

Child Mental Health During the First and Second Wave By COVID-19 According to Sociodemographic Indicators in Peru

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Abstracts: The purpose of the study is to analyze the state of children's mental health in the context of the first and second wave of the COVID-19 pandemic in Peru. This involves describing prevalent behavioral and emotional functioning and comparing clinical and adaptive indicators according to sociodemographic variables such as gender and family type. The study was designed as a descriptive comparative cross-sectional cohort study. The sample was intentionally and non-probabilistically selected and included 485 Peruvian children aged 3 to 13 years ($M = 7.52$, $SD = 2.37$). For the analysis of children's mental health symptomatology, the sample was divided into three groups based on their school level, resulting in the following distribution: Sample 1 (P1): Included 134 children in early education, where 50.75% were female ($n=68$) and 58.21% came from nuclear families. Sample 2 (P2): Comprised 146 children in 1st and 2nd grade of primary school, where 54.79% were male ($n=80$) and 60.96% came from nuclear families. Sample 3 (S2, self-report): Consisted of 205 children in 3rd to 6th grade of primary school, where 54.63% were female ($n=112$) and 53.66% came from nuclear families. For the evaluation of children's mental health, the Behavioural Assessment System for Children and Adolescents (BASC) and a sociodemographic questionnaire were used. During the pandemic, a higher prevalence of adaptive indicators in children was found, including social skills, adaptability, and positive relationships with parents and peers. Clinical indicators such as attention problems and anxiety were also observed. When considering sociodemographic variables, males exhibited higher clinical indicators. Regarding family type, nuclear families showed greater adaptive indicators, while extended families exhibited more clinical indicators. In conclusion, Peruvian children aged 3 to 13 years presented higher adaptive indicators than clinical indicators during the COVID-19 pandemic. It is important to consider that children's mental health may vary according to sociodemographic factors, such as sex and type of family. However, it is crucial to recognize that these results are specific to the studied sample and context, and that children's mental health is influenced by various cultural and context-specific factors.

Keywords: Children's Mental Health, Clinical and Adaptive Indicators, Covid-19, Peruvian Childhood, Sociodemographic Indicators.

1. INTRODUCTION

The COVID-19 pandemic has been the scenario in which authorities worldwide have implemented measures to control infections, including school closures and home confinement. In Peru, several studies have highlighted the complexity of the situation due to the presence of risk factors that have impacted the mental health of children and adolescents [1].

In China, during the second month after the stay-at-home measures were implemented, it was reported that students presented a 22.6% prevalence of depressive symptoms and 18.9% prevalence of anxiety symptoms [2]. Similarly, in Italy, an affectation in the mental health of children and adolescents was reported, characterized by a 147% increase in suicidal ideation, 115% in depression, 78.4% in eating disorders and 17.2% in psychosis. In addition, an increase in pediatric hospitalizations related to neuropsychological disorders was reported [3].

However, other studies have not found a significant increase in childhood mental health problems during the pandemic. In fact, they report decreases in symptoms of anxiety and depression in some cases. This could be due to increased family time, decreased academic pressure, and reduced exposure to stressful situations in the school environment, among other factors [4]. In Bandung-Indonesia, they reported that improving household economic conditions, parental literacy level, adequate childcare, and job security contributed to improved child psychological well-being [5].

In Latin America, significant associations are found between behavioral problems and family socioeconomic conditions. The greater the socioeconomic and educational vulnerability, the greater the deterioration of children's mental health [6]. Another study reinforces the idea that lived stress is related to greater interference and conflicts in the family environment [7].

In Peru, it was found that 36.4% of children between 1.5 and 5 years of age, and 32.5% of children between 6 and 12 years of age, were classified as being at risk of presenting some kind of emotional, behavioral or attention-related mental health problem. In addition, 40% of the children stated that they did not feel comfortable with virtual education, showing a negative attitude towards school and teachers. The Peruvian Ministry of Health [8] considered that the risk of mental health problems and academic difficulties are more frequent at this stage of development. In addition, [9] stated that similar groups presented behavioral and emotional changes during the pandemic, the most common being: irritability, sleep problems, increased sensitivity, tendency to cry and motor restlessness.

In addition, in the case of Metropolitan Lima, it was found that children aged 6 to 11 years presented: 21.3% major depressive episode, 45.7% fear of separation from an attachment figure in the last 6 months, 12.1% combined attention deficit, 12.7% attention deficit alone and 29.8% somnolence. In addition, as the years increase, the percentage of difficulties in adapting to virtual classes doubles [10].

