Depressive Risk among Italian Socioeconomically Disadvantaged Children and Adolescents during Covid-19 Pandemic: A Cross-Sectional Online Survey

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Abstract

Background

Children and adolescents and low-income individuals are considered particularly vulnerable for mental health implications during the current COVID-19 pandemic. Depression is one of the most frequent negative emotional responses during an epidemic outbreak, mainly due to the imposed restriction of social contacts. We aimed to assess depressive symptomatology in a sample of Italian low-income minors and to determine if pandemic-related stressors and pre-existing neuropsychiatric diagnoses would behave as risk factors for depressive symptoms.

Methods

We performed a cross-sectional study during July 2020, at the end of the Italian first wave of COVID-19 pandemic. We recruited 109 Italian socioeconomically disadvantaged children and adolescents, from 7 to 17 years. We used an online survey to collect socio-demographic and clinical data and information about pandemic-related stressors, and to assess depressive symptoms with the Children's Depression Inventory 2 (CDI 2), Parent Version (Emotional Problems subscale) and Self-Report Short Form. We performed logistic regression analysis to assess the association between depressive symptoms and potential risk factors for mental health.

Results

22% and 14% of participants showed depressive symptoms at the CDI 2 Parent Version and Self-Report, respectively. Participants coming from families experiencing a lack of basic supplies during the pandemic (34.9%) were more expected to show depressive symptoms at CDI 2 Parent Version. Participants with a pre-existing neuropsychiatric diagnosis (26.6%) were more likely to exhibit depressive symptoms measured by CDI 2 Parent Version.

Conclusions

The results of our study may be representative of a particular group of frail subjects, the socioeconomically disadvantaged children and adolescents, who were more vulnerable to depressive symptoms if they suffered from a paucity of essential supplies during the pandemic or had pre-existing neurodevelopmental disorders. The promotion of educational and child-care programs and activities could be crucial in sustaining the prevention of mental distress in those frail subjects who particularly need support outside the family.

Background

The World Health Organization declared Coronavirus Disease 2019 (COVID-19) to be a pandemic on March 12th, 2020 [1]. Italy was the first European country to face this new health emergency and has been harmed, to date, by two separate waves of the pandemic (during spring and autumn 2020), with an emerging third one.

During the COVID-19 outbreak, both the pandemic and containment measures taken by the governments have profoundly impacted daily life [2–4]. Isolation, contact restriction, and economic shutdown have generated dramatic psychological, social, and economic consequences [2, 5].

Since the beginning of the pandemic, children and young people have been considered one of the frailest groups for mental health implications [6]. Among them, those belonging to low-income families are particularly vulnerable: the necessary home confinement, ordered by the government authorities, might have led to a forced interruption of temporary works of their parents, parental unemployment, and financial insecurity [2, 3, 6, 7]. Moreover, basal low-income means a paucity of essential supplies in normal conditions, with evident exacerbation during pandemics, when work opportunities are lacking.

Among the containment measures, school closure has affected millions of children worldwide and has had a significant impact on children and adolescents, especially on socioeconomically disadvantaged ones [5, 6, 8–10]. The necessary shift to the home-based distance learning models has meant the absence of school routines and outdoor activities, reduced social contact, and dropping education [7, 8, 11, 12]. The potentially negative implications of similar modifications on the psychological balance of children and adolescents could be even more pronounced for those living in poverty [7, 8, 11, 12]. They often do not own an electronic device or Internet connections, making homeschooling challenging to take part in [5, 6, 9].

In Bari province, in the South of Italy, Diurnal Socio-Educational Centers (DSECs) support low-income families in the afternoon post-school period, working as semi-residential structures. The DSECs belong to the territorial social services network offering holistic support: they operate in close connection with the school, the social services, and other educational structures; ensure educational support in learning activities; enhance good personal hygiene; contribute to healthy free nutrition by giving the midday meal and a snack; provide parenting support to the children's families [13]. A few days after the school closure (March 8th, 2020, throughout Italy), on March 12th also the DSECs were closed, as determined by the civil authorities for the entire regional territory to which Bari belongs. Short-term consequences were a further reduction of social contacts and educational support besides the loss of free healthy nutrition. The socioeconomically disadvantaged families enjoying that service found themselves trying to sustain their children through their scarce resources. In this way, DSEC shutdown increased the already heavy load given by school closure.

