# Effectiveness of Research Capacity Building Program in India – A Quantitative Evaluation

Sandhya Diwakar
Deputy Director General – Scientist E
Indian Council of Medical Research
New Delhi, India.
Email: sandhyadiwakar@yahoo.com

K.K.Singh
Deputy Director General (SG) – Scientist F
Indian Council of Medical Research
New Delhi, India.
Email: singhkeshri@yahoo.com

## Background

For over 50 years, scientific & technological advancements have created tremendous opportunities for progress in combating the disease burden in India. But we cannot find solutions to public health problems merely by acquiring equipment & medicines. Today, the need to optimally exploit knowledge & devise solutions to local problems that work in prevailing conditions is paramount. What we need as a nation is Capacity. Capacity to identify benefits & opportunities and to adapt them to their own needs & constraints, the ability to initiate & engage in research and apply knowledge & technology to essentially local problems, moving beyond the mere application of results generated by others. Therefore, an increasingly important goal of is the need for "capacity building" in health research thereby promoting evidence-based decision making at all levels of the health field.

The past decades have witnessed an exponential growth in scientific health research capacity in India & although this is evidenced by the greater financing of R&D and a corresponding increase in the number of people engaged in research in the country. But are we also improving the ability to conduct research, using results effectively, and also promoting demand for research? Also, are our researchers & institutions responsive to public health

needs in our own country & able to participate more effectively in the global research agenda?

## Objective & Methodology

Indian Council of Medical Research, an apex body in India for promotion of medical research started Financial Assistance to Research Fellows (JRF) in 2001, with the primary purpose of providing the evidence base for policy making, practice guidance & programme development for health care. This programme forms a powerful instrument to arrive at a selection of funding priorities that takes into account National/International trends but also enhance linkages between the spectrums of key stakeholders. Recruitment of JRFs is done annually through a national exam. Selected fellows are allowed to join any Health Research Institute or Medical College of their choice or any ICMR funded project.

Monitoring and evaluation is the most neglected component of capacity building programmes. Literature is scarce and experience very limited. One of the most widely used recent definitions is 'an ability of individuals, organizations or systems to perform appropriate functions effectively, efficiently and sustainably'. There is almost no evidence-based information about how to implement or evaluate this holistic type of capacity building. Much of the literature is based on retrospective reports of external consultants. There is virtually no information specifically about building research capacity for health and the developing country perspective is almost never represented. There are major conceptual and methodological difficulties in designing indicators to evaluate the effectiveness of such complex programmes. As strategies to build capacity become more sophisticated, it is increasingly difficult to adapt and apply existing evaluation methodologies.

The Objective of this paper is to analyze based on 7 years data, if this capacity building program is moving in the right direction based on Quantitative Micro, Meso & Macro indicators. This overview on capacity building covers the recent thinking on the issue and provides information relevant to strengthening capacities. Capacity building results can take over 20 years to come to fruition so it is essential that evaluations achieve an appropriate balance of input, process (i.e. measuring how individuals and organizations behave), output and intermediate outcome indicators.

## Observations & Key Findings

It is not possible or even desirable to develop a Generic Model to evaluate capacity building programmes since each programme is focused around a specific task and has unique constraints. Each programme therefore requires a rigorous experimental evaluation. Capacity building programmes include easily measurable outputs like trainings as well as less tangible outcomes such as organizational culture. Assessments of effectiveness therefore need to be imaginative, innovative and to evaluate not just competence, but expertise. The holistic and flexible nature of sustainable research capacity building programmes mean that they require much broader innovative and appropriate evaluation mechanisms, which incorporate meso and macro levels and which draw heavily on qualitative research methodology.

1. Micro Level Indicators :Individuals
   - Research Leaders: Number of JRF's over years has increased exponentially. 63% more research fellows joined the program in 2007 as compared to 2001. Idea is to have Research leaders with ability to conduct independent research.