The mental health of children and adolescents is influenced by the experiences and environment surrounding them, and the pandemic was no exception. According to the United Nations Children's Fund (UNICEF, 2022), the presence of conflicts, illnesses, family psychopathological background and the interaction between psychological variables and socioeconomic status, exacerbate the problem [11,12].

On the other hand, the age of the infant is associated with psychological health. At 3 to 6 years of age, they are more likely to show symptoms of insecure attachment and fear of family members being infected by COVID-19, and between 6 and 18 years of age, they show lack of attention, worry and anxiety due to the pandemic [13]. Added to this are stressors and risk factors such as fear of infection, alienation, social inequalities, increased screen time, information overload, change of routine, school closures, increased rates of domestic violence, economic hardship, among others [14,15,16].

In 2022, UNICEF proposed an explanatory model of child mental health consisting of three spheres of influence. The first is the world of childhood, which encompasses factors such as adequate nutrition, stable and safe home, committed caregivers in a loving environment. The second is the world around childhood, which includes safety, security and healthy relationships in school and community. The third is the world in general, which has a decisive importance in mental health and is composed of social determinants such as poverty, natural disasters, discrimination, pandemics, among others [11].

Children face situations that can generate both adaptive capacities and clinical indicators in mental health. These adaptive indicators allow them to adapt and relate adequately to their environment, and are present in different situations and contexts, such as school and family. They are manifested through adequate interpersonal relationships, self-esteem, self-confidence, social skills, leadership and positive attitude towards parents. These adaptive indicators have in common a positive tendency, which contributes to a better personal adjustment.

On the other hand, mental health also evidences clinical indicators, including anxiety, aggressiveness, depression, attention deficit and negative attitude towards school and teachers. These indicators show a predominance of external locus of control and may have long-term implications for internalizing disorders in adulthood [17, 18].

Both adaptive and clinical indicators of behavioral and emotional symptomatology of children's mental health are described below (Table 1):

Table 1 Behavioral and emotional symptomatology dimensions of infant mental health.

Symptomatology	Dimensions	Features
IndicatorsAdaptive	Adaptability	Ability to adapt to changes in routine, new people and tasks.
	Self-esteem	Feelings of self-acceptance and self-respect.
	Self-confidence	Personal decision-making ability, confidence to solve problems, awareness of independence and self-determination.
	Social skills	Ability to communicate assertively, complimenting, encouraging, collaborating and admitting mistakes.
	Leadership	Capacity for optimal social relations with others.
	Interpersonal relationships	Positive regard for parents and feelings of esteem.
	Relationships with parents	Positive regard for parents and feelings of esteem.
	Negative attitude towards school	Level of dissatisfaction with the school.
	Negative attitude towards teachers	Level of dissatisfaction with the work of their teachers.
Clinical indicators	Aggressiveness	Verbal and physical hostile behavior.
	Anxiety	Excessive worry, fears, phobias, self-disapproval, obsessive thoughts, and irrational nervousness and worry.
	Atypicality	Evidence of poor contact with reality, psychopathological problems.
	Social stress	Tension, anxiety in interpersonal relationships.
	Depression	Mood discomfort, suicidal ideation, isolation and self-reproach. Feelings due to anxiety and stress.
	Hyperactivity	Exaggerated movement and impulsivity.
	Locus of control	Attributions of control of what happens in life, responsibility likewise or other instances
	Problems of care	Difficulty in maintaining attention and tendency to be easily distracted.
	Behavioral problems	Deviant and disruptive behaviors.
	Withdrawal	Isolation or avoidance of contact as a consequence of feeling rejected by others.
	Sense of incapacity	Lack of confidence in ability to achieve goals.
Somatization	Unjustified somatic complaints due to poor health.	

Note: Own elaboration based on Reynolds & Kamphaus (2002) in the Clinicians Guide to the BehaviourAssessment System for Children [19].

Based on the above, the general objective was to analyze the state of children's mental health in the context of the first and second wave of the COVID-19 pandemic in Peru. To achieve this, the following specific objectives were proposed:

-To describe the prevalent behavioral and emotional functioning of children during the first and second wave of the COVID-19 pandemic in Peru.

-To compare clinical and adaptive indicators of child mental health as a function of sex and family type in the recruited samples.

In this sense, it was hypothesized that children's mental health status was affected by the pandemic and therefore there are significant differences in behavioral and emotional functioning represented through clinical and adaptive indicators, as a function of the sociodemographic variables of the recruited samples.