If poverty is a well-known risk for mental health in children and adolescents, the socio-ecological impact of the pandemic could increase this pre-existing vulnerability, both in the short term and for a lifetime [2]. It is especially true for those mental health conditions, such as depression, that are more prone to environmental risk, like stressors derived from income inequality [14, 15]. One of the research priorities

during the current pandemic was monitoring and reporting rates of depression and other mental health problems across the general population and vulnerable groups [2, 6]. Although lower socioeconomic conditions have been often addressed by literature as a risk factor for children's mental health during COVID-19, only a few original studies have approached this subject, to our knowledge. Findings from the early phases of the pandemic demonstrated more pronounced behavioral and anxiety problems among young children (5 years old or less) from economically disadvantaged households [16, 17]. A large cross-sectional Chinese study found a higher risk for psychosocial problems in children (2–12 years old) from low-income families [18]. In the study by Alvis and colleagues, adolescents suffering from financial difficulties were more likely to develop depressive symptoms and lower belongingness [19].

To date, to the best of our knowledge, no study has assessed the impact of COVID-19 on a homogeneous sample for environmental risk for mental health represented by socioeconomic disadvantage.

This research has aimed to determine whether the COVID-19 pandemic and its containment measures were predictors of mental health problems in a vulnerable group represented by socioeconomically disadvantaged children and adolescents. We recruited a sample of unprivileged children and adolescents attending the DSECs of the Bari province in the South of Italy. We investigated depressive symptoms at the end of the first wave of the pandemic (that in Italy covered the months of March and April 2020, with a slow return to normality during May and June 2020). We assessed if pandemic-related stressors (i.e., Sars-CoV-2 infection, quarantine, food insecurity, parental unemployment, impaired access to homeschooling) and pre-existing neuropsychiatric diagnoses would behave as risk factors for depressive symptoms.

Methods

Setting and Participants

This study was a cross-sectional online survey created on Google Forms. The questionnaire was addressed to 7 to 17-year-old individuals living in the Bari province, attending a DSEC of the territory because of their socioeconomic disadvantage. The DSECs are places of social and cultural integration for 6 to 17-year-old individuals with social problems and exposed to the risk of marginalization or deviance [13]. These structures are regulated by the regional legislation [20]: only people coming from a low socioeconomic level can access, given the required certification of an Equivalent Economic Status Indicator lower than 20.000,00 Euros [13]. We applied to the 48 DSECs of the Bari province by a telephone call and an invitation letter by email, requesting their availability to participate. We sent the survey's link to the managers of the 19 DSECs who declared themselves available. The educational team of each DSEC proposed, explained, and transmitted the survey to the parents of children and adolescents enjoying the service (approximately 800 minors). Overall 109 participants took part in the study. The form was administered from July 14th to July 29th, 2020, at the end of the Italian first wave of COVID-19. We included our email addresses at the beginning of the questionnaire to facilitate any consultation. The minors filled out the survey after their parents had consented. Anonymous data were collected.

Measurements

The online questionnaire (Table 1) assessed the point of view of both the parents and their children with questions concerning general information, variables related to COVID-19 pandemic, and depressive symptoms measured by the Children's Depression Inventory 2 (CDI 2):

Parent-report:

- Socio-demographic and clinical characteristics.
- Pandemic-related stressors.
- Depressive symptoms, assessed by the Italian version of the CDI 2, Parent Version (PV). It is a 17-item questionnaire based on a 4-point Likert scale (0–3), to be completed by the parents of young people aged 7–17 years. It gives information about children's depressive symptoms, in the last two weeks, from the parental point of view. The CDI 2 PV provides two partial scores: Emotional Problems (related to dysphoric feelings and neurovegetative symptoms) and Functional Problems (related to the functional consequences on family, school, and social contacts); the total score of the questionnaire is given by the sum of the two partial scores. In this study only the Emotional Problems score was considered, as the Functional Problems score would have been highly influenced by the lack of school attendance during the summer period: indeed, 3 out of the 8 items contributing to the latter partial score explicitly refer to school. The psychometric characteristics of the Italian version of the CDI 2 PV, Emotional Problems subscale, show reliability coefficients ranging from 0.61 to 0.74 [21]. T-scores normed based on age and sex were used in the present study. T-scores ≥ 60 were considered positive for depressive symptoms, as per the CDI 2 scoring guidelines [21].

