CHAPTER 15

GLOBAL HEALTH STATUS IN THE COVID-19 PANDEMIC PERIOD: HOME QUARANTINE, OBESITY, AND PSYCHOLOGICAL BEHAVIOUR

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DOI: 10.26650/B/SS49.2021.006.15

ABSTRACT

The coronavirus pandemic has substantially changed the rhythm of our daily lives, our habits, and the way we communicate. It has become crucial to protect our mental health, as well as our physical health by taking measures during this outbreak. Besides, evaluation of the relationship between childhood and adult obesity and pandemics is needed. The purpose of this study is to evaluate the positive and negative indirect effects of COVID-19 on the environment and people, especially focusing on psychological factors and obesity. This article aims at a timely and comprehensive review of this rapidly evolving research topic in response to a growing number of publications related to emerging diseases. While many questions about COVID-19 remain to be answered, it can be said that this review, written in accordance with the literature, will help understand the life-threatening COVID-19 pandemic and people's state of physical (obesity prevalence) and mental health with the elimination of the disease.

Keywords: COVID-19, obesity, psychological effect, pandemic

Citation: Celebi, H., Bahadir, T., Simsek, I., Tulun, S., Gök, G., & Bilgin, M. (2021). Global health status in the COVID-19 pandemic period: Home quarantine, obesity, and psychological behaviour. In V. Bozkurt, G. Dawes, H. Gulerce, & P. Westenbroek (Eds), *The societal impacts of COVID-19: A transnational perspective* (pp. 221-225). Istanbul, Turkey: Istanbul University Press. <https://doi.org/10.26650/B/SS49.2021.006.15>

1. Introduction

One of the natural and unnatural disasters faced by the world is undoubtedly pandemics and they have had deep impacts on societies for centuries (Ekiz et al., 2020). Recent pandemics are as follows; SARS (Severe Acute Respiratory Syndrome) 2003, Influenza A H1N5 (bird flu) 2007, Influenza A H1N1 (swine flu) 2009, MERS (Middle East Respiratory Syndrome) 2012, Influenza A H7N9 2013, Ebola 2014 and Zika 2015 (Hui et al., 2020; Paules et al., 2020; Prompetchara et al., 2020; Velavan and Meyer, 2020; Zhou et al., 2020). Pandemic is a general name given to epidemics that spread over a wide area to more than one country or continent in the world. According to the definition by the World Health Organization (WHO), there must be three criteria for a disease to be classified as a pandemic (Maffetone and Laursen, 2020; C. Wang et al., 2020; Yi et al., 2020; Zhang and Ma, 2020). These include, being a new virus or mutated factor, easily transmitted to humans, and easy and continuous transmission from person to person. The impact level of pandemics on individuals varies depending on the infectivity and virulence of the virus, herd immunity, living habits and socio-economic conditions of individuals, risk factors of individuals in their lives, quality of health services in the country where they are located, and the climate's positive or negative effects on the ability of the pandemic factor. The new coronavirus outbreak (COVID-19 or 2019-nCoV), which is known to have emerged in Wuhan, China and has rapidly affected the world, has significantly changed the lives of people and the world economy (Guo et al., 2018; Zhu et al., 2020). Viruses, bacteria, and other microorganisms have been playing a vital role on earth for 3.8 billion years. The majority of them are harmless and are often required for ecosystems and human health. It is particularly possible to encounter many different types of viruses in animals. Diseases that can spread from animals to humans are called zoonoses. Zoonotic diseases include various groups of infections that can be caused by viruses, bacteria, fungi, and other organisms. Studies on zoonoses make up one of the biggest interests of the health sector (medicine and veterinary medicine). Like rabies, leptospirosis, anthrax, SARS, MERS, yellow fever, dengue fever, HIV, Ebola, Chikungunya, and coronaviruses; the common flu is also zoonotic (LePan, 2020). Wildlife associated zoonoses are one of the most significant threats to the world population among all diseases that have emerged recently. Three-quarters of the human diseases known to date have come from animals, and 60% of new diseases have been transmitted from wild animals. Failure to control a zoonosis on time results in pandemic.

