



Integrative Approaches in Health Research in India: Solutions and Policy Recommendations for Promoting Integrated Research

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Abstract

There is unity in diversity, but we need a shared goal to unite. Healthcare Science is no different, union of diverse disciplines creates innovations. An integrative approach bridges biomedical sciences with social and behavioral sciences by understanding the linkages between social, behavioral, psychological, and biological factors in health. It is furthermore vital that integration occur in all steps of the research process: in theory, design, data collection, and analysis. India is slowly and steadily moving towards this Convergence. In this article we will discuss Integrated Research and roadblocks. An expert committee panel held in Chandigarh in 2020 under IAMBSS gave recommendation towards improving the Integrated Research in India, which may aid policymakers to draft policies.

Keywords- Integration, Research, Health, India, Policy

Background

From industrial revolution to present era, convergence or integration is considered as a driving force for innovations that brings together the various disciplines of science despite their varied areas of concern and beginning. In the context of medical science, various fields of medicine are enriched by innovations in other branches of science. For illustration, medical genetics and immunology have been fecundated by biotechnological applications, radiodiagnosis and nuclear medicine advances with progress in physics, etc. This interlocking mechanism between different scientific disciplines is popularly known as Convergence(1). Understanding the complexity of the disease, mounting costs of healthcare and tailoring individualized treatment are key challenges in medical science. With the origin of universe, biology emerged from the amalgamation of physics and chemistry. In today's era, life science, technology, and medicine are coming together to accelerate research innovations. This mechanism is contributing to health research by interdisciplinary and multi-sectorial approaches to strengthen scientific acquaintance.

Integration is of two types: vertical and horizontal(1). The vertical integration defines the involvement of basic science in the clinical decision. On the other hand, horizontal (heterogeneous) integration is a holistic approach engages different disciplines together to obtain the desired results in health care delivery and research. Wearable sensors, smart watches and medical apps are examples of horizontal integration routinely used by people to monitor physiological parameters of body.

Health is and always has been a core area of population science. Although typically coupled with mortality and aging research, health is a key mechanism in reproduction, family planning, sexual behavior, birth outcomes, union formation, migration, education, and labor market behavior and outcomes. From one of the earliest demographic accounts by Louis Dublin, Alfred Lotka, and R.J. Horton in 1937 titled Twenty-Five Years of Health Progress, health remains central to the demographic processes, behaviors, and outcomes we study today.

One of the great strengths of population science is that it draws from diverse areas to solve puzzles of the time. Recently, there has been increasing scholarly interest in the puzzles of health. One indication of this is the increasing number of paper submissions to the Health and Mortality topic in the Call for Papers for the annual Population Association of America (PAA) meetings. Over the past seven years, submissions to Health and Mortality have increased by 50%—the largest growth in submissions across all topics of the PAA.

Integrated Research

Integrated or Interdisciplinary research is a type of study or research that draws from two or more disciplines in order to gain a better developed perspective, or discover something new.

Interdisciplinary is everywhere. From research funders to journal editors, policymakers to think tanks – all seem to agree that the future of research lies outside firm disciplinary boundaries e.g. The British Academy, is leading an inquiry into “the relevance of interdisciplinary to innovation” and “how academics can forge a career path in interdisciplinary research”. They have come up with projects focus on the interaction between technology, nature and humanity(2). Nature, arguably the world’s most influential academic journal, published a special issue on interdisciplinary(3). This approach can generate an understanding of themes and ideas that cut across disciplines and of the connections between different disciplines and their relationship to the real world. It normally emphasizes process and meaning rather than product and content by combining contents, theories, methodologies and perspectives from two or more disciplines. The interdisciplinary approach is valuable not only for its immediate benefits to research, but also for keeping the door open to diverse career paths in the sciences. It's the perfect introduction to the team-based approach common in the industry, a career direction that many students at university eventually take. Not only does it give one the knowledge and the vocabulary to understand other disciplines, but it also provides the necessary communication skills. The field of Medical Research is no different. Even as more and more research work is being conducted across the globe, the findings are adding up to the database of information, in a significant way. So, with every passing day, there is more data to refer to, should anyone want to conduct a research on any topic. One cannot ignore the fact that today, the field of Medical Research needs to deal with disparate schedules of Data Collection, which can indeed make it a challenge to uncover the sites required for research. The solution is an integrated platform for research, which gives researchers access to a world of medical archives, articles, citations, journals, biomedical literature, and other important research information on one single platform. Without the cooperation of researchers in several different fields, many of today's important discoveries wouldn't have been possible. Where would the Human Genome Project be without the help of the computer scientists and bioinformaticists whose programs have helped to organize and annotate all that information? Scientists are getting together, talking, and sharing ideas and the results are fascinating.