2. METHODOGY

2.1. Design

Empirical in nature and followed a cross-sectional cohort comparative type associative strategy [20].

2.2. Participants

A total sample of 485 Peruvian children aged 3 to 13 years ($M = 7.52$, $SD = 2.37$) attending educational institutions in the regions of Metropolitan Lima, Callao, Ancash, Junín, Tacna, Ica, La Libertad, San Martín and Puno was recruited. The sampling was non-probability purposive due to the ease of access to the participants. Three different forms (Parents P1, Parents P2 and Self-Report S2) of the Behaviour Assessment System for Children (BASC) were used to measure the variables; the sample was analyzed according to the form applied, resulting in three different study samples (Table 2).

The first sample (Parents P1) was composed of 134 children in early childhood education, aged 3 to 6 years ($M = 4.54$, $SD = 1.11$). The second sample (Parents P2) was composed of 146 children in first and second grade of elementary education, aged 6 to 8 years ($M = 7.16$, $SD = .73$). Finally, the third sample (Self-report S2) was composed of 205 children from third to sixth grade of elementary school, aged 8 to 13 years ($M = 9.77$, $SD = 1.07$).

Table 2 Sociodemographic characteristics of the participants (N=485).

Variable	Sample P1 Early Childhood Education (<i>n</i> = 134)		Sample P2 1° y 2° grade of elementary school (<i>n</i> = 146)		Sample S2 3° a 6° grade of elementary school (<i>n</i> = 205)	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Sex						
Man	66	49.25	54.79	80	93	45.37
Woman	68	50.75	45.21	66	112	54.63
Family type						
Nuclear	78	58.21	89	60.96	110	53.66
Extensive	37	27.61	34	23.29	55	26.83
Single parent /reconstituted	19	14.18	23	15.75	40	19.51

2.3. Measures

A sociodemographic form was prepared to collect information on the characteristics of the children participating in the study. This form included questions about their age, sex, school level, family type, and region of origin. In addition, information was collected from the children's parents or caregivers, but was not used in the current study.

For variables related to children's mental health, the Behaviour Assessment System for Children (BASC) adapted to Spanish [21] was used. Due to the age and school grade of the participants, three forms P1, P2 and S2 were applied.

The BASC P1 (130 items in 10 scales, 8 clinical and 2 adaptive) was answered by parents of children in early childhood education. The BASC P2 (134 items in 12 scales, 9 clinical and 3 adaptive) was answered by parents of children in 1st and 2nd grade of primary school. Both BASC P1 and BASC P2 are answered on a four-point Likert scale (0 = Never; 1 = Sometime; 2 = Frequently; 3 = Always). On the other hand, the BASC S2 (148 items in 12 scales, 8 clinical and 4 adaptive) is a self-report answered by children in 3rd to 6th grade of elementary school and uses a dichotomous response format (0 = False; 1 = True).

Regarding the validity of the BASC, the content of the three forms was analyzed through the evaluation of six expert judges in children's mental health. These judges evaluated the clarity, representativeness, and relevance of the items, obtaining Aiken's V values above .80 ($p < .05$) for most of the items, indicating that the content of the items was adequate to measure children's behavior. For items with Aiken's V values below .80, modifications were made according to the judges' suggestions.

A confirmatory factor analysis (CFA) was performed to evaluate the internal structure of the BASC, using a two-factor related model (clinical and adaptive) for each form. Heywood cases (negative variances on the Adaptability scale) were found in BASC P1 and BASC P2, which prevented us from assessing model fit. This was possibly due to the small sample size in these BASC forms. On the other hand, the BASC S2 showed good, good goodness-of-fit indices ($\chi^2 = 106.09$, $df = 66$, $p < .001$, $\chi^2 / df = 2$, CFI = .98, TLI = .98, RMSEA = .05 CI 90% [.03, .06] $p = .057$, SRMR = .07), which empirically supports the evaluated structure.

Reliability was evaluated by means of the internal consistency of the items using the omega coefficient (ω). The three scales (P1, P2 and S2) obtained values above .70, indicating that all dimensions presented adequate levels of reliability, except for the dimensions of adaptability, atypicality and withdrawal in scale P1, as well as problems with attention, atypicality and withdrawal in scale P2. In addition, problems were observed in scale S2 in relation to negative attitude towards teachers, interpersonal relationships, self-esteem and self-confidence.

