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Caregiver and Youth Mental Health during COVID-19: Risk and Resilience Factors in a Large National Sample in Peru

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Abstract: The present study examined the prevalence and correlates of psychosocial impairment in a large, national sample of Peruvian children and adolescents (ages 5.0–17.9) during the COVID-19 pandemic in late 2020. A sample of 8263 online questionnaires were completed by caregivers in Peru between 23 October–26 November 2020. In addition to sociodemographic and pandemic-related factors, the survey administered the Peruvian Spanish version of the Pediatric Symptom Checklist (PSC-17) to assess child psychosocial risk. The Patient Health Questionnaire (PHQ-9), Kessler-6 (K-6), and Brief Resilience Scale (BRS-6) assessed caregiver depression, psychological distress, and resilience, respectively. In this case, 33% of the children were at overall risk on the PSC-17. In adjusted models, caregiver distress, depression, and low resilience, as well as having a family member with a health risk factor were the strongest predictors of child psychosocial risk, accounting for nearly 1.2 to 2.1 times the likelihood of risk individually and 2.4 to 3.4 times the likelihood of risk when summed. Due to the opt-in sampling method, the obtained sample was likely skewed toward more advantaged families, suggesting that the study's high prevalence of PSC-17 positivity might have been even higher in a more economically representative sample. Given the prevalence of psychosocial problems in Peruvian youth during COVID-19, preventive interventions, with a special focus on family-level approaches that involve and support parents as well as children, are clearly warranted.



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1. Introduction

The COVID-19 pandemic and initial public health measures for its containment generated abrupt and drastic lifestyle changes in many, if not most, countries in the world, and Peru was especially hard hit. With a national state of emergency and quarantine beginning in March 2020, schools, workplaces, and social meeting spaces were closed, causing a sudden loss of routine, disconnection from friends and loved ones, and an interruption of psychosocial and health supports, which may have disproportionately affected vulnerable groups [1]. By the end of November 2020, Peruvian health officials had already recorded over 960,000 cases and 36,000 deaths [2] and as of September 2022, Peru had the world's highest per capita COVID-19 death rate, with over 4.1 million cases and 216,000 deaths [3].

The United Nations Committee on the Rights of the Child has warned of the pandemic's serious physical, emotional, and psychological effects on children and adoles-

cents [4], especially in the context of the prolonged confinement, mandatory social distancing, lifestyle changes, and heightened stressors caused by the pandemic. Several studies have reported that youth under lockdown experienced increased levels of irritability, worry, fear, inattention, motor restlessness, nervousness, loneliness, search for proximity to caregivers, use of screens, and sleep problems [5–7]. In Peru specifically, an informal survey of more than 500 families in Lima and Arequipa in May 2020 reported that 69.2% of minors presented behavioral changes due to confinement [8].

The pandemic's assorted impacts on social, economic, and health factors could have compounded its emotional and behavioral effects in some youth. In a large, national study of Peruvian adults carried out by the Mental Health Directorate of the national Ministry of Health, demographic and socioeconomic risk factors, including lower household income and education level, single marital status, unemployment, and health comorbidities, were associated with higher levels of depressive symptoms [9]. Parents and caregivers may have experienced these effects even more acutely because they carried an additional responsibility for, and concern about, their children's well-being, in addition to the stressors experienced by other adults.

The pandemic's effects on parents are of special concern because higher levels of parent stress and worsened family functioning during the pandemic have been associated with higher levels of child psychosocial dysfunction [7,10]. In late April 2020, a study of 656 Canadian caregivers with children between ages 1.5 and 8 years found that pandemic-related household stressors and depression were both associated with worse quality of parenting [11]. In the same month, another study of 420 parents in the U.S. found that parent depression and generalized anxiety were associated with less closeness and more conflict in parent-child relationships [12].

In light of findings such as these, there has been a call to study not only risk factors, but also protective factors for child mental health in the context of the pandemic [13]. Caregiver resilience—the ability to adapt in the face of trauma or adversity—is one feature of positive adjustment that has been shown to be a protective factor for children experiencing adversities by facilitating more responsive parenting and parental modeling of positive coping strategies [14–16]. An April 2020 study of 277 parents of 6- to 13-year-olds in Italy found that the negative relationship between parent distress and child emotional well-being was mediated by parental self-efficacy [17]. If, in the context of COVID-19, caregiver resilience could be enhanced [18], it might be possible to find ways to mitigate the negative impacts of adversities on youth.

