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Quality of life among Croatian primary school-age children before and after the COVID-19 pandemic

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ABSTRACT

Introduction: During the lockdown period, numerous different stressors negatively affected children and adolescents in the general population. Children under the age of 18 were the most vulnerable and most likely to suffer from more complex psychiatric symptoms during the closures of educational institutions. This study aimed to measure and compare the quality of life (QoL) of Croatian primary school-aged children before and after the coronavirus disease-19 (COVID-19) pandemic.

Methods: The participants were 310 primary school children aged between 8 and 12 years and their parents or caregivers. QoL was measured by the Paediatric Quality of Life (PedsQL™) inventory generic core scale, which includes children's-self-report (CSR) and parents-proxy-report (PPR) versions for ages 8-12 years. The significant difference of results in CSR and PPR was analyzed with a Student's t-test. The level of significance was set to $p < 0.05$.

Results: Before the COVID-19 pandemic, CSR and PPR gave almost the same result on every subscale, including total QoL, which measured 82.18 ± 11.68 for children and 82.11 ± 11.66 for parents. Children's QoL was significantly worse after the pandemic than it was before, according to both CSR and PPR, with the total QoL scale measuring 77.82 ± 17.08 and 77.96 ± 17.33, respectively. When comparing results of CSR before and after the pandemic, lower results were measured in the post-pandemic period for all subscales, with statistically significant differences found for emotional, school, and psychosocial functioning subscales and total QoL score. The same thing happened with PPR, a statistically significant difference was found for emotional, social, school, and psychosocial functioning subscales and total QoL score.

Conclusion: According to the results of the PedsQL™ inventory generic core scale, the COVID-19 pandemic negatively affected and decreased children's QoL in the physical, emotional, social, school, and psychosocial spheres by both children's and parents' opinions.

Keywords: Quality of life; COVID-19 pandemic; children; parents; Croatia

INTRODUCTION

The first cases of coronavirus disease-19 (COVID-19) were reported in Wuhan City, China, at the end of 2019. COVID-19 has shown high spreading capacity and fatality in a short period of time, and that is why on March 11, 2020, the World Health Organization (WHO) declared spreading of the COVID-19 as a pandemic (1). Governments around the world launched sets of different restrictions and measures to control the spread of the virus, but most of them agreed about quarantine and school closure. After the implementation of the mentioned measures, everyday life took some serious changes. The biggest changes in children's lives were caused by distance online education instead of attending schools in person, and for adults, the same effect was caused by working from home (2). By the middle of April 2020, 192 countries closed their educational institutions, which affected more than 90% of the world's student population (3). Speaking about COVID-19 in Croatia, the first case was reported on February 25, 2020. One part of the response to the COVID-19 pandemic from the Croatian government also included school closures in the whole country, starting with March 16, 2020. The Croatian Ministry of Education offered schools three different teaching models: the first model – in-person learning; the second model – mixed form (primary grades from 5th to 8th and secondary schools); the third model – remote learning (primary grades from 5th to 8th and secondary schools). At first, over 90% of Croatian schools chose the first model, which means that most of the children attended school through in-person learning. The program in which the majority of students attended schools through the first model and

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the second or the third model if needed, was applied for more than three months, all the way to the beginning of December 2020, when Croatia faced the peak of the second wave of the pandemic. On December 14, or one week before the official winter school holidays in Croatia, school closures again took place for secondary and some upper grades students of primary school. Already in the next week, the epidemiological situation started to improve and continued even further in the following weeks. In the middle of January 2021, primary schools started to work normally, while secondary schools were online until the beginning of February, depending on the situation in each region of the country (4).

