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Anxiety of Dental Professionals during Covid-19 Pandemic

Pinar Kiymet Karataban

Abstract

Coronavirus (COVID-19) is an enveloped RNA virus with a size of ~350 kilobase-pair and COVID-19 is commonly transmitted via aerosols, saliva, nasal droplets, and surface contact which causes severe acute respiratory tract infection among infected humans, and recently many cases declared with severe blood clotting. The average incubation period ranges from 4 to 14 days. The infected person usually presents fever accompanying an upper respiratory tract infection (RTI) and complaints of dry cough, and dyspnea. It is highly recommended to keep any suspected individuals in quarantine (isolation). After its first emergence in Wuhan, China in 2019 and then intercontinental spread it was declared as a pandemic by the World Health Organization in March 2020. The pandemic of COVID-19 deeply affected the whole world and healthcare workers as front liners are most at risk among professional groups. Dentistry is among the riskiest occupational groups that include all direct and indirect ways of COVID-19 spread. In this process, the dentists who experienced the effects of COVID-19 in the working conditions, economy, and social fields were psychologically negatively affected, and their anxiety, fear, and stress levels increased. In this review, we discuss the increased risk of the spread of coronavirus during dental operative procedures and the effects of the COVID-19 pandemic on the anxiety level, depression, and mental health of dental professionals.

Keywords: Covid-19 pandemic, uncertainty, anxiety, dentistry, dental professional

1. Introduction

A pandemic is defined as a worldwide epidemic occurring over a very wide area, crossing international boundaries and usually affecting a large number of people. The classical definition includes nothing about population immunity, virology, or disease severity. By this definition, pandemics can be said to occur annually in each of the temperate southern and northern hemispheres, [1] given those seasonal epidemics affecting a large number of people and there are certain criteria for a disease to cause a pandemic as declared by World Health Organization (WHO); It must be an epidemic disease that infected no one before, it must have dangerous consequences, and the disease must spread easily and quickly. COVID-19 disease was declared as a pandemic by WHO on March 11, 2020 [2, 3].

People who are in close contact with COVID-19 patients, especially healthcare professionals, are at high risk of contamination. Since routine health services are carried out in addition to the services related to the prevention of pandemic in the countries, filiation teams, physicians and nurses in charge of the treatment and

post-treatment care of patients, and dental professionals who perform aerosol-generating procedures and treatments are among high-risk occupational groups during the pandemic period. According to WHO's December 2020 data, 14% of people infected with COVID-19 around the world are healthcare workers, and in some countries, this rate can reach up to 35%.

The risks healthcare professionals face include physical, chemical, biological factors and psychosocial structure arising from the working environment. In the most general sense, stress is considered as an environmental factor and the resultant of this environmental factor perceived by the individual. The expected service from healthcare professionals and the ability to meet the expected service determines their stress or tension levels. Healthcare professionals are directly related to human health due to their work. Since they have major responsibilities, they may experience the stress arising from the working environment more intensely [4]. This responsibility and stress increased during the pandemic as an undeniable fact. In addition, in the literature there are studies that working in shifts negatively affect the physiological and psychological health of the healthcare workers. Also regarding the definition of their profession, healthcare professionals have life-threatening duties and responsibilities, plus stress and time pressure as the professional difficulties which are the factors that increase their level of anxiety [5, 6].

Because of the risk of eye contamination, inhalation, and swallowing of very intense aerosols produced during the procedures and the fact that dental professionals work very close to the patient, dentistry is one of the riskiest professions all over the world. The risk of dental operative procedures is not only limited to the risk of COVID-19 but also poses a risk of other viral and bacterial diseases; such as herpes and hepatitis. For this reason, during the pandemic, dental professionals face the risk of being infected with COVID-19 by their patients or their colleagues as well as carrying the infection to their families, relatives, or infecting their patients during dental practices [7, 8].

During the pandemic period, the stress and psychological pressure on them increased, and situations such as anxiety, fear, and high stress levels could adversely affect their mental health. At the same time, the daily worrying news through social media, news, and the increasing number of cases and deaths both in the countries and the world, difficult working conditions, difficulties in the provision of protective equipment, combined with the concerns of dentists in ensuring the well-being of themselves and the family causes increased fear, anxiety, and high-stress levels [9, 10].

