

Mental health in times of Covid-19

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Abstract: The world has been in the vortex of the Covid-19 pandemic since the year 2020. While scientists endeavor to expand research on the novel virus, the atrophy of healthy mental status should not be ignored at the same time. There are certain factors that influence mental health during this period of time, such as social media, genders, older adults and healthcare workers. The internal environment of human body is affected as well as the external environment around us. To address the negative emotions during this pandemic, we can establish a balanced and nutritious diet habit, regular sleeping patterns and proper exercise routines. Pleasant conversations with loved ones also contribute to restoring mental health. The negative feeling during lockdown is more noticeable, however, the positive impact of it still exists. For instance, not only the channels of infection are cut off during lockdown, the general environment is improved as well. Clinical aromatherapy has intrigued scientists for its possible ability to bring down anxiety, depression, stress, insomnia, or pain in patients, which might be beneficial in times of Covid-19. Essential oils extracted from plants, such as lavender, peppermint and Eucalyptol, are applied in aromatherapy. In conclusion, mental health is relatively delicate during the Covid-19 pandemic and it is imperative to take active measures to keep a healthy mental status.

1. Introduction

The world has witnessed the confounding spread of Covid-19 during the past two years. Since the outbreak, the rapidly increasing rate of morbidity and fatality has caught the attention of researchers immediately. Recently, after the discovery of different mutations of the virus, researchers must keep up with the update of their pathogenic mechanism and characteristics and reevaluate the gravity of the pandemic. While researchers strive to devise therapeutic methods for treating the presenting symptoms, the trail of stress and anxiety left by the virus is still warm.

Even though Covid-19 takes a toll on mental health in various aspects for all walks of life, there is no excuse not to try to find the silver lining, or at least, curtail the damage as much as possible.

According to WHO, the definition of mental health is “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community”. [27] From this point of view, it should be emphasized that mental health is more than the absence of mental disorders. During the era of Covid-19, other than clinically diagnosed mental illness, the simple and gradually decline in the level of physically and mentally function can be ignored sometimes. Parts of the somatization symptoms may have invented a smokescreen for underlying problems: the body presents certain symptoms before realizing we are emotionally overwhelming as an unconscious defense.

Many factors may have been encroaching on mental health during this globally pandemic. To a point that before an emotional outburst or breakdown, we might be even wondering: which is the last straw? Mental health may be subject to their age, gender, job, relationship with the significant other, literate levels, salary, accommodation environment, coping mechanism, shame, mental support from society, trust in health-related procedures, intimate interactions with COVID-19 patients, physical and psychological health issues, the extent of immersing in social media covering COVID-19 relevant news, individual hygiene precaution, and estimated survival rate [1]. It is difficult to measure the influence of each factor considering its subjectivity and dynamics. However, scientists still have managed to discover measurements to forecast our unfathomable mind.

Early in the middle of the 1970s, Ferrans developed the research done by Andrew and Withey, who applied QV as a ruler for happiness of the Americans. He drew to the conclusion that QV should involve social function, delightfulness, common daily routines, realization of personal objective and personal capabilities and contentment of life, as decisive factors when measuring. Moons, Budts and De Geest, then, reach the consensus that "contentment of life" was the most persuasive and reliable indicator among them.[2] Due to genetic and environmental reasons, different individuals prefer different coping mechanism for their own protection and best interests. Therefore, the way we digest the ocean of information around Covid-19 will determine the level of "life satisfaction".

As challenging as it is, there are some countermeasures we can take to alleviating the situation during quarantine. Non-therapeutic methods include balanced and nutritious diets, consistent of quality sleeping, regular and vigorous physical activities and communications and emotional support from family members, friends or pets. These factors lean on each other and if done properly, will establish a virtuous cycle for regulating mental stability. Although we can easily lose ourselves in the negative experience when isolating, the benefits for environment should not be discounted. The thought of improving the environment makes the lockdown more significant, thus keeping us motivated.

In this essay, it will discuss the various factors that influence mental hygiene and the research revolved around them. Scientists have also proposed several non-therapeutic countermeasures against gloomy moods pertain to the lockdown, for the society can instill fear or calm into individuals in the long run. Regarding therapeutic methods, aromatherapy, as a heterodox remediation, has aroused interest among researchers. Whether this therapy contributes to the détente between the unexpected novel pandemic and public mental health unassailably needs more supporting data.