The coronavirus family (CoV) has traditionally been regarded as non-lethal pathogen viruses for humans (about 15% of the common cold) (Paules et al., 2020). Coronaviruses

enveloped RNA viruses with a single-chain and positive polarity. Because they have positive polarity, they do not contain RNA-dependent RNA polymerase enzymes, whereas they encode this enzyme in their genomes. They possess rod-like extensions on their surfaces. These viruses are called Coronavirus (crowned virus) based on the meaning of “corona”, that is, “crown” in Latin (Fig. 2). Serious outbreaks originating from this family were faced twice, and these were the pandemics known as SARS-CoV and MERS-CoV that spread to many countries such as China in 2003 and Saudi Arabia in 2012. The current COVID-19 is the third CoV outbreak recorded in human history. COVID-19 was first reported from Wuhan to the Chinese National Health Commission on December 31, 2019, and the first fatal case was reported on January 15, 2020 (Yi et al., 2020; Zhu et al., 2020). During this period, the outbreak started spreading rapidly to nearby regions and countries. On January 30, 2020, WHO declared this outbreak a global health emergency. Information and news about the COVID-19 pandemic has reached an alarming level with many new cases and deaths (Fig. 1). Since social distancing, quarantine, and isolation practices have been made mandatory in countries, long-term negative effects can be observed (Santos, 2020). Moreover, the duration of this has been stressful and it is not known how the pandemic will affect people’s lifestyles or when they can return to regular life conditions due to the unknown long-term state of the virus. This general uncertainty makes it difficult to plan for the future and has caused an increase in obesity and mental problems in individuals. Although the physicochemical properties of COVID-19 are not yet known, the virus is known to survive in dry and humid environments for up to 2 to 5 days (Yi et al., 2020). It has been reported that COVID-19 is sensitive to ultraviolet rays and heat for 30 minutes at 56°C, 80% ethyl alcohol products, disinfectants containing chlorine, as well as some while some oil solvents which can effectively wipe off the virus (Turkey Republic Health Ministry, 2020; Zhou et al., 2019). A comparison of COVID-19 with MERS-CoV and SARS-CoV in terms of differences, death rates, and transmission rates are given in Table 1.

Table 1. Comparison of COVID-19 with SARS-CoV and MERS-CoV (Yi et al., 2020)			
Comparison items	COVID-19	MERS-CoV	SARS-CoV
Characteristics			
Date extracted from	Dec. 2020 – Feb. 2020	Sept. 2012	Dec. 2003
Place of origin	Wuhan, China	Jeddah, Saudi Arabia	Guangdong China
Age range	56 (22-92)	56 (14-94)	39.9 (1-91)
Male/Female sex ratio	1:3:1	3.3:1	1:1.25
Mortality rate	2%	34%	6%
Confirmed cases (Global)	6.181.781	2494	8096
R_0	4.7 – 6.6	0.45 – 0.91	0.86 – 1.88
Incubation period (day)	7 – 14	5.0 – 6.9	4.4 – 6.9
Symptoms			
Fever	93%	98%	99-100%
Dry cough	70%	47%	29-75%
Dyspnea	35%	72%	40-42%
Diarrhea	6%	26%	20-25%
Sore throat	4%	21%	13-25%

Indicators (active case numbers, spreading rate, etc.) show that COVID-19 has higher spreading potential than MERS-CoV and SARS-CoV (see Fig. 1). Therefore, controlling the COVID-19 pandemic seems much more difficult than controlling outbreaks of MERS-CoV and SARS-CoV (Xie and Chen, 2020). Besides, recent research has highlighted the similarities between COVID-19 and coronaviruses found in bats of the genus *Rhinolophus*, which are considered to be the natural reservoirs of the virus. Bats carry a large number of viruses that have evolved together over their long evolutionary history. They easily spread these viruses and easily catch new ones due to their ability to fly over long distances and they live in crowded groups.

The worldwide distribution and spreading potential of COVID-19 cases has been in a continuous increasing trend since December, as shown in Fig. 1. As a result of the increase in COVID-19 spreading potential, a mandatory lifestyle has emerged where everyone starts working from home, one-to-one interaction is virtually zeroed, and all education is remotely computer-assisted. This obligatory transformation has rapidly transformed the world into an “online” laboratory and introduced concepts such as “new digital world” and “new normal” into our lives.

Source: **Worldometer** - www.worldometers.info

Figure 1: Worldwide distribution and spread potential of Covid-19 cases (Hiscott et al., 2020)

Quarantine and isolation are basic practices that can minimize or prevent the impact of a wide variety of infectious pandemics of the past and present (Center of the Disease Control and Prevention, 2017). The countries of the world have faced difficulties to control the spread of viruses from the CoV family in the past and today. Accordingly, keeping populations at home and the effects of precautionary conditions have had negative mental effects on people. Previous experience with pandemics has certainly demonstrated the effectiveness of quarantine and isolation measures (Mattioli et al., 2020; Parmet and Sinha, 2020). However, quarantine is generally an unpleasant situation for individuals and it can cause various behavioral changes. In this case, besides the potential benefits of compulsory quarantine, individuals may also experience mental and psychological perception problems (Suppawittaya et al., 2020). Much the same as all pandemics, the COVID-19 pandemic can have not only physical health effects but also direct and indirect effects that affect many fields. According to a wide range of databases, especially PubMed, a large number of medical articles (publications, research) on COVID-19 have been published in under two months. On the other hand, studies addressing indirect effects remain limited. This review attempts to outline the impact of the new and rapidly developing COVID-19 on obesity and psychological problems.