In the literature on adverse childhood experiences, exposure to cumulative adversities across multiple domains has been found to be associated with negative physical and mental health outcomes into adulthood [19,20]. Since it is likely that social, economic, and mental health risk factors have co-occurred in many households in Peru during the pandemic, it is important to identify the cumulative effects of risk factors such as these because youth facing multiple risk factors may be at the highest risk of negative psychosocial outcomes.

Sponsored by some of the same agencies and carried out by many of the same researchers who collaborated on the study of the impact of COVID-19 on Peruvian adults [9], the current study assessed the prevalence of psychosocial risk in Peruvian school-aged children and adolescents in the context of COVID-19. We further aimed to identify the stressors and protective factors associated with youth mental health in the hope that informing governmental agencies and NGOs would help in their efforts to identify the most appropriate strategies for mitigating the harmful effects of the pandemic on Peruvian youth.

We hypothesized that in addition to household-level and pandemic-linked risk factors, parent distress and depression would be associated with poorer child mental health outcomes, and that, conversely, parental resilience would be related to better youth mental health in the face of these stressors. We also hypothesized that having multiple concurrent risk factors would increase the likelihood of psychosocial problems in youth.

2. Materials and Methods

The analytic sample was comprised of caregivers (fathers, mothers, or other primary guardians) whose youngest children were between the ages of 5.00 and 17.99 years old. Caregivers were eligible if they were at least 18 years old, resided in Peru, and consented to participate in the study. The target sample size was 3000, representing approximately 0.1% of households with internet access in Peru. However, the full sample ultimately included 12,593 eligible caregivers, representing approximately 0.2% of households with internet access in Peru. Of this full sample, 8305 caregivers had children in the target age range. We identified 43 outliers in caregiver age who were subsequently excluded from analyses, yielding the final analytic sample of 8263 caregivers.

The study used non-probability convenience sampling. Participants were recruited through social network platforms, such as Facebook and Twitter, where the survey link was shared from the official accounts of the Mental Health Directorate of the Ministry of Health, the Ministry of Education (MINEDU), the Ministry of Women and Vulnerable Populations (MIMP), and UNICEF Peru. Recruitment took place between 23 October–24 November 2020, during which time Peru was under partial lockdown measures. At the time of the study, all children and adolescents in Peru under age 12 were in quarantine, and the vast majority of students had only virtual classes. The survey included questions about the sociodemographic characteristics of the household, caregiver, and child, variables that reflected stresses related to the pandemic, and measures of child and parent mental health and resilience.

As in the study by Antiporta and colleagues [9], we used raking based on respondents' education level and region to weight the sample in a preliminary report to sponsors. However, since the results did not differ substantially from those based on the unweighted sample and our study aimed to assess correlations, the current paper is based on this non-probability convenience sampling.

2.1. Measures

2.1.1. Household, Caregiver, and Child Characteristics

The household and caregiver characteristics included monthly household income, household size, caregiver education level, and caregiver marital status. Caregiver and child age and gender were also collected.

2.1.2. Pandemic-Linked Variables

The measures related to the pandemic included whether the reporting caregiver had lost their job in the context of COVID-19 and whether the child lived with anyone who had a key comorbidity that put them at higher risk for COVID-19 (including obesity, hypertension, diabetes, age 65+). In addition, residence in metropolitan Lima was considered a pandemic-linked variable because many COVID-19 cases in Peru at the time of the study had been concentrated in this region [2].

2.1.3. Patient Health Questionnaire-9 (PHQ-9)

The Patient Health Questionnaire (PHQ-9) is a screening tool that assesses the frequency of depressive symptoms over the past 14 days [21]. Each item is answered on a 4-point Likert scale, ranging from "not at all" to "nearly every day." A score of 10 or higher indicates risk for at least moderate depressive symptoms. The PHQ-9 has been validated and widely used in Peru since 2014 when it was adopted for use in the Demographic and Family Health Survey (ENDES). A content validation of the PHQ-9 has been carried out in Peru by expert judgment in an earlier study [22]. The Spanish version of the PHQ-9 has also shown good psychometric properties when used with Peruvian women based on item response theory, with no influence of age, education level, or employment status on item functioning [23].

We used a sequential screening approach, in which all participants completed the PHQ-2 (the first two items of the nine-item PHQ-9). Only those who obtained a score of 2 or higher were given the remaining 7 questions of the instrument. This approach has shown to have had a higher sensitivity than, and similar specificity to, administration of the full PHQ-9 and can reduce the time required to complete the questionnaire for those who do not screen at-risk on the PHQ-2.

