

# Challenges in gastrointestinal research in Latin America

Mabel Guzman, Gisela Canedo-Marroquín & Nestor N. Jimenez-Vargas



Gastrointestinal research in Latin America is hampered by a lack of financial support and by biases, affecting research advancement in the region and career development of Latin American scientists. Engagement of the next generation of leaders and established scientists is, therefore, essential to avoid perpetuation of the existing inequalities.

Gastroenterology research in Latin America faces formidable challenges with respect to regional research advancement and career progress for scientists from the region. Among these challenges are low investment by governments and inadequate science policies, which directly impede career development for scientists at all stages of their career. Latin American researchers also encounter social prejudices that thwart their efforts to advance in the system and achieve leadership positions worldwide. Here, we discuss these challenges and make a call to action to address the difficulties faced by the Latin American gastrointestinal research community.

## Challenges in gastroenterology research

The serious economic impact of gastrointestinal diseases on health care and their adverse effects on quality of life have driven considerable scientific advances in this field over the past few decades. However, progress in Latin America remains far below progress in other regions.

A systematic review of literature from 2009 to 2018 demonstrated a positive correlation between scientific output and gross domestic product (GDP)<sup>1</sup>, and no Latin American country was among the top 20 leading countries in gastroenterology and hepatology research and clinical trials. Likewise, a review of data on the prevalence of functional gastrointestinal disorders between 2010 and 2020 identified rigorous results from only eight Latin American countries<sup>2</sup>. Data on the incidence of inflammatory bowel disease in Latin America are more robust and indicate a clear progression in the numbers of cases across the region, and phenotypes are characterized in greater depth<sup>3</sup>, but these data remain insufficient for disease surveillance and not representative of all populations.

Similarly, the prevalence of *Clostridioides difficile* infection, which can cause severe, life-threatening diarrhoea, in Latin American countries remains unknown<sup>4</sup>. Consequently, effective prevention and treatment strategies are lacking despite strong evidence for high mortality as a result of these bacteria in high-income countries.

These problems highlight the urgent need for targeted studies of gastrointestinal diseases that are disease-specific and region-specific for Latin America, as generalizing findings from one region or country to another might not be valid. In addition, diseases that are endemic to

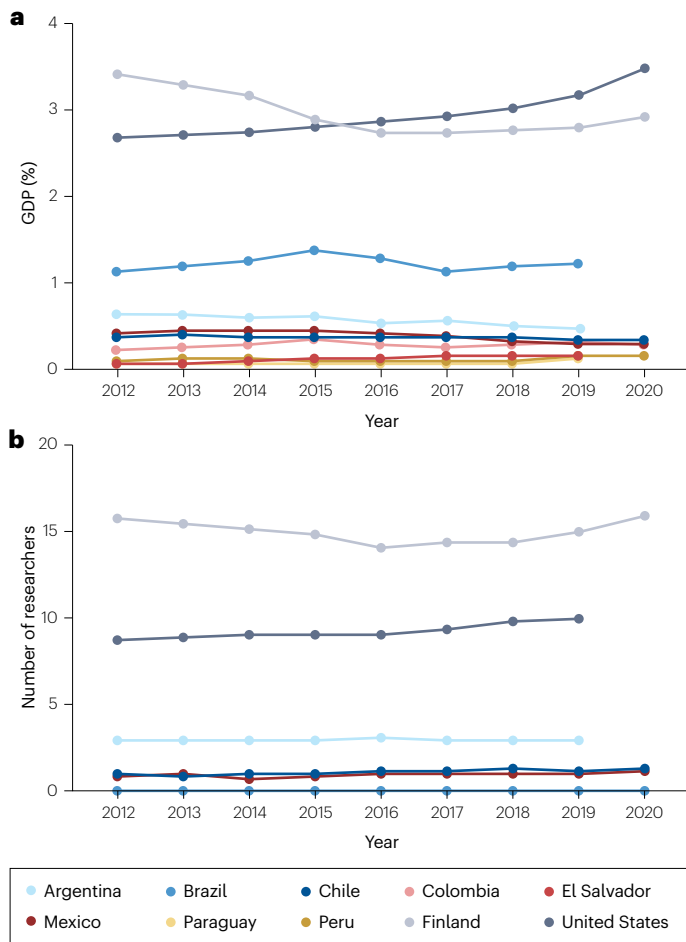
or have high incidences in Latin America, such as dengue fever, Zika, Chagas disease and Chikungunya, have received little attention from the international community because they are less common elsewhere. Consequently, limited resources have been available for the study and the medical management of these diseases. Alliances among Latin American countries (for example, the Latinoamerican Society for Pediatric Gastroenterology, Hepatology and Nutrition) and alliances with countries outside the region (for example, EURAXESS Latin American and the Caribbean) could generate more platforms that connect research funding bodies with researchers in Latin America to bridge the scientific research gap and focus resources on shared and region-specific problems, leading to scientific breakthroughs and improved health outcomes.

## Challenges for Latin American researchers

The striking disparity in research output between Latin American countries and high-income countries<sup>5</sup> stems in part from deeply entrenched, systemic challenges beyond the control of scientists. Limited financial support remains the main challenge that jeopardizes the progress of innovative, high-reward research programmes. The percentage of GDP that Latin American countries spend annually on research and development is considerably lower than that in high-income countries<sup>5</sup> (Fig. 1a). This limitation is reflected in the lower number of scientists who pursue a scientific career in academia in Latin American countries (Fig. 1b). In addition, limited access to cutting-edge technologies hinders the ability of academic centres in Latin America to compete on the global stage.

