

The India Experience

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Abstract This article featuring India constitutes one of five articles in a collection of essays on local capacity-building in research ethics by graduates from the University of Toronto's Joint Centre for Bioethics MHS in Bioethics, International Stream program funded by the Fogarty International Center for Advanced Study in the Health Sciences. Research ethics is a growing area of work and interest in India. Ethics review remains the weakest component in the mechanism of good clinical practice, and there is a severe dearth of professionals trained in ethics who can provide leadership. Although the Indian Good Clinical Practice Guidelines, the Indian Medical Council Act, and the Drugs and Cosmetics Act require that the Indian Council of Medical Research's ethical guidelines be followed as a mandatory requirement for physicians who conduct research, there is a pervasive lack of awareness of basic requirements guiding the ethical conduct of research. There is a great need to strengthen India's research ethics capacity and regulatory framework for research.

Keywords Research ethics · Capacity-building · Health research · India

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Introduction

India has a very ancient history of human settlement dating back to 400,000 to 200,000 B.C. The Indus river valley during the Harappa civilization in 3,000 B.C. showed evidence of good civil facilities and trade relations (Library of Congress 2004). From then until the end of British rule in 1947, numerous empires were established adding their own culture and technologies to the local customs and facilities, thus enriching Indian culture and economy. The march of Aryans from Persia to Northwestern India during 2,000 B.C. brought to India the tiered social system and the Sanskrit language, which has close relations to the Latin language, influencing languages of the West. This language of the religious texts is also that of *Ayurveda*, an Indian system of medicine. The Dravidian civilization influenced the Southern parts of India, where *Siddha* was the prevalent system of medicine. While there was a highly centralized and hierarchical administration in North India, the Southern villages enjoyed greater autonomy. Later, under the patronage of the Muslim and Mughal empires, especially from the 13th century A.D. onwards, indigenization of *Unani* medicine took place in India. The establishment of the Portuguese, French, and British East India Companies brought along a strong European influence. However, it was the British rule which consolidated certain practices of the Mughal period that led to systemic social changes that helped to bring about a better educative and administrative environment. It was during this period that the practice of homeopathy was brought to India.

Historical Background on Research

India is the largest democratic country in the world. The early 1990s marked a departure from the emphasis on agriculture and heavy industry amid liberalization policies that spurred the expansion of activities in the areas of drug development, information technology, and biotechnology with a focus on research and development in processes rather than products. However, with the implementation of the Trade-related Intellectual Property Rights (TRIPS) agreement, new requirements have led to a steady increase in product development. Moreover, research in the health sector has greatly increased due to outsourcing of research and development to India on account of the advantages it offers in terms of expertise and cost-effectiveness.

That said, the changing economic landscape created by urbanization, industrialization, and economic liberalization has engendered a major socio-economic divide that has led to an increase in the vulnerability of those with lower socio-economic status despite the improvement of overall health statistics as shown in Table 1, indicating India's main economic and health indicators. This is partly because priorities in healthcare and health research are often not driven by the real needs of the majority, but the needs of those who can afford and influence policy-makers. Moreover, the cost of health care is rising, making it out of reach for a vast proportion of the population.

Current Health Challenges

The current health challenges have been both in the area of communicable and non-communicable diseases. The priorities in the former group are tuberculosis, HIV/AIDS, and malaria, while in the latter group these are diabetes mellitus, cardiovascular disorders, and

Table 1 Economic and health indicators (2007) ^{1,2}

Indicator	Value
Population (millions)	1123.3
GDP (US\$ billions)	1171
GDP per capita (%) growth	7.7
GDP growth (%)	9
Urban population (% of total population)	42
Life expectancy at birth (years)	64
Infant mortality rate (per 1000 live births)	57
Maternal mortality ratio (per 100,000 live births) (2006)	450
Estimated HIV patients all ages (thousands)	2400

World Bank Data accessed from HYPERLINK <http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,menuPK:295589~pagePK:141159~piPK:141110~theSitePK:295584,00.html>. Accessed on 9.12.2008

UNICEF data accessed from http://www.unicef.org/infobycountry/india_statistics.html. Accessed on 19.11.2008

cancer. While the common water-borne infections – gastroenteritis, cholera, and some forms of hepatitis – continue to cause a high level of morbidity in the population despite the slightly moderated mortality rate, lifestyle changes have contributed to the rise in non-communicable diseases alongside infectious diseases. Research and treatment of Leishmaniasis, one of the many neglected diseases endemic to some parts of India, still presents challenges for the government, although it is being tackled rigorously through initiatives of the [Indian Council of Medical Research \(ICMR\)](#) and the World Health Organization (WHO).

