologists by mothers (loading equal to 0.943). However, the need for personal help in psychology (loading equal to -0.823) decreased the reliance on personal help from psychiatrists and neurologists by mothers.

In this regard, Estes et al. (2009) found that mothers of children with autism report higher levels of parenting stress and mental health issues compared to mothers of typically developing children. Parental stress can negatively impact the mental health and well-being of mothers, emphasizing the importance of providing adequate support and resources for families of children with autism. Fortes, Vieira, and Machado (2020) found that less than half of the research participants sought psychological support, with 40% from Group A and 23.40% from Group B. However, half of Group A lost access to this support, while 81.81% of Group B maintained either partial or normal access.

Additionally, the child's antisocial behaviors, such as isolation, contributed to their low or no participation in online classes (loading equal to 0.245). Similarly, Tokatly, Leitner, and Karnieli-Miller (2020) reported that the lack of interaction with peers was a significant concern during isolation, as the transition to online meetings was not well adapted, resulting in a loss of sociability.

The analysis of Table 2 highlights significant findings related to the effects of changes in the routine of children with Autism Spectrum Disorder (ASD). Notably, the regression of behaviors in children shows a pronounced decline and is linked to antisocial behaviors such as isolation, contributing to an increase in child crises. This, in turn, amplifies the demands for mental health support and medical and psychiatric care for both the child and the family. The presence of mental health issues within the family is also a consequence, further

heightening the need for medical assistance for the child. Additionally, the analysis reveals the importance of multidisciplinary support and the critical role of social support networks, friends, and neighbors. In summary, the change in routine for children with ASD triggers a series of implications that significantly impact behavior and mental health, underscoring the need for integrated and supportive approaches to address these complex challenges.

V. Conclusion

This study has shed light on the significant impacts that the COVID-19 pandemic has had on families of children with ASD across various aspects of their lives. Despite the unavailability of regular services, parents reported that their children benefited from the stability of home routines, providing a sense of well-being. This can be attributed to the unique characteristics of the autism spectrum and the consequences of the pandemic on these children and their families.

However, the shift in routines, from engaging in stimulating activities to less challenging ones, had both positive and negative effects. On one hand, the minimized environmental disruptions brought about a sense of well-being for children with ASD by reducing disturbances that could potentially disturb them. On the other hand, the repetitive home routines and the absence of crisis management interventions had detrimental effects on their development.

With the interruption of multi-professional services utilized in the treatment of children with ASD, caregivers had to adapt to new routines, such as engaging in online activities and classes, or coping with service unavailability. Telemedicine played a crucial role in providing medical assistance to these families. Informative materials, remote consultations, and physical and mental health interventions proved to be invaluable during this crisis.

In terms of education, challenges in conducting online classes resulted in limited or no participation for many children. Difficulties in adaptation, connectivity issues, and lack of family support during activities contributed to this problem. Therefore, it is essential to implement strategies that prevent or reduce children's absences during classes.

The pandemic had noticeable consequences for parents of children with ASD. Apart from the challenges related to COVID-19 containment measures, parents had to navigate financial hardships such as income reduction or loss, while also addressing their children's developmental needs and managing crises. It is crucial for governments to propose public policies that address the financial and mental health aspects of these children and their caregivers. Collaborations with higher education institutions through research, teaching, and outreach projects can also provide valuable support for their overall well-being.

This study acknowledges its limitations, including the sample size and limited dissemination of research findings. Future research should seek support from autism organizations and families to ensure broader knowledge dissemination.

In conclusion, the atypical context of the COVID-19 pandemic has brought about changes in routines for children with ASD and their families, resulting in various consequences in their lives. It is recommended to expand access to healthcare and education services for this population to support their overall development, even during atypical times such as a pandemic. Additionally, preparedness and research are crucial for effectively managing other atypical and crisis situations.

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