

EDITORIAL

Accelerating Medical Research in Madhya Pradesh Through Integrated Research Networks

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Introduction:

Medical research is no longer an optional academic activity but an essential component of modern healthcare. Every advancement in disease prevention, diagnosis, treatment, health technology, and public health policy is established upon scientific research. The Department of Health Research (DHR) has emphasized strengthening research infrastructure in medical colleges through initiatives such as Multidisciplinary Research Units to promote clinical, translational, and multidisciplinary research.

Government Medical Colleges occupy a unique position within the healthcare system. They provide tertiary patient care, educate future healthcare professionals, and possess access to large and varied patient populations. This combination creates an perfect environment for conducting clinically relevant, epidemiological, operational, and implementation research that directly benefits healthcare services.

As the National Medical Commission increasingly promotes research and innovation within medical education, research should become an integral part of institutional culture rather than remaining confined to postgraduate dissertations or isolated faculty projects. Additionally, recent national mandates place strong emphasis on embedding clinical research, innovation, and translational technology into the core medical curriculum.

Research Priorities for Madhya Pradesh:

To effectively guide healthcare planning in Madhya Pradesh, policy must be informed by localized epidemiological evidence rather than national generalizations alone. Aligning with national health mandates and state priorities, target research areas are grouped into four main pillars:

- 1. Disease Burden & Surveillance:** Cancer, tuberculosis, emerging infections, non-communicable diseases (diabetes, CVD, CKD), and antimicrobial resistance.
- 2. Population & Public Health:** Maternal, neonatal, and child health, alongside nutrition and anemia.
- 3. Equity & Specialized Care:** Tribal health, mental health, and environmental/occupational health.
- 4. Innovation & Systems Improvement:** Digital health/AI, health systems implementation, and medical education research.

Existing Research Resources: A Strong Foundation

Madhya Pradesh has already established an impressive research infrastructure that provides an excellent foundation for future growth.

The six Multidisciplinary Research Units (MRUs) established by the Department of Health Research have strengthened research capacity by providing advanced laboratory infrastructure, support for interdisciplinary research, intramural funding, research training, and opportunities for multicentric collaboration. The DHR has identified MRUs as key institutions for strengthening research environments, bridging infrastructure gaps, developing human resources, and promoting multicentric research.

Disease Repositories in state medical colleges now serve as critical hubs for translational research. By systematically linking clinical datasets with biological specimens, these biobanks unlock capabilities in genomics, biomarker identification, and precision medicine tailored to regional needs.

Complementing these repositories is a broader network of state-funded assets:

- Central Research & VRDL Laboratories
- Hospital- and Population-Based Cancer Registries
- Institutional Ethics and Scientific Oversight Committees
- Modern Diagnostic Facilities and Digital Health Platforms

Strategic Focus: The immediate objective of state policy is to integrate these high-value public assets into a unified network, eliminating silos and accelerating translational outcomes for the population.

Leveraging National Health Programmes

National Health Programmes generate vast amounts of high-quality clinical, epidemiological, and public health data that remain largely underutilized for research. Programmes such as the National Tuberculosis Elimination Programme (NTEP), National Cancer Registry Programme (NCRP), National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD), National AIDS Control Programme (NACP), Integrated Disease Surveillance Programme (IDSP), Universal Immunization Programme (UIP), and Maternal and Child Health (MCH) initiatives provide invaluable platforms for operational research, implementation research, programme evaluation, and health policy analysis.

Establishing formal linkages between medical colleges and these programmes can transform routinely collected programme data into actionable scientific evidence. Such integration will facilitate evidence-based policy making, improve programme implementation, strengthen healthcare delivery, and foster a culture of research aligned with national and state health priorities.

Human Resource Development: The Key to Sustainable Research

The long-term success of medical research in Madhya Pradesh depends not only on strengthening research infrastructure but, more importantly, on developing a skilled and motivated research workforce. Building human resource capacity across Government Medical Colleges should therefore be a strategic priority of the Department of Public Health and Medical Education.

A state-wide capacity-building programme should focus on equipping faculty members, postgraduate residents, undergraduate students, laboratory scientists, epidemiologists, biostatisticians, research managers, data scientists, and medical record professionals with the competencies required to undertake high-quality, multidisciplinary research aligned with the health priorities of the State.