The purpose of this review is to analyze the effects of the COVID-19 pandemic process on the mental health and psychology of dentists, who are among the riskiest occupational groups.

2. COVID 19 and mental health

COVID-19 pandemic is still in charge with the second and third waves of the new strains of the virus creating a massive public health crisis worldwide and caused health systems to collapse [11–13]. With the spread of COVID-19, challenges have arisen in both the medical and the dentistry fields in all countries. Mental health has been adversely affected due to factors such as working hours of healthcare professionals that take longer than normal, the risk of disease transmission and transmission to families, uncertainties regarding the pandemic, and working with additional personal protective equipment for a long time [4, 14, 15].

Besides, with the spread of COVID-19, mandatory measures have been taken for everyone in the world. In general, new rules such as social distance, the

obligation to wear a mask, lockdowns have started to come into effect in society. The imperatives in such social life have made the pandemic process even more difficult for healthcare professionals such as dentists and doctors, who already have difficulties during working hours, and have negatively affected their mental health and reduced their motivation to work. When asked about the factors necessary for healthcare to continue working with motivation in such periods, healthcare professionals listed their primary motivation sources as providing personal safety, obtaining sufficient information about the disease, and providing compensation support [16–21].

Dentistry is also among the riskiest professions in terms of cross-infection and includes all the ways COVID-19 spreads. It is an occupational group where the dentist may be at risk of being infected with COVID-19 through direct and indirect ways such as aerosols, sneezing, cough, saliva, working close to the patient, contamination from eyes, mouth, and nasal mucous membranes [22]. For this reason, it is natural for dentists to develop a fear of being infected during the pandemic, as there is a risk of not only getting infected from patients but also spreading COVID-19 to their families, peers, and patients [23].

Besides, fear and anxiety are strong emotions that can be associated with factors such as individuals' social lives, working conditions, economic impact, and insufficient personal protective equipment during the COVID-19 pandemic process. Therefore, before effective approaches can be developed for dentists and healthcare professionals, it is essential to recognize their specific sources of anxiety and fear. Knowing the source of these concerns and focusing on relieving them, rather than teaching general approaches to stress reduction, should be the focus [11, 24].

3. Economical effects

With the COVID-19 outbreak, one of the groups that have been heavily affected among healthcare professionals is dentists. Because of the aerosols released during dental procedures, oral mucosa, and the working distance close to the patient, the risk of cross-infection increases significantly. For this reason, routine treatments have been suspended in most places, except for emergency procedures. Some dental companies even had to lay off their employees [16]. For this reason, concerns have started to arise in dentists due to this economic lockdown. Providing only emergency treatments has had a profound effect, especially on dental professionals who have their own clinics [25, 26].

The decrease in income together with the supply chain difficulties of personal protective equipment and materials put dental professionals in a difficult situation.

In the study conducted by Schwendike et al., in Germany during the pandemic outbreak, when they analyzed the 90-day balance of income and expense in dental clinics, it was deduced that clinics made low profits and that the income-expense balance would deteriorate even more with the continuation of the pandemic, and even reversed. It has been concluded that some clinics will also come up against the possibility of closure [27].

Meanwhile, dental professionals need to consider the treatment needs of their patients in this compelling period, the economic conditions of their staff along with many parameters such as income, expenditure, and the risk of being infected with COVID or infecting others, and should decide to not working at all, perform emergency procedures or routine operations.

The fact that the dental professionals who closed their clinics even temporarily have a great concern about how they will be economically affected not only for themselves but also for the staff working with them.

In the results of an online survey study conducted by Faccini et al. in Brazil, it was concluded that 64.6% of the dentists who answered the questionnaire only did emergency patients' treatment and 58.5% of dentists continued their routine dental treatments. According to the survey, it was stated that in the states less affected from the pandemic, routine dental treatments continued more than the most affected states, and the majority of those who continue routine treatment are young individuals, and the elderly are the majority of dentists who temporarily closed clinics or performed emergency procedures only. Lower anxiety levels have been reported in the pandemic among young dentists, which is thought to be since older people experience more family and job anxiety and financial worries [28, 29].