2. Factors affecting mental health

Humans yearn for happiness by instinct. As the Greek philosopher Epicurus advocated, happiness equals kindness. The reliability of the theory aside, when our brain is facing unpredictable situations, stress piles on unless we get our hands on further information to attenuate the uncertainty. [18] During the pandemic of Covid-19, tremendous waves of factors constantly try to tip over the tranquil canoe of mental health. A broad spectrum of elements determines the final status of mental health as mentioned above. In this essay, it will cover social media, genders, the older adults, healthcare workers and how these factors altogether infect individuals within society.

2.1 Social media, genders, the older adults, healthcare workers

For example, the contagious emotions from social media can rule our minds sometimes, depending on the time or the way we spend on them [4]. (Heffner, J., et al, 2021) During the research, they drew to the conclusion that women who are experiencing unremitting anxiety, reluctant towards indeterminacy, and immerse themselves in abundant amount of information about COVID-19 from their social networks were most vulnerable to escalating emotional hardship [5]. On the other hand, there are also studies suggesting that testosterone to estrogen may predispose men to a widespread COVID-19 infection in contrast [6].

There are also certain groups of people may deserve extra attention than others, such as the elderly, healthcare workers children, adolescents, people with certain chronic conditions and so on. For instance, data collected during the first half of 2020 suggested that social isolation, as a measure to mitigate the transmission of Covid-19, is in correlation with presentation of neuropsychiatric symptoms in older adults with normal cognitive function, or even intensify them. A review published in October last year has discussed various studies indicated that older adults with dementia may manifest psychiatric symptoms, such as aggressiveness, fidgety confusion, and loneliness, due to social isolation [7]. In another aspect, healthcare workers with excessive work demands, sense of providing unavailing care towards patients suffering from Covid-19, lack of resources or fear of exposing beloved family members with the virus are more likely to be in sub-health status mentality [8].

2.2 Altogether influence on individuals: internal and external

As to the internal environment, the link between inflammation and mental hygiene can't be ignored. Hygiene Hypothesis, for instance, pointed out that children who are lack of exposure to the environment of viruses and bacteria, have higher chance of getting anaphylactic diseases such as asthma. In the 20th century, acute poliomyelitis became prevalent in people who were very cautious about hygiene. (William H. McNeill, *Plagues and Peoples*, 2018) This theory then developed, focusing on the relationship between upsetting intestinal microbiota and hypersensitivity disorders. The latest version suggested that various social changes may reduce the change of exposure to a diverse range of microbiota, elevating the odds of inflammation for individuals. For instance, intensified hygienic practice that disinfects bodies, homes, and workplaces is one of the causes [23], and it is not uncommon considering the current Covid-19 situation. There is also study about the position microbiota hold on mental disorders on immunological terms. [24]

Speaking of the external environment, the blend of all these factors may add tension to the general environment. (De Groot JHB and Smeets MAM, 2017) 26 published studies have explored an interesting trait of human- the ability to convey fear, stress and anxiety through body odour from one person to another. [9] Inevitably, we have the instinct to sniff out the subtle change of emotions permeating the society. The relatively negative atmosphere manipulates us into the vicious cycle of generating more fear, stress and anxiety without us even noticing, and we created the vibe in the first place with our own hands.

Everything is connected in this scenario, for society is a concept only existing because of the combination of every individual altogether, as Yuval Noah Harari elaborates in his book *Sapiens: A Brief History of Humankind*, (Yuval Noah Harari, *Sapiens: A Brief History of Humankind*, 2017) humans have invented a collective imagination of countless fiction stories, such as the concept of nation, money or human rights. Somehow magically, almost everyone is convinced and be able to work reconcilably with each other. At the same time, there is no escape from the external environment of society for almost anyone.

3. Measurements to fight off negative emotions

There are certain adjustments we can fit into the normal daily routines during the lockdown in order to restore mental health, namely, diet, sleep, exercise, and communications. Concern for environment also renders the lockdown less unbearable.

Speaking of self-oriented methods, for starters, implementing a healthy and balanced dietary plan will have positive effect on mental health. During the period of Covid-19, people may be forced to alter diet habits due to financial condition or isolation. According to a survey targeting the Italian, 17.8% of the participants had lower desire for food as from before, meanwhile, 34.4% of the participants had noticed their increased intake in food consumption. Correspondingly, 48.6% of the population had noticed their scale numbers going up. Interestingly, 15% of participants replaced their original diets with organic or farmers' produce like vegetables and fruit. This phenomenon was most spotted particularly in North part of Italy, where the residents had lower BMI index generally.[10] This indicated that Mediterranean diet, which incorporates fresh vegetables and fruit, lean meats, fish, nuts, and wholegrains, can reduce the rate of mental dysfunction occurrence.[11] Nutritious and balanced diet to mental health is like rosin to the violin bow. For the purpose of a smooth and extraordinary performance, they are the fundamental instruments.