Publishing scientific studies has also become a challenge because many scientific journals charge high article processing fees (upwards of US\$2,000). Although some publishers have agreements with low-income countries and publishing fees are accounted for in some grants, these fees add pressure to already tight budgets. This difficulty limits the dissemination and recognition of studies conducted in the region. Although this barrier can be overcome in some cases by sharing expenses with collaborators outside the region, other obstacles exist. Evidence suggests that a scientist's country of affiliation influences the recognition they receive; for instance, if investigators in Latin America do not collaborate with scientists in high-income countries, the number of citations their published work receives is substantially lower than that for researchers who do collaborate internationally<sup>6</sup>. These obstacles could create a vicious cycle that ultimately leads to negative bias towards research from Latin American researchers in the international scientific community.

The lack of opportunities to develop a successful scientific career in Latin America leads many talented researchers to move to high-income countries to enable them to contribute to science and, in turn, to society. However, ethnic, cultural and educational prejudices in these countries, exacerbated by language barriers, can still hinder career progression<sup>7,8</sup>. As a result, Latin American researchers can still be at a disadvantage even when working outside the geographical region.



**Fig. 1 | Metrics of gastrointestinal research in Latin America.** **a**, Research and development expenditure as a percentage of gross domestic product (GDP) in selected Latin American countries, compared with Finland and the USA as example high-income countries. Data from Global Bank<sup>5</sup>, June 2022. **b**, Number of researchers per 1,000 people employed in selected Latin American countries, Finland and the USA. Data from Organisation for Economic Co-operation and Development (OECD)<sup>10</sup>.

### Call to action

Increasing the productivity and impact of gastrointestinal research in Latin American countries requires direct actions by the governments of these countries – including greater investment in education, health care and scientific development – and diplomatic interactions among these countries to strengthen scientific collaboration across the region<sup>9</sup>. In addition, a greater understanding among governments and the wider society of the concerns of young and established researchers inside and outside the region would inform the development of scientific policies that more effectively support these researchers<sup>7,9</sup>. In addition, the scientific community in Latin America can take collective actions, such as engaging citizens through science education and active participation of researchers in activities within the community, for example through social media, science fairs, and talks in schools and at public events. These actions could increase interest in local research from society and governments, thereby attracting investments to support scientific development.

Where possible, implementation of blind review systems for scientific journals, grant assessment and selection of participants in international conferences could help to remove bias that limits career progression for Latin American researchers. We recently experienced implementation of such a mechanism at the Little Brain Big Brain 2022 meeting in Heiligkreuztal, Germany, an extraordinary meeting for

neurogastroenterology scientists transitioning to leading research positions. The organizers of this meeting used a novel, double-blinded selection process for participants, described in a [Comment](#) by Alcaino et al. in this issue, and we observed marked ethnic diversity and a large number of women among the participants.

Financial barriers for Latin American researchers, as well as for other disadvantaged groups, can be reduced in several ways. For example, promoting hybrid meetings, such as those conducted at the height of the COVID-19 pandemic, could negate prohibitive travel costs and increase participation and exposure of young Latin American researchers; the opportunities afforded by meetings are often critical to developing key collaborations. In addition, the high costs of society membership, meeting fees and journal subscriptions could be reduced. Furthermore, although some journals do offer discounts to customers in vulnerable regions, the barrier of high publication costs persists.

We strongly encourage academic institutions in high-income countries to create more spaces for students and faculty positions belonging to minority groups. Institutional efforts to develop mechanisms that reduce systemic bias have led to considerable progress, but more remains to be done<sup>7,8</sup>. When considering applications for positions, decision-makers must be aware of the disadvantages for young researchers in Latin American countries and other low-and-middle-income countries, such as a lack of access to prestigious scholarships or top journals. These disadvantages can make applicants from these locations seem less competitive than applicants who have been trained in high-income countries even if they have similar capabilities.

We also call for senior scientists to provide more guidance to junior investigators that would increase their competitiveness for independent research opportunities. Similarly, we encourage scientists from Latin America, inside and outside their home countries, to build a stronger community of Latin American researchers who can continue to work on their passion and maximize their potential to make outstanding contributions in their field.

**Mabel Guzman** <sup>1,3</sup> , **Gisela Canedo-Marroquín** <sup>2,3</sup> & **Nestor N. Jimenez-Vargas** <sup>1,3</sup>

<sup>1</sup>Gastrointestinal Diseases Research Unit, Kingston General Hospital, Queen's University, Kingston, Ontario, Canada. <sup>2</sup>Faculty of Dentistry, Universidad de los Andes, Santiago, Chile. <sup>3</sup>These authors contributed equally: Mabel Guzman, Gisela Canedo-Marroquín, Nestor N. Jimenez-Vargas.

e-mail: [mabelguzmanrdz@yahoo.com.mx](mailto:mabelguzmanrdz@yahoo.com.mx); [gcanedo@uandes.cl](mailto:gcanedo@uandes.cl); [nnjv@queensu.ca](mailto:nnjv@queensu.ca)

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### Competing interests

The authors declare no competing interests.