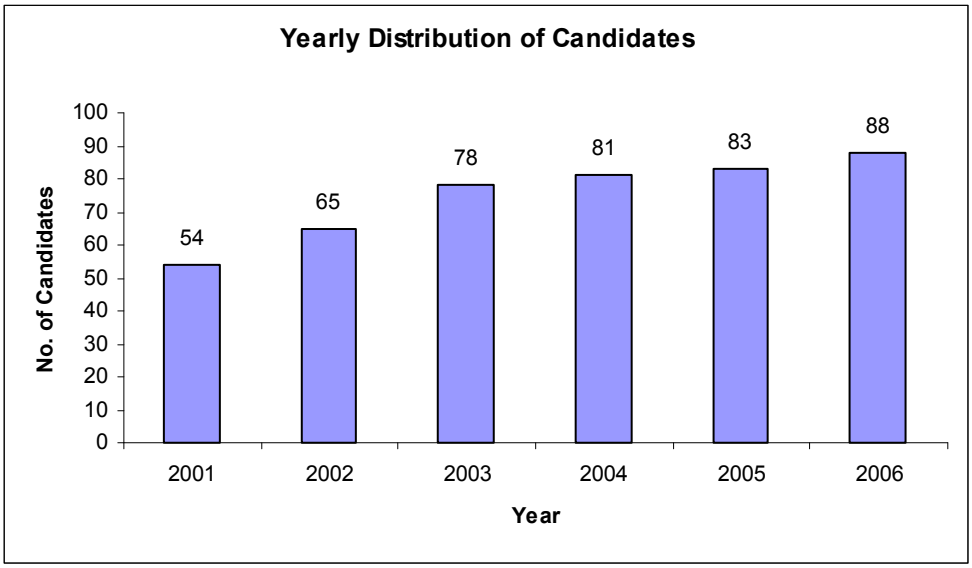


Chart 1- Increasing number of candidates joining per year
* 2006 ongoing (more candidates expected to join)

- Research Areas: Every year a wider spectrum of topics being selected. From all the JRF's during the whole study period a total of 348 Research Topics were identified, on the basis of Topics provided by the researchers. Year wise analysis indicates an increasing trend in the number of Topics being under taken. Detailed analysis shows preference for areas which help in reducing the countries disease burden.

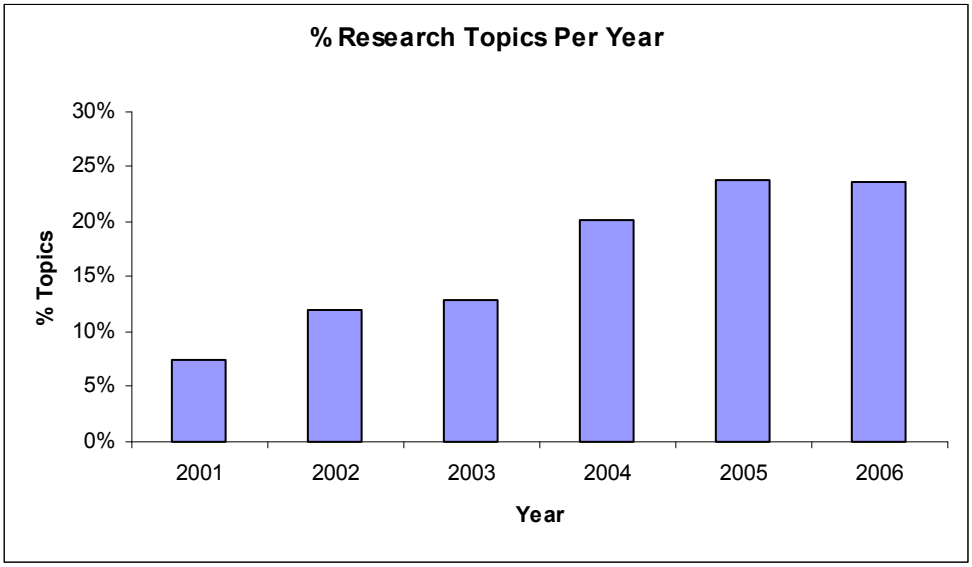


Chart 2- Increasing number of Research Topics per Year

- Publications: The number of papers published per year ranged from 2(2.9%) in 2002 to 7(10.0%)-2007. Maximum papers 22 (31.4%) were published during the year of 2006 followed by 15 (21.4 %) in 2004, 14(20.0%) in 2005, 10 (14.3%) in 2003, and 7 in 2007(10%). The IF of papers reveals that year wise there was an increase in total IF (s) from 2003 to 2006. The average IF remained between 1.441 in the year 2003 to 2.0229 in the year 2006

