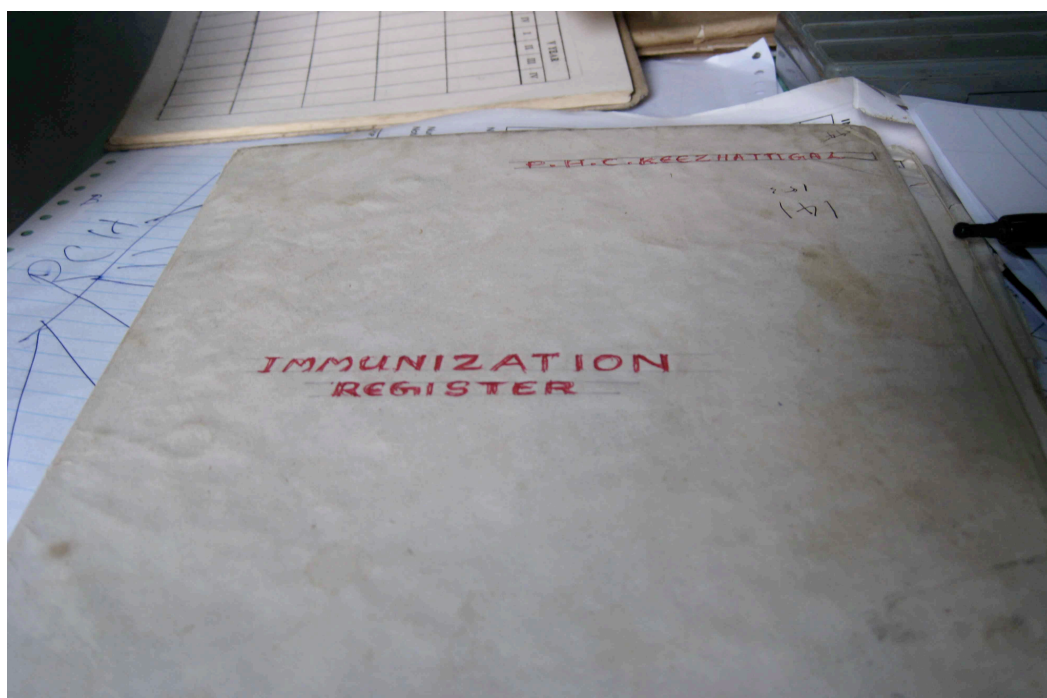


How health data is obtained in Kerala, India

A qualitative study



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Introduction

Today, there is a major need for effective monitoring systems of the world's health status. Inequalities in access to health care are important to monitor, thus be able to act upon them. In this paper, we will explain why health information systems are important and which components such systems need. We followed health care workers in Kerala, India, and we will tell how they collect data for health information, how the data is reported upwards in the system, and if there is feedback to the health care workers on their achievements. Finally, we will discuss and compare theory on health information systems with the practice we observed during our fieldwork.

Motivation

In 2000, leaders from 189 nations agreed on the eight Millennium Development Goals. Their vision was a world with less poverty, less maternal and infant mortality, less hunger, better education, gender equality and a healthier environment before 2015.²⁶

Goals four and five are on maternal and infant health: improve maternal health and reduce child mortality. As two medical students interested in the field of public health, we wanted to take a closer look at these two goals. But our mission has not been investigating the actual cases; rather, we wanted to explore what is behind the numbers.

How is health data obtained?

In a day-to-day health care setting, for example in a hospital in Norway, doctors and nurses do their jobs: examine patients, note what they have done in the patient's journal, and register the procedures they have used during the consultation in order for the hospital to get "paid" for the procedures. Different diseases get registered in different registers. For a specific health care worker it is of importance to focus on a micro level, - you want your patient to be alive, be healthy.

In a Norwegian setting, it appears to us that health information is automatically generated. As medical students we have not really learned how health indicators are produced. What we know is that Norway has one of the best health registers in the world,³⁶ and also a very good health status.

What about developing countries? Countries where resources are scarce? Where there is a lack of computers, and no internet?

In many developing countries, a lot of information is collected. The challenge is to turn the information into relevant knowledge, into meaningful information that the health care workers can act upon. Use the information for resource allocation and for planning. The health information systems in many developing countries are more about gathering data than translating it into information.²⁰

We got in touch with the institute for informatics at the University of Oslo, where we met our adviser, Jørn Braa. He advised us to go to India, to a district called Trivandrum in the state of Kerala, where colleagues of his are working with implementation of health information systems through the organization HISP, health information systems pr.

Objectives

The questions upon which we based our work were the following:

- Why is a health information system important?
- What kind of challenges do implementers of a health information system face?
- How is the local health care system organized in a developing country, like India?
- How are data elements converted into meaningful information?
- What do health care workers think of data collection in Kerala, India?

In the following, we will explain why health information systems are important and which components such systems need. We will explain how the health care workers we followed collect data for health information. Also how the data is reported upwards in the system, and if there is feedback to the health care workers on their achievements. Finally, we will discuss and compare theory on health information systems with the practice we observed during our stay.

Dictionary

Junior Public Health Nurse, JPHN

Sub Centre level. Cover 5000 to 6000 people. Visit 25 houses per day. Have 18 months education. Main work: mother and child health, and reproductive and child health, (MCH and RCH)

Junior Health Inspector, JHI

2 years training. Work close to Junior Public Health Nurses. Responsibilities: communicable diseases, vector study and sanitation. Often male

Sub Centre, SC

The Sub Centre is the most peripheral and first contact point between the primary health care system and the community. Staffed with one Junior Public Health Nurse and one Junior Health Inspector (ideally).

Lady Health Inspector, LHI

Supervisor for Junior Public Health Nurse. Primary health centre level.

Health Inspector, HI

Responsible for health data reporting from the Primary Health Centre. Supervisor of Junior Health Inspectors. Often male.

Primary Health Centre , PHC

PHC is the first contact point between village community and the Medical Officer. It acts as a referral unit for 6 Sub Centres.

Lady Health Supervisor, LHS

At Community Health Centre level. Supervisor of Lady Health Inspector.

Health Supervisor, HS

At Community Health Centre level. Supervisor of Health Inspector. Often male

Community Health Centre, CHC

It serves as a referral centre for 4 Primary Health Centres and also provides facilities for obstetric care and specialist consultations. It has some in-door beds.

Accredited Social Health Activist, ASHA

Report their work to the Junior Public Health Nurse and Junior Health Inspector. Receive a bonus for every patient they visit. Has responsibility for 250-300 houses. The ASHA program was a NRHM initiative.

Medical Officer, MO

Has medical responsibility in a Primary Health Centre, reports to DMO

District Medical Officer, DMO

Has medical responsibility at the district level.

National Rural Health Mission, NRHM

Launched by the Indian government in 2005 with an aim to improving Indian health status, especially mother and child health. Public spending on health care is increased.

Health Information System, HIS

A set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system

Health Information Systems Programme, HISP:

Aims to support the improvement of health care systems in the southern hemisphere by increasing the capacity of health care workers to make decisions based on accurate information. HISP provides training and support for users of the open source District Health Information System ([DHIS](#)) software.

District Health Information System, DHIS 2

Developed by HISP. Under continuous development. Designed to support health workers and managers at all administrative levels services to enter, validate, and analyze routine data, semi-permanent data and survey data. Strong emphasis on using information for local action. Completely free and open source.

Facilitator

Person hired by HISP to work in the field, training and helping health personnel with DHIS software

Millennium Development Goals, MDGs

Leaders from 189 nations agreed on the eight Millennium Development Goals in 2000. Their vision was a world with less poverty, less maternal and infant mortality, less hunger, better education, gender equality and a healthier environment before 2015

Infant Mortality Rate, IMR

Infant mortality rate (0-1 year) per 1,000 live births

Maternal Mortality Ratio, MMR

Maternal deaths by 100,000 live births

Mother and Child Health, MCH**Reproductive and Child Health, RCH****World Health Organization, WHO****Non-Governmental Organization, NGO**

HIS –an overview

Why health information system?

It is important for leaders to make informed decisions regarding health care. In a world where resources are decreasing and the demand for health care is rising, the need to do more with less is important. Managers need health information to make informed decisions.¹³ In 2000 the United Nations Millennium Development Goals, MDGs, were launched. The MDGs were meant to target the major health problems in the world.²⁶ Appropriate health information systems, HIS, are seen as crucial for monitoring these goals.^{3,1}

Access to health care, medical care and necessary social services is also a human right.³⁸ An effective and comprehensive HIS is essential in order to monitor whether people are granted this right. Communities have a right to know why some people die before their time, why some get ill, what health care is available and how they can protect themselves from communicable diseases, among others. Health data presented in a good way can be of great help in these questions.

For a health information system to function, various policy, administrative, organizational and financial prerequisites must be in place¹³ and for information to influence management in an optimal way, it has to be used by decision-makers at each point of the management spiral.³³ Health information system is necessary for strategic policy making and resource allocation. At the district level, HIS is important for effective functioning.¹ Examples of this are implementing programmed activity, building new hospitals, undertaking situational analysis and setting new priorities. The ultimate goal for a health information system is not to gain information, but to improve action.³⁴

To better serve the population every part of the system has to optimize the health information system. Norway, for example, is among the countries with best health registers.³⁵ Norway has registers like the cancer register, the birth register and the death cause register among others. Together with the death registers in Sweden, the Netherlands, England and Wales during the nineteenth century there has been possible to study patterns of death.¹ Unfortunately Norway can only use a small part of the health data they collect today. If the death cause register had been connected to the electronic journal systems in an efficient way, it is believed that we would notice changes in outcome of treatment sooner.³⁵

How is health information system defined?

