Understanding the emerging and reemerging terminologies amid the COVID-19 pandemic

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ABSTRACT

Coronavirus disease (COVID-19) has been declared as a Public Health Emergency of International Concern by the World Health Organization (WHO). During this phase of the health crisis posed by the COVID-19 pandemic, news in print, electronic as well as the social media is abuzz with several emerging and reemerging terminologies. Some of them, such as “social distancing,” “infodemic,” “flattening the curve,” “quarantine,” “cluster containment,” and others were not in routine use but have suddenly reemerged and become the key toward understanding the disease and its prevention. Many of these terms have been a part of public health strategies used for centuries for containment of the spread of infectious diseases. These terms span across social, epidemiological, and administrative contexts concerning the COVID-19 pandemic. Our article aims to present a better understanding of the meaning and origin of these terms and their application in the context of the current pandemic based on a review of the available literature such as chapters from textbooks, published guidelines of the WHO and Centre for Disease Control and Prevention (CDC) and published articles in journals and newspapers through a comprehensive search of the electronic database in English.

Keywords: COVID-19, flattening the curve, hotspot, infodemic, isolation, lockdown, quarantine, social distancing

Introduction

On January 30, 2020, the outbreak of coronavirus disease (COVID-19) was declared as a Public Health Emergency of International Concern by the World Health Organization (WHO). During this phase of the health crisis posed by the COVID-19 pandemic, news in print, electronic as well as the social media is abuzz with several emerging and reemerging terminologies. Some of them, such as “social distancing,” “infodemic,” “flattening the curve,” “quarantine,” “cluster containment,” and others were not in routine use but have suddenly reemerged and become the key toward understanding the disease and its prevention. Many of these terms have been a part of public health strategies used for centuries for containment of the spread of infectious diseases. These terms span across social, epidemiological, and administrative contexts concerning the COVID-19 pandemic. Our article aims to present a better understanding of the meaning and origin of these terms and their application in the context of the current pandemic based on a review of the available literature such as chapters from textbooks, published guidelines of the WHO and Centre for Disease Control and Prevention (CDC) and published articles in journals and newspapers through a comprehensive search of the electronic database in English.

As on date, the COVID-19 pandemic has affected nearly 29.01 million people and caused 925,603 deaths across 215 countries in the world. When a novel microbial agent with pandemic potential emerges for which no vaccine or drugs are currently available, public health measures become the cornerstone to limit the spread of the agent in the population. Under the present health crisis posed by COVID-19, news on every platform, whether advisories of WHO or governments of various nations, conventional and social media platforms, has been dominated by several emerging or reemerging terminologies such as “COVID-19,” “social distancing,” “infodemic,” “flattening the curve,” “self-quarantine,” “isolation,” “cough etiquette,” “lockdown,” “hotspots,” “containment zone,” “buffer zone,” and others. These words or phrases are not mere jargon; instead many of these have been a part of public health strategies used for centuries for containment of the spread of infectious diseases, although some of these terms may not have been in routine public use. The use of measures for controlling outbreaks of infectious diseases with epidemic potential like isolation, quarantine, social distancing,

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and others have always been controversial because these strategies are perceived as intrusive and raise ethical, political, and socioeconomic concerns that require a careful balance between public interest and individual rights. The globalized world of today, which is highly vulnerable to communicable diseases, better understanding and a historical perspective of the terminologies would help justify the use and implications of these still in use public health strategies. These strategies would be particularly relevant to the primary care physicians who would likely be the first point of contact with COVID-19 cases in the coming days with the tertiary healthcare infrastructure already overwhelmed across the world and the increasing number of cases as the pandemic continues.

We undertook a comprehensive search of the electronic database in English on PubMed, websites of WHO, Centre for Disease Control and Prevention (CDC), ministries and departments of government, and various newspapers using keywords of “social distancing,” “infodemic,” “flattening the curve,” “self-quarantine,” “isolation,” “cough etiquette,” “lockdown,” “hotspots,” “containment zone,” and “buffer zone.” A review of the available literature such as chapters from textbooks that published guidelines of the WHO and CDC and published articles in journals and newspapers were done to revisit these concepts to gain deeper insight about them. This article aims to present a better understanding of the meaning and origin of these terms/concepts and their application, particularly in the context of the COVID-19 pandemic. Since this article is a review of already published literature, no approval from the institutional ethics committee was taken.

