ORIGINAL RESEARCH ARTICLE

A Study on Assessment of Impact of Home Confinement and Associated Risk Factors During COVID-19 Lockdown Among Disabled Children in Chennai District, Tamil Nadu- A Cross-Sectional Study

BN Surya[1*], Krishnaprasanth Balaann[2], Umadevi Ramachandran[3], VM Anantha Eashwar[4], RJ Charulatha[5], P Pragadeesh[6]

[1,2,3,4,6]Sree Balaji Medical College and Hospital, Chennai, India
[5]Sri Lalithambigai Medical College and Hospital, Chennai, India

DOI: 10.55489/njcm.140120232594

ABSTRACT

Introduction: The home confinement imposed due to the coronavirus disease (COVID-19) pandemic has disproportionally affected the lives of children around the globe, particularly children with pre-existing vulnerabilities. The study assessed the impact of home confinement and the associated risk factors among disabled children residing in the Chennai district, during the COVID-19 lockdown.

Methods: The list of special schools in Chennai were collected, and five special schools were randomly chosen by lottery method. Using simple random sampling technique children were selected till the required sample size of 189 was reached. Semi-structured questionnaire was used for data collection. Informed consent was obtained, and data was entered in MS Excel and analyzed by SPSS version 22.

Results: Among the study participants around 64% had an impact due to home confinement during the covid lockdown. Statistically significant predictors (p-value <0.05) of home confinement due to Covid-19 were anger & frustration (AOR - 6.47, 95% CI – 2.5-12.6), increased crying among children (AOR - 4.89 95% CI – 1.7-8.5) and sleep disturbances (AOR - 2.92, 95% CI – 1.8-7.1).

Conclusion: Increased care and attention needs to be provided to disabled children as they are more prone to get affected due to lockdown restrictions.

Key words: Autism, dyslexia, obesity, sleep quality

ARTICLE INFO

Financial Support: None declared
Conflict of Interest: None declared
Received: 23-11-2022, **Accepted**: 29-12-2022, **Published**: 31-01-2023
***Correspondence:** BN Surya (Email: suryauk4@gmail.com)

How to cite this article:
Surya BN, Balaann K, Ramachandran U, Anantha EVM, Charulatha RJ, Pragadeesh P. A Study on Assessment of Impact of Home Confinement and Associated Risk Factors During COVID-19 Lockdown Among Disabled Children in Chennai District, Tamil Nadu- A Cross-Sectional Study. Natl J Community Med 2023;14(1):39-44. DOI: 10.55489/njcm.140120232594

www.njcmindia.com | pISSN09763325 | eISSN22296816 | Published by Medsci Publications

BACKGROUND

On a global scale, the Corona virus illness (COVID-19) pandemic caused international health concerns and significant psychological distress. The greater burden faced by children living with disabilities means that additional efforts would be required at every stage to ensure their needs are being met while the pandemic transcends through different phases.[1] Some underlying health conditions place children with disabilities at a greater risk for developing physical and psychological morbidities. Additionally, children living with disabilities, especially those with difficulties in the domains of speech, sight and cognitive impairment face many such barriers which prevent them from access to basic health care.

There are also widespread concerns about the effect of social isolation or social distancing on a disabled child's wellbeing, including increased anxiety, depression, stress, and concern about exacerbation or relapse of pre-existing mental health issues, placing these children at an increased risk for significant mental health issues.[2]

According to World Report on Disability 2011, 5.1% of children (0-14yrs) have some form of moderate or severe disability.[3] Census data from India in 2011, highlighted that 30% of the disabled population belonged to the age group of 0-19 yrs.[4] There are over 2500 special schools[5] in India and as the lockdown extended, children with special needs found themselves confined to their homes, things became more difficult as they need special care and a lot of attention.

