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Biometrics & Biostatistics International Journal

Short Communication

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Infectious diseases and millennium development goals (MDGs)

Abstract

Infectious diseases (Ids), which are caused by germs, are one of the major health concerns across the regions of the globe. They are the third leading cause of death in the United States of America and the leading cause the world over. Globally, the number of deaths due to Ids, including parasitic diseases and respiratory infections, fell from 12.1 million in the year 2000 to 9.5 million in the year 2012. However, Id outbreaks remain a concern to all countries, imposing a significant burden on economies and public health. Several respiratory Id outbreaks have occurred since 2000, including the 2003 severe acute respiratory syndrome (SARS) epidemic and the 2009 A (H1N1) influenza virus epidemic. This paper is aimed at researching into interrelationship between Infectious Diseases (Ids) and sustainable development (SD). Data used are secondary (largely qualitative in nature), and method of data analysis is descriptive in nature.

Keywords: infectious diseases (Ids), HIV/AIDS, tuberculosis, malaria, neglected tropical diseases, millennium development goals (MDGs), and sustainable development (SD)

Volume 7 Issue 6 - 2018

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Received: September 20, 2018 | **Published:** November 13, 2018

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Efficient management of "infectious diseases" (Ids: caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; and spread, directly or indirectly, from one person to another) is an important aspects of achieving overall Millennium Development Goals (MDGs: eight goals with measurable targets and clear deadlines for improving the lives of the world's poorest people).[1] Emerging infectious diseases are "those infectious diseases whose incidence of occurrence in humans has increased within the recent past or threatens to increase in the near future". Such diseases also include those infections that (a) "appear in new geographic areas", and/or (b) "increase abruptly". The new infectious diseases and those which are re-emerging after a period of quiescence are also grouped under emerging infectious diseases.

Over the past several decades, Id outbreaks worldwide have revealed significant weakness in how the world fights the spread of devastating diseases. Fighting Ids is, thus, of utmost importance from human and sustainable development point of view. What is of growing concern is that preventing Ids, such as Middle East Respiratory Syndrome (MERS) and dengue, is a challenge before many national governments, inter-governmental organizations, health care providers and other involved stakeholders. Especially, drug-resistant strains of bacteria and dangerous diseases, like tuberculosis (T.B.) are steadily eroding existing treatments. Most importantly, recent outbreaks of Ids, such as Ebola, Zika, Chikungunya, and yellow fever, have caught the international by surprise. Under such circumstances, it is essential that the scientists apply the most advanced technologies available today. Also, they are expected to (a) work towards inventing new tools, as well (b) support the global fight against Ids. This initiative should be clustered around four key areas: (1) diagnostic tests, (2) new drugs, (3) vaccines, and (4) rapid response.[2]

This brief policy paper is aimed at researching into interrelationship between Ids and sustainable development (SD), in general, and sustainable health development, in particular. Further, it discusses the MDGs (derived from the Millennium Declaration) in the context of IDs. In terms of methodology, data contained in this work are secondary, largely, qualitative in nature, collected from books/book chapters, government publications, research reports, and Internet resources. Method of data analysis is descriptive in nature, involving "desk-based research". Further, analysis, in this work, is based on already published and available data. This paper is basically theoretical in nature, wherein the author has analyzed the collected data (from the sources outlined above) in a manner that ensures realization of set objectives.

The MDGs (representing a unique global compact and benefiting from international governmental support) reflect an unprecedented commitment to tackle the most basic forms of injustice and inequality in our world: poverty, illiteracy and ill-health. Here, it is pertinent to note that the health-related MDGs do not cover all the health issues that matter to poor people and poor countries. However, they do serve as markers of the most basic challenges ahead: to stop women dying during pregnancy and child birth; to protect young children from ill-health and death; and to tackle the major communicable diseases, in particular HIV/AIDS.[3]

Nevertheless, in line with the MDGs and in accordance with international/national/regional priorities, IDs management has found prominent place in policy documents across the globe. It is in this context that significance of controlling IDs becomes obvious. Much effort has been made in this matter. But, much more needs to be done.

