



**Editorial:**

## **Health Informatics, Sustainable Health Care Development and Malnutrition in India**

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**Abstract:** Health informatics aims at studying the principal computer applications related to technology in developing human health care and solving the existing problems to facilitate efficient management. It helps in decision making process, hospital administration and system management and in catering the needs of clients/patients and doctors. However, the inadequacy of skilled manpower, resources and economy are the major hurdles to exploit the full potential of the technology and medical health facilities. Malnutrition and related causes are adversely affecting the nation from several angles. An integral approach would be able to mitigate the human sufferings.  
**Key Words:** Health informatics; Health care; Sustainable development; Malnutrition.

**Introduction:**

Health informatics is an evolving scientific discipline that deals with the collection, storage, retrieval, communication and optimal use of health care related data, information and knowledge. The discipline utilises the methods and technologies of the information sciences for the purposes of problem solving and decision-making, thus assuring quality healthcare in all basic and applied areas of biomedical sciences.(1) Health informatics is concerned primarily with the processing of data, information and knowledge in all aspects of healthcare. It aims to study the principle applications to provide solutions to the existing problems. The domains of Health informatics are the research, academia, operations and commercial; and are delivered by operational health practitioners, managers/administrators, academics, researchers, educators, scientists and technologists. (2)

**Use of Health Informatics:**

Computers in Health Care are well accepted the world over as telemedicine, clinical and diagnostic aids, to improve patient care, tone up administration, facilitate accounting and enable effective management control. An important application has been in hospital management, where computers have been an effective tool for doctors, nurses, administration and management.

The major uses of Health Informatics in Health System Management are:

**Informatics application in Hospital Management:**

All over the world, the health challenges and needs are increasing and becoming more complex. The demands and pressures on the hospitals and health care institutions are also increasing. At the same time, the resources are becoming increasingly limited. Achievement of goals, efficiently, effectively, and economically is the primary responsibility of all the administrators. This can be achieved through business, medical, telemedicine and technical management systems in hospitals.

**Decision making-Decision support system in health care:**

There is a growing trend to apply computers for tasks other than tabulation. The health care providers are increasingly interested in the feasibility of applying the "expert system technology" to assist improved health care delivery through telemedicine. The earliest research contributions in the area of artificial intelligence were a program to simulate expert behavior in the selection of an antibiotic for an infection. The trend of research in Medical Informatics is increasingly in the area called expert systems/decision support systems/telemedicine.

**Informatics application in health system management:**

The deployment and development of health services have been less influenced by the collection of specific data than by what has been referred to as "Impressionistic Planning" a process wherein information may be minimal and the basis for decision making is intuitive and political, the end results being determined by past experience, popular pressures and rough estimates and guess work. Health professionals tended to cooperate more readily and communicate more freely working at a local level and this promoted the free exchange of health activities and information. At the central level, the need to coordinate and control health service development was governmental largely by the constraints of the resources available. The emphasis, until recent years, has been that if there were enough staff, facilities, equipment and finance, the public health and health care services could be expanded and the health status of the population would automatically be improved.(3) In the early 1960s, it be-

came apparent to most health administrators that health expenditure was not infinite and that the emphasis in planning and development must focus on the more effective and efficient use of the limited resources available. When the time came to transmit priorities and proposed programs into actual operation it soon became evident that there was a serious deficit in relevant information. The major areas in which health service data either lacking or readily not available were health workforce development programming, and the evaluation of service effectiveness and efficiency. Health managers found that they urgently required this information to enable them to initiate and control the progress and outcomes of the program operation. The establishment of health information unit enables the health organization to have a single focus for the coordination and collation of any forms and sources of data available within the health systems.(2)

Since the mid-nineties, India's population program has seen a paradigm shift, at least at the policy level. Changes have included on increased emphasis on quality, privacy to client choice rather than demographic objectives, and an expansion of services beyond family planning and maternal and child health to address a wider range of reproductive health needs.(4) The primary management tool used thus far centrally defined contraceptive specific targets for health workers, was replaced by the concept of community needs assessment and response. An attempt has now been made to decentralize program design and management.

However, these policy changes have not been transformed into action at the grassroots level. Health workers at the field level, and their managers at the district level, are unclear about their new roles and responsibilities. Decades of centralized planning and centrally driven programs have left administrators at the district and periphery ill equipped to handle these newer responsibilities. Moreover, inflexible administrative systems, a pre-occupation with reporting requirements and administrative procedures, meager budgets, and the slow pace of social change have caused many mid-level managers to be disheartened.(2) This is compounded by a situation where good work is usually not recognized, and rarely rewarded.

Nevertheless, there are several public sector health staff that are committed and skilled, and have brought about change in their program areas. They have achieved some degree of success in reaching under-served groups, improving quality of services, building effective alliances with other development workers, or maintaining the motivation levels and performance of their field staff. They have demonstrated leadership qualities in the face of heavy odds. Such persons need to be supported to continue and extend their efforts. Without such leadership, public sector health programs will find it more difficult to increase access to health services, improve quality, or respond to client needs.(5)

The non-government organization (NGO) sector has been better able to internalize the policy changes discussed above and to transform them into action. In fact, it has been the NGO sector, which provoked and led the policy change. However, NGO capacity is highly varied, and many health service NGOs need an enhancement of selected management skills. The demands of the new paradigm require that NGOs and Government work together more closely, and staff both of NGOs and of government need to build capacities and skills for understanding and working with each other.