4. Working conditions

During the COVID-19 pandemic, as in all healthcare professionals, dentists also have psychological challenges such as anxiety, stress, fear that can negatively affect their mental health.

Dentists are at risk in this process due to exposure to high amounts of aerosols, working close distance to the patient, direct contact with the patient's oral mucosa, and for COVID-19 having all transmission routes. Studies have also found that infected people have 91.7% viral load in their saliva. Due to these risks, fear of being infected with COVID-19 and transmitting the virus to both their patients and their families cause increased anxiety in dentists [11, 30, 31].

Ahmed et al. evaluated the fear and anxiety levels of dentists in a survey study involved 30 countries in which 657 dentists participated in March 2020. According to the results, 87% of the participants were afraid of COVID-19 contamination from their patients or colleagues, 90% were worried while treating patients suspected of being infected, and 92% feared infecting their families with the virus [32]. As a result of the survey conducted by Ammar et al. between March and May 2020, dentistry academics from many different countries were the participants, it was understood that COVID 19 triggered stress and 10% of the academicians had COVID-19-related traumatic stress. It was concluded that fear of infection is the primary cause of stress [33].

Healthcare professionals have great importance in controlling all diseases such as the COVID-19 pandemic, managing and monitoring the epidemic within the community. Dentistry, which has all direct and indirect transmission routes of COVID-19, is one of the risky occupational groups that dentists should take the highest level of precautions to protect both themselves and their patients from contamination during the pandemic process.

The adequacy of personal protective equipment in clinics, infection control, taking various precautions and trusting the working areas have a place in terms of decreasing the level of anxiety of dentists. Because not using personal protective equipment, thinking of other employees in the same working environment as an agent of contamination, and having close contact with patients are among the reasons that increase anxiety. Besides, the rate of emotional exhaustion, which is one of the symptoms of burnout, has increased with the raising the number of protective equipment used to minimize the risk of contamination and the duration of using the equipment. The use of N-95 masks is recommended during the patients' treatment and at least the surgical masks must be worn in occupational groups such as dentistry where the distance between the patient and the physician is less than 1 meter. The risk of trauma increases with the continuous use of these thick masks during the working period, wearing two-layer surgical gowns, being isolated in the work area, high risk of the work area, and the possibility of being

in contact with infected people. The fact that dentists do not eat, drink or go to the toilet during working hours in order not to get infected makes this process even more difficult [17, 34].

Subjective overload relates to staff perceptions of their circumstances, which, together with their coping strategies, determine their job stress level. As dentists experience stress due to work, their physical, behavioral, emotional, and psychological problems increase as a result of being exposed to high stress, especially during this period. Lack of adequate and correct equipment, the feeling that dentists are not able to perform the treatments in the most ideal and best way during the pandemic process, being have to make simpler treatments, and the demands for treatment that are not suitable for the pandemic process increase the personal burden. In a study analyzing the effect of COVID-19 and psychological factors on the increased psychological stress level in dentists working in Israel in 2020, it was understood that subjective overload led to increased psychological stress levels during the pandemic period [35, 36].

For all these reasons, dentistry is one of the riskiest occupational groups in terms of working conditions during the pandemic process, and it is among the professions in which the use of protective equipment is difficult during the working period and the working environment is psychologically challenging in terms of work stress.

5. Social effects

In the fight against COVID-19, one of the rules that everyone must follow to prevent the spreading of the disease has been the quarantine process. Quarantine is not just a process in which the individual is physically isolated. The individual is also in isolation socio-psychologically. During the quarantine process, fear of infection, quarantine period, internal distress, insufficient information about the disease, insufficient protective equipment and immediate access to food sources are among the stress-increasing factors [37].

Healthcare professionals, including dentists, are in risky groups. They fear not only being infected but also fear family members being infected because of them. For this reason, most healthcare professionals have had to live separately from their homes and families to avoid physical contact. Therefore, while psychological support is especially important in such periods, the emotional and social support provided by the families of healthcare professionals living separately is minimized [30, 31, 38]. In a study conducted in 2004, after the end of the quarantine period during the SARS pandemic period, more fatigue, irritability, insomnia, poor concentration, worsening job performance were observed in healthcare workers. Also, dentists and other healthcare professionals were stigmatized by the public, socially rejected, and faced discrimination since they provided healthcare services during the pandemic period and interacted with patients, so their mental health was adversely affected [39, 40].