2.4. Procedure

The study was approved by the scientific committee of the Vicerrectorado de Investigación y Postgrado of the Universidad Nacional Mayor de San Marcos de Lima, Peru, in 2020 (RR No. 01686-R-20, project code A20180751). To recruit participants, invitations were sent through emails and parent groups on WhatsApp. These invitations included links to online questionnaires providing details about the study objectives and procedures.

Participation was voluntary and no incentives were offered. Informed consent was obtained from participants, who agreed to complete the questionnaires. The international ethical standards of the American Psychological Association (APA) were followed in the treatment of participants.

Data collection was conducted virtually and in two specific periods during the pandemic in Peru: from week 48 to week 53 of 2020, and from week 1 to week 5 of 2021. These periods coincided with the implementation of strict containment declared by the Peruvian government through Supreme Decree No. 031-2020-PCM [22].

2.5. Data Analysis

R software was used for data analysis. Internal consistency reliability was assessed by the omega coefficient, where values above .70 indicated good internal consistency. For the description of children's mental health, the

average scores on each variable were scaled by dividing their value by the number of items they contained. In this way, it was possible to compare the child mental health variables. In samples P1 and P2, the theoretical range of the scores varied from 0 to 3, while in sample S2 the theoretical range was between 0 and 1.

To compare child mental health according to sex, Student's *t* test was used when the homoscedasticity assumption was met. If this assumption was not met, Welch's *t* test was used. In both cases, effect size was estimated using Cohen's *d* coefficient, considering values of .20, .41 and .63 as indicators of small, moderate and large differences, respectively [23]. To compare child mental health as a function of family type, the Kruskal-Wallis test was used for samples P1 and P2, and Fisher's ANOVA for sample S2. To estimate effect size, epsilon squared (ϵ^2) and omega squared (ω^2) coefficients were used, considering values of .02, .13 and .26 as indicators of small, moderate and large differences, respectively [24].

3. RESULTS

3.1. Descriptive Analysis

In the P1 sample, it was found that social skills obtained a higher mean scaled score while the somatization variable presented the lowest value. As for the P2 sample, a higher level of adaptability and a lower level of somatization were exhibited. In addition, in both P1 and P2, attention problems obtained the highest average in the clinical indicators. Finally, in the S2 sample, higher average scores were observed in the areas of relationships with parents and interpersonal, while the lowest scores were observed in the variable of negative attitude towards teachers. Within the clinical indicators, anxiety obtained the highest scaled average.

Table 3 Scaled mean scores of the child mental health.

Variable	Sample P1 Early Childhood Education (<i>n</i> = 134)		Sample P2 1° y 2° grade of elementary school (<i>n</i> = 146)		Sample S2 3° a 6° grade of elementary school (<i>n</i> = 205)	
	<i>M</i>	Ω	<i>M</i>	ω	<i>M</i>	ω
Clinical scales						
Aggressiveness	.50	.88	.48	.85	—	—
Hyperactivity	1.11	.85	1.01	.77	—	—
Behavioral problems	—	—	.41	.71	—	—
Anxiety	.84	.70	1.09	.72	.43	.86
Depression	.60	.80	.59	.77	.17	.80
Somatization	.36	.76	.29	.81	—	—
Atypicality	.42	.65	.45	.57	.20	.79
Withdrawal	.88	.59	.79	.57	—	—
Attention problems	1.22	.76	1.34	.63	—	—
Locus of control	—	—	—	—	.32	.78
Social stress	—	—	—	—	.26	.75
Attitude towards school	—	—	—	—	.19	.74
Attitude towards teachers	—	—	—	—	.07	.55
Sense of incapacity	—	—	—	—	.19	.78
Adaptive scales						
Adaptability	1.98	.62	1.95	.79	—	—
Leadership	—	—	1.68	.85	—	—
Social skills	2.00	.86	1.89	.91	—	—
Relationships with parents	—	—	—	—	.92	.78
Interpersonal relationships	—	—	—	—	.92	.67
Self-esteem	—	—	—	—	.91	.64
Self-confidence	—	—	—	—	.75	.67

3.2. Comparative Analysis of Child Mental Health with Sociodemographic Variables

With respect to comparisons according to sex (Table 4), in sample P1, a small effect size was observed for the variables depression ($d = .20$) and somatization ($d = .23$). In both cases, women presented a higher mean score

compared to men (depression: $M_{woman} = 8.28 [SD = 5.17]$, $M_{man} = 7.33 [SD = 4.15]$; somatization: $M_{woman} = 7.76 [SD = 5.19]$, $M_{man} = 6.73 [SD = 3.76]$).