The most affected aspect by the COVID-19 outbreak within QoL in general refers to health-related quality of life (HRQoL). When speaking about HRQoL, it is usually defined as a person's subjective perception of satisfaction with their own health condition, and personal subjective perception is directly determined by psychosocial characteristics and the state of the individual (5). During the lockdown period, numerous different stressors negatively affected children and adolescents in the general population. The most usual stressors were the lockdown itself, fear of getting infected, home boredom, false and unverified information, lack of communication and interaction in person, and personal or familial financial problems (6). Children under the age of 18 were the most vulnerable and most likely to suffer from more complex psychiatric symptoms during the closures of educational institutions (7). Moreover, relevant literature shows an increase of negative psychological symptoms such as depression and anxiety in the young population (8). During quarantine, most families stored food with a long shelf life, mainly including high-processed and calorie-dense foods (9). The lockdown also caused an increase in the number of children living a sedentary lifestyle and an increase in the amount of time children spend in front of a computer or television. Accessible research results showed that the number of children playing online video games increased too (10). There are some studies that, in addition to the effect of the COVID-19 pandemic on children, also investigated the effect of the pandemic on adolescents, which also came out to be quite an affected age group (11-13). Moreover, there are also some studies conducted directly on children's parents as the main participants after the pandemic has been limited. One of them, which is important to mention, was conducted by Atay et al., who investigated sensitivity levels to violence against children during COVID-19 (14). When all those listed data and facts are considered, it is highly logical to say that the COVID-19 pandemic and its restrictive measures strongly affected HRQoL. This study aimed to measure and compare QoL of Croatian primary school-age children before and after the COVID-19 pandemic.

METHODS

A comparative study with two groups of participants was carried out. Participants were 310 primary school-age children (158 children before the COVID-19 pandemic and 152 children after the COVID-19 pandemic, 8-12 years old) and their parents or caregivers. The sample size of each group was determined using G*Power (version 3.1.9.7) setting to Cohen's medium effect size of 0.5, significance level 0.05, and statistical power of 0.80. The minimum calculated sample size is 142 before and 146 after the pandemic per study group. Due to more children participating, the total sample size reached 158 before and 152 after the pandemic. Participants were randomly selected for this study. Children were excluded from research if they were receiving any treatment for a chronic or acute medical condition or if they had a history of special needs or learning difficulties. Pre- and post-pandemic groups consisted of different participants, and there were no overlapping participants between children and parents.

The Paediatric Quality of Life (PedsQL™) inventory generic core scale comprises two parallel versions: a children's-self-report (CSR) for children's version and a parents-proxy-report (PPR) version for parents, both designed for individuals aged 8-12 years. The children's version employs a 5-point Likert scale with response options ranging from "never" to "almost always." The PPR version contains nearly identical items, with minor linguistic modifications, and utilizes the same 5-point Likert scale. The PedsQL™ scale consists of 23-items distributed across four subscales: physical functioning (8-items), emotional functioning (5-items), social functioning (5-items), and school functioning (5-items). The psychosocial domain encompasses the emotional, social, and school-related subscales. The questionnaire evaluates the frequency of difficulties encountered in the past month. Item scores are reversed and linearly converted to a 0-100 scale (0 = 100, 1 = 75, 2 = 50, 3 = 25, 4 = 0), with higher scores reflecting better perceived QoL. Subscale scores are determined by summing the individual item scores and dividing by the number of items completed. Originally developed in the United States, the PedsQL™ scale has demonstrated strong psychometric properties, with well-documented reliability and validity (15-18). The original scale reported a Cronbach's alpha coefficient of 0.83 for CSR and 0.86 for PPR (15). In the present study, reliability coefficients were 0.86 before the COVID-19 pandemic and 0.95 post-pandemic for children, while for parents, the values were 0.89 before the pandemic and 0.96 after its onset.

The research data were stored in a database using Microsoft Office Excel and analyzed on a personal computer with the statistical software Statistica 14.0.0.15 (TIBCO, Palo Alto, CA, USA). Descriptive statistical methods, including the calculation of mean values and standard deviations, were used to assess data quality, while internal consistency was evaluated using Cronbach's alpha coefficient. The Shapiro–Wilk test was applied to examine the normality of variable distribution. Differences in the total and subscale scores of the PedsQL™ scale (physical, emotional, social, school, and psychosocial functioning) between CSR and PPR were assessed using the Student's t-test. Statistical significance was determined at a threshold of $p < 0.05$.

The Croatian version of the PedsQL™ scale was administered in accordance with the official guidelines for CSR (15,16,19). Each child completed the questionnaire individually in a quiet environment, separate from their peers. Parents provided their assessments using the Croatian version of the PedsQL™ proxy-report, which was sent home with their child for completion. Data collection took

place between September and October in the 2018/2019 school year and between October and November in the 2023/2024 school year, involving Croatian primary school children and their parents.

The datasets generated during and/or analyzed during the present study are available from the corresponding author on reasonable request.

