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2020 Double crisis in Croatia: earthquakes in the time of COVID-19

The pandemic caused by COVID-19 has been an unprecedented health and social emergency worldwide during 2020 that still continues. Although the rate of COVID-19 infection among young children and adolescents is low, there are numerous pandemic-related mental health risks for children and adolescents. The main burden has been associated with contact restrictions, isolation, and increased pressure on families. Preschools, schools, and almost all institutions have been closed, social contacts significantly limited and out-of-home leisure time activities canceled or considerably limited. Parents needed to support their children in homeschooling, while at the same time working from home. Support for families by other family members and social care systems have fallen away or have been reduced. Beside worries and anxieties related to COVID-19, the pandemic has major economic implications with high and rising levels of unemployment worldwide. All this has put a lot of pressure on families, both parents and children, and has had a considerable impact on their mental health. Although children are less susceptible to the negative consequences of COVID-19 than the older population, children represent a vulnerable population in the COVID-19 crisis with regards to mental health because of the many changes, intrusions and influence on their daily life, their mental and physical immaturity and dependence on others for basic emotional and physical needs.

Especially vulnerable for consequences of the COVID-19 crisis are children and adolescents with special needs or disadvantages, such as disabilities, trauma experiences, already existing mental health problems, minorities and low socioeconomic status [1].

During the spring of 2020, the rates of COVID-19 cases and deaths have not been as high in Croatia as in other European countries and the rest of the world [2]. Most likely, this was because of a delayed onset of the pandemic in Croatia, which provided the Croatian government an opportunity to learn from experiences elsewhere. Lock-down procedures have been swift and decisive relative to other countries and included the shutting down of public transport, schools and universities, aged care facilities, restaurants, sporting events, and shopping malls.

Novelty and uncertainty of the COVID-19 pandemic has resulted in the development of different stress reactions which require mental health support amongst many adults and children. Interventions were organized to provide prompt support in alleviating the psychological impact of the pandemic, whilst reducing the risk of disease transmission to health workers [3]. Many hotlines have been established at the national and local levels for the general population, providing new information on COVID-19 and related healthcare updates, helping alleviate anxiety and other stress reactions. Special additional hotlines for providing mental health support to persons in self-isolation or quarantine have also been established by public health institutes. Outpatient and inpatient mental health services

throughout the country organized crisis interventions centers on site and telephone/internet consultations.

With the experience from the recent past related to the 1991–1995 Homeland War, severe floods in 2014 and the migrant crisis in 2015 and 2016, the Croatian health and other services adapted very well to the pandemic circumstances [2, 4]. After initial stabilization of the COVID-19 pandemic crisis and a prompt response to increased needs for mental health support for adults and children in the spring of 2020, the northern part of Croatia, particularly its capital Zagreb, was hit in March 2020 with a series of earthquakes, the strongest one measuring 5.7 Richter degrees. In December 2020, when the Croatian Crisis Headquarters imposed travel restrictions again to prevent the spread of the coronavirus during the holiday season, another series of earthquakes hit the north of Croatia, this time even stronger, with the strongest one measuring 6.3 Richter degrees with the epicenter in Petrinja, a small town south of Zagreb. Both series of earthquakes had catastrophic consequences.

Experiencing earthquakes in the midst of a pandemic is a unique situation for Croatian citizens with many new challenges and threats. This additional natural disaster has threatened the safety of Croatian people in their homes where they were supposed to be safe from COVID-19. There was a danger that the series of earthquakes would accelerate the spread of the COVID-19 epidemic in Croatia since the earthquakes, which left many homeless and fearful of aftershocks, triggered migrations to other parts of the country. In combination with a natural disaster, such as earthquakes, the risk for increasing the number of infected persons, as well as outbreaks of other infectious diseases, was higher [2]. However, on the national level, no increase in the incidence of COVID-19 was experienced following both March and December 2020 earthquakes [2].

Due to the suddenness and unpredictability, natural disasters like pandemics and earthquakes have different degrees of influence on an individual's mental state depending on the constellation of pre-pandemic, peri-pandemic and post-pandemic factors on the individual, family and community levels and can even result in mental disorders. Traumatic stress reactions in children and adolescents commonly include anxiety and depression symptoms related to a range of psychopathologies such as posttraumatic stress disorder (PTSD), panic and anxiety disorders, phobias, and depression [5–10]. These effects can occur in the aftermaths of a disaster, but may also persist over the long-term [11, 12].

