

The impact of reduced time spent outdoors during the Covid-19 lockdown on the health and well-being of young people in Czechia

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ABSTRACT

It was not officially possible to leave the cadastral territory for recreational purposes in Czechia during the period from the 1 March to the 21 March 2021. The aim of this study was to evaluate how this lockdown affected the amount of time young people spent outdoors and their health and mental well-being. Our research was aimed at students at all levels of school. Immediately after the end of the strictest phase of the lockdown, we conducted a questionnaire survey and collected data from more than a thousand students at elementary schools, secondary schools and universities, as well as 160 parents of 269 pre-school and primary school children. The answers to the close-ended questions were evaluated by statistical analysis, while the answers to the open-ended questions were evaluated using thematic analysis. The results show that the impact of restrictive measures on the health and psyche of young people was significant, especially for female students. Lockdown significantly reduced respondents' opportunities to spend time outdoors. Male students spent significantly more of their free time in front of computer screens. Respondents living in buildings without a garden and young people who could not use a recreational building outside the district of residence were most affected by restrictions during the lockdown.

KEYWORDS

COVID-19; lockdown; contact with nature; health; well-being; place attachment

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1. Introduction

The global COVID-19 pandemic represents an unprecedented challenge to the world's population. In Czechia the extraordinary situation was the lockdown in March 2021, which was the most restrictive regulation in the entire duration of the pandemic.

During this period, all persons were prohibited from leaving the territory of their resident district (except for travels to work or necessary travels to medical facilities). At night (from 21:00 to 04:59) the free movement of persons was restricted even more, only with few exceptions. Even during the day, citizens were ordered to stay of their place of permanent residence or domicile, with exceptions (some of them have been mentioned above). Another exception was a trip for the purpose of staying in nature, but under the conditions of presence of only members of one household and only in the cadastral territory of the municipality in which the person resides. For a closer understanding, it is good to remember that the cadastral territories of municipalities are significantly unbalanced in terms of area: from 0.42 km² in the municipality of Závist to 496 km² in the case of Prague (CZSO 2020). Another exception was a stay in one's own recreational building, but only in the same district as the residence (Government of the Czech Republic 2021). Together with the introduction of the above-mentioned restrictions of mobility, the use of mouth and nose protection was also newly ordered in the outdoor environment, namely in the built-up area of the municipality, including city parks.

It is crucial for our research that for the purpose of recreation or stay in nature in the first three weeks of March 2021, it was not possible, with some exceptions, to travel outside of the domiciliary cadastral territory (i.e., usually near surroundings of the village, town, or city). There was a significant restriction on the free mobility in the natural environment, people were forbidden to visit their favorite places outside of the domiciliary cadastral territory.

It is well known that staying in nature is beneficial in many ways. Research confirms that children should be given the opportunity to enjoy positive experiences with nature from an early age (Kellert 2002), as these direct experiences play an important role in developing positive beliefs, attitudes, and behaviors towards the environment (Tilbury 1994). Love for nature, as well as empathy for other living creatures, is already formed in the period of pre-school education (Wilson 1994) and it is desirable to further develop it during compulsory schooling (Kroufek et al. 2021). Nisbet et al. (2009) found that a close relationship with nature is directly proportional to the time spent in it. Direct experiences are most effective in the process of creating a positive relationship with nature (Aaron and Witt 2011), significantly more effective than indirect or mediated experiences. Unfortunately, the mediated experience with nature with the development of

modern digital technologies is increasing (Kellert 2002). The current generation of young people does not have enough opportunities to every day experience the natural environment on their own (Tani, Surma-Aho 2012). That is why the mission of educational institutions should be to mediate contact with nature for all learners.

In Czechia (Pastorová et al. 2011; Ministry of Education, Youth and Sports 2021), as well as in Slovakia (Fedorko 2020a), pupils' stay in the outdoor environment is enshrined directly in valid curricular documents. In response to COVID-19, the World Health Organization (UNICEF 2020) also recommended the maximum possible education in the outdoor environment. However, this was prevented for a long time under concerned period, as in connection with the COVID-19 disease, schools in the Czechia closed almost all year round in the 2020/21 school year.

Human needs include not only the need for contact with nature, but also contact with specific places. We understand the place here as a center of meanings filled with individual experiences (Tuan 1990). Space thus becomes a place if the individual gives it meaning based on experience with it. For a person, it becomes a part of his life. Relph (1976) even writes that being human means having and knowing your place. In the space of experience, one creates one's favorite places, to which one often builds a strong emotional attachment, Tuan (1990) even mentions the term *topophilia*. If a person is not in this place for a long time, he will start to miss the place. On the contrary, staying on site makes him happy. Often one forms this emotional bond with the place where one spends the holidays, where one goes for recreation.