The study received ethical approval from the Ethical Committee of the Faculty of Education, University of Osijek, Croatia. The voluntary nature of the study was emphasized and confidentiality was assured. The participants could withdraw from the study at any time. Written consent from parents or caregivers and verbal assent from children were obtained. Since reporting data from this study involved human participants, the principles outlined in the Declaration of Helsinki were followed.

RESULTS

A total of 310 children (8-12 years old) with their parents participated in this research; 158 children and parents filled out the Croatian version of the PedsQL™ inventory generic core scale before, and 152 of them after the COVID-19 pandemic. The pre- and post-pandemic groups consisted of different participants, and there were no overlapping participants between children and parents. According to the results of the pre-pandemic group of participants, children estimated their QoL higher than their parents in total QoL score and in all subscales except in physical and school functioning subscales. No statistically significant differences between CSR and PPR were found (Table 1).

On the other side, when looking at the results of the post-pandemic group of participants, children estimated their QoL higher than their parents in the emotional, social, and psychosocial functioning subscales, while their total QoL score was lower than in their PPR. A statistically significant difference was found for the physical (t = −2.317, p = 0.022) and emotional (t = 2.703, p = 0.008) functioning subscales (Table 2).

Comparison of the results of CSR in pre- and post-COVID-19 period has shown that children's QoL reduced in all functioning subscales and in total QoL scores after the pandemic. A statistically significant difference was found for the emotional (t = 2.901, p = 0.004), school (t = 3.547, p = 0.001), and psychosocial (t = 2.898, p = 0.004) functioning subscales, but also in the total QoL score (t = 2.531, p = 0.012) (Table 3).

Parents also estimated their children's QoL after the pandemic significantly lower than before in the total QoL score (t = 2.653, p = 0.009) and in the emotional (t = 5.826, p = 0.001), social (t = 2.012, p = 0.045), school (t = 3.049, p = 0.003), and psychosocial (t = 4.068, p = 0.001) functioning subscales. Physical functioning was also the only subscale for which a statistically significant difference was not found when comparing PPR before and after the COVID-19 pandemic (Table 4).

The physical functioning scale was also the only subscale with a higher score in the post-pandemic period than in the pre-pandemic period when CSR before and PPR after the COVID-19 pandemic were compared. Except for the physical functioning subscale, a statistically significant difference was not found for the school functioning subscale too (Table 5).

In the reverse case, the comparison of PPR before and CSR after the COVID-19 pandemic also showed lower results for all functioning subscales and total QoL scores in the post-pandemic period. A statistically significant difference

TABLE 1. Mean values of QoL subscales and total QoL scores measured by PedsQL™ generic core scales for children self-report and parent proxy-report before COVID-19 pandemic

Subscale	Children self-report before COVID-19 pandemic	Parent proxy-report before the COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	83.68±12.21	83.92±12.60	−0.188	0.851
Emotional functioning	79.97±14.43	79.05±15.76	0.537	0.592
Social functioning	88.04±13.59	86.36±15.31	1.017	0.311
School functioning	76.14±18.83	78.01±15.54	−0.959	0.339
Psychosocial functioning#	81.38±12.87	81.14±13.26	0.164	0.871
Total QoL score	82.18±11.68	82.11±11.66	0.058	0.953

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, p<0.05)

TABLE 2. Mean values of QoL subscales and total QoL scores measured by PedsQL™ generic core scales for children self-report and parent proxy-report after COVID-19 pandemic

Subscale	Children self-report after COVID-19 pandemic	Parent proxy-report after the COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	81.25±16.97	85.12±16.05*	-2.312	0.022
Emotional functioning	73.68±21.64	67.83±22.27*	2.703	0.008
Social functioning	86.18±16.81	82.50±18.38	2.001	0.052
School functioning	68.13±19.35	72.11±20.62	-1.937	0.055
Psychosocial functioning#	76.00±18.11	74.14±19.28	0.992	0.323
Total QoL score	77.82±17.08	77.96±17.33	-0.079	0.937

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, p<0.05)

was not found only for the physical and social functioning subscales (Table 6).