Case presentation

V.I. is a 14-year old boy attending the 8th grade of elementary school. He is living with his mother and older sister. His parents are divorced and he maintains regular contact with his father. His father was treated for PTSD shortly after the Homeland war in which he participated, but recovered well and continued to work. The boy's development was normal and he was healthy and an excellent student. Before the COVID-19 pandemic he was never assessed or treated by a psychologist or psychiatrist. From the beginning of the COVID pandemic in Croatia in February 2020 he displayed excessive concerns with contamination. He washed his hands up to 20 times a day even though he did not leave his apartment, he opened the doors in his home with an elbow or using gloves, he wore a protective mask at home even when he was with his mother and sister. He refused to leave his home and he spent most of the time in his room with the blinds lowered. He refused to leave his room when his mother or his sister came home from the shop and refused to touch groceries for several days. He would complete all his tasks for online school, including homework. He was in contact with one close friend and his father over video calls. On Sunday, 22nd of March 2020 he was awakened at 6:24 am by an earthquake and started to scream as several walls of his apartment collapsed. His mother rushed him and his sister out of the apartment, but he refused to go out because of COVID-19. When he heard more noise from the collapsing parts of the building he left the apartment taking his mobile phone, laptop, gloves and masks with him. No one from the building was injured or killed, but the building incurred severe damage. His family left Zagreb on the same day and went to their summer house in a small village at the Adriatic coast. Although the house and its surroundings were familiar to the boy, he was scared to go out and insisted on sleeping with his mother and experienced difficulty falling asleep and nightmares. His concentration for schoolwork significantly decreased, and he had trouble following and completing tasks and homework. He lost interest in watching his favorite tv shows, and followed the news on the aftershocks and pandemic rates almost all the time. His appetite was reduced and he ate only when his mother insisted. When his mother had to leave the house to go shopping, he got very upset and begged her not to go as something bad could happen to her or him while she is away. Within the next several weeks, his sleep and appetite improved. As the rates of COVID cases started to decline during May 2020 in Croatia, he slowly began to go out of the house in the garden. Over the summer he even had contact with close friends in the neighborhood and went swimming with them. In September, his family returned to

Zagreb, to another apartment as the previous one has not been fixed yet. The boy started high school, but refused to go to school as regularly as other children, and continued to show the same behavior as in the beginning of pandemic. Sometimes he would walk his dog at midnight when almost no one is outside. In attempts to attend regular school, he has been in class when all students have been put in self-isolation or quarantine as ordered by health authorities because one student in the class tested COVID-19 positive. As all attempts to attend school regularly failed, he was referred to a mental health professional by his school doctor for assessment. After multidisciplinary assessment (psychologist, neuropsychiatrist, child and adolescent psychiatrist) he was diagnosed with an adjustment disorder with anxiety and depressive symptoms and psychotherapy was recommended. The boy refused to participate even in face-to-face and online psychotherapy sessions and insisted to be schooled solely online. His father had a heart attack after he lost his job recently and was in rehabilitation. The mother developed anxiety and depressive symptoms herself and she started treatment. The two strongest earthquakes in December produced minor damages in their apartment. This time the boy rushed out of the apartment and spent the whole day outside and refused to return to the apartment. He insisted on going to their house at the Adriatic coast, but the mother could not arrange that as she had to work in Zagreb. This time, he had severe problems with sleep and checked the news the whole day and night, especially those on earthquakes and their magnitude. Sometimes he felt shaking even though no one else did and he tried to convince others that he was right. He had no contact with any friends. His mother noticed self-injury on his forearm one day and the boy started to cry because he wants to die. He was referred to child and adolescent psychiatry emergency service and was hospitalized at the inpatient unit.

Discussion

Prolonged COVID-19 pandemic with many threats and uncertainties in combination with repeated severe earthquakes has had short term as well as long-term mental health implications for children and adolescents in Croatia. Children and adolescents are more vulnerable to traumatic stress reactions after natural disasters because of their cognitive and emotional immaturity. As in the case presented here, pre-pandemic, peri-pandemic and post-pandemic risk factors determine the nature and the extent of the psychological reactions of children.

Previous studies have reported that after disasters the loss of a loved one, relocation, and impaired parental mental health influence pediatric mental health [13]. McDermott and Cobham [14] noted that in earthquakes

children and adults are affected by the same disaster, which can impair the functioning of the family and its capacity to provide support for children. The possibility that the association between parenting and family functioning could predict PTSD symptoms in children has been reported and also that depressed mood in mothers is indirectly associated with a reduction in parenting efficacy [15]. High number of pre-pandemic cases of PTSD due to the 1990s' Homeland War is an additional risk factor for people and their families affected by the double crisis of pandemic and earthquakes in Croatia during 2020 [16]. Focusing on the mental status of parents, parenting and family functioning is crucial and could help reduce the psychological impact of natural disasters on children.

Research on outcomes of children and adolescents with the experience of devastating earthquakes show that perceived threat to safety explained more variance in PTSD symptoms than objective measures of trauma severity, such as proximity to the epicenter, level of damage to home, or injury [11]. Thus, survivors who have not experienced the devastating impact of the disaster may require as much attention as those with such an experience.