2.1.4. Kessler Psychological Distress Scale (K-6)

The Kessler scale (K-6) is a brief self-report measure that has been associated with clinically relevant nonspecific distress [24]. We used the 6-item Spanish version. The K-6 items assess symptoms of depressed mood, worthlessness, hopelessness, decreased initiation, nervousness, and restlessness during the past 30 days. Each item is scored on a 5-point Likert scale ranging from “none of the time” to “all the time.” A score of 13 indicates serious psychological distress. In Peru, the K-6 has been found to have a one-dimensional structure and adequate levels of reliability, with Cronbach’s α of 0.901 and McDonald’s ω of 0.899 in a sample of Peruvian university students [25].

2.1.5. Brief Resilience Scale (BRS-6)

The Brief Resilience Scale (BRS-6) is a self-report instrument that assesses resilience in adults, defined as the ability to recover (“bounce back”) from stressful situations [26]. We used the Spanish version of the BRS-6, which has been validated by Rodríguez-Rey and colleagues [27]. The instrument contains 6 items that are answered on a 5-point Likert scale, ranging from “strongly disagree” to “strongly agree”. Example items include “I tend to bounce back quickly after hard times” and “I usually come through difficult times with little trouble”. The negatively phrased items (e.g., “I tend to take a long time to get over set-backs in my life”) are reverse scored. The total score is calculated by taking the mean of the 6 responses. Scores between 1.00–2.99 are classified as “low resilience”, scores between 3.00–4.30 are classified as “normal resilience,” and scores between 4.31 and 5.00 are classified as “high resilience”.

2.1.6. Pediatric Symptom Checklist (PSC-17)

The parent-report Pediatric Symptom Checklist (PSC-17) is a brief measure of overall psychosocial functioning for children ages 5–17 and was used as the primary outcome variable in this study. The PSC has been translated into more than three dozen languages and has been validated and used across ages 4–17, enabling the authors to use a single measure to assess functioning in the full age range in the present study [28]. The Spanish translation of the PSC has been used extensively for more than 20 years in a large national school-based mental health program in Chile. For the current study, the Chilean version of the 17-item PSC was reviewed and adapted by the Peruvian authors to ensure it was appropriate for use in Peru [29]. The items are scored on a Likert scale, with three answer options ranging from “never” to “very often,” with weights of 0, 1, or 2, respectively. In addition to an overall score based on a sum of the weighted item scores, the PSC-17 contains three groups of five or seven items representing three subscales, which measure internalizing (depression or anxiety), externalizing (conduct) and attention symptoms. In the current study, scores of 15 or higher on the overall scale were considered to be in the at-risk range.

2.1.7. Cumulative Risk Factors

All variables were dichotomized (0 = no risk, 1 = risk) prior to conducting unadjusted and adjusted analyses. A cumulative risk score was then generated for each parent-child dyad by summing the dichotomous scores for each of the risk factors that were found to be significantly associated with child psychosocial risk in adjusted analyses.

2.2. Analytic Approach

Statistical analyses were conducted using SPSS version 24.0. First, we used chi-square analyses to examine whether the prevalence of psychosocial risk on the PSC-17 differed by sociodemographic characteristics of the caregiver or child (caregiver age, child age, caregiver gender, child gender, monthly household income, household size, caregiver education level, marital status), pandemic-linked variables (recent job loss, household comorbidity, residence in Metropolitan Lima), or caregiver mental health risk (depression, distress, lack of resilience).

Adjusted analyses then estimated the extent to which caregiver mental health risk was associated with child psychosocial risk, after accounting for the sociodemographic and pandemic-linked variables that were identified as potential confounders in the bivariate analyses. In cross-sectional studies, logistic regression models can produce biased estimates of the risk ratio when the outcome is not rare. Since the frequency of risk on the PHQ-9 and PSC-17 both exceeded 10% in this sample, we generated adjusted prevalence ratios using multivariate Poisson regression with robust standard errors, which estimated the prevalence ratios more closely than logistic regression [30].

The four variables that were found to be associated with PSC-17 risk in unadjusted models were used to compute cumulative risk scores for each parent-child dyad. In a separate model, we estimated adjusted prevalence ratios to assess whether the cumulative number of risk factors was associated with the prevalence of PSC-17 risk. Individuals with missing data for any variable in each adjusted model were excluded from the adjusted analyses.

3. Results

3.1. Sample Composition

Table 1 presents the demographic composition of the sample. Most of the caregivers/respondents were female (84.8%) and their mean age was 39.76 (SD = 8.67). The youth were 53.7% female, and their mean age was 9.84 (SD = 3.52). The most represented region in the sample was Metropolitan Lima (44.1%), while smaller percentages hailed from Coastal, Andean, or Amazonian regions. Most caregivers were either married (37.0%) or living together with a partner (30.5%), although a sizable proportion were single (25.5%) or divorced/separated (5.5%). Most caregivers lived with 4 or more people in their household (73.1%), and 53.1% lived with a household member at heightened COVID-19 risk due to a health comorbidity such as obesity, hypertension, diabetes, or being above age 65. In terms of socioeconomic status, 27.4% of the sample reported a monthly income below 930 PEN (the minimum living wage in Peru) and 18.6% reported losing their job in the context of the pandemic. Nearly half (48.1%) of the sample had completed undergraduate schooling or higher, while 14.7% had not completed high school.

