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Editorial

'*Vasudhaiva Kutumbakam*' and 'one health' approach towards sustainable healthcare to combat global AMR

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1. Introduction

India's philosophy of "*Vasudhaiva Kutumbakam*" encompasses a powerful message of interconnectedness as "One Earth, One Family, One Future".[1] It underscores the importance of solidarity, cooperation, and a shared responsibility to build a healthier and sustainable planet.[2,3] In the context of healthcare, '*Vasudhaiva Kutumbakam*' calls for collaboration among nations to ensure well-being and healthcare access for everyone. It emphasizes the importance of sharing knowledge, expertise, and resources to address health inequalities and promote universal health coverage. By working together, countries can pool their strengths, learn from each other's experiences, and develop innovative solutions to improve global health outcomes. After facing the Covid-19 pandemic, the world is on the verge of another silent pandemic of Antimicrobial Resistance (AMR), a global threat due to multi-drug resistant microbes like bacteria, fungi, viruses and parasites to resist the effects of antimicrobial drugs, making infections harder to treat and increasing the risk of mortality and morbidity.[4,5] Sustainable healthcare and combating AMR are closely linked, and the 'One Health' approach plays a critical role in addressing this global challenge.[6] The 'One Health' approach recognizes the interconnectedness of human, animal, and the environment health. It emphasizes the need for collaboration, coordination, and integration of efforts across these sectors and transcends boundaries to tackle challenges like AMR effectively.[7] Here are a few ways in which the 'One Health' approach contributes to sustainable healthcare in combating AMR (Figure 1):

1. *Promoting rational use of antimicrobials:* One Health promotes the rational use of antimicrobials in both human and animal healthcare settings. This includes appropriate prescription practices, limiting the use of critically important antimicrobials, promoting alternatives to antimicrobial treatment, and creating public awareness about infection prevention and control measures through educational campaigns, media outreach, and community engagement initiatives. By ensuring judicious use, we can slow down the pace of AMR.
2. *Strengthening surveillance, monitoring, and reporting systems:* The One Health approach emphasizes a robust surveillance and monitoring system for AMR across human health, animal health, and environmental sectors.[8,9] This integrated surveillance helps in understanding the AMR patterns, prevalence, and transmission pathways of multi-drug resistant microorganisms, identifying emerging threats, and implementing timely interventions thereof. This includes establishing national networks for surveillance of drug-resistant organisms in healthcare

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facilities and improving data collection, analysis and reporting mechanisms to guide decision-making and resource allocation for prevention and control of AMR.

3. *Infection Prevention and Control:* The One Health approach recognizes the importance of infection prevention and control measures in reducing AMR by promoting hygiene practices in healthcare settings, farms, and households, as well as implementing effective sanitation measures to minimize the spread of drug-resistant microorganisms.
4. *Interdisciplinary Collaboration and Partnerships for Promoting Research & Development:* The One Health approach brings together worldwide nations, healthcare agencies, research institutions, healthcare professionals, veterinarians, scientists, academicians, policymakers, and other stakeholders for investment and partnerships to foster innovation to address the growing threat of drug resistance.[10] This collective effort will create an ecosystem to build comprehensive strategies and promote research initiatives in the development of new antimicrobial drugs, diagnostics, and vaccines to combat AMR.
5. *Environmental Stewardship:* The One Health approach acknowledges the role of the environment in the dissemination of resistant microbes.[5] It emphasizes sustainable practices in the pharmaceutical sector, waste management, and water treatment to reduce the release of antimicrobial residues and drug-resistant bacteria into the environment.

Fig. 1: One health approach towards global sustainable healthcare in combating AMR

2. The G-20 and Global Advocacy on Sustainable Healthcare in Combating AMR

The G20, which consists of the world's major economies, including India, has recognized the importance of addressing antimicrobial resistance (AMR) as a global healthcare challenge foreseeing its potential impact on healthcare systems, economies, and public health.[11] It has emphasized the importance of addressing AMR through strategies, policy reforms, research, collaborative efforts and safeguarding the effectiveness of antimicrobial drugs for future generations. The 18^{th} G20 Summit 2023, hosted by India recently, served as a global platform for world leaders to advocate for the 'One Health' approach to enhance healthcare accessibility and prioritize addressing AMR as well as other urgent health issues to promote improved health and well-being for everyone.[12] The 'New Delhi Leaders Declaration' an outcome of the 18th G-20 Summit not only addressed the critical issue of climate change but also emphasized the 'One Health' approach for monitoring and combating antimicrobial resistance in animals, plants, and humans through a collaborative effort as one earth, one family and one future.[13] As a member of the G20, India has been involved in various actions and commitments to address AMR. Remarkably, the G20's healthcare initiative successfully garnered consensus on all three of India's healthcare priorities and introduced a proposed repository of scalable digital health platforms.[14,15] These health priorities encompassed (Figure 2):[16]

