Medical and Health Research in India: Issues and Directions

ME Yeolekar*, S Mehta+

Conventional research, as per the need of the prevalent situation had focussed mainly on health issues like infections such as malaria, tuberculosis and deficiency diseases arising out of malnutrition. Pioneering research has been carried out in India on important public health problems like iron deficiency anaemia, diarrhoea and dehydration, role of iodised salt in goiter and fortification of foods. The anticipated benefit from such results have not been full fledged due to inadequate application and limitations in implementing the result of the said research.

Infections continue to remain a major public health problem and warrant research into the epidemiology, etiopathogenesis and therapeutics in order to reduce the morbidity and mortality. Malaria, tuberculosis, leptospirosis, dengue and HIV are posing new threats, necessitating research into mechanisms of resistance in microbes, development of new drugs and combination therapies. New re-emerging infections have become international problems, and rapid research is needed in areas of Chikunguniya, Japanese encephalitis, human avian influenza.

Research into eradication of poliomyelitis, typhoid, hepatitis-A,E, diarrhoeal diseases and respiratory infections in children is a major challenge. Spread of multi-drug resistant tuberculosis in HIV/AIDS patients is a worrisome problem. Sickle cell anaemia and thalassemia are important regional problems that warrant preventive research.

Lifestyle diseases continue to dominate the morbidity and mortality statistics of the country. Diabetes mellitus, hypertension, coronary artery disease, cerebrovascular stroke, have relation to unhealthy lifestyles and need continued research to prevent and promote health. Angiogenesis is an attractive concept. The side effects of antiangiogenic treatment still remain a challenge. It is not easy to define the optimal treatment dose and schedule, the optimal combination of anti angionic therapy and other cancer modalities. Obesity in adolescence is of growing concern and anti-obesity drugs have emerged following successful research into their safety and efficacy.

Modern research often revolves around molecular mechanisms of diseases, including genomic studies and recombinant technology in therapeutics and diagnostics. Research into new directions in fortified diet and nutraceuticals has the potential of improving the general health status of the country. Mental health apparently is an important, but relatively neglected area of concern. Anti-depressants have emerged as the most prescribed drugs globally, and mental health continues to affect the economy of developed as well as developing countries. Research in areas like genetic basis of mental diseases, socio-economic factors and therapeutics can transform the public health burden of nation’s economy. Research into medical problems of specific groups like children, pregnant, lactating women and elderly continues to pose a challenge as data on most of the drugs and diseases is lacking in these categories.

Medical research is in the phase of major transformation in India. In addition to individual and council / academic institution or laboratory based projects, medical research has an added component of hi-tech national and international multi-centric studies. As India is one of the fastest growing economies in the world, the global health sector industry is finding huge market in the Indian population. One direct fallout of this market opportunity is that it has become prudent for global health sector industry to include India in all the multi-centric studies, whether it be new drug development, new device(s) or data registries. Medical research has transformed from low resource effort to an organized multi-million dollar industry. This has also created the need for trained clinical research professionals, and a promise for opportunities to thousands of young trainers. The clinical trials market worldwide is multibillion affair and India is emerging as a clinical research hub. The infrastructure including health care facilities, medical professionals, and supporting staff, technological equipments involved in patient care and diagnostics, and trained clinical research personnel are available in most of the leading cities of India and offer a research infrastructure at par with other developing and developed centres around the world. Better clinical trials conducted in India on Indian population can yield useful data pertinent to

*Dean; †Associate Professor of Medicine, Seth G.S. Medical College and K.E.M. Hospital, Acharya Donde Marg, Parel, Mumbai-12.
The country and will find application towards enhanced medical / health care and better health promotion. The results of medical research should also be used to design strategies to prevent diseases in the most cost-effective manner.

Clinical medical research has become an essential component of the health sector industry. Clinical development is conducted to obtain regulatory approval for general medical use and to demonstrate the quality, safety and efficacy of the drug or device. Several concerns are investing a much higher percentage of their total revenue on research and development programs to develop cures for diseases viz. HIV, tuberculosis, malaria. The Indian biopharmaceutical and biotechnological industry is growing at a significant pace. India is amongst the top twelve global biotech hot spots and is third largest in the Asia-Pacific region. Biopharma in India is the biggest contributor to biotech sector, accounting for 75% contribution. Diagnostics, vaccines and recombinant therapeutic proteins are the three main segments in the biopharma industry. Biopharmaceuticals are medical drugs produced using biotechnology. Products that have been licensed for production or / and marketing in India include human insulin, hepatitis-B vaccines, streptokinase, erythropoietin, human growth hormone, human interleukin, recombinant interferon beta 1-B, granulocyte colony stimulating factor, granulocyte macrophage colony stimulating factor, blood factor VIII, follicle stimulating hormone, tissue plasminogen activator.

Interdisciplinary research has received a boost in current times.

Alternative principles of ayurveda, homeopathy, siddha, unani and herbal medicine have socio cultural acceptance with large citizenry, but scientific research is needed so that these modalities can be incorporated as standard treatment regimens for common problems in the population. Research on herbal preparations needs to be conducted scientifically so that it can conform to the modern patenting system. Scientific research should also be able to link various disciplines of alternative medicine with each other and also with modern medicine, a possible convergence for global use.

Medical research to be fruitful should be collaborative with other sectors like agriculture, industry, information technology. Agricultural research into better nutritious foods, genetically engineered foods have the potential to lead to cheaper and better food for masses. Medical research in collaboration with biomedical engineering has revolutionized various aspects of medical care, ranging from automated diagnostics, computer modeling of drug molecules and imaging technologies to minimal access and robotic surgeries. Biomedical research is the most promising field for future research in medicine. Innovative application of nanotechnology in medicine is slated to be the revolution in the coming years and is expected to simplify the diagnostics and therapeutics in diseases considered difficult to diagnose or treat, like cancer, tumors. Travel health and drug dependence are newer areas of research. Medical research is opening up new vistas of opportunities in private sector for medical and paramedical professionals and one important attribute for clinical research -a large and diverse patient pool of different genetic backgrounds can be an asset in such a scenario, the bioethical component being duly considered.

Medical research has to be pertinent and relevant to be in tandem with the national health polices. Physicians shall have exciting options in their therapeutic armamentarium with advances in biotechnology and genetic engineering.

A sound and accurate understanding of the clinical realities, a sensitive and analytical approach considering the changing global scenario and multidimensional innovations can ensure that delivery of medical / health care that ensures the concept of integral nature of health, with curative services as a continuum of the preventive and promotive healthcare, is realized.

REFERENCES