Most importantly, in terms of nexus between Ids and climate change, it has been found that waterborne Ids are strongly affected by changes in the pattern of climate evidenced recently in various parts of the globe. There are research evidences of the fact that water scarcity, resulting from drought situations, lead to poor sanitation standards. Due to this scenario, some sections of the vulnerable population are likely to be exposed to potentially contaminated water and resulting Ids. Recently, there was, for example, an epidemic of cholera in northern part of Kenya owing to severe drought situation.[4]

In addition to what is outlined in the above paragraph on interconnections between Ids and climate change scenario, *"excess rainfall"* and *'flooding'* can also add to epidemics of waterborne Ids (as evidenced in drought situations). Such cases of occurrence of Ids take place due to two contributing factors, namely,

(a) Poor sanitation resulting from runoff from overwhelmed sewage lines, and/or

(b) Water contamination by livestock.[4]

Further, another example of how climate change impacts Ids is of the year 1993 when an epidemic of diarrheal disease occurred in Milwaukee (in the USA) after heavy spring rains. This type of ill health situation is termed as: *"seasonality of bacterial and protozoal diarrheal illnesses"*.[4]

Furthermore, it is alarming for health care providers to note that there are some widely cited examples suggesting that climate change has already resulted in prevalence of certain types Ids that were previously not reported existing in some geographical areas. One research-based instance of this health scenario is: *"occurrence and spread of malaria into highland regions of East Africa"*. *Notably*, this type of disease like situation did not exist in the past. In addition to this, it is interesting to note that this particular spread of Ids took place in weather settings that are characterized by *"much warmer and wetter than usual"*. Also, this scenario resulted in high rates of *"illness and death"*. This happened due to the fact that the disease was introduced into a largely *"non-immune population"*. These discussions are indicative of the fact that there is increasing need, today, for bringing the climate change situation under control through educational interventions and other advocacy measures. This initiative will prove to be helping hand for health care providers in order to curb the menace of Ids.[4]

What is obvious from the description presented above is that concentrated global attention is needed on the long-term epidemics of infectious diseases, such as HIV, tuberculosis (TB), malaria, hepatitis and neglected tropical diseases (NTDs), which require a magnified response sustained over a long period to bring them to an end. Based on the advancements made towards the MDGs, the World Health Organization (WHO) has designed a joint global public health approach to accelerate progress and meet the ambitious global targets set for 2030 for HIV, TB, malaria, hepatitis and NTDs in the era of the Sustainable Development Goals (SDGs). Drawing on the common elements of the individual disease strategies, the new approach provides opportunities for joint and synergistic efforts. The framework emphasizes key actions including expansion of universal health coverage (UHC), ensuring equity and respect for human rights, establishment of a new approach to strategic information within and beyond health, strengthening of health systems with integrated delivery of interventions, pursue of sustainable financing, and promotion of research across the spectrum from product development to implementation research.[5]

From SDGs point of view, efficient management of infectious diseases, including emerging infectious diseases should form priority for the national governments and other developmental organizations across the regions of the globe. More specifically, prevention and control of such diseases requires strong political commitment. This also requires sustained financial support, supplemented with. A thorough review of the public health infrastructure is warranted to create a comprehensive national plan to develop and apply established standards for public health infrastructure (laboratory, epidemiological, communications and research) within and across the public and private sectors. This should be complemented by a spirit of partnership with and across all relevant sectors, notably veterinary sciences, academia, environmental institutes and NGOs and by enhanced communication of public health information to obtain active cooperation of the communities. Research is a crucial part of the response to new and emerging diseases. Policy makers and development planners opine that a "sustained and forward-thinking applied research programme would enable scientists to identify the weak links in the armour of emerging microbes". This initiative will also create novel ways to fight microbial foes, and evaluate the preventive power of new approaches. In order to combat emerging infectious diseases, public health, therefore, requires the renewal and expansion of research on the epidemiology and biology of microbes, vectors and intermediate hosts, and awareness of the possibility that new epidemics can and will emerge in unexpected places.[6]

Infectious diseases were the leading cause of death in the United States until the 1920s. In the present day situation, vaccines and antimicrobials discovered by scientists have proven to effectively treat and prevent many diseases and conditions. However, infectious diseases and the emerging resistance of pathogens that cause disease still pose a very serious threat to patients as well as to health care providers. Critical challenges remain in the battle against infectious diseases, particularly as bacteria and viruses develop resistance to current medicines and as the threat of bioterrorism grows. This paper concludes that since 2000, impressive advancements have been made on many health fronts. However, in order to meet the SDGs health targets by 2030, progress must be accelerated in combating Ids, including neglected tropical diseases, in particular in regions with the highest burden of disease.[7]

Acknowledgements

None.

Conflict of interest

Author declares that there is no conflict of interest.

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