**Isolation and Quarantine**

Isolation is often considered to be the predecessor of quarantine.\(^6\) Isolation is a restriction of movement or separation of persons who are ill with specific contagious (infectious) illness from those who are healthy to stop the spread of that disease and to provide specialized medical care for people who are ill. Isolation of sick individuals may be done in hospitals, in their homes, or designated healthcare facilities. Isolation is prescribed for the period of communicability, that is, the period during which the person sheds the infectious agent and is capable of transmitting the disease to others.\(^6,7\)

Historically, isolation, not quarantine, was the primary method of halting the spread of pandemics, because people did not understand the concept of an incubation period.\(^8\)

Quarantine is used to separate and restrict the movement of those good persons who may have been exposed to a contagious illness, but do not currently have symptoms, to see if they become sick. These individuals may or may not be contagious. Quarantine must be prescribed for the longest known incubation period of that disease. Quarantine usually takes place in the home or at a designated facility and may be applied at the individual level or to a group or community of exposed persons. Quarantine may be self-imposed and followed voluntarily, hence the term self-quarantine, or may be enforced by the health authorities or administration.\(^6,7\)

The most primitive mention of the use of isolation is found in the thirteenth chapter of the Biblical book of Leviticus, in response to skin disease (most likely leprosy). Although there is no consensus regarding the exact age of Leviticus, most biblical scholars agree that it was written between the 5th and 8th century BC. The Jewish Rabbis (religious teachers) did not know about the bacteria causing the skin disease, but they did know the value of isolation.

About a thousand years later, the first recorded outbreak which came to be known as the Plague of Justinian began in 540 A.D. along the territories surrounding the Mediterranean Sea. Since there was little understanding of the cause of this disease at the time, many families usually the marginalized were confined in their homes, sometimes through the use of force, or avoided public gatherings and even fled their communities.\(^6\)

The word quarantine has been derived from the Italian word “quaranta” meaning 40.\(^8\) To prevent the spread of the plague, the Venetians enforced a “quarantine” (40-day quarantine) to incoming healthy travelers and ships. Initially, the term “trentino” implying 30 was used for a 30-day isolation period prescribed for people who became sick. However, the reason for the increase in this period of sequestration to 40 days is not certain. History has it that it could have been due to religious reasons like the 40-day observation of lent or the ancient Greek principle of “critical days,” where it was believed that a disease would develop by 40 days.\(^8\)

The first formal system of isolation and quarantine began in Europe during the plague epidemic in the 14th century. Quarantine was first introduced in Dubrovnik on Croatia’s Dalmatian Coast in the year 1377, and the first permanent plague hospital (lazaretto) for isolation of patients was set up in 1423 on a small island of Santa Maria di Nazareth in Venice. To restrict the spread of disease, Lazarettos were located far enough from centers of habitation but close enough to transport the sick.

During the latter half of the 17th century legislations related to quarantine were drawn up in both Europe as well as North America where attempts were being made to control yellow fever which had appeared in New York and Boston. By the 18th century, the appearance of yellow fever in Mediterranean ports of Italy, Spain, and France forced governments to introduce rules involving the use of quarantine. Also, the fear of smallpox outbreaks induced health authorities to order mandatory home isolation of persons with smallpox.\(^8\)

The identification of pathogenic agents of the most feared epidemic diseases between the 19th and 20th centuries brought about a turning point in the history of quarantine. At the beginning of the 20th century, these preventive strategies began to be considered as a thing of the past. But it was not long before the world was exposed to another health challenge, the 1918 influenza (Spanish
Quarantine lasts no longer than is necessary to ensure that care and essential services are provided to all people under quarantine.

Quarantine is included within the legal framework of the disease-containment strategies including the closure of schools, churches, theaters, suspension of public gatherings, and the use of measures like respiratory hygiene and social distancing were implemented.

The concept gained popularity once again during the COVID-19 pandemic as “remaining out of close contact with a COVID-19 patient within 1 m and for >15 min (from 2 days before and up to 14 days after the onset of symptoms in the patient); or providing direct care for patients with COVID-19 disease without using proper personal protective equipment; or staying in the same close environment as a COVID-19 patient like the workplace, classroom, or household or being at the same gathering for any amount of time; or traveling nearby, that is, within 1 m separation from a COVID-19 patient in any kind of conveyance.”

