

Building Capacity of Indian Scientists to Conduct Systematic Reviews in Child Health: An ICMR Initiative

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Knowledge and training in evidence-based medicine is essential for informed clinical decision-making and treatment choices. Systematic reviews identify, appraise and synthesize research-based evidence and present it in accessible format. The Indian Council of Medical Research has promoted evidence-based medicine in India by establishing an Advanced Center for evidence based medicine that hosted the South Asian Cochrane Network and Center at the Christian Medical College, Vellore; procuring a national subscription to The Cochrane Library making it accessible to all Indian scientists; and establishing a Center for Advanced research on evidence-based child health at Post Graduate Institute of Medical Education and Research, Chandigarh. This article informs about a national level initiative by ICMR that aims to harness the translational potential of secondary research, by funding systematic reviews aligned to national health priorities selected through a national competitive process; and to provide training, mentoring, and quality assurance. A continuing scheme of funding high-quality systematic reviews on priority areas of Child Health may follow.

Keywords: Capacity building, Evidence-based-medicine.

Health care providers, researchers, and policy makers are inundated with unmanageable amounts of information on a daily basis. There are too many trials, approximately 8000 articles get published every day, and there are about 25000 biomedical journals in print [1]. All published studies are not equally well designed or interpreted. Systematic Reviews (SRs) identify, appraise and synthesize research-based evidence and present it in accessible format for clinicians and healthcare practitioners. SRs integrate existing information and provide data for rational decision-making by providing systematically generated scientific evidence for policy briefs. Knowledge and training in evidence-based medicine (EBM) is essential for informed clinical decision-making and treatment choices. It helps the clinicians to critically appraise the promotional literature about new drugs. In addition, it also equips them with skills to undertake and publish systematic reviews in journal publications. For the policy makers, the knowledge of EBM helps in prioritization of health issues leading to judicious use of limited resources.

Conduct of systematic reviews is based on an EBM approach that distinguishes it from the traditional reviews: an explicit and systematic process of search; criteria-based selection of studies and critical appraisal and synthesis of scientific evidence that is without personal bias inherent in traditional reviews and expert opinions. Systematic

reviews top the 'evidence pyramid' [2] by generating level 1 evidence due to rigorous methodology (adopted and *a priori* outlined in the protocol), and relatively large sample size achieved by pooling data from a set of studies. Results of meta-analyses (not always a part of systematic review) provide a comprehensive but concise view of research evidence on specific issues for the policy makers.

HISTORY OF EVIDENCE-BASED MEDICINE

The term evidence-based medicine was coined by a group of epidemiologists led by David Sackett and Gordon Guyatt from McMaster university. EBM is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients". The practice of EBM means integrating individual clinical experience with the best available external clinical evidence from systematic research [3].

Deeply inspired by the works of Archie Cochrane and his comments about systematic analysis of randomized controlled trials (RCTs), Prof. Iain Chalmers during the years 1978-82 started work for establishing the National Perinatal Epidemiology Unit in Oxford by hand searching of 15 journals upto 1948, to find 3500 RCTs and preparing their critical summaries. Thus the Oxford Database of Perinatal Trials and later Database of Pregnancy and Childbirth were established. These efforts led to the establishment of the Cochrane Collaboration in 1992,

known for its systematic reviews. The James Lind Initiative, formed in 2003, is another organization that promotes/lobbies for better and relevant RCTs, because these studies can provide the most important information needed to improve healthcare [4].

THE ROLE OF EVIDENCE IN GUIDING HEALTH RESEARCH

The Indian Council of Medical Research (ICMR), New Delhi, is the apex body in India for the formulation, coordination and promotion of biomedical research. It contributes significantly to the formulation of policy at the national level through the translational component of research output of its constituent institutions. However, due to incoherent and duplicating efforts of various agencies involved in research and lack of coordination among them, a gap between research, decision-making and clinical practice still remains [5]. The shared conceptual clarity among researchers and policy makers about the scope and nature of health research to be conducted is insufficient. During the past, in absence of evidence from systematic reviews, the national disease control programs have been guided by the outputs of operational research carried out in the country [6]. At present, there is a scope of knowledge brokering – a strategy to close the ‘know–do gap’ to promote evidence [7-9]. Systematic reviews can fill this gap efficiently.

ICMR INITIATIVES IN EBM

The science of evidence-based medicine is still in its infancy in the country. ICMR has promoted EBM in India by funding an Advanced Center for EBM (2007-2011) that hosted the South Asian Cochrane Network & Centre (SACNC) at the Christian Medical College, Vellore.

In 2007, ICMR procured a national subscription to The Cochrane Library making it accessible to all Indian scientists. This was a major achievement that opened the doors of EBM in India. Accessibility of the Cochrane library through a national subscription led to an increase in the number of contributors to the Cochrane Library from India.

In another initiative, ICMR established an Advance Center for Evidence-Based Child Health (CAR EBCH) at the Post Graduate Institute, Chandigarh since 2011. Through its capacity building component, CAR EBCH is training students and young faculty of medical colleges in various parts of India.

