

Following 4 months of social distancing during COVID-19 Pandemic in Brazil did not change aspects of functioning in children and adolescents with developmental disabilities: A longitudinal study

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Abstract

The COVID-19 pandemic and its demands of social distancing have created challenges in the lives of children/adolescents with developmental disabilities and their families, which would change aspects of children's functioning. The objective of this study was to evaluate changes in some components of functioning of children/adolescents with disabilities following 4 months of social distancing during a period of high contamination rate in the year 2020 in Brazil. Participated 81

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mothers of children/adolescents with disabilities, 3-17 years, most of them (80%) diagnosed with Down syndrome, cerebral palsy and autism spectrum disorder. Remote assessments of functioning' aspects including IPAQ, YC-PEM/ PEM-C, Social Support Scale and PedsQL V.4.0. Wilcoxon tests compared the measures, with significance level <0.05 . No significant changes in participant's functioning were identified. Social adjustments required to facing the pandemic during two points in time in the midst of the pandemic did not change the evaluated aspects of functioning in our sample of Brazilian.

Keywords

functioning, children, disabilities, COVID-19

What this paper adds?

- The level of physical activity and participation at home in children with developmental disabilities did not change between the pandemic period analyzed.
- The social support received by the caregiver of children with developmental disabilities did not change between the pandemic period analyzed.
- The child's health-related quality of life did not change during the period evaluated.

Introduction

The Coronavirus (COVID-19) pandemic, recognized in March 2020 by the World Health Organization (WHO), has brought numerous and unprecedented challenges to health systems and daily life of the population. In Brazil, the period of high contamination rate in the year 2020 occurred between June and September 2020, when the highest rates of positive cases of COVID-19 were registered (Silva et al, 2020) until that moment. Without available vaccines, social distancing became the most protective/drastring measure to contain the viral spread (Nussbaumer-Streit et al., 2020; Lippi et al., 2020).

Considering the relevance of the environment for children/adolescents' development (Kramer et al., 2012), social distancing seems to have a negative impact on their lives, potentially determining worse cognitive development and higher rates of anxiety and depression (Almeida et al., 2021). The interruption of outdoor activities, deprivation of social contact, associated with the maintenance of school demands by means of video lessons, resulted in many changes, like an increase in the time of exposure to screens (TV, smartphones, computers, and tablets) (French et al 2020). The long periods of remote teaching and the required adjustments to keep the didactic schedule also increased the volume of school tasks carried out at home, demanding time and dedication not only from the child but also from their parents. Therefore, parental stress, due to overlapping demands of household chores, remote work, educational support for their children and lack of social support, might create anxiety, irritability, and lack of patience for raising children.

Although the globally advocated social distancing measures might have had potential to negatively impact everyone, children and adolescents with developmental disabilities may have been more intensely affected by these measures due to their greater health vulnerability (Okuyama et al., 2021). For this population, the abrupt interruptions in elective medical and therapeutic procedures and the complete withdrawal of face-to-face school and leisure activities were among the biggest challenges arising from social distancing (Aquino et al., 2020; Batista et al., 2021).

Studies prior to the COVID-19 pandemic reported that children with developmental disabilities presented lower quality of life (Isa et al., 2016; Kuru and Piyal, 2018) and physical activity levels (Einarsson et al., 2015; Aviram et al., 2019) when compared to their typical peers. Moreover, their parents and caregiver showed lower perceptions of social support (Holanda et al., 2015, Kuru and Piyal, 2018).

Therefore, in the pandemic scenario, the peculiarity of the social changes might have affected the functioning of both these children and their parents/caregivers. Most of the studies addressing the effects of COVID-19 pandemic have focused on specific components of health of the individuals, such as, caregivers' quality of life (Al Awaji et al., 2021), behavioral aspects (Summers et al., 2020; Marinho et al., 2019) or physical activity level of children with disabilities (Marinho et al., 2019; Theis et al., 2021; Suarez-Balcazar et al., 2021). We point out the need to address the potential changes observed during pandemic on the functioning of children and adolescents with developmental disabilities, emphasizing functioning in the light of the International Classification of Functioning, Disability and Health (ICF), by assessing multiple biopsychosocial components of health.