On the other hand, in the P2 sample, statistically significant differences were found in the variables of atypicality and hyperactivity ($p < .05$). The effect size of the differences was small in anxiety ($M_{woman} = 7.21 [SD = 3.24]$, $M_{man} = 7.92 [SD = 3.88]$, $d = .20$), atypicality ($M_{woman} = 4.67 [SD = 2.76]$, $M_{man} = 5.97 [SD = 3.73]$, $d = .40$), withdrawal ($M_{woman} = 7.39 [SD = 2.79]$, $M_{man} = 6.80 [SD = 2.92]$, $d = .21$) and conduct problems ($M_{woman} = 4.17 [SD = 3.09]$, $M_{man} = 4.84 [SD = 3.30]$, $d = .21$), while it was moderate in hyperactivity ($M_{woman} = 7.91 [SD = 3.86]$, $M_{man} = 9.99 [SD = 4.77]$, $d = .48$). In all variables, males presented higher mean scores than females, except in withdrawal, where females had a higher mean.

Finally, in the S2 sample, statistically significant differences were found in the variables of negative attitude toward school, negative attitude toward teachers, anxiety and locus of control ($p < .05$). The effect size of the differences was small in negative attitude toward teachers ($M_{woman} = .54 [SD = 1.01]$, $M_{man} = .84 [SD = 1.07]$, $d = .29$), anxiety ($M_{woman} = 6.68 [SD = 4.49]$, $M_{man} = 7.95 [SD = 4.30]$, $d = .29$), atypicality ($M_{woman} = 3.17 [SD = 3.17]$, $M_{man} = 4.00 [SD = 3.18]$, $d = .26$), locus of control ($M_{woman} = 4.70 [SD = 3.00]$, $M_{man} = 5.65 [SD = 2.82]$, $d = .33$) and sense of disability ($M_{woman} = 2.04 [SD = 2.32]$, $M_{man} = 2.69 [SD = 2.53]$, $d = .27$), while it was moderate in negative attitude toward school ($M_{woman} = 1.38 [SD = 1.56]$, $M_{man} = 2.05 [SD = 1.78]$, $d = .41$). In all variables, males presented higher mean scores than females.

Table 4 Comparison of child mental health according to sex.

Variable	Sample P1 Early Childhood Education (n = 134)			Sample P2 1° y 2° grade of elementary school (n = 146)			Sample S2 3° a 6° grade of elementary school (n = 205)		
	<i>t</i> ₍₁₃₂₎	<i>p</i>	<i>D</i>	<i>t</i> ₍₁₄₄₎	<i>p</i>	<i>d</i>	<i>t</i> ₍₂₀₃₎	<i>p</i>	<i>d</i>
Clinical scales									
Aggressiveness	.31	.761	.05	.72	.472	.12	—	—	—
Hyperactivity	.39 ^a	.698	.07	2.91 ^a	.004	.48	—	—	—
Behavioral problems	—	—	—	1.26	.210	.21	—	—	—
Anxiety	.22	.825	.04	1.19	.237	.20	2.05	.041	.29
Depression	1.17 ^a	.244	.20	.80	.427	.13	1.22	.225	.17
Somatization	1.32	.189	.23	.20	.840	.03	—	—	—
Atypicality	.25	.804	.04	2.43 ^a	.016	.40	1.86	.064	.26
Withdrawal	.73	.465	.13	1.25	.215	.21	—	—	—
Attention problems	.86	.391	.15	.021	.836	.03	—	—	—
Locus of control	—	—	—	—	—	—	2.32	.021	.33
Social stress	—	—	—	—	—	—	1.19	.236	.17
Attitude towards school	—	—	—	—	—	—	2.91	.004	.41
Attitude towards teachers	—	—	—	—	—	—	2.08	.039	.29
Sense of incapacity	—	—	—	—	—	—	1.92	.056	.27
Adaptive scales									
Adaptability	.80	.426	.14	.51	.613	.08	—	—	—
Leadership	—	—	—	.22	.827	.04	—	—	—
Social skills	.33	.739	.06	.04	.969	.01	—	—	—
Relationships with parents	—	—	—	—	—	—	.38	.702	.05
Interpersonal relationships	—	—	—	—	—	—	.50	.617	.07
Self-esteem	—	—	—	—	—	—	1.34	.183	.19
Self-confidence	—	—	—	—	—	—	.15	.878	.02

^a Welch's *t*-test was used. Levene's test was significant ($p < .05$) and suggests that the variances between groups are not equal. Sample P1: in hyperactivity, $g = 122.31$, and in depression, $g = 127.58$. Sample P2: in hyperactivity, $g = 143.95$, and in atypicality, $g = 142.42$.