Outcomes of Ongoing Initiatives: A Situational Analysis

SACNC is taking lead and is steadily increasing the pool of personnel trained in EBM around the network sites. The Cochrane contributors from India are concentrated in

institutions that hosted the network sites. Further efforts are needed to engage more and more Indian scientists in the conduct of systematic reviews. Capacity building beyond the SACNC network sites is needed [10].

National subscription to The Cochrane Library over a period of 7 years has led to an increase in Cochrane Reviews by Indian authors. Protocols and full reviews with Indian authors have increased marginally from 11 (in 2005) to 272 (in February 2014).

The number of journal publications listed as systematic reviews by Indian authors still remains limited. Systematic reviews published in the PubMed indexed journals by Indian authors are limited to 1437 (till March 2014). Indian medical journals, indexed at IndMed, published 62 systematic reviews upto 2014 [11].

The New Initiative

Realizing the limited reach and output from the already ongoing initiatives, ICMR has initiated a central program at the national level to complement them, and increase the pool of scientists trained in the conduct of systematic reviews in India. This program would directly facilitate the conduct and publication of systematic reviews by Indian scientists. This National level program is unique in that it proposes to provide funding to the prospective authors, for conducting secondary research, in the same way as it does for primary extramural research. Objectives of this program are to harness the translational potential of secondary research, by funding systematic reviews aligned to national health priorities, selected through a national competitive process; and to provide training, mentoring, and quality assurance, in order to ensure the timely completion of high-quality reviews.

ICMR advertised for letters of intent (LOIs) from Indian scientists interested in carrying out systematic reviews in maternal, perinatal, newborn, child, and adolescent health. A project review committee (PRC), consisting of clinicians with expertise in the area of EBM, critically evaluated the 36 LOIs received for their suitability and relevance to current national priorities; potential to identify evidence-gaps for initiation of primary research; compliance with current best methods in research synthesis; and the expertise of the review team and their training needs. The 36 LOIs were individually scored by the lead discussants. In the end there were 9 LOIs accepted by the committee for submission of full protocol within a period of three months. A format for preparing the protocol was provided by ICMR to the selected review authors. Out of the LOIs that were not recommended for funding in the present form, the committee recognized the potential of five investigators

to become systematic reviewers in future, and suggested their inclusion in capacity building workshops on EBM sponsored by ICMR. A total of twenty-three prospective authors were nominated by the PRC for training in Systematic reviews.

Training, Mentoring and Quality Assurance

A two day protocol development workshop was organized by ICMR. The facilitators were faculty of SACNC and JHSPH. In order to ensure uniformity in the methods and standards in the reviews, the authors were advised to follow the Cochrane Handbook for intervention reviews to prepare protocols. They could use RevMan, STATA or other program; however, use of the Cochrane format for the protocols and the full reviews was recommended. It was advised to grade the overall quality of the evidence using GRADE profiler, <http://ims.cochrane.org/revman/gradepro> Authors were advised to detail which outcomes (maximum seven) will be considered for inclusion in the Summary of Findings Tables created using GRADE Pro.

Authors of selected reviews topics related to social sciences were advised to consult the methods recommended by the EPPI centre or use the software provided by the EPPI Centre <http://eppi.ioe.ac.uk/cms/>. Participants came with their topics for systematic review that were discussed during the workshop. Handson training in using Review Manager (RevMan) and GRADE Profiler software was held. All participants provided feedback via emails and reported that their training goals were fulfilled.

At the end of the workshop, nine review titles were shortlisted for development of full protocols, with appropriate funding assured, contingent on the submission of the protocol. All nine author-teams submitted protocols using RevMan, within three months.

The selected topics included important knowledge gaps and research questions of priority in the area of Child Health: exposure to electronic media and adolescent health outcomes, antihypertensive drugs for primary or secondary hypertension in children, estimating equations for glomerular filtration rate for chronic kidney disease in children, impact of supplemental nutrition component of Integrated Child Development Scheme (ICDS) program on nutrition of children aged 6-72 months in India, Impact of water, sanitation and hygiene Interventions on growth, non-diarrheal morbidity and mortality in children, effect of home visitation by paramedical professional in pregnancy for reducing low birth weight incidence in developing countries, Impact of Integrated Management

of Childhood Illness (IMCI) strategy of training health care providers for reduction of childhood mortality in low and middle income countries, Impact of interventions to increase agricultural production on children's nutritional status, and effect of zinc supplementation on growth in children under 5 years of age in low and middle income countries.

In April 2014, ICMR invited the authors for a protocol-refinement workshop. Objectives and methodologies were discussed and inputs for improvement were provided by the PRC members. Full reviews are expected from authors shortly

It is expected that conclusions drawn from these systematic reviews in priority areas would provide input for the policy briefs, and bridge the knowledge gap leading to new primary research.

SCOPE OF THE NEW INITIATIVE

Adequate funding by ICMR, careful pre-selection of review topics and author teams by the PRC, exposure of potential authors in Cochrane methodology through provision of suitable training, repeated quality assurance measures taken up such as protocol refining workshop and assistance extended by the secretariat, can result in short review production timelines. This ICMR initiative will help expand the pool of trained systematic reviews authors in India.

Outcomes of this initial call for letters of intent for systematic reviews would lead to a continuing scheme of funding for the benefit of Indian scientists providing condensed, balanced and verifiable information through conduct of systematic reviews on priority areas and policy related issues.

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