Comparing functioning in children with Down syndrome one month before and three months after pandemic beginning, a study found a significant reduction in the social support reported by the children's caregivers, and an increase in children's participation at home (Brugnaro et al., 2021). Possibly, the longer time spent by these children and their parents at home, with increased contact with domestic activities, generated greater opportunities for participation in this environment. Taking into account the multidirectionality between the health components of individuals for determination of their functioning (Castro et al., 2020; Halberstad et al., 2019), we believe that the extensive duration of social distancing measures imposed to control the pandemic (Lippi et al., 2020; Nussbaumer-Streit et al., 2020) would have impacted functioning of these children. In addition, considering the vulnerability of the population of children and adolescents with developmental disabilities, this pandemic situation might affect other components of their health. The knowledge of these changes may help rehabilitation professionals involved with these children to better comprehend the relevance of social aspects for their health, as well as might guide them to develop and adopt measures to promote functioning for this population.

Therefore, the present study proposes to carry out a remote assessment (Brugnaro et al., 2022) longitudinally of some aspects of functioning (physical activity level, home participation, home environment support, social support and quality of life related to health) of children and adolescents with developmental disabilities during a period of high contamination rate in the year 2020 in Brazil. We expect that aspects of functioning evaluated will be undermined after 4 months of pandemic, considering the challenges imposed by social distancing, and the difficulties that children with developmental disabilities and their caregivers already face prior to the pandemic. This study will possible new insights about the functioning assessment of children with developmental disabilities in Brazil during pandemic, in order to provide important data about how they were facing the pandemic during this period.

Methods

Research design

This was a longitudinal study with a convenience sample. It was approved by the local ethics committee (protocol number: 31786920.8.1001.5504) following the recommendations of the

Check-list for Reporting Results of Internet E-Surveys (CHERRIES) statement guideline (Eysenbach, 2004).

Participants

Parents of children and adolescents aged 3 to 17 years diagnosed with developmental disorders were assessed. We consider as developmental disabilities: (1) diagnosed neuromotor impairments, such as, cerebral palsy, developmental coordination disorders, myelomeningocele, chronic syndromes with motor impairments and neurodegenerative diseases (Field & Roxborough, 2012; Field & Roxborough, 2011), and (2) other diagnosed conditions affecting cognitive development, such as, Down syndrome (Agarwal Gupta and Kabra, 2014) and autism spectrum disorder (Baird et al., 2003). Participants' age was chosen according to the range within the cut line of the used instruments and based on the Brugnaro et al. (2022) study, since we used part of the same assessment.

The study was widespread through communication media and social networks. Participants were selected from contact on demand, direct invitation contact from researchers or in partnership with institutions that take care of children/adolescents with developmental disabilities. Contacts were established by WhatsApp or e-mail.

We did not include parents who did not sign the Informed Consent Form (ICF) and child's the Minor's Consent Form (MCF). Those who wanted to leave the research, for any reason, were discontinued from the study.

Procedures

All the included participants were assessed by electronic forms (EF), and also by a telephone interview. The EF contained the ICF, MCF and a characterization form addressing child's profile (age, sex, diagnosis, mothers' age, caregiver education level, type of residence, number of rooms in the residence and Socioeconomic Classification) and validated questionnaires (IPAQ-short version, Social Support Scale and PedsQL V.4.0). Phone interviews were used by the researchers allowing parents' responses to YC-PEM/PEM-CY (according to the child's age). These calls were conducted by only one evaluator ensuring consistency and reliability for the assessments.

Following the recommendations of the CHERRIES, parents/caregivers received a link containing ICF and MCF. Study design involved two assessments (AI and AII) separated by an interval of four months. The first assessment was carried out between June/September 2020, during a period of high contamination rate in the year 2020 in the country where the study was carried out. Parents should answer all the measures items within 10 calendar days of EF submission.

Outcome measures

We assessed the sample characterization and some aspects of functioning based on the biopsychosocial model in the ICF, in two modalities: EF and telephone interview, which will be described below.