Regarding comparisons based on family type (Table 5), in sample P1, a small effect size was observed for the variables of aggressiveness ($M_{Extensive} = 9.32 [SD = 7.65]$, $M_{SinpaRec} = 6.37 [SD = 4.42]$, $M_{Nuclear} = 6.82 [SD = 5.18]$, $\epsilon^2 = .02$), hyperactivity ($M_{Extensive} = 19.11 [SD = 8.34]$, $M_{SinpaRec} = 17.32 [SD = 6.15]$, $M_{Nuclear} = 17.29 [SD = 6.96]$, $\epsilon^2 =$ 1899

.02) and attention problems ($M_{\text{Extensive}} = 10.46 [SD = 3.54]$, $M_{\text{SinpaRec}} = 10.84 [SD = 3.29]$, $M_{\text{Nuclear}} = 9.22 [SD = 2.85]$, $\epsilon^2 = .04$). In aggressiveness and hyperactivity, participants coming from extended families showed higher scores, while in attention problems, those belonging to single-parent and reconstituted families obtained higher scores.

In the P2 sample, statistically significant differences were observed in adaptability, attention problems, and social skills ($p < .05$). The effect size was small in the adaptability variables ($M_{\text{Extensive}} = 15.71 [SD = 3.72]$, $M_{\text{SinpaRec}} = 16.83 [SD = 4.50]$, $M_{\text{Nuclear}} = 18.44 [SD = 4.61]$, $\epsilon^2 = .07$), leadership ($M_{\text{Extensive}} = 12.41 [SD = 5.06]$, $M_{\text{SinpaRec}} = 13.22 [SD = 4.72]$, $M_{\text{Nuclear}} = 13.88 [SD = 4.88]$, $\epsilon^2 = .02$) and social skills ($M_{\text{Extensive}} = 23.32 [SD = 7.42]$, $M_{\text{SinpaRec}} = 27.26 [SD = 8.06]$, $M_{\text{Nuclear}} = 27.49 [SD = 8.09]$, $\epsilon^2 = .05$). In addition, a small effect size was observed for attention problems ($M_{\text{Extensive}} = 10.38 [SD = 1.99]$, $M_{\text{SinpaRec}} = 9.74 [SD = 2.82]$, $M_{\text{Nuclear}} = 8.96 [SD = 2.16]$, $\epsilon^2 = .07$), depression ($M_{\text{Extensive}} = 7.82 [SD = 4.03]$, $M_{\text{SinpaRec}} = 7.74 [SD = 5.76]$, $M_{\text{Nuclear}} = 6.69 [SD = 4.34]$, $\epsilon^2 = .02$) and hyperactivity ($M_{\text{Extensive}} = 10.44 [SD = 5.07]$, $M_{\text{SinpaRec}} = 9.52 [SD = 4.95]$, $M_{\text{Nuclear}} = 8.39 [SD = 4.03]$, $\epsilon^2 = .03$), although the highest mean score was found in the extended family type.

In the S2 sample, the effect size was small for the negative attitude variable toward school ($M_{\text{Extensive}} = 2.11 [SD = 1.94]$, $M_{\text{SinpaRec}} = 1.40 [SD = 1.26]$, $M_{\text{Nuclear}} = 1.57 [SD = 1.68]$, $\epsilon^2 = .02$), where the highest mean score was in the extended family type. En la muestra S2, el tamaño del efecto fue pequeño en la variable de actitud negativa hacia el colegio ($M_{\text{Extensa}} = 2.11 [DE = 1.94]$, $M_{\text{SinpaRec}} = 1.40 [DE = 1.26]$, $M_{\text{Nuclear}} = 1.57 [DE = 1.68]$, $\epsilon^2 = .02$), where the highest mean score was in the extended family type.

Table 5 Comparison of child mental health by family type.