Table 1. Sample characteristics ($N = 8263$).

Characteristic	N	%
Child Age		
5–9.9 Years	4150	50.2
10–13.9 Years	2565	31.0
14–17.9 Years	1548	18.7
Caregiver Age		
18–24 Years	287	3.5
25–34 Years	2057	24.9
35–44 Years	3472	42.0

Table 1. *Cont.*

Characteristic	N	%
45–54 Years	2046	24.8
55–64 Years	401	4.9
Child Gender ^a		
Male	3828	46.3
Female	4434	53.7
Caregiver Gender		
Male	1255	15.2
Female	7008	84.8
Monthly Household Income ^b		
Up to 930 PEN	2263	28.5
931–1860 PEN	1434	18.1
1861–2790 PEN	867	10.9
2791–4650 PEN	575	7.2
>4651 PEN	213	5.5
Not Reported	2355	29.6
Caregiver Education Level		
Less than High School	1217	14.7
Completed High School	3077	37.2
Undergraduate or Higher	3969	48.0
Marital Status ^c		
Married	3056	37.6
Living Together	2523	31.0
Single	2105	25.9
Divorced or Separated	451	5.5
Number of Household Members		
<4 Members	2224	26.9
≥4 Members	6039	73.1
Job Status		
Remained Employed	6727	81.4
Lost Job	1536	18.6
Household Comorbidity ^d		
No Comorbidity in Household	3878	46.9
Comorbidity in Household	4385	53.1
Region		
Metropolitan Lima	4619	44.1
Coastal	1851	22.4
Andean	2202	26.6
Amazonian	566	6.9

Table 1. *Cont.*

Characteristic	N	%
Caregiver Psychological Distress ^e		
K-6 Risk (≥ 13)	460	5.7
No K-6 Risk	7652	94.3
Caregiver Depression ^f		
PHQ-9 Risk (≥ 10)	1280	15.6
No PHQ-9 Risk	6922	84.4
Caregiver Resilience (BRS) ^g		
Low Resilience	1471	18.5
Normal Resilience	5152	64.7
High Resilience	1346	16.9
Child Psychosocial Risk (PSC-17-OVR)		
PSC-17-OVR Risk (≥ 15)	2740	33.2
No PSC-17-OVR Risk	5523	66.8

Note: PEN = Peruvian sol; K-6 = Kessler-6; PHQ-9 = Patient Health Questionnaire-9; BRS = Brief Resilience Scale; PSC-17-OVR = Pediatric Symptom Checklist-17 Overall Scale. ^a Missing: *n* = 1. ^b Missing: *n* = 320. ^c Missing or other: *n* = 136. ^d Presence of a key comorbidity that puts a household member at higher risk of COVID-19 complications (e.g., obesity, hypertension, diabetes, age 65+) ^e Missing: *n* = 152. ^f Missing: *n* = 62. ^g Missing: *n* = 295.

Table 1 also shows the prevalence of mental health risk in children and their caregivers. Among youth in the sample, 33.2% were at overall risk on the PSC. Using the cutoff of 10 points on the PHQ-9, 15.5% of caregivers screened at moderate risk for depression or higher. With a cutoff of 13 points on the K-6, 5.6% of caregivers screened at-risk for psychological distress. On the brief resilience scale, the prevalence of low, normal, and high resilience were 17.8%, 62.4%, and 16.3%, respectively (Table 1).

