

Exploration of the Epidemiological and Emotional Impact of Quarantine and Isolation During the COVID-19 Pandemic

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Abstract

Starting in December 2019 in Wuhan Municipal Health Commission, the coronavirus disease 2019 (COVID-19) has crossed the borders forming a pandemic in 2020. The absence of pharmacological interventions has pushed governments to apply different sets of old, non-pharmacological interventions, which are, though temporary, helpful to prevent further pandemic propagation. In the context of COVID-19, research confirms that

quarantine is useful, mainly if applied early and if combined with other public health measures. However, the efficacy of quarantine and isolation is limited in many ways, ranging from legal issues and suspension of economic activities to mental health considerations. This chapter is an exploration of (i) epidemiological impact of isolation and quarantine; (ii) emotional impact of isolation and quarantine; and (iii) the possible effect of culture on quarantine experience.

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38.1 Introduction

In late December 2019, the world faced the problem of a novel coronavirus disease (COVID-19); its spread was as rapid as it was declared as a pandemic by the World Health Organization (WHO) on March 11, 2020 (Hanaei and Rezaei 2020). As of writing this chapter, all countries worldwide have experienced the first wave, some are undergoing the second wave, and the others are aware and possibly preparing for the second wave of the COVID-19 pandemic. About 6 months have passed since its first report, and it has affected nine million cases and claimed more than 460,000 lives worldwide. Such a high number of deaths state explicitly how much the SARS-CoV-2 is violent, and multiple routes of transmission might explain its violence (Yazdanpanah et al. 2020b; Jahanshahlu and Rezaei 2020a; Lotfi et al. 2020; Saleki et al. 2020). Genetic factors and medical conditions can intensify infection severity as well (Yousefzadegan and Rezaei 2020; Darbeheshti and Rezaei 2020; Shamshirian and Rezaei 2020; Ahmadi et al. 2020; Sahu et al. 2020). The current literature provides a library of evidence of inflammation in people with severe COVID-19 along with reports of a relatively lower susceptibility to develop COVID-19 in people lacking immunocompetence (Ahanchian et al. 2020; Bahrami et al. 2020; Babaha and Rezaei 2020). Totally, these findings have made doubt on the

role the immune system truly plays against COVID-19 (Rokni et al. 2020; Yazdanpanah et al. 2020a).

There is neither vaccine for prevention of disease nor a specific treatment, other than supportive care, and previously identified options for dealing with viral pneumonia that causes immune dysregulation (Rokni et al. 2020; Bahrami et al. 2020; Yazdanpanah et al. 2020a; Saghazadeh and Rezaei 2020a; Fathi and Rezaei 2020; Lotfi and Rezaei 2020; Nasab et al. 2020) progressing to acute respiratory distress syndrome and multior-gan failure, e.g., antivirals (Mohamed et al. 2020b) and immunosuppressants (monoclonal antibodies, corticosteroids, plasma therapy, and intravenous immunoglobulin) (Saghazadeh and Rezaei 2020b; Mohamed et al. 2020b; Lotfi et al. 2020; Pourahmad et al. 2020; Jahanshahlu and Rezaei 2020b). However, a number of promising opportunities appear for specific treatment of COVID-19. They include therapies that can precisely target signaling pathways engaged in hyper-inflammation and viral entry into the cells as well as cell therapies that can help enhance antiviral immunity while attenuating inflammatory responses (Sharifkashani et al. 2020; Mansourabadi et al. 2020; Pashaei and Rezaei 2020; Basiri et al. 2020b; Rezaei 2020b).

The absence of pharmacological interventions has made the health-care system to rely on early diagnosis of infection, which is, in turn, challenging and needs more reliable techniques (Basiri et al. 2020a; Rabiee et al. 2020), to provide an extended window for care delivery. However, COVID-19 has affected the health-care providers as well (Rezaei 2020a; Moazzami et al. 2020), and this has pushed governments to apply different sets of old, non-pharmacological interventions, based on societal measures and behavior

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adjustment, including cordon sanitaire, traffic restriction, social distancing, home confinement, centralized quarantine, and universal symptom survey, which are, though temporary, helpful to prevent infection and re-infection with the SARS-CoV-2 pandemic (Pan et al. 2020; Jabbari and Rezaei 2020; Jabbari et al. 2020).

Quarantine refers to the restriction of the movement and separation of people who are not ill and may have been exposed to an infectious disease, while isolation means separation of people who are ill and have been infected. Both quarantine and isolation aim at controlling the spread of communicable diseases, such as cholera, diphtheria, tuberculosis, plague, smallpox, yellow fever, and viral hemorrhagic fevers (Parmet and Sinha 2020). In the context of COVID-19, research confirms that quarantine is useful, mainly if applied earlier and combined with other public health measures (Nussbaumer-Streit et al. 2020). Thus, several strategies were implemented, including cocooning, social distancing, movement restricting, and self-isolating. However, the efficacy of quarantine and isolation is limited in numerous ways, ranging from legal issues and suspension of economic activities – which will be discussed in Chaps. 40, 41, 42 – to mental health considerations. This chapter is an exploration of (i) epidemiological impact of isolation and quarantine; (ii) emotional impact of isolation and quarantine; and (iii) the possible effect of culture on quarantine experience.