1. Antimicrobial resistance and One Health Framework with emphasis on health emergency prevention, preparedness and response, ensuring resilience against a wide range of health threats and combating antimicrobial resistance.[8]
2. Strengthening collaboration in the pharmaceutical sector, with an emphasis on ensuring fair availability and access to safe, effective, high-quality, and affordable medical solutions like vaccines, diagnostics, and therapeutics during pandemics.[17]
3. Digital health innovations and solutions to ensure improved and universal health coverage. The new Global Initiative on Digital Health (GIDH), is one of the key deliverables of India's G20 Presidency and the World Health Organization (WHO) aiming at transforming global healthcare, delivery, patient care and disease management.[18,19]

The 2023 G20 summit delved into various health-related challenges, encompassing infectious diseases, mental health, non-communicable diseases, and the pursuit of universal health coverage, healthcare accessibility, and amelioration of the existing infectious disease surveillance and health systems. Moreover, the lessons drawn from the COVID-19 pandemic have charted a course towards preventing and preparing for future pandemics,[4] as well as

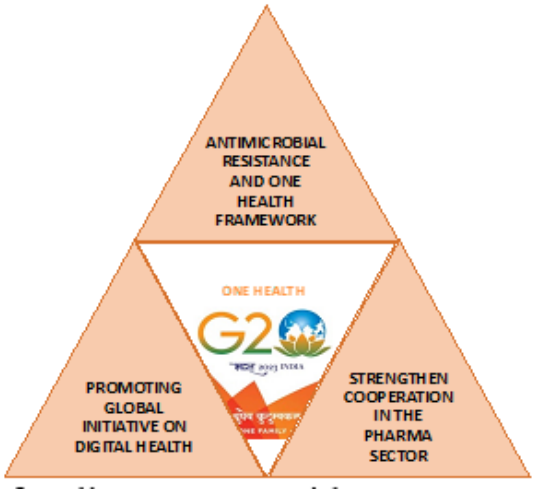

Fig. 2: Three health priorities of India's G20 presidency

strengthening global healthcare systems prosing substantial investments in healthcare infrastructure, workforce training, and research, fair access to safe, effective, high-quality, and affordable vaccines, diagnostic tools, and other medical interventions, including evidence-based Traditional and Complementary Medicine in healthcare, particularly for Low-and Middle-income Countries (LMICs) and Least Developed Countries (LDCs). India's G20 presidency has advocated for the integration of scientifically validated traditional and complementary medicine practices into modern healthcare systems and reinforcement of the existing infectious disease surveillance system.[20] In essence, this global initiative will play a pivotal role in addressing present health dilemmas and shaping the trajectory of healthcare in the future.

3. Challenges

The healthcare and pharmaceutical industry faces numerous obstacles to overcome. These include discrepancies in quality and accessibility between rural and urban regions, the absence of a well-structured three-tier healthcare system, leading to patients seeking superspeciality hospitals for basic medical procedures, and high costs within the private healthcare sector. A lack of sufficient investment in research and development hinders innovation, and counterfeit medications also negatively affect the sector. Additionally, the integration of digital healthcare solutions, enhancing public health education, and tackling disruptions in the supply chain poses further challenges.

4. Perspective

By nurturing an ecosystem of strategic partnership and cooperation, we can collectively address global healthcare challenges and drive advancements in medical technology solutions. India's philosophy of "*Vasudhaiva Kutumbakam*" serves as a call to action, urging the world to come together as one global family and adopt the 'One Health' approach, to advance towards sustainable healthcare systems that can effectively combat AMR. This holistic approach will not only address the immediate challenges of AMR but also promote long-term health and well-being to protect and preserve the planet for future generations. IP International Journal of Medical Microbiology and Tropical Diseases works on the same ideology of "*Vasudhaiva Kutumbakam*" and 'One Health' and is committed to disseminate the revolutionary research as arsenal in the global fight against AMR.

5. Source of Funding

None.

6. Conflict of Interest

None.

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