One can also form place attachment, which gives meaning to life (Proshansky et al. 1983). According to Jack (2010), direct and repeated childhood experiences from specific places have the greatest influence on the creation of this bond, together with the social meanings that children and others (e.g. family members) ascribe to them. In this way, a young person often creates a place attachment¹ to the residence of his relatives. The ban on visiting such places can then have a significant impact on the individual's physical and mental health. The possible effects of pandemic stressors on the lives of children and adolescents are described in detail, for example, by de Figueiredo et al. (2021). The words of Norberg-Schulz (1994, p. 18): "Modern man has long believed that science and technology freed him from direct dependence on places. This belief proved to be an illusion ..." resonate when imagining a young man sitting at a computer at home instead of at a school he has been banned

1 We emphasize that we also include an interpersonal component in the place attachment concept, so we do not distinguish to what extent the negative impact on individuals is caused by the limitation of contact with a close person or with a place.

from entering and his favorite places he has also been banned from entering.

It follows from the above mentioned that limiting the stay in nature and limiting contact with favorite places can be a very frustrating circumstance for humans. In our research, we focused on the perception of this situation by young people and asked ourselves the following research question:

What was the impact of restrictive restrictions on living in nature on the health² (overall well-being) of young people?

In addition to the impact of lockdown on health and well-being, we were interested in where young people spent time during lockdown, whether the cadastral territory of the village satisfied their need to spend time in nature, what were the main barriers on the way to nature, whether young people were prevented on their way to the recreational building or behind relatives, or whether these people spent more free time at the screens because of the lockdown.

2. Methodology

Data were collected using two online questionnaires (Google Forms tool). The first questionnaire was designed for elementary school pupils (ISCED level 2),³ secondary school students (ISCED level 3–5) and university students (ISCED level 6–8). The second questionnaire was completed by parents of primary school pupils and pre-school children (ISCED level 0–1). Data collection took place immediately after the toughest lockdown, specifically in the period from 25 March to 15 April 2021. The questionnaire contained items focusing on 3 areas: a) closer identification of the respondents (age, sex, degree of study, place of residence and region in which they spent the lockdown, ownership of a garden, the possibility of using a recreational building, the possibility of visiting relatives), b) the possibilities of the respondents to spend time in nature during the lockdown, c) the effect of the lockdown on the physical and mental health of the respondents.

The questionnaires contained a combination of closed and open items. Their formulation was discussed with sociology surveys experts before the questionnaire was sent out. The research plan of the project, of which this research is a part, was approved by the ethics committee of the PF UJEP (4/2020/04). Subsequently, a pilot study was conducted among elementary school pupils and among secondary school and university students. Less comprehensible items

have been reformulated. Respondents answered closed items using a five-point Likert scale (Chytrý and Kroufek 2017). In most cases, they expressed a degree of agreement (certainly agree – rather agree – I can't decide – rather disagree – definitely disagree), for the item devoted to the question of the degree of change in the possibility of spending time in nature, the scale was different (extremely – strongly – moderately – partially – not at all).

The respondents of this research were elementary school pupils (N = 377), secondary school students (N = 203) and university students (N = 479). The selection of respondents was made based on personal contacts of the authors and subsequently expanded by the snowball method. Instead of pre-school children and primary school pupils, their parents answered (N = 160), some of whom answered for more children (a total of 269 children were obtained). Respondents from all 14 regions of Czechia were represented. In terms of sex distribution, 30% of men (boys) and 70% of women (girls) participated in the research.

For the basic distinction of the two main groups of respondents, we use the following terms: students (includes answers of elementary school pupils, secondary school students and university students – i.e. young people from about 11 years and older) and parents (includes answers of parents of primary school pupils younger than about 11 years and pre-school children).

Statistical analysis was performed in IBM SPSS Statistic 27. Due to the evaluation of individual items, which are answered using Likert scales (i.e. ordinal data), non-parametric tools were used, namely Mann-Whitney U test and Kruskal-Wallis test.

The answers to the open-ended questions were evaluated using thematic analysis, which provided a better understanding of the answers to the questions with a selection of predefined options, and also revealed some additional information. The thematic analysis of the answers to each of the questions was carried out in three steps. In the first step, the main categories of answers were selected. In the second step, the answers were classified into the categories established in the previous step, and the answers that were considered representative of one of the categories were marked, as well as the answers that could not be clearly classified into the established categories. In the third step, a summary of the most important findings was made.

3. Results

Firstly, the results of this research are presented in summary and then the results are related to selected variables (sex, degree of study, garden ownership, ownership of a recreational building outside the municipality, visits to relatives) are presented.

Figures 1 and 2 show that the cadastral territory of the municipality fully satisfied the need to spend

2 According to the WHO (Kühn and Rieger 2017), health is “a state of complete physical, mental and social well-being”.

3 ISCED classification (UNESCO 2012).

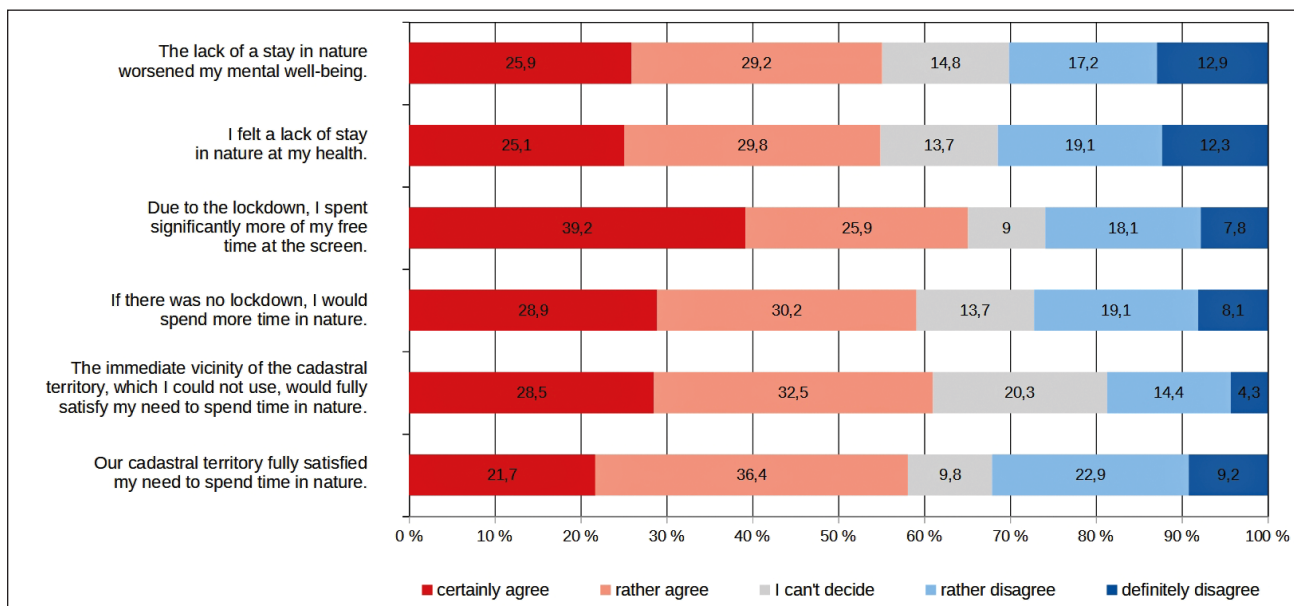


Fig. 1 Answers of students to the close-ended questions.

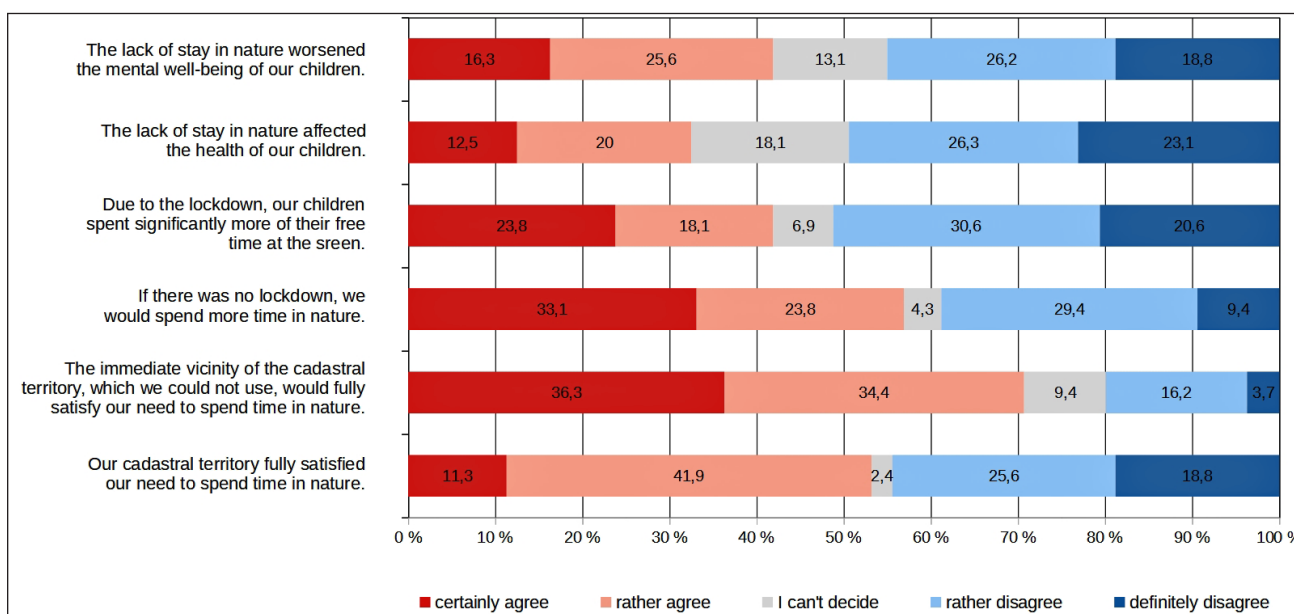


Fig. 2 Answers of parents to the close-ended questions.

time in nature (“I definitely agree”) to about one-fifth of young people. From the parents’ point of view, it was even only 11% of cases. The situation would be significantly better if it were possible to visit the immediate vicinity of the cadastral territory. In this case, the share of negative answers (I rather/definitely disagree) would fall to less than 20%.

