Quarantine: Psychological aspects

ABSTRACT

Quarantine is an age-old method of preventing the spread of infection by restricting the movement of persons or goods. It has again come to global attention due to its widespread implementation during the COVID-19 pandemic. While the public health utility of quarantine is well established, it is associated with few psychological effects which are neither well known nor recognized. In this communication, the psychological side-effects of quarantine and their prevention are briefly discussed.

Keywords: Psychological effects, quarantine, remedial actions

TERMINOLOGY

The word “quarantine” is a modification of the Italian word “quarantena” (quarantine of ships), from the Italian “quaranta” (forty). According to the Oxford English Dictionary, quarantine is defined as, “A period (originally of forty days) during which persons who might serve to spread a contagion are kept isolated from the rest of the community; especially a period of detention imposed on travelers’ or voyagers before they’re allowed to enter a country or town, and blend with the inhabitants. It is also a period of segregation.

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or isolation following contact with an individual laid low with a contagious disease.”

**HISTORICAL ASPECTS OF QUARANTINE**

**Ancient past**
The history of quarantine goes back to ancient times. The Bible describes some health control measures. Isolation of infected persons and burning their garments is mentioned in the Old Testament (Leviticus 13). The new testament also advised isolation of sick people. Ancient Greek leaders and physicians advocated the isolation of sick long before the discovery of the microbes causing infectious diseases.

**The middle ages**
The middle ages comprise of the ten centuries from the fifth to the 15th century AD. During this era, Europe was ravaged by recurrent plague epidemics. During the 14th century, 30% of the population of Europe succumbed to the plague. While dealing with contagious diseases, it became evident that there exists a relation between the passage of time and commencement of symptoms in that, subjects who did not develop symptoms of the disease after a period of time neither developed nor spread the disease. As a result of this mandatory, isolation was instituted by the State. People tried to protect themselves by isolation of sick people, quarantining persons suspected to be infected, and disallowing persons and products coming from infected areas from entering healthy communities. Laws to isolate persons coming from areas affected by the bubonic plague epidemic were issued in 549 AD by the Byzantium emperor, Justinian the Great. During that period, quarantine was the sole effective health measure against the spread of transmissible diseases. In 1348, during a notorious epidemic of the plague (the “Black Death” described by the Italian writer Boccaccio in “Il Decamerone”) the Republic of Venice established a quarantine system by which full ships and individuals were detained within the Venetian lagoon for 40 days. In 1377 the Rector of Ragusa (city state of Dubrovnik, Croatia) and yellow fever were the infectious diseases that required quarantine. In 1710, England enacted The Quarantine Act by which individuals not following the prescribed compulsory 40-day quarantine for the plague could be awarded the death sentence. Similar laws were also passed within the U.S.A.; a quarantine anchorage off Liberty Island was started in 1738 to stop the diffusion of yellow fever and small pox in New York. Toward the end of the 18th century, the administration of Philadelphia had a ten-acre quarantine station built south of the town along the Delaware River to stave off yellow fever, which had continued to be a particularly serious biological danger for the complete state.

**The 19th century**
The frequent cholera epidemic occurring in the 19th century and finally compelled the authorities to formulate a uniform quarantine policy.

**The 20th century**
In the 20th century, air movements became the foremost transmission modality for large-scale diseases requiring quarantine, such as influenza, severe acute respiratory syndromes (SARS), and avian influenza. In light of the historical lessons learned from SARS and from avian influenza, quarantine regulations were recently reviewed, and on June 15, 2007, the revised International Health Regulations (IHR) became operative. The IHRs are a licensed set of procedures and rules aimed toward rendering the world safer from global health threats including food and environmental safety and communicable diseases.

**Quarantine in the present day**
Apart from COVID-19, the list of quarantinable diseases includes cholera, diphtheria, tuberculosis, plague, smallpox, yellow fever, viral hemorrhagic fevers, and SARS.

**STRESSORS DURING QUARANTINE**

**Length of quarantine**
The increased duration of quarantine is associated with higher prevalence of psychological symptoms, especially posttraumatic stress symptoms, avoidance behaviors, and anger.[1-3]
Infection related fears
Quarantined subjects are fearful about their own health and also fearful of infecting others, especially their family members. Their fear is particularly increased if they developed any physical symptoms that could be due to the infection and this fear continued to be related to psychological outcomes several months later.[4-5] On the other hand, one study reported a very low prevalence of fear except subjects having young children or were pregnant.[6]

Boredom and irritation
Due to quarantine, subjects are confined, unable to follow their usual routine, and have less social and no physical contact with others. These factors often caused boredom, irritation, and a feeling of isolation from the rest of the world, which distressed the participants. Inability to participate in normal daily activities such as shopping for daily requirements or taking part in social networking activities through the telephone or Internet 7 worsened the irritation.[3-5]

Lack of essential supplies
Causes of irritation in quarantine participants included inadequate basic essential facilities (e.g. housing, food, water, toilet, or clothing).[7] Subjects continued to have feelings of anger and anxiety 4–6 months after completion of quarantine.[5] Inability to obtain continued medical care and prescriptions was a major problem for some subjects.