EF: Sample characterization

The caregiver's education level was obtained through a closed question for the participant to choose the option that best describes (Incomplete Elementary, Complete Elementary, Incomplete high school, Complete high school, Incomplete Higher Education, Complete Higher Education) which

were categorized by frequency of occurrence. Participants' socio-economic classification was obtained using the Brazil Economic Classification Criterion (CCBE), according to ABEP - Brazilian Association of Research Companies. ABEP is an economic segmentation instrument that uses the survey of household characteristics (presence and quantity of some household items of comfort and educational level of the family head) to differentiate the population. The criterion assigns points according to each household characteristic and performs the sum of these points. Subsequently, correspondence is made between the value obtained in the sum and score ranges established by the economic classification, from highest to lowest, defined by A, B1, B2, C1, C2, D-E. Sample characterization data is shown on [Table 1](#).

When fill in the EF participants should indicate the type of social distancing child and caregiver were adopting: no social distancing (not avoiding external physical contact); partially social distancing (only leaving home to access food, medication, therapies, or medical consultation); or total social distancing (do not leave the house under any circumstances). Also, they completed the time of social distancing caregiver was performing (Was not distancing; 0 to 1 month; to 2 months; 2 to 3 months; 3 to 4 months; More than 4 months) and if the child was undergoing in-person therapy during the pandemic (yes or no). These results are presented on [Table 2](#).

EF: IPAQ- Short Version. The level of physical activity was remotely accessed via EF using the International Physical Activity Questionnaires - short form (IPAQ-short form). IPAQ is a global instrument, widely used to assess physical activity level ([Lima et al., 2019](#)), and validated for Brazilians ([Guedes et al., 2005](#)). By means of eight standardized questions, IPAC assesses the frequency, duration, and intensity of activities performed by the individual, in the week prior to the assessment date. The activities questioned involve, 'light physical activity', 'moderate physical activity, and 'vigorous physical activity. The results obtained were classified as 'inactive' (sedentary), 'insufficiently active B', 'insufficiently active A', 'active' and 'very active' ([Lima et al., 2019](#); [Melo et al., 2016](#)). IPAC scores were increasingly categorized for statistical analyses. [Table 2](#) presents these results.

Telephone interview: YC-PEM/PEM-CY. The Young Children's Participation and Environment Measure (YC-PEM) and the Children's Participation and Environment Measure (PEM-CY) are corresponding instruments that assess the frequency and involvement in participation ([Coster et al., 2011, 2013, 2014](#); [Bedell et al., 2011, Khetani et al., 2014](#)). They can be used, respectively, in infants/children and children/adolescents aged between 0-5 years and between 6-17 years, with typical development or with any type of developmental disabilities, including physical, cognitive, or emotional, and must be answered by parents or caregivers ([Coster et al., 2011](#)). The present study used the versions with translation and cultural adaptation for Brazil ([Galvão et al., 2018](#); [Silva Filho et al., 2019](#)). Only part of participation at the home environment was used, considering the situation of social distancing imposed by the COVID-19 pandemic. Both versions have the same structure, varying only in the number of questions, and are composed of two parts: (a) participation, which involves the constructs frequency and involvement, and (b) environment, which involves characteristics of supports and barriers and the availability of services and resources.

For part (a) 'participation', the YC-PEM instrument has 13 items in the home session and the PEM-CY, 10 items. Thus, for each type of activity, it is asked (1) How often the child/adolescent participated in certain situations over the past 4 months; (2) How involved the child/adolescent is when they participate in 1 or 2 of the activities they perform most frequently. In order to normalize the YC-PEM and PEM-CY data considering the different number of questions, and allow to use as a same measure variable, the mean frequency score was used, which is obtained by dividing the total

Table I. Characterization of the participants of the first and second evaluation.