2. Literature Survey

All academic areas related to COVID-19 and effects were determined by the electronic scanning of MEDLINE, PubMed, Google academic, ISI web of Science, Springer, Taylor-Francis, Elsevier and Scopus etc. without time and language limitations. The current scientific literature was searched with the following keywords: “COVID-19”, “SARS-CoV2”, “Pandemic”, “Obesity”, “weight gain”, “Psychology”, “Psychosocial”, “Psychiatry”, “marginal”, “indirect effect”, “mental health”, “Quarantine”, “Social behaviours” and “Food behaviours” etc. The final search date for all databases was June 11, 2020.

3. Relationship Between COVID-19 and Obesity

In December 2019, the city of Wuhan in Hubei Province of China became the center of an unknown pneumonia pandemic, which was later named as the coronavirus disease 2019 (COVID-19) by the World Health Organization. Currently, there is no specific, effective antiviral drug or vaccine against COVID-19 infection for the potential treatment of humans. Apart from the positive effects that the COVID-19 pandemic has had on the environment, it has some negative effects in terms of health. In particular, individual isolation, home, and other environment quarantines have unavoidably changed people’s lifestyles (watching TV for a long time, using a computer, sleeping, etc.). Compulsory quarantine and isolation at home can trigger anxiety and stress in individuals. Some studies have examined the relationship between anxiety and stress and eating and drinking behavior and found that people cope with stress by eating and drinking to feel happier. This stress-focused behavior often leads to excessive weight gain as a result of decreased physical activity along with an unhealthy and unbalanced diet (Pietrobelli et al., 2020; Rundle et al., 2020b). Obesity, the accumulation of fat in a body on a health-threatening degree, is today accepted as a common health problem worldwide by international standards (An, 2020; Hussain et al., 2020; Torres and Nowson, 2007). The prevalence of obesity worldwide is increasing at an alarming rate (about 50% of the population is overweight or obese in industrialized countries). In addition to the current situation, practices for protection against COVID-19 virus can result in excessive fattening in regular individuals over time. As a result of the increase in adipose tissue, various diseases (diabetes, hypertension, cardiovascular disease, liver, and kidney disease) occur in the individuals and body mechanisms such as the respiratory, immune, cardiovascular, muscular, and skeletal systems weaken (Maffetone and Laursen, 2020; Polito et al., 2018; Bialek et al., 2020; Maffetone et al., 2017).

Most recent studies on the relationship between viral infections and obesity have been conducted on Adenovirus 36 (Adv36). However, research on COVID-19 remains limited (Maier

et al., 2018; Misumi et al., 2019; Rundle et al., 2020a). The most significant problem with isolation at home to protect against COVID-19 is physical inactivity. Inactivity or decreased physical activity can increase obesity (Ferreira et al., 2020; Frühbeck et al., 2020; WHO, 2010; Woods et al., 2020). Adipose tissue is a multifunctional endocrine organ involved in many physiological and metabolic processes (Balanzá-Martínez et al., 2020; Zachary et al., 2020). However, excessive fattening leads to metabolic disorders, an increased risk of infection, and an increase in various diseases in individuals. Therefore, the immune system will be adversely affected by increasing obesity and the impact of COVID-19 will increase (Abbas et al., 2020; Kassir, 2020; Rodríguez et al., 2020). As shown in Fig. 2, a regular individual faces obesity due to a lifestyle with habits such as immobility, vitamin D deficiency, and excessive food consumption as a result of isolation (Luzi and Radaelli, 2020). Consequently, while obesity continues to increase all over the world, the pandemic duration poses a serious risk in this increase and creates the concept of quarantine obesity. During the pandemic period, time spent in the kitchen increased in terms of cooking and eating. However, our physical activities were limited. This process has gradually led to quarantine obesity, but individuals need to consider the obesity factor when organizing their new lifestyles. In this context, physical activity, exercise, and balanced nutrition should be practiced in homes and other settings. Positive contributions can be made to one's metabolic and immunological system in this way.

Figure 2: Indirect effect on obesity as a result of quarantine and home isolation to protect from COVID-19 (Luzi and Radaelli, 2020; Maffetone and Laursen, 2020)

In the duration of COVID-19, three main factors indirectly affect obesity (Fig. 2). While individual isolations and home quarantines are mandatory among these factors, lifestyle and habits appear as non-mandatory variable parameters. Pandemic-induced psychological changes occur differently in each individual. Some individuals have a desire to glut in this psychological state. Some individuals behave just the opposite. In addition, the increased time spent at home increases the frequency of consuming drinks with high caffeine content such as tea and coffee. As a result of this, eating habits at night and sleeping problems increase. Thus, obesity and psychological problems occur with the effects of COVID-19.