Social interactions of dentists decrease because they stay in isolation for a long time not only at their homes but also within the clinics they work for. Normally, being confined to a limited area is a situation that creates mental pressure in the human being, as the daily working routines of dentists have changed greatly, the decrease in both social and physical contact with other dentists, the decrease in teamwork, and the disappearance of interaction between other employees has become a situation that further increases psychological distress [17].

Social support has been shown to reduce stress and anxiety levels and improve the sleep quality of healthcare professionals caring for patients with COVID-19. For this reason, it is important for dentists and other healthcare professionals to be

in constant communication with their families, loved ones, friends by phone and social media during such challenging times [41].

6. Conclusion and recommendations

It is understood that it is inevitable that dentists, who are healthcare workers, will also be affected by a pandemic such as COVID-19 that creates a public health crisis in the world and negatively affects people's lives. Working conditions, economic difficulties, social isolation, the risk of infection, and transmission negatively affected the mental health of dentists and increased fear and anxiety. Dentists, who are the riskiest group in terms of working conditions and environments, have psychologically challenging working conditions due to reasons such as the difficulty of working with protective equipment for a long time, the presence of insufficient protective equipment in the work environment, work stress, social isolation among their colleagues. In this process, the balance of income and expenditure has deteriorated economically, and the fact that the dentists who own the clinics, whose income decreased only with emergency dental treatments, closed their clinics, even temporarily, caused concern among dentists not only for themselves but also about how the staff working with them would be affected economically. Besides, dentists have been deprived of family support, as they have to live in isolation and separately to minimize the risk of contamination to the family and their relatives, not only in the working environment but also in their normal lives. They have experienced stigma and discrimination by the public in social life due to their working with patients closely. All these reasons have caused negative mental disorders such as fear, anxiety, and depression in dentists.

The main protective factors of psychosocial health in epidemics are protective-preventive regulations related to the working environment and the pandemic. To prevent this situation, it is necessary to take precautions to protect dentists in the working environment. Providing detailed information about the disease, providing adequate protective equipment, and the hygiene of the working environment make the dentist feel more confident in the working environment. Therefore, the dentist's fear of being infected with COVID-19 reduces the risk of infecting his family and patients.

Continuing social communication with the family, even if remotely, through phone, social media, and video calls is an important factor in maintaining family support. Studies have shown that social support from colleagues and family and positive responses from hospital management and supports are effective in coping with stress during the pandemic process of healthcare workers.

As a result, dentists and all healthcare professionals play a key role in reducing and preventing the spread of COVID-19 during the pandemic process and maintaining healthcare services with minimum disruptions. It is an undeniable fact that dentists are among the professional groups that are most deeply affected psychologically within the framework of these responsibilities.

