

# Psychological impact of COVID-19 lockdown in children and adolescents from San Carlos de Bariloche, Argentina: Parents' perspective

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## ABSTRACT

**Introduction.** From an infectious perspective, children and adolescents were not highly affected by the COVID-19 pandemic. However, social isolation measures have deeply changed their lifestyle, which is believed to have a psychological impact on them. The objective was to assess the impact of COVID-19 lockdown on the emotional health of children and adolescents attending primary or secondary school.

**Population and methods.** Parents of children and adolescents from San Carlos de Bariloche participated in the study. Adults' perception of the emotional and behavioral impact of lockdown on children and adolescents, changes in sleeping habits, screen use, sports-related activities, eating, and medical consultations, was assessed. **Results.** A total of 267 parents were included. Of them, 96.3 % noticed emotional and behavioral changes. The most common ones were that their children were more bored (76.8 %), more irritable (59.2 %), more reluctant (56.9 %), and angrier (54.7 %). It was observed that they woke up and went to bed later, and slept 30 minutes more. Moreover, leisure screen use increased by 3 hours on weekdays. Time dedicated to physical activities did not change, but the type of activities did: swimming and team sports were replaced by biking, walking, and skiing.

**Conclusions.** COVID-19 lockdown affected the emotional health and habits of children and adolescents. Boredom, irritability, and reluctance were more present during lockdown. The possibility of doing outdoor physical activities allowed them to keep practicing sports.

**Key words:** social isolation, child, adolescent, COVID-19, psychosocial impact.

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## INTRODUCTION

Pandemic disasters are part of our history. The Spanish flu is considered to be one of the greatest tragedies of the 20<sup>th</sup> century. Worldwide, 1 out of 3 people got infected and 50-100 million people died, which accounted for 2.5 %-5 % of the world population at that time.<sup>1</sup>

Lockdown as a response to a pandemic and the resulting economic instability affect the mental health of the population.<sup>2</sup> From an infectious perspective, children and adolescents are not particularly affected by the coronavirus disease 2019 (COVID-19), with low morbidity and mortality rates. Children were therefore not a major concern among those responsible for managing the crisis. However, lockdown deeply affects their lifestyle, which is one of health determinants.<sup>3-5</sup>

Furthermore, in many parts of the world, in-person classes were suspended as a way to control the pandemic. Its global scale and the extension of this suspension are unprecedented and may affect the right to education.<sup>5</sup> For children and adolescents, school is not merely an educational center, but also a place where they interact with their peers. In addition, schools play a role in promoting personal hygiene, physical activity, healthy eating, and body habits.<sup>5</sup> Even a short-term closure of educational institutions may be detrimental to the physical and mental health of children and adolescents, and affect the sense of normalcy that schools offer. Childhood obesity, reduced physical activity, irregular

sleep patterns, unfavorable diets, a sedentary lifestyle, and more screen time (mobile phone, TV, and computer) may result from lockdown.<sup>6,7</sup>

COVID-19 started in Asia, migrated to Europe and then to the Americas. The Argentine government tried to delay its arrival and spread by implementing early isolation measures. In San Carlos de Bariloche, in-person classes were interrupted in March 2020 and have not resumed until now. Between March and May, there was complete lockdown. Walking and biking in one's neighborhood was authorized in June; and the ski resort, bars, and restaurants opened in July. Social gatherings in houses have been banned since the beginning of lockdown.

It is important to know how children and adolescents experience lockdown in order to take measures aimed at mitigating its effects on their psychophysical health.<sup>8</sup> The objective of this study was to assess the impact of COVID-19 lockdown on the emotional health and habits of children and adolescents attending primary or secondary school.

## POPULATION AND METHODS

### Population

Children and adolescents aged 5-19 years from San Carlos de Bariloche who had health coverage through a social insurance program or a managed care organization were included. According to the 2010-2020 census projections, there were around 32 150 children and adolescents aged 5-19 years in San Carlos de Bariloche; 63 % of them had health coverage through a social insurance program or a managed care organization.<sup>9-11</sup>

### Study design

This was a prospective, descriptive, cross-sectional study.