4. Psychological Circumstances During COVID-19 Period

Although great emphasis was placed on just the high contagiousness and lethality of the COVID-19 infection on 11 March 2020 by the World Health Organization, the pandemic also remains important in terms of psychiatric and mental health (Santos, 2020). Currently, the effects of COVID-19 and other past pandemics on individuals in terms of psychiatry are not completely known despite intensive research being conducted in the literature. During the pandemic period, situations such as disruption and unexpected change of routine life, sudden change of known safe space understanding, loss of expectations and goals, disruption of plans, or postponements bring about mental problems (Brooks et al., 2020; Rubin and Wessely, 2020; WHO, 2020; Xiang et al., 2020). During the COVID-19 pandemic, which is accepted as an extraordinary situation, healthy individuals can have different emotions (shock and denial, stress, anxiety, fear, loss of self-control, anxiety, panic, anger, intolerance, tension, hopelessness, restlessness, guilt, helplessness, loneliness, dysphoria, stigma, prejudice, suicidal thoughts, sleep problems, frustration, addiction or substance use, medical insecurity and conspiracy theories, etc.) (Betsch et al., 2020; Brooks et al., 2020; Chatterjee and Chauhan, 2020). It is a known fact that these emotions are quite usual reactions in sudden and unexpected situations. At this point, it can be said that the expressed emotions will not reach the level of psychological and mental illnesses as long as they are not exaggerated and continuous (Cabrera et al., 2020; Lima et al., 2020; Rogers et al., 2020). Psychological problems can arise if these feelings take control of the individual and mental effects such as panic attacks, anxiety disorders, hygiene obsessions, stress, sudden emotional changes, anxious and fearful behaviors, and burn-out syndrome can be observed in healthy individuals (Fig. 3) (Carvalho et al., 2020).

Figure 3: Psychological effects of COVID-19 in quarantine and isolation process
(Woods et al., 2020; Zhu et al., 2020)

COVID-19 virus causes health problems in two ways. The first is the physical health problems directly caused by the virus, and the other is psychological problems such as anxiety, panic and anxiety associated with the pandemic. As seen in Fig. 3, COVID-19 should not only be considered a medical health crisis, but also an emergency for mental health and human psychology. Infectious diseases affect not only the physical health of individuals but also the psychological health and well-being of the entire population, whether infected or not. In the early days of the pandemic, the physical consequences of the virus attracted more attention and the psychological consequences were disregarded. However, even if the pandemic ends, its psychological effects will likely last for months or even years after returning to our normal lives. In the face of this pandemic disease, typical trauma responses of denial, shock, and confusion are likely to be observed in individuals (Fig. 3). Denying the existence of the virus is a psychological defense mechanism that all people initially use as a means of coping and reflects the difficulty in accepting the pandemic. These emotional changes and psychological reflections do not affect each individual equally. In particular, the fact that

many healthcare professionals are at the forefront during the pandemic and have to deal with a heavier and more stressful workload than usual affects them more psychologically (Chen et al., 2020). These unselfish individuals in the health sector are subjected to deep psychological factors such as family separation, extraordinary situations, more exposure to COVID-19, fear of contamination, feelings of failure and insufficiency in helping patients. This rapidly developing situation can increase the risk of depression, anxiety, or burn-out syndrome for healthcare professionals. Quarantine and individual isolation, which is the most crucial protection practice against COVID-19, causes individuals to experience psychological and mental problems over time. Although quarantine measures protect against the spread of COVID-19, it constitutes a state that can trigger or increase major psycho-social problems (Mukhtar, 2020a; Vahia et al., 2020). COVID-19 reduced the sharing of enjoyable events, which brings about the emergence of uncertainty and loss of routine life and feelings of 'loss, anxiety, fear, tiredness, stress, shame, depression, loneliness' (Mukhtar, 2020b; Temsah et al., 2020). COVID-19 pandemic, along with a fundamental physical health problem, also brings forth serious socio-economic and psychological crises. In fact, all these have a domino effect. On the other hand, since the focus of COVID-19 is physical health, the effects of the pandemic on psychological health in daily social life are regarded as less important. However, the human body works physically and mentally in a synergy. Physical health affects one's psychological health, and psychological health affects one's physical health. The COVID-19 pandemic, the end of which is not known exactly, requires seeking ways to protect one's mental health and reducing the psychological effects one can have for the benefit of one's physical health and social life. In this period, it is necessary to continue the activities and sharing as close to daily life habits as one can in the quarantine days to decrease the frequency of negative emotions and thoughts related to mental and psychological conditions. If the practices specified in the COVID-19 period are not performed and are not useful, it becomes imperative to seek professional support in case of highly obsessive behaviors, excessive depressive feelings, harm to yourself and others, insomnia, anorexia, desire to overeat (obesity factor), eating due to change of emotions, exaggerated social environment isolation, tantrums, etc. A limited number of studies have been carried out in this respect in the literature. In a study, Zhang and Ma (2020) investigated the effects of the COVID-19 pandemic on the quality of life with ≥ 18 -year-old local Chinese individuals in Liaoning Province, China. The data show that psychological problems surface in individuals while the COVID-19 pandemic persists. In another study, Lau et al. (2006) investigated pandemic-related psycho-social health in individuals living in Hong Kong during the SARS outbreak in 2003. As a result, they determined that pandemic had psychological effects on individuals. In a study conducted by