38.2 Factors Determining the Epidemiological Impact of Quarantine and Isolation During the COVID-19 Outbreak

38.2.1 Combination with Other Testing and Tracing

Using mathematical modeling of data from UK participants ($n = 40,162$), the study estimated that each of random mass testing of 5% of the population each week, self-isolation of symptomatic cases within the household, and self-isolation outside the household would reduce mean trans-

mission of disease by about 2%, 29%, and 35%, respectively. Self-isolation effectiveness increased to 37%, 47%, and 57% when combined with household quarantine, manual contact tracing of acquaintances, and app-based contact tracing. Furthermore, it reached a high value of 64% in combination with both household quarantine and manual contact tracing of acquaintances (Kucharski et al. 2020).

As summarized in a systematic review (Lahiri et al. 2020), the most commonly used models for prediction of the behavior of COVID-19 pandemic included susceptible exposed infected recovery (SEIR), susceptible infected recovered (SIR), and neural network models and their modified versions. The review highlighted that control measures, ranging from isolation, social distancing, lockdown, and quarantine to port-of-entry screening, testing, tracing, personal hygiene, and the increase in the number of hospital beds, should be combined to enhance each other's strengths and also to compensate for each other's shortcomings.

In the study (Wilasang et al. 2020), the authors compared ten countries, e.g., Belgium, China, France, Germany, Iran, South Korea, Spain, Thailand, the United States, and the United Kingdom, in terms of reduction of the reproduction number, starting from the date when the reported number of cases exceeded 100 to 3 weeks after control measures were applied. As of April 07, 2020, two countries could achieve and maintain a reproduction number of about one to below one after implementation of control measures for 3–4 weeks: China and South Korea. In China, control measures include a strict lockdown, total standstill, stay-at-home order, contact tracing, and quarantine, reducing the reproduction number from 3.10 to about 1. In South Korea, these measures were a strict lockdown and active case finding, leading to a decrease in reproduction number from about three to below one. The other eight countries applied only one of quarantine (lockdown) and active case finding and failed to control the COVID-19 as of study completion date.

In summary, the findings of the models are consistent with an analysis of real-time data demonstrating the more effectiveness of comprehen-

sive attempts, comprised of early isolation, contact tracing, and quarantine, to bring down the reproduction number of COVID-19 (Wilasang et al. 2020).

38.2.2 Digital Contact Tracing

As above described, self-isolation alone could reduce transmission by 37%, and this reduction increased to 47% when combined with the manual tracing of contacts compared to 57% when combined with the app-based tracing of contacts (Kucharski et al. 2020). Telehealth or telemedicine offers digital technologies that not only accelerate screening and contact tracing but also facilitate treatment and surveillance. Interestingly, the use of telemedicine assists clinicians with holding virtual visits while being quarantined at home (Hollander and Carr 2020). In this manner, quarantine and isolation will work more effectively employing digitalization, a concept referred to as “Digital herd immunity” by Bulchandani et al. (2020) and Caetano et al. (2020).

38.2.3 Combination with Travel Restrictions and School Closures

When combined with travel restrictions, a review of studies suggests that isolation and quarantine could control the outbreak better in terms of reduction in the number of confirmed cases and duration of the outbreak of COVID-19 (Nussbaumer-Streit et al. 2020). Models, however, forecast that travel restrictions, even if strictly sustained, reveal more than a moderate effect on the trajectory of COVID-19, if and only if combined with other control measures that can reduce disease transmission by at least half (Chinazzi et al. 2020).

38.2.4 Degree of Adherence to Quarantine

The study (Sjödin et al. 2020) investigated the correlation between the degree of adherence to

quarantine – defined as the degree to which the community correctly follows quarantine laws and limits – and the effectiveness of a 2-week lockdown with community quarantine in Italy. The four different degrees of adherence to community quarantine were complete noncompliance to community quarantine, medium adherence to community quarantine, near-complete community quarantine, and a complete community quarantine, on the average of 10, 5, 1, and 0 h out-of-household activities per day, correspondingly. The more time spent out of the house (the less the community tended to adhere to the quarantine), the more the number of secondary cases increased by the end of quarantine.

38.2.5 Response System

Based on mobility data from mobile devices in the Boston metropolitan area, an agent-based model predicted that it would suffice to keep a potential second wave of disease at the place within the capacity of the health-care system, if a response system using social distancing combined with testing, contact tracing, and household quarantine permits detection of 50% of symptomatic cases, tracing of 40% of their contacts and households, and 9% of individuals quarantined (Aleta et al. 2020). Under such a system, economic activities can be re-opened while preventing the oversaturation of the health-care system.