Lack of information
A stressor reported by many subjects was poor information from public health authorities. Subjects complained about lack of clear guidelines about actions to be taken by them. In addition, they were confused about the objective of quarantine.[3]

STRESSORS AFTER QUARANTINE

Financial loss
Loss of income is a major challenge during quarantine, since without advance planning people are confined to home, and therefore, not able to go for work or engage in their professional activities. Unfortunately, these effects may last long after the quarantine period has ended. A review observed that the financial loss due to quarantine resulted in severe socioeconomic distress[8] and was a risk factor for psychiatric disorders[6] and both anger and anxiety several months after quarantine.[1,4]

Stigma due to infection
Quarantined health-care workers (HCWs) report stigmatization and rejection from people in their local neighborhoods’ significantly more than nonquarantined HCWs, clearly proving that quarantined persons are stigmatized. Participants in few studies observed altered behavior of others towards them including avoidance, withdrawal of social invitations, and fear of contacting infection from them and making disparaging remarks.[9]

PSYCHOLOGICAL CONSEQUENCES

Few studies which compared the psychiatric effects on people who had been quarantined with those who had not undergone quarantine reported varying results.[10] Evaluation of HCWs who had been exposed to SARS reported that in the immediate postquarantine period the most important predictor of acute stress disorder was the fact of being quarantined. Quarantined HCWs had significantly higher prevalence of feeling exhausted, detached from others, irritable, reduced sleep, and poor concentration, inability to take decisions, anxious when handling patients with fever, declining work performance, and reluctance to do work or considering resignation.[11]

Mean posttraumatic stress scores of quarantined children was four times higher than children who had not been quarantined. In the same study 28% (27 of 98) of quarantined parents and only 6% (17 of 299) of parents who were not quarantined met the criteria for a trauma-related mental health disorder. In HCWs having been quarantined was found to be predictor of posttraumatic stress symptoms even after 3 years. 3 years after quarantine the prevalence of high depressive symptoms was 9% (48 of 549) among HCWs. The prevalence of posttraumatic stress disorder symptoms was directly related to the durations of quarantine. During quarantine people experienced fear of falling sick or dying, feelings of helplessness, increased levels of self-blame, fear, and depression.[11-13]

A different pattern of negative responses during the quarantine period were observed in individuals undergoing quarantine due to exposure to suspected cases of SARS (n = 1057) viz.: Fear (20%), nervousness (18%), sadness (18%), and guilt (10%). A few of the subjects also reported positive feelings including: Happiness (5%) and relief (4%).[8] Qualitative studies reported additional psychological reactions (fear, anger, numbness, grief, and lack of sleep) during quarantine reported. Comparison of psychological reaction of quarantine with later outcome revealed that the prevalence of anxiety and anger was 7% and 17%, respectively, during quarantine and after 4–6 months had reduced to 3% and 6%, respectively.[13] After quarantine, many participants still engaged in avoidance behaviours. A significant and positive association of being quarantined with avoidance behaviors, such as
avoiding direct contact with patients and absence from work was reported in HCW. Some HCW also reported long-term behavioural changes following quarantine, such as attentive hand washing and evading crowded places. A past history of psychiatric disorders was associated with presence of anxiety and anger 4–6 months after quarantine.\[3-5\]

**REDUCING THE ADVERSE PSYCHOLOGICAL EFFECTS OF QUARANTINE**

During a pandemic quarantine is an inescapable and lifesaving preventive measure to contain the spread of infection. However, it is also associated with adverse psychological effects. The following steps have been suggested to reduce the adverse psychological effects of quarantine.\[3\]

**Disseminate disease-related information**
In view of extreme fear by people in general and persons in quarantine in particular every effort should be made to disseminate basic information about the disease, transmission, communicability, and the purpose and duration of quarantine so that the extreme fear caused by the disease is dissipated.

**Minimize the duration of quarantine**
Since length of quarantine is associated with increased adverse psychological effects, it is logical to propose that the duration should be kept at the minimum scientifically allowed period, discarding an extremely cautious approach. Repeated and unnecessary prolongation of quarantine is likely to worsen the psychological consequences in addition to grave economic impact. Announcing strict lockdown for the entire nation or cities without announcing an end point may be psychologically worse than strict quarantine prescribed only for the incubation period of a disease.\[14\]

**Ensure adequate provision of essential supplies**
The government should make necessary arrangements for making basic amenities like food and medicine supplies available to the general population in such a crucial time. People belonging to the below poverty line category should be provided these amenities free of cost to tide over the quarantine period as most of them have no source of income during this period. Backup supplies should also be taken into account so that no one runs out of them.\[15\]

**Improve communication**
Clear guidelines on coping with the disease and quarantine along with stress management should be adequately communicated to the people. Public health officials should spread information in simple language to guide the populace about the steps to be taken should they develop any suspicious symptoms and the further steps to be undertaken. During lockdown, quarantine and also during the physical distancing prescribed in the COVID-19 pandemic, social media and the internet plays a large part in alleviating boredom and isolation by increasing opportunities to keep in contact with family members, friends, and co-workers at any time. However, internet can also have a negative impact on mental health of people, due to spread of unverified rumors, half-truths and downright false and alarming news.\[16,17\]

**Keep one occupied**
One should engage in activities they find pleasurable, which otherwise due to their busy schedules previously, they would not have had time for. This helps keep the mind occupied and helps in dealing with negative emotions associated with quarantine.

**CONCLUSION**
Quarantine can produce numerous adverse psychological consequences which can last longer than the quarantine itself. This is certainly not a ground to suggest that quarantine should not be imposed at all, but for the concerned authorities to do due diligence before imposing quarantine.

On the other hand, deprivation of liberty of a small group for the wider public good is always controversial and should be done after due consideration and the logic clearly explained.

If quarantine is inescapable, then the concerned authorities should take steps to ensure that this period should be with the minimum discomfort for the public. This can be achieved by giving a detailed explanation of the need for the step either before or simultaneously with imposing the quarantine. The duration should also be announced and explained. During the quarantine meaningful activities should be available and essential supplies including medicines should be provided. The aim should be to achieve the cooperation of people by giving full explanation and appealing to altruism rather than browbeat and coerce the population by making them feel guilty.

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