Lippeveld and Sauerborn define health information systems this way:³³

“(...) we can now define health information systems as a set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system (...) Health information systems integrate data collections, and use of the information necessary for improving health services effectiveness and efficiency through better management at all levels of health services.”

Information is defined as a “*meaningful collection of facts or data*”³³

Components for HIS

The Health Metrics Network was launched in 2005 to help countries and other partners improve global health by strengthening the systems that generate health-related information

for evidence-based decision-making.¹⁴ HMN have their main focus on two needs: the need to enhance the entire health information and statistical systems and the need to concentrate efforts on strengthening country leadership for health information production and use.

In a framework for HIS, they define six components for Health information systems:¹³

Component 1: **Health information system resources** – these include the legislative, regulatory and planning frameworks, and the resources that are prerequisites for such a system to be functional: personnel, financing, logistics support, information and Communications technology (ICT), and coordinating mechanisms within and between the six components.

Component 2: **Indicators** – a core set of indicators and related targets for the basis for a health information system plan and strategy.

Component 3: **Data sources** – can be divided into two main categories; (1) population-based approaches (censuses, civil registration and population surveys) and (2) institution-based data (individual records, service records and resource records).

Component 4: **Data management** – this covers all aspects of data handling from collection, storage, quality-assurance and flow, to processing, compilation and analysis.

Component 5: **Information products** – data must be transformed into information that will become the basis for evidence and knowledge to shape health action.

Component 6: **Dissemination and use** – the value of health information can be enhanced by making it readily accessible to decision-makers and by providing incentives for information use.

Challenges

For a sustainable HIS to evolve, there are different challenges that need to be addressed. In the following, we will discuss the challenges related to sustainability, capacity and resources.

Sustainability of HIS

The core indicators of a health system should reflect changes over time in socioeconomic, environmental, behavioural, demographic and genetic determinants in health, health systems and health status, e.g. mortality, morbidity and disability. An indicator can be defined as:¹⁶

“A certain condition, capability, or numerical measure which, when recorded, collected, and analysed, makes complex concepts more readily measurable and allows managers and evaluators to compare actual programme results with expected results.”

Carefully selected and regularly reviewed core indicators can be viewed as the backbone of the HIS. All countries need a nationally defined minimum set of health indicators used regularly in national program planning, monitoring and evaluation. The definitions of these indicators must meet international standards.¹³

Targets should be set for core indicators that match national plans or international goals.¹³ Targets can be defined as:¹⁶

“The desired outcomes quantified and specified in time towards the attainment of the ultimate strategic objectives.”

Because of performance-based disbursement by many international NGOs, monitoring targets

have become very important.¹³

Standardization

In order to have a well-functioning HIS, there need to be a standardized system for collecting health data from the whole country, covering all population groups.

Global and national health policies normally recommend local management and integration of health information from different services and programs.³ Unfortunately this is not the case. National health systems are typically made up a number of independently health programs with each its own uncoordinated reporting systems. India is an example of this with vertical programs with little horizontal collaboration and integration.³

Donor actions are often driven by the demands of accountability. Donors are anxious to maximize compatibility between countries. They very often implement and support their own data collection.¹ Often health data can be collected and reported many times through different structures, while at the same time there are gaps where important data do not get reported.^{3,33} In order to make more with less in undeveloped countries, there has to be a **coordination and consistency** in the health information gathering. The lack of national standards makes is difficult to make one unified HIS. Most countries fail in achieving one. The reasons are:⁵

1. Conflicting interests between health programs; difficult to reach a “final” agreement.
2. Change is the only constant; new needs keep popping up (e.g. HIV/AIDS).
3. Multiple software and paper tools are difficult to coordinate and change; standards are “cast in stone”.

The sectors need to come together and agree upon a national standard of HIS. HMN is a great resource on this matter.

According to Braa et.al., in South Africa the process of standardization was a process of reforming the HIS, and even the health system itself. Agreeing on the standards, however, was not easy. After long discussions, there was an agreement: “it is not possible to agree on everything, we should agree on a basic minimum”.³ It was further agreed that everybody would continue to have the freedom to collect the additional data they wanted. A hierarchy of standards¹³ was established, and visualised in the following figure:

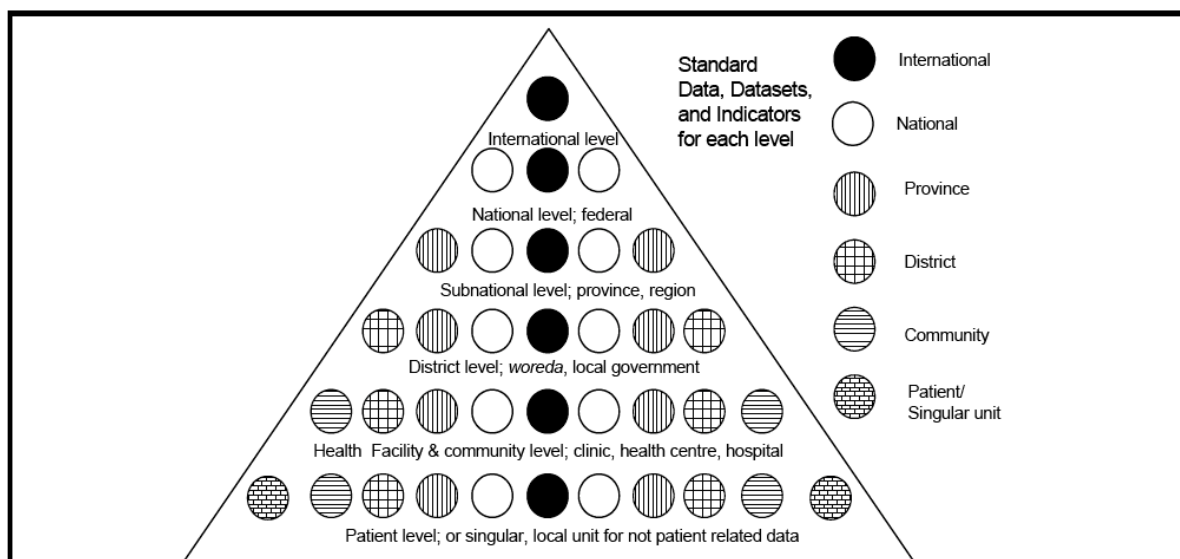


Figure 1. Hierarchy of Data Standards Used in South Africa with the Patient Level Added

Feedback from national to lower levels

The use of information at the local level in developing countries is limited. Managers at all levels should make informed decisions, especially local leaders. Motivation for more staff, budget re-allocation and adapting targets in operational plans are important examples.⁴⁰ Often the health care workers can not make use of the information they collect for their own quality improvement.

Data are often collected without being analyzed critically or turned into information that can be used for day-to-day management or longer-term planning.¹³ Therefore too much information is sent upwards, hence the HIS turns **data-driven**, rather than **action-driven** as it should be according to Lippeveld and Sauerborn.³³ Too little information is reported back to the primary health workers collecting the data. Feedback from the national to more peripheral levels is crucially important, and encourages the creation of a culture of data generation and use.^{13, 1}

There is too much pressure on primary health workers to fill out forms and to report the health status upwards.^{3, 13} Health care workers are overburdened by demands from higher levels. And it is essential that health workers take interest in health information. A major challenge is to get the health workers less afraid of making wrong action. Systems need to be developed in favour of encouraging health action instead of punishing health workers.³²

Methods for information generation

Population-based surveys are today the most used tool to collect health data for calculating indicators. Many indicators commonly cited are based on predicative models rather than on empirical data.¹ Often politicians' wonder where the work should get upgraded and where resources should be allocated in order to improve an indicator.

For local- and sub national management there need to be service records in health facilities. These local records can be used to develop population-based estimates of immunization coverage, maternity care, etc. Local records are necessary for planning future local health work and budgets in hospitals and primary health facilities.^{32, 22} Unfortunately health service data is rarely 100% accurate and should be compared to a house surveys.¹³ Under-or double counting is often a problem in developing countries. A challenge is to optimize registry-work in the service records, so that local health workers can evaluate themselves and have a more cost efficient and target structured way of working.

Capacity

Statistical capacity building is a core need for many countries.¹ The need for people with numeric and statistical skills to analyze the health information data is overlooked in many human resource requirements. This affects the ability to use information.⁴³ Often, the analyzing part is put on the health care workers, who are not trained in information analysis, but in people-care.

Negative attitudes among health workers, for instance that data collection is a waste of time, are harmful to data quality. Motivating data collectors is hence an important challenge. Often the focus lies on how the system works and not on why the system is important. It is also necessary to have good insight on the professional culture and health care organizations, when giving education to the health care workers during HIS implementation.²² Motivating data collectors is hence an important challenge and the implementers need to be aware of the dissonance between the expectations of the commissioner, the producer, and the users of the system.

