Original Research Article

Determination of the Depression, Anxiety and Stress Levels of Hairdressers during the COVID-19 Pandemic and the Associated Factors

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Abstract

Background: COVID-19 affected negatively almost every person in the world. This process has brought psychological disorders, social and economic problems at the societies especially in business sector. So this study was conducted to determine the factors related with depression, anxiety and stress levels of hairdressers during COVID-19 pandemic.

Material and methods: This analytic research was conducted with 103 volunteer hairdressers who were reached by snowball sample. The data were collected with a personal data form and the DASS-21 Scale.

Results: Of the participants, 40.8% were in the 14-30 years age group, 57.3% were female, 58.3% were high school graduates. Of them, 68% were affected negatively due to the COVID-19. The COVID-19 had negative effects on the mental health status of hairdressers. The mental health of

hairdressers was affected by gender, income status, chronic disease status, psychotherapy status, negative impact of COVID-19 process, daily working time and daily sleep duration significantly affect the mental health of hairdressers.

Conclusion: The supporting mental health services and the adjustments can be given to small business owners, especially to hairdressers. In addition, further studies that determine of the effects of the COVID-19 on the economic and mental health of the small business owners can be useful.

Key words

Anxiety, COVID-19, Depression, Hairdressers, Mental status, Stress.

Introduction

The COVID-19 pandemic has quickly and deeply affected the life of individuals since it came out. These rapid changes and transformations in education, social life, economic and business life because of the quarantines enforced due to the pandemic have caused individuals to have mental problems. The COVID-19 pandemic has hurt societies in several aspects [1]. One of the most important negative effects of the restrictions imposed on societies has been unemployment and economic problems due to the closure of working areas. Not only the places where basic needs are produced and procured or some large-scale employment areas, but the small-scale service sector particularly has suffered greatly from the COVID-19 outbreak [2, 3].

Although the COVID-19 has affected many areas deeply, it has done so to small business owners most. It is important to determine the mental health status of small business owners who have both economic lost and try to survive with such an economic burden and to make the necessary intervention programs for these mental conditions [2, 4]. Although many sectors were affected due to the closure during the COVID-19 pandemic, hairdressers, a highly affected group in the service sector, were affected badly due to the long-term shutdown. Hairdressing services, which are not included in the basic needs for life such as food and beverage, were not able to provide any services and gain during the closure.

There are studies that examine the effect of COVID-19 pandemic on the society [5, 6, 7].

They emphasize that the long-term effects of COVID-19 pandemic on society should be well monitored and there should be intervention studies for these effects [5]. However, there is no research that determines the economic and mental effect of artisan due to COVID-19. Due to the COVID-19 pandemic, it is important to determine their mental health status as they have made an important contribution to the continuation of the social order and constitute an important part of the society. Determining the mental response of hairdressers during the COVID-19 pandemic can be considered a starting point for small business owners, which can form the basis for future research on this group. This research was made to determine the factors related to the depression, anxiety and stress levels of hairdressers, one of the most affected occupational groups, based on the necessity of investigating the effects of the pandemic on mental health.

Materials and methods

Research Type
This is a cross sectional research.

Population and Sample of the Study
The study was conducted between January and February 2022 in Türkiye. It used the power table prepared by Cohen for independent comparisons between the two groups and the sample size was designed to include 136 people with a 0.80 power, 0.42 effect magnitude and error 0.05 [8]. However, due to incomplete or incorrect response problems, there was a drop in the sample and the research was completed with 103 people (75.7%).

Data Collection

The data obtained from the participants were collected using an online questionnaire. The study used snowball sampling method that can be accessed on social media in an attempt to encourage the participants to deliver it to other individuals. The pilot study was conducted with 20 people who were selected randomly and not included in the sample. It revealed that filling out questionnaire form took 10-15 minutes and there was no unclear question. The data were collected online using the snowball sampling technique and online forms in social media. (The online questionnaire link: https://docs.google.com/forms/d/190xpOpmbUM 1EPhyJ6ZjSgbSfpxTohyZnMcGS9kbkQ3o/edit).