As mentioned above, the changing economic landscape has resulted in greater health problems for vulnerable individuals or groups such as the elderly, disabled, addicts, children, and women. Drug addiction, abuse of children and women as well as the frequency of delinquency, and violence, have increased. Although there are laws preventing such happenings, their implementation leaves wide gaps regarding the quality or the degree of the intervention (World Health Organization 2007). Moreover, the social support of traditional families is fast dwindling, leading to sharp increases in mental health problems. This is further exacerbated by the lack of funding for social science research as compared to medical research to create evidence to enable the government for formulating or modifying policies.

Current Research Responses to Health Challenges

To resolve the increasing health challenges, government agencies have adopted both top-down and bottom-up approaches, while private institutions have designed more or less top-down approaches targeting specific areas of interest to them.

The role of various sectors in addressing health challenges is described below:

Government: According to the Constitution of India, health is a matter of the State. Financial outlays earmarked for individual states, falling under the Minimum Needs Programme (MNP), cannot be diverted for any other purposes. Although these outlays

have been increasing over each successive five-year plan period, public funds alone are not enough to sustain health care, urging the Indian government to now consider joint ventures with autonomous or other private sectors.

Major research funding is obtained through government agencies. The apex funding body for biomedical research, namely the [Indian Council of Medical Research](#) (ICMR), also caters to some extent laboratory and health services through its 21 institutes and six Regional Medical Research Centres. This agency functions under the recently formed Department of Health Research in the Ministry of Health, which has identified ethics as one of its mandatory areas of function. The Council for Scientific and Industrial Research (CSIR) under the Department for Scientific and Industrial Research in the Ministry of Science and Technology conducts a wide range of scientific and industrial research projects through its 40 laboratories and institutes. Only some of these are related to biomedical research.

The Department of Biotechnology under the Ministry of Science and Technology funds projects on biotechnology and has recently included clinical trials using products that they have developed or prioritized. Biotechnology has the potential of generating revenues to the tune of US\$5 billion and creating one million jobs by 2010 through products and services. Biopharmaceuticals alone, mainly driven by vaccines and biogenerics, have the potential opportunity to capture a US\$2 billion market. Clinical development services can generate a market in excess of US\$1.5 billion, whilst bioservices or outsourced research services can do so at US\$1 billion during the same time scale. The balance of US\$500 million is attributable to agricultural and industrial biotechnology (Department of Science and Technology 2007).

The Ministry of Human Resource Development (University Grants Commission) and others have worked together with the agencies mentioned above to contribute to India's power in science and technology. The scientific freedom for fostering initiative as envisaged in the Scientific Policy Resolution by the Government (1958) and the [National Science & Technology Policy](#) (2003) has been encouraged to increase the scientific inputs in health research. International grants from United Nations (UN) agencies, the World Health Organisation (WHO), and other government and non-government agencies have also contributed to the promotion of research in India.

Two major initiatives undertaken by the government, the revised National Health Policy of 2002 and the National Rural Health Mission, reflect how seriously it wants to improve public health parameters. The goals of this mission are as follows:

- Reduction in Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR)
- Universal access to public health services such as women's health, child health, water, sanitation and hygiene, immunization, and nutrition.
- Prevention and control of communicable and non-communicable diseases, including locally endemic diseases
- Access to integrated comprehensive primary healthcare
- Population stabilization; gender and demographic balance
- Revitalize local health traditions and mainstream AYUSH (*Ayurveda, Yoga, Unani, Siddha* and Homeopathy)
- Promotion of healthy life styles

To implement this, core and supplementary strategies have been designed, with the latter focusing on reorienting medical education to support rural health issues, including the regulation of health care and medical ethics. The National Health

Policy, 2002b also has recognized the importance of ethics in genetics and stem cell research.

The bottom-up approach was first initiated by the establishment of the Accredited Social Health Activist (ASHA), followed by the Auxiliary Nurse Midwife (ANM), Anganwadi workers, Panchayati Raj Institutions (PRI), and involvement of non-governmental organizations (NGOs). District Administrations, and State Government, in that order. Health care delivery systems starting from the lowest level – i.e. Sub-Centres, upwards to Peripheral/ Primary health centres and Central Health Centres are all involved in collecting data, which are updated, monitored and evaluated regularly in an effort to make suitable health policies. Since the first National Family Health Survey (NFHS) conducted in 1992–93, subsequent surveys, NFHS-2 and NFHS-3, continue to provide more state and national data, including data on fertility, infant and child mortality, the practice of family planning, maternal and child health, reproductive health, nutrition, anemia, and utilization and quality of health and family planning services (International Institute for Population Sciences 2006).

Additionally, the recently formed Public Health Foundation of India (PHFI) is attempting to address directly the various problems related to public health, especially by way of capacity-building through education modules.