Earthquake and pandemic-related fears and phobic avoidance may cause significant impairment in children. The majority of children reported fear of entering and staying in buildings, being alone, darkness, loud noises and aftershocks after earthquakes [17]. On the other hand pandemic-related fears keep children in their homes and away from social interactions [5–8]. Many Croatian children and adolescents have been in two parallel crises during 2020 that contradict each other.

This case also presents what has been presumed—that children might resist going to school after the lockdown and may face difficulty in establishing interactions with their peers and teachers after schools reopen [18]. This has happened quite some times in children and adolescents moving to another school as in this case.

The available data point towards a detrimental effect of disease-containment measures such as quarantine and isolation on the mental health of children with 30% of them meeting the criteria for PTSD as reported by parents after the H1N1 and SARS epidemics [19].

In India, children isolated in quarantine due to COVID-19 experienced greater psychological distress than non-quarantined children, most commonly experiencing worry (68.6%), helplessness (66.1%), and fear (62%) [20]. The COVID-19 pandemic has brought new experiences regarding self-isolation due to its prolonged duration. Some adults and children have been in self-isolation repeatedly because of multiple contacts with COVID positive persons, sometimes even two or three times in a row. This might significantly increase the risk for immediate and long-term mental health problems, but the extents are not yet known

and warrant extensive research. Children in isolation require special attention as they might be at a higher risk of developing mental health problems. Separation from primary caregivers can make a child more vulnerable even in adolescence and can pose a threat to a child's mental health [7, 21]. Children in isolation may develop feelings of anxiety, fear of death and fear of parents' death [20, 21]. They also might feel separated or alone as they have limited levels of maturity to understand the implications of the current pandemic situation in their limited world which may have a very detrimental effect on their attachment with parents and psychological development [1, 22].

The COVID-19 pandemic and earthquakes have brought many losses to children and adolescents, not only in terms of deaths, but also in terms of missed opportunities in their education, physical activities and socialization [7]. Absence of a structured school setting for a long time resulted in the disruption of routines, the lack of various extracurricular activities and boredom. Boss et al. [23] used the expression "frozen" sadness to describe ambiguous loss, what people experience when they cannot really tell what they have lost. This kind of an ambiguous situation makes it more difficult to come to terms with loss. Some children have expressed lower levels of affect for not being able to play outdoors, not meeting friends and not engaging in the in-person school activities [5–8, 21, 22].

Although the health system adapted generally well to the current double crisis in Croatia during 2020, some services might not have provided their interventions to the full extent. In this case the school doctor could have supported this boy in regular times, but during pandemics school doctors served as school epidemiologists as the number of epidemiologists in Croatia was not sufficient to cover all COVID-19 cases and their contact in autumn 2020. Since Croatia has entered the EU, many highly qualified professionals have left the country and continued working in more developed EU countries. Besides the shortage of health staff, many schools did not have a school psychologist or psychologists were not able to provide their interventions as they had to cover up for teachers absent because of COVID-19 disease or other reasons.

If children's psychological response to a crisis is not managed promptly and effectively, it can seriously affect their functioning and even development in terms of mental health and have long-term effects throughout their lifetime. Substantial barriers to appropriate mental health care for both pharmacological and nonpharmacological interventions are present worldwide and may deepen during health crises like pandemics or earthquake devastation [24].

During 2020, despite the shortage of child and adolescent mental health workers, child and adolescent

psychiatrists and allied professionals in Croatia used their knowledge and longstanding abundant experience in working with psychotraumatised youth and participated actively in psychosocial interventions either through supervisions of volunteers and non-clinical professionals or clinical assessment and treatment of youth in need either in face-to-face or online evaluations. Besides their continuous education and improving their knowledge and skills in assessment and treatment of youth during the 2020 double crisis in Croatia, mental healthcare professionals held many different types of education and training for non-clinical professionals like social workers and preschool and school teachers and others on mental health needs and problems of the youth during and after natural disasters like pandemics and earthquakes to incorporate early detection in their daily work with youth.

As the current pandemic has led to the reorganization of many aspects of everyday life, it has also provided the opportunity to introduce and/or broaden innovative approaches to delivering mental health services through telepsychiatry. The efficacy and safety of telepsychiatry remain to be determined through appropriate research. Other important research questions that need to be addressed in future studies include the child and adolescent mental health effects of social distancing, increased use of internet and social media, economic pressure, identifying risk and resilience factors related to the pandemic to develop new and/or update existing the guidelines for working with traumatized children and parents in the time of crisis like pandemics and earthquake devastation.

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Declarations

Conflicts of interest The authors have no conflicts of interest or competing interests to disclose.

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