Acta Scientific Ophthalmology (ISSN: 2582-3191)

Volume 4 Issue 9 September 2021

Short Communication

Quarantine in COVID: A Necessary Public Health Care Measure?

Ranjila Shyangbo[1]* and Raju Kaiti[2]

[1]*National Academy of Medical Sciences (NAMS), Nepal*

[2]*M. Optom, Consultant Optometrist, Nepal Eye Hospital, Nepal*

***Corresponding Author:** Ranjila Shyangbo, Final Year, Bachelor of Optometry and Vision Science, National Academy of Medical Sciences (NAMS), Nepal.

Received: May 17, 2021

Published: August 18, 2021

The world is facing an outraging pandemic of COVID-19 caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), first isolated in the Chinese province of Wuhan, which now has spread across 220 countries and territories resulting about 163,179,059 confirmed cases [1] with 3,383,606 deaths [1] and this number continues to change with progression of pandemic. What led to the pandemic nature of COVID 19 is its ideal attribute of high transmissibility, both via symptomatic and asymptomatic carrier. COVID-19 outbreak was declared as a Public Health Emergency of International Concern [2] (PHEIC) on 30 January 2020. Following the uncontrolled and explosive nature of the disease, the World Health Organization (WHO) has declared the outbreak of COVID-19 as a pandemic on 11 March 2020 [3]. So far there is no proven pharmacological treatment and vaccine for COVID-19. This necessitates to explore other options of decelerating the spread of pandemic. Of the many non-pharmacological public health controlling measures, isolation, physical distancing and quarantine have been imposed and are found to be one of the effective ways to respond to the outbreak.

In order to slow down the rate of infection, the Centers for disease prevention and control (CDC) has urged the preventive measure of "quarantine" and "isolation" to be implemented. Quarantine has been implemented from time to time in history, starting from Venice to prevent spread of leprosy. The term "quarantine" can be defined as containment of suspects who are doubted to be carriers of the disease. WHO has described "Quarantine of persons as the restriction of activities or separation of persons who are not ill, but who may have been exposed to an infectious agent or disease, with the primary objective of monitoring symptoms and the early detection of cases" [4]. Though quarantine and isolation have been used interchangeably, isolation, nonetheless, can be described as the separation of contagious individuals from healthy people, to prevent the outspread of disease and possible contamination.

The mode of transmission of SARS-CoV-2 is primarily respiratory via infected droplets and secretions. Although the SARS-CoV-2 is supposed to be zoonotic in its genesis, the ongoing pandemic has signified its strong predilection for human host to human host transmission. Therefore, quarantine of suspected individuals and isolation of positive cases may help to break the chain of transmission by limiting or averting any human-to-human contact. The mean incubation period of SARS-CoV-2 is reported to be about 3 - 9 days [5], with a range between 0 - 24 days [5], and an average incubation period of 1 - 14 days [6]. The mean serial interval has been known to be about 3 - 8 days [7], presenting shortly before the end of incubation which suggests that individual becomes infectious even before the outset of the first symptoms nearly about 2.5 days earlier. Based on this, WHO has recommended the 14-days quarantine strategy which has been universally implemented in major COVID afflicted countries and territories and has proven to be an effective public health measure in curbing the spread of disease [8].

Ranging from mild self-limited disease to life-threatening multiple organ involvement, COVID-19 clinically manifests in three phases- an early infection phase, a pulmonary phase, and a hyper-inflammation phase. Pre-symptomatic or asymptomatic transmis-

sion during the incubation period has been considered the Achilles' heel of COVID-19 pandemic control, since a considerable number of people testing positive for COVID-19 may show no symptoms at all [9]. In early infection phase, viral replication and relatively mild symptoms develops followed by pulmonary phase which is characterized by adaptive immunity stimulation and predominance of respiratory symptoms and, in some cases, a third and last phase may occur which progress to a hyper-inflammatory condition i.e. hyper-inflammation phase. The most frequently common symptoms of COVID-19 are similar to other viral respiratory diseases presenting with fever, cough, and fatigue with an estimated pooled prevalence of 82.68% [10], 57.67% [10] and 37.98% [10] respectively. But what differentiates COVID-19 from other viral respiratory diseases is the presentation of myalgia, sore throat, nausea, vomiting, dyspnea, anorexia, productive sputum, and abdominal pain. Beside respiratory symptoms, COVID-19 may also present with olfactory (anosmia and ageusia or dysgeusia), gustatory (vomiting, diarrhea, and abdominal pain or discomfort) and otolaryngological symptoms (Face pain and nasal obstruction).

