

## FROM INFORMATION FOR DECISION MAKING TO INFORMATION FOR KEEPING CORE KNOWLEDGE UPDATED – HEALTH MANAGERS WHO KNOW THEIR POPULATION

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**Abstract:** This study pointed out how health information is gained and applied for action. Computer support for health management consists of reports of health indicators, which are supposed to be used for deciding upon changes in the health services. Qualitative case studies of low level health managers of two developing countries, on the other hand, showed that instead of checking such information when decisions are made, health managers rather tend to “know their population and other health related issues” which means knowing the different villages, communities, households or even patients in small clinics. This tacit knowledge is what they base their managerial work on. Having such a conceptualisation of their prime tacit knowledge corresponds to findings from other practices. This embedded knowledge is developed through accumulation of learning from their routine practices and their close interaction with the community. Besides, geographical information structure was implemented. This local knowledge can also be used by district and other higher health managers for different purposes.

**Keywords:** use of information, health workers, management information systems, learning, geographical information systems, Ethiopia, South Africa.

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## 1. INTRODUCTION

There is no doubt that timely use of the reliable health information is essential to make informed decisions, set priorities, use scarce resources effectively and improve the quality of health services or track epidemics. However, a number of researchers have emphasized that health information systems (HIS) in most developing countries are inadequate in providing the needed management support (Heeks, 1998). In recent years, different strategies are designed in order to combat the problem related to HIS of developing countries. For example, computer based management information systems in the health sector have been implemented with the aims of providing “information for action,” assuming that when managers take some action, it is, or at least it should be, based on indicators which numerically show the health and health services status. Even though every health worker collects numerous data routinely, (Braa & Blobel, 2003; Heywood & Rohde, 2002), few incidences of such action based on indicators have been reported, however, and there has rather been a call for more management training to learn how to “use information.”

Nevertheless, observations that health indicators are presented and discussed in meetings (Galimoto, Hamre, Kaasbøll, & Sandvand, 2008) and frequent observations that data is presented as posters on walls, even in rural health posts in Ethiopia (Damtew & Kaasbøll, 2008) points that health information is included in health managers’ and health workers duty, possibly without being directly linked to decisions.

Studies of such work indicated that expert practitioners have generated a large bulk of tacit knowledge, which enables them to come up with best solutions, detect the “deep structure” of a problem, framing a situation through many domain-specific and general constraints, monitor their performance, choosing strategies, exploiting opportunities, and all of this with minimum effort (Chi, 2006). Expertise can be developed through prolonged participation in a community of practice (Lave & Wenger, 1991), and Nonaka (1994) points to internalisation and socialisation as necessary knowledge transformation processes. The knowledge created in such communities has been characterized as tacit and embedded (Lam, 2000).

Tacit or indigenous knowledge can be defined as the systemic body of knowledge acquired by local people through the application of experiences, informal experiments, and intimate understanding of the environment in a given culture (Rajasekaran, Martin, & Warren, 1994). Dreyfus and Dreyfus (Dreyfus & Dreyfus) point to that tacit expert knowledge is composed of a large number of cases, in contrast to the smaller set of general principles which novices have read in textbooks. Bédard and Chi (1992) maintain that experts sort problems according to the ways that they use to solve them, while novices rely on more surface features, e.g. the types of objects involved.

In line with these literatures, two cases of fieldwork were re-examined to see whether health managers had concepts for their tacit knowledge, and whether knowing such concepts could help out finding their information needs. Based on this our research question is

What is the role of tacit knowledge in the day to day practices of health managers and in the implementation of health action within the community?

## 2. HEALTH MANAGEMENT

Some practices are dominated by professionally educated cadres, such as nurses and doctors. Managers, janitors and home based care takers are examples of practices where no particular

education is needed, but where the information needs may be quite as high as in the work of professionals. Core knowledge areas are therefore independent of formal education.

The nurses have a somewhat more stable domain, since the patients normally stays for more than one shift (Kaasbøll, 1987). Therefore, they mostly have a “total picture of the patient,” achieved through care, medication, reporting and discussing, enabling them to react adequately to emergencies in the absence of documentation (Kaasbøll, 1987). This can point in the direction that the tacit knowledge has a core that is used in particular when the practitioner does not have documentation available. Further, this core concerns the domain of their work rather than the means and material used to achieve results or the textbook procedures and regulations. Health is more stable, and except for possible emergencies like drinking water pollution, the finest resolution for change of health status in a community is a month. Health managers could therefore refine their domain competence over a long period of time.

