

Perspective

Scope of translational research focusing rural areas

Science as a systematic enterprise builds and organizes knowledge in the form of testable explanations and predictions about the universe¹. A scientist practices science with the knowledge that can be explained rationally and applied reliably. Generation and organization of knowledge as a process of science can be better undertaken by research as a scientific discipline, which involves steps for collection and analysis of information to increase the understanding of an issue². As a health researcher, the focus is human health with the ultimate aim to build the evidence for a socially, mentally, economically and spiritually productive life. Evidence based health research helps to design health care programmes and strategies to improve the population health.

As an outcome of basic and clinical research, the health care technologies have transformed the health care programmes for their better implementation and utilization. The resultant patient and population benefits can be assessed by clinical and public health research with the focus to understand the determining factors for their applicability. This, mostly understood as “Translational Research (TR)” is a growing discipline, which in itself has two domains; first, “bench to bedside” enterprise of translating knowledge from basic sciences into development of new treatments; and second, translating the findings from clinical trials to every day practice³. In addition to translational research, another term “Implementation Research (IR)” is not well understood despite its need to inform the policy decisions to further improve the health care strategies and programmes. IR has been referred as a scientific inquiry concerning to implementation - the act of carrying an intention to effect, which in health research can be policies, programmes, or individual practices (collectively called interventions)⁴. It needs to be understood with a distinct concept of “Operational Research (OR)” in public health, which

deals with the method of producing practically usable knowledge (evidence, findings, information, *etc.*) which can improve programme implementation (*e.g.* effectiveness, efficiency, quality, access, scale up, sustainability) regardless of type of research (design, methodology, approach)⁵. Like after successful generation of knowledge for home-based neonatal care^{6,7} with the help of village health workers, the ambit of OR addresses the replication, operational and implementation issues for the country considering the ongoing programme effectiveness. Thus, the concept of OR also deals with principles of translational and implementation research, which validate the understanding for real world or usual practice settings with special emphasis on end users in the context of implementation and its associated factors. Health system related factors influence the implementation of intervention and need to be studied and reported.

What is required for the principles of TR/IR is the understanding of the contextual factors that could influence the public health interventions, which are to be studied in real time settings. Observing the national health programmes as a set of interventions had a change in the strategy after analyzing the local contextual factors, like changing the diagnostic and treatment guidelines for tuberculosis (TB) control, upgradation of peripheral health institutions as per the Indian Public Health Standards (IHPS) to improve the quality of care, changing the iron folic acid formulation to control anaemia, availability of newer contraceptive methods in family welfare programme, *etc.* It is due to the observed operational limitations, though the extent of application of TR and IR principles for such changes could not be attributed at this stage. Usually, the change in the diagnostic and treatment strategy for the benefit of a large population focuses to ease the mode of its delivery to the population with improved effectiveness.

Improving the way of intervention mostly requires application of newer health care technologies for use, like rapid diagnostic kits, patient wise treatment boxes in TB care, hormone bases contraceptive devices, *etc.* to make them accessible and affordable.

There is always a scope for the constant improvement in the effectiveness of national health care programme. This is addressed by research as there might be various social, health system, human resource related factors that form a complex environment which influences the adaptability of the programmes. Their careful consideration helps to tailor the programme in contextual setting for improving its performance. Strategies intend to work in a system if feedbacks of key stakeholders and the end users are incorporated. Such strategies have research implications with the flexible study methodology which accounts for environment in which such strategies are actually being implemented^{8,9}.

The national level research institutions played a significant role in rechristening the strategies based on their research findings. Over the years, with the expansion of research institutions the need was felt to reach out to the populations to conduct the needs based research and in turn to translate it to the relevant national health care programme. The Indian Council of Medical Research (ICMR) as one of the oldest medical research bodies in the world has expanded its scope of functions and augmented its research bodies/institutes in almost all parts of the country. The expansion of research bodies to the needs of population is also demonstrated by the Indian Council of Agricultural Research (ICAR), which since 1929, has grown into its 100 institutes and shown its contribution in green revolution with the technology transfer, which has enabled our country to enhance production of food grains five times, horticulture 9.5 times, fish 12.5 times, milk 7.8 times, and eggs 39 times from 1951 to 2014¹⁰.

Focusing on health, the research infrastructure has grown over years and has its presence in all the States of the country to address the State specific issues as well. The research agenda has now been aligned with the needs of the national health care programmes, so that it can be translated better for the benefit of people. So far, the research was focused for the national level agenda, but the Department of Health Research (DHR) understood the State-specific needs and took measures to empower the need based research before directly placing the intervention in use. It advocated for the establishment of Model Rural Health Research Units

(MRHRUs) across the country, one in each State. The Unit was planned to be in a rural area, and identification of the area was subjected to the discretion of the State government, so that it could demonstrate the technology transfer better. Under the 12th Five Year Plan there was a target of establishing 15 MRHRUs. So far, 12 MRHRUs have been established¹¹. This is considered as a major step to bring research directly to the population for its direct use. It provides an infrastructure in the rural areas that will work directly with the peripheral health care delivery system like the sub Centre (SC), Primary and Community Health Centres. The research will be carried out by the State owned medical colleges with the mentorship of ICMR institutes as a designated task for the specific MRHRU. Administrative support in terms of provision of research staff and laboratory equipment along with the infrastructure is provided by the ICMR to augment the capacity to conduct research relevant to State-specific health issues. In addition, the proposed new technologies and strategies can be tested for their translational feasibility and understanding the determinants for their effectiveness in the real time settings. Thereafter, it can be incorporated into the national strategy of the health care programme to improve its performance. The MRHRUs ensure an interface between new technology developers, health care delivery system and end users. This initiative intends to demonstrate the transfer of medical technologies or interventions to the rural population. It provides a platform for State medical academicians and health sector for evidence generation based upon their local agenda. The States shall be further empowered to test the public health interventions for their feasibility and effectiveness in their settings.

Health care delivery system is accessible to each and every village of the country by the provision of Accredited Social Health Activist (ASHA), and at least one sub-centre to an average group of 4-5 villages. The ASHA workers intend to bring a change in the community by mobilizing for health planning and utilization of health services by generating awareness and accountability among rural population at village level^{12,13}. ASHA as an important strategy, is a verified medium for transfer of policy in the form of a programme. The MRHRU can be considered as a TR and IR research unit of ICMR in every State of the country for the State use. In addition, the units will empower the State medical colleges for research and development. The mix of academics, research and

services shall provide an opportunity at MRHRUs to practice the TR and IR in real world settings and also for effective knowledge and technology transfer.

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