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A Critical Review on Ayurveda in Global Public Health Policy: Opportunities and Limitations

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Abstract

Public health in the 21st century is characterized by intersecting challenges, including the growing burden of non-communicable diseases (NCDs), climate-related health impacts, antimicrobial resistance, and the resurgence of infectious diseases. Amidst these concerns, traditional systems of medicine such as Ayurveda are gaining renewed attention for their emphasis on prevention, lifestyle management, and ecological balance. This review explores how key Ayurvedic principles—including *Swasthavritta* (healthy living), *Rasayana* (rejuvenative therapy), and *Janapadodhwansa* (classical epidemic theory)—offer valuable perspectives in the context of global public health policy. Drawing from classical texts and recent literature, the paper examines Ayurveda's alignment with contemporary goals such as immunological resilience, psychosomatic health, and climate-responsive disease prevention. Ayurvedic formulations and lifestyle practices have demonstrated potential in supporting immunity (*Vyadhikshamatva*) and community-level wellness, particularly during pandemic scenarios. However, practical integration remains limited due to gaps in scientific validation, lack of standardization, and challenges in aligning traditional concepts with modern health systems. The review highlights the need for collaborative research, policy reform, and culturally sensitive strategies to bridge these gaps. If approached thoughtfully, Ayurveda can serve not as an alternative, but as a complementary model that enriches global health discourse with preventive, person-centered, and environmentally aware approaches.

Keywords : *Public Health Challenges; Public Health Opportunities; Janapadodhwamsa; Ritucharya; Dinacharya; Rasayana; Prevention*

1. Introduction

Public health in the 21st century is increasingly shaped by a convergence of complex, interlinked challenges. While there has been notable progress in certain areas—such as a decline in maternal and child mortality—many countries remain off track in meeting core Sustainable Development Goals (SDGs) related to health. Non-communicable diseases (NCDs), including cardiovascular disorders, hypertension, diabetes, and cancer, now account for more than 80% of global deaths.[1] Their burden continues to grow, particularly in low- and middle-income countries (LMICs), where healthcare systems often lack the capacity to address chronic illness comprehensively. These patterns reflect a global epidemiological shift from infectious to lifestyle-related diseases, propelled by changes in diet, physical activity, environmental exposure, and urbanization.

At the same time, the resurgence of communicable diseases—such as tuberculosis, malaria, and newly emerging zoonotic infections—alongside rising antimicrobial resistance (AMR), underscores the need for resilient and adaptive public health frameworks.[2] Climate change further complicates this scenario by altering patterns of disease

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transmission and intensifying health risks through extreme weather events, air pollution, and disruptions in food and water security.[3]

Within this evolving global health landscape, there has been growing interest in classical systems of medicine, including Ayurveda, as potential contributors to public health policy. Rooted in centuries of clinical practice and ecological understanding, Ayurveda offers a holistic framework that emphasizes prevention, immunity enhancement (*Vyadhikshamatva*)[4], and individual adaptation through lifestyle regulation (*Swasthavritta*),[5] seasonal routines (*Ritucharya*),[6] and ethical living (*Aachar Rasayana*)[7]. The Ayurvedic approach to epidemic response, illustrated in the classical theory of *Janapadodhwansa*,[8] reflects early recognition of population-wide health threats, including the influence of environment, water, air, and time on disease prevalence.

Ayurveda's potential relevance to global health policy lies not only in its preventive ethos but also in its capacity to integrate with contemporary wellness and chronic disease management. During the COVID-19 pandemic, Ayurvedic guidelines and formulations were widely disseminated in India and recognized for their role in community-level resilience building.[9] Nonetheless, questions remain regarding standardization, scientific validation, regulatory mechanisms, and cross-system integration.

This review examines the possible roles, benefits, and boundaries of Ayurveda in contemporary global public health policy. By exploring both classical knowledge and modern research, it seeks to highlight where Ayurveda aligns with current public health goals, and where critical reflection and evidence-building are still required.

2. Material And Methods

This review draws upon classical Ayurvedic scriptures as well as contemporary public health literature accessed through databases like PubMed and WHO publications. The study explored foundational Ayurvedic concepts such as *Swasthavritta*, *Rasayana*, and *Janapadodhwansa* in the context of current global health trends and policy frameworks.