If there was no lockdown, 59% of young people and 57% of parents with children would spend more time in nature. In the supplementary question, we found out what were the main respondents’ barriers on the way to nature (more answers could be marked). It turned out that the main obstacle was *the impossibility to go to nature with friends* (44% of students and 33% of parents). The second most important obstacle turned out to be *the obligation to wear a respirator*

(37% of students, 34% of parents). Almost 25% of students (26% of parents) answered that they were hampered by *fears of a high concentration of people in one place*. This was one of the paradoxes of restrictions aimed at reducing people’s contacts. It often happened that people in some localities were concentrated even more than without a lockdown, because they were not allowed to travel to remote places. For almost 24% of students (9% of parents), the fear of *ignorance of the boundaries of the cadastral territory* was another barrier in the way to nature (another paradox of restrictions). Instead of mentally relaxing, these people feared that the area in which they moved was already in a “forbidden zone”.

Almost two thirds of the young people surveyed spent significantly more of their free time at screens

than in nature due to the lockdown. From the parents' point of view, it was about two-fifths of the children. The lack of stay in nature was felt by their health (e.g. poorer concentration, lack of fresh air, increased eye fatigue, etc.). 55% of students and the same proportion of young people lack of stay in nature worsened their mental well-being. Parents noticed a worsening of their children's health in about a third of cases and an impact on their psyche in 42%.

3.1 Effect of sex

The lockdown experience seems to be influenced by sex. The deterioration of physical and mental health was reported more by women, while men spent significantly more free time at the screens, see Tab. 1.

3.2 Effect of degree of study

Significant differences were found within the perception of lockdown between elementary school pupils, secondary school students and university students. Younger respondents had a higher increase in time spent on screens of electronic devices, at the same time they expressed a higher degree of satisfaction of the need to stay in nature in the cadastral territory. The elders, on the other hand, declared a more significant impact on their mental well-being. There is no difference in the perception of physical health among the respondents. They also agreed that the lockdown only partially affected the possibility of spending time in nature. Complete results can be found in Tab. 2.

Tab. 1 Sex differences in lockdown perception – students (Mann-Whitney U test).

	Women		Men		Z
	M	SD	M	SD	
Our cadastral territory fully satisfied my need to spend time in nature.	3.35	1.30	3.50	1.28	1.68
The immediate vicinity of the cadastral territory, which I could not use, would fully satisfy my need to spend time in nature.	3.65	1.18	3.70	1.10	0.34
How much has the lockdown changed my chances of spending time in nature?	2.57	1.09	2.44	1.14	-1.56
If there was no lockdown, I would spend more time in nature.	3.54	1.29	3.47	1.34	-0.80
Due to the lockdown, I spent significantly more of my free time at the screen.	3.62	1.37	3.97	1.26	3.66***
I felt a lack of stay in nature at my health	3.46	1.15	3.08	1.37	-3.88***
The lack of a stay in nature worsened my mental well-being.	3.49	1.36	3.04	1.37	-4.60***

*** $p < 0.001$; M = mean, SD = standard deviation, Med = Median, Z = test criterion

Tab. 2 Differences of lockdown perception by degree of study – students (Kruskal-Wallis test).

	Elementary school		Secondary school		University		H
	M	SD	M	SD	M	SD	
Our cadastral territory ...	3.66	1.17	3.20	1.27	3.24	1.37	24.19***
The immediate vicinity ...	3.51	1.13	3.83	1.27	3.72	1.18	14.83***
... chances of spending time in nature	2.49	1.08	2.60	1.00	2.54	1.16	1.47
... spend more time in nature	3.63	1.31	3.62	1.19	3.40	1.33	7.61*
... free time at the screen	3.94	1.26	3.78	1.32	3.49	1.41	22.22***
... my health	3.33	1.40	3.39	1.35	3.39	1.34	0.26
... my mental well-being	3.13	1.38	3.51	1.33	3.53	1.36	21.14***

* $p < 0.05$; *** $p < 0.001$; M = mean, SD = standard deviation, Med = Median, Z = test criterion; the full wording of the items is in Table 1

Tab. 3 Descriptive statistics of answers – parents.

	M	SD	Med
Our cadastral territory fully satisfied our need to spend time in nature.	3.01	1.37	4
The immediate vicinity of the cadastral territory, which we could not use, would fully satisfy our need to spend time in nature.	3.83	1.19	4
How much has the lockdown changed your childrens' chances of spending time in nature?	2.46	1.15	2
If there was no lockdown, we would spend more time in nature.	3.42	1.44	4
Due to the lockdown, our children spent significantly more of their free time at the screen.	2.94	1.51	2
The lack of stay in nature affected the health of our children.	2.73	1.35	3
The lack of stay in nature worsened the mental well-being of our children.	2.94	1.39	3

M = mean, SD = standard deviation, Med = Median

Table 3 presents the results of descriptive statistics for parents of children in pre-schools and primary schools. Because the data were collected based on information from parents, not directly from children, we did not include them in the analysis above.