Thus, there is a need for building management and leadership skills within public sector health programs as well as in NGOs.

#### **Sustainable Health Care Development:**

Providing the people adequate healthcare was never as important as it is today. Considering the fact that India spends only 5-6% of its \$720 billion worth (gross domestic product) GDP on

healthcare, the wonder why we do not talk about health so much? Here are some proving statistics. According to India Brand Equity Foundation (IBEF), in a country of 1,000 million people, there are only 8,70,161 hospital beds in a meager number of 5,097 hospitals. Currently, there are 5,03,900 certified doctors and 7,37,000 nurses churned out by a miniscule 162 medical colleges. If we simply think further then it is surprising to note that India just has over 10 beds for every 10,000 of its citizens, now combine this with less than one doctor per 1,000 people!

On the contrary, it is surprising that India is home to the best medical facilities in the world. Growing at an enviable 25% annually, medical tourism in India is worth an ever-burgeoning \$350 million and is expected to reach an estimated \$2 billion within the next six years.

At present, it is estimated that India needs to spend a colossal \$49 billion to reach China's level of the sustainable healthcare, considered under-developed by the Western standards. At present, there is a shortfall of 9, 20,000 hospital beds for the somewhat lesser affluent Indians. The current healthcare infrastructure in India is poor. The overall number of beds is low compared to other developing countries in the world. The situation is worse in case of tertiary beds. To meet the expected demand in 2012, an additional investment of Rs. 1, 00,000 crore to 1, 40,000 crore is required. An additional 7, 50,000 beds will be required (from 1.5 million to 2.25 million in 2012), of which 1, 50,000 beds need to be tertiary beds. So in the heat of our economic boom, we are forgetting the most important factor of our subsistence.

#### **How to tackle Malnutrition?**

India is one of the most under-nourished countries in the world, the level of malnutrition being nearly twice of what prevails in Sub-Saharan Africa. Out of 1000 children, 640 suffer from many kinds of incurable diseases. Similarly, out of 1000 women, 722 are under-nourished. Malnourishment rates are high in India, 54% among scheduled castes and scheduled tribes; and 50% among rural children are malnourished. In India 2000-3000 children die of malnutrition everyday. The required calorie intake of adults is only 1345 Kcal; which is far below for a healthy body. These are the statistics of the World Health Organization (WHO) released in January 2009. In view of this deplorable kind of state of affairs that a National Food Security Act need to be enacted as the malnutrition has emerged as a major health challenge needing urgent response. In this context, a think-tank of experts, activists, NGOs and administrators have brought the notice that poverty is a prominent, but not the sole cause of malnutrition. Malnutrition is an extremely complex, inter-generational phenomenon with multiple causes, that is, physical – poverty, hunger, calorie or micronutrient deficit, infection and disease; attitudinal or socio-cultural – gender-discrimination in society and intra-family food consumption, early marriage of girls, frequent pregnancies, superstition or ignorance regarding proper maternal and child care and feeding practices; governance related, mainly - inadequate nutrition or health services for women and children, low access to safe drinking water and hygienic sanitation and lack of social inclusion.(6)

Malnutrition causes economic loss to the nation, due to reduced physical or cognitive growth and learning capability, and lower physical work output. It is indicated that India loses around 4% of Grand Domestic Product (GDP) due to calorie/energy deficit. It is stressed that malnutrition is huge human resource calamity and high energy; low-cost food should be made available to the poor. Malnutrition is caused by deficiencies of micro-nutrient like iron deficiency anemia (IDA), vitamin A deficiency (VAD), iodine deficiency disorders (IDD). About 70% of pre-school children suffer from IDA. Further low birth-weight (LBW) is one of the key causes of under-nutrition in In-

dia, where about 30% of the children are born with LBW largely due to poor maternal nutrition. Almost a third of the women in India have a body mass index (BMI) below normal and the prevalence of anemia among the pregnant women is around 60%.<sup>(7)</sup> The United Nations has defined malnutrition as a state in which an individual can no longer maintain natural bodily capacities such as growth, pregnancy, lactation, learning abilities, physical work and resisting and recovering from disease.

On continuing high malnutrition and failure of on-going programmes to improve it, the expert group concluded that India has no comprehensive national programme with the objectives of eradicating malnutrition. Several nutrition-related programmes address some but not all aspects and causes of it.

Though India's malnutrition is deeply rooted in an inter-generational cycle, the current nutritional interventions do not address the issue related to inter-generation. Thirty per cent of India's population suffers from high protein-calorie deficit. The general population lacks adequate awareness regarding proper nutritional practices. Crucial prescriptions of the National Nutrition Policy 1993 in India were not translated into programmes and popularization of low-cost nutritious foods, reaching adolescent girls, fortification of essential foods and control of micronutrient deficiencies. Most importantly the political will for addressing malnutrition with high priority needs articulation. No single intervention can eradicate malnutrition. The package of interventions must be widely inter-sectoral and addressed at least, a majority of causes; they must be simultaneous so that the benefit of one intervention is not lost on an account of the absence of another; and they must cover the entire life-cycle of women and children to create immediate impact within one generation on the nutritional status of the three critical links of malnutrition, viz., children, adolescent girls, and women. Only then can the benefits be sustainable enough to break the inter-generational cycle, and pass on to the next generation.

The fact is that even though our economic development could reach double digits, if we do not give an enabled, medically satisfied labor force, the whole so called 'economic vicious cycle' would be rendered useless. This is enough for us to think about and plan our future!

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