3. Results

The current global health landscape presents a convergence of long-standing challenges and emerging threats. While strides have been made in reducing maternal and child mortality, many Sustainable Development Goal (SDG) targets remain unmet. The epidemiological burden has transitioned markedly, with non-communicable diseases (NCDs)—such as cardiovascular disorders, cancer, diabetes, and chronic respiratory conditions—now accounting for the majority of global mortality, especially in low- and middle-income countries (LMICs). According to the Global Burden of Disease (GBD) 2021 report, modifiable risk factors including, hypertension, tobacco use, dietary deficiencies, and air pollution dominate the global risk profile.[10] These patterns reflect a shift driven by urbanization, changing lifestyles, and an aging global population. LMICs, in particular, face dual pressure from both chronic disease management and insufficient healthcare infrastructure.

Alongside the growing NCD burden, communicable and reemerging infectious diseases continue to pose critical threats. HIV/AIDS remains a complex concern, further compounded by co-infections and the existence of multiple strains such as HIV-1 and HIV-2. Diseases like Lyme disease, dengue, Zika virus, and West Nile virus are resurging across regions, often linked to changing vector ecology influenced by climate change.[11] Antimicrobial resistance (AMR) adds another layer of urgency, making previously manageable infections like tuberculosis, gonorrhea, and cholera significantly harder to treat. Moreover, diseases transmitted through food and water—such as E. coli O157:H7, leptospirosis, and hepatitis A—underscore the fragile interplay between public sanitation, environmental health, and disease control.

Environmental stressors like climate change, deforestation, and urban sprawl further intensify these risks. According to the World Bank, climate-related disasters cause annual losses of approximately USD 520 billion, with floods alone constituting over 90% of reported natural disasters.[12] These events frequently disrupt water supply, sanitation, and health infrastructure, creating conditions conducive to large-scale outbreaks. Seasonal surges in diseases—such as those observed with influenza, cholera, and vector-borne infections—highlight the cyclical, climate-sensitive nature of epidemic outbreaks.

In this context of health uncertainty, Ayurveda offers a preventive and systems-based paradigm that aligns with several modern public health objectives. The classical Ayurvedic framework integrates a detailed understanding of individual health, environmental influences, community health, and pandemic phenomena. One of its most relevant contributions is the theory of Janapadodhwansa, as described by Acharya Charaka.[13] This concept outlines how common environmental factors— vitiated air (*dushta vayu*), polluted water (*dushta jala*), contaminated land (*desha dushti*), and disturbances in seasonal cycles (*kala*)—can lead to mass afflictions. These ideas parallel modern concepts of epidemiology, including endemicity, pandemics, and environmental triggers of disease. The Ayurvedic lens also accounts for seasonality, regional disease specificity, and the interaction of external pathogens (*Agantuka karana*) with host vulnerability.

Another critical dimension is the Ayurvedic emphasis on Vyadhikshamatva, or immunity. According to Ayurveda, Ojas—the essence of all tissues (*dhatus*)—is central to the body's ability to resist disease. Loss of Ojas leads to susceptibility, decay, and degenerative illness.[14] Ayurvedic interventions such as Rasayana therapy are designed to enhance the quality of *dhatus*, nourish tissues, and boost vitality and immunity. Rasayana is more than pharmacological; it includes behavioral and ethical dimensions. For example, Kamya Rasayanas are aimed at enhancing general well-being, while Achar Rasayana refers to cultivating a virtuous lifestyle—truthfulness, self-control, compassion—that sustains mental and emotional balance. The integration of these elements reflects a psychosomatic model of health that anticipates the modern psycho-neuro-immunological framework.[15]

Scientific inquiry into Rasayana herbs has revealed a host of pharmacological properties[15]:

- Immunomodulatory (e.g., *Guduchi*, *Shatavari*)
- Adaptogenic (e.g., *Ashwagandha*, *Haridra*)
- Antioxidant (e.g., *Triphala*, *Guggulu*)
- Nootropic/Medhya Rasayana (e.g., *Mandukaparni*, *Yashtimadhu*, *Shankhapushpi*)

These herbs support stress adaptation, cognitive clarity, and immune regulation. Their relevance becomes even more apparent in the context of pandemic preparedness, where strengthening host resistance and mental stability is critical.

Further, the discipline of Swasthavritta (code of healthy living) advocates for personalized, environment-sensitive health behavior. Daily regimens (*Dinacharya*) and seasonal practices (*Ritucharya*) are tailored to individual constitution and ecological context.[16][17] These practices resemble modern lifestyle medicine and chronobiology. They include dietary management, sleep hygiene, physical activity, and environmental attunement. When adhered to, they aim to preserve the equilibrium of the body, minimize the impact of seasonal epidemics, and ensure mental steadiness.

