

The Tripledemic; Separating Truth from Fiction

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Every fall and winter, a "triple epidemic" convergence of respiratory viruses such as influenza, COVID-19, and RSV causes thousands of hospitalizations and deaths. The associated pathogens, which drive this seasonal crisis, comprise respiratory syncytial virus (RSV), human metapneumovirus (HMPV), coronavirus, enterovirus/rhinovirus, influenza virus (A and B being the cause of seasonal flu epidemics), parainfluenza virus, adenovirus, and human bocavirus (1).

It is this simultaneous surge of RSV, COVID-19 and Influenza that defines the tripledemic's unique danger and with rising rates being attributed to air pollution and emerging viruses; it is important to identify relevant public health measures to address the combined threat.

Pakistan is currently ranked as the fifth most populous country with a population of 221 million, supplemented by a very high birth rate of 27 per 1,000. Viral illnesses affect 200 million children and elderly annually (1), displaying a typical "two-spike W-trend", however, healthy young adults can also be affected (2). Children under 5 years of age are more vulnerable to ARIs, reportedly responsible for a 16% incremental increase in the last decade, particularly in Pakistan, where respiratory infections account for 20% to 30% of all deaths (1). The tripledemic season significantly exacerbates this baseline burden.

RTIs can be further classified as upper tract respiratory infections (UTRI) and lower tract respiratory infections (LTRI). The infections of the upper tract are most common and include rhinitis, croup, sinusitis, pharyngitis, epiglottitis, and laryngitis. The infections of the lower tract include pneumonia, bronchitis, bronchiolitis, and influenza; the foremost cause of mortality and morbidity of children. Common symptoms across these tripledemic viruses include cough, high-temperature fever, wheeze, runny nose, and nasal congestion, new loss of taste or smell. Ignoring these acute-level infections may lead to complications (1).

Around 777 million COVID-19 cases and more than seven million deaths have been officially recorded since the first infections emerged in December 2019, according to the World Health Organization (WHO), however, the actual toll is believed to be far higher. At the moment, the Omicron variant KP.3.1.1 is the most common while the rising XEC rated as having a low global health risk is the only "variant under monitoring" by the WHO. There have been documented occurrences of the novel JN-1 variant of Covid-19, underscoring the need for a proactive and vigilant approach in the context of the annual tripledemic (3). After the 2019 pandemic people are more cautious of the upswing in Influenza-Like Illness (ILI), however, awareness on pandemic prevention, preparedness and response can

prove helpful in the long run against these converging threats (4).

Expanded surveillance and longitudinal studies are needed to identify viral strains, their patterns and incidence responsible for respiratory infections, particularly to track the dynamics of the tripledemic. To address some concerns on the current variety of outbreaks here's an overlook; RSV is the more dominant type in the tripledemic, subtyped as A and B, followed by Influenza being common amongst Pakistanis and lastly HMPV since 2001, is something we have the capacity to detect, manage and control (5). Since the majority of people had been vaccinated against coronavirus, they have developed immunity in their bodies and that has resulted in the tripledemic with reduced severity. Children born during COVID-19 lockdowns have not been exposed to common pathogens, making them more vulnerable to severe illness when encountering these tripledemic viruses. While this is concerning, the increased prevalence is the normal seasonal increase seen in winter.

Common colds are a normal occurrence in the world, so one must understand it from a scientific perspective that will help in preparedness and prevention in order to try to stem the spread of disease. The precautionary measures for the tripledemic are universal: living with deteriorating air standards (AQI-Particulate matter ~ 287) mandates the use of masks, adopting proper coughing etiquette, washing hands and improving ventilation in the places where people live and work which will safeguard humans from environmental health hazards and multiple viruses (6). As per the recommendations of World Health Organization for seasonal respiratory illness protection; pregnant women, children <5

years, elderly people and individuals with chronic medical conditions should get vaccination against influenza and COVID-19. According to advisories the treatment is mainly supportive and guidelines need to be issued to the district hospitals for timely preventive and control measures against the tripledemic (7).

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