Self-report by children and adolescents:

- Major difficulties perceived by minors, through a question developed by our research team. More than one answer was possible.
- Depressive symptoms, assessed by the CDI 2 Self-Report (S-R) Short Form (SF). It is a 12-item 3-point (0–2) Likert's self-report scale, widely used for screening purposes to investigate children's depressive symptoms, in the last two weeks, from a subjective point of view. It provides a single total score. The psychometric characteristics of the Italian version of the CDI 2 S-R SF show reliability coefficients ranging from 0.68 to 0.78 [21]. The cut-off for depressive symptoms was set at T-scores ≥ 60 .

Table 1
Questionnaire presented during the online survey

Socio-demographic and clinical information (parent-report):
1. Sex
2. Age
3. Municipality of residence
4. Attendance at a territorial Diurnal Socio-Educational Center (Y/N)
5. Pre-existing neuropsychiatric diagnosis (Y/N. If yes, which one?)
Pandemic-related stressors (parent-report):
6. Sars-CoV-2 infection (affecting the child and/or a family member) (Y/N)
7. Mandatory quarantine (affecting the child and/or a family member) (Y/N)
8. Impact on the parental job (no access to previous occupation? Layoff? Dismissal? No changes?)
9. Impact on the availability of basic supplies (difficulty in finding basic supplies? More material help received than before?)
10. Impact on access to homeschooling (homeschooling from the beginning? Within 1 month? Beyond 1 month? No homeschooling at all? No homeschooling due to unavailability of devices?)
Children's Depression Inventory 2, Parent Version
Major difficulties perceived by minors (self-report):
11. "What do you think was the greatest difficulty for you to face in this period: - Fear of getting sick or my relatives and friends getting sick? - Not being able to go to school? - Not being able to go to the Diurnal Socio-Educational Center? - Concern for the work of mum and dad? - Not having enough water or food or clothing? - Failing to access homeschooling due to the lack of a computer or a tablet or internet connection?"
Children Depression Inventory 2, Self-Report, Short Form

Statistical Analysis

Data were analyzed using "pandas" and "statsmodels": two software libraries written for the Python programming language for data manipulation and statistical analysis. Computation results and data visualizations were collected and documented in Python Jupyter notebooks. We used descriptive statistics and frequency analysis to analyze socio-demographic data; the pandemic-related stressors; the

major difficulties perceived by children and adolescents; the depressive symptoms. We performed logistic regression analysis to assess the association between depressive symptoms and potential risk factors for mental health (pre-existing neuropsychiatric diagnoses and the pandemic-related stressors). Statistical significance level was set at $p < 0.05$.

Results

Participants socio-demographic and clinical characteristics

The sample size of our survey included 109 participants (M: F = 1.6: 1), from 7 to 17 years old. The median age was 12 years. The whole sample was resident in the Bari Province and attended a territorial DSEC, as requested to be recruited in the survey. Therefore, all the participants had a socioeconomic disadvantage. A pre-existing neuropsychiatric diagnosis was present in 29 subjects (26.6%), most frequently represented by Specific Learning Disability (SLD) (12.8%) and Attention-Deficit/Hyperactivity Disorder (ADHD) (8.3%). Table 2 reports complete socio-demographic and clinical characteristics.

Table 2
Sample socio-demographic and clinical characteristics

Variables	N (%)
Participants	109
Sex	
● Male	68 (62.4%)
● Female	41 (37.6%)
Age	
● 7–12 years	65 (59.6%)
● 13–17 years	44 (40.4%)
Pre-existing neuropsychiatric diagnoses	
● Specific Learning Disability	14 (12.8%)
● Attention Deficit/Hyperactivity Disorder	9 (8.3%)
● Speech or other Communication Disorder	4 (3.7%)
● Intellectual Disability	3 (2.7%)
● Tic or other Movement Disorder	2 (1.8%)
● Autism Spectrum Disorder	1 (0.9%)
● Mixed Specific Developmental Disorder	1 (0.9%)
● Unspecified Psychiatric Disorder	1 (0.9%)

Pandemic-related Stressors

Table 3 shows the parent-reported problems related to the time of the pandemic.

Only one family reported Sars-CoV-2 infection and mandatory quarantine affecting a family member different from the minor interested in the survey. About half of the families underwent negative consequences on their jobs, mainly not managing to maintain previous occupation (22%) or being laid off (21.1%). 2.7% underwent dismissal. Many low-income families received some food or food vouchers (47.7%), but one-third of the sample experienced a lack of basic supplies (34.9%). Thirty-five people (32.1%) started homeschooling late, mainly within one month; seven children (6.4%) did not attend homeschooling at all. Thirty-seven families (33.9%) declared the impossibility to start homeschooling promptly due to the unavailability of technological devices or a reliable internet connection.

