

Population's Mental Health after Wave V of COVID in a Disadvantaged Region of North-Hungary

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Abstract

We examined the level of stress, aggression, health anxiety and well-being and their changes in almost every wave of the pandemic, and we have reported about the results in national and international studies. In Wave V, the prolonged effect of the pandemic, and, over the mental situational picture, the population's post-traumatic condition was also examined. Our current research is focusing on the situational picture of North-Hungary, our aim is to get know the mental state of the region's population. During the research, we used the Mental Health Continuum Scale (MHC-SF), the Depression, Anxiety and Stress Scale (DASS-21) and the Post-traumatic Growth Inventory (PTGI) completed with background variables. Results: the questionnaire was filled by 482 persons living in the region, 34.4% of them were men, 65.6% were women, average age 33 ± 15.1 . The mental health of the region's population appears to be below the average ($x=32.6 \pm 11.8$). The worst situation was found in the population's social well-being ($x=9.7 \pm 4.7$) which did not reach the threshold value. The respondents' average was in the normal range on the depression, anxiety and stress scale ($x=21.9$), but the more severe stage of depression was shown by 30% of the respondents, the same of anxiety by 29.5% and stress by 19.9%. The existence of the population's post-traumatic condition could be detected in the region ($x=43.1 \pm 20.9$) that could be interpreted as the aftermath of the pandemic. The COVID infection occurring in the family has strongly influenced the development of the condition ($p < 0.009$).

Keywords: Population, mental health, Covid disadvantaged region, north-Hungary

Introduction

In the beginning of the COVID-19 pandemic, the situation analysis of the mental health status of the disadvantaged region has been initiated in the frameworks of the Excellence Program of Higher Education Institutions. We monitored and followed the level and changes of stress, aggression, health anxiety, hope and well-being in the second, third and fourth waves of the pandemic, about which we reported in national and international studies. The prolonged pandemic has occurred as severe mental burden among people, so, in Wave V, we examined the long-lasting effects of the pandemic in the region's population, and, over the mental situational picture, the population's post-traumatic condition as well.

Literature review

The new coronavirus occurred in the end of 2019 (SARS-CoV-2) reached Europe and Hungary in the spring of 2020, and it has raged in five waves until now. Although, life was partially restored after the end of the first wave, other four waves passed between the autumn of 2020 and the summer of 2022. The changes of the morbidity and mortality indicators experienced in the certain waves has turned our way of life upside down and become strong stress resources. The pandemic has caused the forced transformation of life guiding, and the changes of our methods of keeping in touch, learning and work, as a consequence of which several new habits and coping mechanisms should have been created. Besides the inconvenience of losing the usual behavioural routines, a lot of people had to face with severe existential difficulties.

The new situation meant a great health, economic, physical and mental hygienic challenge for the humanity. Even the early studies warned for the negative effects of the virus on mental health besides its short- and long-term effects on physical health (Brooks et al., 2020; Osváth, 2021; Pfefferbaum & North, 2020; Sampogna, 2022). It has been proved in numerous cases by now that the pandemic has caused the aggravation of the symptoms of depression, perceived stress, anxiety and psychoactive substance abuse (Lakatos & Rucska, 2022; Li et al., 2021; Rucska & Lakatos, 2021; Tyrer, 2020; Xiong et al., 2020). The inflation, workplace uncertainty, unemployment, existential uncertainty, and controversial information in connection with economic measures and world economic processes were accompanied by such negative mental symptoms as frustration and boredom, post-traumatic stress reactions, panic symptoms, anger and irritability, low self-esteem, loneliness and the feeling of inertia (Brooks et al., 2020). All these internal conditions typical for existential crisis were accompanied by the significant decrease of the level of mental well-being (Serafini et al., 2020).

A critical incident is such a sudden, unexpected, often directly life-threatening and -endangering event (e.g., mass disaster, terror attack, epidemic) that may overwhelm the individual's capacity to respond adaptively (Flannery & Everly, 2000). The COVID-19 pandemic affecting all fields of life may be considered as exactly this kind of critical/traumatic life event (a stressor) that happened unexpectedly and suddenly, affected people over the world, and caused the drastic transformation of the daily, usual, routine lifestyle (Fiorillo & Gorwood, 2020; Gorwood & Fiorillo, 2021).