Data Collection Tools

The demographic information of the study was collected using the data collection form and Depression Anxiety Stress Scale (DASS-21).

Personal Information Form

The personal information form consists of 21 questions aiming to determine some characteristics and behaviors of individuals such as age, gender, income level, working status, the presence of chronic diseases and mental health-related diseases. The content validity was 90% according to five experts. The literature reports that a coherence level of 80% and more is adequate for the content validity [9].

Depression Anxiety Stress Scale (DASS-21)

The Turkish validity and reliability study of the DASS-21 was conducted by Yılmaz, Boz and Arslan [10]. The scale includes seven questions for each to measure the depression, stress and anxiety dimensions. It is a four-point Likert type scale coded as "inappropriate to me=0", "slightly appropriate to me=1", "often appropriate to me=2", and "absolutely appropriate to me=3". Yılmaz, Boz and Arslan (2017) determined the internal reliability coefficients of the scale between .755 and .822 [10]. Cronbach's alpha reliability coefficient of the 21-item DASS-21 scale that was used in the study was calculated as 0.921, that of the anxiety subscale consisting of seven items was 0.823, that of the depression subscale consisting of seven items was 0.833 and that of the stress subscale consisting of seven items was 0.780 [10].

Data Analysis

Analyses were made using IBM SPSS Statistics 26 software. When the study data were evaluated, the frequencies (number, percentage) were used for categorical variables and descriptive statistics (mean, standard deviation, median, minimum, maximum) for numerical variables. The normality hypotheses of the numerical variables were evaluated with Kolmogorov Smirnov, Shapiro-Wilk normality test and visually examined with histogram and skewness-kurtosis values. The variables were not normally distributed and nonparametric statistical methods were used. For non-normally distributed data, the Mann Whitney U test and Kruskal Wallis H test were used. The statistical significance was interpreted at the level of 0.05 in the analyses.

Ethical Considerations

The study was approved by the Ethics Committee (Date: January 18, 2022, Decision number: 2022/43). The participants read the explanations before being given the questionnaire. Then, those participants who accepted the conditions voluntarily completed the questionnaire.

Results

This study was conducted to determine the factors related to the depression, anxiety and stress levels of the hairdressers. Table 1 provides some characteristics of the participants. **Table - 1** shows that 40.8% of the participants are in the 14-30 years age group, 57.3% are women, and 58.3% have a high school-level education. Of the participants, 91.3% currently live in the city center, 62.1% have an income equal to expenses, 74.8% are married, 91.3% have a nuclear family, and 68.9% have children. Of them, 10.7%, 64.1% worked daily for 11-16 hours with a mean of 10.96±1.55 hours.

Table – 1: Distribution of the participants by attributes.

Attributes	Number	Percent
Age (Mean ± SD = 33.55 ± 8.65)		
30 years of age and below	42	40.8
31 years of age and above	61	59.2
Gender		
Female	59	57.3
Male	44	42.7
Educational status		
Secondary school and lower	31	30.1
High school	60	58.2
University	12	11.7
Currently living in the city center		
Yes	94	91.3
No	9	8.7
Income status		
Less income than expense	29	28.2
Equal income and expense	64	62.1
More income than expense	10	9.7
Marital status		
Married	77	74.8
Single	26	25.2
Family type		
Nuclear	94	91.3
Extended	9	8.7
Having a child		
Yes	71	68.9
No	32	31.1
Number of children (n=71) (Mean ± SD = 2.16 ± 0.95)		
1 child	17	23.9
2 children	34	47.9
3 or more children	20	28.2
Having a chronic disease		
Yes	11	10.7
No	92	89.3
Diagnosed mental disorder		
Yes	4	3.9
No	99	96.1
Receiving psychotherapy		
Yes	6	5.8
No	97	94.2
Daily sleep duration		
6 hours or less	10	9.7
7 hours	48	46.6
8 hours or more	45	43.7

Table – 2: Participants' lives affected by the pandemic process.

