Health Information Systems in India

Jennifer Zelmer

We need courage and vision to fashion a new India. This will need united efforts on the part of all to... improve the living conditions of the masses and to see that the future of our children is better and bright. (Gandhi).

India: An Evolving Society

India is home to some of the world's earliest civilisations. This rich cultural heritage forms the basis for today's complex and continually evolving society.

Modern India houses sixteen percent of the global population, in only 2.4 percent of the world's area. (Govt. of India, 1991). Primarily a rural society, one third of India's citizens live in poverty. This number is constantly added to with an annual population growth of 16 million, the equivalent of adding one Australia each year (Govt. of India, 1991). In addition to the burgeoning population, other social trends have a significant impact on India today. Major influences include:

- Increased rate and complexity of social and technological change,
- Separation and polarisation of social, economic, and political groups leading to violence and tension,
- Widespread search for identity and interpersonal connections,
- Changing nature and meaning of work and increased realisation of the importance of leisure,
- Development of a post industrial economy, and
- Growing involvement in the world community (K. Mukherjee, 1992b).

In this climate of changing population, economic, demographic, and social characteristics, achieving Health For All is one of India's priorities as part of in its efforts to promote sustainable integrated development. Numerous governmental, non-profit, and private organisations around the country are responding to this challenge.

Initiatives for Health

In India, as in many other nations, a complex network of governmental, voluntary, and commercial organisations is working to improve the health status of the population. These groups support self-care and provide health promotion and primary, secondary, and tertiary health services as part of the overall program of integrated development.

The government sector consists of a multi-tiered system offering health promotion, disease prevention, and curative services. It is government policy that these services are available free of cost to any Indian. The most common type of facility is the rural Sub-Centre, serving approximately 5,000 people. Each Sub-Centre provides first aid, health education, and basic health care services. More complicated cases are referred to the Primary Health Centres (PHC). PHCs also treat patients on a walk-in basis. They typically offer a range of public health programs, out-patient clinics, and limited in-patient facilities. For each 4 PHCs, there is approximately one Community Health Centre or District Hospital. These facilities provide in-patient treatment and a variety of out-patient services at centres throughout the country. Finally, patients can be referred to tertiary care hospitals located in the major metropolitan centres. These tertiary care hospitals are often affiliated with medical training centres.

The Government's programs, however, are only a small portion of the existing health care delivery services. In many ways, the Indian system is like the two tiered health system which exists in Australia—without the regulatory framework. As a result, a diverse range of practitioners and facilities operate, either on a non-profit basis or for those who can afford to pay.

This sector includes such independent and, generally, poorly coordinated services as:

- single private practitioner clinics,
- mobile facilities addressing the needs of the indigent who lack access to other services,
- large health education or other campaigns, and

- commercially-run tertiary care hospitals based in major cities.

A 1981 survey counted over 2,400 voluntary institutions offering community health services in the country, and the number has continued to increase in subsequent years (Tong, 1981). This figure includes only allopathic (Western) medicine. There are also thousands of ayurvedic and homeopathic practitioners throughout the country.

Given the complex and diverse determinants of health, however, the formal health care system is not the only, or perhaps even the most important, initiative in improving health in any society (Evans and Stoddart, 1990). India is no different. Since "only healthy and educated people... can contribute to economic growth and this growth in turn will contribute to human well being," other aspects of integrated development are just as critical (P. Mukherjee, 1992).

The Indian Government's 8th Plan (1992-97) for human development will therefore have a tremendous influence on population health. It includes programs to:

- generate employment (particularly in rural areas),
- contain population growth,
- achieve universal elementary education and literacy for people aged 15-35,
- provide safe drinking water and primary health facilities,
- promote self-sufficiency and exports of food,
- strengthen the infrastructure,
- privatise Government operations where appropriate, and
- improve productivity and efficiency in public sector enterprises. (Sengupta, 1992).

Voluntary groups and international organisations are also active in many of these areas. Common programs are related to rural technology, income generation, and maternal and child welfare (K. Mukherjee, 1992a). These initiatives "have been increasingly viewed as an integral part in the process of welfare and development of the country" (Gram Niyojan Kendra, 1992).

The challenge in achieving Health For All is to recognise and co-ordinate the diverse organisations, activities, and events that have an impact on population health. In the health system this means improving service, reducing duplication, and eliminating gaps in service availability (Raj, 1992). However, it also means forging links with groups outside the formal health sector to work together to achieve the common goal: human development (Rao, 1992).