38.2.6 Early Implementation

The study (Moris and Schizas 2020) using data from the Worldometer compared 22 countries in terms of delta days defined as the gap between the first-time implementation of control measures and the date of the first case per million population (PMP) confirmed and its impact on 30-day mortality and incidence outcomes. Among the countries included in the analysis, only Iceland and Switzerland implemented large-scale sampling, while the remaining 20 countries relied on lockdown as the control measure. Delta days

ranged from -1 day for Hong Kong to 29 days for Sweden, and the less the delta days (control measures occur earlier), the lower the 30-day incidence of COVID-19. By observing no significant association between gross domestic product (GDP) health expenditure and disease outcomes, control measures and their timing appeared to be a more critical element of success.

38.2.7 Duration of Quarantine

Studies using different epidemiological models make different recommendations on a preferred duration of lockdown. Other factors that play a role in determining a preferred duration of lockdown include the degree of adherence to quarantine and the population and household size. For India, studies mostly conclude on 3 weeks of lockdown for adequate detection of cases and controlling the disease spread in the country, while other studies call the need to adopt the lockdown for an extended duration of 42–56 days as reviewed in Lahiri et al. (2020). For Italy, modeling data related to a 2-week community quarantine estimated that for medium average household size (three persons), a 1-month duration of quarantine is required for adequate control of outbreak when the degree of adherence to community quarantine is near complete (Sjödin et al. 2020). The duration increased to 54 days under medium adherence to community quarantine.

38.2.8 Individuals Quarantined

Using a SEIRQ epidemic model with high accuracy for COVID-19 predictions, the study (Cui et al. 2020) evaluated the comparative effect of quarantine of different populations, including susceptible individuals, exposed individuals, and infected individuals, on COVID-19 variations. The model predicted that quarantine of suscepti-

ble individuals is more important for controlling the spread of disease as indicated by the number of confirmed cases when compared to the quarantine of infected and exposed individuals. No direct evidence exists regarding the effectiveness of quarantine of travelers on controlling the spread of COVID-19 outbreak. There is only a little indirect evidence on the issue regarding the outbreak of SARS, as reviewed in Nussbaumer-Streit et al. (2020).

38.2.9 Household Size

The study (Sjödin et al. 2020) addressed whether household size would influence the effectiveness of community quarantine in Italy concerning the degree of adherence to community quarantine. There were four different average household sizes, larger (six persons), medium (three persons), small (two persons), and single-person, and four degrees of adherence to community quarantine, no, medium, near-complete, and complete community quarantine. Considering a town of 5000 persons, the model provided estimations of the number of secondary cases under the quarantine scenarios mentioned for different household sizes as follows: larger, 43, 29, 19, 16; medium, 20, 12, 8, 7; and small, 11, 7, 4, 3. It shows the interaction between the household size and the degree of adherence to quarantine and its impact on the effectiveness of community quarantine.

38.2.10 Population Size

The study mentioned above also found a direct relationship between the population size and the number of secondary cases. For a town of 50,000 people, the number of secondary cases was estimated to be 110, 70, 40, and 30 for a small household size under no, medium, near-complete, and complete community quarantine scenarios.

38.3 COVID-19: Psychological Challenges and Opportunities Ahead

38.3.1 COVID-19: The Trauma

COVID-19 is a severe threat to global health and is now recognized as one of the significant human concerns internationally. The impact of COVID-19 on mental health cannot be dismissed even though there are so many things to tackle at the same time, like stopping the virus and helping those struggling financially. The cost of psychological support skyrockets when left unaddressed. We are all affected by the pandemic, both emotionally and mentally, but to different degrees.

As such, COVID-19 is traumatic in many ways. From a psychological point of view, a trauma is a response to a deeply distressing or disturbing event that overwhelms an individual's capacity or even ability to cope. It generates feelings of helplessness/hopelessness and reduces the sense of self and the access to the full range of emotions and experiences in an individual. Medically, trauma can also refer to physical damage (which is evident in this pandemic). COVID-19 is to be considered as complex trauma, being exposed to varied and multiple traumatic events of an invasive and interpersonal nature.

In such a context, the most critical issues related to COVID-19 are stress, anxiety, and their consequences, which can also be worsened by necessary public health actions to stop the spread of the disease (such as quarantine and isolation). These can make people feel lonely, powerless, and isolated.

38.3.2 Stress: A Double Impact

Stress is a normal physiological response to an abnormal situation. It is a fundamental component of our lives. It enables us (body and soul) to adapt and adjust to both positive and negative situations through increased cortisol levels. Stress is multifactorial, not constant, and varies from one individual to another. Stress can affect

how people feel emotionally, mentally, and physically. It can also affect how people behave.