DISCUSSION

The aim of this study was to measure and compare QoL for Croatian primary school-age children before and after the COVID-19 pandemic. Parents were also asked about their perceptions of their children's QoL; after examination, CSR and PPR before and after the pandemic were also mutually compared. To the best of our knowledge, this is the first study in Croatia that investigates QoL in pre- and post-COVID-19 period of children from 8 to 12 years by

TABLE 3. Comparison of mean values for QoL subscales and total QoL scores measured by PedsQL™ generic core scales for children self-reports before and after COVID-19 pandemic

Subscale	Children self-report before COVID-19 pandemic	Children self-report after COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	83.68±12.21	81.25±16.97	1.413	0.159
Emotional functioning	79.97±14.43	73.68±21.64*	2.901	0.004
Social functioning	88.04±13.59	86.18±16.81	0.921	0.359
School functioning	76.14±18.83	68.13±19.35*	3.547	0.001
Psychosocial functioning#	81.38±12.87	76.00±18.11*	2.898	0.004
Total QoL score	82.18±11.68	77.82±17.08*	2.531	0.012

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, $p<0.05$)

TABLE 4. Comparison of mean values for quality of life subscales and total quality of life scores measured by PedsQL™ Generic Core Scales for parent proxy-reports before and after COVID 19 pandemic

Subscale	Parent proxy-report before the COVID-19 pandemic	Parent proxy-report after the COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	83.92±12.60	85.12±16.05	−0.779	0.437
Emotional functioning	79.05±15.76	67.83±22.27*	5.826	0.001
Social functioning	86.36±15.31	82.50±18.38*	2.012	0.045
School functioning	78.01±15.54	72.11±20.62*	3.049	0.003
Psychosocial functioning#	81.14±13.26	74.14±19.28*	4.068	0.001
Total QoL score	82.11±11.66	77.96±17.33*	2.653	0.009

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, $p<0.05$)

TABLE 5. Mean values of QoL subscales and total QoL scores measured by PedsQL™ generic core scales for children self-reports before and parent proxy-reports after COVID-19 pandemic

Subscale	Children self-report before the COVID-19 pandemic	Parent proxy-report after the COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	83.68±12.21	85.12±16.05	-0.879	0.381
Emotional functioning	79.97±14.43	67.83±22.27*	5.382	0.001
Social functioning	88.04±13.59	82.50±18.38*	2.791	0.006
School functioning	76.14±18.83	72.11±20.62	1.668	0.097
Psychosocial functioning#	81.38±12.87	74.14±19.28*	3.613	0.001
Total QoL score	82.18±11.68	77.96±17.33*	2.266	0.025

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, $p<0.05$)

TABLE 6. Mean values of QoL subscales and total QoL scores measured by PedsQL™ generic core scales for parent proxy-reports before and children self-reports after COVID-19 pandemic

Subscale	Parent proxy-report before COVID-19 pandemic	Children self-report after COVID-19 pandemic	t-value	*p*-value
	MV±SD			
Physical functioning	83.92±12.60	81.25±16.97	1.644	0.102
Emotional functioning	79.05±15.76	73.68±21.64*	2.587	0.011
Social functioning	86.36±15.31	86.18±16.81	−0.052	0.959
School functioning	78.01±15.54	68.13±19.35*	4.904	0.001
Psychosocial functioning#	81.14±13.26	76.00±18.11*	2.767	0.006
Total QoL score	82.11±11.66	77.82±17.08*	2.585	0.011

MV: Mean value, SD: Standard deviation, QoL: Quality of life, #Psychosocial subscale includes emotional, social, and school functioning, *Statistically significant difference (t-test, $p<0.05$)

