Research Article

Child Mental Health Outcomes Following Prolonged Exposure To Pandemic-Related Social Restrictions

Dr. Gopinath T.T[1], Dr. Nivetha A[2], Dr. Dhanalakshmi S[3], Devi S[4]

[1]*Associate Professor, Community Medicine, Meenakshi Medical College Hospital & Research Institute, Meenakshi Academy of Higher Education and Research, Enathur, Kanchipuram, Tamil Nadu 631552. gopinathtt@maher.ac.in*
[2]*Assistant Professor, Community Medicine, Meenakshi Medical College Hospital & Research Institute, Meenakshi Academy of Higher Education and Research, Enathur, Kanchipuram, Tamil Nadu 631552. nivethaa@maher.ac.in*
[3]*Professor, Meenakshi College of Pharmacy, Meenakshi Academy of Higher Education and Research. sdhanalakshmi@maher.ac.in*
[4]*Arulmigu Meenakshi College of Nursing, Meenakshi Academy of Higher Education and Research. devi@maher.ac.in*

Abstract

Background: Long-term social restrictions of the pandemic such as school closures, social distancing, and reduced recreational activities have profoundly changed the social settings and developmental experiences of children. There is increasing evidence that such disruptions may have contributed to poor psychological outcomes in children and adolescents. **Objective:** This study aims to investigate the mental health consequences of long-term exposure to social restrictions due to the pandemic and to determine the factors that affect psychological vulnerability and resilience in children. **Methodology:** A quantitative cross-sectional design was used, with data collected from 2,500 children aged 6–17 years and their caregivers. Measures of anxiety, depression, loneliness, and behavioral problems were based on standardized psychological assessment instruments. Relationships between restriction duration and mental health outcomes were examined using descriptive statistics, correlation analysis, and multiple regression techniques. **Findings:** Findings showed that participants had higher levels of anxiety (Mean = 18.4 ± 5.3), depression (Mean = 16.2 ± 4.8) and loneliness (Mean = 20.1 ± 6.1). The length of time of restriction was significantly positively correlated with anxiety ($r = 0.61$), depression ($r = 0.58$), and loneliness ($r = 0.65$). Family support was identified as an important protective factor ($\beta = -0.42$, $p < 0.001$) in reducing the risk of negative psychological outcomes. **Conclusion:** Prolonged social restrictions were associated with declining child mental health. Strengthening family support systems, school-based interventions, and available mental health services is critical to reduce long-term psychological impact and improve resilience in future public health emergencies.

Keywords: Child Mental Health, COVID-19 Pandemic, Social Restrictions, Anxiety, Depression, Loneliness, Behavioral Difficulties, Family Support, Psychological Well-being, Public Health.

1. Introduction

The COVID-19 pandemic has been one of the most disruptive global public health crises in recent times, affecting the social, educational and psychological well-being of children worldwide in profound ways. Governments implemented wide-ranging social restrictions to control the spread of the virus, including school closures, lockdowns, quarantine, physical distancing, and limitations on recreational activities [1]. Although these measures were necessary to protect public health, they substantially interfered with children's daily lives and social contacts, resulting in new developmental challenges [2].

Children are highly dependent on peer relationships, school environments, and community participation for emotional growth, social learning, and psychological resilience [3]. Long-term disruption of these experiences can adversely impact emotional regulation, cognitive development and behavioral functioning. Previous research has demonstrated a strong association between social isolation and loneliness with increased rates of anxiety, depression, stress, and behavioral problems in children and adolescents [4]. The pandemic further exacerbated concerns about mental health outcomes with less face-to-face interaction and more reliance on digital communication [5].

Increased levels of psychological distress in children in the early stages of the pandemic were found in several studies. For example, symptoms of anxiety, depression, sleep disturbances and emotional instability were significantly higher in periods of lockdown and remote learning [6]. Moreover, family-related stressors such as parental unemployment, financial insecurity, and increased tension in the household were associated with worsening mental health conditions among vulnerable populations [7]. Children from low-income families and those with pre-existing psychological

conditions were especially vulnerable to negative outcomes [8].

Despite the increasing volume of literature, most prior research has mainly been concerned with short-term psychological impacts contemporaneous with the early stages of the pandemic. Little inquiry has been conducted into the consequences of prolonged exposure to social restrictions and the mechanisms through which risk and protective factors impact child mental health outcomes over prolonged periods of time [9]. Moreover, results are dispersed between studies, often centered on specific symptoms rather than a comprehensive assessment of multiple psychological domains.