During the COVID-19 outbreak, stress has caused fear and worry (e.g., about work, health, support, finances); changed eating or sleep patterns; worsened focus, chronic health problems, and mental health conditions; and increased our use of alcohol/tobacco and other substances. From this point of view, stress appeared to make people vulnerable and to possibly aggravate a situation already dramatic by disabling emotional management and regulation. In that sense, it can contribute to intensifying the damages of the coronavirus, causing confusion, discomfort, and chaos. However, stress has also been extremely beneficial during the COVID-19 crisis. Thanks to stress, we have been able to react to the threat of COVID-19 and take action to protect ourselves. Stress is crucial to raise our attention, focus, and alertness in a situation of insecurity. It helps behavioral change or adaptation and enables planning in order to reduce the risks and the dangers of our environment. Stress is essential for an organism to initiate and activate a cohesive defense while exposed to a threat. Stress increases the body's ability and energy (via cortisol secretion) in order to preserve personal and environmental health. During the COVID-19 crisis, stress helped make people aware of the gravity of the situation, to take things seriously, and attempt to limit the spread of coronavirus. Stress will become a problem when affecting how people cope with day-to-day life, and both beneficial and destructive aspects of stress have been observed during the pandemic: a double impact.

38.3.3 Anxiety

Contrary to fear, which is a response to a well-defined and very real and concrete danger, anxiety is a response to a vague or unknown threat. It occurs when we believe that a menacing or unfortunate event could happen and are expecting it. Like stress, anxiety is experienced at various individual degrees and intensity. The extent of the anxiety manifestations greatly depends on how we perceive the anticipated event.

Anxiety appears directly connected to people's uncertainty, cognitive ambiguity, and lack of scientific information about the virus. As per the DSM-5 (2013), anxiety can present in many ways and forms: generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and phobia (including social phobia), with or without a panic attack. Levels of anxiety, depression, and PTSD have doubled in society since the onset of COVID-19, with as many as 4/10 people experiencing symptoms (Lucey 2020).

38.3.4 Challenges and Behaviors During the COVID-19 Crisis

During the lockdown, challenges were legion; some people reported suffering from quarantine and isolation measures, as they felt lonely, restricted, and withdrawn from the environment. Self-isolation reduced drastically social contact, and many people felt trapped. Other people felt at risk of losing their livelihood, especially the ones who had a horrific experience (like being on a respirator or extended stay in ICU). The uncertainty status over the disease, coupled with constant exposure to harmful and frightening news, made life extremely difficult. The decimation of normal routine and structure, the loss of freedoms, and the boredom associated with quarantine made the whole process very lengthy for the population. Some individuals were particularly sensitive to the changes in work circumstances, the financial insecurity (including bankruptcy, financial loss), inadequate supplies and infrastructure, and the fact that their life was "on pause." It was very hard to adjust and obey societal changes that were not always well explained nor well understood and which heavily impacted families (as weddings and funerals, e.g., had to follow a different protocol). Prolonged uncertainty and impossibility to plan the future were probably the hardest challenges population faced during the COVID-19 crisis. Of course, while confined, many had to closely face the cracks, the conflicts, and the failures of their couple/family, without being able to escape. Similarly, being

separated from loved ones led to worrying for their safety, well-being, access to medical assistance, mental health, and daily services and supports and to wondering about how their loved ones' condition would evolve without those regular supports.

In terms of behaviors, alarm, panic, and terror appeared first, but also anger and confusion/delirium. Maximum individualism was illustrated by food hoarding and compulsive buying. There were thefts in shops, pharmacies, and hospitals to the point that hydro-alcoholic gel distributors had to be removed from the wards. Some aggressive behaviors also emerged, either via assaults of various types (from threats to gun attacks), including against health-care professionals or in a domestic context with a raise in arguments, abuse, and violence within the home (couple and family crises). If insecurity certainly motivated these manifestations, increased consumption of alcohol and drugs associated with boredom and despair is also to be taken into account.

38.3.5 Mental Health Alterations During the COVID-19 Crisis

Millions of people are suffering from psychological repercussions, especially those closest to the pandemic. In patients acutely ill with severe COVID-19, available data suggest (Rogers et al. 2020) that 65% experience delirium, 69% have agitation after the withdrawal of sedation, and 21% have altered consciousness. In the general population under lockdown, not only anxiety increased, but depression also intensified; depression is a mood disorder that causes, among other symptoms, a persistent feeling of sadness and loss of interest. Hypochondria is not to be forgotten in the picture. It is also called health anxiety and consists of an excessive preoccupation with one's health. Besides cyberchondria otherwise known as "compuchondria," COVID-chondria (excessive preoccupation with one's health around the coronavirus), COVID-phobia (extreme or irrational fear of or aversion to COVID-19), and paranoid states (in which persecutory and grandiose ideas and delusions consti-

tute a significant part of the symptoms) were also observed. Altogether, anxiety appears to be the most substantial mental health alteration and most common psychiatric disorder to affect all individuals (in the general population but also health-care professionals) during the COVID-19 crisis. It only highlights the necessity to invest in mental health services, hotlines, counseling, guidance, information, and online help and support groups.