Though WHO has recommended a 14 days quarantine, the duration may not be applicable in all cases, especially among asymptomatic carriers and severe COVID infection. The 14-days quarantine measures were based on sparse data and tended to enroll cases with a short incubation period more frequently than other patients [11], which may have underrated the segment of individuals with comparatively longer incubation period than others. Because the asymptomatic carriers may become a potent source of infection following halt of quarantine, it is necessary to define the length for quarantine based on the precise estimation of the incubation period. Incubation period distribution is vital in establishing the optimal duration for quarantine [12]. The CDC [13] has listed following people who needs to be quarantined [13]:

- People who have been in close contact with someone who has COVID-19 excluding people who have had COVID-19 within the past 3 months or who are fully vaccinated.
- People who have tested positive for COVID-19 within the past 3 months and recovered do not have to quarantine or get tested again as long as they do not develop new symptoms.
- People who develop symptoms again within 3 months of their first bout of COVID-19 may need to be tested again if there is no other cause identified for their symptoms.
- People who have been in close contact with someone who has COVID-19 are not required to be quarantined if they have been fully vaccinated against the disease and show no symptoms.

Why is quarantine and isolation a much needed public health measure to control COVID-19? The first and the foremost reason would be absence of effective treatment against it. There are uncertainties in the current treatment endorsed with almost no promising new therapies that are 100% effective against COVID-19. So far, the pathophysiology responsible for the severe form of the infection and death are not fully elucidated. In such a situation where very little is known about the disease and very little can be done to cure it, a preventive measure such as timely quarantine of suspected patients and appropriate isolation of positive cases will act to lessen the rate of transmission until a definitive cure is developed as "Prevention is better than cure". Secondly, as quarantine is designed to slow down the infection rate i.e. although the same proportion of individuals are supposed to get infected, it will take over a longer period of time, which tends to lessen the burden on the available health resources. Moreover, slowing down infection rate may also buy more time and manpower to develop a definitive therapeutic treatment against the infection in the form of an antiviral drug or a vaccine. Similarly, quarantine is likely to be a cost- effective measure to contain the spread of virus. And this is particularly important in countries with limited economies and health care means.

Implementation of strict quarantine has shown noteworthy outcomes in controlling the spread of virus. Taking example of China, from where the pandemic originated, China was successful in dropping down the daily admission rate of COVID patients from more than 1600 per day to less than 8 per day in less than a span of 1 month [14] by imposing a strict mass quarantine strategy with quarantine, estimates showed a minimum reduction in the number of people with COVID-19 of 44%, and a maximum reduction of 96% [15]. Similarly, with quarantine, estimates of the number of deaths showed a minimum reduction of 31%, and a maximum reduction of 76% [15]. Studies also indicated that there may be a reduction in the basic reproduction number ranging from 37% to 88% due to the implementation of quarantine [15]. It has also been proven that, if quarantine were to be integrated with other prevention and control measures, such as shut-down of educational institutions,

travel restrictions and physical distancing, a large reduction of new cases, transmissions and deaths than measures without quarantine or no interventions could be achieved.

While discussing the pros of quarantine, the cons must not be missed. The benefits of quarantine come with a huge negative psychological implication, both for the patient and health care providers. Quarantine can be an unpleasant experience for some patients, especially for those who already have pre-existing psychiatric disorders. Moreover, even for health care workers who have been quarantined, exhaustion, detachment from others, anxiety when dealing with febrile patients, irritability, insomnia, poor concentration and indecisiveness, deteriorating work performance and reluctance to work or consideration of resignation have been reported [16]. Quarantine measures, in general, are known to cause up to 4 times post-traumatic stress in quarantined individuals in comparison to non-quarantined individuals [17]. The psychological experience often exacerbate any physical symptoms experienced during the quarantine period. Even from an economic point of view, quarantine has a negative impact, particularly in those areas where "work from home" or "remote office" cannot be made practical further attributing to underemployment, poverty, aggravating mental health issues (depression, anxiety, stress) and hunger. From a health perspective, quarantine of staff causes scarcity of service providers, leading to excessive burdening on available local health care systems and the workers. This is particularly of more importance in countries with limited health care facilities where only limited health care workers and resources are available, making the situation unsophisticated to combat any pandemics, epidemics or even endemics. The risk of spread of infection in the health care workers also increases, which may further contribute to the problem as they are the front line of defense against such outbreaks [18]. Beside that quarantine facilities may themselves become breeding hubs for COVID-19 due to improper facilities, crowding, poor sanitation and hygiene and lack of proper medical care due to limited staffs. Therefore, quarantine implemented recklessly without proper guidelines and protocols will only result in more harm than good. For this reason, WHO[4] has recommended certain measures that to improve compliance and effectiveness in times of quarantine and to reduce negative psychological impacts [4]:

- Authorities must make available clear, up-to-date, transparent and consistent guidelines, as well as reliable information about quarantine measure;
- Constructive engagement of communities makes quarantine measures more acceptable;
- People who are quarantined, are to be provided with proper health care, financial, social, and psychosocial support, along with basic necessities such as food, water, and other essentials. The needs of vulnerable populations should be prioritized;
- Cultural, economic, and geographic factors are known to influence the success of quarantine. Rapid assessment of the local context should consider both the drivers of success and the potential barriers to quarantine, and the design is to be informed in most appropriate and culturally accepted measures.

In conclusion the ongoing global pandemic of COVID-19 is a major threat to 21 century Earthlings, the cure of which is yet to be discovered. As a matter of fact, to contain the spread of COVID, quarantine is one of the most important public health measures to decline the number of infections and deaths resulting from severe infection, considering factors like effectiveness, manpower and costs. However, the potential benefits of quarantine should be weighed carefully against the possible harms. Therefore, early and efficient implementation of quarantine by combining with other preventive and control measures seems to be key to obtain the desired outcome.

Bibliography

1. Worldometer. Coronavirus Update (Live): 163,179,059 Cases and 3,383,606 Deaths from COVID-19 Virus Pandemic - Worldometer (2021).
2. WHO. Timeline: WHO's COVID-19 Response (2020).
3. WHO. WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 (2020).
4. World Health Organization. Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19): Interim guidance, 19 March 2020". World Health Organization (2021).
5. Siordia JA. "Epidemiology and clinical features of COVID-19: A review of current literature". *Journal of clinical virology: the official publication of the Pan American Society for Clinical Virology* 127 (2020): 104357.

6. Li Q., *et al*. "Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia". *The New England Journal of Medicine* 382.13 (2020): 1199-1207.

7. Lauer SA., *et al*. "The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application". *Annals of Internal Medicine* 172.9 (2020): 577-582.

8. Liu C., *et al*. "Pollen PCP-B peptides unlock a stigma peptide-receptor kinase gating mechanism for pollination". *Science* 372.6538 (2021): 171-175.

9. Gandhi M., *et al*. "Asymptomatic Transmission, the Achilles' Heel of Current Strategies to Control Covid-19". *The New England Journal of Medicine* 382.22 (2020): 2158-2160.

10. Hatmi ZN. "A Systematic Review of Systematic Reviews on the COVID-19 Pandemic". *SN Comprehensive Clinical Medicine* (2021): 1-18.

11. Linton NM., *et al*. "Incubation Period and Other Epidemiological Characteristics of 2019 Novel Coronavirus Infections with Right Truncation: A Statistical Analysis of Publicly Available Case Data". *Journal of Clinical Medicine* 9.2 (2020): 538.

12. Nishiura H. "Determination of the appropriate quarantine period following smallpox exposure: an objective approach using the incubation period distribution". *International Journal of Hygiene and Environmental Health* 212.1 (2009): 97-104.

13. CDC. When to Quarantine (2020).

14. Willem Roper. Mass Quarantine Effective Against Coronavirus in China (2021).

15. Nussbaumer-Streit B., *et al*. "Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review". *Cochrane Database of Systematic Reviews* 4.4 (2020): CD013574.

16. Bai Y., *et al*. "Survey of stress reactions among health care workers involved with the SARS outbreak". *Psychiatric Services* 55.9 (2004): 1055-1057.

17. Brooks SK., *et al*. "The psychological impact of quarantine and how to reduce it: rapid review of the evidence". *Lancet* 395.10227 (2020): 912-920.

18. Marjanovic Z., *et al*. "The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey". *International Journal of Nursing Studies* 44.6 (2007): 991-998.

Volume 4 Issue 9 September 2021