Moreover, a good night sleep automatically prescribes excellent mental health majority of the time. Poor mental health can mess with sleeping patterns correspondingly. (Panteleimon Voitsidis et al, 2020) Researchers collected information from 2,363 responders from a Greek population on sleep quality during Covid-19, 37.6% of them admitted having trouble sleeping.[13] (Jared D. Minkel et al, 2014) A study with 53 healthy adult participants divided into two groups: 29 of them had sleep deprivation and 24 as the control group. When facing a lower-stressor task, the prior group manifested more pressure, irritation and anxiety than the latter group. [12] It is important to take actions before

insomnia triggers chronic mental disorders, or even spills over to physical conditions imperceptibly. Sleep difficulty can result in activating the inflammatory signaling. [14] In this particular case of Covid-19, this discovery has significant meaning.

Exercise better mental health on certain levels. Take Italy as an example, (Laura Di Renzo et al, 2020) researchers studied the lifestyle alternation during Covid-19 and drew to the conclusion that 48.6% of 3533 participants experienced weight gain. 38.3% of them claimed to be a little bit more active than before, and in terms of choices of exercise, they expressed a preference for weight training.[10] There are studies suggesting that energetic exercise purifies mental hygiene of individuals, whether with or without clinically diagnosed mental ailments.[16] (David C Nieman and Laurel M Wentz, 2018) In a review, it indicated that physical exertion may have the chance of bringing down the morbidity in certain bacterial and viral diseases.[15]

Diet, sleep and exercise interact with each other, no matter for better or worse. Not only will they affect physical health at the same time for potentially boosting immune system. Improved physical health, such as improved immunity, alleviates undesired pressure on mental health.

Communication between family members, friends, ourselves or even pets dismantle the negative emotional walls we have built. Stress and fear feed on the boredom and loneliness we are experiencing and use it to stifle us. This is when communication comes in handy and weaves our experiences of this pandemic together and eventually, it would become parts of the fabric of the mutual relationship, as opposed to keeping the emotions to ourselves, under the false belief that we are undergoing the downsides of the pandemic alone. (Adam Hampshire et al, 2021) A study in UK provided a convincing argument that more than 80% of 79,779 responders find more time to bond with their loved ones instead of indulging themselves in apps. [17]

Viewing from a bigger picture, even though isolation has the odds of raising morose sentiment among individuals, it also partakes in cutting off channels of infection and making amends to the environment which we have been taking for granted. There has been speculation about environmental reasons generating Covid-19 in the first place. According to a release covered by WHO in 1996, it demonstrated that At least 30 new diseases had emerged in the last 20 years. In 2020, WHO estimated that every year, “more than 700 000 people die from vector-borne diseases (VBDs) such as malaria, dengue, schistosomiasis, leishmaniasis, Chagas disease, yellow fever and Japanese encephalitis, among others. More than 80% of the global population lives in areas at risk of at least one major vector-borne disease.” Climate has a huge impact on the distributions of vector-borne disease, as Campbell-Lendrum D et al proposed^[3]. Take China as an example, contrast to the same sequent two weeks after the Spring Festival holiday in 2019, CO2 emissions dropped by at least 25% in 2020, which was approximately 6% of the emissions worldwide during the same spell of time. There are researchers studied climate and Covid-19 mortality rate. It indicated that temperature and absolute humidity are not in relation with Covid-19 mortality cases, while DTR is. This finding suggested that when treating Covid-19 patients, the fluctuation of temperature and humidity may influence the survival rate. [28] In that theory, revising the disorder of environment will help calm Covid-19, and restore our mental health at last.

The first four things can boost the immune system to some extent, while the isolation can cut off channels of infection and cushion the blow on environment in some ways. Eventually, break the cycle as mentioned.