W. Wang et al. (2020) in China, it was observed that access to detailed, up-to-date, and correct health information by individuals and taking personal precautions (hand hygiene, wearing a mask, etc.) decreased the level of psychological effects, stress, depression, and anxiety. Zhu et al. (2020) found that the psychological conditions of people affected by COVID-19 in China put great psychological pressure on everyone, including the healthcare staff and the general population. As a result of this study, they observed that approximately 20% of the participants had psychological health problems. Post-quarantine psychological effects are also important, and individuals may have psychological problems due to socioeconomic distress and financial losses (Dubey et al., 2020; Vinkers et al., 2020).

5. Conclusions

There is a linear relationship between the COVID-19 outbreak and increased obesity and psychological changes. This study examines the indirect effects of the COVID-19 outbreak in line with the literature and contributes to some important research fields in the future. Two new concepts have entered people's daily lives, especially as a result of research and experiences. With the combination of COVID-19's high contamination characteristics and quarantine applications, 'Corona Obesity' and 'Coronaphobia' have become the concepts that have taken their place in our future life. Therefore, as a result of this review on the indirect effects of COVID-19, suggestions on obesity, and psychology can be listed as follows:

1. In the COVID-19 pandemic, the psychological and behavioral responses of individuals should be systematically examined.
2. More attention should be given to the social impact while planning and implementing precautions against pandemics.
3. The domino effect of COVID-19 and other pandemics (tourism, travel, health sector, economic activities, human relations, etc.) should be evaluated from every angle possible.
4. COVID-19 has changed almost every aspect of people's lives, from school to work, sports, where we eat and what we do, and all these changes have affected people both physically and psychologically. In such times, applications of psychological support (TV programs, public spots, advertisements, etc.) should be carried out in addition to the physical health aspect. Also, online applications developed for individuals to manage stress and anxiety (Calm, Headspace, Smiling Mind, Daylio, etc.) should be evaluated.

5. With COVID-19, environmental studies to protect healthy ecosystems and restore damaged ones to health (halving our ecological footprint in nature, halting the loss of natural habitats, stopping the extinction of living species, etc.) should be carried out.
6. The applicability of the 'One Health' concept should accelerate across the world, which is a concept based on the basis that human health is closely linked to the health of other animal species and the environment. For the Single Health approach to be truly effective, there is a need for stronger and systematic interaction between relevant occupational groups such as physicians, veterinarians, epidemiologists, environmentalists, and wildlife experts, as well as sociologists, economists, and lawyers, which is stated in the Environmental Impact Assessment Report (EIA).

As with all pandemics, COVID-19 will be brought under control over time and the world will return to healthy days; however, the work we do today and the steps we take can lead to changes that will deeply influence the future. Thus, let us continue to stay at home and take part in life from home, appreciating the value of quarantine and isolation days.

