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EDITORIAL

Global influences on pediatric respiratory health: navigating the challenges of the 21st century

Joseph A. Bellanti [1-4], Mario La Rosa [5, *]

[*] **Correspondence to:**
mlarosa@unict.it

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[1] Associate Editor, Pediatric Respiratory Journal
[2] Department of Pediatrics, Georgetown University School of Medicine, Washington DC, USA
[3] Department of Microbiology-Immunology, Georgetown University School of Medicine, Washington, DC, USA
[4] The International Center for Interdisciplinary Studies of Immunology (ICISI), Georgetown University Medical Center, Washington, DC, USA
[5] Full Professor of Pediatrics, University of Catania, Catania, Italy and Editor in Chief, Pediatric Respiratory Journal

INTRODUCTION

The field of science has evolved into one of the most powerful and influential forces in society. The knowledge as a public good, the peer review of scientific work, the prominence of open publications, and the premium placed on professional recognition and scientific inquiry have been the defining hallmarks of science for the past three centuries. Based on this ethos, a unique social contract has been established between science and society.

As we enter the second decade of the 21st century, the institution of science is undergoing significant changes driven by three societal forces: 1) the impact of globalization, 2) the advancement of technology, and 3) the urgency of addressing climate change.

1. **The impact of globalization**, whether understood through Thomas Friedman's "*The World is Flat*" (2005) (1) or the increasing interdependence of nation-states (2-5), is pervasive and undeniable. Even though concepts such as nation-states, sovereignty, national economies, and nationalism remain strong and manifest in various forms, globalization's overarching impact is significant. This impact not only includes the social but also the global interactions through the information and communications technology revolution, the economic interactions through transnational corporations and the movement of global capital, and the worldwide political interactions (*e.g.*, global and United Nations regimes affecting security, international trade, the environment).
2. **The advancement of technology** has revolutionized scientific research and communication. Innovations in computing, biotechnology, and data analysis have accelerated the pace of discovery and allowed for unprecedented collaboration across the globe. The rise of artificial intelligence and machine learning is transforming how we approach problems and process information, leading to new insights and efficiencies in various fields of science.
3. **The urgency of addressing climate change** has brought environmental considerations to the forefront of scientific inquiry and policymaking. The growing recognition of the impact of climate change on ecosystems, human health, and global stability is driving a shift in research priorities and funding. Scientists are increasingly focused on understanding and mitigating the effects of climate change, which requires interdisciplinary collaboration and international cooperation.

KEY WORDS
Respiratory health; medical research; pediatric pulmonology.

These three forces − **globalization**, **technological advancement**, and the need to address **climate change** − are collectively reshaping the social contract between science and society, prompting a reevaluation of the roles, responsibilities, and expectations within this dynamic relationship.

MAJOR EFFECTS OF GLOBALIZATION ON SCIENCE AND PEDIATRIC HEALTH

- **The impact of globalization extends beyond political, economic, and social institutions**. Economic and market forces have penetrated the institution of science, transforming it so radically that we can now distinguish between the existing and emerging social contracts between science and society.
- **Globalization has become a reality in society, economy, and daily life**. How can we prevent the institution of science from being completely overtaken by economic and market-oriented forces? As Amartya Sen observed, we need mechanisms to maintain a "level playing field" between public and market goods. Institutional mechanisms and policy instruments must ensure that globalization benefits everyone, not just a few.
- **Respiratory diseases, as seen with COVID-19, spread rapidly across the globe**. Not only we can learn from these experiences of the effect of disease patterns and management strategies, but we must unite globally to advocate for children against global warming, pollution, and the ravages of war, including crimes against humanity perpetrated against children, often dismissed as collateral damage.
- **Advocacy is also needed to ensure that all children have access to the same medications**, which are often priced beyond the reach of low- and middle-income countries. For example, highly effective modulator therapy for cystic fibrosis needs to be made affordable, similar to how antiretroviral therapy costs were reduced for sub-Saharan Africa. Will new RSV monoclonals be affordable?

We believe that a Scientific Society for Pediatric Respiratory Diseases should have an international perspective and a mission to improve global health for all children. The basis for this recommendation is derived from the following considerations:

- Lifelong lung function is largely determined antenatally and in the preschool years, impacting health into old age. Improving adult lung health therefore must start early.
- Susceptibility to adult diseases such as late-onset and occupational asthma, chronic obstructive pulmonary disease (COPD), and lung cancer is increased by adverse childhood influences.
- Children's lung function is now recognized to have a genetic basis and is, therefore, significantly influenced by that of their parents and adverse pregnancy exposures. Adult physicians' care for their patients will impact children in pediatric clinics.
- Traditional childhood diseases such as cystic fibrosis and Duchenne muscular dystrophy are now recognized in adults due to longer survival. Building upon this understanding, pediatricians and adult physicians are encouraged to cultivate enhanced reciprocal relationships. Pediatricians can provide valuable assistance to adult physicians in understanding the unique needs of young patients, while adult physicians can contribute by informing pediatric practitioners about late complications.
- New diseases are emerging among disease survivors who are now seeking treatment in adult clinics. These include individuals who were born extremely preterm and those who have undergone cancer treatments. Coordinated planning is essential to ensure proper care for these individuals.
- Increasingly, genetic diseases with family-wide implications are being discovered. For example, surfactant protein C mutation disease manifests across the developmental course, affecting entire families.

CONCLUSIONS

The intersection of globalization, technological advancement, and the imperative to address climate change has profoundly reshaped the landscape of pediatric respiratory health and the practice of medicine. These objectives align with those of the Pediatric Respiratory Journal, the official publication of the ***Italian Pediatric Respiratory Society*** (Società Italiana per le Malattie Respiratorie Infantili – SIMRI), further reinforcing the imperative. As we navigate the challenges of the 21st century, it is clear that a collaborative and international approach is essential to ensure the well-being

of children worldwide. The impact of globalization on science and pediatric health extends far beyond economic and market forces. It encompasses the spread of diseases, the sharing of knowledge, and the urgent need for advocacy to ensure equitable access to essential medications. We must unite globally to advocate for children against the threats of global warming, pollution, and the consequences of armed conflict.

As new diseases emerge and genetic discoveries unfold, it is imperative that we remain vigilant and adaptive in our approach to pediatric respiratory health. Coordinated planning and interdisciplinary collaboration will be essential to meet the evolving needs of patients and families worldwide.

In conclusion, those of us who are entrusted to the care of children, the challenges are before us. By embracing an international perspective and committing to collaboration and advocacy with our colleagues throughout the world, we can strive to improve global health outcomes for all children. We must assume the responsibility as physician educators and child advocates in order that children might prosper on this earth (6).

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