The nationwide lockdown, which was implemented as a preventive strategy to combat the threat of covid infection, disrupted medical services and resulted in the cessation of elective procedures such as speech, behavioural, and eating therapy among this vulnerable population. School closures and other routines resulted in severe social isolation, which was seen as one of the most crucial and prominent causes of mental health problems in children.[6]

The consequences of COVID-19 and home confinement appears to be disturbing children's routines, which adds to decreased sleep quality, a poorer diet, less exercise, and more time spent interacting in social media and television.[7,8,9] Few studies have highlighted that the sudden disruption in medical services and therapies hampered the lifestyle of these disabled children.[10,11] There is dearth in literature regarding the clear-cut morbidity of these vulnerable population secondary to lockdown and methods to compensate for the physical therapies done among them. During a pandemic the primary focus of the healthcare facilities in the entire country shifts to infectious diseases rather than these small scale morbidities.[12] Since it is not an emergency the elective procedures like speech, behavioural and vocational therapy have come to a standstill at this point of time.The disabled population require the utmost care as morbidities can hamper their lives permanently.Based on the above rationale, this study was conducted to assess the impact of home confinement during COVID-19 lockdown among disabled children as well as identifying potential risk factors associated with it.

METHODOLOGY

This is an analytical Cross-sectional study done in Chennai, Tamil Nadu from the period of February to June 2022. Children with disability attending special needs schools in Chennai were included as study participants. From a study done by Anne Masi et al[7], Impact of Covid-19 was present in 76.9% of the children. Taking this as P value and applying in the formula Z^2PQ/L^2 where P= 76.9, Q= 23.1 and absolute precision (L) was taken as 6%, the required sample size was calculated as 189 (n=189).

The list of special schools in Chennai district was collected from the District Disabled children welfare office[13]. There was a total of 52 special schools in Chennai district. Due to logistic limitations, among the 52 schools, 5 special schools were randomly selected by lottery method.

List of all students in the 5 schools were obtained and using simple random sampling technique those fulfilling the inclusion criteria were selected till the required sample size of 189 was reached. The principals of each school were met in person and all details of the study was explained to them including the study purpose and confidentiality of the study participants. The purpose of the study was explained, and informed consent was obtained from the parents of study participants. Semi structured questionnaire was used to collect data regarding sociodemographic details and various social factors. Collected data were entered using MS EXCEL and analyzed using SPSS-version 22. Chi-square value and odds ratio were used to find out the association between impact of home confinement during Covid-19 lockdown and the related social determinants.

Inclusion criteria was that the disabled children of age group 6- 18 years of age were selected for the study and Children with multiple disabilities (≥3) were excluded.

Data was collected from eligible participants who were personally interviewed using a semi structured questionnaire which was prepared after a rigorous pilot testing with questions related to sociodemographic details and various social factors. A pilot study was conducted among 30 disabled children with a semi-structured questionnaire (The results from the pilot study was not included in the final analysis). Based on the responses and feedback received the questions were modified. To assess the impact of home confinement 7 questions were pretested and validated in the pilot study and they were acceptable with a Cronbach's alpha of 0.81. All the 7

dichotomous questions were measured on a yes/no scale and a score of 0 (No) was given for a negative response and 1(Yes) for a positive response. The maximum score which could be obtained was 7 and lowest score being 0. The median score was calculated to analyses the impact of house confinement. Median score obtained was 4. Therefore, those who have scored more than 4 were categorized as having an impact due to home confinement and those who scored ≤4 was not impacted. The questionnaire which was developed and tested was used for collecting data in the present study. BMI was assessed based on the International Obesity Task Force (IOTF) reference which employs age-sex-specific BMI percentiles.[14]

Operational definition:

Disabled children: Disabled children is defined as limitation of a person's ability to carry out the activities of daily living, to the extent that he or she may need help in doing so.[15]

Morbidity: Refers to having a disease or a symptom of disease, or to the amount of disease within a population. Morbidity also refers to medical problems caused by a treatment[16]

Human subject protection and ethical consideration:

Approval from the Institutional Human ethics committee of Sree Balaji medical college and hospital was obtained. Patient's information was kept confidential and anonymous.

RESULTS

A total of 189 disabled children attending special schools in Chennai were studied. Among the study participants around 64% had an impact due to home confinement during covid lockdown. Out of all participants (n=189), 116 (61.4%) were aged above 12 years and around 73 (38.6%) were aged below 12 years. Male participants were predominantly higher 141 (74.6%), when compared with females 48 (25.4%). Among the study participants around 34 (18%) were obese, 51 (27%) overweight and 104 (55%) were normal. Among the parents interviewed majority of them were mothers 146 (77.2%) when compared to fathers 43(22.8%). Majority of the study participants suffered from Autism 76 (40.2%), when compared to other disorders such as Dyslexia 47 (24.9%), Visual impairment 41 (21.7%), Speech impairment 12 (6.3%) and Hearing impairment 13 (6.9%). (Table 1)

Table 2 shows the association between impact of home confinement due to covid lockdown and related variables.