3.2. Unadjusted Analyses

Table 2 presents the distribution of child psychosocial risk across sociodemographic characteristics, pandemic-linked variables, and caregiver mental health risk. Female caregivers were more likely than male caregivers to report risk (34.6% vs. 25.3%, $\chi^2(1) = 40.84$, $p < 0.001$), and male children were more likely to be at risk than female children (35.9% vs. 30.8%, $\chi^2(1) = 23.98$, $p < 0.001$). The characteristic of caregiver age was significantly, but not linearly associated with prevalence of risk, with the youngest caregivers being most likely to report risk (41.1%, $\chi^2(4) = 20.60$, $p < 0.001$). The youngest children (ages 5–9.9) were more likely to be at risk (34.2%) than the 10- to 13.9-year-olds (33.1%) and the 14- to 17.9-year-olds (30.3%, $\chi^2(2) = 7.91$, $p < 0.05$). Children whose caregivers were single, divorced, or separated were more likely to be at-risk than those whose caregivers were married or living together (36.3% vs. 31.7%, $\chi^2(1) = 16.31$, $p < 0.001$). In addition, children were more likely to be at risk if they had caregivers who lost their jobs in the pandemic (38.5% vs. 31.9%, $\chi^2(1) = 24.06$, $p < 0.001$), lived with a household member with a health risk factor for COVID-19 (38.8% vs. 28.2%, $\chi^2(1) = 104.25$, $p < 0.001$), or lived in Metropolitan Lima (33.2% vs. 30.8%, $\chi^2(1) = 27.12$, $p < 0.001$) compared to those without these pandemic-linked risk factors. On the other hand, having a monthly household income below the minimum living wage, the number of household members, and the caregiver’s education levels were not significantly associated with psychosocial risk in youth (Table 2).

Caregiver mental health risk was associated with especially large differences in child psychosocial risk. Among children whose caregivers screened positive (≥ 13) on the K-6,

74.3% scored in the at-risk range on the PSC-17, compared to only 30.6% of those whose caregivers did not screen positive, $\chi^2(1) = 374.99, p < 0.001$. Similarly, 68.4% of children whose caregivers screened at moderate risk or above (≥ 10) on the PHQ-9 scored in the at-risk range of the PSC-17, compared to just 26.7% of children whose caregivers did not screen positive, $\chi^2(1) = 847.69, p < 0.001$. There was a dose-response relationship between levels of caregiver resilience and risk on the PSC-17. As caregiver resilience increased from low to normal to high, the prevalence of PSC-17 positivity decreased from 46.9% to 33.2% to 17.7%, $\chi^2(2) = 271.18, p < 0.001$ (Table 2).

Table 2. Bivariate Analysis of Potential Factors Associated with Child Psychosocial Outcomes (N = 8263).

Predictor	PSC-17 Overall Risk		χ^2
	Not At-Risk (%)	At-Risk (%)	
Child Age			7.91 *
5–9.9 Years	2729 (65.8%)	1421 (34.2%)	
10–13.9 Years	1715 (66.9%)	850 (33.1%)	
14–17.9 Years	1079 (69.7%)	469 (30.3%)	
Caregiver Age			20.60 ***
18–24 Years	169 (58.9%)	118 (41.1%)	
25–34 Years	1322 (64.3%)	735 (35.7%)	
35–44 Years	2389 (68.8%)	1083 (31.2%)	
45–54 Years	1371 (67.0%)	675 (33.0%)	
Child Gender ^a			23.98 ***
Male	2454 (64.1%)	1374 (35.9%)	
Female	3068 (69.2%)	1366 (30.8%)	
Caregiver Gender			40.84 ***
Male	937 (74.7%)	318 (25.3%)	
Female	4586 (65.4%)	2422 (34.6%)	
Monthly Household Income ^b			0.57
Greater than 930 PEN	2204 (66.3%)	1121 (33.7%)	
Up to 930 PEN	1478 (65.3%)	785 (34.7%)	
Caregiver Education Level			0.01
Undergraduate or Higher	2872 (66.9%)	1422 (33.1%)	
High School or Less	2651 (66.8%)	1318 (33.2%)	
Marital Status ^c			16.31 ***
Married or Living Together	3809 (68.3%)	1770 (31.7%)	
Single, Divorced/Separated	1629 (63.7%)	927 (36.3%)	
Number of Household Members			0.37
<4 Members	1475 (66.3%)	749 (33.7%)	
≥ 4 Members	4048 (67.0%)	1991 (33.0%)	
Job Status			24.06 ***
Remained Employed	4578 (68.1%)	2149 (31.9%)	
Lost Job	945 (61.5%)	591 (38.5%)	

Table 2. *Cont.*

Predictor	PSC-17 Overall Risk		χ^2
	Not At-Risk (%)	At-Risk (%)	
Household Comorbidity ^d			104.25 ***
No Comorbidity	3149 (71.8%)	1236 (28.2%)	
Comorbidity	2374 (61.2%)	1504 (38.8%)	
Region			27.12 ***
Metropolitan Lima	2325 (63.8%)	2740 (33.2%)	
Other	3198 (69.2%)	1421 (30.8%)	
Caregiver Psychological Distress ^e			374.99 ***
K-6 Risk (≥ 13)	118 (25.7%)	342 (74.3%)	
No K-6 Risk	5310 (69.4%)	2342 (30.6%)	
Caregiver Depression ^f			847.69 ***
PHQ-9 Risk (≥ 10)	405 (31.6%)	875 (68.4%)	
No PHQ-9 Risk	5077 (73.3%)	1845 (26.7%)	
Caregiver Resilience (BRS) ^g			271.18 ***
High Resilience	1108 (82.3%)	238 (17.7%)	
Normal Resilience	3443 (66.8%)	1709 (33.2%)	
Low Resilience	781 (53.1%)	690 (46.9%)	