38.3.6 Psychotherapy Approaches to Anxiety

Psychologists use psychotherapeutic approaches such as cognitive behavioral therapy (CBT) approaches and emotionally focused therapy (EFT) approaches to help regulate anxiety levels in order to treat individuals (Najafi et al. 2015a). In the CBT approach, harmful and wrong beliefs are considered as the basis of negative emotions. Healthy beliefs lead to healthy emotions and, ultimately, to healthy functioning. This approach also helps to improve anxiety through the use of psychological training techniques, cognitive reconstruction, coping, and role-playing. The EFT approach is also a short-term approach, which is an empiric humanistic approach to rebuilding the emotional business and uses a structural, systemic approach to rebuilding interactions (Javidi et al. 2013; Soleimani et al. 2015; Najafi et al. 2015b). This approach focuses on emotions and helps people to achieve emotional self-regulation. It uses the components of focusing on positive emotions, emotional reconstruction, and finding new meanings to better communicate with others and better adapt to the environment (Madahi et al. 2013). In this approach, the therapist pays special attention to attachment styles and the communication patterns of individuals (Javidi et al. 2001; Najafi et al. 2015b). On this basis, the therapist regulates the treatment process in such a way as to lead to a secure attachment, so that people can move more confidently toward a positive and constructive relationship in order to be able to express their emotions constructively (Javidi et al. 2012,

2013). The precarious feeling of anxiety is being treated in this approach. It is because the main focus of this approach is to create a safe, emotional, and supportive environment. Both approaches help to control and manage anxiety by managing and regulating emotions.

38.3.7 The Notion of Locus of Control and the Response Ability

The notion of “locus of control” first appeared in 1966, thanks to Julian Rotter. It was formulated after observing recurrent patterns in how people perceive what is happening to them (and to their health). On the one hand, he observed that some individuals believe they are directly responsible for what is happening to them, as directly resulting from their actions or behaviors (internal locus of control). On the other hand, Rotter noticed that some individuals consider that the “reinforcements” they receive do not result from their actions but are depending on external factors (luck, fate, others, external locus of control). More specifically, this theory aims to predict which behavior an individual will adopt, knowing different reactions are possible. Multiple studies have applied the concept to the health sector and have identified three subtypes in terms of beliefs, thinking, and behaviors: (i) internal locus of control; (ii) external “powerful others” locus of control; and (iii) external “chance” locus of control. There are some obvious connections between COVID-19 and the health locus of control (Naviaux et al. 2020).

Indeed, people who have a rather internal locus of control will look after themselves and self-observe (fever, cough, shortness of breath, sore throat, headaches), while individuals with an external locus of control will consider that the course of the coronavirus depends either on luck, destiny, or “the others.” The health locus of control will also predict how people will handle prevention measures, quarantine, and isolation; knowing that people with an internal locus of control will better comply (than people with an external locus of control) because they feel responsible (“response-able” or “able to provide

a proper response” in order to protect their health). Therefore, opting for an internal locus of control during the COVID-19 and choosing response ability is not only salutary but also sanitary.

38.3.8 Vulnerable Groups

During the pandemic, children and young people, older adults, health-care providers, and people with comorbid conditions appear as the most psychologically vulnerable populations. However, pregnant women are the same even if they are not infected (Mirbeyk and Rezaei 2020).

38.3.8.1 Children and Young People

Schools and colleges have been closed, so children and young people are staying at home during the pandemic. Parenting is the key. It is important to help young ones find a positive way to express their feelings, such as sadness, boredom, or fear. For example, engaging in creative activities such as drawing or clay modeling can prove extremely helpful in that regard, as it allows us to express and communicate feelings and emotions. Isolation can be challenging for little ones who miss their friends and their activities. It is essential to keep children close to their parents and family if safe for the child and to maintain regular contact with parents and caregivers in case of separation. It is crucial to make time for younger people to check in with friends and family they might be worried about, using phone or video calls, so that they can see they are okay. Young people should be informed about what is happening in the world, using words and language they can access, and not overwhelming them with unnecessary information. Adults need to be honest with them and address their concerns in a reassuring way to ease anxiety. Maintaining familiar routines (such as bedtime rituals, hygiene routines, and a healthy diet) increases the feeling of safety. Creating new routines and dedicating some time to daily physical exercise are also essential. Children must be encouraged to pursue learning and age-appropriate activities, to continue to play, to have fun, and to socialize with

others if only within the family. They might seek more attachment and be more demanding to parents. Intuitively they will get cues on how to manage difficult times by observing adults’ behaviors and emotions. Supervised and limited access to (social) media is given. Just like for any vulnerable group, we need to help, support, and stand by our children.