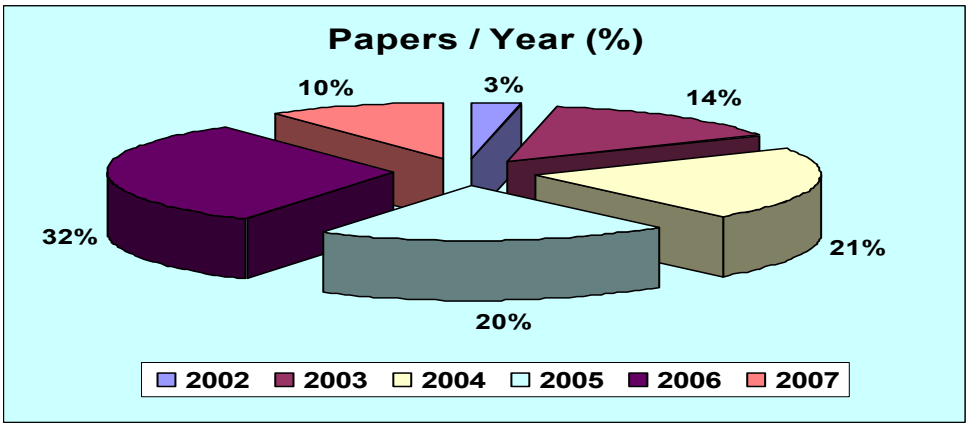


Chart 3- Papers published per year

2. Meso Level Indicators: Organization
   - Grant Income: From 2MM Budget in 2001, the program has a recommended budget of 130MM in 2007. On an average 75 projects per year were funded every year. However, year wise distribution of JRFs was 54-2001, 65-2002,78-2003,81-2004, 83-2005, 88 in 2006 and annual expenditure was Rs. 20,77,309 (2002), 56,11,668 (2003), 1,52,77,568 (2004), 3,16,62,621 (2005) and 3,80,27,997 (2006). The budget was increased exponentially in year 2007- 2008.

| Year | No. of candidates appeared | Total joined | Money received by ICMR | Expenditure MPD programme |
|---|---|---|---|---|
| 2001-02 | 1966 | 54 | 3,19250/- | - |
| 2002-03 | 2139 | 65 | 2,02000/- | 20,77,309 |
| 2003-04 | 5463 | 78 | 6,50000/- | 56,11,668 |
| 2004-05 | 5169 | 81 | 9,64300/- | 1,52,77,568 |
| 2005-06 | 5400 | 83 | 10,000,00/- | 3,16,62,621 |
| 2006-2007 | 6000 | 92 | 16,000,00/- | 3,80,27,997 |
| 2007-2008 | 8000 | 84Ongoing | | 13.00crores |

Table 1 - Presents year wise R&D support for JRF Scheme during 2001-2008.

- Research Collaboration: Wider ties with top Indian Research Institutes & Colleges along with ICMR's own resources guarantees efficient access to electronic & other resources like Lab, Library facilities. The R&D support reached out to a total of 165 JRFs /PI from total 70 institutions. All these projects were having a total of 165 investigators/research guides. Evidence-based decision making to improve clinical outcomes and health indicators is done effectively through these collaborations.

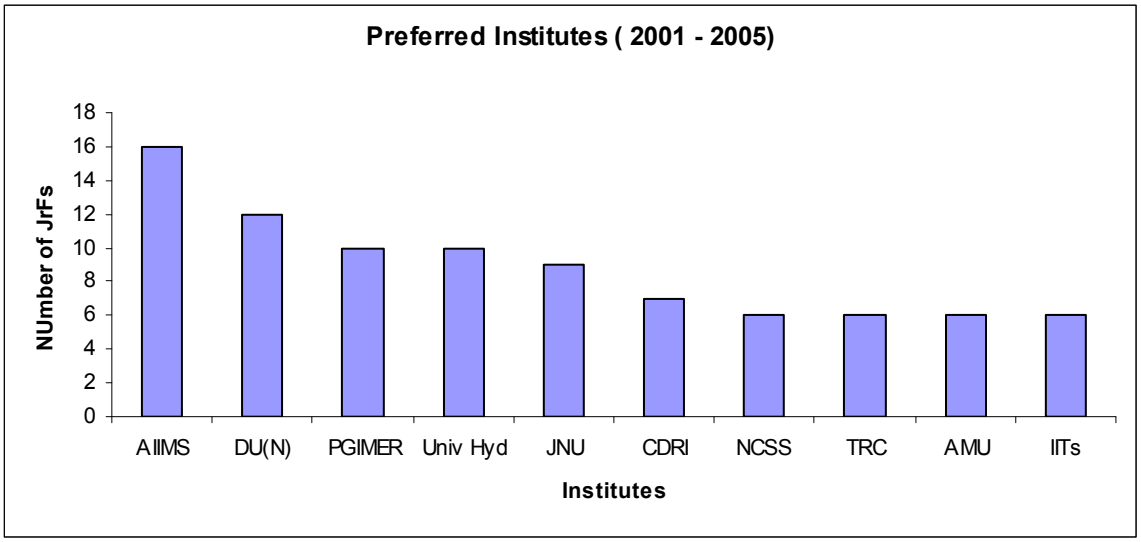


Chart 4: Top 5 preferred institutes are AIIMS, University of Delhi, PGIMER, Univ Hyderabad and JNU.