Effects due to the pandemic process	Number	Percent
Daily working duration (in hours) (Mean ± SD = 10.96 ± 1.55)		
10 hours or less	37	35.9
11-16 hours	66	64.1
Negatively affected life by COVID-19		
Yes	70	68.0
No	33	32.0
The way of being affected by COVID-19 process		
I got stuck in the economic dead end	37	35.9
I was afraid and my anxiety increased	34	33.0
I had more stress and became more nervous	20	19.4
I was not negatively affected	12	11.7
Economic difficulties experienced during COVID-19 pandemic		
I was fired, went bankrupt or run in debt	52	50.5
I managed with my savings; it didn't force me	51	49.5
Daily working duration (in hours) (Mean ± SD = 10.96 ± 1.55)		
My family (mother, father, sibling, uncle, cousin, aunt)	63	61.1
My spouse or his/her family	30	29.1
My workmates	5	40.9
My friends	5	40.9
Negatively affected life by COVID-19	70	68.0
Yes	33	32.0
No	70	68.0
The way of being affected by COVID-19 process		
I got stuck in the economic dead end	37	35.9
I was afraid and my anxiety increased	34	33.0
I had more stress and became more nervous	20	19.4
I was not negatively affected	12	11.7
Economic difficulties experienced during COVID-19 pandemic		
I was fired, went bankrupt or run in debt	52	50.5
I managed with my savings; it didn't force me	51	49.5
The most supporter when an adverse condition is faced		
My family (mother, father, sibling, uncle, cousin, aunt)	63	61.1
My spouse or his/her family	30	29.1
My workmates	5	4.9
My friends	5	4.9
Supporter when an adverse condition is faced		
My family (mother, father, sibling, uncle, cousin, aunt)	63	61.1
My spouse or his/ her family	30	29.1
My workmates	5	4.9
My friends	5	4.9

The COVID-19 process negatively affected the life of 68% participants. Of them, 35.9% got stuck due to their economic loss, 50.5% were in debt due to several reasons such as unemployment and bankruptcy, and 61.1% were supported by their own family most (**Table - 2**).

Table - 3 shows that individuals aged 30 years and under scored a median value of 2.5 in anxiety, 3 in depression, 4 in stress; and they had a higher median value than individuals aged over 30 years. This difference was not statistically significant (Z=-0.559, p>0.05). Regarding anxiety, depression and stress scores by gender, the median depression score (3) and median stress score (4) of women were significantly higher than those of men (**Table - 3**). The median scores of anxiety (4), depression (4) and stress (5) of those who had lower income than expenses were significantly higher than those of other income groups (X^2=12.084, p<0.05; X^2=11.981, p<0.05; X^2=13.044, p<0.05). The depression median scores of individuals who had a chronic disease (5) were higher than those who did not (2) (Z=-3.428, p<0.05). The anxiety (7.5), depression (9.5) and stress (10) median scores of those who received psychotherapy were significantly higher than those who did not receive (Z=-2.431, p<0.05; Z=-2.338, p<0.05; Z=-2.604, p<0.05). Those with sleep duration of six hours or less had significantly higher depression (6.5) and stress (9) median scores than individuals with more sleep duration (X^2=11.276, p<0.05; X^2=12.125, p<0.05). The anxiety (3), depression (3) and stress (4) median scores of those who were negatively affected by COVID-19 pandemic were significantly higher than those who were not (Z=-2.119, p<0.05; Z=-2.883, p<0.05; Z=-2.208, p<0.05).

Table – 3: Examination of the DASS-21 differences according to demographic characteristics.