During the examination of the mental effects of the pandemic, it is worth keeping in mind the important principle of positive psychology, according to which people experience and evaluate the same experience or life situation in very different ways, the response triggered by a certain stressor basically differs in case of different persons, and it can be even totally opposite (Oláh, 2005; Tringer, 2014). So, the psychological reactions following traumatic events are not one-sided responses which occur as a template in all sufferers, but they are rather complex, multi-faced phenomena, thus, positive mental reactions may also occur besides the negative ones. According to experience, not only collapse, or survival accompanied by permanent damage, but recovery (resilience) and blooming (personality growth) are also possible after a traumatic life event (Kállay, 2007). The latest is also known as post-traumatic growth or "*the experience of positive change that occurs as a result of the struggle with highly challenging life crises*" (Tedeschi & Calhoun, 2004, page 1). By now, the definition separates well from the definitions of coping, mental adaptation, and resilience, and indicates such a growth process by which the persons experienced the critical life event will not get sick of the experienced trauma, but they will "grow" both emotionally and spiritually (Vörös et al., 2009).

Numerous studies have been conducted for the examination of post-traumatic growth in the recent years. On the one hand, the studies were aimed at individual life events (tumorous diseases, suffering due to a traffic accident) (Gouzman et al., 2015; Kroemeke et al., 2017), and communities suffered from a natural disaster, earthquake or nuclear accident on the other hand (Pérez-Sales et al., 2005; Kaye-Kauderer et al., 2019), but they were also extended to earlier health crises, such as SARS-epidemic (Cheng et al., 2006). The common characteristic of the listed situations is that all of them generate anxiety, fear and worry because of unpredictability, uncertainty, and the accompanied risks, and the differences can always be detected in the individuals' reactions (Esterwood & Saeed, 2020).

However, several models have been created for the explanation of post-traumatic growth (Janoff-Bullman, 2004; McMillen, 1999; Tedeschi & Calhoun, 2004, cited by Tanyi, 2015), the functional-descriptive model of Tedeschi and Calhoun (2004, 2018) is the best-known one. According to the model, the personality development of a traumatized person is determined by the person's features, the nature of the trauma and the effects of the environment together. The affected people report about development and growth in five fields most often. These are the following: greater appreciation of life, living warmer and more intimate relationships, increased feeling of personal power with experiencing vulnerability at the same time, recognizing new opportunities and career paths, and spiritual development. Additionally, growth may occur in the increased appreciation of health and the positive change of health behaviour, but even in other fields, such as experiencing financial advantage, professional development, or self-knowledge (Kulcsár 2005; Tanyi 2015). Research exploring post-traumatic growth has associated the phenomenon with decreased mortality data, lower depression level, fewer post-traumatic stress symptoms, and the decrease of the risk of a second heart attack (Kovács et al., 2012; Reinhardt, 2022b).

As social support, and the physical and spiritual presence of the family members, close relatives and friends within that, has key importance in the cognitive and emotional process of the traumatic event, researchers have come to the conclusion in the early studies that the supporting person can also experience growth during the active presence, but its level is lower than in case of the person affected by the trauma (Kulcsár, 2005; Tanyi, 2015). The results of the examination performed among healthcare professionals during the COVID-19 period, which found and described significant post-traumatic growth among the hospital workers caring after corona virus patients, may connect to this closely (Chen et al., 2021; Pado et al., 2022).

The COVID-19 pandemic crisis has had really serious negative mental effect all over the world. Studies reported about the experiences of post-traumatic growth (PTG). For example, in Spain in March 2020, 15-41% of the population showed moderately severe post-traumatic stress symptoms (Collazo-Castiniera et al., 2022).

Methodology

Materials and methods

Our present research focused on the North-Hungarian situation picture; our aim was getting know the effects of the long-lasting pandemic on the mental condition among the population over the age of 18 living in the region. For the research, we used the Mental Health Continuum Scale, the DASS-21 and the PTGI scale measuring the post-traumatic condition with background variables.

The *Mental Health Continuum Scale* (MHC-SF) examines three fields of subjective well-being: hedonic tradition measures *emotional well-being* that means how much the person is happy and satisfied. Eudaimonic tradition *examines psychological well-being* that looks self-acceptance, positive relationships, aims, the sense of efficiency, and autonomy, and *social well-being* that examines social relationships, social integration and acceptance (Reinhardt, 2022a).

