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Perspective

Implementation research for strengthening health systems in India

Implementation research (IR) is important for understanding and overcoming various challenges in achieving universal health coverage. In this article, we highlight the relevance of embedding IR within health systems, the lack of capacity that restricts it and the ways of bridging this gap.

"Research capacity should be built close to the supply and demand for health services."

This was a key message from the World Health Report entitled "Research for Universal Health Coverage"[1]. Implicit in this message is the need for countries to build IR capacity within the health system.

IR (often synonymous with operational research) can be defined as a systematic approach to understand and address barriers in the effective implementation of proven interventions, policies and strategies[2,3]. It is conducted within real-world health systems and community settings.

IR is important for understanding and overcoming various challenges in achieving universal health coverage (UHC). For example, there are several unanswered questions linked to barriers to healthcare access. For example, why did the eligible children (10 million of them) in sub-Saharan Africa have no access to medicines for protecting them against the seasonal malaria outbreaks in 2020 and why in 2021 only 36 per cent of people globally with drug-resistant tuberculosis have access to effective treatments? In the era of Sustainable Development Goals (SDGs), the answers to such questions become critical for strengthening health systems globally to scale up health care[4,5].

In this perspective, the relevance of embedding IR within health systems is highlighted and, the lack of capacity that restricts it and the ways of bridging this gap are also discussed.

The relevance of embedding research within health systems

Many healthcare professionals in low- and middle-income countries (LMICs) feel that IR is a "luxury" that competes with routine healthcare delivery[3]. This is particularly so, where health systems are constrained by limited human and financial resources[6]. In contrast, we are of the strong opinion that IR is a necessity, for three reasons.

First, useful data for improving public health is often left unused on shelves, filing cabinets or in computers, resulting in public health programmes being data-rich but information-poor. IR can change this paradigm by maximizing the use of such data to generate relevant information and thereby making countries data rich, information rich as well as action-rich[7].

Second, many useful tools, interventions and policies are typically either generated through clinical trials or proposed by health experts, but it often takes decades for countries to apply these in routine practice. Some of the classic examples in this context include the 15 yr delay after regulatory approval for the rollout of rapid diagnostic tests for malaria, the 18 yr delay in wide-spread implementation of insecticide-treated bed nets for vector-borne diseases prevention and the 27 yr delay for widespread implementation of hepatitis B vaccination[1,8]. The primary cause for such delays is the lack of "know how" regarding how to deliver and sustain these interventions in real-world settings. IR is thus critical in bridging these knowledge gaps[2]. As the saying goes "If you want to get research into practice, first get practice into research"[9].

Third, the surveys carried out by the World Health Organization (WHO) in 2022 and 2023[10] showed that at least 84 per cent of countries faced persistent COVID-19 related disruptions affecting

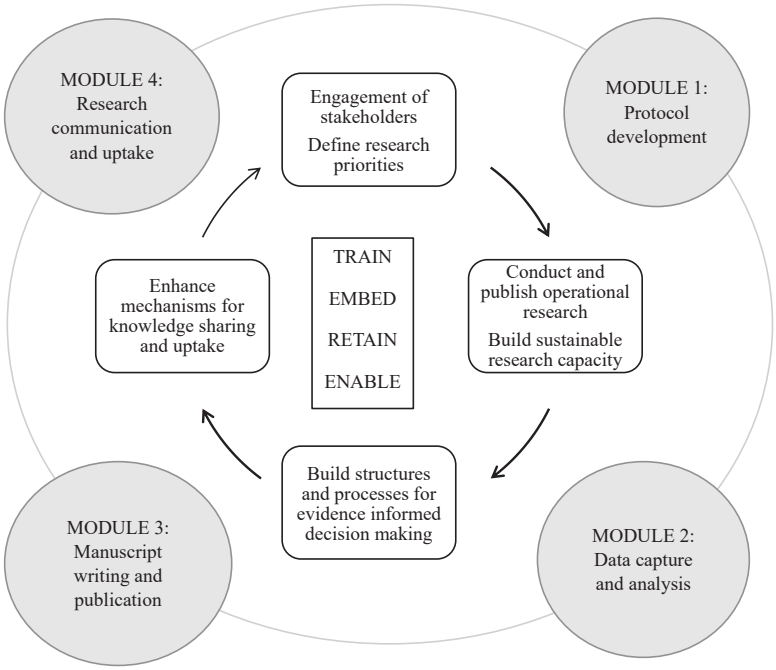

Figure. The Structured Operational Research and Training IniTiative (SORT IT) cycle and theory of change.

service delivery platforms. This implies that health systems could not be steered out of trouble during the COVID-19 pandemic underlining the importance of real-time IR for obtaining "real-time intelligence" to sustain the health systems capability in essential service delivery[11,12].

Embedding implementation research: The lack of capacity in the health system

Despite the need for health systems to embrace IR, one of the underlying challenges is the lack of capacity to plan and undertake the work. This can be attributed to the fact that many training models for building research capacity are largely academic and divorced from the day-to-day health service delivery[3,9,13]. Hence, there is hardly any synergy between research and the strengthening of health system capacity in service delivery. A way to address this conundrum is to couple the two – implementation of research with capacity building such that they take place simultaneously. The training should be practical, with young researchers (preferably from within health systems) being given the opportunity to manage their own research projects and being provided with on-the-job mentorship by experts and the approach should be driven by milestones such that the expected outputs are met within rapid but realistic timeframes[14,15].