	Anxiety	Depression	Stress
Attributes	**Median (Min-Max)**	**Median (Min-Max)**	**Median (Min-Max)**
Age			
30 years of age and below	2.5 (0-15)	3 (1-10)	4 (1-10)
31 years of age and above	2 (0-10)	3 (0-13)	3 (0-12)
Z; p	-0.559; 0.576	-1.895; 0.058	-1.187; 0.235
Gender			
Female	3 (0-15)	3 (0-13)	4 (0-12)
Male	2 (0-7)	2 (0-13)	3 (0-11)
Z; p	-1.595; 0.111	-2.241; **0.025***	-2.251; **0.024***
Educational status			
1) Secondary school or lower	3 (0-10)	3 (0-13)	4 (0-12)
2) High school	2 (0-10)	3 (0-9)	4 (0-11)
3) University	1 (0-15)	2 (1-10)	3.5 (1-10)
X^2; p	5.109; 0.078	0.339; 0.844	2.559; 0.278
Income status			
1) Less income than expense	4 (0-15)	4 (1-13)	5 (1-12)
2) Equal income and expense	2 (0-9)	2.5 (0-13)	3 (0-11)
3) More income than expense	2 (0-8)	2 (1-4)	3.5 (2-7)
X^2; p	12.084; **0.002*** **Difference: 1-2.3**	11.981; **0.003*** **Difference: 1-2.3**	13.044; **0.001*** **Difference: 1-2**
Marital status			
Married	2 (0-15)	3 (0-13)	4 (0-12)
Single	2.5 (0-9)	3.5 (1-9)	4 (1-9)
Z; p	-0.257; 0.797	-1.095; 0.273	-0.122; 0.903
Having a chronic disease			
Yes	5 (2-10)	4 (0-13)	6 (1-12)
No	2 (0-15)	3 (0-13)	4 (0-11)

Z; p	-3.428; **0.001***	-1.865; 0.062	-1.706; 0.088
Receiving psychotherapy			
Yes	7.5 (2-9)	9.5 (1-13)	10 (3-12)
No	2 (0-15)	3 (0-10)	4 (0-11)
Z; p	-2.431; **0.015***	-2.338; **0.019***	-2.604; **0.009***
Daily sleep duration			
1) 6 hours at most	5.5 (0-15)	6.5 (1-13)	9 (1-11)
2) 7 hours	2 (0-10)	3 (0-13)	4 (0-12)
3) 8 hours	3 (0-10)	2 (0-8)	4 (0-11)
4) More than 8 hours	2 (1-8)	2 (1-4)	2 (1-6)
X^2; p	3.257; 0.354	11.276; **0.010*** **Difference: 1-2,3,4**	12.125; **0.007*** **Difference: 1-2,3,4**
Duration of daily work			
10 hours or less	4 (0-15)	4 (0-13)	4 (0-12)
11-16 hours	2 (0-10)	2.5 (0-13)	4 (0-11)
Z; p	-2.259; **0.024***	-1.211; 0.226	-0.665; 0.506
Life affected by COVID-19 process			
Yes	3 (0-15)	3 (0-13)	4 (0-12)
No	2 (0-10)	2 (0-7)	3 (0-9)
Z; p	-2.119; **0.034***	-2.883; **0.004***	-2.208; **0.027***
Total	3.21±3.05	3.50±2.77	4.43±2.97

Abbreviations: Z: Mann Whitney U Analysis X^2: Kruskal Wallis Analysis

*:p<0.05 (statistically significant)

Discussion

The COVID-19 pandemic caused uncertainty and anxiety almost in all societies [11]. This study was conducted to determine the factors related with depression, anxiety and stress levels of hairdressers during COVID-19 pandemic. The study results determined that the stress, anxiety and depression levels of hairdressers were negatively affected by the COVID-19 pandemic, less income than expense, and having received psychological treatment or psychotherapy (p<0.05). COVID-19 driven economic losses had a more devastating impact on individuals with lower income levels [5]. With the COVID-19 pandemic, the closure of the service sector especially due to quarantine practices applied around the world adversely affected many occupational groups in both economic and mental terms [12]. Individuals have lost their jobs due to quarantine and closure, which has deeply affected people's lives both economically and mentally. The problems faced in meeting daily needs or basic needs such as eating and drinking, and inability to meet household expenses ended in serious difficulties, which caused individuals to have anxiety and uncertainty about the future [13, 14]. As a result of the long-term closure due to the quarantine practices, particularly workplaces of hairdressers faced significant economic losses. The uncertainty and fear experienced due to the pandemic also caused an increase in their anxiety, stress and depression levels as in all other members of the society, leaving negative effects on their daily lives.