Table 1: Health condition of the study population (n= 189)

Health Condition	Cases (%)
Autism	76 (40.2)
Dyslexia	47 (24.9)
Visual impairment	41 (21.7)
Speech impairment	12 (6.3)
Hearing impairment	13 (6.9)

Table 2: Association between impact of home confinement due to covid lockdown and related variables among study participants

Variable	Impact of home confinement due to covid lockdown		Total (N = 189)	Chi-square	Unadjusted Odd's ratio (95% CI)	P Value
	Present (n = 121) (64 %)	Absent (n = 68) (36%)				
Age						
<12 years	47 (64.4)	26 (35.6)	73 (38.6)	0.007	1.026 (0.557-1.889)	0.934
>12 years	74 (63.8)	42 (36.2)	116 (61.4)		1	
Gender of the child						
Male	97 (68.8)	44 (31.2)	141 (74.6)	5.491	2.205 (1.130-4.302)	0.019*
Female	24 (50)	24 (50)	48 (25.4)		1	
Type of family						
Nuclear	102 (64.6)	56 (35.4)	158 (83.6)	0.120	1.150 (0.521-2.542)	0.729
Joint	19 (61.3)	12 (38.7)	31 (16.4)		1	
Relation to the child						
Mother	94(64.4%)	52(35.6%)	146 (77.2)	0.037	1.071 (0.529 – 2.168)	0.848
Father	27(62.8%)	16(37.2%)	43 (22.8)		1	
Socio economic status						
Class 1,2	103 (65.2)	55 (34.8)	158 (83.6)	0.571	1.353 (0.617-2.965)	0.450
Class 3,4	18 (58.1)	13 (41.9)	31 (16.4)		1	
Health disorder						
Autism	55 (73.3)	20 (26.7)	75 (39.7)	4.681	2.005 (1.062-3.765)	0.030*
Other disorders	66 (57.9)	48 (42.1)	114 (60.3)		1	
Nutritional status						
Overweight/Obese	62 (72.9)	23 (27.1)	85 (45)	5.336	2.056 (1.110 – 3.807)	0.021*
Normal	59 (56.7)	45 (43.4)	104 (55)		1	

*P Value <0.05 - Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, χ^2 – Chi-square

Table 3: Binomial logistic regression analysis to find out the predictors of impact of home confinement among study participants.

Variable	P Value	Adjusted Odds Ratio	95% CI
Male gender	0.008*	2.608	1.2-5.2
Autism	0.010*	2.423	1.2-4.7
Overweight/Obese	0.011*	2.296	1.2-4.3

*"Enter method" was used for binomial logistic regression
*Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, AOR – Adjusted Odd's Ratio

Table 4: Association between Impact of home confinement due to covid lockdown and social factors influencing it

Variable	Impact of home confinement due to covid lockdown		Total (N = 189)	Chi-square	Unadjusted Odd's ratio (95% CI)	P Value
	Present (n = 121) (64 %)	Absent (n = 68) (36 %)				
Reduction in physical exercise						
Yes	61 (73.5)	22 (26.5)	83 (43.9)	5.765	2.126 (1.143-3.954)	0.016*
No	60 (56.6)	46 (43.4)	106 (56.1)		1	
Sleep disturbances						
Yes	50 (78.1)	14 (21.9)	64 (33.9)	8.357	2.716 (1.362– 5.417)	0.004*
No	71 (56.8)	54 (43.2)	125 (66.1)		1	
Anger & frustration						
Yes	100 (76.9)	30 (23.1)	130 (68.8)	30.095	6.032 (3.083– 11.801)	0.000*
No	21 (35.6)	38 (64.4)	59 (31.2)		1	
Difficulty in socializing						
Yes	47 (85.5)	8 (14.5)	55 (29.1)	15.471	4.764 (2.091– 10.851)	0.000*
No	74 (55.2)	60 (44.8)	134 (70.9)		1	
Children afraid of getting sick						
Yes	83 (69.2)	37 (30.8)	120 (63.5)	3.778	1.830 (0.0992– 3.376)	0.052
No	38 (55.1)	31 (44.9)	69 (36.5)		1	
Difficulty in maintaining daily routine for children						
Yes	44 (75.9)	14 (24.1)	58 (30.7)	5.094	2.204 (1.100– 4.415)	0.024*
No	77 (58.8)	54 (41.2)	131 (69.3)		1	
Increased crying among children						
Yes	57 (86.4)	9 (13.6)	66 (34.9)	21.978	5.839 (2.658– 11.826)	0.000*
No	64 (52)	59 (48)	123 (65.1)		1	