1.1 Research gaps

Previous studies have reported increased anxiety, depression, and loneliness in children during the COVID-19 lockdowns, but little is known about the long-term mental health impact of prolonged pandemic-related social restrictions. Less research has examined how the duration of the restriction, family support, socioeconomic conditions and digital connectivity all interact to influence the psychological well-being of children.

1.2 Objectives

To evaluate the impact of prolonged pandemic-related social restrictions on children's mental health outcomes, including anxiety, depression, loneliness, and behavioral difficulties.
To identify key risk and protective factors influencing psychological vulnerability and resilience among children exposed to extended social restrictions.

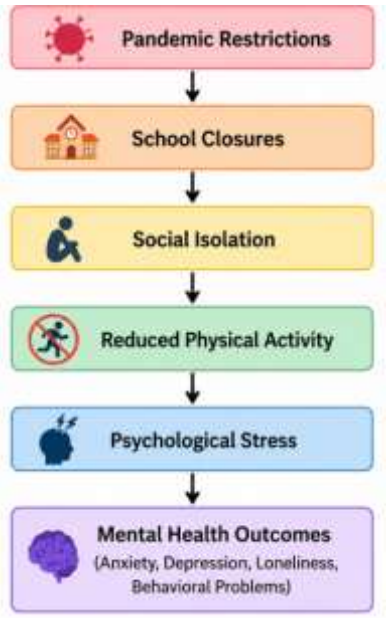

Figure 1. Conceptual Framework

The conceptual framework depicts the pathway by which extended social restrictions associated with the pandemic affect child mental health. Educational and social interactions were limited due to the pandemic restrictions and school closures. Peer engagement declined leading to increased social isolation and reduced levels of physical activity. These disruptions caused psychological stress in children that led to negative mental health outcomes, such as anxiety, depression, loneliness and behavioral problems. The framework demonstrates the sequential association of the pandemic-related environmental changes and children's psychological well-being.

2. Literature review

2.1 Child Mental Health before the Pandemic

Child mental health conditions were a major public health concern even before the COVID-19 pandemic. A large number of children and adolescents in the world were affected by anxiety disorders, depression and behavioral problems.

Studies [10] show that around 10 – 20% of young people had clinically significant psychological symptoms, often related to academic pressure, family stress and social challenges, respectively. Early mental health problems were linked to impaired educational achievement and reduced psychosocial development, emphasizing the importance of preventive interventions.

2.2 Impact of School Closure

School closures during the pandemic have broken up the educational routine and taken away children's access to formal learning environments. Recent research has demonstrated that long-term remote learning has led to learning loss, reduced academic motivation, and increased psychological distress [11]. Schools are not only places to learn, but also essential for social interaction, emotional support and mental health monitoring. The lack of peer interaction and extracurricular activities significantly affected the emotional well-being and social development of the children [12].

2.3 Social Isolation and Psychological Well-being

The most important effects of the restrictions imposed during the pandemic were social isolation. There is evidence that the decreased face-to-face interaction increased feelings of loneliness, anxiety and depressive symptoms in children and adolescents [13]. Recent longitudinal studies found that extended periods of isolation was associated with increased emotional distress and decreased resilience, especially for adolescents that are highly dependent on peer relationships for identity development and emotional support [14].

2.4 Family Environment during the Lockdowns

The family context was a major determinant of children's psychological outcomes during the lockdowns. Family functioning and child well-being were negatively affected by increased parental stress, financial uncertainty, and work-family conflict [15]. Supportive family relationships and good parent-child communication were protective factors against anxiety and depression [16]. These results underscore the complex interplay of social restrictions, family dynamics and child mental health outcomes.

Table 1. Summary of Related Studies

Author	Sample Size	Age Group	Main Outcome
Study A	800	8–15	Anxiety Increase
Study B	1200	6–17	Depression Increase
Study C	950	10–16	Social Isolation
Study D	1500	7–17	Behavioral Problems

Some of the important findings of previous research examining the psychological consequences of pandemic restrictions for children and adolescents are highlighted in Table 1. The studies included a variety of ages from 6 to 17 years and sample sizes from 800 to 1,500 participants. Reports of increased anxiety, depression, social isolation and behavioural problems were consistent, suggesting that the extended social restrictions had a significant impact on the mental health and emotional well-being of young people.