#### Sample

The mother or father of children and adolescents attending primary or secondary school in San Carlos de Bariloche participated in the study.

#### Data collection

The study was publicized through social networks, the media, and WhatsApp. It consisted in an online, self-administered survey. Data were collected between September and October 2020.

### Outcome measures

Sociodemographic characteristics of the minor and their parents. Adults' perception of the emotional and behavioral impact of lockdown on their children.

The questionnaire developed by Orgilés et al., was used.<sup>12</sup> It considered 31 symptoms to assess whether they occurred much less, considerably less, without changes, considerably more, or much more compared to before lockdown. Habits before and during lockdown: type of schooling, wake-up time and bedtime, screen use, sports-related activities, and eating. Completion of the immunization schedule and physician consultation patterns during lockdown. Activities outside their homes in the first 5 months of lockdown.

### Statistical analysis

Descriptive methods (median and range for quantitative outcome measures and percentages for categorical outcome measures) were used to assess sociodemographic characteristics. The percentage of parents perceiving some type of emotional change in their children, and the percentage for each symptom, were estimated. The percentage of parents who perceived that this occurred considerably more or much more during lockdown compared to before was also estimated. These percentages were estimated globally and separately for children younger than 12 years and older than 12 years.

Bedtime and wake-up time were assessed using median and range. Sleep time, screen time, and physical activity time before and during lockdown were compared using the Wilcoxon test for paired samples.

Eating habits, immunization, physician consultation, and activities outside their homes during lockdown were summarized using descriptive methods. Statistical analyses were performed using the R statistical package.<sup>13</sup>

### Ethical aspects

The research protocol was approved by the Provincial Commission for the Assessment of Human Health Research Projects, Ministry of Health of the Province of Río Negro, Resolution no. 5196. Participants provided their informed consent online before completing the questionnaire.

## RESULTS

A total of 267 parents participated in the study. The mean age of children and adolescents was 11.1 years (range: 6.2-18.1). *Table 1* shows the sociodemographic characteristics. The parental level of education was high: 67.0 % of mothers and 55.4 % of fathers had completed tertiary or university education. In relation to employment,

3.4 % of mothers and 3.0 % of fathers referred having lost their job during the COVID-19 lockdown.

TABLE 1. Sociodemographic characteristics (N = 267)

Characteristics	N	%
Female sex	141	52.8
Lives with the mother	267	100.0
Lives with the father and/or other adults	242	90.6
Lives with siblings and/or other minors	203	76.0
Health coverage		
Does not have	6	2.2
Social insurance program	113	42.3
Managed care organization	148	55.4
Maternal education level		
Incomplete secondary education	0	0
Complete secondary education	21	7.9
Incomplete tertiary or university education	66	24.7
Complete tertiary or university education	179	67.0
No answer	1	0.4
Paternal education level		
Incomplete secondary education	10	3.7
Complete secondary education	39	14.6
Incomplete tertiary or university education	66	24.7
Complete tertiary or university education	148	55.4
No answer	4	1.5
Maternal employment situation		
Self-employed	89	33.3
Part-time	46	17.2
Full-time	88	33.0
Unemployed (looking for a job)	3	1.1
Lost job due to COVID-19	9	3.4
Other	31	11.6
No answer	1	0.4
Paternal employment situation		
Self-employed	85	31.8
Part-time	13	4.9
Full-time	135	50.6
Unemployed (looking for a job)	3	1.1
Lost job due to COVID-19	8	3.0
Other	20	7.5
No answer	3	1.1
Situation of the mother or father concerning COVID-19		
Belongs to a risk group	30	11.2
Lives with people belonging to a risk group	17	6.4
Has friends or family members who belong to a risk group, but do not live with the minor and their family	191	71.5
Does not know anyone who belongs to a risk group	29	10.9