The *Depression Anxiety Stress Scale* (DASS-21) is a multidimensional questionnaire that assesses three negative emotional conditions: depression, anxiety and stress.

The *Posttraumatic Growth Inventory* (PTGI) serves for the mapping of the experience of positive changes following the trauma. The scale uses 5 factors to examine that at which field the positive change following trauma starts¹. The scales of the measuring tool look the positive attitude to other people, the increased respect of life, the exploration of new opportunities, personal power and spiritual change. The higher score shows the level of mental growth developing as the aftermath of the trauma: the higher the score, the stronger the experienced post-traumatic growth (Reinhardt, 2022b).

The online survey study is not representative, but the large number sample reflects well the region's mental status. Data were analysed by SPSS statistical software.

Characteristics of the sample

The questionnaire was filled by 482 persons living in the region, 34.4% was male and 65.6% was female. Their average age was 33 ± 15.1 , the youngest was 18 years old, the oldest was 73 years old. 12% of the population lived in the capital city, 40.1% in cities, 24.9% in towns and 23% in villages. People living in the North-Hungarian region were overrepresented (69.7%), but the answers of the population of six different regions also occurred in different rate in the sample. The majority had maturity graduation (48.1%), 27.3% of the respondents had higher education, 10.3% were workmen, 10.3% had technical education, and 4% had general education (primary school) or lower level. 48.5% of the sample worked regularly. The workplace of 14.3% of the population became endangered during the pandemic. Although not significantly ($p < 0.069$), but losing job occurred as a higher risk factor among women². 41.3% of the respondents live in family, 21.8% in multigenerational family, 17.7% live alone and 19.2% in a relationship. 42.7% of the sample feels its health status good, 33.2% satisfactory, 17.4% very good, 5.8% bad and 1.9% feels it very bad (Table 1.).

¹ Maximum 105 points can be achieved.

² In the North-Hungarian region, men are at greater risk ($p = 0.069$) in the issue of losing a job.

		Valid Percent
Valid	Very bad	1.9
	Bad	5.8
	Satisfactory	33.2
	Good	42.7
	Very good	17.4
	Total	100.0

Table 1. Subjective health status

Age has significant effect on subjective health status ($p < 0.000001$): older people feel themselves less well.

Results

Mental Health Continuum Scale (MHC-SF)

Mental health was examined along three dimensions: emotional, social and psychological well-being (Table 2.). It can be seen well in the table that the values of the population of the disadvantaged North-Hungarian region were minimally lower than the values of the total population.

	emotional	social	psychological	mean of total score
Total population mean score	7.6618	9.7863	15.2365	32.6846
SD	3.15895	4.71671	5.68125	11.81282
North-Hungary mean score	7.4379	9.7267	15.1087	32.2733
SD	3.18351	4.79419	5.62294	11.88233

Table 2. Mean of dimensions of mental health

The mental health of the region's population appears to be below the average ($x = 32.68 \pm 11.8$)¹. During the examination of the sub-scales, it can be stated that the worst situation could be explored in the population's social well-being ($x = 9.7 \pm 4.7$) which is far under the threshold value. The emotional and psychological well-being are around the threshold value. Educational level determines mental well-being ($p < 0.006$), higher educational level occurs as a protective factor. No significant differences could be found in case of genders ($p < 0.072$), but women showed better mental status than men both in the samples of the total population and North-Hungary (Table 3.).

¹ The threshold value of the MHC-SC scale is 37.5.

Gender		emotional	social	psychological	total mean score
Total population	mean score	7.5542	9.2349	14.5602 6.08570	31.3494
	SD	3.30749	4.93340		12.59142
North-Hungary	mean score	7.4298	9.3070	14.5175	31.2544
	SD	3.35765	5.11484	6.09691	13.00906
Total population	mean score	7.7184 3.08192	10.0759	15.5918 5.43310	33.3861
	SD		4.58021		11.34018
North-Hungary	mean score	7.4423	9.9567	15.4327	32.8317
	SD	3.09223	4.60551	5.33291	11.21057

Table 3. Mean of dimensions of mental health in terms of genders

Examining the sub-scales, it can be seen that the North-Hungarian emotional dimension was closely the same in terms of genders, but women showed better condition in case of the other dimensions.