* P Value < 0.05 - Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, χ^2 – Chi-square

Table 5: Binomial logistic regression analysis to find out the predictors of impact of home confinement among study participants

Variable	P Value	Adjusted Odds Ratio	95% CI
Reduction in physical exercise	0.067	2.131	0.9-4.7
Sleep disturbances	0.020*	2.923	1.8-7.1
Anger & frustration	0.000*	6.475	2.5-12.6
Difficulty in socializing	0.119	2.212	0.8-6.1
Difficulty in maintaining daily routine for children	0.737	1.179	0.45-3.8
Increased crying among children	0.002*	4.891	1.77-8.52

* "Enter method" was used for binomial logistic regression
* Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, AOR – Adjusted Odd's Ratio

It was found that, among the study participants males had 2.20 times increased odds of being impacted due of home confinement compared to females. (OR= 2.20).

Autistic children were more affected due to home confinement compared to children with other disabilities such as dyslexia, hearing, visual and speech impairment. (OR =2.0). Those who had an impact of home confinement had 2.05 times increased odds of being overweight/obese.

On bivariate analysis, variables which were found to have statistically significant association with impact of home confinement during covid lockdown were analyzed using binary logistic regression analysis to eliminate the confounders. It was found that statistically significant predictors (p value <0.05) of home confinement due to Covid-19 were males with an adjusted odds ratio of 2.60 (95% CI – 1.2-5.2), Autism among children with an adjusted odds ratio of 2.42 (95% CI – 1.2-4.7) and being obese/overweight with an adjusted odds ratio of 2.29 (95% CI – 1.2-4.3). (Table3)

Table 4 shows the association between Impact of home confinement due to covid lockdown and social factors influencing it. Among those who were impacted due to home confinement during covid lockdown 78% had sleep disturbances and the association between them was found to be statistically significant (P<0.05) with an odds ratio of 2.71 (95% CI – 1.3-5.4). It was found that those who were impacted due to home confinement had 2.12 times increased odds of having decreased physical activity.

Around 86.4% of those who were impacted due to home confinement during covid lockdown suffered from increased crying and the association between them was found to be statistically significant (P<0.05) with an odds ratio of 5.83 (95% CI – 2.6-11.8). Other variables which had a statistically significant association (P<0.05) with home confinement during covid lockdown were anger & frustration among children, children finding it difficult to socialize, difficulty to maintain daily routine for the children during lockdown with an odds ratio of 6.03, 4.76 and 2.20 respectively.

The variables which were found to have a statistical association with home confinement due to Covid-19 were analyzed using regression analysis. It was found that statistically significant predictors (p value <0.05) of home confinement due to Covid-19 were anger & frustration with an adjusted odds ratio of 6.47 (95% CI – 2.5-12.6), increased crying among children with an adjusted odds ratio of 4.89 (95% CI – 1.7-8.5) and sleep disturbances with an adjusted odds ratio of 2.92 (95% CI – 1.8-7.1). (Table 5)

Discussion

Home confinement during the covid lockdown has had a significant impact on the daily lives of children with disabilities and their families. Children face a variety of health risks, including mental, behavioural, social, and physical risks. The study yielded interesting findings which are discussed below compared with studies done in India and elsewhere.

In the present study the prevalence of impact of home confinement during covid lockdown was found to be 64%. In a study done by Marine Cacioppo et al in France revealed lockdown had negative effects on the morale of around 44% of physically challenged children.[17] Similar findings were present in a study done by Anne Masi et al in Australia, where impact of Covid-19 was present in 76.9% among disabled children children.[7] A study conducted in Honkong by Tso et al reported that children with special needs were more vulnerable during the COVID-19 pandemic with a higher risk of poor mental health.[18] These findings highlight the burden of lockdown on children's physical, psychological and social well-being. Therefore, measures must be taken to address these problems by developing and adopting prevention strategies tailored toward disabled children so that the health system and the parents can manage children in case of a future lockdown.