WHO recommendations for COVID-19 quarantine
In the context of the current COVID-19 outbreak, the global containment strategy includes the rapid identification of laboratory-confirmed cases and their isolation and management either in a medical facility or at home. WHO recommends that contacts of patients with laboratory-confirmed COVID-19 be quarantined for 14 days from the last time they were exposed to the patient. To implement quarantine, contact has been defined as a person who is involved in face-to-face contact with a COVID-19 patient within 1 m and for >15 min (from 2 days before and up to 14 days after the onset of symptoms in the patient); or providing direct care for patients with COVID-19 disease without using proper personal protective equipment; or staying in the same close environment as a COVID-19 patient like the workplace, classroom, or household or being at the same gathering for any amount of time; or traveling nearby, that is, within 1 m separation from a COVID-19 patient in any kind of conveyance. WHO recommendations for COVID-19 quarantine

Social Distancing
Although the use of social distancing measures dates back to 5th century BC, the term was for the first time used in public health during the Spanish Flu pandemic of 1918 as per the available literature. The phrase was also commonly used by the sociologists during the 1950s and 1960s to describe individuals or groups deliberately adopting a policy of social or emotional detachment.
Edward T. Hall, a cultural anthropologist, in his book titled “The Hidden Dimension” published in 1966 emphasized the impact of proxemic behavior (the use of space) on interpersonal communication. Hall's concern was that closer distances between two persons may increase visual, tactile, auditory, or olfactory stimulation to the point that some people may feel intruded upon and react negatively. Hall described the interpersonal distances of man (the relative distances between people) in four distinct zones: (1) intimate distance (<0.5 m), (2) personal distance (about 1 m), (3) social distance (2 to 3 m), and (4) public distance (>5 m).

The concept gained popularity once again during the SARS outbreak and is one of the most widely used strategies during the COVID-19 pandemic. Social distancing is deliberately increasing the physical space between people and limiting their face-to-face interaction to avoid the spreading of illness. These are a set of non-pharmaceutical interventions or measures taken to prevent the spread of a contagious disease by maintaining a physical distance between people and reducing the number of times people come into close contact with each other. It usually involves keeping a distance of 6 feet (2 m) from others and avoiding gathering together in large groups. The CDC describes social distancing as “methods for reducing frequency and closeness of contact between people to decrease the risk of transmission of disease.” CDC has revised the definition of social distancing during the present COVID-19 pandemic as “remaining out of congregate settings, avoiding mass gatherings, and maintaining distance (approximately 6 feet or 2 m) from others when possible.”

Quarantine
Quarantine, as is being currently practiced, is a public health tool involving collective action for the common good. It is more likely to be applied to few people exposed to contagion in a small area such as on an airplane or at a public gathering and only rarely is applied to entire cities or communities. The main goal of modern quarantine is to reduce transmission by increasing the “social distance” between persons; that is, reducing the number of people with whom each person comes into contact. The following key principles of modern quarantine ensure that the basic needs of those infected and exposed are met and it strikes an appropriate balance between individual liberties and the public good.

• Quarantine is used when persons are exposed to a disease that is highly dangerous and contagious.
• Exposed well persons are separated from those who are ill.
• Care and essential services are provided to all people under quarantine.
• The “due process” rights of those restricted to quarantine are protected.
• Quarantine lasts no longer than is necessary to ensure that quarantined persons do not become ill. Its maximum duration would be one incubation period from the last known exposure, but it could be shortened if an effective vaccination or prophylactic treatment is available and can be delivered in a timely fashion.
• Quarantine is used in conjunction with other interventions like disease surveillance and monitoring for symptoms in persons quarantined by rapid diagnosis, and timely referral for those who become ill, and provision of preventive interventions, including vaccination or prophylactic antibiotics.

Quarantine is included within the legal framework of the International Health Regulations (2005), and articles 30, 31, and 32 specifically pertain to the quarantine of travelers.