The indicators of the scale correlate with the values of the Depression, anxiety and stress scale ($r=-0.365$). The strongest correlation could be observed in the depression dimension of the emotional ($r=0.42$) and psychological ($r=-0.37$) sub-scales. Family, and lifestyle in multigenerational family households within that, influence mental health status as a protective factor ($p<0.005$).

On the *Depression, anxiety and stress scale*, the mean value of the respondents was in the range of normal values ($x=21.9$), but some of the severe stages of depression could be seen in 31.5% of the respondents, stress in 17.6% and anxiety in 32.3% (Table 4.). People living in the North-Hungarian region were affected by stress in a greater extent than in the total population (19.9%).

	mean score total population	mean score North-Hungary
Depression	7.1	7.2
Anxiety	5.7	5.6
Stress	8.9	8.9

Table 4. Mean of dimensions of the Depression, anxiety and stress scale

The *depression* sub-scale of the measurement shows that, in average, the population is not affected in the issue of depression. But the not negligible rate of the sample showed depression symptoms, mild depression could be experienced in 13.7%, moderate in 16.9% and severe depression in 0.9%. Residence influences the level of depression, however, not significantly ($p<0.076$): higher level of depression can be experienced in people living in villages than those living in towns.

The mean value of the questionnaire's *anxiety* sub-dimension can also be found within the normal value (Table 4.), but mild state of anxiety was shown in 8.6%, moderate in 15%, severe in 7.1% and very severe in 1.7%.

Age significantly influences anxiety ($p < 0.022$), the younger age group is more affected.

Although, residence does not influence the level of anxiety significantly ($p = 0.2$), but people living in villages are more anxious.

The mean value of the *stress* sub-scale can also be found in the normal value (Table 4.), but mild stress level was shown in 13.1% of the sample, while moderate in 4.5%. Age influences the level of stress significantly ($p < 0.000021$), the younger age group is more stressful than the elderly.

Before the sub-unit of the questionnaire, a negative life event happened within the last 5 years had to be recalled. Mostly the death of a relative within 2 years, own infection, a broken-up relationship, a car accident or other diseases were recalled by the respondents.

The *Posttraumatic Growth Inventory* (PTGI) looks through five dimensions that in which dimension the positive change following the trauma has started. The higher score obviously suggests experienced post-traumatic effect. Obviously post-traumatic situation could be detected in the sample ($x = 43.1 \pm 20.9$) (Table 5.). The change occurred most markedly in spiritualism, then strong transformation could be experienced in case of personal power.

	positive aspect	increased respect of life	discovery of new opportunities	personal power	spiritual change	summed mean score
mean score	14.3987	5.1782	10.7661	9.7550	3.0824	43.1804
SD	7.43268	2.94433	6.54286	4.97697	2.79746	20.97779

Table 5. Mean values of the PTGI sub-dimensions

The COVID infection occurring in the family strongly influenced the development of the condition ($p < 0.009$). Not significantly, but this condition occurred mostly in people living in cities ($p > 0.3$). During the examination of the sub-dimensions, it can be stated that significant difference can be experienced in the positive attitude in case of genders ($p < 0.031$) and subjective health status ($p < 0.006$), women with very good subjective health status are the most affected. The level of spirituality increased significantly in the religious population ($p < 0.002$).

Only 8.5% of the respondents asked for mental support, which was overrepresented in the population of the North-Hungarian region (6.3%), but the demand would be significantly higher, since 29.8% told that they would have demand for such kind of support. Rather women living in villages used the help of professionals.

Summary

In our non-representative research made by online data recording, we were curious for what mental status change was caused by the prolonged pandemic period in the Hungarian population, and especially in the disadvantaged North-Hungarian region. We used standard validated questionnaires for data recording, such as the Mental Health Continuum Scale, the DASS-21 (depression, anxiety and stress) scale and the post-traumatic growth scale. Data recording was performed during the fifth wave of the pandemic.

482 persons filled in the questionnaire.

The population's mental status is satisfactory, but some disturbance could be detected in the social dimension which could be caused by the prolonged and recurring quarantine situations.