“Enhancing the quality and use of health data is linked directly to behavioural factors such as the perceived value of health information and the motivation of data collectors and users.”
(Lessons learned for strengthening HIS at district level, conference in South Africa 2004)¹⁸

Human Resources

For a HIS to evolve and be sustainable, there need to be stability of human resources. A major treat to health care in developing countries is what is known as brain-drain, that health care professionals migrate to developed countries where salaries, working and living conditions are much better. According to Medicals Sans Frontiers, an inability to attract and keep health care workers, nurses especially, is one of the greatest challenges to sustaining existing programmes and expanding access to medical care and treatment.²⁵ Some countries which have improved domestic conditions have succeeded in effecting a brain gain by attracting back medical professionals.³⁰

As mentioned earlier, not only is there a need for health care professionals, there is a need for statisticians, system developers, system implementers etc. There need to be continuous training of health care workers on use of computers and HIS software to ensure sustainability. HISP India puts a lot of emphasis on this issue.²⁰

Technological resources

In the setting of a developing country, infrastructure like electricity, the internet and computers are not always accessible. There is often a lack of basic infrastructure.²¹ In some remote parts of countries in Africa, where power-supply is scarce they have fortunately been provided with computers that use solar power.⁹

The software has to evolve and adapt changes that will occur once the health care workers start asking for different indicators, or different functions to evaluate and monitor their work. But this requires trained and motivated staff. Computers alone can never improve decision making.²¹

Financial resources

The last challenge to mention is money. The main problem is that few developing countries have financial and technical resources to implement large-scale survey programmes without external support.¹ The many contributes to the health care and their different interest in health data makes the collection fragmented and without the purpose to make the health care better as a whole.

Research approach

In our field study, we used qualitative method. In the following, we will describe qualitative method in general, and then more specifically our approach.

Qualitative method

Qualitative research method seeks to understand the sense of people's experiences and explore the meaning of social phenomena from the perspective of the people involved.^{17, 23} One of the key strengths of qualitative research is that it studies people in their natural settings.³¹

In a medical setting, quantitative research was, until mid 90's, regarded as the only way of doing scientific research. Qualitative method was considered to be "unscientific", and to be a field of research belonging to social sciences, not to medical research.^{23, 31} After that period, there has been a shift to an understanding of knowledge being more than something that can be weighed and measured. Science is not linked to any specific research method; rather it is linked to the way knowledge is collected and handled.²³

Qualitative method can be thought of as similar to what we do every day; we talk to people and we try to make sense of other people's behaviour in order to interpret and understand them. However, in qualitative method, this data collection is systematic and explicit. Also the conversation is not between equals; rather the researcher is in control of the topics discussed. Qualitative method requires experience and an analysis is that is careful and rigorous.^{31, 17} Ethical issues need to be kept in mind, and anonymity, confidentiality and informed consent have to be thoroughly discussed and ensured.^{17, 21, 31}

Methods

Often, several different qualitative methods are employed in one research setting; both structured and semi-structured interviews, observations, talking to people in an informal setting, reading what someone has written, etc.³¹

Direct observation: for example study how organisations work, how staff interact, their roles, etc. Observations require good observation skills, good memory and detailed, systematic recording. Researcher need to keep in mind that their presence may alter or modify the staff's behaviour and actions.²³ This seems to reduce over time.³¹ Researcher need to be careful on assumptions from periodic and relatively short-term observations. It is important to ensure that a wide variety of people and behaviour are observed on different times of day.

Interviews: Aim is to understand the world from the interviewee's point of view.¹⁷ A hard task is to avoid imposing the researcher's meanings on the interviewee. The interview can be recorded with notes written at the time, notes written afterwards or audio recorder.

- Structured: with a structured questionnaire
- Semi-structured: with open-ended questions that define the area
- Dept: covers one or two issues in detail. Questions are based on what the interviewee says
- Analysis of texts
- Analysis of recorded speech or behaviour³¹

Case studies

Case studies are valuable where a planned change is occurring in an organization. It takes use of multiple methods; staff interviews, observations of meetings and document analysis, in order to obtain comprehensiveness and to strengthen validity. A site can be chosen on the background of being considered to be typical of the phenomenon one want to investigate. The sampling required in this type of qualitative research is different from statistical sampling. The first requires sites appropriate for addressing the research questions; the latter requires a sample that is statistically representative of a population. One major challenge on behalf of the researcher is, when it comes to the interpretation of the findings, to be aware of the danger of bias and making judgements based on own values.³¹

Analysis

In most qualitative research the analytical process begins with the data collection phase. Data collected is used to identify the need and/or shape of further data to be collected. There are three approaches to data analysis:

- thematic analysis which groups data into themes
- grounded theory which is testing explanations in a continual re-analysis
- the framework approach which is very systematic and structured

The aim for the analysis is to develop new knowledge; that the research material leads to new descriptions, new concepts, or new theoretical models.²³

Our research approach

Trivandrum, Kerala

We stayed in India for 6 weeks. Four of them we were working in Trivandrum. In the beginning of our stay we spent quite some time in the HISP office, getting to know the HISP workers, learning more about HISP and how they work in Trivandrum. We were also doing research on the Indian health care system, with special focus on Kerala, and on the Millennium Development Goals, MDGs, and India. After doing background research for some time we went for field trips.

During our field work, we:

- took part of two implementation meetings between HISP coordinators and two health centres. We interviewed the field staff on both occasions.
- followed a Junior Public Health Nurse for two days doing house to house visits
- conducted a structured interview with two Junior Public Health Nurses
- observed one staff conference meeting for a Community Health Centre and one staff meeting for a Primary Health Centre. Interviewed the staff after.
- went for a hospital visit to the most successful public women and children's hospital in Trivandrum
- observed general clinic work at a Primary Health Centre like antenatal care and immunization.

Experience from field visits

The Indian health care workers we met did not speak English very well. We decided to have a checklist of things we wanted to know instead of a list of questions. Both were active asking questions, both took notes, both were responsible for data collection and both had to make sure we had covered the topics on our checklist.

We decided we wanted to get to know one centre, get to know the people there, follow their work/routines in all aspects possible the short period we stayed.

The shape of the field work

The fieldwork can be split into different types of activities: observations and structured interviews. Our focus concerning active observation was to be as much as possible in the field together with the grass root workers. We followed all the different kinds of activity they took part in like meetings, house to house visits, clinic work to mention a few.

Interviews

An important task was making questions before the interviews were held. Before going into the field for the first time we discussed the questions with our advisor in Kerala, Jyotsna Sahay. She told us to make the questions as concrete and practical as possible. Otherwise, she thought that they would be very sceptical towards us, as foreigners. Many researchers from HISP had visited them earlier, and Jyotsna Sahay was afraid that they would feel they were examined on their knowledge of HISP. We then decided to make some questions regarding mother and child health to have as a starting point for asking questions about data collection and how they register and report the numbers. We studied the MDGs carefully, and learned the components of indicators needed for monitoring these goals.

Before interviewing new health care workers we explained our mission and told them: “We are medical students from Norway, University of Oslo. Study general medicine. Our country is close to the Arctic Circle”. We were told by Jyotsna Sahay that they probably wouldn’t know where Norway is, but all of them would remember from school where the polar circle is. “We have 6 months of daylight and then 6 months of darkness. We are here as researchers. We are very interested in public health. We wanted to write about the health system in India. We contacted our professor, and he recommended us to go to Kerala. We got to know HISP in Norway (home), and got very interested in their work in India, especially Kerala. We are staying here in Kerala for 5 weeks.” This intro seemed to be informative for the health workers.

The important interview

The most important interview for obtaining information about how the Junior Public Health Nurses feel about reporting and other aspects of their work was an interview with two Junior Public Health Nurses. The language used was English and Malayalam (local language in Kerala). Location was at the Community Health Centre, Vizhinjam. People present were Lisa, Ingvild, Suneel, and the two Junior Public Health Nurses, we call them Parvati and Nisha for the purpose of this paper. To some extent the Lady Health Inspector and the Health Inspector were also present.

The interview did not quite turn out as we had expected. We managed after some time to do a private interview with two Junior Public Health Nurses, without the Lady Health Supervisor and the Health Inspector interrupting all the time. Originally, we meant to interview one Junior Public Health Nurse at a time, but they did not want to do the interview alone.

Suneel was present the whole session. He helped us a lot by translating Malayalam into English for us, and rephrasing our questions into a more Indian-friendly English. Both the Junior Public Health Nurse spoke English, but not very well, so it was very good having Suneel to translate the discussion in-between the Junior Public Health Nurse’s from local language to English. He doesn’t speak Malayalam, but he understands it. He is Indian, but not from Kerala.

Documenting the material

We didn't record our interviews, but we both took notes. These notes were made into a more comprehensive text the next day. After making the comprehensive text, we discussed the answers we got and our interpretation of the answers

There were several reasons for not using a tape recorder. After dealing with Junior Public Health Nurse's on several occasions, we decided not to do the interviews in a formal setting. A tape recorder could make the settings very formal, and Junior Public Health Nurse's might feel that they were taken in for questioning. We had already presented ourselves as researchers from Norway. It seemed like the staff of the Community Health Centre took us very seriously and put a lot of efforts into giving us the "right" answers. A second reason is that the Community Health Centre is a very noisy place where people come and go. There were no rooms available for conducting private interviews.

Results

India

India has a population of 1,147,995,904 (July 2008).⁷ It is the second most populous country in the world.⁴¹ It is divided into 28 states and 7 union territories.

The climate varies from tropical monsoon in the south to temperate in the north.⁷

India gained its independence from the UK in 1947.