38.3.8.2 Elderly People

Older adults and those with cognitive decline or dementia can be deeply affected by staying at home as they can experience an increased feeling of isolation and loneliness. The lack of daily tasks and their physical vulnerability can make them feel more anxious, angry, or even agitated. Adjusting to a new situation can take a while, and do so, it is crucial to develop a regular structure to the day as routines make the world safer and more predictable. Staying active, eating and drinking healthily, and receiving practical and emotional support through family, friends, and professionals will help maintain good mental health. Participating in groups or events online and developing new interests will also be beneficial. Information should be provided clearly and simply so that people with cognitive impairment can understand. Information should be repeated if necessary.

38.3.8.3 People with Pre-existing Conditions

People with pre-existing conditions might experience increased stress over the threat of the infection. They should activate their social contacts for assistance and make sure they have access to medication, food, services, and medical assistance.

38.3.8.4 People with Pre-existing Mental Health Issues

There is a risk of exacerbation and deterioration of pre-existing mental health issues. Physical exercise, maintaining daily routines, and a healthy diet, as well as regular activities, are helpful to cope. Having access to appropriate (and not overloading) information is essential, just like it is to keep in touch with family, friends,

and professionals. Access to medication, food, services, and medical assistance should be available.

38.3.9 Health-Care Professionals (HCP) During the COVID-19 Crisis

HCP are disproportionally affected by work-related stress because of excessive workloads, working in an emotionally charged environment where demand outweighs capacity and facing a lack of management and government support and unrealistic public expectations and perception of stigma. HCP are at high risk of decompensation regarding both physical and mental health (burn-out in essential workers), and access to appropriate support should be put in place. HCP can also experience cynicism regarding a possible change as they face (unprecedented) high levels of mortality and extremely distressed patients (including treating infected colleagues). No child care arrangements have been made for HCP who have to deal with social isolation and interpersonal distancing, infection control procedures, diminished collegial social interaction, and re-deployment in unfamiliar environments or with unfamiliar colleagues. They often do not dispose of adequate supplies and equipment, rationing personal protective equipment and facing ethical dilemmas of rationing access to ventilators and other essential health supplies. HCP are, of course, facing a higher risk of contamination. Personal worries include infection risk to self and others, and concerns regarding the well-being of family members who are “home-schooled,” quarantined, or infected are real (Gavin et al. 2020).

The only study to date on the psychological impact on COVID-19 frontline HCP reports high rates of depression, distress, anxiety, and insomnia (Lai et al. 2020). Ensuring that HCP is safe and able to carry out their job is crucial. HCP are per definition exposed to the virus in their life-saving activity and should not be stigmatized for this.

Unfortunately, the sad reality is that HCP have been subject to many shocking forms of violence.

It includes harassment, stigmatization, and physical violence. In response to this concern, on May 26, 2020, 13 medical and humanitarian global organizations representing more than 30 million HCP have issued a declaration condemning increasing incidents of attacks against health workers and facilities (healthcareindanger.org 2020).

38.3.10 Opportunities

Along with the damage it has caused, the COVID-19 pandemic has also provided opportunities for people to develop their existential and skill-building capabilities. It has led to achievements, including hardware and software upgrades, improved knowledge of specialists and public adherence to the principles of health and hygiene, and an increase in the spirit of sympathy between people and the authorities. It would also help to understand the importance of health-care systems, education, and research and identify strengths and weaknesses in various areas, in particular, in the field of crisis intervention. Its psychological achievements also include improving individual emotional regulation, identifying individual existential capacities in times of crisis, controlling anxious beliefs, improving psychological adjustment, recalling anxiety about death, enhancing creativity and innovation, individual self-assessment in the field of courage/fear and indifference, a better understanding of the value of health, a distinction between opportunism and profit- and fame-seeking and truth-seeking, human attention to family and friends, the empowerment of sympathy, and the creation of home opportunities and home quarantine jobs.

38.4 True Face of Quarantine and Social Isolation in Iran

One of the primary methods in breaking the chain of infection is the separation of people exposed to a contagious disease. Three main methods could achieve this: (i) isolation, separating the affected individuals from the rest of

the population; (ii) quarantine, applying distance on any suspected member; and (iii) social distancing (Huremović 2019). Although quarantine is considered a passable action in outbreak management (quarantine and isolation), many governments, e.g., the United States, Singapore, and Iran, doubted about its actual effectiveness in the current COVID-19 outbreak, mainly due to socioeconomic burdens. However, social distancing described as canceling mass gatherings and closing schools has been the preferred measure for the abovementioned governmental health authorities so far.