3.3 Effect of garden ownership

If the respondents spent the lockdown in a building that has a garden, this relatively significantly affected most of the monitored indicators. Respondents (61% of students) who had the opportunity to spend time in the garden felt less confined and declared less impact on their physical and mental health. On the contrary,

respondents from buildings without a garden (35% of students) were more negatively affected by this fact. See Tab. 4. For parents of younger children, the same significant differences were found only if the need to spend time in nature in the cadastral territory was satisfied ($Z = -2.24$; $p = 0.025$) and the perception of a change in the possibilities of spending free time in nature by their children ($Z = -3.20$; $p = 0.001$).

3.4 Effect of ownership of a recreational building outside the district

Ownership of a recreational building outside the district of permanent residence divided the students'

Tab. 4 Influence of garden ownership in lockdown perception – students (Mann-Whitney U test).

	Without garden		With garden		Z
	M	SD	M	SD	
Our cadastral territory ...	3.20	1.35	3.49	1.26	-3.22***
The immediate vicinity ...	3.69	1.19	3.68	1.14	-0.44
... chances of spending time in nature	2.75	1.13	2.43	1.07	-4.27***
... spend more time in nature	3.65	1.30	3.48	1.30	-2.07*
... free time at the screen	3.80	1.34	3.67	1.35	-1.71
... my health	3.61	1.30	3.26	1.38	-3.96***
... my mental well-being	3.62	1.32	3.28	1.38	-3.84***

* $p < 0.05$; *** $p < 0.001$; M = mean, SD = standard deviation, Med = Median, Z = test criterion; the full wording of the items is in Table 1

Tab. 5 Influence of recreational building ownership in lockdown perception – students (Kruskal-Wallis test).

	No		Yes, but we still wouldn't go		Yes, we would go		H
	M	SD	M	SD	M	SD	
Our cadastral territory ...	3.47	1.29	3.65	1.06	2.95	1.34	29.46***
The immediate vicinity ...	3.64	1.17	3.43	1.17	3.86	1.10	11.59**
... chances of spending time in nature	2.48	1.09	2.12	1.03	2.94	1.06	45.79***
... spend more time in nature	3.46	1.32	3.08	1.30	3.96	1.12	38.44***
... free time at the screen	3.66	1.35	3.50	1.39	3.96	1.30	12.51**
... my health	3.31	1.36	3.05	1.45	3.73	1.25	22.48***
... my mental well-being	3.35	1.37	3.01	1.37	3.68	1.31	19.03***

** $p < 0.01$; *** $p < 0.001$; M = mean, SD = standard deviation, Med = Median, H = test criterion; the full wording of the items is in Table 1

Tab. 6 Visits of relatives and lockdown perception – students (Kruskal-Wallis test).

	No		Yes, but we still wouldn't go		Yes, we would go		H
	M	SD	M	SD	M	SD	
Our cadastral territory ...	3.52	1.28	3.67	1.16	3	1.32	41.32***
The immediate vicinity ...	3.64	1.17	3.72	1.13	3.69	1.17	1.01
... chances of spending time in nature	2.37	1.11	2.43	1.08	2.89	1.02	51.34***
... spend more time in nature	3.29	1.33	3.34	1.32	4.03	1.09	67.91***
... free time at the screen	3.53	1.39	3.65	1.35	4.04	1.23	29.49***
... my health	3.19	1.41	3.25	1.34	3.72	1.21	29.39***
... my mental well-being	3.22	1.40	3.22	1.39	3.73	1.23	29.02***

*** $p < 0.001$; M = mean, SD = standard deviation, Med = Median, H = test criterion the full wording of the items is in Table 1

Tab. 7 Visits of relatives and lockdown perception – parents (Kruskal-Wallis test).

	No		Yes, but we still wouldn't go		Yes, we would go		H
	M	SD	M	SD	M	SD	
Our cadastral territory ...	3.25	1.32	3.58	1.35	2.64	1.35	10.81**
The immediate vicinity ...	3.66	1.18	4.47	0.70	3.76	1.29	7.07**
... chances of spending time in nature	2.09	0.97	1.84	0.90	3.01	1.15	27.69***
... spend more time in nature	3.07	1.47	3.16	1.21	3.85	1.37	10.79**
... free time at the screen	2.79	1.53	2.95	1.51	3.12	1.50	1.51
... health of our children	2.47	1.38	2.84	1.30	2.96	1.33	4.84
... mental well-being of our children	2.57	1.35	2.79	1.27	3.34	1.38	10.40**

** $p < 0,01$; *** $p < 0,001$; M = mean, SD = standard deviation, Med = Median, H = test criterion; the full wording of the items is in Table 3

respondents into three different groups. The largest group ($N = 735$) does not own such an object, the second group ($N = 107$) owns it, but even if there was no lockdown, it would not use it, the third group ($N = 216$) owns it and would use it in the current period. The latter group represents the respondents who were most affected by the lockdown, both in terms of satisfaction with contact with nature and in terms of perception of their own physical and mental well-being. On the contrary, the second group, which owns a recreational building, which it would not use anyway, represents the least affected individuals by the lockdown (see Tab. 5). Parents who own a recreational building outside the district of residence and would normally visit it were significantly less satisfied with the possibilities of the cadastral territory than parents who would not go to it or do not have it ($H = 7.37$, $p = 0.025$). The same parents are also more convinced that the lockdown limited the possibility of their children spending free time in nature ($H = 5.41$, $p = 0.025$).