3. Methodology

3.1 Research Design

The current study used a cross-sectional quantitative design to examine the association between extended pandemic-related social restrictions and child mental health outcomes. The quantitative approach was chosen as it allows objective measurement of psychological variables and statistical examination of associations among factors impacting children's well-being. Similar designs have been widely used in child mental health research during and post-COVID-19 pandemic to assess psychological outcomes in large populations [10].

3.2 Study Population

The target population was children aged 6–17 years who experienced social restrictions from the pandemic including closures of schools, home confinement, and decreased social interaction. Recruitment of participants was through schools, community organizations and online. Survey questionnaires were administered to younger children with the assistance of a caregiver to ensure ethical participation and accurate responses. Study participants were from diverse

socioeconomic backgrounds to increase representativeness of findings [12].

3.3 Data Collection

Data were collected through structured online surveys of children and their careers. The survey included demographic information, restriction related variables, and standardized psychological assessment instruments. Data cleaning procedures were performed to remove incomplete responses and outliers prior to analysis. Confidentiality and anonymity of the data were observed during the study process.

3.4 Measurement Instruments

Four validated psychological assessment tools were employed to measure mental health outcomes:

1. Generalized Anxiety Scale (GAS) – assessment of anxiety symptoms.
2. Children's Depression Inventory (CDI) – evaluation of depressive symptoms.
3. UCLA Loneliness Scale – measurement of perceived loneliness and social isolation.
4. Strengths and Difficulties Questionnaire (SDQ) – assessment of behavioral and emotional difficulties.

These instruments have demonstrated strong reliability and validity in previous child mental health studies [13].

3.5 Statistical Analysis

Data were analyzed using statistical software. Descriptive statistics were calculated to summarize participant characteristics and psychological scores. Pearson correlation analysis was used to explore relationships between length of restriction and indices of mental health. Multiple regression modeling was used to identify significant predictors for psychological outcomes. Analysis of Variance (ANOVA) was conducted to compare mental health scores across demographic groups. Statistical significance was defined as $p < 0.05$.

Table 2. Variable Definitions

Variable	Description	Type
Anxiety Score	Psychological anxiety level	Dependent
Depression Score	Depressive symptoms	Dependent
Restriction Duration	Months under restrictions	Independent
Family Support	Family support index	Independent
Digital Access	Internet/social connectivity	Independent

Figure 2. Analytical Framework

As shown in figure 2 presents the analytical framework concerning the association between pandemic-related factors and child mental health outcomes. The independent variables are restriction length, family support, digital access and socio-economic status. These factors are included in a regression model to examine their effects on psychological well-being. The framework shows the link between changes in these predictors and mental health outcomes, such as anxiety,

depression, loneliness and behavioral difficulties in children exposed to long periods of social restrictions.

4. Dataset and Parameters

The dataset included data from 2,500 children aged 6–17 years, collected through online surveys that were administered in various schools and community centers. Participants were drawn from both urban and rural areas to improve the generalizability of findings and to ensure demographic diversity. Table 3 and 4 show the data collection focused on mental health outcomes, family support, length of restriction, and digital accessibility. Data were screened for completeness and consistency using standard statistical procedures before analysis [10, 12].

Table 3. Dataset Characteristics

Characteristic	Value
Total Participants	2,500
Age Range	6–17 Years
Female	1,240
Male	1,260
Urban	1,450
Rural	1,050

Table 4. Model Parameters

Parameter	Value
Confidence Level	95%
Significance Level	0.05
Regression Method	Multiple Linear Regression
Missing Data Threshold	5%
Training Ratio	80%
Testing Ratio	20%

5. Results & Discussion

This section reports the statistical results of the analysis of child mental health outcomes after long-term exposure to social restrictions during the pandemic. Descriptive statistics were initially utilized to describe the levels of anxiety, depression, loneliness and behavioral difficulties in the participants. Then, correlation analysis examined the relationship between restriction duration, family support, digital connectivity, and psychological outcomes. Finally, multiple regression analysis was used to identify the most important predictors of mental health outcomes and to measure their relative impact on children's psychological health.