References

- Abbas, A.M., Fathy, S.K., Fawzy, A.T., Salem, A.S., & Shawky, M.S. (2020). The mutual effects of COVID-19 and obesity. *Obesity Medicine*, 19, 100250.
- An, R. (2020). Projecting the impact of the coronavirus disease-19 pandemic on childhood obesity in the United States: A microsimulation model. *Journal of Sport and Health Science*, 9(4), 302-312.
- Balanzá-Martínez, V., Atienza-Carbonell, B., Kapczinski, F., & De Boni, R.B. (2020). Lifestyle behaviours during the COVID-19 – time to connect. *Acta Psychiatrica Scandinavica*, 141, 399-400.
- Betsch, C., Wieler, L.H., & Habersaat, K. (2020). Monitoring behavioural insights related to COVID-19. *The Lancet*, 395(10232), 1255-1256.
- Bialek, S., Boundy, E., Bowen, V., Chow, N., Cohn, A., Dowling, N., Ellington, S., Gierke, R., Hall, A., MacNeil, J., Patel, P., Peacock, G., Pilishvili, T., Razzaghi, H., Reed, N., Ritchey, M., & Sauber-Schatz, E. (2020). Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) — United States, February 12–March 16, 2020. *Morbidity and Mortality Weekly Report (MMWR)*, 69(12), 343-346.
- Brooks, S.K., Webster, R.K., Smith, L.E., 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*, 395(10227), 912-920.
- Cabrera, M.A., Karamsetty, L., & Simpson, S.A. (2020). Coronavirus and its implications for psychiatry: a rapid review of the early literature. *Psychosomatics*, Article in press.
- Carvalho, P.M. de M., Moreira, M.M., de Oliveira, M.N.A., Landim, J.M.M., & Neto, M.L.R. (2020). The psychiatric impact of the novel coronavirus outbreak. *Psychiatry Research*, 286, 112902.
- Center of the Disease Control and Prevention, (2017). Quarantine and Isolation [WWW Document]. 2015. Retrieved from <https://www.cdc.gov/quarantine/index.html> (accessed 6.11.20).
- Chatterjee, K., & Chauhan, V.S. (2020). Epidemics, quarantine and mental health. *Medical Journal Armed Forces India*, 76(2), 125.

- Dubey, S., Biswas, P., Ghosh, R., Chatterjee, Subhankar, Dubey, M.J., Chatterjee, Subham, Lahiri, D., & Lavie, C.J. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 779–788.
- Ekiz, T., İlman, E., & Dönmez, E. (2020). Bireylerin sağlık anksiyetesi düzeyleri ile covid-19 salgını kontrol algısının karşılaştırılması. *International Journal of Health Management and Strategies Research*, 6(1), 139–154.
- Ferreira, M.J., Irigoyen, M.C., Consolim-Colombo, F., Saraiva, J.F.K., & De Angelis, K. (2020). Vida Fisicamente Ativa como Medida de Enfrentamento ao COVID-19. *Arquivos Brasileiros de Cardiologia*, 114(4), 601–602.
- Frühbeck, G., Baker, J.L., Busetto, L., Dicker, D., Goossens, G.H., Halford, J.C.G., Handjieva-Darlenska, T., Hassapidou, M., Holm, J.-C., Lehtinen-Jacks, S., Mullerova, D., O'Malley, G., Sagen, J. V., Rutter, H., Salas, X.R., Woodward, E., Yumuk, V., & Farpour-Lambert, N.J. (2020). European Association for the Study of Obesity Position Statement on the Global COVID-19 Pandemic. *Obesity Facts*, 2(2), 292–296.
- Guo, H., Bi, C., Zeng, C., Ma, W., Yan, L., Li, K., & Wei, K. (2018). Camellia oleifera seed shell carbon as an efficient renewable bio-adsorbent for the adsorption removal of hexavalent chromium and methylene blue from aqueous solution. *Journal of Molecular Liquids*, 249, 629–636.
- Hiscott, J., Alexandridi, M., Muscolini, M., Tassone, E., Palermo, E., Soultioti, M., & Zevini, A. (2020). The global impact of the coronavirus pandemic. *Cytokine & Growth Factor Reviews*, 53, 1–9.
- Hui, D.S., I Azhar, E., Madani, T.A., Ntoumi, F., Kock, R., Dar, O., Ippolito, G., Mchugh, T.D., Memish, Z.A., Drosten, C., Zumla, A., & Petersen, E. (2020). The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health — The latest 2019 novel coronavirus outbreak in Wuhan, China. *International Journal of Infectious Diseases*, 91, 264–266.
- Hussain, A., Mahawar, K., & El-Hasani, S. (2020). The Impact of COVID-19 Pandemic on Obesity and Bariatric Surgery. *Obesity Surgery*, 30, 3222–3223.
- Kassir, R. (2020). Risk of COVID-19 for patients with obesity. *Obesity Surgery*, 21(6), e13034.
- Lau, J., Yang, X., Tsui, H., Pang, E., & Wing, Y. (2006). Positive mental health-related impacts of the SARS epidemic on the general public in Hong Kong and their associations with other negative impacts. *Journal of Infection*, 53(2), 114–124.
- LePan, N. (2020). Visualizing the History of Pandemics [WWW Document]. 2020. Retrieved from <https://www.visualcapitalist.com/history-of-pandemics-deadliest/> (accessed 6.11.20).
- Lima, C.K.T., Carvalho, P.M. de M., Lima, I. de A.A.S., Nunes, J.V.A. de O., Saraiva, J.S., de Souza, R.I., da Silva, C.G.L., & Neto, M.L.R. (2020). The emotional impact of Coronavirus 2019-nCoV (new Coronavirus disease). *Psychiatry Research*, 287, 112915.
- Luzi, L., & Radaelli, M.G. (2020). Influenza and obesity: its odd relationship and the lessons for COVID-19 pandemic. *Acta Diabetologica*, 57, 759–764.
- Maffetone, P.B., & Laursen, P.B. (2020). Revisiting the Global Overfat Pandemic. *Frontiers in Public Health*, 8, 51.
- Maffetone, P.B., Rivera-Dominguez, I., & Laursen, P.B. (2017). Overfat and Underfat: New Terms and Definitions Long Overdue. *Frontiers in Public Health*, 4, 279.
- Maier, H.E., Lopez, R., Sanchez, N., Ng, S., Gresh, L., Ojeda, S., Burger-Calderon, R., Kuan, G., Harris, E., Balmaseda, A., & Gordon, A. (2018). Obesity Increases the Duration of Influenza A Virus Shedding in Adults. *The Journal of Infectious Diseases*, 218(9), 1378–1382.
- Mattioli, A.V., Ballerini Puviani, M., Nasi, M., & Farinetti, A. (2020). COVID-19 pandemic: the effects of quarantine on cardiovascular risk. *European Journal of Clinical Nutrition*, 74, 852–855.
- Misumi, I., Starmer, J., Uchimura, T., Beck, M.A., Magnuson, T., & Whitmire, J.K. (2019). Obesity Expands a Distinct Population of T Cells in Adipose Tissue and Increases Vulnerability to Infection. *Cell Reports*, 27(2), 514–524.e5.