### Parental perception of emotional and behavioral changes

A total of 96.3 % of participants noticed emotional and behavioral changes in their children during the COVID-19 lockdown. The most common changes (present in at least 50 % of participants) included children and adolescents being more bored, more irritable, more reluctant, angrier, more anxious, more likely to argue with the rest of the family, having more difficulty concentrating, and being more frustrated. Boredom was perceived as the most common symptom both in children younger than 12 years and adolescents older than 12 years. The second most common perception in smaller children was that they were more frequently angry, whereas older ones were more commonly reluctant (Table 2).

### Habits before and during lockdown

A total of 57.7 % of children and adolescents attended school in the morning and the afternoon, and 30.3 % in the morning shift. Table 3 summarizes habits before and during the COVID-19 lockdown. The median wake-up time changed from 7:10 a.m. to 9:00 a.m., and the median bedtime, from 10:00 p.m. to 11:00 p.m. The median sleep time on weekdays increased by 30 minutes ( $p < 0.0001$ ), and the median screen time for entertainment on weekdays increased by 3 hours ( $p < 0.0001$ ), and although median values were the same on holidays, the difference in distribution was significant ( $p < 0.0001$ ). The difference in sports-related activity time did not change ( $p = 0.1886$ ).

The main sports-related extracurricular activities before lockdown were swimming (24.7 %), team sports (soccer, rugby, handball, basketball, and hockey) (26.2 %), and different types of physical exercise (15.0 %), whereas during lockdown, biking (33.0 %), walking (22.5 %), and skiing (17.6 %) were the most common ones.

A total of 56.9 % of participants reported eating changes among children and adolescents; 61.7 % referred healthier eating habits; and 22.6 % an increased consumption of fast foods during lockdown. A total of 59.2 % of children and adolescents took part in food preparation, and 62.5 % paid attention to food quantity and quality.

In addition, 97.4 % of adolescents had completed their immunization schedule, but 30.7 % of parents referred not having taken their children to the physician in situations where

they would have taken them if it were not for the pandemic. Table 4 shows the activities children

and adolescents did outside their homes in the first 5 months of the COVID-19 lockdown. At the

TABLE 2. Parental perception of the emotional and behavioral impact of COVID-19 isolation on their children (N = 267). Emotions and behaviors that participants perceive to be more present among children and adolescents than before lockdown: total participants (N = 267), parents of children younger than 12 years (N = 161), and parents of children older than 12 years (N = 106)

My child...	Total		Younger than 12 years		Older than 12 years	
	n	%	n	%	n	%
Is worried	107	40.1	66	41.0	41	38.7
Is restless	125	46.8	90	55.9	35	33.0
Is anxious	145	54.3	93	57.8	52	49.1
Is sad	114	42.7	65	40.4	49	46.2
Has nightmares	40	15.0	32	19.9	8	7.5
Is reluctant	152	56.9	81	50.3	71	67.0
Feels lonely	119	44.6	77	47.8	42	39.6
Wakes up frequently	41	15.4	30	18.6	11	10.4
Sleeps little	36	13.5	15	9.3	21	19.8
Is very indecisive	74	27.7	43	26.7	31	29.2
Is uneasy	86	32.2	56	34.8	30	28.3
Is nervous	100	37.5	64	39.8	36	34.0
Is afraid of sleeping alone	53	19.9	49	30.4	4	3.8
Argues with the rest of the family	145	54.3	86	53.4	59	55.7
Is very quiet	36	13.5	11	6.8	25	23.6
Cries easily	93	34.8	66	41.0	27	25.5
Is angry	146	54.7	93	57.8	53	50.0
Asks about death	49	18.4	39	24.2	10	9.4
Feels frustrated	134	50.2	77	47.8	57	53.8
Is bored	205	76.8	126	78.3	79	74.5
Is irritable	158	59.2	91	56.5	67	63.2
Has sleeping difficulties	83	31.1	50	31.1	33	31.1
Has no appetite	25	9.4	16	9.9	9	8.5
Is easily alarmed	57	21.3	41	25.5	16	15.1
Has difficulty concentrating	138	51.7	84	52.2	54	50.9
Is afraid of COVID-19 infection	75	28.1	50	31.1	25	23.6
Is very dependent on adults	106	39.7	77	47.8	29	27.4
Has physical complaints (headache, stomachache, etc.)	53	19.9	33	20.5	20	18.9
Has behavioral problems	53	19.9	38	23.6	15	14.2
Eats a lot	90	33.7	55	34.2	35	33.0
Worries when one of the adults leaves the house	63	23.6	44	27.3	19	17.9

TABLE 3. Habits before and during lockdown

	Before lockdown	During lockdown
Wake-up time, weekdays, M (range)	7:10 a.m. (5:30 a.m.-1:00 p.m.)	9:00 a.m. (7:00 a.m.-1:00 p.m.)
Bedtime, weekdays, M (range)	10:00 p.m. (6:30 p.m.-2:00 a.m.)	11:00 p.m. (9:00 p.m.-4:00 a.m.)
Sleep hours, weekdays, M (range)	9.5 (6.5-12.5)	10 (5-13)
Screen time, weekdays (hours), M (range)	2 (0-12)	5 (1-12)
Screen time, weekend (hours), M (range)	4 (0-16)	4 (0-20)
Sports-related extracurricular activities (hours per week), M (range)	3 (0-12)	3 (0-23)
Shares breakfast with the family, n (%)	205 (76.8)	203 (76.0)
Shares lunch with the family, n (%)	125 (46.8)	258 (96.6)
Shares the afternoon snack with the family, n (%)	202 (75.7)	225 (84.3)
Shares dinner with the family, n (%)	267 (100.0)	265 (99.3)

M: median.

beginning, 79.0 % of children and adolescents were not involved in any activity outside their homes, whereas in August only 7.5 % were not. In relation to doing outdoor activities, this figure went from 22.1 % in April to 74.2 % in August. Visiting friends and family members, going shopping, and going to pastry bars and restaurants saw a gradual increase throughout the lockdown months.

## DISCUSSION

In Argentina, mandatory isolation measures were implemented in March 2020, when the number of new daily *COVID-19* cases across the country was below 30. The type of lockdown varied across towns, but in-person classes were suspended nationwide at all levels. In San Carlos de Bariloche, there was complete lockdown: circulation was forbidden, except for essential activities. Family lifestyle was greatly affected by lockdown. Children and adolescents stopped interacting with their peers and started spending much more time at home. The most common emotional changes reported in our study revealed a difficult daily coexistence at home.

Caffo et al., found that 61 % of parents with children aged 0-18 years were more involved in their school activities than before, and 20 % found it difficult to coordinate between homeworking and their children's activities.<sup>14</sup> In a review of studies on the effect of quarantine on children and adolescents' mental health, Imran et al. observed that parents reporting more child emotional and behavioral difficulties were those who found family coexistence difficult or very difficult.<sup>15</sup>

It is very important to pay attention to children and adolescents during the public health emergency in order to prevent mental disorders.<sup>16</sup> In this context, the *Sociedad Argentina de Pediatría* advocates for the return to in-person classes due to the role played by school in education, the development of social and emotional skills, and

nutrition and physical activity among children and adolescents, which are essential pillars for their well-being.<sup>17</sup>

In a study conducted in Italy and Spain, 83.8 % and 88.9 % of parents, respectively, noticed emotional and behavioral changes in their children during lockdown. The authors indicated that the increased flexibility of lockdown in Italy compared to Spain may account for such difference.<sup>12</sup> The high percentage of emotional and behavioral changes observed in our study may be due to the strict nature of our lockdown, particularly in the first months, and its extension.