children themselves and their parents using the Croatian version of the PedsQL™ inventory generic core scale. In our study, we found that the QoL by both children and their parents was estimated higher for periods before the pandemic than after the pandemic in all QoL domains except in the school functioning subscale in PPR. When comparing the results of children and parents, children, in general, estimated their QoL higher than their parents except for the physical and school functioning subscales before and after the pandemic and for the total QoL score after the pandemic. The results of this study were discussed in connection with the published literature regarding QoL during the COVID-19 pandemic domain since the COVID-19 outbreak until today. We found it extremely important to investigate children's QoL because, despite school and other educational institutions closures, children and adolescents are among those groups of the population that have received very little attention in the COVID-19 research domain globally, especially in Croatia. Speaking of Croatia, Simetin et al. observed that a statistically significant increase in incidents of COVID-19 in Croatia occurred until the 50th week of 2020 in all age groups, except for the population aged 19-25. The biggest increase in hospitalizations was reported in the 40th week of 2020, including mostly people aged 26-65, while the biggest increase in mortality was reported one week later for population groups aged 26-65 and 66+ (4). Kenđel Jovanović et al. investigated the outcome of the COVID-19 lockdown on changes in the body mass index and lifestyle among Croatian schoolchildren. Results of their study among 1370 schoolchildren between 10 and 15 years revealed that the lockdown increased the number of overweight and obese children, including changes in their lifestyle habits, such as less physical activity and spending more time in front of computers and television, which resulted in possible psychological distress (20). A third study from Croatia, conducted by Alardović Slovaček and Čosić, investigated the role of parents during the COVID-19 pandemic and online-based learning. Findings from that study implicate that online teaching requested more involvement from parents who needed to replace teachers in some spheres of teaching (21).

As the COVID-19 pandemic progressed, more and more studies have been conducted in the QoL domain, finally including QoL among school-aged children and adolescents. Quite a number of researchers estimated children's QoL in the same domains and subscales as we did in our study, mainly including school functioning, physical activity or physical functioning, mental health or emotional functioning, social functioning, and total QoL.

In the physical activity or physical functioning domain, there are also several studies that confirm our results, which indicate that the COVID-19 pandemic negatively affected physical functioning and condition (22,23). In our study, parents estimated physical functioning as higher than their children in both the pre- and post-pandemic period and surprisingly even higher in the period after the pandemic than before the pandemic. The reason for that is maybe the fact that they were aware of their children's capabilities when they spent more time with them at home. Lack of physical activity can easily grow into a sedentary lifestyle, which, when combined with bad eating habits, represents a high risk of harming physical and mental well-being and increases the risk for some specific diagnoses and mortality (24). On the other hand, some studies proved wide positive aspects of physical activity and training on negative consequences caused by the COVID-19 outbreak, which harmed physical, psychological, and social well-being (25). A study done by Chtourou et al. confirmed that children who did some form of physical exercise had lower levels of stress, anxiety, and depression, especially if they performed some type of high-intensity interval training (26). The effect of the coronavirus (COVID-19) pandemic on primary school-aged children's physical functioning and HRQoL in general was also investigated by Adibeli and Sümen in 2020. Although self-reported QoL scores of children were generally good, parents reported that the tendency to sleep and internet use increased during the pandemic. As the biggest problem, 41.5% of parents reported that their children gained a large amount of weight (1).

In the mental health or emotional functioning domain, all relevant studies (27-32), as well as our study, have similar conclusions that the COVID-19 pandemic strongly disrupted the mental health and emotional well-being of children. The mentioned studies (27-32) also concluded that the COVID-19 pandemic negatively affected and decreased children's QoL in physical, social, school, and psychosocial domains, but with lower intensity than in the emotional functioning sphere. The results are even more dramatically changed when viewed from parents' perspectives. The main reason for that is likely due to the fact that parents had a higher level of consciousness about the negative effects of social isolation and living life online on mental and social health than children themselves. Moreover, some reviews indicated that children and adolescents were often diagnosed with depressive and anxious disorders in the first weeks of the COVID-19 outbreak (27,33,34). Zhou et al. conducted an online survey in China, which included 8140 schoolchildren from 12 to 18-years-old. During the pandemic, 43.7% of participants developed depressive symptoms and 37.4% developed signs of anxiety. The most frequently reported symptoms of depression were having less interest or pleasure in everyday activities (53.9%), sleep or energy deficits (48.4%), and eating disorders in both too much or too little eating (45.6%). The most frequently reported symptoms of anxiety were feelings of nervousness and being on the edge (53.6%), feeling too worried (47.3%), and lack of tolerance when annoyed or irritated (47.0%) (35).