Nearly 31.5% of the population is affected by some level of depression, about 30% has anxiety and about 18% is stressed. While elderly people are more affected by anxiety and depression, younger people are more affected by stress.

The experienced post-traumatic situation can obviously be detected in the region's population, which has developed as the effect of infections, death cases and family tragedies happened in the family. Women living in cities and having subjectively good health status are the most affected group.

Conclusion

The mental status of the region's population has been strongly damaged by the long-lasting pandemic, as all the sub-dimensions of the scale show significantly worse values compared to the previous national measurements (Reinhardt, 2019). The values occur more markedly in the North-Hungarian region compared to the total population. Our research has obviously supported and completed those international studies according to which the pandemic has caused such mental status in the population that resulted in the strengthening of the post-traumatic condition (Collazo-Castiniera et al., 2022). In case of the population living in the disadvantaged regions, people are not aware of this situation, so, they cannot use professionals' help as well. The demand for professionals occurs in people in higher social status, but they cannot use it in time because of the inadequate supply of the region.

The study has been made in the framework of the Thematic Excellence Programme 2021 - National research sub-programme, as the part of the Creative Region III project (ID: TKP2021-NKTA-22), by the support of the NKFIH (Hungarian acronym for the National Research, Development and Innovation Office).

References

- [1] Cann, A., Calhoun, L. G., Tedeschi, R. G., & Solomon, D. T. (2010). Posttraumatic Growth and Depreciation as Independent Experiences and Predictors of Well-Being. *Journal of Loss and Trauma*, 15(3), 151–166. doi:10.1080/15325020903375826
- [2] Chen, R., Sun, C., Chen, J. J., Jen, H. J., Kang, X. L., Kao, C. C., et al. (2021). A large-scale survey on trauma, burnout, and posttraumatic growth among nurses during the COVID-19 pandemic. *International Journal of Mental Health Nursing*, 30(1), 102–116. <https://doi.org/10.1111/inm.12796>
- [3] Cheng, S. K. W., Chong, G. H. C., Chang, S. S. Y., Wong, C. W., Wong, C. S. Y., Wong, M. T. P. (...) (2006). Adjustment to severe acute respiratory syndrome (SARS): roles of appraisal and post-traumatic growth. *Psychol. Health* 21, 301–317. doi: 10.1080/14768320500286450
- [4] Collazo-Castiñeira P., Rodríguez-Rey R., Garrido-Hernansaiz H., Collado S. (2022). Prediction of post-traumatic growth in the face of the COVID-19 crisis based on resilience, post-traumatic stress and social participation: A longitudinal study. *Front. Psychol.* 13:985879. doi: 10.3389/fpsyg.2022.985879
- [5] Dormán J., Martos T., Urbán Sz. (2012). Vallásosság és poszttraumás növekedés: egy többdimenziós megközelítés. *Mentálhigiéné és Pszichoszomatika*. 13. 21–35. doi: 10.1556/Mental.13.2012.1.2.
- [6] Esterwood, E., and Saeed, S. A. (2020). Past epidemics, natural disasters, COVID19, and mental health: learning from history as we deal with the present and prepare for the future. *Psychiatr. Q.* 91, 1121–1133. doi: 10.1007/s11126-020-09808-4
- [7] Flannery R.B. Jr, Everly G.S. Jr. (2000). Crisis intervention: a review. *Int J Emerg Ment Health*. 2(2):119-25. PMID: 11232174.
- [8] Gouzman, J., Cohen, M., Ben-Zur, H., Shacham-Shmueli, E., Aderka, D., Siegelmann-Danieli, N., et al. (2015). Resilience and psychosocial adjustment in digestive system cancer. *J. Clin. Psychol. Med. Settings* 22, 1–13. doi: 10.1007/s10880-015-9416-9
- [9] Kállay É.: (2007) Posttraumatic growth: A brief review. *Series Humanistica* 5. 55–85.