According to the study results, depression, anxiety and stress scores of those who had previously received psychiatric treatment or psychotherapy were significantly higher (p<0.05). In a similar vein, a community-based study in Saudi Arabia found that those who had previously received a psychiatric diagnosis and treatment had a high anxiety score from the DASS-21 scale during the COVID-19 pandemic [15]. A study by Tao et al. (2021) also found that people who had a previous psychiatric diagnosis

were at greater risk for depression and anxiety [16]. This can be attributed to the triggering of previously experienced and diagnosed psychiatric problems during the pandemic, the decrease in socialization due to the quarantine practices, the increase in fear and anxiety arising from the pandemic, the increase in asocial behaviors, the deterioration of sleep patterns, and the economic concerns.

This study found that depression and stress levels were significantly higher in women than men. Similarly, there are studies indicating that women had higher depression symptoms due to the quarantine applied during the COVID-19 pandemic, domestic violence or psychiatric symptoms [17-20]. These findings support the finding that depression was more common among women compared to men before the COVID-19 pandemic in a similar vein [21]. This can be attributed to the fact that women became more disadvantaged in terms of gender, experienced unemployment and economic losses, and were more affected by domestic violence during the COVID-19 pandemic [14, 22].

The study results indicated that those who themselves or their family members had chronic disease had significantly higher anxiety scores (p<0.05). Similarly, in the research conducted by Özdin and Bayrak-Özdin (2020), the health anxiety, depression and anxiety scores of those with chronic diseases due to the COVID-19 pandemic were found to be higher than those without chronic diseases. The same study reported that having an individual aged 60 years and over in the family was not statistically significant [18]. Similarly, other studies reported that anxiety scores of those with a chronic disease were higher than those without a chronic disease [23, 24]. COVID-19 disease has a severe prognosis in the elderly and those with chronic diseases within the society. Advanced age and the presence of chronic disease are among the greatest risk factors in mortality due to infection [25, 26]. This may cause fear and anxiety in individuals with chronic diseases due to thoughts such as dying or the loss of a relative in case of

contracting COVID-19 infection, hospitalization and having severe disease. This suggests that anxiety or stress can be triggered in these individuals and may affect their daily lives.

The results showed that those who had a sleep duration of six hours or less had significantly higher stress and depression scores (p<0.05). The COVID-19 pandemic adversely affected individuals in many aspects, one of which was the increase in the time of mandatory stay at home due to the quarantine and the change of daily life routines at home resulted in the change of sleep habits. Individuals' lifestyles, educational status, occupations and employment status, area of residence, unusual experiences with COVID-19 infection, stress and anxiety levels caused them to experience severe insomnia [27, 28]. In the literature, depression, anxiety and posttraumatic stress disorder are associated with sleep quality. It is reported that impaired sleep quality can be the triggering factor for this [20]. Furthermore, there may be an increase in sleep problems due to the changes in daily routines (inability to go to work, loss of work, staying at home for a long time, increased child care, increase in housework, economic loss, concerns about earning their living, economic concerns, etc.). In parallel with this, there may be increase in the symptoms of stress and depression due to having sleep problems. The depression, anxiety and stress levels of individuals increased due to the problems experienced in the provision of counseling and treatment services as well as adaptation problems to the changes in daily life routines, particularly after the home lockdown.

Conclusion

Many sectors were affected due to the lockdown measures during the COVID-19 pandemic, and hairdressers in the service sector were among those affected most by these measures. They could not provide service and did not make any income. This affected them not only economically but also mentally. Based on the results obtained from this study, it is very

important to provide mental support to small business owners, particularly hairdressers during COVID-19 and to make some arrangements that can facilitate their living conditions. In addition there is no research that determines the economic and mental effect of artisan due to COVID-19. From this point of view, this research can make a significant contribution to the literature. Increasing the number of studies to determine the economic and mental response of small business owners due to the COVID-19 pandemic can be useful in terms of revealing the importance of the problem and guiding the measures to be taken.