With increase in team-based and problem-based interdisciplinary learning or research approaches, we are hopeful that today's crop of budding scientists will emerge with an appreciation for a variety of disciplines and the ability to move among them effectively. It might not be long, in fact, before we see the lines between different fields start to blur even further than they have already.

Scope of convergence policy in health science in India

In India, term Integrated medicine is interchangeably used for complementary alternative medicine (CAM)(4)(5). CAM is alternatively called AYUSH (Ayurveda, yoga, unani and homeopathy) in India. However, Integrated medicine is not synonymous with CAM/AYUSH, it is a much broader term involving multi-sectoral collaboration of sciences which may not be not even remotely related to each other with the common goal for health and sustainable development. For instance, application of space science technology in health will be considered Integration in its true form.

Implementing the integrative approach in pre-degree and foundation curricula of postgraduate degree and Ph.D. courses needs a strategic plan and exuberance from expert faculties, administration, and acquiescence from concern ministry. Implementing this kind of approaches provide the opportunity to clinicians, statisticians, basic scientists, and public health specialties to move forward together to deliver better health care, solve research-based queries, makes epidemiology understandable, develop holistic health policies and intervention framework for healthy nation. In India, we lack a shared platform where experts trained in various disciplines connect with each other with one goal of decoding health related challenges. Integrated Association of Medical, Basic and Social Scientists (IAMBSS) is an attempt towards providing the platform where “technology meets medicine” and “basic sciences meet applied sciences”. An expert committee panel meet held in Chandigarh in 5th January 2020 gave following policy recommendations.

POLICY RECOMMENDATIONS/CONDITIONS

1. Revision of the curriculum in Post graduate courses throughout all disciplines in respect to encouraging the interdisciplinary study/research.
2. Generation of formal website including target areas/ themes with regular updation with evidences.
3. Interdisciplinary Projects/association should be promoted by Government bodies.
4. Environment that encourages faculty/researcher collaboration
5. Seed/glue money
6. Seminars to foster bridges between students, postdoctoral scholars, and PIs at the same institution
7. Workshops to foster bridges between investigators at different institutions
8. Frequent meetings among team members
9. Science and engineering PhDs trained in research administration
10. Support project initiation and team building
11. Seamless and flexible funding from various Government bodies, NGOs and Private institutions.
12. Recognize potential for high impact research and application
13. Involvement of funding organization

14. Physical co-location of researchers
15. Shared instrumentation
16. Enhance chance meetings between researchers, such as on-site cafeterias
17. Matrix organization
18. Rewards for academic leaders and Professional recognition of successful practitioners who foster Integrated Research
19. Tenure/promotion policies for interdisciplinary work
20. Utilize experts with breadth and Integrated Research experience for assessment

References

1. Sharp P, Hockfield S. Convergence: The future of health. *Science* (80-). 2017;355(6325):589.
2. Knowledge Frontiers: International Interdisciplinary Research 2021 :The British Academy [Internet]. Available from: <https://www.thebritishacademy.ac.uk/funding/knowledge-frontiers-international-interdisciplinary-research-2021/#:~:text=The British Academy is inviting,between technology%2C nature and humanity.&text=The Academy is looking to,research they aim to undertake>.
3. Interdisciplinarity [Internet]. Available from: <https://www.nature.com/collections/jcfdbccgjj>
4. Singh R. Integrated Healthcare in India - A Conceptual Framework. *Ann Neurosci*. 2016;23(4):197–8.
5. Shenwai MR, Tare KN. Integrated Approach Towards Holistic Health: Current Trends and Future Scope. *Int J Cur Res Rev* [Internet]. 2017;9(7):19–22. Available from: http://www.ijcr.com/uploads/280_pdf.pdf

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