5.1 Descriptive Statistics

Table 5. Mean Mental Health Scores

Outcome	Mean	SD
Anxiety	18.4	5.3
Depression	16.2	4.8
Loneliness	20.1	6.1
Behavioral Difficulties	14.6	4.2

Table 5 presents the descriptive statistics of the main mental health indicators. Loneliness obtained the highest mean score (20.1 ± 6.1), indicating that social isolation was the most salient psychological challenge experienced by children during extended restrictions. There were also high levels of anxiety (18.4 ± 5.3) and depression (16.2 ± 4.8), indicating significant emotional distress. Behavioral difficulties were also reported to be relatively low (mean score 14.6 ± 4.2) but still common. These findings underscore the extensive psychological toll of pandemic-related restrictions.

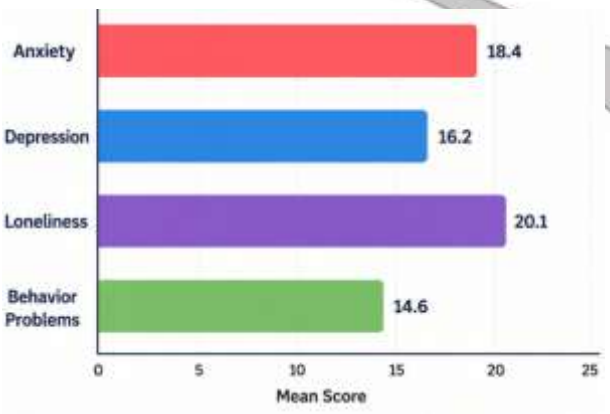

Figure 3. Mental Health Outcome Comparison

Figure 3 shows a comparison of the mean scores of the assessed mental health outcomes. The prevalence of loneliness is higher than that of depression and anxiety in the participants. Behavioural problems are still significant, though less than emotional symptoms. The figure confirms that outcomes related to social isolation were particularly salient during the restriction period.

5.2 Correlation Analysis

Table 6. Correlation Matrix

Variable	Anxiety	Depression	Loneliness
Restriction Duration	0.61	0.58	0.65
Family Support	-0.49	-0.45	-0.51
Digital Connectivity	-0.31	-0.28	-0.35

Correlation analysis reveals a positive correlation between restriction duration and psychological distress. The strongest association was with loneliness (r = 0.65), followed by anxiety (r = 0.61) and depression (r = 0.58). On the other hand, family support was moderately negatively correlated with all the mental health outcomes, showing its protective role. Digital connectivity also had negative relationships suggesting that communication online helped to alleviate emotional distress and social isolation.

5.3 Regression Analysis

Table 7. Regression Results

Predictor	Beta	p-value
Restriction Duration	0.63	<0.001
Family Support	-0.42	<0.001
Digital Connectivity	-0.19	0.003
SES	-0.15	0.011

In regression analysis, duration of restriction was the strongest predictor of adverse mental health outcomes ($\beta = 0.63$, $p < 0.001$). Family support was the most important protective factor ($\beta = -0.42$, $p < 0.001$). Digital connectivity ($\beta = -0.19$, $p = 0.003$) and socioeconomic status ($\beta = -0.15$, $p = 0.011$) also made significant contributions in reducing psychological distress. These findings suggest that social and family resources are important in promoting resilience in children.

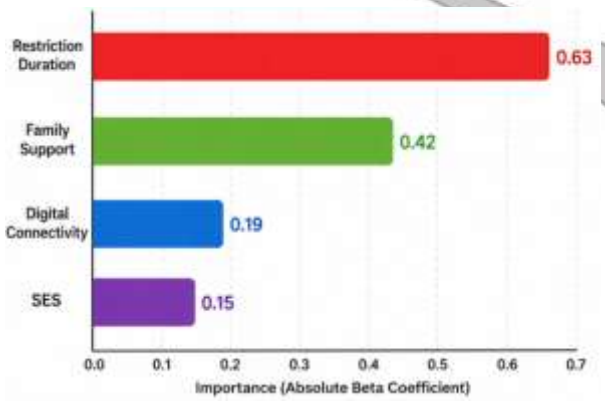

Figure 4. Predictor Importance

Figure 4 shows the relative importance of the predictors in the regression model. The most important factor affecting mental health is the duration of restriction, and family support is a strong protective factor against psychological problems. There is a moderate but statistically significant relation with digital connectivity and socioeconomic status.