- Availability of Resources: Examination details & curriculum available on-line. Awareness being spread through leading newspaper publications, guaranteeing efficient access to information leading to effective, independent research.
- Culture : Institutional research 'culture' is very positive with committed budget, ethics committee & handpicked expert panel reviewing research work & providing recommendations at regular intervals

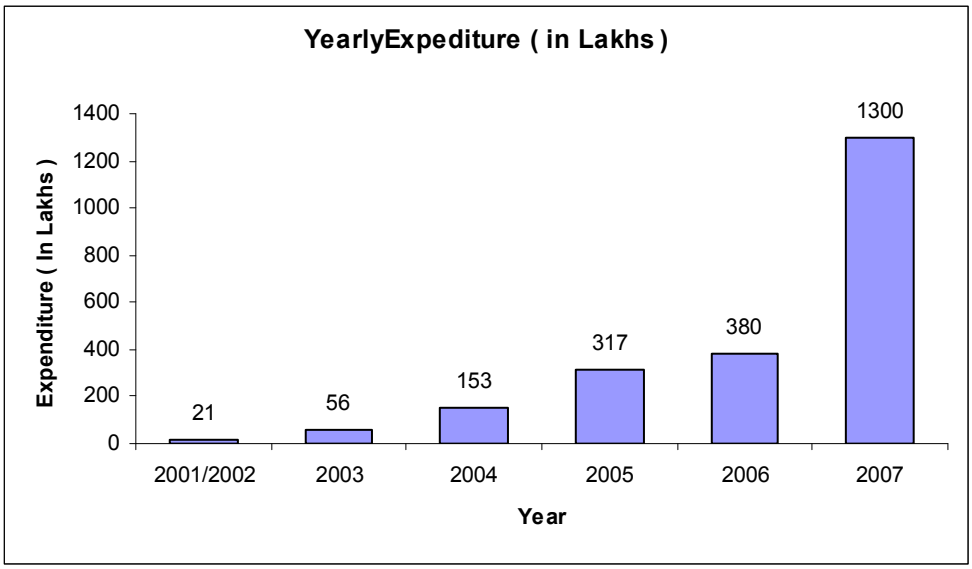

Chart 5 - Increasing annual budget

3. Macro Level Indicators: National
   - Evidence based policies and practises : ICMR has effective communication channels with policy makers needing to plan & budget on the basis of effective, evidence-based strategies
   - Career structure and remuneration : Continuum of funding opportunities available to researchers resulting in a fundamental long-term career structure & remuneration

## Conclusion & Key Findings

Over the years, much international knowledge has accumulated on capacity building. The experience and learning come from different sectors but reinforce each other in a synergistic relationship. Hence, in future capacity building we are better able to avoid falling repeatedly into the same pitfalls than has been the case in capacity building actions for decades.

Capacity building goals have so far been met by the JRF program. However, in a fast changing, globalizing world, an essential aspect of capacity building should be to build capacity to cope with change and to inculcate more integrated and holistic approach rather than traditional, sectionalized ways of thinking in addressing problems at hand. To make quantum leap in capacity building or to invest substantially & strategically in boosting research capacity there is a continuing need for

- Capacity building to be a continuous iterative & flexible process, focused on enhancing local ability to solve problems & to define & achieve development needs & responding to changes in internal & external environments.
- Research outputs need to be put into practice on a wide scale. Consequently, improving the accessibility & use of research should receive as much, if not more, attention as strengthening the performance of research.
- Research both to maximize the use of existing tools & strategies & to develop new & better ones to reduce the high burden of infectious diseases.

**References**

1. Deolalikar A. Attaining the Millennium Development Goals in India: Role of public policy and service delivery. Washington, DC: The World Bank, South Asia, Human Development Unit; forthcoming

2. World Bank. World Development Indicators Database 2004. Washington, DC: The World Bank; 2004

3.Annan J. Ghana health sector-wide programme. A case study, DAC I/CD Network & Policy Branch of CIDA, 1999

4. Capacity assessment and development in a systems and strategic management context. Technical advisory paper 3, Management development and governance division, Bureau for development policy, UNDP 1998

5. Horton D. Evaluation of capacity… Capacity for evaluation. Second issue of the Capacity.org, 1999

6. Kotellos K, Amon J, Githens Benazerga W. Field experiences: measuring capacity building efforts in HIV/AIDS prevention programmes. AIDS:12(Suppl 2):109- 117, 1998.

7. Sikosana P, Dlamini Q, Issakov A. Health sector reform in Sub-Saharan Africa. A review of experiences, information gaps and research needs. ARA Paper number 12. World Health Organization, 1997.