Health Information Systems

The burgeoning population, diversity of health care providers, and impact of other factors on health creates enormous challenges for the effective delivery and coordination of health services throughout India. One way to support the provision and management of these services is through the use of informatics, a "key tool and strategy to development" (Mandil, 1989).

In recent years, informatics has proven to be an appropriate and effective tool for primary health care in countries around the world. As Elmandjra (1989) says, "any improvement in information processing represents a direct contribution to the [health] objectives sought." This statement is equally valid for developed and developing nations. In fact, information technologies are "not a luxury for the poorest countries of the world; they are the ones who need it most" (Elmandjra, 1989).

Currently in India, there appears to be a high level of awareness among health executives of the importance of health informatics. This is partly the result of the activities of the Voluntary Health Association of India which is active in promoting the appropriate use of health information and knowledge around the nation. As early as 1984, Dr. E. Lyngdoh, in one of their publications, stated that:

> The development and implementation of the health information system should receive the highest priority if we want to achieve health for all by 2000 A.D. because no proper planning and programme implementation can be done unless the health information system is improved.

The United Nations agencies acting in India have long concurred with this view. These agencies identified health information systems for the assessment of the health situation and diagnostic trends as one of their priorities for collaborative programming as far back as 1983.

Reflecting these views, the National Institute of Health and Family Welfare has included a large

module on management information systems in their health management training course (Trakroo, 1992). On a smaller scale, posters fixed to the walls of the central office of Gram Niyojan Kendra, one of the voluntary organisations visited in Uttar Pradesh, remind professionals of the need for and uses of management information.

Nevertheless, these attitudes have yet to trickle down to the periphery in many places. In Government-run health centres, for example, two principal types of records are maintained. The personal care record, recording the patient's health history and current care, is left in the custody of the patient. The quality, accuracy, and rate of retention of these record varies considerably between centres.

Fifteen sub-centre registers make up the second type of record. These registers consist of summaries of health indicators and interventions for the community. At visits to the centres, frequent mention was made of the amount of clerical work required to maintain and report on these records. Previous studies have shown that this activity can take as much as forty percent of the time of a multi-purpose health worker in the Primary Health Centres (Nath, 1990 and 1992). As summaries of the registers are passed up the hierarchy, further effort is required to collate and tabulate the results.

In privately run facilities, even more problems exist. Some keep few, if any, health records for their clients. Others invoke the same practice as the government clinics with the patients being the custodians of the records. Yet others maintain patient records at the care delivery site. The latter facilities, often those sponsored by international groups, were the only ones observed regularly compiling and using health statistics to assist management.

Effective use of health informatics has the potential to substantially improve this situation. In the late 1980's, for instance, a relatively unique system was developed for Ballabgarh, Haryana, the rural outreach centre of the All India Institute of Medical Sciences (Nath, 1990). Its use has since been extended to another nearby Primary Health Centre.

The developers of this system recognised that any health information system is dependent on data generated at the periphery by the Multi-Purpose Workers and passed to the centre. It therefore focused on the peripheral worker and provided a user friendly, menu-driven interface for data entry and results reporting.

The system itself is a database containing demographic information about residents in the community. It produces work plans to guide the activities of the Multi-Purpose Workers, records the interventions performed, and generates supervisory and government reports.

Experience showed that the savings generated paid for the hardware in less than one year (Nath, 1992). In addition, the data quality, effectiveness and timeliness of reporting, and speed and comprehensiveness of feedback to the worker improved. Another important benefit was that the system reduced the time needed for clerical tasks by twenty-seven percent (Nath, 1992). This means that close to one extra worker for every three is now available to concentrate on health promotion and disease prevention activities in the community.

Patient and community information is not the only area which could benefit from the application of information technologies; another possibility is the support of education and training (Pett, 1992). Potential uses of informatics include:

- providing support to learners in remote areas,
- creating a database of existing health learning materials,
- customising materials, and
- using Computer Assisted Instruction (CAI) and Computer Managed Learning (CML) techniques in educational programs.

Minor initiatives in each of these areas were reported on during a recent seminar on Health Learning Materials in New Delhi, India. One of the conference's recommendations was for further exploration of the uses of information technologies to enhance health learning.

Conclusion

There are many areas throughout India where Government bodies, voluntary organisations, and commercial operations are working to improve the health of the population. Information technology is one tool which can further their aims if used appropriately. If Health For All is to become a reality, however, all efforts must be considered as part of a larger strategy for sustained integrated development.

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About the Author

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