According to the official reports from Iran in May 19, there are 122,492 confirmed cases; and the number may be underestimated due to a limited number of COVID-19 PCR diagnostic kits, hence the US ban (Retrieved from worldometers on May 19, 2020). Indeed, there might be several cases with milder symptoms (or even asymptomatic) who were not included. On February 20, 2020, the National Headquarters for Fighting Coronavirus in Iran has made a decision for closing schools and universities until the further announcement, asked people to house-quarantine themselves and avoid unnecessary travel, and dedicated specific hospitals merely to manage COVID-19 in isolation. From March 6, 2020, province-wide quarantine was applied to two Northern provinces of Iran (Mazandaran and Gilan), which did not exceed 3 weeks. Although only two mentioned provinces have gone under the official mass quarantine, remarkable portion from many other metropolitan residents, e.g., Tehran, Karaj, Mashhad, Isfahan, and Shiraz, have voluntarily house-quarantined themselves. Moreover, most airlines stopped traveling to and from Iran, which brings a sense of entrapment within their own geographical borders in the population. These measures were applied a week before the pandemic declaration (<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19%2D%2D-11-march-2020> accessed on April 16th).

38.4.1 Review of the Literature

Outbreaks themselves attenuate community-wide anxiety, starting as the first death being reported through the increasing reports in media and by the growing number of newly infected cases. The mass quarantine can raise this imposed anxiety due to several reasons. It represents the authorities' belief that not only is the situation difficult, but it also is liable to worsen. Also, it brings the feeling of being trapped and having lost control among the population under quarantine. Besides, the absence of clear messages and facts on the ongoing situation escalates to fear, and as regards, people turn to less reliable sources for the information, which makes the possible ground to plant rumor (Rubin and Wessely 2020).

Quarantine forces people to separate from loved ones, brings loss of freedom and uncertainty over disease course, and has the potential to expose individuals to profound boredom. The latter could lead to suicide, as previously been reported. Consequently, successful mandatory mass quarantine application is not reached unless we are aware of the potential psychological costs that we have to pay and do our best to reduce it (Brooks et al. 2020; Barbisch et al. 2015). However, social isolation describing the loss of social integrity with the loved ones has severe health damages as reducing immune responses to viral infections and inducing inflammatory cytokines (Leschak and Eisenberger 2019).

Although we could not find strong evidence to back up our claim, Persians are considered a friendly social community that relies intensely on their social network and prioritizes the family gatherings to any other personal activity. Hence, we presume the Iranians to be much vulnerable to this house confinement. Moreover, this quarantine is concurrent with the Persian celebration of New Year, anciently called "Nowrouz," which directly translates to the new day. Nowrouz marks the beginning of spring in the Northern Hemisphere and marks the first day of the first month (Farvardin) of the Iranian calendars, which usually is in March 21. It is the most important

national holiday for the Persian population with the essential tradition of making short visits to the homes of family, friends, and neighbors. This concurrency could also be considered a mental burden for the population.

Reviewing the literature revealed the null experience of previous quarantine in the Iranian population. Thus no evidence is available on the community acceptance, the effectiveness of the modality based on Persian culture, and their mental health within and afterward. It raises the need to learn from different nations' experiences in order to apply better facilities and measures during the quarantine period and to minimize long-term psychosociophysical burdens on this huge quarantined population.

It is crucial to plan mitigation measures along the way since the psychophysical burden could be troublesome in the future. The only proven risk factor is pre-existing poor mental health. Coping mechanisms focus on four main groups, including the role of government, how the individuals could cope, and the impact on health-care workers and among youngsters. Lessons learned from previous severe acute respiratory syndrome coronavirus (SARS-COV) and Ebola outbreak alongside with author's recommendation led to the following coping strategies in brief (Robertson et al. 2004; Brooks et al. 2020).

38.4.2 Recommended Strategies

38.4.2.1 The Government

For the government, clarity is the key. That is what makes people believe them and listen to their instructions and reduces panic among the public. Governments should propose an exact extent of quarantine relevant to the incubation period and stick to it, inform the population about the disease and the reasons of the quarantine, and do it through altruism rather than compulsion. It is also crucial that governments plan to provide the supplies and the resources for the needs of people during the quarantine. One of the essential needs is communication. Lack of proper deeds to communicate through social networks can make

people anxious and should be avoided. Also, it is necessary to build particular forms of communication such as support groups and special communicating lines that ease the connection between quarantined people and other affected ones and also health-care providers, such as psychiatrists. Lastly, health authorities should provide a mechanism by which people with the symptoms of the disease can connect to the health-care workers and learn what to do if they develop illness symptoms (Brooks et al. 2020). Currently, several online platforms and hotlines are provided in Iran to reassure people about the symptoms they are experiencing in order to ease the corona phobia.

38.4.2.2 The Individual

The individual responsibility is to trust the government and do as they are asked to, pay attention to the instructions, maintain the quarantine, and avoid stigmatizing the affected people instead of supporting them. It is crucial only to pass valid information and avoid spreading fear and fake news about the disease. People should only buy what they need instead of buying loads of supplies out of panic. They should help each other to overcome the income reduction during quarantine (which is the reason for many low-income families to break the quarantine). Also, they should avoid overloading hospitals out of fear, so that there would be enough time and resources remained for the people in need (Robertson et al. 2004; Brooks et al. 2020).