- [10] Kaye-Kauderer, H. P., Levine, J., Takeguchi, Y., Machida, M., Sekine, H., Taku, K., et al. (2019). Post-traumatic growth and resilience among medical students after the March 2011 disaster in Fukushima. *Japan. Psychiatr. Q.* 90, 507–518. doi: 10.1007/s11126-019-09646-z
- [11] Kovács É., Balog P., Preisz L. (2012). A Poszttraumás Növekedésérzés Kérdőív pszichometriai mutatói hazai mintán. *Mentálhigiéné és Pszichoszomatika.* 13. 57–84. doi: 10.1556/Mental.13.2012.1.4.
- [12] Kroemeke, A., Bargiel-Matusiewicz, K., & Kalamarz, M. (2017). Mixed Psychological Changes Following Mastectomy: Unique Predictors and Heterogeneity of Post-traumatic Growth and Post-traumatic Depreciation. *Frontiers in Psychology*, 8. doi:10.3389/fpsyg.2017.01245
- [13] Kulcsár Zs. (editor) (2005). *Teher alatt... Pozitív traumafeldolgozás és poszttraumás személyiségfejlődés. Szöveggyűjtemény.* Trefort kiadó, Budapest
- [14] Kulcsár Zs., Rózsa S., Reinhardt M. (2006). *A poszttraumás növekedés feltételei és empirikus vizsgálata.* Trefort Kiadó, Budapest
- [15] Oláh A. (2005). *Érzelmek, megküzdés és optimális élmény.* Budapest, Trefort kiadó
- [16] Osváth, P. (2021). A COVID-19-pandémia mentálhigiénéés következményei. *Hogyan tudunk felkészülni a pszichodémiás krízisre?* *Orvosi Hetilap*, 162(10), 366–374. <https://doi.org/10.1556/650.2021.31141>
- [17] Pérez-Sales, P., Cervellón, P., Vázquez, C., Vidales, D., and Gaborit, M. (2005). Post-traumatic factors and resilience: the role of shelter management and survivors' attitudes after the earthquakes in El Salvador (2001). *J. Community Appl. Soc. Psychol.* 15, 368–382. doi: 10.1002/casp.827
- [18] Pado, K., Fraus, K., Mulhem, E. et al. (2022). Posttraumatic Growth and Second Victim Distress Resulting from Medical Mishaps Among Physicians and Nurses. *J Clin Psychol Med Settings* <https://doi.org/10.1007/s10880-022-09931-3>
- [19] Reinhardt, M., Tóth, L., & Kenneth, G. R. (2019). Perfekcionista csoportok pozitív mentális egészsége – a perfekcionizmus, az érzelemszabályozás és a szubjektív jóllét mintázódása fiatal élsportolók körében. *Magyar Pszichológiai Szemle*, 74(3), 301–325. doi:10.1556/0016.2019.74.3.3
- [20] Reinhardt M. (2022a): *Mentális Egészség Kontinuum Skála –rövid változat*, In: Horváth Zs. Urbán R., Kökönyei Gy., Demetrovics Zs. (editor) *Kérdőíves módszerek a klinikai és egészségpszichológiai kutatásban és gyakorlatban*, Medicina Könyvkiadó, Budapest, 177-182

- [21] Reinhardt M. (2022b): Poszttraumás Növekedés Skála, In. Horváth Zs, Urbán R., Kökönyei Gy., Demetrovics Zs. (editor): Kérdőíves módszerek a klinikai és egészségpszichológiai kutatásban és gyakorlatban. Medicina Könyvkiadó, Budapest, 259–267.
- [22] Tanyi Zs. (2015). A trauma pozitív hozadéka. In. Kuritárné-Szabó I., Tisljár-Szabó E. (szerk.) *Úgy szerettem volna, ha nem bántottak volna*. Oriold és Társai, Budapest, 269–288.
- [23] Tedeschi R.G., Shakespeare-Finch J., Taku K., Calhoun L. G. (2018). *Posttraumatic Growth. Theory, Research, and Applications*. Routledge, New York. doi: 10.4324/9781315527451
- [24] Tringer I. (2014) Megküzdés (coping). In: Kállai J. Varga J., Oláh A. (editors) *Egészségpszichológia a gyakorlatban*, Budapest, Medicina kiadó, 177–195
- [25] Vörös V., Osváth P., Ambrzs N., Csürke J. (2009) Trauma és krízis. In: Csürke J., Vörös V., Osváth P., Árkovics A. (editor) *Mindennapi Kríziseink. A lélektani krízis és a krízisintervenció kézikönyve*. Oriold és Társai Kiadó, Budapest, 215–238.