	Assessment I - n (%)	Assessment II - n (%)
Child's Gender	(n = 81)	(n = 60)
Female	30 (37.0%)	18 (30.0%)
Male	51 (63.0%)	42 (70.0%)
Child's Age (completed years)	(n = 81)	(n = 60)
Mean	7,58	7,65
Standard deviation	3,55	3,61
Child's Age description (completed years)	n	n
3	8	4
4	8	6
5	10	9
6	11	10
7	9	7
8	9	6
9	6	2
10	4	4
11	4	2
12	3	3
13	4	3
14	0	0
15	2	1
16	1	1
17	2	2
Developmental Disability	(n = 81)	(n = 60)
Down syndrome	34 (42.0%)	23 (38.3%)
Cerebral Palsy	16 (19.8%)	12 (20.0%)
Autism Spectrum Disorder	14 (17.3%)	11 (18.3%)
Others	15 (18.5%)	12 (20.0%)
Was not informed	2 (2.5%)	2 (3.3%)
Maternal Age (completed years)	(n = 81)	(n = 60)
Mean	38,42	38,53
Standard deviation	8,93	8,63
Caregiver education level	(n = 81)	(n = 60)
Incomplete Elementary	9 (11.1%)	6 (10.0%)
Complete Elementary	5 (6.2%)	4 (6.7%)
Incomplete High School	8 (9.9%)	5 (8.3%)
Complete High School	26 (32.1%)	19 (31.7%)
Incomplete Higher Education	5 (6.2%)	3 (5.0%)
Complete Higher Education	28 (34.6%)	23 (38.3%)
Type of residence	(n = 81)	(n = 60)
House	64 (79.0%)	46 (76.7%)
Apartment	17 (21.0%)	14 (23.3%)
Number of rooms in the residence	(n = 81)	(n = 60)
0-3	6 (7.4%)	5 (8.3%)
4-6	56 (69.1%)	39 (65.0%)

(continued)

Table I. (continued)

	Assessment I - n (%)	Assessment II - n (%)
7-9	16 (19.8%)	14 (23.3%)
10	3 (3.7%)	2 (3.3%)
Socioeconomic Classification	(n = 81)	(n = 60)
D-E	2 (2.5%)	2 (3.3%)
C2	21 (25.9%)	11 (18.3)
C1	27 (33.3%)	25 (41.7%)
B2	23 (28.4%)	17 (28.3%)
B1	5 (6.2%)	3 (5.0%)
A	3 (3.7%)	2 (3.3%)

Legend: n = number of participants.

frequency score (sum of the scores from all items) by the total number of items of each version (YC-PEM: 13; PEM-CY: 10).

For involvement in each activity (2), the mean involvement score was also calculated dividing the total involvement score (sum of the scores from all items) by the total number of items of each version (YC-PEM: 13; PEM-CY: 10).

All scores (mean frequency, mean involvement) for the home environment were used in the statistical analyses. Higher scores indicate, respectively, greater frequency and greater involvement. See [Table 3](#).

EF: Social Support Scale. The Social Support Scale measures the social support provided to the main caregiver of the child/adolescent. This scale is composed of 19 items that assess, according to validation for the Brazilian population, three dimensions of social support: positive social interaction/affective support; emotional/information support; and material support and has high internal consistency in all its domains ([Griep et al., 2005](#)).

For each item, the respondent answers, on a scale from 1 to 5 points, how much he/she considers that he/she has that particular social support, in the frequency of “never” (1); “rarely” (2); “sometimes” (3); “almost always” (4); and “always” (5) ([Griep et al., 2005](#)). The final score is obtained by summing the points of all items, and this raw value was used in the statistical analysis. Thus, higher scores indicate that the respondent has greater social support. See [Table 3](#).

EF: PedsQL™ V. 4.0. PedsQL™ V. 4.0 Generic Core Scales module, with the parent proxy versions, was used to assess the health-related quality of life of the children/adolescents with developmental disabilities based on the responsible person’s report ([Klatchoian et al., 2008](#)). The instrument has adequate internal consistency for the Brazilian population ([Klatchoian et al., 2008](#)). There are specific versions for age groups: 13-18 years (23 items), 8-12 years (23 items), 5-7 years (23 items), and 2-4 years (21 items). Different versions only change the examples in survey questions, consistent with the age gap evaluated. The answer options are the same as for the other module. Versions corresponding to the age of the participants were used. Items are reversed scored and linearly transformed to a 0-100 scale as follows: 0 = 100, 1 = 75, 2 = 50, 3 = 25, 4 = 0, and the Total Score was obtained from the sum of all the items over the number of items answered on all the Scales. Higher scores indicate the higher health-related quality of life of children. See [Table 3](#).

