

Retraction notice

Retraction notice to "SYNDEMIC: CHALLENGES, EFFECTS AND MITIGATION IN INDIA AMID COVID-19"

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This article has been retracted on the request of the Editor-in-Chief. The authors have plagiarized part of a paper that had already appeared in Social Science and Medicine (vol. 206, pp.117-122) <https://www.sciencedirect.com/science/article/pii/S0277953618301588> and other published sources. During the submission process of a paper, the authors declare explicitly that their work is original and has not published elsewhere. Hence this paper represents a severe abuse of the scientific publishing ethics. The scientific community takes a very strong view on this matter and apologies are offered to readers of the journal that this was not detected during the submission process.

SYNDEMIC: CHALLENGES, EFFECTS AND MITIGATION IN INDIA AMID COVID-19

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ABSTRACT:

The idea of synergistic epidemics known as syndemics, is albeit a lesser known phenomenon but not a new concept. The world has witnessed few such occasions in the past. The 19th flu pandemic made Sioux people the victims of a syndemic of interacting infectious diseases. Similarly the influenza of 1918, 1957 and 1968 were syndemic, which caused thousands of deaths around the world. A syndemic or synergistic epidemic is the aggregation of two or more concurrent of sequential epidemics or disease clusters in a population with biological interactions, which exacerbate the prognosis and burden of disease. A syndemic other than the medical factors has also social and cultural factors. The economic disparities, social constructs, vices amid the present crisis all contribute to a syndemic. The potential of COVID-19 becoming a syndemic along with Malaria and Dengue in the upcoming monsoon season will emerge as a challenging task for the Health care systems of the country. To avert the irreparable loss of lives, an efficient mitigation strategy is required which must be in consonance with the latest technologies and approaches. Other than innovations, research, and applications, the Covid-19 has also compelled the world to increase more investments in the health care systems.

KEYWORDS: Synergistic, Syndemic, Epidemics, Malaria, Dengue, Covid-19, Innovations, Technology.

Introduction:

COVID-19 has transformed the world's affairs in a lurch. The unprecedented spread of the pandemic has affected the entire aspects viz. economic, social, political, institutional and familial zones. W.H.O and many health experts have also warned about the second wave of infections that would take place in the coming months. Moreover the alarm of diseases like malaria and dengue with the upcoming monsoon season may further adverse the prevailing pandemic and what may arise is a lesser known construct of a 'Syndemic'. A syndemic or

synergistic epidemic is the aggregation of two or more concurrent of sequential epidemics or disease clusters in a population with biological interactions, which exacerbate the prognosis and burden of disease (Singer, 2009). In other words, a syndemic is a situation when two or more epidemics interact synergistically to produce an increased burden of disease in a population. Interestingly Merrill Singer, who coined the term 'syndemic' in 1994, also clubbed it to the abstract meaning of abuse, violence and harassment as well, other than

merely keeping it attached only with the diseases. There is a high possibility that India, amid the ongoing urban-to-rural chaotic migrant crisis may witness COVID-19 becoming a syndemic. Added to this is the complexity of the upcoming dengue and malaria season. Closing state borders, discriminating against migrants returning to their home states, and quarantining them in public locations may not be a viable option going forward if India is peaking on the curve. What required is to look at testing/tracing/isolating as well as ideas to deploy population health surveillance technologies like smart thermometers and oximeters (Chatterjee, 2020).

Understanding Syndemic in Myriad Form:

The theory of syndemics was first proposed by Singer (1996) to describe “synergistically related” (Singer, 1996:103) epidemics that cluster and arise from harmful social conditions. The structural aspect of his theory follows in the vein of what Krieger describes as “theories of disease distribution” (Krieger, 2000:160), all of which have highlighted the role of large-scale forces in driving concentrated health disadvantage at the population level. This influential body of work includes, among others, eco-social theory (Krieger, 1994), fundamental cause theory (Link and Phelan, 1995), and the theory of structural violence. Similarly, by the time Singer (1996) proposed his theory, the disease interaction concept had already become widely accepted among health care providers caring for patients with complex constellations of comorbidities, described in parallel literature on multi-

morbidity (Diederichs et al., 2011; van den Akker et al., 1996) and dual diagnosis (Drake et al., 1991; Lehman et al., 1989). In the two decades since Singer (1996) first explicitly named the intertwined epidemics of Substance Abuse, Violence and AIDS (“SAVA”) in Hartford, Conn., the menu of alphabet soup offerings has expanded. We now have: VIDDA (Violence, Immigration and associated isolation, Depression, type 2 Diabetes, and Abuse) (Mendenhall, 2012), SUMIC (Substance Use, Mental Illness, and familial Conflict non-negotiation) (Robinson et al., 2016), SAVID (Substance use during condom-less intercourse, Adolescent sexual abuse, Violence, Internalized Homonegativity, and Depression) (Adeboye et al., 2017), and, most recently, PHAMILIS (Physical Health problems, Abuse, Mental Illness, Loss, Instability, and Substance use) (Tsai, 2018).