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References

- [1] Heath K. The classical definition of a pandemic is not elusive, *Bull World Health Organ* 2011;89:539-540
- [2] https://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/
- [3] Zhu, N.; Zhang, D.; Wang, W.; Li, X.; Yang, B.; Song, J.; Zhao, X.; Huang, B.; Shi, W.; Lu, R.; et al. A novel coronavirus from patients with pneumonia in China, 2019. *N. Engl. J. Med.* 2020.
- [4] Temsah MH, Al-Sohime F, Alamro N, et al. The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *J Infect Public Health.* 2020;13(6):877-882. doi:10.1016/j.jiph.2020.05.021
- [5] Sakaoğlu HH, Orbatu D, Emiroglu M, Çakır Ö: Spielberger State and Trait Anxiety Level in Healthcare Professionals During the Covid-19 Outbreak: A Case of Tepecik Hospital (Article in Turkish)
- [6] Mousavizadeh L, Ghasemi S. Genotype and phenotype of COVID-19: Their roles in pathogenesis *Microbiol Immunol Infect.* 2020;S1684-1182(20)30082-7. doi:10.1016/j.jmii.2020. 03.022
- [7] Lu C-w, Liu X-f, Jia Z-f : 2019-nCoV transmission through the ocular surface must not be ignored. *Lancet (London, England).* 2020;395(10224): e39.
- [8] Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *International Journal of Oral Science.* 2020;12(1):1-6
- [9] González-Olmo MJ, Ortega-Martínez AR, Delgado-Ramos B, Romero-Maroto M, Carrillo-Díaz María. Perceived vulnerability to Coronavirus infection: impact on dental practice. *Braz Oral Res.* 2020;34:e044). doi:10.1590/1807-3107bor-2020.vol34.0044 19
- [10] Gavin B, Hayden J, Adamis D, McNicholas F. Caring for the psychological WellBeing of healthcare professionals in the Covid-19 pandemic crisis. *Ir Med J.* 2020;113(4):51
- [11] Aly, M. Elchaghaby, MA: Impact of novel coronavirus disease (COVID-19) on Egyptian dentists' fear and dental practice (a cross-sectional survey). *BDJ Open*, 6(1). doi:10.1038/s41405-020-00047-0),
- [12] Hamid H, Khurshid Z, Adanir N, Zafar MS, Zohaib S. COVID-19 pandemic and role of human saliva as a testing biofluid in point-of-care technology. *Eur. J. Dent.* 2, 1-7, <https://pubmed.ncbi.nlm.nih.gov/32492721/> (2020).),
- [13] Khachfe HH. et al. An epidemiological study on COVID-19: a rapidly spreading disease. *Cureus* 12, e7313, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7164711/> (2020)
- [14] Balasopoulou A, Kokkinos P, Pagoulatos D, et al. Psychological impact of COVID-19 on ophthalmologists-in-training and practising ophthalmologists in India. *BMC Ophthalmol.* 2020;68:994-998. doi:10.4103/ijo.IJO
- [15] Uzun ND, Tekin M, Sertel E, Tuncar A. Psychological and social effects of COVID-19 pandemic on obstetrics and gynecology employees. *J Surg Med.* 2020;4(5):355-358. doi:10.28982/josam.735384
- [16] The Mental Health Consequences of Coronavirus Disease 2019 Pandemic in dentistry Andrea

Vergara-Buenaventura, Mariella
 Chavez-Tuñon, Carmen Castro-Ruiz,
 Disaster Medicine and Public Health
 Preparedness, 10.1017/dmp.2020.190

[17] Tuncay FE, Koyuncu E, Özel Ş. A review of protective and risk factors affecting psychosocial health of healthcare workers in pandemics. *Ankara Med J.* 2020; 20(2): 488-504

[18] Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare Workers Emotions, Perceived Stressors and Coping Strategies During a MERS-CoV Outbreak. *Clin Med Res.* 2016;14(1):7-14. doi:10.3121/cm.r.2016.1303

[19] Lee SH, Juang YY, Su YJ, Lee HL, Lin YH, Chao CC. Facing SARS: Psychological impacts on SARS team nurses and psychiatric services in a Taiwan general hospital. *Gen Hosp Psychiatry.* 2005;27(5): 352-8. doi:10.1016/j.genhosppsych.2005.04.007

[20] Li Z, Ge J, Yang M, ve ark. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain, Behavior, and Immunity.* 2020;https://doi.org/10.1016/j.bbi.2020.03.007

[21] Simonds AK, Sokol DK. Lives on the line? Ethics and practicalities of duty of care in pandemics and disasters. *Eur Respir J.* 2009;34(2):303-9. (doi:10.1183/09031936.00041609

[22] Khurshid, Z., Asiri, F. Y. I. & Al Wadaani, H. Human saliva: non-invasive fluid for detecting novel coronavirus (2019-nCoV). *Int J. Environ. Res Public Health* 17,17-20, <https://pubmed.ncbi.nlm.nih.gov/32224986/2020>

[23] Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, Khurshid, Z. (2020). Fear and practice

modifications among dentists to combat novel coronavirus disease (COVID-19) outbreak. *International Journal of Environmental Research and Public Health*, 17(8), 2821. doi:10.3390/ijerph17082821

[24] Evren C, Evren B, Dalbudak E, Topcu M, Kutlu N. Measuring anxiety related to COVID-19: A Turkish validation study of the coronavirus anxiety scale. *Death Studies.* 2020:1-7.