The domains of health managers could be 100+ indicators for 20 geographical areas over 12 months times a number of years, multiplying to tens of thousands of data. The daily number of data for some other professionals, for example, for meteorologist is smaller, but still substantial calculations and statistical analysis can be made on these data. On the other side, the health extension workers of Ethiopia, who are living in the rural areas within the community and provide essential health care, have basic knowledge about the population in their respective vicinity (Damtew & Kaasbøll, 2008).

A community of practice requires that the members work closely together on a common task. While this may be the case, for example, for engineers collaborating on constructing a bridge or an emergency team treating a patient, much work is carried out near to the community for shorter or longer periods. Hence, many practitioners take great care to keep their membership in the community as they spend most of their time with customers (Orr, 1996). The health managers work with people around large parts of the day. Normally, hardly any of these are also health managers, so the opportunity for maintaining a community of practice is limited to a monthly meeting when all colleagues in the district meet. The study in Ethiopia proved to be an exception from this rule (Damtew & Kaasbøll, 2008).

Two previous studies have addressed the health workers' information needs, concluding that they needed information concerning patients, while the statistical data collected in the health information system were of less importance to them (Thompson, 2002; Østmo, 2007). Lippeveld et al (1997) also stressed that much of the information recorded by health workers in developing countries are not relevant to the tasks they perform.

### **3. METHOD**

A qualitative case study was carried out in rural Ethiopia, where 47 interviews and two observations of meetings took place. Most of the studied subjects were health extension workers, who are the peripheral level health workers. Document analysis was also done in order to substantiate our findings. A similar study was carried out in rural and urban South Africa, where clinic managers and other health staff in low level managerial positions were interviewed.

The data was collected for two separate studies, so the results presented here constitute an additional analysis of the data aiming at creating hypotheses on the tacit knowledge of local health managers and their ways of becoming knowledgeable. We adopted the interpretive approach to analyse our data, and the responses to questions concerning their knowledge, as well as, their relation to information were looked into in particular.

### **4. THE COMMUNITY BASED HEALTH MANAGERS' JOBS**

Health extension workers (HEWs) have one year of health training and deployed in rural communities of Ethiopia. Two female HEWs are in charge of an area with around 5000 population. HEWs provide basic health care and advice for a package of 16 health actions

consisting of mainly maternal and child health, major communicable diseases and basic sanitation and hygiene practices. They are also supposed to record local health data including deaths and births. Each post manages 20 volunteer community health workers. These are members of the community who are early adapters of health actions and volunteer to practice and demonstrate doable health actions to their relatives, friends and neighbours. Community health work needs to be well coordinated and harmonized. In this respect the HEWs would play the role of managers. The HEWs and community volunteers have basic knowledge about the population of their vicinity, including the common diseases and cultural practices that influence health actions directly or indirectly. This is not only since they have collected health data, but also it is because of their tacit knowledge that gained informally as they are living within that particular community.

The profile of Primary health care facilities in South Africa vary substantially in terms of size of the population served (5000 – 50000 people), the range of services provided, (from a core package of Primary Health Care to additional services such as X-ray, maternity and anti retro viral therapy), the hours of operation (8 -24 hour) and the number of staff varies (5 – 50 health, clerical and technical workers). Clinic managers have a minimum of 4 years professional training in general, midwifery and community nursing science with practice experience in both hospital and community settings. As we tried to point out in the following theme, our finding showed that the health managers in the rural clinics know their clients.

## 5. KNOWING THE POPULATION

Health managers frequently engage in conversations with other health workers and stakeholders on a range of health service topics, and most often, the documentation where health indicators are to be found were not present in one rural clinic in South Africa. When questioned on how to deal in with this, a manager said:

*We know our area; we don't need to check it out. I have grown up here, and I have done home visits.* (Manager in a large, rural clinic, South Africa)

This quotation hints at the managers know the geographical area of their catchments' population, and the people living there. From this point, it is possible to infer that the manager developed this knowledge through experience as he has been living there for a long time and also through a routine practice of home visiting for his clients.