Table 3
Pandemic-related stressors

Variables related to COVID-19 pandemic (parent-report)	N (%)
Infection with Sars-CoV-2 (affecting child and/or a family member)	1 (0.9%)
Quarantine (affecting child and/or a family member)	1 (0.9%)
Impact on parental job	
● No access to previous occupation	24 (22%)
● Layoff	23 (21.1%)
● Dismissal	3 (2.7%)
● None	60 (55%)
Impact on availability of basic supplies	
● Lack of basic supplies	38 (34.9%)
● More help received (e.g., food, vouchers)	52 (47.7%)
Impact on access to homeschooling	
● Homeschooling from the beginning	74 (67.9%)
● Homeschooling within one month	31 (28.4%)
● Homeschooling beyond one month	4 (3.7%)
● No homeschooling	7 (6.4%)
● No homeschooling due to unavailability of technological devices	37 (33.9%)

Major Difficulties Perceived By Minors

Children and adolescents perceived their concern about health (either their own or that of their relatives and friends) as the major difficulty in 60.8% of the cases. More than half the sample declared that the impossibility to attend DSEC, due to its closure, was the greatest difficulty to sustain (55.7%). Other subjective difficulties were: school closure (37.1%), concern for the parental job (29.9%), impaired access to homeschooling (13.4%), living in a very small house (12.4%), lack of basic supplies (11.3%).

Depressive Symptoms And Potential Risk Factors

At the CDI 2 PV, Emotional Problems subscale, 24/109 (22%) participants obtained scores in the elevated range, suggestive of typical depressive emotional symptoms (e.g., deflected mood, physical symptoms, negative self-esteem).

Those who answered the CDI 2 S-R SF were 100 minors, with 14% obtaining elevated scores.

Detailed scores above the cut-off can be found in Table 4.

The correlations between potential risk factors for mental health and depressive symptoms were analyzed by logistic regression (Table 5). Because of insufficient data, we could not leverage all possible independent variables to compute the regression model (e.g., we had to exclude “Sars-CoV-2 infection” and “quarantine” as we reported only one positive case for both variables).

Participants coming from families experiencing a lack of basic supplies were more expected to show depressive symptoms at CDI 2 PV, Emotional Problems subscale (OR 5.042; 95% CI 1.314–19.346; $p < 0.05$). Moreover, participants with a pre-existing neuropsychiatric diagnosis were more likely to exhibit depressive symptoms measured by CDI 2 PV, Emotional Problems subscale (OR 3.396; 95% CI 1.215–9.488; $p < 0.05$). The regression model considering the self-reported depressive symptoms as dependent variables remained above our a priori cut-off for statistical significance ($p = 0.35$).

Table 4
Depressive symptoms assessed by CDI 2 (values above the cut-off, as per CDI 2 scoring guidelines)

Depressive symptoms	N (%)
● CDI 2 Parent Version, Emotional Problems subscale: T-scores ≥ 60	24/109 (22%)
- T-scores 60–64 (above average)	7 (6.4%)
- T-scores 65–69 (elevated)	8 (7.3%)
- T-scores ≥ 70 (very elevated)	9 (8.2%)
● CDI 2 Self-Report Short Form: T-scores ≥ 60	14/100 (14%)
- T-scores 60–64 (above average)	3 (3%)
- T-scores 65–69 (elevated)	6 (6%)
- T-scores ≥ 70 (very elevated)	5 (5%)

Table 5

Logistic regression analysis of factors influencing depressive symptoms assessed by CDI 2 Parent Version, Emotional Problems subscale

Depressive Symptoms (Emotional Problems) (T ≥ 60) CDI 2 PV (p-value: 0.01239*)					
	Partial regression coefficient	Standard error	p	Odds Ratio (OR)	OR Confidence Interval 5% - 95%
Pre-existing neuropsychiatric diagnosis	1.2225	0.524	0.020*	3.396	1.215–9.488
No access to previous occupation	-1.0051	0.738	0.173	0.366	0.086–1.555
Layoff	-0.4495	0.696	0.518	0.638	0.163–2.495
Lack of basic supplies	1.6177	0.686	0.018*	5.042	1.314–19.346
More help received (e.g., food, vouchers)	-1.2613	0.723	0.081	0.283	0.069–1.169
No homeschooling due to unavailability of technological devices	0.1381	0.585	0.813	1.148	0.365–3.610
Note: * indicates $p < 0.05$					

Discussion

Mental health is a critical concern in the pandemic scenario. It is particularly true when considering vulnerable populations exposed to greater environmental risk, like children and adolescents from socioeconomically disadvantaged households. We studied the psychopathological impact of the COVID-19 outbreak and pandemic-related stressors on a sample of Italian minors with socioeconomic disadvantage.