Variable	Sample P1 Early Childhood Education (n = 134)			Sample P2 1° y 2° grade of elementary school (n = 146)			Sample S2 3° a 6° grade of elementary school (n = 205)		
	$\chi^2_{(2)}$	p	ϵ^2	$\chi^2_{(2)}$	p	ϵ^2	$F_{(2,202)}$	p	ω^2
Clinical scales									
Aggressiveness	2.79	.248	.02	1.63	.443	.01	—	—	—
Hyperactivity	2.19	.335	.02	3.80	.150	.03	—	—	—
Behavioral problems	—	—	—	1.98	.371	.01	—	—	—
Anxiety	.72	.698	.01	1.18	.555	.01	.74	.476	.00
Depression	45	.799	.00	2.28	.320	.02	.91	.403	.00
Somatization	.98	.613	.01	1.65	.437	.01	—	—	—
Atypicality	1.64	.440	.01	1.74	.420	.01	.52	.595	.00
Withdrawal	.84	.658	.01	.22	.895	.00	—	—	—
Attention problems	5.60	.061	.04	10.42	.005	.07	—	—	—
Locus of control	—	—	—	—	—	—	.20	.822	.01
Social stress	—	—	—	—	—	—	.10	.903	.01
Attitude towards school	—	—	—	—	—	—	2.57	.079	.02
Attitude towards teachers	—	—	—	—	—	—	.71	.491	.00
Sense of incapacity	—	—	—	—	—	—	1.63	.198	.01
Adaptive scales									
Adaptability	.78	.677	.01	9.69	.008	.07	—	—	—
Leadership	—	—	—	2.27	.321	.02	—	—	—
Social skills	1.15	.562	.01	7.12	.028	.05	—	—	—
Relationships with parents	—	—	—	—	—	—	.18	.835	.01
Interpersonal relationships	—	—	—	—	—	—	1.27	.284	.00
Self-esteem	—	—	—	—	—	—	.03	.968	.01
Self-confidence	—	—	—	—	—	—	.16	.851	.01

4. DISCUSSION

The aim of this study was to describe the state of children's mental health during the first and second waves of the COVID-19 pandemic in Peru, and to compare clinical and adaptive indicators according to sociodemographic variables.

Despite challenging circumstances such as confinement and social restrictions, it was evident that children in the P1 sample were able to develop social skills. One possible explanation is that they had the opportunity to spend more time living together and establishing greater communication with their close family members during the pandemic [25]. Parental support and quality interactions between mothers and their children during difficult times have been shown to have a positive impact on sociability [26]. In addition, the virtual implementation of innovative pedagogical practices played a key role in fostering these skills [27].

On the contrary, in Japanese children there was a decrease in social skills, attributed to isolation [28], lack of social interaction and difficulties to cooperate with their environment [29]. This highlights the importance of considering the particularities of each context and the variables that may influence the development of these skills.

In P2, they had more outstanding adaptive behavior, which may have been possible thanks to support through the creation of daily routines, participation in creative activities, effective communication and continuous help from parents during confinement [30]. Similarly in 2020, Erades and Morales reported the adaptive achievement of Spanish children despite the negative impact on their emotional well-being due to confinement [31].

In S2, a good relationship between the children and their parents was identified, which could be due to the greater time the families spent together due to the imposed restrictions [32], thus strengthening affective bonds [33] and promoting their emotional and behavioral adaptation [34,35]. In addition, a good capacity to establish optimal social relationships with the people around them was evidenced [36]. This allowed them to develop greater resilience, cooperation, conflict resolution and practice social skills in a safe and familiar environment [37,38].

Although clinical indicators were not predominant in the present study, it is important to note that attention problems were observed in P1 and P2. Several factors may have contributed: decreased opportunities for play and physical activity, feelings of confinement, lack of freedom to explore at home [2], transition to virtual learning without access to adequate educational resources that would foster their adaptation [39], this coupled with the lack of social interaction at school [40]. In contrast, in 2020 Panda et al. highlighted that the reduction of academic and social demands had opposite effects [41].

In S2 they manifested anxiety due to individual factors: genetic predisposition, previous experiences of stress or emotional vulnerability; and external factors: social distancing, disruption of daily life, concern about contagion, lack of clear information [42, 41], parents who had essential jobs with a severe decrease in their presence [43] and socioemotional variations [44].

In the sociodemographic variable of sex, females presented a higher prevalence of depression and somatization (P1). According to Racine et al. [45], depression could have been a consequence of social isolation, disruption of preschool routines, limitation of social interactions and generalized uncertainty. In addition, somatization is related to emotional and social sensitivity caused by the female hormonal constitution [46].

On the other hand, men presented a prevalence in anxiety (P2, S2), possibly due to the experience of uncertainty, changes in daily routines and lack of social interaction. Gender stereotypes drove the repression of their emotions and encouraged an appearance of false strength [47,48]. This disagrees with epidemiological studies, where anxiety tends to be more prevalent in females and tends to emerge before puberty [28, 49, 50].