Note: PSC-17 = Pediatric Symptom Checklist-17; PEN = Peruvian sol; K-6 = Kessler-6; PHQ-9 = Patient Health Questionnaire-9; BRS = Brief Resilience Scale. * $p < 0.05$, *** $p < 0.001$. ^a Missing: $n = 1$ ^b Missing or not reported: $n = 2675$ ^c Missing or other: $n = 136$ ^d Presence of a key comorbidity that puts a household member at high risk for COVID-19 complications (e.g., obesity, hypertension diabetes, age 65+) ^e Missing: $n = 152$ ^f Missing: $n = 62$ ^g Missing: $n = 295$.

3.3. Adjusted Analyses

Each variable that was significantly associated with PSC-17 risk in unadjusted analyses was entered into a multivariate Poisson regression with robust standard errors. After controlling for all other significant variables, female caregivers were 21% more likely to report PSC-17 risk in their children than male caregivers. With all other aspects equal, the prevalence of risk was 13% lower for female youth than male youth. There were no differences in adjusted levels of PSC-17 risk based on caregiver age, and 5.5- to 9.9-year-olds had similar level of risk to 10.0- to 13.9-year-olds, but the oldest adolescents (ages 14–17.9) were 12% less likely to be at risk than the youngest children (ages 5–9.9). In the adjusted model, marital status was no longer significantly associated with PSC-17 risk. In terms of pandemic-linked risk factors, having a household member with a health comorbidity remained associated with a 24% higher prevalence of risk in the adjusted model. However, job status and region no longer had a significant association with psychosocial risk after adjusting for the other variables (Table 3).

Caregiver mental health, in contrast, continued to show stronger associations with PSC-17 risk than did most sociodemographic and pandemic-linked risk factors. Holding other variables constant, a caregiver’s overall distress on the K-6 was associated with a 20% higher likelihood of PSC-17 risk and caregiver depression was associated with 2.09 times the likelihood of PSC-17 risk. Meanwhile, youth with highly resilient caregivers were only 54% as likely to have PSC-17 risk compared to youth whose parents had low resilience, all else equal (Table 3).

Table 3. Adjusted prevalence ratios of factors associated with PSC-17 risk ($N = 7843$) ^a.

Predictor	aPR [95% CI ^b]
Caregiver Age	
18–24 Years	Reference
25–34 Years	1.08 [0.86, 1.17]
35–44 Years	0.96 [0.83, 1.12]
45–54 Years	1.11 [0.95, 1.29]
55–64 Years	1.19 [0.97, 1.46]
Child Age	
5.0–9.9 Years	Reference
10.0–13.9 Years	0.98 [0.91, 1.05]
14.0–17.9 Years	0.88 [0.81, 0.97] **
Caregiver Gender	
Male	Reference
Female	1.21 [1.09, 1.33] ***
Child Gender	
Male	Reference
Female	0.87 [0.82, 0.92] ***
Marital Status	
Married or Living Together	Reference
Single, Divorced or Separated	1.04 [0.97, 1.11]
Job Status	
Remained Employed	Reference
Lost Job	1.05 [0.97, 1.13]
Household Comorbidity ^c	
No Comorbidity	Reference
Comorbidity	1.24 [1.16, 1.31] ***
Region	
Metropolitan Lima	1.06 [1.00, 1.12]
Other	Reference
Caregiver Psychological Distress	
K-6 Risk (≥ 13)	1.20 [1.11, 1.30] ***
No K-6 Risk	Reference
Caregiver Depression	
PHQ-9 Risk (≥ 10)	2.09 [1.95, 2.23] ***
No PHQ-9 Risk	Reference
Caregiver Resilience (BRS)	
Low Resilience	Reference
Normal Resilience	0.91 [0.85, 0.97] **
High Resilience	0.54 [0.47, 0.62] ***

^a $p < 0.01$, ^{***} $p < 0.001$ ^a Any respondents with missing values in any of the variables ($n = 420$) were excluded.
^b 95% Wald Confidence Interval ^c The presence of a key comorbidity that puts a household member at higher COVID-19 risk (e.g., obesity, hypertension, diabetes, age 65+).

