

Revitalizing Research in Pakistan

Nayab Amin, Usama Siddiqui

Department of Dental Materials, Rehman College of Dentistry, Peshawar, Pakistan

The foundation of innovation and progress is based on research which improves lives, generates revenue and addresses global challenges. However, research in Pakistan has frequently been neglected and disregarded due to insufficient financial resources. Despite having brilliant researchers, the research ecosystem has been hindered by poor infrastructure, lack of investment and emigration of skilled professionals. Pakistan thus falls behind its neighbouring countries in terms of scientific production, novelty, and advance technology.¹ Still, there is time to revitalize research in Pakistan. The nation can realize its full potential, take on urgent challenges, and advance toward a better future with a renewed emphasis on research and development.

Research and Development (R&D) plays a vital role in driving innovation across numerous sectors of academia and industry. It involves systematic investigation, experimentation, and innovation aimed at developing new products, processes, or services, or improving existing ones. R&D efforts are crucial for staying competitive in today's rapidly evolving global economy, fostering technological advancements, and addressing complex societal challenges.² By investing in R&D, organizations and governments stimulate creativity, explore new frontiers of knowledge, and ultimately contribute to sustainable growth and improved quality of life. Effective R&D requires interdisciplinary collaboration, robust funding, and a long-term vision to translate discoveries into practical applications that benefit society at large.

Although current research system in Pakistan faces many obstacles but the desire to conduct research is rising as well. With an annual growth rate of more than 15%, research publications have significantly increased in Pakistan in recent years. Various new research institutes and universities have established focusing on disciplines such as science, technology, engineering, and mathematics (STEM).³ Likewise, Higher Education Commission (HEC) has taken initiatives to promote research and academic excellence by implementation of several programs including faculty development program, research grant program and development of research centres.⁴ This aims to stimulate innovation as well as addresses local challenges through scientific inquiry and technological development.

Despite the ongoing financial difficulties, research funding has been increased from both government and commercial sectors that allows researchers to move forward with their studies and publish their results. There is also significant increase in number of PhD holders in Pakistan. Moreover, Pakistani researchers are working with foreign collaborators more frequently which has exposed them to worldwide research standards and raised the number of

Corresponding Author:

Nayab Amin
Department of Dental Materials, Peshawar, Pakistan
Email: nayab.amin@rmi.edu.pk

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co-authored publications. This enhances research profile, offers novel solutions to critical problems, increases chances of growth in employment and establishes effective research ecosystem. Beside this, the regulatory bodies such as HEC and Pakistan Medical and Dental Council (PM&DC)⁵ has also implemented selection criteria for faculty in which research is mandatory. Thus, research culture is promoted among the community.

Additionally, Pakistan has been increasingly R&D as a critical driver of economic growth and technological advancement. Over the years, the country has invested in enhancing its R&D capabilities across various fields, including agriculture, healthcare, information technology, and energy. Collaborations between academia, industry, and international partners have also been instrumental in leveraging expertise and resources to accelerate R&D outcomes. Despite challenges such as funding constraints and infrastructure limitations, Pakistan continues to make strides in fostering a culture of innovation and knowledge creation, laying the groundwork for a more competitive and sustainable future.

It is important to state that while the ratio of research publications is improving, the quality and influence of research also need consideration. Pakistan still faces challenges in:

1. Citation impact: Pakistani research papers often have lower citation rates compared to global standards.
2. Research relevance: Ensuring research is relevant to Pakistan's socio-economic challenges and contributes to the country's development goals.
3. Interdisciplinary research: Encouraging collaboration across disciplines to tackle complex problems and promote innovation.

By addressing these challenges, Pakistan can further enhance its research landscape and make a more significant impact on the global research community.

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