Education: Health research is being undertaken in the public and private sectors involving non-medical post-graduate institutions as well as medical, dental, and nursing teaching institutions. Since 1979, undergraduate students under the ICMR's Short Term Studentship Program have also been undertaking research to familiarize themselves with research methodology and techniques. This was a scheme initiated by ICMR to encourage research in the country. In recent years, the quality of such research has improved and the need to get these proposals reviewed by ethics committees has been well recognized by these students. Presently, India has more than 280 recognised medical colleges of modern medicine and even more so for traditional systems of medicine. The institutions belonging to these parallel systems of Indian medicine also conduct research. Graduates from these institutions number more than those from the schools of modern medicine. The government is trying to improve the quality of research being done in these institutions, as traditional systems of medicine hold a lot of promise in treating chronic diseases or conditions where modern medicine fails.

Private sector: Liberalization of economic policies in the 1990s opened the doors to foreign investments, particularly the outsourcing of clinical trials by the pharmaceutical industry and Clinical Research Organizations (CROs) to private institutions with affiliated hospitals. Many private institutions now offer courses on clinical research, rendering it crucial to regulate research in order to protect research participants and set basic standards for future research. Therefore, necessary ethical guidelines have been formulated by the national agencies for research on drugs, devices, and genetically modified food or drugs.

Civil Society Organizations (CSOs) and Non-Government Organizations (NGOs): This is a strong sector in India that has been involved in health research for many years. They often carry out innovative health programs and research projects in small or remote settings such as the North-East region where malaria and HIV/AIDS are rampant. These organizations have also been conducting much needed social science research in health that produces important data for policy making.

UN bodies and international organizations: Various UN agencies such as UNICEF, and UNFPA, international agencies such as the WHO, USAID, DFID, the Bill and

Melinda Gates Foundation, Ford Foundation, and the Wellcome Trust, and foreign government agencies such as the U.S. National Institutes of Health and Genome Canada also fund research in the country. There is a specific mechanism for clearance of these projects, the final approval being given by the Health Ministry's Screening Committee, in order to protect its own population from exploitation and the intellectual property rights of Indian scientists. Individual foreign researchers need to get clearance from the Human Resource Ministry in addition to clearance from the nodal Ministry.

Current Research Ethics Context and Challenges

Research ethics is a growing area of work and interest in India. However, ethics review remains the weakest component in the mechanism of foreseeing conduct of good clinical practice. The ICMR has done pioneering work in increasing awareness about bioethics through the release of ethical guidelines as early as 1980 (Policy Statement on Ethical Considerations involved in research on Human Subjects) revised in 2000 as 'Ethical Guidelines for Biomedical Research on Human Subjects' and in 2006 as 'Ethical Guidelines for Biomedical Research on Human Participants'. Although research institutions have been mandated to review research proposals via ethics committees since 1980, a recent survey conducted by the ICMR reveals that many institutions do not have an institution ethics committee (IEC) or if they do, it is not at par with ECs following standardised procedures in some good institutions. Moreover, while the Indian GCP Guidelines (2001), Indian Medical Council Act in its amendment of 2002a, and the Drugs and Cosmetics Act (1940) in its amendment of 2005 requires that ICMR's ethical guidelines be followed as a mandatory requirement for physicians who conduct research, there is a pervasive lack of awareness of basic requirements guiding the ethical conduct of research. Only a handful of researchers in the country are sensitized to their existence, while many are not even aware of the concept of informed consent or its requisite documentation.

Both formal and informal education is thus a major focus. Before finalizing the revised guidelines of 2000, regional public debates were organized to raise awareness among researchers. Since then, the ICMR has been organizing workshops for various levels of researchers as well as holding short- and long-term courses in bioethics for medical undergraduates, non-medical and medical post graduate students, researchers, faculty and ethics committee members through funds of their own, and other international agencies such as the WHO, The Joint United Nations Program on HIV/AIDS (UNAIDS), Genome Canada, the U.S. National Institutes of Health, the Indo-US Science and Technology Forum, and some universities in the United States, among others.

In addition, the Forum for Ethics Review Committees in India (FERCI) is now engaged in building capacity in ethics review and in formulating ethical guidelines for specific research areas. For example, it is currently preparing a curriculum in bioethics education for non-scientific members of ethics committees as well as teaching materials for basic training in GCP (Good Clinical Practice) and ethics in clinical research. Recently, FERCI and ICMR accredited for the first time two ethics committees in Mumbai at Seth G. S. Medical College and Tata Memorial Hospital.

Since research with human subjects essentially involves volunteers, patients, and members of society, there is also a need to work with communities and patient advocacy organizations to strengthen community engagement and education in order to enable

patients and research participants to make informed decisions about participating in research. Avenues such as the formation and involvement of Community Advisory Boards in some nationally important research projects have been found to be useful in this process.