We measured depressive symptoms after the first wave of the COVID-19 pandemic, when mental health symptoms were expected to increase more than the previous acute phase, due to the emerging recession, according to the literature [2]. In our sample, 22% of subjects reported depressive symptoms measured by CDI 2 PV, Emotional Problems subscale. 14% of the minors fulfilling the CDI 2 S-R SF obtained elevated scores, suggesting depressive symptoms. None of them reported a pre-existing diagnosis of a depressive disorder: we can hypothesize that depressive symptoms could have recently emerged in all subjects. It is

known that Major Depressive Disorder (MDD) can occur more frequently in individuals with a pre-existing genetic or environmental vulnerability, like the socioeconomic disadvantage [15]. The National Institute for Mental Health estimated the prevalence of MDD, in the year 2017, in 13.3% of American people aged 12–17 years old [22]. In 2020 depression was estimated as the fourth leading cause of illness and disability among adolescents between 15 and 19 years and fifteenth for those aged 10–14 years [23]. Depression is also one of the most frequent negative emotional responses during an epidemic outbreak [6, 24]. Its prevalence was expected to increase during the COVID-19 pandemic, in all populations and particularly in young people, due to the imposed restriction of social contacts [6]. Several large-scale studies from China provided reports of depressive symptoms in children and adolescents of the general population during the COVID-19 outbreak [24–28]. They reported a prevalence of depressive symptoms ranging from 11.78% [28] to 43.7% [24], based on single questionnaires. Our data are in line with those reported in the recent literature about the prevalence of depressive symptoms in the current pandemic. Notably, for a subset of children and youth, the impact on the mental health of pandemic-related stressors will not be detected immediately but after some period of development [29]. Future epidemiological large-scale studies will reveal if the prevalence of MDD has actually increased among children and adolescents, as expected due to the growing environmental pandemic-related risk.

To date, to the best of our knowledge, no study had assessed the risk for mental health among socioeconomically disadvantaged children and adolescents during the COVID-19 outbreak. We found that almost half of the sample met conditions of more marked indigence during the pandemic. Nearly 50% of the households underwent worsening working conditions; 34.9% experienced a lack of essential supplies; 33.9% did not manage to access their children to homeschooling due to the absence of devices or Internet connection. Participants from families experiencing a lack of basic supplies were more expected to show depressive symptoms at CDI 2 PV. Poverty is one of the social determinants of general and mental health; additional factors introduced by the pandemic seemed to exacerbate the pre-existing vulnerability, making some poor even poorer [30]. It is known that socio-cultural and economic contexts significantly affect the prevalence of depression [31, 32]. We may consider the deficit of essential supplies as an extreme form of poverty, hitting low-income families who relied on educational institutions for providing healthy meals for their children. With the absence of this kind of help, several families were left alone in sustaining the nutrition needs of minors. Our data suggest that those who experienced a paucity of basic supplies had a higher risk to develop depressive symptoms at the end of the Italian first wave of the COVID-19 outbreak. It is possible to hypothesize that the increased environmental risk could trigger MDD in vulnerable individuals.

More than half the minors of the sample declared that the impossibility to attend DSEC, due to its closure, was the greatest difficulty to sustain. We can deduce that this kind of educational institution would be perceived as really supportive by most minors who benefit from adequate nutrition, educational support in learning activities, playgrounds for physical activities, and regular social contacts with peers and caring adults. It is clear how a perceived supportive environment could advantage the maintenance of the psychological balance in vulnerable people.