- Mukhtar, S. (2020a). Are individuals with cardiovascular disease at risk of COVID-19-related mental health problems or individuals with cardiovascular disease at risk of cardiovascular disease-related mental health problems during COVID-19? A psychological-psychiatric perspec. *Medical Hypotheses*, 144, 109919.
- Mukhtar, S. (2020b). Mental Health and Psychosocial Aspects of Coronavirus Outbreak in Pakistan: Psychological Intervention for Public Mental Health Crisis. *Asian Journal of Psychiatry*, 51, 102069.
- Parment, W.E., & Sinha, M.S. (2020). Covid-19 — The Law and Limits of Quarantine. *New England Journal of Medicine*, 382(15), e28(1)-e28(3).
- Paules, C.I., Marston, H.D., & Fauci, A.S. (2020). Coronavirus Infections—More Than Just the Common Cold. *American Medical Association*, 323(8), 707-708.
- Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., Antoniazzi, F., Piacentini, G., Fearnbach, S.N., & Heymsfield, S.B. (2020). Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study. *Obesity*, 28(8), 1382-1385.
- Polito, R., Nigro, E., Messina, A., Monaco, M.L., Monda, V., Scudiero, O., Cibelli, G., Valenzano, A., Picciocchi, E., Zammitt, C., Pisanelli, D., Monda, M., Cincione, I.R., Daniele, A., & Messina, G. (2018). Adiponectin and Orexin-A as a Potential Immunity Link Between Adipose Tissue and Central Nervous System. *Frontiers in Physiology*, 9, 982.
- Promptchara, E., Ketloy, C., & Palaga, T. (2020). Immune responses in COVID-19 and potential vaccines: Lessons learned from SARS and MERS epidemic. *Asian Pacific Journal of Allergy Immunology*. 38, 1–9.
- Rodríguez, M.Á., Crespo, I., & Olmedillas, H. (2020). Exercising in times of COVID-19: what do experts recommend doing within four walls? *Revista Espanola De Cardiologia (English Ed.)*, 73(7), 527–529.
- Rogers, J.P., Chesney, E., Oliver, D., Pollak, T.A., McGuire, P., Fusar-Poli, P., Zandi, M.S., Lewis, G., & David, A.S. (2020). Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. *The Lancet Psychiatry*, 7(7), 611–627.
- Rubin, G.J., & Wessely, S. (2020). The psychological effects of quarantining a city. *BMJ*, 368, m313.
- Rundle, A.G., Factor-Litvak, P., Suglia, S.F., Susser, E.S., Kezios, K.L., Lovasi, G.S., Cirillo, P.M., Cohn, B.A., & Link, B.G. (2020a). Tracking of Obesity in Childhood into Adulthood: Effects on Body Mass Index and Fat Mass Index at Age 50. *Childhood Obesity*, 16(3), 226–233.
- Rundle, A.G., Park, Y., Herbstman, J.B., Kinsey, E.W., & Wang, Y.C. (2020b). COVID-19–Related School Closings and Risk of Weight Gain Among Children. *Obesity*, 28(6), 1008–1009.
- Santos, C.F. (2020). Reflections about the impact of the SARS-COV-2/COVID-19 pandemic on mental health. *Brazilian Journal of Psychiatry*, 42(3), 329–329.
- Suppawattaya, P., Yiemphat, P., & Yasri, P. (2020). Effects of Social Distancing, Self-Quarantine and Self-Isolation during the COVID-19 Pandemic on People's Well-Being, and How to Cope with It. *International Journal of Science and Healthcare Research*, 5(2), 12–20.
- Temseh, M.-H., Al-Sohime, F., Alamro, N., Al-Eyadhy, A., Al-Hasan, K., Jamal, A., Al-Maghlouth, I., Aljamaan, F., Al Amri, M., Barry, M., Al-Subaie, S., & Somily, A.M. (2020). The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *Journal of Infection and Public Health*, 13, 877–882.
- Torres, S.J., Nowson, C.A. (2007). Relationship between stress, eating behavior, and obesity. *Nutrition*, 23(11-12), 887–894.
- Turkey Republic Health Ministry, (2020). COVID-19 (SARS-CoV-2 enfeksiyonu) Rehberi, Health Ministry.
- Vahia, I. V., Blazer, D.G., Smith, G.S., Karp, J.F., Steffens, D.C., Forester, B.P., Tampi, R., Agronin, M., Jeste, D. V., & Reynolds, C.F. (2020). COVID-19, Mental Health and Aging: A Need for New Knowledge to Bridge Science and Service. *The American Journal of Geriatric Psychiatry*, 28(7), 695–697.