Table 2. Characterization of Pandemic period and level of physical activity.

	Assessment I - n (%)	Assessment II - n (%)
Type of Social Distancing (Child)	(n = 81)	(n = 60)
Total	20 (24.7%)	0 (0.0%)
Partial	59 (72.8%)	55 (91.7%)
Was not in distancing	2 (2.5%)	5 (8.3%)
Type of Social Distancing (Caregiver)	(n = 81)	(n = 60)
Total	7 (8.6%)	0 (0.0%)
Partial	70 (86.4%)	53 (88.3%)
Was not in distancing	4 (4.9%)	7 (11.7%)
Social Distancing Time (Caregiver)	(n = 81)	(n = 60)
Was not distancing	4 (4.9%)	0 (0.0%)
0 to 1 month	1 (1.2%)	16 (26.7%)
1 to 2 months	1 (1.2%)	4 (6.7%)
2 to 3 months	39 (48.1%)	6 (10.0%)
3 to 4 months	1 (1.2%)	34 (56.7%)
More than 4 months	35 (43.2%)	0 (0.0%)
Was the child undergoing in-person therapy during the pandemic?	(n = 81)	(n = 60)
Yes	41 (50.6%)	36 (60.0%)
No	40 (49.4%)	24 (40.0%)
IPAQ - Short version	(n = 71)	(n = 58)
Very Active	10 (14.1%)	13 (22.4%)
Active	26 (36.6%)	18 (31.0%)
Insufficiently Active A	15 (21.1%)	10 (17.2%)
Insufficiently Active B	14 (19.7%)	11 (19.0%)
Sedentary	6 (8.5%)	6 (10.3%)

Legend: n = number of participants.

Statistical Analysis

The Kolmogorov-Smirnov test attested the non-normal pattern of data distribution. Descriptive values across assessments were obtained by the mean and standard deviation in Excel® spreadsheets.

Significant changes in outcome variables between AI and AII were investigated using the Wilcoxon test with Bonferroni correction (Armstrong, 2014). For all analyses, a significance level of 0.01 was adopted ($0.05 / \text{number of comparisons made} = 0.05/5 = 0.01$). Statistical Package for Social Science (SPSS®, version 24.0, Chicago, IL, USA) was used to perform the analyses. We used only cases with valid data and missing values are treated as missing using the pairwise deletion method.

Results

One hundred twenty-four mothers of children and adolescents with developmental disabilities were invited to participate in the research. In assessment I (AI), 81 mothers participated, and 60 mothers agreed to continue in the research (assessment II - AII). Figure 1 illustrates the flowchart of the study

Table 3. Inferential data, mean and standard deviation of the variables analyzed in the first and second assessments during the COVID-19 pandemic.

	IPAQ AI	IPAQ All	Frequency AI	Frequency All	Involvement AI	Involvement All	Social Support AI	Social Support All	PedsQL - V4.0 AI	PedsQL - V4.0 All
N Statistic	71	58	69	53	69	53	78	58	69	57
Minimum Statistic	1	1	6	6	2	3	31	24	17	15
Maximum Statistic	5	5	8	7	5	6	95	95	84	85
Mean Statistic	3.28	3.36	6.51	6.45	4.31	4.36	62.01	63.12	53.67	50.56
Std. Deviation Statistic	1.185	1.307	.342	.289	.544	.610	19.619	21.386	16.120	17.530
Variance Statistic	1.405	1.709	.117	.084	.296	.372	384.896	457.371	259.859	307.284
Kurtosis Statistic										
Statistic	-.811	-1.019	1.635	-.470	.897	.206	-1.211	-1.468	-.690	-.696
Std. Error	.563	.618	.570	.644	.570	.644	.538	.618	.570	.623
Z	-.141b		-1.184c		-.994b		-.363c		-2.386c	
Asymp. Sig. (2-tailed)	.888		.236		.320		.716		.017	

Legend: AI = Assessment I; All = Assessment II; IPAQ = International Physical Activity Questionnaire, short version; PedsQL = Pediatric Quality of Life Inventory; a = Wilcoxon Signed Ranks Test, b = Based on negative ranks, c = Based on positive ranks.

about participants. The participating children and adolescents were mostly male (AI= 63%; AII= 70%) and diagnosed with Down syndrome (AI= 42%; AII= 38.3%). The characterization data of the total sample can be found in [Table 1](#).