The word ‘syndemic’ is a portmanteau that combines the words synergies and epidemic to punctuate the connections of multiple factors in who and how a disease exists in isolation, and the interaction and clustering of two or more conditions is exacerbated by broader factors like social inequality (Mendenhall, 2020). Thus, comes into play the role of social, cultural and economic factors that are implicitly responsible in worsening the situation of a syndemic. This concept of syndemic matters because people with chronic conditions like heart disease, and Type 2 diabetes are the ones who are most likely to die from a potential syndemic situation that will arise in consonance with COVID-19. It’s not necessarily a reflection of age but a reflection of pre-existing

conditions which do not merely consider the medical one but the social and structural factors as well. In India, the percentage of Gross Domestic Product (GDP) spent on Healthcare systems is merely 3.6% as per the Organisation for Economic Co-operation and Development (OECD). The Economic Survey 2020 states that only 1.6% of the GDP spent on Healthcare for the Financial Year 2020. The low expenditure on Healthcare systems eventually renders the authorities in a sudden block because of the absence of a pre-existing mechanism or specialized units to deal with a situation like syndemic. Mendenhall in her book *Rethinking Diabetes: Entanglements of Trauma, Poverty, and HIV* argues that the psychophysiology of oppression along with structural issues, such as food deserts and lack of economic security, are equally to blame for a syndemic to arise. Recognizing social and potential drivers of COVID-19 as equally as vital to the medical drivers is part of what makes this condition syndemic. COVID-19 disproportionately affects those living with cardiovascular problems, like heart disease. Although the condition is linked to age, the more powerful risk factor is the number of chronic conditions an individual has, tempering their immune response (Mendenhall, 2019). We know that there are important links between inflammation among infections and among chronic stress—from both chronic diseases like hypertension or diabetes and social problems like poverty. These are exacerbated by the chronic financial insecurity and our fragmented healthcare system that prevents many people from

seeking care until it is too late. The more social, economic, and medical pressures individuals face, the more their body suffers (Ibid.).

Singer in her book *Introduction to Syndemics: A Critical Systems Approach to Public and Community Health* initially called the spread of HIV and tuberculosis as a syndemic. There is a biological element in which HIV weakens the immune system, making people more susceptible to a tuberculosis infection. But there's also a social or community health element in which close quarters, poor health care and unsanitary conditions allow tuberculosis to thrive. The effects of these two epidemics are amplified in vulnerable groups, like refugees, migrants and those living in poverty to form a syndemic. Similarly COVID-19 has already proven disastrous for the people suffering from chronic diseases like diabetes, hypertension, depression, type-2 diabetes etc. The possibility of it turning into a syndemic with malaria and dengue during the monsoon season thus can't be ruled out and a situation like that will be even more burdensome and challenging for the health workers and the authorities.

In 2019, the Lancet, a journal published a series of papers under the title "*The Global Syndemic of Obesity, Undernutrition, and Climate Change*" where the authors tried to explain that the epidemics of obesity, malnutrition and climate change are not happening in isolation, but are thoroughly intertwined and need to be addressed together, not as isolated problems. The study brings to fore that the reason behind undernutrition and obesity were same –

unhealthy, inequitable food systems, underpinned by the same political economy that is single-focused on economic growth, and ignores the negative health and equity outcomes. The report suggests a global public health treaty to regulate food companies the same way many nations have dealt with tobacco companies. It also suggests limiting their influence on governments to prevent problems. A study revealed how Coca-Cola exerted influence over China's policymaking on its obesity crisis. Other suggestions include a tax on red meat, an end to the \$5 trillion in subsidies given to food and fossil fuel companies around the world and a \$1 billion fund to support policy initiatives to combat the Global Syndemic (Daley, 2019)

The Real Challenge:

The very first documented case of syndemic can be traced back to the Columbian Exchange event that refereed to the widespread transfer of plants, animals, culture, human populations, technology, diseases, and ideas between Native Americans and Europeans. The exchange came with many communicable diseases for which the natives had no immunity to fight with (Nancy, Nathan, 2010). Plains Indian people like Sioux were forced to leave their traditional dependence on Bison for food which vanished due to the infectious diseases. The situation turned grim when the Sioux were confronted with the infectious diseases that they contracted from the Whites. Measles, *grippe* (influenza), Whooping cough Pertussis and bronchitis along with the 1889-90 influenza turned into a syndemic and Sioux people were the worst victims.