Limitations

That the research data was reached 103 individuals only can be considered an important limitation of the research.

Acknowledgments

References

1. Eroğlu E. An assessment of the economic impacts of COVID-19 and the economic response to pandemic. International Journal of Public Finance, 2020; 5(2): 211-236. DOI: 10.30927/ijpf.803572

2. Haleem A, Javaid M, Vaishya R. Effects of COVID 19 pandemic in daily life. Curr Med Res Pract., 2020; 10(2): 78–79. doi: 10.1016/j.cmrp.2020.03.011

3. Subaşı-Baybuğa M, Akgün Ş. Reflections of the COVID-19. (In) An interdisciplinary look at the COVID-19 pandemic. Ed: Nursen Vatansever Deviren, Filiz Daşkıran (1st edition). Ankara (Türkiye): Nobel Akademik Yayıncılık Eğitim Danışmanlık Tic Ltd.Şti; 2021, p. 35. ISBN : 978-625-7492-70-6

4. Polat AY, Muğaloğlu E, Tekin H, Doğan E. Examining the economic impact of the COVID-19 epidemic with sectoral and general uncertainty indices and sectoral emergency measures (28-06-2021). Project Number: 120K554 TÜBİTAK, Coordinator: Ali Yavuz Polat. Avaliable from:https://tubitak.gov.tr/sites/default/files/20689/covid_19_ve_toplum_salginin_sosyal_beseri_ve_ekonomik_etkileri_sorunlar_ve_cozumler.pdf.

5. Nicola M, Alsaf Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifdis C, Agha M, Agha, R. The socioeconomic implications of the coronavirus and COVID-19 pandemic: a review. International Journal of Surgery, 2020; 78: 185–193. doi: 10.1016/j.ijsu.2020.04.018

6. Reznik A, Gritsenko V, Konstantinov V, Khamenka N, Isralowitz R. COVID-19 fear in Eastern Europe: validation of the fear of COVID-19 scale. Int J Ment Health Addict, 2020; 19(5): 1903-1908. DOI: 10.1007/s11469-020-00283-3

7. Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V. Study of knowledge, attitude, anxiety & perceived mental health care need in indian population during COVID-19 pandemic. Asian J Psychiatr., 2020; 51: 102083. doi: 10.1016/j.ajp.2020.102083

8. Cohen J. Statistical power analysis for the behavioral sciences (2nd edition). Lawrence New York (USA): Erlbaum Associates Publisher, 1988, p. 54.

9. Yeşilyurt S, Çapraz C. Ölçek geliştirme çalışmalarında kullanılan kapsam geçerliği için bir yol haritası. Erzincan University Journal of Education Faculty, 2018; 20(1): 251-264.

10. Yılmaz Ö, Boz H., Arslan A. The validity and reliability of depression stress and anxiety scale (DASS21) Turkish short form. Research of Financial Economic and Social Studies, 2017; 2(2): 2602-2486.

11. Nelson LM, Simard JF, Oluyomi A, Nava V, Rosas L, Bondy M, Linos E. US public concerns about the COVID-19

pandemic from results of a survey given via social media. JAMA Intern Med., 2020; 180: 1020-1022. DOI: 10.1001/jamainternmed.2020.1369

12. Fiorillo A, Gorwood P. The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. Eur. Psychiatry, 2020; 63 (e32). DOI: 10.1192/j.eurpsy.2020.35

13. Deguchi Y, Iwasaki S, Niki A, Kadowaki A, Hirota T, Shirahama Y, Nakamichi Y, Okawa Y, Uesaka Y, Inoue K. Relationships between occupational stress, change in work environment during the COVID-19 pandemic, and depressive and anxiety symptoms among non-healthcare workers in Japan: a cross-sectional study. Int J Environ Res Public Health, 2022; 19(2): 983. DOI: 10.3390/ijerph19020983

14. Lei L, Huang X, Zhang S, Yang J, Yang L, Xu M. Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 epidemic in Southwestern China. Med. Sci. Monit, 2020; 26: e924609. DOI: 10.12659/MSM.924609