Nassim Nicholas Taleb has talked about how randomness is important for the stability of the entire system. If a system has never encounter small setbacks, then the next possible random incident might be destructive. (Nassim Nicholas Taleb, *Antifragile: Things That Gain from Disorder*, 2013) The theory can also be applied to immune system. Small attacks from light infections may be beneficial for the stability of our immune system. Namely, viewing from the entire human history, Covid-19 possibly acts as a role of one of the “randomness” to keep the stability and strength of our immune system, if we take active measurements to protect each other, and stop blurring the line between human society and nature at the same time. With that perception in mind, possibly it will help to look Covid-19 in the eye with more motivation and maintain taking active countermeasures.

4. Aromatherapy

In terms of therapeutic methods, aromatherapy has aroused attention among many researchers. Clinical aromatherapy can bring down the level of anxiety, depression, stress, insomnia, or pain in patients. If inhaled, it can induce instant alternation in vital signs, such as blood pressure and pulse rate. Essential oils are frequently used in aromatherapy, which are normally extracted from a plant's seeds, pedals, leaves, roots or fruits etc. [19] Lavender, peppermint essential oils and Eucalyptol are three of the examples.

Silexan, a standardized essential oil extract of *Lavandula angustifolia* (SLO), which contains linalool and linalyl acetate, has been approved to treat subsyndromal anxiety in Germany. [20] It is given through oral administration, instead of inhalation, which has been proved to alleviate anxiety levels after taking 80 mg/die for at least 6 weeks. [21] The researchers detected that the decrease in 5HT1A receptor activity was doing the trick. [20]

(LIANG Haoming, et al, 2015) During the research, they confirmed that peppermint oils of nasal inhalation administration could resist mental fatigue on sleep-deprivation mice. The essential oils stimulated the amino acid transmitters, resulting in the decrease in Glu and Asp, whereas an increase in Gly and GABA. They participated in the modulation of mental activities and conditions. [22] It is possible to apply essential oils containing SLO or peppermint extract on Covid-19 patients for stress-reducing purpose under strict and detailed principles and administration.

Eucalyptol, a natural component mostly derived from *Eucalyptus globulus*, which can lower the manufacture of inflammatory mediators (TNF- α , IL-6, and IL-8). Among these inflammatory mediators, IL-6 weighs in a phenomenon called "cytokine release syndrome", which can lead to undesired results in clinical practice during the treatment with Covid-19 patients. The respiratory effect of Eucalyptol attribute to its anti-inflammatory and antimicrobial ability. [29] Though aromatherapy is a relatively natural and organic method to help regulate emotions, it still requires further research, evidence and measurements.

5. Discussion

Covid-19 is probably the "The Black Swan Incident" of the current era. This is a concept brought up by Nassim Nicholas Taleb including the following factors: it has a profound impact occurs by accident, and we often have the urge to make excuses for it, considered it explicable and predictable. (Nassim Nicholas Taleb, *The Black Swan*, 2008) The pandemic itself, as a major social change, has an impact on sanitation principles and routines globally which has the possibility of changing the microbiota around us. It increases inflammation physically and the novel microbiota is in relation with mental health at some levels. [25] [26]

During the development of wave-particle duality, Werner Heisenberg formulated the concept of the Uncertainty principle, which stated that the momentum and position of a particle cannot be measured accurately at once. There is a similar concept called the Observer Effect, which means the status of observation itself can influence the observed. In the case of the studies about mental health in the times of Covid-19, the fact that participants are aware of the observation and evaluation may affect their mental status to some extent, either consciously or unconsciously. Questionnaires and index are common ways of mental health evaluation. Adding the Uncertainty principle and the Observer Effect, the subjectivity seems hard to be controlled precisely. The previous researches elaborated on the statistics showing women, older adults with dementia and healthcare workers are more likely to be in sub-health status emotionally. Social media also weighs in. They exhibit evidence that those cohorts are more vulnerable than others. Due to the particular quantification of mental health status, the statistics provide solid information, as well as indications to a certain degree. The realization and awareness of this can encourage us to combine all the information we acquired from various sources with our current actual emotions, and act or modify accordingly by paying more attention to dietary plans, sleeping schedules, exercise routines and communications on social safety distance during quarantine.

Aromatherapy is considered a relatively natural way of dealing with stress, anxiety and depression. There are some researches focusing on the effect of lavender and peppermint essential oils on mental malaise. However, more statistics and research are required for further evidence on this area.

Mental status is based on relatively feeling and definition, because the sense sensitivity and pressure threshold are different between individuals. Proven scientific researches provide us with reliable reference on dealing with negative emotions. It is necessary to take measurements to regulate and restore mental health based on dependable information and personal conditions.

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