Taking the example of the 1957 Asian influenza pandemic, it can be prophesized that how a syndemic resulting from the simultaneous proliferation of malaria and dengue along with COVID-19 would create a plethora of infections on rise. A large number of deaths during the Asian influenza pandemic were caused by the secondary bacterial infections among the influenza patients, in short by a viral/bacterial syndemic (Chatterji, 2020). A study covering the HIV infections in Kisumu, Kenya has shown that 5% of those infections are due to high infectiousness of malaria-infected HIV patients. The possibility of comorbidities is again a matter of concern for the medical community especially if COVID-19 deepens as a syndemic in populations with antibiotic resistance. Three concepts underlie the notion of a syndemic: disease concentration, disease interaction, and the large-scale social forces that give rise to them. The concept of *disease concentration* holds that two or more epidemics co-occur in particular temporal or geographical contexts due to harmful social conditions. This aspect of the theory of syndemics is not necessarily what makes its contribution distinctive. For example, anthropologists have long called attention to the manner in which large-scale political, economic, and cultural forces have given rise to clustered epidemics of various infectious diseases, such as Asian influenza, HIV, Tuberculosis, and at present COVID-19. Rather, what make the theory notable are its predictions about how interactions between epidemics amplify disease burden and about how public health planners can (or cannot) effectively intervene to mitigate this

burden. Although the theory of syndemics is principally a theory about population health, the past two decades' worth of quantitative literature motivated by the theory has generally focused on studying individuals, rather than populations -- and consequently has had very little to say about population health (Tsai, Mendenhall, Trostell, Kawachi: 2018).

Keeping in mind the largest population in the world with more than 37% below poverty line (BPL), and around 17.4% (2011 Census Report) people living in slums amid unhygienic conditions, a syndemic would prove disastrous for India. Poverty and syndemic are the igniting factors together. The notion of syndemics can be expanded to situate the occurrence of multiple diseases within the context of poverty and other mitigating factors that support and perpetuate poor health. Syndemics tend to develop under conditions of health disparity, caused by poverty, stress, or structural violence, and contribute to a significant burden of disease in affected populations. Given that social conditions can contribute to the clustering, form and progression of disease at the individual and population level, it poses a great challenge in understanding the processes that generate these patterns of co-infection and syndemics (Allotey, Zhou: 2016).

Vulnerability to syndemics involves both factors that put groups in harm's way for clusters of disease, as well as factors that contribute to the weakening of bodies, the degrading of immune capacities, the failing of social support systems, and the disruption or inaccessibility of healthcare services.

Commonly, these are social conditions, such as structural inequalities, which produce chronic stress, inadequate diets, exposure to physical and emotional traumas, gender or other discrimination, and involvement in risky behaviors such as survival or coping mechanisms. Syndemics, in short, involve both biological and social factors and their pathways of interaction, mechanisms of disease promotion, and enhanced health impacts. Syndemic theory draws attention to, and provides a framework for, the analysis of these biosocial interactions, including their causes and consequences for human life and well-being (Singer, 2013). Syndemics are not limited to pathogen-pathogen interactions involving infectious diseases, such as Malaria and Helminths but also include adverse interplay of infectious and noninfectious diseases. It has been established that some infections increase the risk of certain noninfectious diseases and vice versa. The interaction between diabetes and undernutrition is one such example. Diabetes contributes to anemia during pregnancy and maternal morbidity (Ibid). It has been shown earlier that how COVID-19 is a bigger threat for diabetic patients and thus it qualifies to be called a syndemic even before it multiplies with malaria or dengue in the upcoming monsoon season.

Mitigation Strategies:

As highlighted earlier the paucity of designated funds in the health care system across the country, a situation of the caliber of syndemic will be an extreme challenge. Enhancing investments in the Health care to optimum levels is the need of the hour. Strengthening the medical care systems

across the country, with ample number of health workers, infrastructure consisting quality devices and instruments and above all access to all are some of the prominent requirements to tackle any syndemic situation. Apart from understanding the intricacies of syndemic, a systematic study of meta-analysis cannot be ignored. Considering the present times of advanced technology and science, there is a need to adopt innovative mechanisms in population health surveillance technology and creative health models. At the same time quality of such devices, mechanisms must not be compromised in any haste. This conceptual instrument of syndemic has the potential to help policymakers and program implementers in their endeavors to improve population health. The co-occurrence of psychosocial and structural problems, and the excess disease burden experienced by persons in vulnerable subgroups (e.g., homeless and marginally housed women, requires our urgent attention (Tsai and Venkatramani, 2017). It is also quite important to develop and implement interventions that provide maximum reductions in these syndemics while reducing disparities in prevention, care and treatment.

Conclusion:

India is the second largest populated country in the world and is prone to epidemic, pandemic or in worst cases to a syndemic. A dedicated, efficient and skillful task force equipped with innovative technological defence system and empirical knowledge will be a boon against it. The policies must strengthen the prevailing health care systems by allocating more considerations. COVID-

19 is an unprecedented catastrophe in the past few decades and its turn into a syndemic with malaria and dengue can be a huge health crisis in the country. The theory of syndemics has the potential to help policymakers and program implementers in their endeavors to improve population health. As theorized, syndemics are complex, multilevel phenomena, and there remain important opportunities to investigate how epidemics interact both at the level of populations and at the level of individuals and how they evolve across space and time (Tsai, 2018). The field will need to move forward beyond the first generation of studies to mobilize evidence to support appropriate interventions to improve the health and psychosocial wellbeing of vulnerable populations worldwide.

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