In the AI, most children and adolescents (72.8%) and caregivers (86.4%) were in partial distancing. This distancing regime was also observed in the second assessment, with 91.7% of children/adolescents and 88.3% of caregivers considering being in partial distancing. Descriptive data and measures referring to the pandemic experience can be seen in [Table 2](#).

We did not find significant changes on outcome variables addressing aspects of functioning between AI and AII. [Table 3](#) indicates the results of descriptive and statistics tests.

Discussion

We aimed to investigate if 4 months of social distancing during a period of high contamination rate in the year 2020 in Brazil changed aspects of the functioning of children and adolescents with developmental disabilities.

There was no significant change in the physical activity levels of the children evaluated. Our results do not agree with those reported by other authors, who point to a significant reduction in the level of physical activity in this population ([Theis et al., 2021](#); [Suarez-Balcazar et al., 2021](#); [Marinho et al., 2019](#)). Still, in the first assessment, we could see that, in our sample, about 48% of the participants already had an insufficient level of physical activity, a percentage that changed to 46% in the second assessment. So, we can notice that there were no significant changes. In this way, the characteristics of the pandemic peak scenario did not contribute to reducing these levels, since they were already too low in the first assessment. In any case, this high occurrence of insufficient physical activity in the population of children and adolescents with developmental disabilities draws attention to the importance of health professionals in guiding this population, seeking to ensure satisfactory levels of regular physical activity, even in the home environment, for example, proposing active family games, with balls, circuits of activities, or dance. The study by [Masi et al. \(2021\)](#) identified that, during the pandemic, children were viewing more television and digital media and exercising less. Considering that the level of physical activity may be related to mental health in

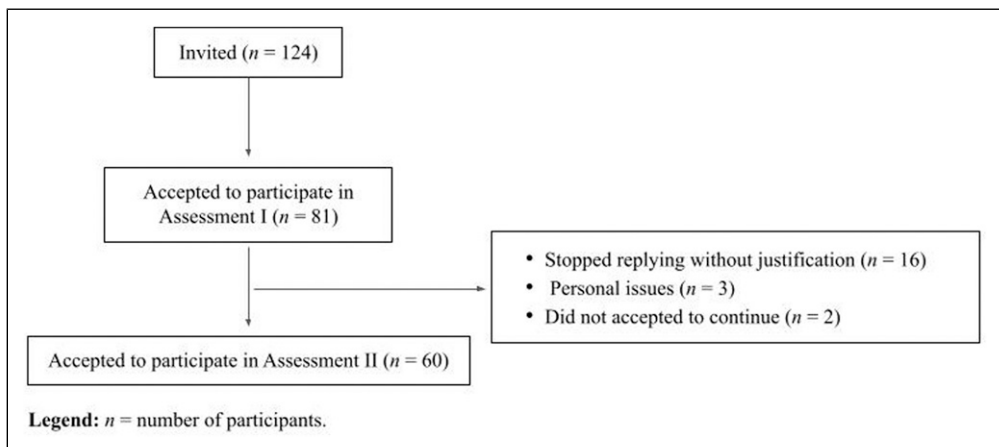


Figure 1. Study flowchart. Legend: *n* = number of participants.

children and adolescents with typical development during the pandemic (Okuyama et al., 2021), it is important that both aspects are evaluated and monitored.

We also did not observe changes in the frequency of participation or in the involvement of individuals when participating in activities in home environments in the period evaluated. However, a previous study reported a significant increase in participation in the home of this population, soon after the immediate onset of the pandemic (Brugnaro et al., 2021). Therefore, when analyzing the results of the present study, we can infer that although the pandemic scenario has immediately changed numerous components of children's functioning (Theis et al., 2021; Suarez-Balcazar et al., 2021; Brugnaro et al., 2021; Marinho et al., 2019), including the participation at home, its continuity does not seem to have contributed to an even greater decrease/increase in activities and participation components during the 4 months of high contamination rate in the year 2020. So, the changes caused immediately after the social distancing started, these domains tend to keep constant. We can also think that, for these families, the routine has an important role, being more difficult to achieve some changes throughout the pandemic, having probably changed more soon after its sudden onset.