15. Alkhamees AA, Alrashed SA, Alzunaydi AA, Almohimeed AS, Aljohani MS. The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia. Comprehensive Psychiatry, 2020; 102: 152192. DOI: 10.1016/j.comppsych.2020.152192

16. Tao J, Lin Y, Jiang L, Zhou Z, Zhao J, Qu D, Li W, Zhu Y. Psychological impact of the COVID-19 pandemic on emergency dental care providers on the front lines in China. International Dental Journal, 2021; 71(3): 197–205. DOI: 10.1016/j.identj.2020.12.001

17. Liu S, Yang L, Zhang C, Xiang Y, Liu Z, Hu S, Zhang B. Online mental health services in China during the COVID-19 outbreak. Lancet Psychiatry, 2020; 7(4): e17–e18.

18. Özdin S, Bayrak-Özdin S. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: the importance of gender. Int. J. Soc. Psychiatry, 2020; 66(5): 504–511. DOI: 10.1177/0020764020927051

19. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate psychological responses and associated factors during the initial stage of the 2019 Corona virus Disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health, 2020; 17(5): 1729. DOI: 10.3390/ijerph17051729

20. Wang C, Pan R, Wan X, Tan Y, Xu L, McIntyre RS, Choo FN, Tran B, Ho R, Sharma VK, Ho C. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. Brain Behav. Immun, 2020; 87: 40-48. doi: 10.1016/j.bbi.2020.04.028

21. World Health Organization (WHO), (2022). Mental disorders. [8 June 2022]. Avaliable from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders#:~:text=Mental%20disorders%20include%3A%20depression%2C%20bipolar,mental%20disorders%20such%20as%20depression.

22. González-Sanguino C, Ausín B, Castellanos MA, Saiz J, López-Gómez A, Ugidos C, Muñoz, M. Mental health consequences during the initial stage of the 2020 coronavirus pandemic (COVID-19) in Spain. Brain Behav. Immun 2020; 87: 172-176. DOI: 10.1016/j.bbi.2020.05.040

23. Guo W, Li M, Dong Y, Zhou H, Zhang Z, Tian C, Qin R, Wang H, Shen Y, Du K, Zhao L, Fan H, Luo S, Hu D. Diabetes is a risk factor for the progression and prognosis of COVID-19.

Diabetes Metab. Res. Rev., 2020; 31: 3319. DOI: 10.1002/dmrr.3319

24. Mazza C, Ricci E, Biondi S, Colasanti M, Ferracuti S, Napoli C, Roma P. A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors. Int. J. Environ. Res. Public Health, 2020; 17: 3165. DOI: 10.3390/ijerph17093165

25. Vrettou CS, Mantziou V, Vassiliou A.G, Orfanos SE, Kotanidou A, Dimopoulou I. Post-intensive care syndrome in survivors from critical illness including COVID-19 patients: a narrative review. Life (Basel, Switzerland), 2022; 12(1): 107. doi:10.3390/life12010107

26. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, Xiang J, Wang Y, Song B, Gu X, Guan L, Wei Y, Li H, Wu X, Xu J, Tu S, Zhang Y, Chen H, Cao B. Clinical course and risk factors for mortality of adult in patients with COVID-19 in Wuhan, China: a retrospective cohort study. The Lancet, 2020; 395(10229): 1054–1062. DOI: 10.1016/S0140-6736(20)30566-3

27. Lin LY, Wang J, Ou-Yang XY, Miao Q, Chen R, Liang FX, Zhang YP, Tang Q, Wang T. The Immediate impact of the 2019 novel corona virus (COVID-19) outbreak on subjective sleep status. Sleep medicine, 2021; 77: 348–354. DOI: 10.1016/j.sleep.2020.05.018

28. Liu CH, Zhang E, Wong G, Hyun S, Hahm HC. Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: clinical implications for U.S. Young Adult Mental Health. Psychiatry Research, 2020; 290: 113172. DOI: 10.1016/j.psychres.2020.113172