Modern quarantine: principles and practice
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Measures to ensure social distancing

- Working from home instead of at the office
- Closing schools or switching to online classes
- Canceling or postponing conferences and large meetings
- Avoid eating or drinking in restaurants, bars, and food courts.
  Use pickup or delivery options.
- Avoid visiting nursing homes, old age homes, or long-term care facilities.
- Stay connected virtually with loved ones through video calls, phone calls, texts, or social media.\[11-13,18\]

Social distancing measures are more effective when the infectious disease spreads via droplet infection (coughing or sneezing), direct physical contact, including sexual contact, indirect physical contact (by touching a contaminated surface), or by airborne transmission (if the microorganism can survive in the air for long periods).\[13\] These measures are less effective when the infection is transmitted primarily via contaminated water or food and by vectors. The effects of social distancing include a reduction in the probability of an uninfected person coming into physical contact with an infected person thereby reducing the disease transmission and avoids overburdening healthcare systems, particularly during a pandemic (Flattening the curve).

However, during the COVID-19 pandemics, the usage of this term has been subjected to a lot of critique and debate. The term “social distancing” can imply a sense of disconnection from persons. During this period of a health crisis when being physically isolated from others can have serious implications on mental health, WHO emphasizes that people must stay socially connected. Hence, WHO suggested the use of the term “physical distancing” in preference to “social distancing” in keeping with the notion that it is the physical distance between people that would be required to prevent the transmission; people can remain socially connected via technology with their family and friends. Some critiqued that the term social distancing hints towards social discrimination.\[11-13,18\]

Given the COVID-19 pandemic, to prevent the spread of the disease in India the Union Ministry of Health and Family Welfare issued an advisory on Social Distancing measures which included the closure of all educational establishments, gyms, museums, cultural and religious centers, swimming pools, and theatres, encourage private sector organizations to allow employees to work from home wherever feasible, meetings to be done through video conferences, ensure physical distancing (minimum 1 m) between people, local authorities to regulate hours and number of people visiting market places, bus depots, railway stations, and restrictions on nonessential travels.\[19\]

Infodemics

The term is a relatively more recent coinage, was introduced in 2003 for the surge of misinformation and fake news during the SARS outbreak.\[17\] This term which reemerged and was used by the WHO during the COVID-19 pandemic is an amalgamation of two words, namely, “information” and “epidemic.” As in case of an epidemic, where there is an excessive number of cases of a disease, similarly, in an infodemic, there is an excessive amount of information flow about a problem, which makes it difficult to identify a solution.\[18\] Infodemics can spread misinformation (refers to false information that is spread regardless of an intent to mislead; inaccuracies resulting from an error) and disinformation (refers to deliberately spreading misleading or biased information; manipulated narrative or fact) during a health emergency and can hamper an effective public health response and create confusion and distrust among people.\[19\] This global epidemic of misinformation which spreads very rapidly through social media platforms and other outlets poses a serious threat to public health and makes it difficult for people to find reliable resources to obtain authentic information.

Measures to prevent infodemic

Immediately after COVID-19 was declared a Public Health Emergency of International Concern, WHO’s risk communication team launched a new information platform called WHO Information Network for Epidemics (EPI-WIN), to use a series of amplifiers to share tailored information with specific target groups. The idea was to make the first information that the public receives be from the WHO website and the social media accounts of WHO and its Director-General. WHO also uses social media for real-time updates.

Also, a team of WHO “myth-busters” are working with search and media companies like Facebook, Google, Pinterest, Tencent, Twitter, TikTok, YouTube, and others to counter the spread of rumors, bring down posts, filter out unfounded medical advice, hoaxes and other false information that could risk public health. The traditional media would also have a key role to play in providing evidence-based information to the general public, which would then hopefully be picked up on social media.\[18\] The United Nations has joined forces with new partners to share vital coronavirus information and has launched a direct messaging campaign with WhatsApp.\[20\]

Flattening the Curve

“Flatten the curve” is an idiom that has come into use very recently and it means to mitigate how quickly an illness spreads in a population or to spread out the projected number of new cases over a longer period; not necessarily to avoid transmission altogether. The expression has been traced back to a publication by the Centers for Disease Control and Prevention in 2007 that explored the possible outcomes of the influenza pandemic. The concept was depicted graphically showing the number of people who would be infected if no preventive steps were taken compared to the number of people who would be infected if preventive steps were taken. The expression, however, was coined by Dr. Howard Markel, an American physician, and medical historian.\[21\]