In the present study Autistic children were more affected due to home confinement compared to children with other disabilities. A study done by Guller et al in Turkey reported that frequencies of emotional and behavioural problems in Autistic children were higher compared to children with other disorders.[19] In a study done by SM Kaku et al in India revealed that COVID-19 epidemic has affected coping mechanisms in both individuals and their families, altered routines, and brought on behavioural disorders in individuals with autism.[20] These findings infer that, compared with other disabilities, children with autism seem to be more affected due to restrictions imposed by COVID 19 lockdown, leading to behavioural problems which could impact the child, their family and their caregivers. Clinicians need to be aware of this, counsel them regularly, and identify their psychological needs.

In the present study those who were overweight/obese had increased odds of being impacted by home confinement during the lockdown. Several studies have shown that children and adolescents with physical and cognitive disabilities have a higher prevalence of overweight compared to their non-disabled peers.[21,22] Obesity causes low self-esteem, a bad body image or self-image, increased stress, and a reduced capacity to socialize, which can lead to emotional problems or learning challenges, limiting social involvement. Many obese people also have problems with their mood, self-esteem, quality of life, and body image.[23]

The present study highlighted that; increased crying was observed among children with disabilities which was found to be a significant risk factor being impacted due to home confinement. Similar findings were observed in a study done by Choque PM et al in which mothers felt that the behavioural problems accompanied by frequent crying among the children was one among the major problems suffered by disabled children due to COVID 19 lockdown.[24] Virtual counselling services could be arranged for the children along with their parents, so that any behavioural problems can be identified and treated at an early stage.

In this study sleep disturbance was found to be a significant predictor of home confinement during covid lockdown. In a study done by Riyo Ueda et al in Japan among children with neurodevelopmental disorders 41.9%[10] of them reported with changed sleep rhythm during covid lockdown. In the present study around 68.6% suffered from anger & frustration. Similar findings were obtained in a study done by Anne Masi et al among children with neurodevelopmental disabilities, in which 62.8%[7] of the children have been easily irritable, impatient, and angry since the Covid-19 epidemic. Children with autism, intellectual and developmental disabilities (IDD), Down syndrome, learning disability, receptive and expres-

sive language delay, and other communication disorders experienced major developmental delays, anger, frustration, attention and concentration issues, and an overall regression in social, academic, and other communicative skills during the lockdown phase.[25]

The findings of the study highlight the fact that, disabled children are more prone to get affected due to lockdown restrictions leading to increased sleep disturbances and anger issues among them. Special measures, such as tele rehabilitation and frequent consultations with the therapist, must be taken, especially when the child throws tantrums, and intervention strategies could be developed catering to their needs, so that both the children and their parents' stress levels can be managed and the impact of future lockdowns, if any, can be mitigated.

Conclusion

The findings of the study sheds light on the fact that 64% of disabled abled children had an impact due covid lockdown. Independent factors such as reduction in physical exercise, sleep disturbances, increased crying, anger & frustration are proposed to influence the outcome of this study. Better planning, prompt attention and newer initiatives like telerehabilitation can decrease the impact of lockdown restrictions on these vulnerable and needy population.