- Velavan, T.P., & Meyer, C.G. (2020). The COVID-19 epidemic. *Tropical Medicine & International Health*, 25(3), 278–280.
- Vinkers, C.H., van Amelsvoort, T., Bisson, J.I., Branchi, I., Cryan, J.F., Domschke, K., Howes, O.D., Manchia, M., Pinto, L., de Quervain, D., Schmidt, M. V., & van der Wee, N.J.A. (2020). Stress resilience during the coronavirus pandemic. *European Neuropsychopharmacol*, 35, 12–16.
- Wang, C., Horby, P.W., Hayden, F.G., & Gao, G.F. (2020). A novel coronavirus outbreak of global health concern. *The Lancet*, 395(10223), 470–473.
- Wang, W., Tang, J., & Wei, F. (2020). Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. *Journal of Medical Virology*, 92(4), 441–447.
- WHO, (2020). Novel coronavirus (2019-nCoV) Situation Report-22.
- WHO, (2010). Global recommendations on physical activity for health.
- Woods, J., Hutchinson, N.T., Powers, S.K., Roberts, W.O., Gomez-Cabrera, M.C., Radak, Z., Berkes, I., Boros, A., Boldogh, I., Leeuwenburgh, C., Coelho-Júnior, H.J., Marzetti, E., Cheng, Y., Liu, J., Durstine, J.L., Sun, J., & Ji, L.L. (2020). The COVID-19 Pandemic and Physical Activity. *Sports Medicine and Health Science*, 2(2), 55-64.
- Xiang, Y.-T., Zhao, Y.-J., Liu, Z.-H., Li, X.-H., Zhao, N., Cheung, T., & Ng, C.H. (2020). The COVID-19 outbreak and psychiatric hospitals in China: managing challenges through mental health service reform. *International Journal of Biological Sciences*, 16(10), 1741–1744.
- Xie, M., & Chen, Q. (2020). Insight into 2019 novel coronavirus — An updated interim review and lessons from SARS-CoV and MERS-CoV. *International Journal of Infectious Diseases*, 94, 119–124.
- Yi, Y., Lagniton, P.N.P., Ye, S., Li, E., & Xu, R.-H. (2020). COVID-19: what has been learned and to be learned about the novel coronavirus disease. *International Journal of Biological Sciences*, 16(10), 1753–1766.
- Zachary, Z., Brianna, F., Brianna, L., Garrett, P., Jade, W., Alyssa, D., & Mikayla, K. (2020). Self-quarantine and weight gain related risk factors during the COVID-19 pandemic. *Obesity Research & Clinical Practice*, 14(3), 210–216.
- Zhang, Y., & Ma, Z.F. (2020). Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, 17(7), 2381.
- 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. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The Lancet*, 395(10229), 1054–1062.
- Zhou, Y., Yang, Y., Huang, J., Jiang, S., & Du, L. (2019). Advances in MERS-CoV Vaccines and Therapeutics Based on the Receptor-Binding Domain. *Viruses*, 11(1), 60.
- Zhu, W., Li, X., Wu, Y., Xu, C., Li, L., Yang, J., & Fang, S. (2020). Community quarantine strategy against coronavirus disease 2019 in Anhui: An evaluation based on trauma center patients. *International Journal of Infectious Diseases*, 96, 417–421.