Economics were liberalized in the 1990s, and has grown at a fast rate 7-8% per year since.⁴¹ The major source of economic growth is services, but it accounts for only 1/3 of the labour force. Most of the work force is in agriculture.⁷



From: <http://www.wordtravels.com/images/>

The subcontinent is characterized by large diversities in geographical regions, socio-cultural groups, and health needs.⁷

Religion is mostly dominated by Hindus, 80.5%. But there are also Muslims 13.4%, Christians 2.3%, Sikhs 1.9%, and other 1.8% (2001 census).⁷

Health data

Most of the burden of disease in India is on the poor, - on women, scheduled castes and tribes, especially in the rural areas of the country. There is also an inequity of resources between the advanced and less developed states. Indian public spending on health is amongst the lowest in the world, whereas its proportion of private spending on health is one of the highest.²⁰

- Life expectancy of total population: 69.25 years
- Communicable diseases account for about 38% of the disease burden
- India's maternal mortality rates are among the highest in the world. The country is seriously off-track in meeting this MDG. The major causes of these deaths have been identified as haemorrhage (both ante and post-partum), toxemia (hypertension during pregnancy), anaemia, obstructed labour, puerperal sepsis (infections after delivery) and unsafe abortion.¹⁵

Indicators:^{27, 42}

	Kerala	India	Uttar Pradesh*	Norway
Under five mortality rate (per 1000 live births) 1999-2003	18,4	99,1	121,2	3
Maternal mortality rate (per 100 000 live births)	110	301	606	7
Antenatal care (3 visits) percent 2005-2006	93,9	48,2	29,2	
Proportion of birth attended by skilled health personnel 2005-2006	99,7	48,2	29,2	
Female Literacy rate (percent)	87,7	53,7		

**Uttar Pradesh: One of the poorest states in India.*

National Rural Health Mission, NRHM

NRHM was launched by the Indian government in 2005 in order to: “(...) to carry out necessary architectural correction in the basic health care delivery system.”²⁹

Their plan of action includes: increasing public expenditure on health, reducing regional imbalance in health infrastructure, optimization of health manpower, decentralization and district management of health programmes and community participation.

Their aim in regard to mother and child health is reducing total fertility rate, infant mortality rate and maternal mortality rate.

The mission lasts until 2012.

Kerala

Kerala is located on the south-western tip of India. It has a tropical climate. Kerala is 120 km wide and 550 km long.² The official language is Malayalam. English is learned in school. The largest religion is Hinduism, but there are also Muslims and nearly a fifth of the population is Christian.² Kerala is divided into 14 different districts. Trivandrum, Thiruvananthapuram, is the capital city and one of the districts. It is divided into 17 Gram Panchayats (village), each containing one Community Health Centre.

Kerala has been controlled by different colonial powers like the Portuguese, the Dutch and the British. Vasco da Gama arrived at the coast of Kerala; the Malabar Coast, in the year of 1498.² Kerala is governed by a left-winged party, and was the first state in the world to democratically elect a communist government in 1957.²

Kerala is proud of their reputation for healthcare and education.

Dataflow in Kerala

Junior Public Health Nurse and Junior Health Inspector are responsible for collection health data. Every month this data is consolidated by superiors. A form is generated and passed upwards in the health care system, all the way to the national level.

The dataflow in the primary health care of Kerala is partly managed with computer technology and with handwritten papers. Junior Public Health Nurses and Junior Health Inspectors are often using diary when they are conducting their house visits. This information is then collected and implemented into a handwritten registry. The collected data is registered in the DHIS 2 software at the end of every month at the Primary Health Centre that they

correspond to. There they have access to one computer and use a defined report sheet, which is designed by HISP India.

The Primary Health Centre is then in charge of consolidation of the data from the Sub Centre and the data collected at the Primary Health Centre. All this is then given to the Community Health Centre in paper format. A new consolidation takes place at the Community Health Centre level, where the representatives from the different PHCs get together. The Community Health Centre consolidated report in paper format is then sent to the district medical officer, District Medical Officer.

The public hospitals also report to the District Medical Officer. A final form is generated on the level of the District Medical Officer, which is based on consolidated forms from Community Health Centre and consolidated forms from hospitals. The final District Medical Officer form is sent to the Keralan Government.

HISP, Health Information System Project

HISP is a collaborative action research project started in 1994 by Western Cape University in Cape Town and the University of Oslo. Their vision is to develop and implement sustainable and integrated health information systems that empower communities, health workers and decision makers to improve the coverage, quality and efficiency of health services.⁴⁴ HISP India was initiated in 1999 in Andhra Pradesh, and over time it has expanded, and is now active in the following states: Kerala, Gujarat, Jharkhand, Madhya Pradesh, Chattisgarh, and soon also starting in Karnataka.⁴⁵ Since 1994 HISP has expanded from a pilot project in three Cape Town health districts to a global South-South-North network active in around 15 countries/states with over 200 million people in Africa and Asia.

District Health Information System (DHIS)

HISP has developed District Health Information System (DHIS) software, which is under continuous development. The DHIS is designed to support health workers and managers at all administrative levels services to enter, validate, and analyze routine data, semi-permanent data and survey data. The software has a strong emphasis on using information for local action. DHIS is completely free and open source. DHIS 2.0 is java-based with a MySQL database and is able to run on Linux, which is a free operating system.¹²

The local health workers in Trivandrum mainly use DHIS for data entry and generation of reports. An example of a data element is: number of children vaccinated for measles (during a month). Data elements are structured together into datasets. There are other applications in the DHIS 2, for example charts that compare different indicators from different facilities. These applications are not used by health workers today.

HISP in Kerala

HISP was introduced in Kerala in the year of 2004. The Trivandrum district was chosen as pilot district. At first an analysis of the health care structure and data reporting was conducted. This analysis took place in Community Health Centre Vizhinjam.

Eventually, more CHCs were included in the project. The government of Kerala was very impressed with the work of HISP and chose to invest in the project. HISP hired more people, facilitators, for training of the DHIS software to the health care workers.

A MoU, memorandum of understanding, was signed by the Minister of Secretary health and family welfare of the government of Kerala on August 30th 2008. This is the official document that initiates the implementation of DHIS 2 in all the 14 districts of Kerala.

The HISP Kerala team is now, August 2008, introducing new datasets to all levels (Sub Centre, Primary Health Centre and Community Health Centre, block, and state level). The number of data elements has been drastically reduced in order to use data collection for information. The tradition was to collect all data possible, without generating useful information. Now, all health data collected is part of an indicator, i.e. meaningful information. Junior Public Health Nurses are led to thinking in the line of datasets and indicators, thus making information more available. It is, hence, easier to make budgets and action plans.

During training sessions that were conducted for the HISP facilitators when we were in Trivandrum, the head staff of HISP emphasized the following five principles as a guiding line for introducing DHIS to new health facilities:

- Principle 1: Data elements will only be reported from the facility where the service will be provided. For example: IUD insertions reported only by facility providing the service.
- Principle 2: Data will only be entered in one form and one data element only once in a facility.
- Principle 3: No data will be collected which does not contribute to at least one indicator
- Principle 4: Disaggregated data is best captured through surveys, not routine data: Especially where such data is not part of service provision: For Example: Breakups by cast (Schedule cast or tribes), Sex (Male or Female) and Age (under 1,5,15 etc) in some situations.
- Principle 5: Formulation of a hierarchy of indicators.

The team that is working in Kerala now consists of Jyotsna Sahay, Seid Hussein, Suneel Kumar and field facilitators. Madam Sahay is educated in public health from various Universities. She has been doing a lot of training of health workers during the last year. She was our adviser in Trivandrum. We owe a lot to her for all the help she has kindly offered us!

Fieldwork

Structure of facility, Community Health Centre Vizhinjam

Community Health Centre: 123,000 people
3 Primary Health Centres: 35,000-45,000 people
23 Sub Centres: 3,000-7,000 people

At CHC Vizhinjam, the Community Health Centre, the Primary Health Centre and the Sub Centre is located in the same building.

The Junior Public Health Nurses and local health work

In this chapter we will describe our experiences and observations of the Junior Public Health Nurses. Their main tasks are mother and child health. We will describe house to house visits, their role as coordinators of ASHA-workers, ANC, immunization, promotion of family planning and deliveries.

House-to-house

We had decided to join Nisha on a house-to-house visit for two hours; in total we visited eight houses with her. We were really looking forward to this, to see how the Junior Public Health Nurse communicate with the people in her area and of course how she registers what she does on these visits. Both of us were wearing Indian clothing, salwar kameez – baggy pants with a knee-long blouse on top. Nisha was wearing a saree as it is the work “uniform” of the Junior Public Health Nurses.



At the first house we went to she explained and demonstrated how she takes notes in her diary. She records date, and then house number and area name, both printed on a yellow label above the front door. Next, name of male house holder, his age and occupation, then the name of the wife, her age and finally the number, name and age of their children. The Junior Public Health Nurse classifies the people in every house according to their need of health care.

All the time she explained her work very carefully and thoroughly. She was very eager to explain all aspects of her work, and to give us all the information we wanted. We could ask as many questions we liked.

After taking notes on the members of the household, Nisha took a look at the surroundings. She checked to see if there was mosquito or bee breeding, if there was sun-shed around the house, she asked how they get water: if there if a well, if the water is chlorinated. It should happen every 3 months, every month if there is an outbreak of diarrhoea.

Finally she asks how the blood pressure and blood glucose of the household members are. If they do not know, they are referred to her sub Centre for a check. If they do know, she asks if they go to regular check-ups. Medicine against high BP is free of charge at the Primary Health Centre, but only two types are available. Patients can get other types of medicine in private hospitals, where they will have to pay for the medicine.

When there are children in the household, she asks if they are fully or partially immunized. If there is a young girl in the house she gives her advice on menstruation and risk of anaemia, and she can give iron tablets or IFA tablets to these girls.

We noted that before every house she told us about the people living there; it seems she knows the people in her area very well, a fact that was really surprising to us. We got very impressed of this because her population consists of 4200 people.

She explains that every year she conducts a family survey. Based on the results of this she will make her schedule for follow-up visits.

It is important to note if a family is below poverty line (BPL) and/or Scheduled cast or tribe (SC/ST). These groups are entitled to receiving 1000 rupees for a maximum of two hospital deliveries. The ASHAs play an important role in motivating these women to hospital deliveries.

Her area is a coastal area and people generally are poorer compared to in-land areas. Many of them rent their houses; about half of her population lives BPL and one third are scheduled cast.

ASHA coordinator

As we were standing outside of a house on one of our house-to-house visits, a woman came and handed a register over to Nisha. This woman is an ASHA, accredited social health activist. They report their work to the Junior Public Health Nurse.

Immunization

Every child gets a vaccine card from the hospital after the first shots of vaccines. On her house visit, the Junior Public Health Nurse will encourage the mothers to follow up the vaccination at her Sub Centre. The women can also bring their children to the hospital for vaccination. At the hospital we visited we were told that women came there from both rural and urban areas. “Some find it more convenient to come to this hospital, than to their field facilities”, we were told by the Junior Health Inspector we met at the main hospital for woman and children in the Trivandrum district.

At the Sub Centre level vaccination takes place once a week. They also have outreach programs in order to reach remote areas. They go to pre-schools and they conduct immunization camps every month. The vaccines that are given are BCG, Diphtheria Pertussis Tetanus, Oral Polio Vaccine, Hepatitis, Measles, Vitamin A, and Rubella.

We attended one immunization day at the Vizhinjam Community Health Centre. From our post at the clinic bench we had a broad view of how the immunization was registered. The children and parents went first to the doctor’s table. The doctor did physical check up on the child, while the Lady Health Supervisor and an assistant registered in a register book. After the check up, they went into the Junior Public Health Nurse room where the immunization took place.



At birth the infants get vaccines at the wards of the hospitals. The Junior Public Health Nurse is responsible for giving the shots, the Junior Health Inspector for registration in the book. The baby always gets BCG and Oral Polio vaccines before going home.

The immunization at the hospitals is reported to the district level. The Lady Health Inspector of the hospital collects registered data from all the hospitals wards and consolidates it.

Antenatal care

Women can register for antenatal care only at the Sub Centre. Only one registration is possible. They receive an antenatal care-card, and can then get service from Sub Centre, Primary Health Centre or Community Health Centre. All women should get three sessions of antenatal care.

At Vizhinjam Community Health Centre they have antenatal care sessions once a week. A gynaecologist has consultations with pregnant women. The consultations were brief, she asked for complaints, -ordered a urine examination if there were any specific complaints, and then she did a brief abdominal examination.

The Junior Public Health Nurse was more of an assistant, she wrote down the weight of the women, gave them a tetanus vaccine and IFA tablets. Actually, in-between clinical work, the Junior Public Health Nurse, Nisha, was entering her monthly data into the computer, since it was the last working day of the month.

Antenatal care is registered in one of the many registers the Junior Public Health Nurse's keep at the Sub Centre; tetanus injection, IFA tablets, weight, hypertension, haemoglobin below 11, antenatal care registration and number of women in third trimester is registered.

Deliveries

Keeping the MDGs in mind, were curious to know where deliveries take place. Every health care worker we asked replied the same as the first Health Inspector who said: "100% of deliveries take place in hospitals, public or private", with a great portion of pride in their voice.

On our hospital visit, at the labour room there were 7 delivering mothers and all of these women had oxytocin fluids dripping. There are 14 beds in total at the delivery room. There were midwives, doctors and resident doctors present. Based on this, we assume that skilled birth attendants are present at most of the deliveries in this district.

Monthly there are more than 600 births at this hospital; all are registered in the register book for their ward. At the moment we visited, the book was collected by the birth certificate office. The District Medical Officer consolidate the registered data: number of deliveries in total, number of deliveries assisted with vacuum, and number of C –sections.

Family planning

The Junior Public Health Nurse provides couples who only have one child with temporary methods of family planning, like condoms, oral contraception and IUD. This service is free of charge. Couples with two or more children are offered male or female sterilization. The Junior Public Health Nurse tells about the advantages and the disadvantages for every method and let the couple decide what they prefer. We asked them whether the couples had to ask for it, or if they offered it to all couples after having a baby. They said "some ask, some we ask". Family planning is actively promoted by the Junior Public Health Nurse's in Trivandrum. A public health professional we talked to, argued that family planning is too heavily promoted, - that the Junior Public Health Nurses are spending too much time and resources on family planning.

Eligible couples for family planning are between 18 and 45 years of age. On her house-to-house visit, the Junior Public Health Nurse makes a remark in her notes if a couple is eligible, how many children they have and if they are using family planning. If an eligible couple does not use family planning they are classified as targets for family planning. If a child of the household is getting married, he/she is a target for advice on family planning.

The number of distributed condoms and birth control pills is registered.

Registration and reporting

At Hospitals

The health care workers do not register data such as vaccinations and antenatal care in the DHIS 2 software on the computer. There is only one computer in the hospital and it belongs to the superintendent. They register in a register book and give the patients immunization cards. There was one HISP facilitator responsible of this at hospital, but he quit the job for a

better one some time ago.

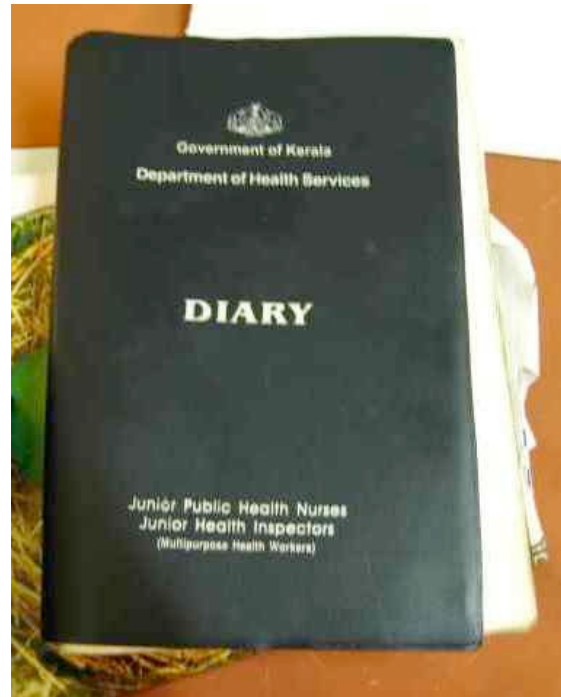
At the birth certificate office two secretaries were working. They had a list of all the last deliveries registered in the hospital. The fathers go here in order to get a birth certificate for their new baby. There were monthly 600 births.

The births are registered in a register book at the labour room. They register number of deliveries and number of deliveries assisted with vacuum or C -sections.

In Sub Centre/Primary Health Centre/Community Health Centre

Junior Public Health Nurses keep a lot of different registers. The first register a Junior Public Health Nurse use is her personal diary. The diary helps her remembering the information she obtains during the house-to-house visits. This information is registered in the different registers at the Sub Centre. One Junior Public Health Nurse listed up the 13 different registers she could remember.

Another Junior Public Health Nurse told us that there were over 40 different registers and that only 5 of these were important. It is also possible that some of the Junior Public Health Nurses only store their information in their personal diary until the Primary Health Centre consolidation day. But we are pretty sure that there is an antenatal care register and an immunization register that are kept as own important registers at the Sub Centre. We can only conclude that there were different ways of keeping the different health data before entering them in the DHIS 2 software.



Another Junior Public Health Nurse told us that there were over 40 different registers and that only 5 of these were important. It is also possible that some of the Junior Public Health Nurses only store their information in their personal diary until the Primary Health Centre consolidation day. But we are pretty sure that there is an antenatal care register and an immunization register that are kept as own important registers at the Sub Centre. We can only conclude that there were different ways of keeping the different health data before entering them in the DHIS 2 software.

Before doing the data entry each Junior Public Health Nurse made their own note. We assume that they went through all their different registers and their field diary to sum up the numbers under the different data elements. Our observations were that they had a little book with the aggregated data. The Junior Public Health Nurses also helped each other with the data entries. They read lines in the DHIS and explained the computer procedure to each other.

There are strict regulations regarding registration, and the Junior Public Health Nurse is supposed to do it the same day as she conducts the house-to-house visit during the office hours. We understood that some of the registrations were sometimes done the day after or even later. This was something that they didn't want their superiors to know. They also explained to us that much of their work is in their heads. They remember the cases and people they deal with.

The Junior Health Inspector and the Junior Public Health Nurse is responsible for reporting different data. The Junior Health Inspector is mainly responsible for sanitation and the Junior Public Health Nurse for mother and child health, MCH and RCH. Yet, they are both multipurpose health workers, so they both collect data on sanitation, fever cases and MCH.

Every afternoon between 2-4 p.m. there is a meeting at the Sub Centre, where the Junior Public Health Nurse and the Junior Health Inspector get together to exchange details from

their work that day. The Junior Public Health Nurse will report fever cases and general complaints to the Junior Health Inspector and he will report pregnancies and antenatal care and un-immunized children less than 5 year to the Junior Public Health Nurse. There is little chance that the Junior Public Health Nurse and the Junior Health Inspector register the same data, if they work close together.

Births shall only be registered and reported from where delivery takes place, that is: birth in Sub Centre registered in Sub Centre line listing, birth in hospital in hospital register.

The Junior Public Health Nurses find registration important. On our question on why registration is important, they replied that it is necessary to have these field details. As they say: “without registration, how do I know the people?” Registration also makes their work easy to follow up. They have a reference if something is wrong, like a pregnant mother loosing weight; it is good to have documented the weight during the first consultation when she comes for the next. We asked if they registered data for governmental use, and they say they keep the register books for themselves and not for the government.

The computer data entry, on the other hand, is mostly done to please the government. NRHM wants them to enter data directly into computers.

How work is planned

HISP India is very dedicated to bringing about a change in the mindset of both decision makers and grass root health care workers in India when it comes to the use and collection of data.²⁰ Traditionally, data has been collected for data analysis, now data should be collected for the purpose of information analysis. HISP India is promoting a change from thinking in terms of aggregated numbers into thinking in terms of indicators. We wanted to know if the Junior Public Health Nurse’s know what an indicator is, and if they use indicators to evaluate and monitor their work. During the interviews we learned that they use targets, rather than indicators to monitor their work, but that they use some sort of indicators to calculate the targets for their work.

Targets for work

Every Junior Public Health Nurse makes a yearly action plan. The Lady Health Inspector is in charge of approving these action plans. She keeps the action plan of every Junior Public Health Nurse in her archive at the Community Health Centre. The action plan covers the performance last year in all Junior Public Health Nurse activities; like antenatal care performance, number and type of immunizations carried out, number of vitamin A and IFA tablets handed out, number of couples receiving family planning, etc. Then it indicates the planned performance for the year of the action plan. This number is estimated from house surveys done by the Junior Public Health Nurses, a national census in India and a formula of birth rate, provided to them by the government. This way they get a more precise estimate.

Birth rate is used to calculate number of people receiving services in MCH or RCH. Birth rate equals total birth last year divided by total population this year times 1000. They calculate birth rate for need assessment. For example antenatal care equals total population times birth rate plus 10 %, which accounts for wasted pregnancies, i.e. medical termination of pregnancies, abortions and foetal defects. The formulas were explained to us by a Health Inspector.

They told us that they are preparing this action plan because of community needs. They receive help from NGOs, teachers, ward members and Anganawadi workers. In previous years they got fixed annual targets from District Medical Officer. Now Junior Public Health

Nurses told us that they prepare their own targets based on the formulas, and report these to the DPM, district program manager. The DPM is the NRHM coordinator. This is the procedure for targets related to MCH and RCH. This is known as the “Target free approach”. The Junior Public Health Nurse get no fixed targets from the national level, because the Junior Public Health Nurse are the fieldworkers and they know the field.

The monthly targets are simply the yearly targets divided by 12. They say that every month they compare their accumulated number with these calculated numbers.

Knowledge of indicators

In our first field visit, we asked the Junior Public Health Nurses and a Health Inspector what they mean by indicators. First the Health Inspector mentioned what indicators is a measure of, how you use them; health awareness, evaluate status of community, that indicators make it easy to compare between states. Then he started mentioning what indicators there are: birth rate, death rate, crude death rate, and maternal mortality rate. The Junior Public Health Nurses nodded their heads, and were repeating what he was saying.

We asked how infant mortality rate (IMR) is different from number of infant deaths. The Health Inspector replied that they do not calculate IMR, that it is a number you read in newspapers, or learn to deal with when you study for a public health course. He knew the correct definition of IMR according to the MDGs, but commented: “We are not asked to calculate this”. “It’s done at the state level; if it’s high they’ll tell us”. We asked if he had ever asked for indicators from the state, but he had not.

At another occasion we asked the block coordinator if the Junior Public Health Nurse use indicators to plan or evaluate their work, and she replied that the district medical officer, District Medical Officer, calculates indicators. She doesn't think that the Junior Public Health Nurse will start using indicators; she said that they would still use accumulated numbers to plan their work.

Budgets

While we were talking to a Health Inspector, we learned that money related to MCH and RCH is provided based on action plan from the government. Funding is distributed through NRHM, then the district health supervisor, the district medical officer and finally to the Community Health Centre. Percentages, like share of children below five years, from the national census is used for resource allocation and making of the health budget.

National health concerns

We wanted to find out if the field workers reflect about their work in a broader perspective. The Junior Public Health Nurses know that India is concerned with MMR and IMR. They said they get knowledge on public health from TV and newspapers. Some Junior Public Health Nurse get updated in knowledge courses, the Lady Health Inspector will also inform them on the progress of their district after a monthly conference she has at the district level.

They know that Kerala is well off health wise compared to other states in India. The Junior Public Health Nurses meant that it is because education level is high. We were told that the main focus of NRHM in Kerala is upgrading Community Health Centre, mini Primary Health Centre, and Sub Centre, get more doctors, and promote rural health, ASHA workers, decentralization, and interconnection of all activities in health. Kerala has a system of activity coordination committees consisting of ward members and Junior Public Health Nurses that get together once a month to discuss ward health problems and challenges.

Evaluations and meetings, staff conferences

Quarterly, half a year and annually they review their work; they look at their achievements compared to the targets. There are monthly staff conferences at the Community Health Centre, where all from the Primary Health Centre and Sub Centre come. There is also a District Medical Officer review meeting.

They use accumulated numbers when they evaluate.

We asked if it is useful to do reviews and were told that it is useful for the Health Inspector to look at achievements of the Junior Public Health Nurses; it improves the quality of their work.

Evaluation at the Primary Health Centre

We had planned to join an evaluation meeting at the Primary Health Centre we observed. We had thought that this would be a very formal meeting, but when we arrived at scheduled time, Nisha was the only one there, doing data entry at the computer. After some time the other Junior Public Health Nurses were coming, they were all preparing some papers to hand in to Lady Health Supervisor: advanced program for the following month, program for the last month, and achievements and targets for MCH and RCH of their Sub Centre. For example, one Junior Public Health Nurse would be planning that for Sept 2008 she spend 19 days of house visits (where she will visit approx 25 houses, then office work 2-4 p.m.), 4 days of holiday, 2 days of staff conference, 1 day immunization out-reach program day, and every Sunday is a day off.

At the consolidation meeting, the Lady Health Supervisor and Health Inspector were in charge. Six Junior Public Health Nurse, four Junior Health Inspector, Ingvid and Lisa were also present at the meeting; we sat on benches forming sort of a circle around the persons in charge of meeting.

All attendees had to sign a book.

They were planning next month's program;

- They're conducting a School Health Program,
- Discussing vasectomy (seems to be a concern at state level in Kerala),
- Vector Study program: 4 every month, 4 Junior Health Inspector and 2 Junior Public Health Nurse every time.
- Community health education, a conference on eye donation will take place this month, last month it was on breastfeeding

After 45 minutes, the meeting was over. We were surprised how short it was, surprised they didn't discuss and evaluate last month's work, especially since the Junior Public Health Nurse had been stressing with finishing their paper in the morning. Also because we'd been told it was an evaluation and planning- meeting. The meeting was in Malayalam, but the Health Inspector told us the topics of discussion. The Junior Public Health Nurse took part in the meeting/discussions.

After the meeting, Lady Health Supervisor sat with two Lady Health Inspector from the Mini Primary Health Centre's and consolidated from the three Primary Health Centres. They each had a copy of a printed form from their Primary Health Centre. Lady Health Supervisor was manually making the consolidated form.

We asked to see how the form looked, and got to see the Community Health Centre form from July.

Many columns were filled in, but many columns were empty or had a 0-zero- in them. The forms obviously contain too much information, info that they are not collecting in the field, at least not in every Community Health Centre, Primary Health Centre.

Staff conference at Community Health Centre

As the meeting was in Malayalam, we were lucky to have a local facilitator from HISP with us to this meeting.

MO (a woman) was the person in charge of the meeting.

Among others, there was an interesting discussion on measles. The MO pointed out that due to a lack of immunization of measles; cases of measles are appearing in the district of the Community Health Centre. They have cases of measles in the hospital of the Community Health Centre. MO was strict and told the Junior Public Health Nurses that they have to visit patients from their area in the hospital. Some patients go directly to the hospital, and the Junior Public Health Nurse hence have no idea which diseases/problems she's dealing with in her area unless she pays a visit to the hospital. MO said the Junior Public Health Nurses were only interested in the field; they have to understand that there are cases of disease that they are not seeing in the field.

Monthly there is a conference at the District Medical Officer office and after there is a supervisory meeting at the district level. Lady Health Inspector and Health Inspector have to attend this meeting, but last month there had been absence of staff in that meeting. One man that was absent said it was because he had another meeting. He was strictly told by the MO either to come to the meeting or to take casual leave (non-paid leave).

Computerization

Opinions of Junior Public Health Nurses and a Junior Health Inspector regarding computers and data entry

We wanted to know why computer is important for them in their daily work. We got answers after the Community Health Centre consolidation meeting: “When NRHM says, we do”. “No need to keep registers now data entry directly in computers”. “Saves time”. “Directly report”. The Junior Public Health Nurses said they have lots of work: maintain registers, incentives for ASHA, bills, ASHA programs, NRHM committee, and saw computers as a way of reducing the workload.

On the question if they like computers, the Junior Public Health Nurses replied: “Yes, easy to use”, “Before we didn't know, but through HISP India: now all Junior Public Health Nurse know computers”. They also commented that there was still a lack of training. Training needs to be provided continuously, this is the only



way they will learn more and be able to catch up with the software. They said they were motivated to keep working with computers. They said that they preferred the computer reports, because that way they have a back-up of files, computers are easier to use if they want to find old data, because paper will get damaged. They wish to implement computers also in the Sub Centre, now they're only in the Primary Health Centre's.

They explained to us that some elderly women are afraid of computers. These are the ones complaining, they told us. The complaining is related mostly to the fact that they are afraid, they are not confident in the use of computers, they are afraid that it will break. We were told that the regional coordinator from HISP India helps the elderly women.

All Kerala ladies know more about computers now, compared with 3-4 years back, they told us. Block coordinator thinks that when all institutions get Internet the Junior Public Health Nurse will send mail with their data to the District Medical Officer.

On one occasion we got the chance to talk to a Junior Health Inspector for some time. He said that he liked computers very much, and that computers are easy to use. He also said that the forms they use are too long, that there are too many columns. He said that it was so many lines on the reporting format that it is difficult for elderly colleagues to see which line they are entering the data into. He tries to help these women, Senior Junior Public Health Nurse's, with data entry, reading them the lines they have to enter data into. He said that they were using both the paper format and the computer format, because when entering data into the computer it could happen that someone entered a number into a wrong data element box. The outcome of such a case is a false report from the computer; therefore they enter data manually to prevent such cases.

We asked the Junior Health Inspector if he thought that the older Junior Public Health Nurse disliked the DHIS 2 and computers. He replied that the older Junior Public Health Nurses were motivated, but they need more time to adjust to the system. He was very motivated, and said that he thought that in one- two years maybe they all would only make a computerized report 6.

Discussion

In the following, we will compare the basic components of HIS, elaborated under the chapter HIS –an overview, to what we experienced and witnessed in our field work in Trivandrum, India.

Study limitations

First and foremost in this discussion we would like to emphasize the limitations of our study. We are fully aware that the following are very important limitations to the conclusions we will draw in the following discussion:

- language barriers
- cultural differences
- the short period we actually spent in the field
- this is our first field study
- our limited knowledge about health information systems before leaving for India

Accuracy

We believe that data collection done by the Junior Public Health Nurses is not always 100 % accurate. There are many factors supporting this statement. The Junior Public Health Nurses have many patients and little time for registering. There are very few computers; only the Primary Health Centres have computers. The Junior Public Health Nurses told us that they have their areas in their head. We were very impressed with their memory of the people on their routes, but it is a problem when not all information is written down in their diary or registered in right time. They also said that registering not always was done during office hours. It is possible that some of the numbers reported in by Junior Public Health Nurses are estimates on what they remember from the field and not empirical data.

When we were in the field with HISP India and Jyotsna Sahay was presenting the new data sets, time after time she emphasized, that only the person conducting the service was responsible for reporting it. A typical example is antenatal care registering. Antenatal care could be done at Hospital, Community Health Centre or a Primary Health Centre. The problem arises when the Junior Public Health Nurse hears about an antenatal care check up of one of the women in her area. She might then register this antenatal care in her register, even though she has not conducted it. The same scenario is possible for immunization. These situations cause double reporting.

The last point we want to mention is the user interface of the DHIS 2. A Junior Health Inspector pointed out to us that old ladies had problems with reading the data entry lines. The lines were small and easy to mix up. So also here an inaccurate number could be registered. We know now that there recently has been a big cut in data entry lines and that a new interface has been introduced.

Data gathering

Every immunization got registered both in the DHIS and their registers. They had made columns for first dose, second dose and so on in their register books. This is unnecessary reporting. It is enough to write down the final shot for the different kind of vaccines. For instance, measles immunization is the only necessary indicator concerning the MDGs. With

the new data sets, this type of data collection is decreased drastically. The babies have their own vaccination cards, where the vaccine shots are registered.

The old data sets also had break-ups into scheduled cast and scheduled tribe, although the field workers did not make this break-up when reporting.

These are both good examples of how data is collected without purpose.

Education and motivation

One way of doing more with fewer resources is to make the local managers in charge of the budgets and planning.

*“A key strategy of HISP is to develop systems that are both scaleable and sustainable through a process of ongoing and continuous capacity building of staff at all levels. A main focus of these activities is at the grassroots level to enable health staff in the field to eventually assume independent ownership of managing their information processing needs and to be able to use the information to support their everyday activities.”*²⁰

It is more likely that the local managers can control local resources with better results, than the government. The local managers including the health care workers need the skills and the education to manage this.

The motivation among health care workers concerning registering health data is of utmost importance. HISP has held a lot of successful workshops where health care workers were taught the DHIS software and how to use a computer. Junior Public Health Nurses told us that it was easy to use computers, and that even the old Junior Public Health Nurses managed to use them. The reasons **why** the health care workers learned these skills and performed them is a core point in the decentralization philosophy.

We asked in our interview with the two Junior Public Health Nurses why they did data entry. They answered, they did it to please the Government. We find this answer to be a problem. It is a problem because it does not follow the decentralization philosophy. It emphasizes that there is very little feedback to the local health workers.

We feel that the health workers should be taught to think more **why** and not **how** they enter data in a HIS. The health care workers need to focus more on local management and decision making. The local health staff should ask questions like: “What are the health trends in my area?” and “How can we do useful changes with the resources the government has given us?”

The top managers need to be more proactive in introducing a new way of thinking regarding health care planning, data registration and health data use. But as the HISP team explained us, “baby steps” is the way of getting things done in India. It takes time to make a radical change in the mindset of thousands of health care workers and politicians in India.

India has a large bureaucracy and ways of doing things are often “cast in stone”. The common Indian is concerned with following rules and taking orders from supervisors. We witnessed a very visible and strong hierarchy in India. Indian culture also is very accepting. We believe that they do not dare to give their own thoughts validity. The Health care worker needs lots of encouragement and education long after the software and the computers are installed and training has been received. We witnessed in a training session HISP gave new facilitators, that they were very silent and afraid of taking leadership in the group, both the women and the men acted like this.

To be a successful implementer of HIS in developing countries you need a lot of positive

thinking, hard work, belief in the system and a broad insight on how the health care worker think. The health care workers and the implementers are living by different philosophies. Health care workers are often more concerned with getting the work done and the implementers are often more concerned with using the system correctly and making the system better. It is difficult for a software engineer to imagine how much work and responsibilities a health care worker like a Junior Public Health Nurse has. It is hard for the Junior Public Health Nurses to find the time to discover the possibilities with HIS. HISP Kerala has spent very much time in the field, getting to know the routines of a health care worker.

Computerization

A Junior Health Inspector told us about elder Junior Public Health Nurses, who were afraid of using the computers. They were afraid of ruining the system and losing their job. We do not really understand the origin of this fear; whether it is because it has been like this that you lose your job if you make an error, or if it is a fear of new technology, a fear of the unknown. Most probably it is the latter; we heard that through support, this fear became weaker.

Other Junior Public Health Nurses told us that they wanted more education on computers; they want continuous training and support on using computers to be more confident. Resources concerning teaching and follow up of the health workers are most necessary. A future hope is the young women of Kerala. IT is one of the most prestigious things to work with. We were told that they now learn how to use computers in most schools in Kerala.

Evaluation and feedback

Feedback from higher to lower levels of the health sector is a core function of a HIS. We experienced through our work with HISP India that they put a lot of emphasis on strengthening management and decision-making at the local level. As mentioned earlier, it had been a shift at the local level from receiving fixed annual targets from the District Medical Officer into making their own.

Still, we do not believe that the data first and foremost is collected for local management; there is a lot of focus on data collection for “government”. The quality of work seems to be linked to every health care worker and their own personal motivation. The Junior Public Health Nurses said they keep registers for their own sake, to keep an eye on the field. Reporting their numbers, on the other hand, is a duty, for the sake of the government.

We witnessed how they were preparing sheets of achievements before the Primary Health Centre staff conference, but it was done in a hurry. The Lady Health Inspector collected these sheets, but we do not know whether she reviewed them, or just put them right into the archive, for record keeping. Hence, we do not know the extent of self-evaluation or feedback from the immediate supervisor. At the Primary Health Centre staff conference we saw no sign of evaluation of collected data from the past month; they were rather planning next month’s work.

At the Community Health Centre staff conference, the focus was on achievements of targets. The MO, person in charge of the meeting, had people go through the achievements from the different facilities.

Mavimbe, Braa and Bjune, learned in Mozambique that there is too much focus on targets. Health care managers are too concerned with targets. In Mozambique, the health workers were even threatened by salary cuts when they had not “performed well” i.e. reached their

target. Hence, an emphasis on **support mechanisms** as a key to improving data quality is necessary. The supervisors should not only monitor targets, but also give adequate feedback, even do in-job training on monitoring indicators.²⁴ A reason for thinking only in terms of targets might be that donors want accountability, and achieving targets, even reaching higher numbers than the original targets, looks good on paper.

The MO in Vizhinjam was never threatening the workers not achieving their targets; rather, she was saying that the person first reaching the target would receive a present. Also, she was concerned with how focused the Junior Public Health Nurse's are on the field. She was reminding them to come to the hospital to get a broader picture of the health status in the area. In order to provide good quality health care, a Junior Public Health Nurse should know of cases of for example measles in her area, and take the necessary precautions.

In regard to feedback from higher levels; we believe that there is very little. We know that there is a staff conference at the level of the District Medical Officer, we had planned to join this meeting, but we were told that there would merely be exchanging of numbers, no discussions or evaluations.

The District Medical Officer level is responsible for making indicators based on performance. The indicators are not reported back to the different facilities, the trend is rather that if you perform badly, i.e. report few cases, you will be told, but if you perform good, you will hear nothing. We asked a Health Inspector if he had asked for "his" indicators, but he had not, and it seemed he did not see the use of it either.