Similar expressions were used by others, e.g.

*I must know my population, what is expected of me.* (Manager in a small, rural clinic, South Africa)

In addition to having worked in this clinic for more than a decade, the manager also relied on documentation including health indicators. On her wall, she had a map of her area, showing where the tuberculosis patients were living, so that the staff could go and get them if they didn't show up for treatment, see Figure 1a.



**Figure 1 a) Computer drawn map from rural South Africa. b) Hand drawn map from rural Ethiopia**

While this was a computer drawn map marked with pencil, the HEWs in Ethiopia had drawn the map of their area themselves manually, and this map had a prominent position on the walls of their health posts, see Figure 1b.

The HEWs had given immunization targets from district health offices based on the population data from an old census. However, the HEWs had come up with other population data, which they relied upon, and they also had convinced the district managers what they had to be the correct numbers (Damtew & Kaasbøll, 2008). These numbers had been found by means of collaborating with the community volunteers, because

*they knew the households in their vicinity.*

Based on what managers said about their knowledge and the maps which are frequently observed, we can conclude that they know their population and other relevant health data, and this is the main tacit knowledge which they rely on in their work. Knowing their population is related to the area and the villages, communities, households. In the smaller clinics, they also know individual patients who live there and have follow up for some specific diseases, such as tuberculosis.

The way of coming to this knowledge seems to be the accumulation of their learning through the routine work related to their managerial and health staff roles. They communicate with subordinates, colleagues, superiors and community volunteers, they write and read reports and correspondence, they go out to see for themselves, and they interact with the patients and dwellers directly. The formal health management information system plays a minor role in the accumulation of such type of information, whereas it is through the embedded knowledge that gained informally in the local area. This way of coming to know is similar to what has been observed in other professional groups (Kaasbøll, 1987; Perby, 1987).

In the model of knowledge creation in organisations, Lam (2000) uses the term “embedded” to denote the collective, internalised knowledge. Previous literature does not describe any structure of the embedded knowledge, while this study points to a spatial knowledge structure into which information is internalised, in Nonaka’s (1994) sense. Dreyfus and Dreyfus (1986) maintain that expertise is composed of an accumulation of thousands of experienced cases. They refer recurrently to master chess players, who recognise types of positions on the board and how the plays correspond to such a type, so spatial organisation constitutes their knowledge structure, while each memorised game provides its own time line.

While knowing their population and other health related issues, for example the residence of tuberculosis patients, we would also expect that health managers know their service delivery, their staff, their budget and possibly other fields in a similar tacit fashion. The could be compared to the chess games, which provide knowledge of possible sequence of actions appropriate to the structure.

## 6. CONCLUSION AND IMPLICATIONS FOR SYSTEM DESIGN

Although preliminary, the finding of this study points to at least three qualities of the tacit knowledge:

- the practitioners have concepts for denoting the necessary information using their tacit knowledge,
- the tacit knowledge is also used when the practitioner does not have documentation at hand, and
- the tacit knowledge concerns the domain of their work rather than the means and material used to achieve results or the textbook procedures and regulations.

The current health information system divides the population into the coverage area of a health unit, so a local clinic or health post is one area. These local health units know their population and other important health data. This knowledge is mostly developed from their routine practices embedded in their particular vicinity. The information gained through the tacit knowledge of these local practitioners can be an input for district and higher level managers to design a plan and to know the population in the district and in the country at large.

At the visited clinics and health posts, it is possible to say that, the health information system is deficient to provide the necessary information on the villages, communities or households, which could have been useful for boosting the knowledge of the health unit managers. Therefore, the tacit knowledge of local health managers and the community volunteers is important in order to substantiate the information need in the health care setting.

At the clinic level, the data structure of the health information system is according to diseases and services, e.g. antenatal and vaccination, and this structure does not seem to tally with the knowledge structure of health managers. A geographic structure of the information seems appropriate also at the clinic level, due to the frequent use of maps in the visited health facilities. In a study of use of maps in India, it was found that this was of little use due to the locals' unfamiliarity of maps (Walsham & Sahay, 1999), so that GIS was not recommended. This seems contrary to the findings here, and the reason might be that location is an important issue in health, so health workers have developed a geographical view of their population.

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