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ANTIMICROBIAL RESISTANCE

Insha Mir

Abstract:

Antimicrobial resistance (AMR) poses a significant global health threat, particularly in low- and middle-income countries (LMICs). Self-treatment with antibiotics, the practice of using antibiotics without professional guidance, is often considered an important contributor to the emergence and spread of AMR.

Keywords: Antimicrobial resistance, combating, food animals, one health concept

Introduction:

Antimicrobial resistance (AMR) is a growing global threat to health and wellbeing. Antibiotic resistance occurs when bacteria change so that antibiotic medicines can't kill them or stop their growth. Antimicrobial resistance happens when microorganisms (such as bacteria, fungi, viruses and parasites) develop the ability to continue to grow, even when they are exposed to antimicrobial medicines that are meant to kill them or limit their growth (such as antibiotics, antifungals, antivirals, antimalarials and anthelmintics). As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spread to others. Antimicrobial resistance (AMR) threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi.

According to World Health Organization (WHO) report of 2019, AMR is responsible for the deaths of 700,000 people, while it's estimated that by 2050 the figure will have risen to 20 million. As a result, it has become a major problem, posing a serious danger to our lives and economy. Without preventative measures, it is estimated that by 2050, AMR could potentially become the world's primary cause of death.

Scenario of AMR in India

AMR is a problem for all countries at all income levels. Its spread does not recognize country borders. Contributing factors include lack of access to clean water, sanitation and hygiene (WASH) for both humans and

Insha Mir

Research Associate (Veterinary), Central Council for Research in Homoeopathy, Ministry of Ayush

animals; poor infection and disease prevention and control in homes, healthcare facilities and farms; poor access to quality and affordable vaccines, diagnostics and medicines; lack of awareness and knowledge; and lack of enforcement of relevant legislation. People living in low-resource settings and vulnerable populations are especially impacted by both the drivers and consequences of AMR.

In developing Countries, increasing levels of antibiotic consumption and the development of AMR are attributed to the higher availability and widespread over-the-counter sale of antibiotics through the retail sector. Hand in hand with the over-the-counter sale of antimicrobials is the issue of self-treatment which is typically defined as the use of medicines, such as antibiotics, without prior diagnosis and counselling by a healthcare professional. In the animal health sector, veterinary medicines, including antibiotics, are often sold in agrovet shops, even though it is technically illegal for farmers to treat their own animals with antimicrobial.

In India in 2019, there were 297,000 deaths attributable to AMR and 1,042,500 deaths associated with AMR. India has the 145th highest age-standardized mortality rate per 100,000 populations associated with AMR across 204 countries.

The environment, especially the water bodies, have also reported the presence of resistant organisms or their genes. India is one of the leading producers of pharmaceuticals in the world (Rehman *et.al*, 2015). Specific socio-economic and cultural factors prevalent in India make the containment of resistance more challenging. Injudicious use of antimicrobials and inadequate treatment of waste waters are important drivers of AMR in India. Use of sludge in agriculture, improper discard of livestock animals and aquaculture industry are considered AMR contributors in other countries but Indian data regarding these are lacking.

Conclusions

Addressing self-treatment requires a multi-faceted approach. Improving the availability and accessibility of antibiotics, enhancing healthcare services and involving retail vendors in antibiotic stewardship are essential. A One Health framework is essential, involving diverse stakeholders including, but not limited to government agencies, local human and animal health and agricultural officials and end-users. It is important to recognise the right to healthcare and livelihoods of affected communities and work with retail providers, who are already a vital source of health information and products, to build a more resilient, accessible and high-quality public health system that can be trusted.

It is critical to strengthen and harmonise the AMR surveillance through the development of agreed epidemiological and microbiological methods, the adoption of common definitions to enhance the ability to share and compare resistance information, and to attain a better coordination of the surveillance networks.

References

1. O'Neill, J. *Review on Antimicrobial Resistance. Tackling Drug-Resistant Infections Globally* (2016). Available from: https://amr-review.org/sites/default/files/160525_Final%20paper_with%20cover.pdf (Accessed March 21, 2023).
2. Rehman MS, Rashid N, Ashfaq M, Saif A, Ahmad N, Han JI, et al. Global risk of pharmaceutical contamination from highly populated developing countries. *Chemosphere.* 2015; 138:1045–55. [PubMed] [Google Scholar]
3. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance.