

# The Impact of an ICT Project (Health Information Systems Programme) on the Work Practices of Health Workers in Primary Health Sector: A Case Study from India

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## ABSTRACT

*Health care sector is very complex and different from other sectors due to the high level of unpredictability in processes. For ex, an epidemic might break out, or emergency situation may suddenly occur and totally change the schedules of trajectories. The available resources in terms of drugs and equipments might also affect the articulation of work. Articulation here refers to collaboration and reaching common understanding (Strauss et al 1985) which is imperative in this field. Hence trajectories are not simple and linear. Introducing computers and implementing health information management systems requires new work routines and practices which are quite challenging (Boulus, 2004). As pointed out by Nina Boulus (2004) changing work practices and improving management information systems are not singular elements but rather part of a large heterogeneous socio-technical network that includes artefacts, tools, people and other socio-cultural factors etc. Also she views the transformation process as a mutual, dynamic and reflexive transformation of both information infrastructures and situated practices of use. While the typical focus of training programs during the process of implementation of HIS is their technical content, many practitioners have demonstrated that social factors could be instrumental in the target system's success as the positive outcomes afforded by user training and adoption of the system are improved user attitudes, behavior, and performance. Thus to make the ICT projects sustainable it is essential that social factors along with technical issues are given importance during the process of implementation as ultimately the technology intervention has to get integrated into the existing work practices of the people in the organization thus leading to the establishment of new routines which will support the institutionalization of this technology-induced change. Using narrative method this paper will not only highlight the work culture that existed before the intervention of an ICT project but also how the work practices changed slowly during the process of an ICT intervention, and the different challenges (technical, social, geographical and political) faced both by the implementation team and the users in bringing about a change in the work culture of health workers based at the community level is described.*

## INTRODUCTION

Information and Communication Technologies, variously called ICT4D, i4D, or ICT, for Development interventions have demonstrated tremendous transformational potential for the developing world in e-government, telemedicine, e-learning, and other grass roots initiatives. (Sood, 2002).

There is enthusiasm in the development community over the great potential for ICTs as it is believed to alleviate the social and economic problems of the developing world (d'Orville, 2000; Allen & Thomas, 2000). A special challenge would be how to reach out to the poor and marginalised particularly women and make sure that they are not excluded from the emerging information society (Ekenberg & Asker, 1999). In order to bring about a realistic ICT profile particular to a rural community this implies that the starting-point for ICT use must be the

people needs (d'Orville, 2000; Mansell, 1999) which can be identified by using a participatory approach.

Many approaches to using ICT for development have exposed the failure of top-down, one-way, non-consultative, technology-driven approaches to development communication (O'Farrell, 2000). Thus, developing appropriate ICTs (i.e. a framework) for sustainable development is, therefore, quintessential.

In health sector electronic information systems are revolutionizing health-care practice, research and education. Many health-care professionals realise the need for skills in finding and using information, and in assessing information systems since information is a critical ingredient for development. The more information that the poor and the marginalized possess, the greater their sense of empowerment.

With greater information particularly in health sector the health workers and the other staff based at the grass root level are better able to organize health care and take immediate and appropriate actions to improve the quality of health care services.

In this paper I try to describe how a contextual intervention of an ICT, Health Information Systems Programme (HISP) an action research project for mainstreaming and strengthening health information management at the district level is introduced to bring about changes in the work culture of health workers based at the community level.

Information and communication technology (ICT) continues to have a significant impact on the lives of people as its impact weaves through the cultural, psychological, political, sociological dimensions of human/social existence -- to spiritual and cultural values. The critical influence on people's responsiveness to change probably is its social attitudes, religious beliefs, and culture.

(In the present paper, the empirical data presented has been collected from Kuppam, a small area with nine Primary Health Centres (PHCs) spread over five mandals (administrative divisions) in Chittoor district in Andhra Pradesh, a site where the project was piloted and later was in the process of achieving sustainability).

The case study presented below apart from describing the impact of an ICT project on human behaviour also provides us a deeper understanding of the socio technical aspects of the complexities and challenges that emerge from the implementation of the HISP, an ICT project which is important from an anthropological perspective.

## WORK CULTURE THAT EXISTED BEFORE THE INTERVENTION OF HISP

Before the intervention of the HISP it was found that PHCs which were supposed to provide both prevention and outreach services were instead burdened with achieving targets related to performance indicators such as immunizations, Ante Natal Care (ANC) registrations, ANC check ups, institutional deliveries,

sterilisations etc as there was an extreme pressure from the health authorities on health staff particularly on the Multi Purpose Health Assistant(MPHA)based at the grass root level to achieve the numbers fixed by them without taking in to account the ground realities.

Since the MPHA is the main link between the primary health care and the community in the rural areas extreme pressure is exerted at the health worker in fulfilling the targets. So, ultimately the health worker who is required to do outreach services and provide services to the communities instead neglects her duties and gets fully involved in completing the targets 'by hook or by crook'. As a result there is lot of manipulation in the data collected and collated at all levels.

Some of the elder MPHAs reminisces that during seventies and early eighties the focus of PHCs was only on providing services to the community. But in recent years with the focus on targets on important performance indicators the concept of primary health care has changed and the stress is only on figures that is, quantity and not on service.

For years the usual routine of work the MPHAs have been doing is that after performing the outreach services in the community the entries are made against the services provided in the field diary. And on reaching home instead of copying the figures from the diary in to the respective fourteen registers maintained for each service they postpone the above work to the day when review meeting is held in PHCs.

On the review meeting day the figures are entered in to the various registers maintained for each service and then they are culled out again to prepare different reports for different services though it is tedious and monotonous. More over in this pattern of work they find it quite easy to change the figures in the last minute to match the targets given by the medical officer before they can submit those forms to the supervisor on the review meeting day.

But during the intervention of the Health Information Systems Programme (HISP) commonly referred to as computer project among the health workers which was implemented in all the 9 PHCs of Kuppam, jointly done by University of Oslo, Norway and Government of Andhra Pradesh, the implementation team explained how HISP in the long run will benefit the health workers by reducing the work pressure by not entering data in to many registers but only in one or two forms

in the DHIS(District Health Information Software) installed in a computer and how the data can be analysed and converted in to information.

## INITIATING A CHANGE IN WORK PATTERN THROUGH HISP

### Attempts to Mainstream Information Systems in Health Sector

Keeping in view the main objectives of HISP and the work pattern that exists within PHCs in the broader socio political context it became imperative to initiate efforts in changing the work culture of the health staff within PHCs and also to bring about the changes in the district medical and health office at district head quarters.

## DATA ELEMENTS AND REPORTS

Before attempting to introduce change in the work practices of health workers initial months were spent in Chittoor district trying to understand the structure and functioning of both district and primary health units, information flows, different arte facts and tools used for data collection, reporting structure and formats. Based on the information attempts were made to develop minimum data sets by removing redundant data elements.

Similar to the redundant data elements was the practice with the reports. After discussing with officers in charge for various programmes and making them see the uselessness and waste of efforts of sending repeated reports containing duplicated data efforts were made by implementation team to reduce the number in the reports sent from district to state.

Simultaneously efforts were made to set up the necessary infrastructure by placing computers in all the 9 PHCs of Kuppam constituency for initiating change through DHIS (District Health Information System), an open source software for improving their routine health information processes since more than 60% of the time of health workers is spent on health information transactions (collection of data, collation of data in various forms and registers, and the transmission of data to upper levels of district and state). It was also considered that improving these processes will then directly have an impact on work, and the health staff can focus more time on providing care to the community as compared to filling

Figure 1. Map showing Kuppam constituency with five mandals and nine primary health centres



up endless forms that ultimately are marginal to their work of providing health care to the community.