In the different staff conferences we attended, there never was talk about indicators, nor did they compare the health status of different areas. One advantage with thinking in terms of indicators is that it is easier to identify problem areas, and act rapidly to new challenges. If, for example, one area is doing well, and another area is struggling with bad health indicators, one can transfer resources like medical aid and staff between the two. Indicators should therefore be used actively at lower levels of the health care system, in order to achieve more efficient local management.

All in all we got the impression that things were running well. People know their area of responsibility and act thereafter. We feel that sessions of evaluation, reflection about the quality of their work, is lacking. The focus seems short-sighted. We experienced the work of the health professionals in regard to HIS, as data-, rather than action-driven to a large extent.

Resources

Human

Health care professional in Kerala have a heavy workload, - they do house-visits, have clinic days and outreach programs, register their data, report the data, attend staff conferences and computer/software training sessions. We learned that a government job is a good and safe job. Still, in all the health facilities we visited, there were vacant positions, both for health care professionals and, in the hospital, for a HISP facilitator. We were told that it is normal for a doctor to work daytime in a public clinic, and night-time at a private clinic, in order to make more money. NRHM has a focus on the shortfall of manpower in the primary health care, especially the lack of specialists at the community health centers.²⁹

According to a recent article, brain drain is reversing in India. This is due to improvements in healthcare and quality medical education, says the Union Health and Family Welfare Minister Anbumani Ramadoss.⁴⁶ This is good news, as long as not all the home-coming doctors will go directly into private health sector, and henceforth more inequality in health services.

There are many system developers in India, but they might not be that interested in working in the public sector when multinational companies are many and salaries are higher.

Financial and technological

HISP has been financed through different contributors.⁹ When we were in Kerala, a memorandum of agreement was signed between HISP India and the state government, so from then on Kerala state would be responsible for financial matters regarding HISP implementation. HISP India could then precede the state-wide implementation by hiring new trainers and buying computers to all the health facilities. Remember that the hospital only had one computer.

Access to the internet would have made it easier for the health workers to report their forms upwards. They would not have to physically meet and fill in the forms together. Forms could rather have been generated from e-mailed documents. Then the meetings could have paid more attention to information analysis, not just adding numbers as it is now.

Electricity is an issue in India. There were power cuts in Kerala for half an hour every night we were there. The reason for this was little rainfall, which led to less hydroelectric power. Half an hour is not that much time, but in the neighbour state, Tamil Nadu, there were power cuts for four hours many days.

Conclusion

- Motivation towards the importance of data collection needs to be strengthened. There should be more focus on why data collection is important, not only how to do it.
- The local health care workers need ownership towards their health data in order to improve local management.
- Today, the data collection done by the Junior Public Health Nurses is not 100 % accurate.
- Feedback from national level and state level to more peripheral levels has to be improved.
- The data-flow should be more action –, than data-driven.
- Knowledge towards computers is getting better.
- In terms of resources, there are too few computers, and technology standards are far behind western. There is still a shortfall of manpower.

References

1. AbouZahr C, Boerma T. Health information systems: the foundations of public health. *Bulletin of World health organization*. August 2005. 83 (5)
2. Abram D, Edwards N, Ford M. *The Rough Guide to South India*. New York-London-Delhi: Rough Guides, 2007.
3. Braa J, Hanseth O, Heywood A, et. al. Developing health information systems in developing countries: the flexible standards strategy. *MIS Quarterly* 2007; 31: 1-22
4. Braa J, Hedberg C. Developing District-based Health Care Information Systems: The South African Experience. In *Proceedings of the IFIP WG9.4 Conference on Information systems Flows, Local Improvisations and Work Partices 2000*. Cape Town, South Africa.
5. Braa J, Muquinge H. Building collaborative networks in Africa on health information systems and open source software development – Experiences from the HISP/BEANISH network. *IST Africa conference, Namibia 2008 Mozambique*, 2007
6. Chilundo B, Aanestad M. Negotiating multiple rationalities in the process of integrating the information systems of disease-specific health programmes. *EJISDC* 2004; 20, 2, 1-28 www.ejisdc.org
7. CIA. *The World Factbook*. <https://www.cia.gov/library/publications/the-world-factbook/geos/in.html> (30.01.2009)
8. Das G. *India Unbound From Independence to Global Information Age*. India: VIKING by Penguin Books, 2000.
9. Dvergsdal EY. *Notat om Helseinformasjonssystemer og HISP*. Norad AHHA. (04.06.2008)
10. Færøvik T. *India: Stevnemøte med sjebnen*. Oslo: Cappelen, 1999.
11. Grøholt E, Hesselberg Ø, Alvær K. et. al. Hva vil det si å overvåke befolkningens helse? *Tidsskr Nor Legeforen* 2008; 128: 2470-71
12. Hafsdal K. *Building participatory networks for HIS in a developing country context*, Master thesis. University of Oslo: Department of Informatics, 2006
13. Health Metrics Network. *Framework and Standards for Country Health Information Systems*. Second edition. ISBN 978 92 4 159594 0. Geneva: WHO Library Cataloguing-in-Publication Data, 2008.
14. Health Metrics Network. WHO, <http://www.who.int/healthmetrics/about/en/> (07.12.2008)
15. India.gov.in, http://india.gov.in/sectors/health_family/maternal_health.php (08.08.2008)
16. International Planned Parenthood Organization. <http://www.ippf.org/en/What-we-do/Advocacy/Targets+and+indicators.htm> (28.01.2009)
17. Kvale S. *Det kvalitative forskningsintervju*. ISBN 978-82-417-0807-7. Oslo: Gyldendal Norsk Forlag AS, 2001.
18. LaFond A, Siddiqi M. *Routine health information network (RHINO), second international workshop on: Enhancing the quality and of routine health information at district level*. Eastern Cape South Africa: October 2003.
19. Lankinen KS. *Health and disease in developing countries*. London: Macmillan, 1994.
20. Lewis J. *Understanding "Hybrid Knowledge" in the context of health information systems in developing countries: Case studies from the Indian public health sector*, Upgrade document. University of Oslo: Department of Informatics, 2008
21. Lippeveld T. *Routine Health Information Systems: The Glue of a unified Health System*. Keynote address at the *Workshop on Issues and Innovation in Routine Health Information in Developing Countries*, Potomac, March 14-16. Washington, DC: JSI; 2001.
22. Littlejohns P, Wyatt JC, Garvican L. Information in practice. *BMJ* 2003; 326:860–3

23. Malterud K. Kvalitative metoder i medisinsk forskning -en innføring. ISBN: 82-15-00275-7. Oslo: Universitetsforlaget, 2003.
24. Mavimbe J, Braa J, Bjune G. Assessing immunization data quality from routine reports in Mozambique. BMC Bio Med Central Public health 2005; 5:108 www.biomedcentral.com
25. Medecins sans Frontieres. News.
http://www.msf.org.uk/Retaining_health_workers_the_basics.news (22.01.2009)
26. Millennium Developmental Goals. <http://www.un.org/millenniumgoals/> (29.01.2009)
27. Millennium developmental goals report 2007. India country report.
http://mospi.nic.in/rept%20_%20pubn/ftest.asp?rept_id=ssd04_2007&type=nsso
(29.01.2009)
28. National Rural Health Mission, NRHM. <http://mohfw.nic.in/NRHM.htm> (29.01.2009)
29. NRHM <http://mohfw.nic.in/NRHM/Documents/NRHM%20Mission%20Document.pdf>
(30.01.2009)
30. Pang T, Langsang MA, Haines A. Brain Drain and Health Professionals Global Problems needs global solutions. BMJ 2002;324:499-500
31. Pope C, Mays N. edt. Qualitative research in health care. Third edition. Oxford: Blackwell Publishing Ltd, 2006
32. Sandiford P. Does data mean decision. Health Action Issue 3 1992; pp6-7
33. Sauerborn R, Lippeveld T. Chapter 1- Introduction. In: Lippeveld T. et. al. Design and implementation of health information systems. ISBN 92 4 1561998. Geneva: WHO Library Cataloguing-in-Publication Data, 2000
34. Sauerborn R. Chapter 3 –Using information to make decisions. In: Lippeveld T. et. al. Design and implementation of health information systems. ISBN 92 4 1561998. Geneva: WHO Library Cataloguing-in-Publication Data, 2000.
35. Stene-Larsen G, Stoltenberg C. På sporet etter dagens helsetall. Fagtidsskriftet HMT 2007; 6: 5-7
36. Stoltenberg C. Dagens helsetall. Tidsskr Nor Legeforen 2008; 128: 15
37. The Economist. Country Briefings. www.economist.com/countries/india/profile.cfm?folder=Profile-FactSheet (29.01.2009)
38. The Universal Declaration of Human Rights. Article 25. UN
<http://www.unhchr.ch/udhr/lang/eng.htm> (28.01.09)
39. Tully M, Wright G. India in Slow Motion. India: VIKING by Penguin Books, 2002.
40. Williamson L, Stoops N. Topic 8. Chapter 8. HISP. Using information for health. Bangalore. IFIP 9.4 Conference. 2001
41. World Health Organization. India. Country Cooperation Strategy 2006-2011.
http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_ind_en.pdf (28.01.2009)
42. World Health organization. WHO statistical information systems.
www.who.int/whosis/en/ (28.01.2009)
43. World Health organization. Health and development policy. High level forum on the Health Millennium Development Goals. www.who.int/hdp/hlf/en/ (29.01.2009)
44. www.hisp.org (28.01.2009)
45. www.hispindia.org (28.01.2009)
46. www.medindia.net, <http://www.medindia.net/news/Reverse-Brain-Drain-in-Indian-Health-Sector-46021-1.htm> (28.01.2009)