People experience boredom, loneliness, fear, and anxiety at this time. According to previous studies, the most useful way to cope with these feelings is the stress adaptation model. In this model, you identify, articulate, and normalize the stressors as much as possible. Prolonged home-stays lead to severe inactivity, which contributes to anxiety and depression and could cause a range of chronic health conditions. Maintaining regular physical activity at the house, using a smartphone application or other multimedia, can boost the energy, lower the stress, and enhance the immune system (Chen et al. 2020; Sellami et al. 2018). Examples of home exercises include walking in the house; alternating leg lunges; stair climbing;

stand-to-sit and sit-to-stand, using a chair and from the floor; chair squats; sit-ups and pushups; and yoga (National Center for Complementary and Integrative Health. Yoga: what you need to know. Available at:).

We also recommend the practice of mindful meditation to the people under quarantine. Mindfulness meditation mainly represents a mental training framework for cultivating a state of mindful awareness in daily life. Besides the known role of stress management, mindfulness has shown to enhance cell-mediated immune functions by increasing the number of CD4⁺ T lymphocyte and their activity. It also reduces inflammatory response by reductions in the activity of the cellular transcription factor NF- κ B and reductions in circulating levels of CRP (Black and Slavich 2016; Bower and Irwin 2016). In this matter, several online sessions could be found, and the most accessible professional application, which authors recommend, is Headspace (Headspace).

38.4.2.3 Health-Care Providers

HCP need special attention during this time. Not only should they be provided with organizational support, but also the affected staff should receive proper support from their colleagues, so that they will not feel guilty for causing more work for them. It is crucial to forming a leadership group from different specialties, for example, psychiatrists, internists, immunologists, virologists, and infectious disease specialists among epidemiologists and managers. They should keep in mind that it is their job to provide transparent information and supportive atmosphere among the colleagues and that the health-care workers can be more vulnerable because they get isolated from their loved ones, they cannot work when they are most needed, and all of this makes them prone to more prolonged adverse psychological effects. Useful measurement is to link psychiatrists with other colleagues to inform ease the mental support. Senior staff should act as role models, for example, in using the support system and medical care advice (Brooks et al. 2020; Robertson et al. 2004).

38.4.2.4 Children

They are a vulnerable group that could easily be neglected during the home confinement. Stressors such as prolonged duration; fears of being infected; fear of death; inability to perceive real information; frustration and boredom; losing their social network of classmates, friends, and teachers; and familial financial loss can raise problematic psychological issues among children (Wang et al. 2020). Based on a study by Sprang and Silman, children are more prone to develop PTSD, when exposed to quarantine, compared to their parents (Sprang and Silman 2013). An integrated approach is necessary for this matter. Parents can build committees to work together and bridge the needs of students with school requirements. Psychologists and social workers can offer online services for children to learn how to cope with mental health issues caused by domestic conflicts, tension with parents, and anxiety from becoming infected. Lastly, the role of schools is more critical, not only to deliver educational materials to children but also to offer an opportunity for students to interact with teachers and obtain psychological counseling. They actively promote a health-conscious schedule as an obligatory school curriculum, encouraging the children to build personal hygiene habits, encouraging physical activities, and teaching healthy diet contents and sleep hygiene (Wang et al. 2020).

38.5 Conclusion

Currently, the COVID-19 outbreak has put many nations under serious psychological stress due to quarantine. Social relationships are described as what exists between two people when each can influence the other's thoughts, feelings, and/or behavior has lost (Clark et al. 2015). Loneliness and decreased social interactions affect individuals' health drastically. Apart from depression and anxiety, a lack of proper social contact exposes individuals to a higher risk of coronary heart disease and stroke, suppresses antiviral immunity, and increases the inflammatory responses (Valtorta et al. 2016b; Valtorta et al. 2016a; Wang

et al. 2018). Due to a lack of a unified framework within studies that score social isolation, the existing data is diverse (Valtorta et al. 2016a). Commonly nations are believed to be different in their social attachments. Ultimately without a comparable social connectivity baseline score plus zero data on the national social connectivity diversity, a scientific comparison is impracticable. It is presumed that prior enriched social connection could be a possible threatening factor for the within and post lockdown psychophysical health. Thus, different measurements should be directed to address the impact of personality traits and cultural differences on the psychological experience of confinement. It is also crucial to address the early and late psychosociophysical impact of quarantine on people's lives and to reduce the costs as much as possible before it becomes too late. This universal house confinement makes the ground for further research on how various nations react to the imposed quarantine, hopefully preparing for international collaboration and interdisciplinary research as a very strong response to this pandemic (Momtazmanesh et al. 2020; Mohamed et al. 2020a; Rzymiski et al. 2020; Moradian et al. 2020; Kafieh et al. 2020).

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