3.5 Visits of relatives

Less than half of the young people interviewed visit relatives regularly, and almost two-thirds of them would increase their opportunities to spend time in nature. Thus, as in the previous case, we identify a group of respondents who would visit relatives in the current period, whose place of residence is a suitable starting point for nature walks – this group represents respondents significantly limited by lockdown, perceiving the highest impacts on their physical and mental health and at the same time declaring the highest increase in time spent with electronics. The opposite is the group that has the same opportunity but would not use it even if it could (Tab. 6).

The possibility to visit relatives from whose residence they regularly undertake nature trips has proved to be a strong change in the case of parents of younger children, see Tab. 7. Parents who would go to such relatives with their children were the least satisfied with the possibilities offered by the cadastral territory, they were convinced that the lockdown

changed the possibilities of their children to spend time in nature, and at the same time they perceived the deterioration of the health and especially the mental well-being of their children at the highest level.

4. Thematic analysis of open answers

The results of the thematic analysis aimed to several supplementary open-ended questions, can be summarized in the following points:

- Unsurprisingly, respondents who spent it in smaller rural settlements with naturally attractive surroundings were satisfied with the place where they spent the lockdown. However, several respondents stated that the surroundings are beautiful, but they are already beyond the boundaries of the cadastral territory.
- Several respondents in large urban cadastral territories were also satisfied, but they usually complained that there were more people than usually in naturally attractive places (in terms of preventing crowding, the lockdown was rather counterproductive, which was caused by the fact that people could not visit restaurants, attend cultural events, spent time in parks, etc.
- To several respondents (or their children) their surroundings soon became banal, while others stated that they had discovered new places in their cadastral territory thanks to the lockdown.
- In some cities, parks were the only way to spend time in nature.
- Many respondents declared that their own garden, where they spent much of their time, was very important to them.
- In general, respondents expressed higher overall satisfaction with their own garden, with beautiful natural surroundings (usually villages) or with a large cadastral territory (large cities).
- On the other hand, respondents living in urban areas, in an apartment, were dissatisfied (they were bothered, for example, by noise, from which there was nowhere to run). Respondents in villages

- whose cadastral territory is small or naturally uninteresting (fields) were also dissatisfied.
- Several respondents stated that they spent the whole period outside their place of residence (usually a cottage, less often with relatives) and these respondents were usually very satisfied overall.
 - Those whose recreational building is located in the same district as their residence had a significant advantage (they could therefore visit it, as many of them directly mentioned).
 - Many of the respondents who spent time in a naturally attractive environment were aware of their advantages (large garden, living in a village with beautiful surroundings) and at the same time could not imagine how they would manage such a situation in a city apartment.
 - Respondents who own a recreational building but would still not use it at the time of lockdown specified in several cases that their recreational buildings are not adapted for a colder season.
 - Respondents also mentioned reasons that were not directly dependent on the lockdown as obstacles to the trip to nature, especially work or study workload, laziness, bad weather and in several cases also illness or quarantine after contact with the infected person.
 - The fact that it was not possible to spend time in nature with friends was often mentioned as a barrier to the trip to nature.
 - Several respondents (only students; there was no such answer from parents) also stated that they did not look for nature, so the lockdown did not affect them in this regard.
 - In their answers, a number of respondents mentioned dissatisfaction with the fact that they could not go skiing in the mountains (the lockdown occurred during the ski season).
 - The answers also show that if the children spent more time at the screens than usual, it was mainly due to the closure of schools (distance learning) and kindergartens (parents worked from home and needed to entertain the children).
 - Some responses also show that the combination of various measures (closure of schools, including kindergartens, distance learning, failure to meet relatives or friends as well as mental deprivation and cadastral territory lockdown) has multiplied many problems that would not be such problems on their own.
 - Although distance learning was often cited as the main reason why respondents spent less time in nature, several university students said they had more time to walk in nature, because they spent more time than usual thanks to the distance learning. Several respondents who sought the opportunity to relax in nature, especially from digital means of communication, also spent more time than usual during the lockdown.
 - In several answers, a summary statement appeared in various variations that the lockdown did not affect *how often* we went out, but strongly affected *with whom* (or *without whom*) and *where* we went and also *how* we enjoyed our stay in nature.
 - In rare cases, the thematic analysis also revealed a certain ignorance or misunderstanding of certain terms (confusion of the terms cadastral territory and built-up area, ignorance of the term recreational building, etc.).