In addition to its main effect in the overall sample, parental resilience was a significant mitigator of child PSC-17 risk among children whose parents who had risk of depression on the PHQ-9 and/or risk of distress on the K-6. In the subsample of respondents who were at-risk on the PHQ-9 and/or K-6, increasing levels of parental resilience were associated with a decline in the prevalence of PSC-17 risk from 74.5% to 65.1% to 41.3% for parents with low, average, and high resilience, respectively ($\chi^2 [1] = 28.22, p < 0.001$).

3.4. Cumulative Risk

To illustrate the cumulative impacts of caregiver mental health risk and household comorbidities on the odds of PSC-17 risk, the four risk factors that were found to be significantly associated with psychosocial functioning (household comorbidity, caregiver distress, caregiver depression, low caregiver resilience) were summed. Youth had a range of 0–4 risk factors, but youth having four risk factors were grouped into the same category

as those with three risk factors because relatively few youths had all four risk factors. Adjusted prevalence ratios showed that compared to youth who had no risk factors, youth with one risk factor were 1.4 times more likely to be at-risk, youth with two risk factors were 2.4 times more likely to be at-risk, and youth with three or four risk factors were 3.4 times more likely to be at-risk on the PSC-17 (Table 4).

Table 4. The adjusted prevalence ratios of cumulative risk factors ($N = 7968$)^a.

Predictor	aPR [95% CI ^b]
Caregiver Age	
18–24 Years	Reference
25–34 Years	0.95 [0.82, 1.10]
35–44 Years	0.89 [0.77, 1.03]
45–54 Years	1.01 [0.86, 1.17]
55–64 Years	1.06 [0.87, 1.30]
Child Age	
5.0–9.9 Years	Reference
10.0–13.9 Years	0.99 [0.92, 1.06]
14.0–17.9 Years	0.87 [0.79, 0.95]**
Caregiver Gender	
Male	Reference
Female	1.26 [1.14, 1.40]***
Child Gender	
Male	Reference
Female	0.87 [0.82, 0.92]***
Cumulative Risks ^b	
0 Risks	Reference
1 Risk	1.40 [1.29, 1.52]***
2 Risks	2.35 [2.15, 2.57]***
3 or 4 Risks	3.36 [3.09, 3.65]***

** $p < 0.01$, *** $p < 0.001$ ^a Any respondents with missing values in any of the variables ($n = 420$) were excluded.

^b 95% Wald Confidence Interval.

4. Discussion

A child's level of psychosocial functioning is influenced by a complex interplay of psychological, social, familial, and environmental factors. The present study examined the prevalence and correlates of psychosocial risk in Peruvian youth during the COVID-19 pandemic, finding that 33.2% were at overall psychosocial risk. Given the opt-in sampling design and use of an online survey tool in a country where only 65% of individuals had internet access [31], the sample in this study was undoubtedly skewed towards children from more advantaged families who tend to have a lower prevalence of risk on the PSC [32]. Even without adjustment, the prevalence of 33.2% impairment found in this study was very high. In pre-pandemic studies of elementary and junior high school students in Chile, the prevalence of positive screening on the PSC fell between 10–15% [33,34].

Characteristics associated with higher prevalence of youth psychosocial risk included younger child age, gender of the child (male) and of the reporting caregiver (female), household health comorbidity, and caregiver mental health (psychological distress, depression, and resilience). Furthermore, children with more than two concurrent risk factors of any type had more than two times greater risk than children facing a single risk factor and more than three times greater risk than children without risk factors. Interventions to prevent psychosocial dysfunction in youth should be targeted towards youth with the most risk factors, who appeared to be at the greatest risk in the short-term, especially given the strong body of literature showing that cumulative early adversities can have persistent long-term impacts [19].

In line with ecological systems theory, a child's development is impacted by their entire environmental and interpersonal context [35]. The broader economic effects of the pandemic, national stay-at-home orders, media coverage, risks of infection or death,

local school closures, distance from friends, and loss of access to community groups exert pressure on a child's immediate family and household system, potentially impacting children's psychosocial outcomes. This study showed that household characteristics, such as living with a family member with a health comorbidity, were associated with poorer psychosocial functioning. Additionally, it showed that at the level of the micro-system, parent or caregiver depression, distress, or low resilience appear to pose significant risk to children's mental health.

In the present study, having a caregiver with moderate depressive symptoms doubled the likelihood of psychosocial risk compared to caregivers who did not meet the threshold for moderate depressive symptoms. Parental distress or depression can be internalized by children (e.g., feeling undervalued) or interfere with the quality of caregiving. Studies of other disasters have found that children whose parents experience more distress are likely to experience more distress themselves [36–38], and parents who experience more distress after a traumatic event have reported having more difficulty providing responsive parenting [39].