The Structured Operational Research and Training IniTiative (SORT IT) solution for building IR capacity

The Structured Operational Research and Training IniTiative (SORT IT) was conceived to address the lack of IR capacity in the health system. SORT IT, a partnership-based initiative spearheaded by the UNDP, UNICEF, WHO, World Bank, and Special Programme for Research and Training in Tropical Diseases (TDR)[16].

Unique features of the SORT IT model are that decision-makers within the health systems steer the research agenda and inexperienced trainees receive hands-on mentorship support on a one-to-one basis to fulfil their milestones. Such mentorship is provided beyond the classroom to embrace the entire journey from the generation of research questions to field implementation and then to publication and eventual impact[17]. The SORT IT cycle and training modules are shown in the Figure.

SORT IT has performance targets and regular assessments are made on the quality of publications of SORT IT[17]. The last assessment of observational studies involving 72 countries and 24 thematic areas showed that 90 per cent of publications were of good reporting quality[17]. Another assessment of qualitative and mixed methods studies involving 13 public health themes

Table. Examples of implementation research from the Structured Operational Research and Training IniTiative and their effect on policy and/or practice in India

Study	Study description	Main findings	Effect on policy and practice
India Tuberculosis-Diabetes Study Group[37] *(Influenced national policy)*	Cohort study to assess feasibility of screening tuberculosis (TB) patients for diabetes mellitus within the routine health care settings: eight tertiary care hospitals and sixty peripheral health centres	It was feasible to screen patients for diabetes mellitus which resulted in earlier identification and better co-management	A policy decision was made by the National TB Programme of India to implement this intervention countrywide
Kumar *et al.*[38] *(Influenced national guidelines)*	Cross-sectional study to evaluate if India could cope with increased demand for antiretroviral treatment (ART) if the 2010 WHO ART guidelines for individuals with TB and HIV co-infection were adopted	The health system could cope with the additional ART demand allowing all HIV-Infected TB patients to benefit	India adopted the 2010 WHO ART guidelines and ART was offered to all individuals with HIV-TB co-infection country-wide
Shewade *et al.*[39] *(Influenced practice at subnational level)*	Mixed-methods study on pre-treatment attrition of presumptive MDR-TB patients	High pre-diagnostic attrition of 46% and pre-treatment attrition of 29%, with reasons for the attrition identified	Improved patient tracking and sputum transport systems were introduced Pre-diagnostic attrition reduced to 24% and pre-treatment attrition became 0%

TB, tuberculosis; ART, antiretroviral treatment; MDR-TB, multidrug-resistant TB; WHO, World Health Organization

and 18 countries, graded 89 per cent of publications as "good" to "excellent"[18].

The success of the SORT IT model: The SORT IT model can be assessed to be successful by indicators of replicability, research impact and sustainability. In terms of replicability, the model has been expanded to 94 countries, applied to 25 public health domains and includes 74 partner institutions, 80 per cent from LMICs. In terms of research impact, there is a 95 per cent publication rate with about 70 per cent of studies impacting policy and/or practice[19-21]. In terms of empowering individuals, about 50 per cent of all trainees continue with research independently and 40 per cent become mentors in research[22]. There is also evidence of transversal gains to strengthening health system resilience. Two assessments led by TDR showed that over 70 per cent of the trained individuals applied their acquired SORT IT skills to the frontlines of the COVID-19 response including improving monitoring and systems and future research[23,24].

In terms of sustainability, there are numerous examples of successful nationalization of the SORT IT model. Examples include Armenia and Ukraine, for improving health care for hard-to-reach and vulnerable populations[25,26]; Kenya, on tackling neglected tropical diseases and tuberculosis[27]; Sierra Leone and Liberia, on improving health system resilience against Ebola outbreaks[28]; Nepal and Ghana[29,30,] on tackling antimicrobial resistance; Pakistan[31] and Rwanda[32,33] on improving public health; the United Kingdom, on health protection issues[34]; and India in using global fund grants for tackling tuberculosis and promoting training innovations[35,36]. India is unique in having produced hundreds of SORT IT publications, with many of them having an impact on policy as well as practice. Some examples are shown in the Table[37-39].

Moving forward with the SORT IT model to strengthen health systems in India

India is in a favourable position to expand the use of the SORT IT model by harnessing the skills of a trained pool of 177 individuals, many of whom have become global leaders in IR. There are over 10 national institutions that have embedded the SORT IT model. Expansion could be guided by the principles as listed in the Box[40].

In conclusion, any country striving to achieve UHC should have the capacity to generate and use available local evidence in a timely and impactful manner. Individuals working in the health systems should be empowered with the capacity to use research as a tool for building the science of solutions. Embracing and embedding IR will enable health systems to serve all people all the time, this is certainly a necessity and not a luxury.

Box. Principles for expanding the SORT IT initiative in India

Align IR agendas to country priorities:
Build a system to steer research agendas while engaging with decision-makers in the health systems (local research, solutions and ownership).

Build a "critical mass" of researchers:
Create an equitably distributed pool of trained researchers in the country. Impetus should also be on retaining them in an embedded manner within the health system.

Enhance synergies between public health programmes & academia:
Pair persons from the public and academic sectors in each research project. This will converge skill sets while optimising available expertise and resources.

Manage knowledge and communicate the findings:
Provide the skills needed to persuasively communicate research findings to decision-makers[40]. Scientific evidence could be transformed into plain language summaries and presentations that are adapted to the target audience. Translation into local languages would bridge language gaps for wider dissemination.

Build partnerships and community engagement:
Build partnerships and engage communities to enrich research conception, knowledge management and advocacy for using high-quality evidence to inform practice and policy[8,19,20]. Ideally, IR should engage a range of stakeholders, such as health-care workers development partners, decision-makers, policy entrepreneurs, donors and community members.

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