In cases of emergent public health threats, Ayurveda also suggests community-based preventive strategies, such as:

- Community Rasayana administration during epidemics
- Use of rejuvenative herbs to enhance resilience
- Implementation of Achara Rasayana (ethical education) to ensure psychological immunity
- Observation of social hygiene, similar to modern quarantine or isolation principles

Furthermore, the classical texts recognize airborne, waterborne, and soil-related modes of disease transmission. The effects of polluted air (*Asatmya Gandha*), stagnant or toxic water sources, and soil contamination are clearly acknowledged in ancient epidemiological models, echoing contemporary environmental health concerns. The Ayurvedic perception of disrupted ecosystems—increased prevalence of flies (*Makshika*), mosquitoes (*Mashaka*), and zoonotic vectors—is consistent with the rise in vector-borne diseases due to ecological imbalance.[18]

4. Discussion

Ayurveda offers a distinctive and holistic framework that resonates with many of the objectives at the heart of global public health policy, especially in the areas of prevention, resilience, and individualized care. In light of rising global health challenges, from the burden of non-communicable diseases (NCDs) to the threat of emerging infectious diseases and climate-linked health risks, there is growing interest in re-examining classical systems like Ayurveda through a modern public health lens. Yet, while its potential is significant, the practical integration of Ayurveda into mainstream health policy is not without its hurdles.

5. Opportunities for Integration

One of Ayurveda's enduring strengths lies in its preventive focus. Through principles like *Swasthavritta*, it advocates daily and seasonal routines (*Dinacharya*, *Ritucharya*), dietary discipline, and ethical conduct (*Aachar Rasayana*)—all of which closely align with contemporary approaches to health promotion and disease prevention. These routines target lifestyle-related risk factors such as poor nutrition, sedentary habits, and chronic stress, which contribute heavily to the global NCD burden.

Moreover, Ayurveda's classical epidemiological thinking, particularly the concept of *Janapadodhwansa*, offers an early understanding of the interplay between environment, climate, and disease outbreaks. The observation that epidemics may arise from vitiated air, water, seasons, and social behaviors shows surprising foresight and ecological awareness. In today's context—where climate change and environmental degradation fuel the emergence of diseases like dengue, Zika, and hantavirus—such frameworks may inform more responsive, context-sensitive public health strategies. This could complement existing global initiatives, particularly those focused on disaster preparedness and climate resilience.

Another noteworthy contribution is Ayurveda's emphasis on *Rasayana* therapies. Classically aimed at enhancing vitality, immunity (*Vyadhikshamatva*), and longevity, several Rasayana herbs have shown adaptogenic and immunomodulatory properties in contemporary studies. In times of pandemic risk, where boosting immunity and reducing systemic vulnerability are critical goals, these time-tested regimens could have renewed relevance—particularly at the community level.

6. Limitations and Challenges

Despite these promising alignments, several barriers hinder the full-scale integration of Ayurveda into global public health frameworks. The most pressing challenge is the lack of robust scientific validation. While classical usage and anecdotal evidence abound, many Ayurvedic medicines have yet to be studied through randomized controlled trials, and few adhere to globally accepted standards for dosage, safety, and efficacy. This presents a major obstacle to inclusion in evidence based policy environments.

Further, regulatory inconsistency and quality control issues—especially in the global market—pose concerns. The absence of harmonized standards for production, labelling, and pharmacovigilance limits the reliability of Ayurvedic products and reduces public confidence.

There is also a fundamental difference in worldview. Ayurveda is inherently holistic and qualitative, valuing experiential knowledge and individual constitution (*Prakriti*), while modern public health policy tends to prioritize measurable outcomes, population averages, and uniform guidelines. Reconciling these epistemologies is complex and will require new frameworks for dialogue and collaboration between systems.

On an operational level, Ayurveda remains largely absent from formal public health delivery channels. While it plays a role in India's AYUSH mission, its integration into programs for disease control, immunization, or maternal health remains limited. Outside India, Ayurveda often exists on the periphery—seen either as alternative medicine or cultural heritage—without the infrastructure or support for broader application.

Additionally, Ayurveda's person-centric approach, while valuable, is not yet scaled for populationlevel interventions. Developing simplified, affordable, and context-specific protocols that can be used across communities—especially in low-resource settings—remains a work in progress.

Lastly, cultural perception and health literacy pose real challenges. In many parts of the world, Ayurveda is either poorly understood or associated with mysticism, limiting its credibility among practitioners and policymakers alike. Without careful cross-cultural adaptation and community engagement, its global relevance may remain limited to niche or elite wellness markets.

7. Conclusion

Ayurveda offers valuable insights into preventive care, immunity building, and ecological health, aligning well with global public health goals. While its integration faces challenges—such as lack of standardized evidence, regulatory gaps, and philosophical differences—these can be addressed through collaborative research and policy innovation.

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