As mentioned earlier, social functioning was also affected by the pandemic, and therefore psychosocial functioning, which unifies school, emotional, and social functioning. That is also confirmed by our results that are higher in both CSR and PPR for pre-pandemic than for the post-pandemic period. When comparing the results of children and parents in both periods, children scored their social functioning better than parents. The main reason for that is probably hidden in the power of virtual connections and online-based relationships, which today's children apply every day and which generations of their parents simply cannot understand. In addition to that, social distancing may reduce social contacts and lead to longer periods of decreased mobility. That can directly or indirectly cause an

increase in the usage of interactive devices, such as TVs, computers, and mobile phones (36). Some studies showed that isolating from society during the outbreak period can have some other negative outcomes, such as aggressive behavior, sadness, crying, or emotional pain (37). The study that probably gave the best proof of a strong connection between physical, emotional, and social aspects of QoL is one done by Li et al. in China. They concluded that social isolation has a direct influence on mental health, and all these interconnected reactions can be harmful to the physical aspects, which can reduce the functionality and increase the perception of physical pain (38).

In terms of school functioning, our study showed that parents estimated the school functioning of their children better than children themselves in both the pre- and post-pandemic period. Similar to physical functioning, we found a reason for that in the fact that they were more in touch with the real situation of their child in terms of education. That statement is confirmed if we look at PPR results after the pandemic, which are lower than before the pandemic, probably because they spent more time with their children and participated in more children's tasks and activities. In addition to that, school closures during the pandemic made education more difficult and challenging for children and their families to deal with during normal life. At the same time, parental support to children was often not enough because of parents' fear of the COVID-19 infection, which was likely to happen at their age (39). When comparing all the pros and cons of school closures, it is obvious that closures bring more negative consequences, such as depression, anxiety, social isolation, eating and weight problems, or some other chronic disorders. It was even worse when results from some studies came to the surface because they clearly stated that children were less likely to transmit the COVID-19 virus than adults, and therefore school closures played a smaller role in virus spreading prevention than some other social distancing interventions (40,41). On the contrary to previously stated negative effects of school closures, there are some good examples from practice that eased that situation. Schools and other educational institutions in some countries enabled children to take part in educational programs for health promotion and disease treatment and prevention despite school closures to educate them and make them more aware of the epidemiological situation at that time (40).

Most of our results agree with results from relevant studies inside children's QoL during the COVID-19 pandemic domain from all around the world. Most of the mentioned results point out that children's QoL was lowered and changed by the pandemic and most governments' restrictive measures that came with it.

This study possesses several notable strengths. One key advantage is that QoL was assessed through direct self-reports from children. In contrast, the majority of research conducted during and following the COVID-19 pandemic relied primarily on parental or caregiver assessments or utilized indirect data collection methods, such as online surveys. In addition, children's perceptions of their own well-being may differ from those of their parents or caregivers. Consequently, self-reported data provide valuable insights into the multidimensional nature of children's QoL, offering a more comprehensive perspective. Another strength of this study is the comparative approach, analyzing data from both pre- and post-COVID-19 groups, rather than relying solely on a cross-sectional design, which was common in research conducted during the pandemic. In addition, findings from the pre-pandemic group, examined separately from prior studies, revealed differences when compared to those obtained from children assessed after the pandemic. These findings highlight the need for further research, particularly among younger and older children, as well as young adults, who were included in studies conducted before the onset of COVID-19.

CONCLUSION

The COVID-19 pandemic was globally associated with numerous different stressors that negatively affected the general population. The most usual were lockdown itself, fear of getting infected, home boredom, false and unverified information, lack of communication and interaction in person, and personal or family financial problems. Moreover, relevant literature shows an increase in the number of people living a sedentary lifestyle and people suffering from negative psychological symptoms such as depression and anxiety. Lockdown also increased the number of overweight and obese children, including changes in their lifestyle habits such as less physical activity and spending more time in front of computers and television. The most exposed groups to these symptoms were children and adolescents; this fact was associated with social isolation and distancing, which were mainly caused by the closures of schools and other educational institutions. Our results point out that after the COVID-19 pandemic, it is necessary to work on all QoL spheres of children. The biggest work from parents and children themselves should be put into the improvement of emotional and school functioning, since the results of the mentioned subscales after the pandemic came out to be the worst by the opinion of all participants. Therefore, we recommend that it is crucial that parents spend more time with their children communicating about all problems and QoL in general. When comparing pre- and post-pandemic results measured with the Croatian version of the PedsQL™ inventory generic core scale in this study, it is clearly evident that the COVID-19 pandemic negatively affected and decreased children's QoL in the physical, emotional, social, school, and psychosocial spheres by the opinion of all participants.

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DECLARATION OF INTEREST

The authors declare no conflicts of interest.

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