Considering the social support received by the caregiver, no significant changes were identified. It is observed that the participants scored, on average of 65.27% in the first assessment, and 66.44% in the second assessment. It is known that family members of children with disabilities generally have less social support (Hassanein et al., 2021), in line with our data. In addition, the pandemic brought several challenges to the entire population, and this did not change the social support received by participating caregivers - neither more nor less. One might think that the support network, despite being small, can be considered loyal, even during the peak of the pandemic.

Considering aspects of quality of life related to health, no changes were found between the assessments. We can observe that the quality of life was slightly above 50 points in both assessments, with a variable score between 0 and 100, which represents approximately half of the maximum possible value. The literature indicates that children with disabilities have lower quality of life when compared to typical peers (Voll, 2001; Dahan-Oliel, et al., 2012). Thus, during the period of the pandemic, the constant dedication of the family to maintain the routine and the conditions of care, were able to maintain the quality of life between the assessments. An important aspect is that the characterization data of the evaluated individuals shows that at the end of the second assessment, more than 90% of the children assessed were in partial isolation.

We can highlight some important notes about our sample, because the participants have specific characteristics that can influence the results found. For example, our sample was composed for mothers with advanced age (mean age about 38 years), and according to previous studies, mothers with advanced age (Silva et al., 2008) can positively impact the global development of the child. Also, the maternal schooling of our sample was predominantly complete higher education and complete high school, which can be considered a high level of education, and study has indicated that higher mother's level of education can indirectly influence the child-mother interaction (Chai & Choi, 2021), facilitating the period to face the pandemic. Another important aspect is that almost 80% of participants live in a house, which can provide space for child play and do things in an open place. In addition, the majority of children and caregivers were in partial social distancing, which can reduce the impact of distancing time, and half or more were doing physical therapy during this time. So, the set of these factors may have acted as environmental facilitators, and have favored the results of no change in the aspects of functioning of the evaluated children.

Limitation e strengths

This study had several limitations. First, we did not have data about these aspects before pandemic start, therefore, our results are limited only at the two points in time in the midst of the pandemic. Also, different types of developmental disabilities were included, which may have hampered the findings. In addition, it was not investigated whether the family and the child were receiving telehealth guidelines or interventions, which could help better cope with the pandemic situation. We did not verify which environmental factors could have influenced the absence of changes in the components evaluated. Thus, environmental facilitators may have driven this outcome. Also, the study included participants from one community in one country and can not be generalized to others contexts. Finally, the different experiences of social distancing presented by the participants may be a bias in the study, and during the second assessment, no family was in complete social distancing. Moreover, the partial social distancing is an aspect that is difficult to control and may vary between families.

We highlight that, being a longitudinal study, we had 25% of drop out rate. Therefore, although 75% of the assessed families did not show significant changes in the functioning of their children, the results would have been different if all the families had participated in the second assessment.

We consider as a strength the fact that the assessment took place in the months that comprised the height of the pandemic in the country where the research was carried out. Thus, it was possible to evaluate these aspects at a time when the pandemic was the most critical, with the greater need for social distancing, allowing the identification of biopsychosocial aspects at that specific moment. In addition, because the sample is comprehensive, it provides an overview of children with developmental disabilities, which can guide further investigations on the subject, specific to each health condition. Another strength is that our study evaluated different aspects of functioning for the same population, unlike other studies that evaluate isolated components, for example, quality of life and level of physical activity. When evaluating everything for the same population, the biopsychosocial approach is favored.

Conclusions

Considering the characteristics of our sample, and the aspects of functioning we proposed to analyze, there were no changes between the 4 months during a period of high contamination rate in the year 2020 in Brazil. These results, however, do not exclude the importance of constant assessments of this population, in order to monitor their functioning aspects, and better cope with the pandemic.

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Ethics statement

This study was approved by the local ethics committee (protocol number: 31786920.8.1001.5504).

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