5. Discussion

The positive effect of living in the natural environment on human physical and mental health has been documented several times (Pretty 2006; Nisbet et al. 2011; Capaldi et al. 2014; Lanza-León et al. 2021; Barrable et al. 2021). Dai et al. (2021) states that closeness to nature is potentially valuable in preventing infectious diseases and that it increases the quality of life. Nature walks with friends also help maintain social relationships (Lenaerts et al. 2021). The inclusion of staying in nature in regular human activities, whether it is recreation and relaxation (White et al. 2019) or the educational process at all levels of schools (Daniš 2019; Fedorko 2020b) is therefore a completely logical step. However, the last months and years, as a result of the lockdowns associated with the resolution of the COVID-19 pandemic, pose a challenge to humanity in this regard. In March 2021, lockdown deprived the inhabitants of the Czechia of the opportunity to travel outside the cadastral territory, while at the same time schools were closed. In this research, it was found out to what extent such a lockdown affected pre-school children, primary school pupils, elementary school pupils, secondary school students and university students.

The results of our study suggest that the deterioration of physical condition and mental well-being during the lockdown was more declared by women. The findings of an Iranian study (Khalilnezhad et al. 2021) indicate that natural areas were also missing from women during the restrictions associated with the COVID-19 pandemic. Roe et al. (2013) also point to the greater sensitivity of women. The conclusions of their study suggest that there may be a gender difference in the perception of nature as a mechanism for coping with stressful situations (in environments with a smaller green area, women were significantly more stressed than men).

Lockdown has reduced, as in other countries (de Lannoy et al. 2020), the amount of time spent in the natural environment. Although the respondents indicated that the cadastral territory does not always allow sufficient livelihood in this direction, and if it were not for the lockdown, they would spend more time in nature. At the same time, however, they declared that their own lockdown had a rather weak effect on their behavior. Less affected were those who live in a house

with its own garden, which allowed for an outdoor stay in a “safe” environment. The positive influence of one’s own gardens has also been documented from Italy (Spano et al. 2021), Brazil (Marques et al. 2021) or Iran (Khalilnezhad et al. 2021). Also Löhmus et al. (2021) found that more greenery around the home is associated with fewer symptoms of depression and anxiety. In this context, however, Sharifi and Khavarian-Garmsir (2020) and Rios et al. (2021) point to the “environmental injustice” resulting from the COVID-19 pandemic. Children from families with higher socio-economic status are more likely to have “holiday homes” in rural areas with large gardens. In contrast, children from socio-economically weaker families were often literally locked in small city apartments during the lockdown with very limited opportunities to visit nature (recall that city parks were closed in some parts of the world). Our research shows that young people spending a lockdown in a house with their own garden declared a deterioration in mental well-being in 51% of cases, while those without their own garden in 64% of cases.

According to Vágner, Fialová et al. (2004) and Vágner, Müller, and Fialová (2011) 11.2% of households own (more precisely a second home) (in Prague and some other larger cities up to 25% of households). In a certain way (e.g. by sharing within the extended family), about 30% of households use second-housing objects. This roughly corresponds to our results (almost 70% of respondents said they do not own a holiday home). Although more than 78% of recreational buildings are located within a distance of 40 km from the place of residence, it can be assumed that objects whose owners cross the district border when traveling to them predominate.

Howlett and Turner (2021) mentions that more than three-quarters of parents from rural areas responded they were satisfied with their children’s nature opportunities during pandemic measures, while only 40.5% parents from urban areas were satisfied with it. Our research shows that parents who spent time with children in a house with their own garden declared significant or extreme restrictions in spending time in their children’s nature only in 13% of cases, while parents from buildings without their own garden in 38% of cases. Students living in a house with their own garden felt a significant or extreme restriction in spending time in nature in 18% cases, while those without their own garden in 28% cases.

An interesting typology of respondents crystallized within the research. In addition to the majority, which do not own a recreational building and cannot travel to relatives whose residence is a suitable starting point for nature trips, two significantly different groups have formed. The first group had this option, but the respondents would not use it anyway, they were least affected by the lockdown. It seems that it includes respondents without much interest in staying outdoors. The second group were those who also

have a similar opportunity and if there was no lockdown, they would certainly use it. These respondents felt to be limited by the lockdown at the highest level, were most sensitive to the increase in stays at electronic devices and at the same time declared the most significant deterioration in physical and mental health. These are probably respondents who are active in everyday life, staying in nature is a normal activity for them and the given restrictions fell on them in full force. The young people most affected by the restrictions are the young people who would like to visit the recreational building and at the same time spend the lockdown in the building without their own garden. More than two thirds of these respondents stated that they felt the lack of stay in nature at their health, resp. worsened their mental well-being. Of the respondents who own a recreational building but would not use it, less than half reported health complications and “only” 43% affect the psyche.