In 2020, with the onset of the COVID-19 pandemic, the term reemerged. During this outbreak, an exponential rise in the number of cases has occurred. A sudden surge in patients over a short time,
France, Italy, and the UK have implemented the world’s largest lockdown. Countries like India, China, this approach in the administrative context and put their citizens at risk of confinement is used to minimize the possibility of damage to individuals located around the incident. Although the government of India announced a nationwide lockdown to break the transmission chain of coronavirus with widespread implications such as restriction of movement of people outside their homes, closure of all malls, theatres, and market places except for those providing essential services like pharmacies and groceries, suspension of public transport including the road, railways, and air transport and suspension of industrial establishments and hospitality services. The terms “hotspot,” “cluster,” “containment zone,” and “buffer zone” are being used as a part of cluster containment strategy to stop local and community transmission and reduce morbidity and mortality due to COVID-19. These and other similar terms have also been used in the past for containment of diseases like smallpox, polio, swine flu, SARS, ebola, and others. Hotspot: A coronavirus hotspot is an area in a district where six or more people have tested positive for coronavirus infection. The area is demarcated based on the probability of a high degree of spread. As per the protocol, if an area is identified as a hotspot, people would not be allowed to enter or leave that area even for essential services like groceries or medicines. The government would ensure the doorstep delivery of food, medicine, and other essential items. The entry of media is also barred in the hotspot area. Sanitization of the area would be carried out and the government would ensure rigorous door to door monitoring to contain the spread of the virus. Only ambulances with special permission are allowed to enter or leave the area in case of a medical emergency. Cluster: As per the CDC definition, the cluster is defined as “an unusual aggregation of health events that are grouped in time and space and that are reported to a health agency.” Clusters of human cases are formed when there is local transmission. The local transmission in the context of coronavirus is defined as a laboratory-confirmed case of COVID-19 who has not traveled from an area reporting confirmed cases of COVID-19 or who had no exposure to a person traveling from COVID-19 affected area or other known exposure to an infected person. There could be single or multiple foci of local transmission which may or may not have an epidemiological link to a travel-related case. Containment Zone: It is the perimeter for specified action around the index case or a cluster acting as its epicenter. The containment zone will be defined based on the index case/cluster (designated epicenter), the listing and mapping of contacts, the geographical distribution of cases, and contacts around the epicenter and administrative boundaries within urban cities/town/rural areas.

The decision about the geographic limit of this zone and extent of perimeter control would be that of the government and would depend upon the number (single or multiple) and type of cluster (closed environment like a residential school or hostel, residential colony, spatially separated clusters, rural setting, etc.) and real-time risk assessment. Usually, the administrative boundary of the building or the residential colony or the district
is taken as the limit of the containment zone in urban areas and a perimeter of a 3 km radius around the cluster in rural areas.

The perimeter control actions for COVID-19 ensure that there is no unchecked outward or inward movement of population from the containment zone except for maintaining essential services (including medical emergencies), all vehicular movement, movement of public transport and personnel movement is restricted and vehicles moving out of the perimeter control zone are decontaminated with sodium hypochlorite (1%) solution and all roads including rural roads connecting the containment zone are guarded by police. Health workers posted at the exit point would be required to perform screening (interview travelers, measure temperature, record the place and duration of the intended visit, and keep a complete record of the intended place of stay) and the district administration would post signs and create awareness informing public about the perimeter control.[34]

**Buffer Zone:** Buffer zone is an area around the containment zone, where new cases are most likely to appear, however, there is no perimeter control action for the buffer zone. Usually, a buffer zone of 5 km radius for urban areas and a 7 km radius for rural areas is recommended but may vary based on risk assessment.[34]

**Conclusion**

We conclude that most of the terms mentioned above have been introduced several decades earlier, but their rampant and widespread usage in today’s technologically connected world has brought them to the forefront. Their operational definitions by various health organizations and their usage by administrative authorities and published literature have standardized these terms today. We expect that an understanding of these terms will lead to a better understanding of the COVID-19 pandemic.

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There are no conflicts of interest.

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