While many studies of children's psychosocial development focus on risk factors, resilience in both the child and family can also impact psychosocial functioning in disaster contexts. In the current study, having a caregiver with high resilience was associated with about half the likelihood of psychosocial risk compared to having a caregiver with low resilience. These findings align with studies that found that parental resilience was a key predictor of child psychological well-being during the early stage of the pandemic, with implications for designing effective intervention programs [17]. Studies have shown that resilience in adults can be impacted by interventions [40–42]. In addition, studies have demonstrated that resilience interventions targeted at parents or families can have measurable effects on children's mental health by empowering parents to cope with stressors and improving parents' belief in their ability to handle stress [43–46]. Resilience has also been found to buffer against the compounding impact of cumulative childhood adversities on later life outcomes [20], lending support to the idea that resilience interventions—aimed at either the parent, the child, or both—could benefit these vulnerable populations who experience the greatest number of risk factors.

The interdependence of child and caregiver mental health may have been especially pronounced in the context of COVID-19 stay-at-home orders, given the narrowing of the child's world and the increased time children spend with their caregivers. Our findings echo studies from Canada and the U.S., which found that both caregiver mental health and other household risk factors predicted lower quality parenting or poorer parent-child relationships in the early months of the pandemic [11,12]. In addition to social policies that can alleviate socioeconomic and household pressures on caregivers, prevention programming to support caregivers' mental health may improve parenting quality and family functioning, and, in turn, children's psychosocial functioning in crisis situations. There is evidence that programs that target both parents and children or adolescents can yield larger improvements in youth mental health than programs for children or adolescents alone [47,48]. Accordingly, we recommend applying this multigenerational framework to preventive interventions in response to COVID-19 in Peru.

Limitations and Future Directions

The present study has limitations that are important to highlight. First, given that the survey was administered online and used social networks as a distribution channel, the sample was only representative of individuals with internet access. These families may be more advantaged than the general population. Accordingly, this sample may underestimate the true population prevalence of various risk factors, and, in turn, psychosocial impairment. Conversely, the opt-in nature of the survey led to a self-selecting sample, and it is possible that individuals with a pre-existing interest in mental health issues during the pandemic were experiencing more mental health concerns and were more likely to partake in the

survey. Thus, the prevalence of mental health difficulties in this sample may overestimate the true population prevalence.

Another important limitation is that child psychosocial functioning was measured using a parent-report scale rather than collecting youth self-reported symptoms. It is possible that parents experiencing depression and other mood symptoms may have been more likely to report more symptoms in both themselves and their children because they have a more negative outlook [49]. Additionally, caregivers with a greater willingness to report their own symptoms also may have been more willing to report symptoms in their children, whereas parents harboring a greater fear of disclosure may have been more reluctant to report symptoms in both themselves and their children. Parent reports of children's psychological symptoms may not be as reliable as reports from youth themselves, a point that might be especially worth noting for the adolescents in the sample as it has been found that self-reports may be more reliable measures of adolescent internalizing symptoms [50]. On the other hand, one study has shown that parental depression was not associated with the level of parent-child agreement on the PSC-17 [51], and that, in contrast, children were more likely to agree with a positive parent-reported screen when parents had higher levels of anger/frustration or lower parent-child connectedness.

Lastly, the cross-sectional nature of this study precludes inferences about causality and the longer-term effects of adversities during the pandemic on children's psychosocial functioning. Given the ongoing pandemic, these risk factors may turn into chronic stressors for many children. For others, the psychosocial impacts of the pandemic may be more temporary. Further studies are needed to understand how the changing landscapes of the COVID-19 crisis are continuing to impact Peruvian children and adolescents over time.

Despite these limitations, the current study suggests a very high level of psychosocial risk in Peruvian children and adolescents—a level that was magnified in higher risk population groups such as those whose caregivers had mental health symptoms or whose household members had risk factors for COVID-19. The study also points to the potential that efforts to support and enhance parental resilience have as a pathway to mitigating the psychological harms of the pandemic. Finding and building upon interventions based on supporting parents appears to hold great promise in a time of great need.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Prisma, an NGO that provides research related services in Peru. The analysis of this data by the U.S.-based team was then approved by the Mass General Brigham Institutional Review Board as non-human subjects research (protocol #2021P002550, 16 September 2021). A Data Use Agreement for this study was fully executed between Massachusetts General Hospital (MGH), UNICEF Peru, and the Peruvian Ministry of Health. The Peruvian teams fully deidentified all data before sharing with the MGH team.

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: Data available on request due to privacy and ethical restrictions.

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