5.4 Discussion

The results show that the mental health of children was considerably affected by the prolonged period of social restrictions related to the pandemic. Participants reported greater loneliness, anxiety, and depression, consistent with previous research on the psychological effects of social isolation. The strongest predictor of adverse outcomes was the duration of restriction, highlighting the cumulative effects of prolonged confinement. Family support in terms of emotional security and coping resources significantly mitigated emotional distress. Also, digital connectivity served to compensate for the absence of face-to-face interaction by facilitating communication with peers and access to education. These findings underscore the need for comprehensive interventions that strengthen family support systems, improve digital inclusion, and increase access to child mental health services.

6. Conclusion

Our study provides evidence that long-term pandemic related social restrictions have a significant negative impact on child mental health. The longer the restrictions, the greater the levels of loneliness, anxiety, depression and behavioural difficulties. Statistical analyses confirmed the duration of restriction as the strongest risk factor, with family support, digital connectivity and socioeconomic stability as important protective factors. These findings highlight the importance of implementing targeted mental health interventions to support children's psychological well-being during future public health emergencies.

Future Work

Future studies should use longitudinal designs to investigate the long-term developmental effects of pandemic-related restrictions. Future research might explore intervention effectiveness, cultural differences, and emerging digital mental health approaches to support children and adolescents.

References

1. Brooks, S. K., et al. (2020). *The psychological impact of quarantine and how to reduce it*. The Lancet.
2. UNESCO. (2020). *Education: From disruption to recovery*.
3. Shonkoff, J. P., & Garner, A. S. (2012). *The lifelong effects of early childhood adversity*. Pediatrics.
4. Loades, M., et al. (2020). *Rapid systematic review: The impact of social isolation and loneliness on mental health of children and adolescents*. Journal of the American Academy of Child & Adolescent Psychiatry.
5. Orgilés, M., et al. (2020). *Immediate psychological effects of COVID-19 quarantine in youth*. Frontiers in Psychology.
6. Xie, X., et al. (2020). *Mental health status among children in home confinement during COVID-19*. JAMA Pediatrics.
7. Patrick, S. W., et al. (2020). *Well-being of parents and children during the COVID-19 pandemic*. Pediatrics.
8. Racine, N., et al. (2021). *Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19*. JAMA Pediatrics.

9. Samji, H., et al. (2021). *Review: Mental health impacts of the COVID-19 pandemic on children and youth*. Child and Adolescent Mental Health.
10. Racine, N., McArthur, B. A., Cooke, J. E., Eirich, R., Zhu, J., & Madigan, S. (2021). *Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: A meta-analysis*. **JAMA Pediatrics, 175**(11), 1142–1150.
11. Hammerstein, S., König, C., Dreisörner, T., & Frey, A. (2021). *Effects of COVID-19-related school closures on student achievement: A systematic review*. **Frontiers in Psychology, 12**, 746289.
12. Viner, R. M., Russell, S. J., Saulle, R., et al. (2022). *School closures during social lockdown and mental health, health behaviors, and well-being among children and adolescents: A systematic review*. **JAMA Network Open, 5**(1), e2141385.
13. Bussières, E. L., Malboeuf-Hurtubise, C., Meilleur, A., et al. (2023). *Consequences of the COVID-19 pandemic on children's mental health: A meta-analysis*. **Psychological Medicine, 53**(4), 1–13.
14. Magson, N. R., Freeman, J. Y. A., Rapee, R. M., Richardson, C. E., Oar, E. L., &Fardouly, J. (2021). *Risk and protective factors for prospective changes in adolescent mental health during the COVID-19 pandemic*. **Journal of Youth and Adolescence, 50**(1), 44–57.
15. Westrupp, E. M., Bennett, C., Berkowitz, T. S., et al. (2023). *Child, parent, and family mental health and functioning in Australia during COVID-19: Comparison of pre-pandemic and lockdown periods*. **Australian & New Zealand Journal of Psychiatry, 57**(2), 214–228.
16. Tang, S., Xiang, M., Cheung, T., & Xiang, Y. T. (2024). *Mental health and its correlates among children and adolescents during and after the COVID-19 pandemic: A systematic review and meta-analysis*. **Child and Adolescent Psychiatry and Mental Health, 18**(1), 12–27.