Regular training should encompass research methodology, epidemiology, biostatistics, bioethics, Good Clinical Practice (GCP), scientific writing, grant proposal development, data management, artificial intelligence, bioinformatics, health informatics, research administration, and scientific communication. These programmes should be delivered through the existing network of Multidisciplinary Research Units (MRUs), Disease Registries, Central Research Laboratories, and medical colleges, thereby optimizing available institutional resources.

To foster a vibrant research culture, the State should also establish structured mentorship programmes, provide protected time for research, encourage inter-institutional collaboration, and introduce performance-based incentives for quality publications, patents, innovations, and externally funded research projects. Such investments in human capital will enable Madhya Pradesh to build a sustainable research ecosystem capable of generating high-quality evidence to inform clinical practice, public health programmes, and health policy.

Optimizing Existing Resources Through Collaboration

The next phase of research development in Madhya Pradesh should emphasize integration rather than expansion.

A State Medical Research Network should connect all Government Medical Colleges, MRUs, Disease Repositories, Cancer Registries, Central Research Laboratories, VRDLs, Institutional Ethics Committees, and biostatistics units through common digital platforms and collaborative governance.

Such a network would facilitate multicentric studies, standardized research protocols, centralized databases, specimen sharing, advanced laboratory support, and coordinated responses to emerging public health challenges while minimizing duplication of infrastructure and expenditure.

Dissemination of Scientific Evidence

Research achieves its true value only when it influences policy and practice.

Medical colleges should encourage publication in indexed peer-reviewed journals, preparation of policy briefs, scientific

conferences, and dissemination of research findings to programme managers and policymakers.

The Madhya Pradesh Journal of Medical Sciences can become the official scientific platform for publishing high-quality research from Government Medical Colleges. A strong state journal will encourage young researchers, improve scientific communication, document state-specific evidence, and increase the national visibility of research conducted in Madhya Pradesh. With rigorous peer review, digital publication, and indexing, it can evolve into a respected regional biomedical journal.

Establishing a State Centre of Excellence for Medical Research

The time is appropriate for establishing a State Centre of Excellence for Medical Research and Innovation under the Directorate of Medical Education.

The Centre should serve as the apex institution for research planning, coordination, mentoring, multicentric research, advanced laboratory support, disease repositories, epidemiology, biostatistics, artificial intelligence, data science, and scientific publication.

It should also function as the nodal centre for collaboration with the Department of Health Research, Indian Council of Medical Research, Department of Biotechnology, National Centre for Disease Control, and other national and international institutions. Such a Centre would facilitate competitive research funding, promote innovation, strengthen technology transfer, and provide strategic leadership for medical research across the state.

Conclusion:

Madhya Pradesh has already created the essential infrastructure required for a vibrant medical research ecosystem. The future lies not in establishing isolated facilities but in integrating existing resources through strategic planning, collaborative networks, and strong institutional leadership.

To strengthen medical research in Madhya Pradesh, the following policy actions are proposed:

Develop a comprehensive State Medical Research SOPs aligned with national priorities, Integrate MRUs, Disease Repositories, Cancer Registries, VRDLs, and Central Research Laboratories into a unified research network, establish a State Centre of Excellence for Medical Research and Innovation, strengthen human resource development through structured training, mentorship, and research fellowships, promote multicentric research addressing state health priorities, develop centralized digital research databases and biorepositories, strengthen the Madhya Pradesh Journal of Medical Sciences, as the official platform for dissemination of state-generated evidence, encourage national and international collaborative research and externally funded projects, introduce measurable research performance indicators for Government Medical Colleges linked to quality, innovation, and societal impact.

By strengthening human resource development, optimizing research infrastructure, promoting multidisciplinary collaboration, enhancing dissemination through a robust state medical journal, and establishing a State Centre of Excellence for

Medical Research, Madhya Pradesh can emerge as a national leader in biomedical and public health research. More importantly, this integrated research ecosystem will generate high-quality evidence that improves patient care, strengthens

public health programmes, informs policy decisions, and ultimately contributes to better health outcomes for the people of the state.