[25] Coulthard P. Dentistry and coronavirus (COVID-19) - moral decision-making. *Br Dent J.* 2020;228(7):503-505. doi:10.1038/s41415-020-1482-1

[26] El-Hage W, Hingray C, Lemogne C, et al. Les professionnels de santé face à la pandémie de la maladie à coronavirus (COVID-19) : quels risques pour leur santé mentale ? [Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic: What are the mental health risks?] [published online Apr 22, 2020]. *Encephale.* 2020;S0013-7006(20)30076-2. doi:10.1016/j.encep.2020.04.008.

[27] Schwendick F., Krois J, Gomez J. (2020). Impact of SARS-CoV2 (Covid-19) on dental practices: Economic analysis. *Journal of Dentistry*, 103387. doi:10.1016/j.jdent.2020.103387

[28] Faccini M, Ferruzzi F, Mori AA et al. Dental care during COVID-19 outbreak: A web-based survey. *European Journal of Dentistry.* doi:10.1055/s-0040-1715990

[29] Jungmann SM, Witthöft M. Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to coronavirus anxiety? *J Anxiety Disord* 2020;73:102239

[30] Liu Z, Han B, Jiang R, Huang Y, Ma C, Wen J, et al. Mental health status of doctors and nurses during COVID-19

epidemic in China. Available at SSRN 3551329. 2020

[31] Wang L-Q, Zhang M, Liu G-M, Nan S-Y, Li T, Xu L, et al. Psychological impact of coronavirus disease 2019(COVID-19) epidemic on medical staff in different posts in China: A multicenter study. *Journal of Psychiatric Research*. 2020 Oct; 129: 198-205.

[32] Ahmed MA, Jouhar R, Ahmed N et al. Fear and practice modifications among dentists to combat novel coronavirus disease (COVID-19) outbreak. *Int. J. Environ. Res. Public Health* 2020, 17, 2821. <https://doi.org/10.3390/ijerph17082821>

[33] Ammar N, Aly NM, Folayan MO, Khader Y, Virtanen JI, Al-Batayneh OB, et al. (2020) Behavior change due to COVID-19 among dental academics—The theory of planned behavior: Stresses, worries, training, and pandemic severity. *PLoS ONE* 15(9): e0239961. <https://doi.org/10.1371/journal.pone.0239961>

[34] Sasangohar F, Jones SL, Masud FN, Vahidy FS, Kash BA. Provider burnout and fatigue during the COVID-19 pandemic: Lessons learned from a high-volume intensive care unit. *Anesth Analg*. 2020;10.1213

[35] Shacham M, Hamama-Raz Y, Kolerman R, Mijiritsky O, Ben-Ezra M, Mijiritsky E. COVID-19 Factors and Psychological Factors Associated with Elevated Psychological Distress among Dentists and Dental Hygienists in Israel. *Int. J. Environ. Res. Public Health* 2020, 17, 2900. <https://doi.org/10.3390/ijerph17082900>

[36] Horesh D, Kapel Lev-Ari R, Hasson-Ohayon I. Risk factors for psychological distress during the COVID-19 pandemic in Israel: Loneliness, age, gender, and health status play an important role. *British Journal of Health Psychology*. 2020.

[37] Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*. doi:10.1016/s0140-6736(20)30460-8

[38] Wu F, Ireland M, Hafekost K, Lawrence D. National mental health survey of doctors and medical students. Beyond Blue Publications 2013, Australia https://www.beyondblue.org.au/docs/default-source/research-project-files/bl1132-report---nmhdmss-full-report_web

[39] Serrano-Ripoll MJ, Meneses-Echavez J, Ricci-Cabello I ve ark. (2020) Impact of viral epidemic outbreaks on mental health of healthcare workers:A rapid systematic review and meta-analysis. *J Affect Disord* 23, 277:347-357

[40] Stuijzand S, Deforges C, Sandoz V Ve ark. (2020) psychological impact of an epidemic/pandemic on the mental health of healthcare professionals: A rapid review. *BMC Public Health* 2020, 20: 1230

[41] Xiao H, Zhang Y, Kong D, Li S, Yang N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit*. 2020;26:e923549. doi:10.12659/MSM.923549