References

1. Children with disabilities and COVID-19 UNICEF DATA ; available at; https://data.unicef.org/topic/child-disability/covid-19/;Accessed on May 1st 2022
2. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L, et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. Lancet Psychiatry. 2020 Jun;7(6):547–60.
3. World health organization, World report on disability 2011;Available from https://apps.who.int/iris/rest/bitstreams/66941/retrieve. ; accessed on May 1st 2022
4. Ministry of Statistics and Programme Implementation, Government of India. Disabled Persons in India: A statistical Profile 2016. New Delhi, India: Ministry of Statistics and Programme Implementation, Government of India; 2016.
5. Byrd ES. India, Families, and a Special School. Teach Except Child Plus [Internet]. 2010 Feb [cited 2022 May 10];6(3). Available from: https://eric.ed.gov/?id=EJ879598
6. Esposito S, Giannitto N, Squarcia A, Neglia C, Argentiero A, Minichetti P, et al. Development of Psychological Problems Among Adolescents During School Closures Because of the COVID-19 Lockdown Phase in Italy: A Cross-Sectional Survey. Front Pediatr. 2020;8:628072.
7. Masi A, Mendoza Diaz A, Tully L, Azim SI, Woolfenden S, Efron D, et al. Impact of the COVID-19 pandemic on the well-being of children with neurodevelopmental disabilities and their parents. J Paediatr Child Health. 2021;57(5):631–6.
8. Ingram J, Maciejewski G, Hand CJ. Changes in Diet, Sleep, and Physical Activity Are Associated With Differences in Negative Mood During COVID-19 Lockdown. Front Psychol [Internet]. 2020 [cited 2022 Jul 21];11. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.588604
9. Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S, et al. Mental health problems and social media exposure during COVID-19 outbreak. PLOS ONE. 2020 Apr 16;15(4):e0231924.
10. Ueda R, Okada T, Kita Y, Ukezono M, Takada M, Ozawa Y, et al. Quality of life of children with neurodevelopmental disorders and their parents during the COVID-19 pandemic: a 1-year follow-up study. Sci Rep. 2022 Mar 12;12:4298.
11. Colizzi M, Sironi E, Antonini F, Ciceri ML, Bovo C, Zoccante L. Psychosocial and Behavioral Impact of COVID-19 in Autism Spectrum Disorder: An Online Parent Survey. Brain Sci. 2020 Jun 3;10(6):E341.
12. Madhav N, Oppenheim B, Gallivan M, Mulembakani P, Rubin E, Wolfe N. Pandemics: risks, impacts, and mitigation.
13. Disabled children Special Schools List, Homes & Institutions | Chennai District | India [Internet]. [cited 2022 Jul 18]. Available from: https://chennai.nic.in/school-list/
14. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ. 2000 May 6;320(7244):1240–3.
15. Disabled children definition ; available at; https://enabled.in/wp/differently-abled-and-their-social-integration/; Accessed on May 21st 2022
16. Definition of morbidity - NCI Dictionary of Cancer Terms; available at; https://www.cancer.gov/publications/dictionaries/cancer-terms/def/morbidity.Accessed on May 1st 2022
17. Cacioppo M, Bouvier S, Bailly R, Houx L, Lempereur M, Mensah-Gourmel J, et al. Emerging health challenges for children with physical disabilities and their parents during the COVID-19 pandemic: The ECHO French survey. Ann Phys Rehabil Med. 2021 May;64(3):101429.
18. Tso WWY, Chan KL, Lee TMC, Rao N, Lee SL, Jiang F, et al. Mental health & maltreatment risk of children with special educational needs during COVID-19. Child Abuse Negl. 2022 Aug;130(Pt 1):105457.
19. Guller B, Yaylaci F, Eyuboglu D. Those in the shadow of the pandemic: impacts of the COVID-19 outbreak on the mental health of children with neurodevelopmental disorders and their parents. Int J Dev Disabil. 2021 May 26;0(0):1–13.
20. Kaku SM, Chandran S, Roopa N, Choudhary A, Ramesh J, Somashekariah S, et al. Coping with autism during lockdown period of the COVID-19 pandemic: A cross-sectional survey. Indian J Psychiatry. 2021;63(6):568–74.
21. Rimmer JH, Rowland JL, Yamaki K. Obesity and secondary conditions in adolescents with disabilities: addressing the needs of an underserved population. J Adolesc Health Off Publ Soc Adolesc Med. 2007 Sep;41(3):224–9.
22. Liou TH, Pi-Sunyer FX, Laferrère B. Physical disability and obesity. Nutr Rev. 2005 Oct;63(10):321–31.
23. Reinehr T, Dobe M, Winkel K, Schaefer A, Hoffmann D. Obesity in disabled children and adolescents: an overlooked group of patients. Dtsch Arzteblatt Int. 2010 Apr;107(15):268–75.
24. Gamarra Choque PM, Rivera Arellano EG, Reynosa Navarro E, Méndez Vergaray J, Huayta-Franco YJ, Muñante Toledo MF. Children with severe disabilities: adaptation, virtual education, and prospects. Experiences of three Peruvian mothers, COVID-19 context. J Med Life. 2022 Jan;15(1):43–51.
25. Levante A, Petrocchi S, Bianco F, Castelli I, Colombi C, Keller R, et al. Psychological Impact of COVID-19 Outbreak on Families of Children with Autism Spectrum Disorder and Typically Developing Peers: An Online Survey. Brain Sci. 2021 Jun;11(6):808.