A prevalence of atypicality was observed in some males (P2; S2) possibly because they tend to experience greater functional impairment and hide their emotional distress [51], associated with factors such as isolation and social exclusion [52]. These results coincide with the findings of Bozzola, who reported a 17.2% increase in psychosis in Italian children, highlighting that it tends to be more common in males and has an early onset [3].

In addition, higher indicators of hyperactivity were observed in males (P2) due to difficulties in inhibiting motor response and managing cognitive flexibility. Loyer-Carbonneau et al. [53] suggest the presence of biological factors

and the lack of locus of control makes it difficult to follow instructions and intensifies impulsive and hyperactive behaviors, manifesting in behavioral problems such as verbal aggression.

Negative attitude towards school and teachers was also observed in boys (S2), possibly influenced by lack of peer support [54] and poor relationship established with teachers, being limited by online classes during pandemic [55]. Results that disagree with Kavalić et al. [56] who found no gender differences in attitude towards school in students aged 11-18 years from the Republic of Serbia during pandemic.

The sense of helplessness was more pronounced in children (S2) since, they faced greater restrictions in social interactions and additional pressure due to new responsibilities within the home, increased stress and the perception of lower competence and self-confidence in them [57].

In relation to the type of family, the nuclear family (P2) differed in the development of adaptive skills, leadership and social skills, given that, by having a smaller family nucleus and constant parental presence, it has probably created a less stressful family environment, conducive to the development of social skills and positive interaction among its members [58].

In contrast, in extended families, clinical indicators such as aggressiveness, hyperactivity, attention deficit, depression and negative attitude towards school were observed in all samples (P1, P2, S2). It is possible that the larger number of members, lack of privacy and increased interpersonal relationships, which characterize extended families, increased the potential for conflict, tension and emotional stress during the pandemic. Added to this is the lack of a clear structure and defined roles in the family to cope with pandemic demands, which may have generated confusion, ambiguity in responsibilities and difficulty in adequately managing emotions and behaviors [59].

Single-parent and reconstituted families registered attention problems (P1). In the case of the former, these problems may be attributed to the challenges they face, such as the lack of additional support from a second adult, which makes it difficult to establish consistent routines and to create a structured and stimulating environment conducive to attention and concentration on tasks [60, 61]. In the case of reconstituted families, it is possible that the process of adaptation to the new family structure during the pandemic has problematized homework accompaniment, negatively impacting academic performance and attention- concentration [62, 63].

In terms of implications, the study offers a significant contribution to the existing landscape of children's mental health in times of pandemic at the national level, highlighting findings from a different perspective. The results will help to understand the needs of children in this complex context. This could ensure their well-being and appropriate development in the current circumstances.

In terms of limitations, we have the absence of generalization due to the size of the sample, considered as a small grouping; however, it is possible that the results could be replicable at the local level. On the other hand, there is little support for research on the effects of the pandemic caused by COVID-19 in the Peruvian child population.

It is suggested to continue with specific and detailed research on adaptive and clinical indicators of child mental health, since there is currently a knowledge gap in this field in Peru. It is necessary to better understand why there were discrepancies in the results and to further explore the factors that influence their manifestation in children in this context, following future lines of research that will contribute to strengthen the scientific basis.

CONCLUSIONS

In conclusion, in the samples analyzed, it was observed that adaptive indicators, such as social skills, adaptability and positive relationships with parents, were prominent. These aspects were more prominent than clinical indicators. However, it is important to mention that the presence of anxiety was relevant in all samples, indicating the need to adequately address this concern in the evaluated context.

In addition, comparisons were made according to sex in three different samples, revealing that males showed a higher manifestation of clinical indicators compared to females during the pandemic, except in the P1 sample of initial education, where a higher level of depression and somatization was observed in females.

Finally, the findings suggest that nuclear families tend to exhibit more adaptive indicators in child mental health, while extended families showed a higher prevalence of clinical indicators during pandemic. On the other hand, single-parent and reconstituted families seem to present a more specific focus on attention problems in their children.

Acknowledgements

The authors would like to thank the children and parents who participated, as well as the student evaluators from the PROINFAN Research Group at the Faculty of Psychology of the National University of San Marcos.

This research was funded by the National University of San Marcos - RR N°. 01686-R-20 with project code A20180751.

Declaration Of Interest Statement

The authors report there are no competing interest to declare.

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DOI: <https://doi.org/10.15379/ijmst.v10i2.2703>

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