The identification of these two groups of respondents’ points to a link between the effects of a pandemic on individuals’ health and their place attachment. Places (e.g. recreational buildings) can have a very positive effect on the health of individuals. However, the lack of contact with these places can have an unwelcome effect on them, which was also shown in our study. Counted et al. (2021) report that place attachment disrupted responses during a COVID-19 pandemic can be loneliness, despair, or protests. Meagher, Cheadle (2020) found that people with a greater connection to their home showed better mental health during the constraints associated with the COVID-19 pandemic. This finding underlines the importance of the text in the mandatory curriculum of the Czechia: “Various activities and tasks should naturally awaken in pupils a positive attitude towards their place of residence” (Ministry of Education, Youth and Sports 2021, p. 47). Let us specify that by home we do not only mean the given object – the building, but also the spatially larger area in which the individual feels at home.

Respondents from the ranks of elementary school pupils, secondary school students and university students declared a rather negative effect on their physical and mental health. Older students emphasized this fact. This is consistent with the findings of a study in American adolescents from the same period (Jackson et al. 2021), which demonstrated a significant positive effect of outdoor living on mental health during a pandemic. Similar results are obtained by Pouso et al. (2021). Based on the responses of more than 5000 respondents from 9 countries, the authors of this study found that COVID-lockdown had a significant negative impact on individuals’ mental health and that contact with nature has helped people better bridge the lockdown. This study also finds a relatively interesting finding: younger people were more likely to experience symptoms of anxiety and depression during lockdown than older people, although this is

exactly the opposite. This finding has been confirmed in other studies (Fancourt et al. 2020; Valiente et al. 2020). Also, Candeias et al. (2021) states that young adults experienced anxiety and general discomfort more often than the older generation during a pandemic. The authors of the study attribute this to a lower psychological level of adaptation in younger people. In our study with the declaration *Lack of stay in nature worsened my mental well-being*, respectively *I felt on my health* certainly agreed on average 26% of young people, while the declaration *Lack of stay in nature worsened the mental well-being of our children*, respectively *affected the health of our children* certainly agreed on average only 14% of parents. This finding is therefore either at odds with the above results of the cited studies or, on the contrary, confirms them (parents perceive the influence on the psyche of their children less significantly than the children themselves).

The positive impact of the natural environment on the mental health of individuals during the COVID-19 pandemic was confirmed by a systematic review (25 articles) by Lanza-León et al. (2021), from Spain and Portugal, Ribeiro et al. (2021), from a US university environment, Larson et al. (2022). Zabini et al. (2020) even found a short-term positive effect of watching nature videos on the psyche of Italian respondents.

Parents of children of pre-school and younger school age rather declared the absence of changes in the use of electronics, the stay in nature decreased, although not dramatically. Significant changes in these two variables were reported by researchers from Canada (Li et al. 2021) or Iran (Rajabi et al. 2021), who, however, reflected the entire period of the pandemic and not just three weeks.

Browning et al. (2021) found that a higher proportion of screen time worsened the mental health of American students. Our study shows that students who spent significantly more of their free time at the screens felt a negative effect on their psyche in 67% of cases, while students who did not spend significantly more of their free time at the screens observed an effect on their psyche “only” in 30% of cases.

The presented research is limited by several facts that the authors are aware of. The sample of respondents was non-random, we worked with an available set of respondents. This fact does not make it possible to generalize the conclusions, although it is possible (and appropriate) to draw attention to some more general tendencies which have the ambition to exceed the availability of the sample used. Interpretive limitations can also be found in the method of collecting data on pre-school and early school children, as data were collected from the parents of these children. The results also need to be interpreted with respect to the timing of the lockdown within the year. Lockdown took place in March, when the ski season ends, the beginning of the spring hiking and cycling season is dependent on the weather during this period and for

some recreational activities (swimming, mushroom picking) there are practically no conditions during this period. With the exception of skiing, this is a period in which outdoor recreational activities are run less than in other parts of the year. (This fact is nicely described by the Czech folk adage, which says: *In March we will climb behind the oven.*)

The last limit is the fact that despite the timing of data collection and repeated warnings that information about the lockdown was collected in March 2021, respondents were able to reflect in their reactions the entire period of the COVID-19 pandemic in the Czechia, when the scope and method of lockdowns changed several times.

6. Conclusion

Lockdown, which was implemented in Czechia in March 2021, was probably the most significant restriction in the fight against COVID-19. The prohibition of leaving residential cadastral territory caused a lower intensity of stay in the natural environment for children and adolescents and led to several negative phenomena, including deterioration of physical and mental health and an increase in leisure time spent in front of the screens. Lockdown had the greatest impact on those individuals who were accustomed to traveling in the natural environment outside their immediate surroundings. The question thus remains whether the benefits of similar extreme restrictive measures outweigh their negative effects on human well-being.

Also, in the light of experience from other countries and the ongoing pandemic, it is appropriate to integrate the stay in nature into the educational process, even if this process takes place in a distance form. This would reduce the forced stay in front of the screens and increase the amount of time spent outdoors.

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