Work needs to be done on making research ethics contextual to India. This includes efforts to incorporate Indian philosophies, making consent forms and the process of consent adapted to Indian culture and sensibilities, ensuring empowerment to participants, addressing needs around lack of education or access to healthcare, as well as looking at a community focus. Involving the media is an important part of this effort.

Regular avenues for interaction and updating of skills in research ethics are important. This is being done in part through initiatives like the Indian Journal of Medical Ethics and the National Bioethics Conference organized by the journal, as well as other journals like the National Medical Journal of India and The Journal of Postgraduate Medicine, and groups such as FERCI, Drug Information Association, India Office, and PHFI. There are a few electronic groups dedicated to the discussion of bioethical issues, especially research ethics; for example, there are the ICMR Bioethics and the South Asian Medical Ethics listservs, where there is continued and moderated discussion on important issues.

Current Institutional Ethics Capacity Needs

Institutional ethics capacity needs operate at various levels:

Need for training and capacity strengthening: Although the Medical Council of India recommended in 1997 that bioethics be incorporated in the medical curriculum and in 2002 that physicians undertaking research abide by ICMR's ethical guidelines, there is a severe dearth of professionals trained in ethics who can provide leadership. There is a need for mainstreaming bioethics as well as developing institutional programs to develop a network of professionals working in the area of ethics.

Challenges of isolation: Individuals trained in bioethics often face the problem of isolation within their institutions as there are not others to support their effort to institutionalize ethics. Hence, there is a need to train more individuals within institutions so that there is support available for work related to bioethics. As well, efforts have to be made in involving and convincing leadership in institutions that bioethics is important and must be given institutional prominence. This would help in increasing support, provision of funds, training for faculty members/students, and recognition of the time spent by faculty in working on ethics /regulatory issues, such as their participation in ethics committee meetings, etc.

Strengthening the regulatory framework: There is inadequate oversight of the large amount of research being carried out in the country. Given the various types of organizations/institutes doing research in the country, the needs and context of oversight vary widely. Thus, a major area requiring strengthening is the regulatory framework for research. This would be at the level of:

- a) The government as enforcer: given the recent rise in outsourced clinical trials in the country, government bodies such as the Office of the Drugs Controller General of India need to be reinforced with additional powers and staff as well as institute reforms to address some of the criticism raised in recent times related to conduct of clinical research

- b) Statutory bodies such as the Medical Council of India and Central Council of Indian Medicine need to ensure that it is also important that the doctors and professionals registered with these bodies conduct ethical and good quality research. Continuing professional education programmes such as Continuing Medical Education should have a regular focus on research and research ethics.
- c) Institutions: Research and research ethics capacity in institutions is a major lacuna that requires concerted and continued work. Ensuring that ethics review is one of the focus areas of institutional audits by funding agencies and government regulators would help in providing an impetus to make it integral to the process.

Masters of Health Sciences in Bioethics (MHSc) Program, International Stream, at the Joint Centre for Bioethics (JCB) University of Toronto: Insights About its Role and Scope

The program at the Joint Centre for Bioethics (JCB) has not only trained graduates well in various aspects of bioethics, but laid the foundation for building capacity in the area of bioethics in India. This has helped nurture work and interest in ethics at the centres where the JCB trained individuals are working. Also, there has been networking done within the JCB-trained group as well as with individuals trained through other Fogarty programs across the globe like the one at Monash University, the Harvard fellowship, or through the Erasmus Mandamus program in Europe.

The greatest challenge facing India is how to train as many researchers of various levels as efficiently as possible. In keeping with what was taught in the JCB program and using the network of Fogarty graduates from the JCB and Indian Fogarty Fellows from other global programs in bioethics as resource persons along with other subject experts, different methodologies were adopted to organize 1-day to 5-week long programs to sensitize and train researchers at various levels – i.e., from medical undergraduates to non-medical and medical postgraduate students to trainers. Many aspects of the JCB program were adapted for the training in India. This includes the foray of the program in areas of the country where such discussions probably did not take place earlier– e.g. the trainees from the north-east. Some of the trainees have started a centre of bioethics or set up ethics committees where none existed. Many have conducted tutorials, workshops, and seminars using other trainees as resource persons besides themselves. Also, the inclusion of writing and teaching skills was felt necessary only because the advantage of using these tools was experienced at the JCB. This has equipped trainees to spread bioethics education through writing and teaching.

The JCB community, website and listserv as well as continued contact of the JCB graduates with faculty and fellow students in Canada and internationally, and the occasional reunions, also help in offering support and ideas about furthering the field of bioethics in individual settings as well as within respective countries. The JCB also has provided opportunities under joint initiatives to its trainees in region or nation specific objectives through other funds like Genome Canada and the Bill and Melinda Gates Foundation.

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