Another relevant issue is related to our findings: 26.6% of the sample declared a pre-existing neuropsychiatric diagnosis; all but one were neurodevelopmental disorders (NDDs), mainly represented by SLD and ADHD. This high prevalence is consistent with data from the 2016 National Survey of Children's Health, where children living in lower-income households had a higher prevalence of a parent-reported diagnosis of mental, behavioral, or developmental disorder than children living in higher-income families (22.1% versus 13.9%) [33]. There is a lack of articles on children and adolescents with NDDs during the current pandemic, apart from Autism Spectrum Disorder (ASD) and ADHD [34]. In our sample, a pre-existing NDD correlated with the occurrence of depressive symptoms measured by the CDI 2 PV, acting as a further risk factor for depressive symptoms besides the socioeconomic disadvantage. As expected, children and adolescents with pre-existing neuropsychiatric problems were more susceptible to new mental health conditions in a time of crisis, like the present pandemic scenario [2, 35, 36]. That could be explained by several stressors, like the absence of school or other daily routines, that are important coping mechanisms for young people with NDDs like ADHD and ASD, or the inability to access regular care or mental health support [34, 36, 37]. SLD and ADHD, the most frequent neuropsychiatric diagnoses of our sample, can both hurt self-esteem, self-efficacy, and psychological well-being, favoring the development of internalizing symptomatology like anxiety and depression [37, 38]. We can suppose that children and adolescents with learning disorders (12.8% of our sample) suffered from the increased emotional distress of adapting themselves to online classes without adequate specific tools for addressing their learning needs [38, 39].

Following the literature, in our survey, the group of families who had children with pre-existing NDDs underwent a high burden of stress: they had to sustain the special educational needs of their children without any training and in the absence of external supporting networks [34, 36]. This kind of stress, combined with the higher economic pressure hitting low-income households especially in time of crisis, raised the risk of increased domestic violence, which is considered one of the biggest threats to children's mental health [40, 41].

The results of our study may be exemplary of a particular group of frail subjects represented by socioeconomically disadvantaged children and adolescents. They were more vulnerable to depressive symptoms during the COVID-19 outbreak, especially if they experienced a lack of essential supplies during the pandemic or had a pre-existing neurodevelopmental diagnosis.

Conclusions

The COVID-19 pandemic appears to have increased the already elevated risk for mental health affecting socioeconomically disadvantaged children and adolescents. The experience of a lack of essential supplies during the pandemic and pre-existing neurodevelopmental diagnoses were significantly associated with the occurrence of depressive symptoms in minors with a socioeconomic disadvantage at the end of the Italian first wave of COVID-19. International politicians should carefully consider vulnerable populations like children and adolescents from low-income households, who had to suffer the consequences of economic recession and the absence of support outside the family. The promotion of

educational and child-care programs and activities could sustain the prevention of mental distress. There is no health without health prevention.

Limitations And Strengths Of The Study

The first limitation of the research was the small sample, which makes findings more difficult to generalize. Second, given the cross-sectional nature of data, it was not feasible to use the correlations for causal inferences. Third, the response rate was scarce (13.6%), probably due to social disadvantage itself, making the study susceptible to non-response bias. Fourth, the association between depressive symptoms and risk factors like pre-existing NDDs and paucity of essential supplies resulted only from the parent-reported CDI 2 because the self-reported data were not statistically significant. We think the main strength of our study was the assessment of the COVID-19 impact on mental health among a homogeneous vulnerable group represented by socioeconomically disadvantaged minors. The present research could have some beneficial long-term effects by identifying mechanisms (e. g., coping strategies, preventive interventions) to support vulnerable groups such as young people with low socioeconomic status. Future larger-scale studies among similar samples of vulnerable people could confirm our findings and provide new insights.

Abbreviations

COVID-19
Coronavirus Disease
DSEC
Diurnal Socio-Educational Center
CDI 2 PV
Children's Depression Inventory 2 Parent Version
CDI 2 S-R SF
Children's Depression Inventory 2 Self-Report Short Form
SLD
Specific Learning Disability
ADHD
Attention-Deficit/Hyperactivity Disorder
MDD
Major Depressive Disorder
NDD
Neurodevelopmental Disorder
ASD
Autism Spectrum Disorder

Declarations

Ethics approval and consent to participate

This study was approved by the Independent Ethical Committee of Azienda Ospedaliero-Universitaria Consorziale Policlinico di Bari, and conducted according to the recommendations of the Helsinki Declaration. The parents of all participants provided their online informed consent.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MS and AP designed the study. MS and LQ analyzed the survey data. MS was a major contributor in writing the manuscript. AP, LQ, EM and FM helped in drafting the manuscript. MREU and LMarz contributed to the literature review. LMarg supervised the research. All the authors reviewed and edited the manuscript.

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