So, keeping in view the above perspective 'On-site' and 'Off-site' training strategies were devised in order to build the capacity of health workers to work independently on the HIS software. Initially the trainers and the health staff had many problems on both sides -teaching as well as learning.

After lot of motivation and continuous training from the implementation team and the pressure from the officials at the different levels finally there were quite a number of medical officers and health staff including MPHAs, MPHS, pharmacist and lab technicians from different PHCs who managed to learn the computers, DHIS software and the generation of reports. Slowly this pattern of work became a routine and health staff enjoyed their new work culture as it not only reduced their work load and efforts but they were getting empowered with new skills. Moreover this training helped them to build capacity for dealing with health information, and enabling a culture of "use of information."

Both with peer pressure and through word of mouth the attitudes of their colleagues also changed and all the staff in their respective PHCs dutifully started using computers and DHIS software for entering data, doing analysis and generating reports.

Eight months after the project was initiated in Kuppam it was evaluated by the office of Commissioner of Family Welfare Department(CFWD) who gave instructions to the DM&HO to institutionalize HISP.

We assumed that as in any developing country more so in the rural areas the computers, free software and the free training on the software would be a welcome feature but there were many constraints and resistances which were not obvious initially but were very subtle and strong in nature to overcome them.

# DIFFERENT CHALLENGES ENCOUNTERED WHILE INTRODUCING CHANGE IN THE WORK CULTURE OF HEALTH WORKERS

Apart from the different challenges faced by the implementation team such as power dynamics and social politics within PHCs not allowing the grass root workers learn computers and acquire new skills, too many meetings and workshops focused on achieving the targets sapped the time and energy health workers, hardware problems & problems of power supply which hindered the training programmes, gender concerns and the most important issue was that of the refusal of statistical officer in the DM&HO to learn computers and DHIS software thus putting all the efforts of HISP implementation team and the sanction from CFWD to institutionalize HISP at stake.

In spite of all the challenges faced both by the implementation team and the users in adopting the technology there was a positive outcome in terms of users adopting and using the technology in their work practices. The users particularly those based at the primary health centres (MPHAs, MPHS and in some cases medical officers, lab technicians and Pharmacist) started to use computers and DHIS in their daily work. The above case study delineates how new technology affects and interacts with the various actors and vice versa indicating a mutual interaction process.

But whether the impact of an ICT project lasted long enough in their work practice bringing about a change in their work culture is a point for discussion which needs to be discussed separately.

## REFERENCES

- 1.Allen, T., & Thomas, A., (2000) Poverty and Development into the 21st Century, Oxford: Oxford University Press.
- 2..d'Orville, H., (2000) Knowledge and Information – New Levers for Development and Prosperity in the World Economy of the Future, IT for Development Programm Bureau for Development Policy, Choices,UNDP.
- 3.Ekenberg, L. & Asker, L. (1999) IT in Swedish Development Co-operation Suggestions for Ways of Including the Low-income Countries, The Swedish Ministry for Foreign Affairs and Sida, ISBN 91-586-7749-6, Stockholm.
- 4.Mansell, R. (1999) Information and communication technologies for development:assessing the potential and the risks, Telecommunications Policy 23: 35 – 50.
- 5.Nina Boulus (2004) Managing the Gradual Transition from Paper to Electronic Patient Record, Department of Informatics, University of Oslo, Norway(Unpublished Masters Thesis).
- 6.O' Farrel, C., Norrish, P. & Scott, A. (2000) Information and communications technologies for sustainable livelihoods, SD dimensions. Available: <http://www.fao.org/sd/cddirect/CDre0055d.htm> [March 19, 2003]
- 7.Sood, A, D (2002). "Guide to ICTs for Development", Center for Knowledge Societies, Bangalore
- 8.Strauss et al (1985) Social Organization of Medical Work, New Brunswick, NJ and London: Transaction Publishers,1997. First published in 1985 by The University of Chicago Press.

## ENDNOTE

- \* The empirical material for the above case study was collected during my association with HISP project as Project Coordinator, HISP India from January 2001 to April 2005.

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