The most common changes reported by parents in our study included children and adolescents being more bored, more irritable, more reluctant, angrier, more anxious, more likely to argue with the rest of the family, having more difficulty concentrating, and being more frustrated during lockdown. Orgilés et al., found that difficulty concentrating was the most common symptom reported by parents in Spain and Italy, which affected 76.6 % of children and adolescents, followed by boredom, which was present in 52.0 % of them.<sup>12</sup>

Our study observed changes in sleeping habits. A study conducted by Roitblat et al., pointed out that the timing of sleep and sleeping habits significantly differed from daily routine conditions, and that a prolonged stay at home may affect them.<sup>18</sup>

During lockdown, the median screen time for entertainment increased by 3 hours on weekdays. Orgilés et al., also observed an increase in screen time. Before lockdown, 50 % of children and adolescents had a screen time of less than 1 hour, and only 3 % of more than 3 hours, whereas during confinement these figures were 15 % and 30 %, respectively.<sup>12</sup>

Ruiz-Roso et al., assessed the eating habits of adolescents from Chile, Colombia, Brazil, Italy, and Spain during confinement and concluded

TABLE 4. Activities in the first 5 months of lockdown. N = 267

	April		May		June		July		August	
	n	%	n	%	n	%	n	%	n	%
None	211	79.0	174	65.2	125	46.8	57	21.3	20	7.5
Outdoor activities	59	22.1	81	30.3	108	40.4	155	58.1	198	74.2
Visiting friends	4	1.5	12	4.5	24	9.0	57	21.3	95	35.6
Visiting family members	15	5.6	27	10.1	53	19.9	81	30.3	99	37.1
Shopping	6	2.2	11	4.1	29	10.9	60	22.5	91	34.1
Going to pastry bars or restaurants	0	0	0	0	2	0.7	14	5.2	45	16.9

that, although during this period families had more time to cook, the overall diet quality did not improve. They observed an increase in sweet food consumption among adolescents, likely due to boredom and stress produced by confinement.<sup>19</sup>

In our study, almost 1 out of 4 parents referred that their children ate more fast food. The combination of a higher calorie intake, the need to stay at home, and more hours of screen use, which remote learning entailed, put children and adolescents at risk of weight gain and declining physical condition. One-third of parents failed to take their children to medical appointments that they would have otherwise scheduled. This is an alarming situation since a delay in seeking medical care may result in the worsening of a condition.

To date, there is no knowledge of other completed studies assessing the impact of lockdown on school-age children and adolescents in our region. This study poses some limitations: the questionnaire assesses parents' perception of the emotional health of their children, which is subjective; memories regarding activities done by children and adolescents in the first 5 months of lockdown may be inaccurate, and invitations to participate were made through the media. Therefore, the resulting sample is not representative of the population of San Carlos de Bariloche. The sample characteristics indicate that the participating families belong mainly to the middle class; lockdown and its consequences on the economy may have affected families from other socioeconomic levels differently.

In spite of its limitations, this study evidences important emotional and habit-changing effects of lockdown on children and adolescents. Even if vaccines help to control the pandemic, it is very likely that isolation measures will continue to be necessary for a considerable period of time. The epidemiological knowledge gained will allow to guide the planning of programs aimed at children and adolescents in the isolation setting of San Carlos de Bariloche and other towns in the region with similar characteristics. In addition, it will serve as the basis for developing other studies on the topic.

Pediatricians should pay attention and, during consultations, inquire how the patient and their family are adapting to life in isolation conditions and what they are feeling. This will allow to warn about psychosocial risk situations.

## CONCLUSIONS

A total of 96.3 % of parents noticed emotional changes in their children. Boredom, irritability, and reluctance were more present during lockdown. Leisure screen time increased by 3 hours on weekdays. Time dedicated to physical activities did not change, but the type of activities did: swimming and team sports were replaced by biking, walking, and skiing. A total of 30.7 % of parents referred not having taken their children to the physician in situations where they would have taken them if it were not for the pandemic.

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