Information and its value to health workers in rural Uganda: a qualitative perspective*

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Abstract

A study was conducted in 1998/99 to investigate the accessibility and use of information by health workers in rural Uganda. Data were collected qualitatively using semi-structured interviews. As a qualitative study, it focused in-depth on a relatively small sample of health workers selected purposefully. Different categories of health workers were interviewed.

Data were analysed using a grounded theory approach. In this paper, two main categories that emerged from the data will be discussed, namely: *value of information* and *constraints*. Information was valuable in clinical work, information dissemination, decision making, administration and detection. Constraints to effective information use included the quality and relevance of the information as well as the difficulties of sometimes putting theory into practice. Finally, the concepts that emerged from the analysis of the use of information pointed directly to the information needs of the health workers studied, which shows that information was valuable in meeting those needs. Some implications of the study and areas for further research are highlighted.

Introduction

This paper is part of a larger study that investigated the accessibility and use of health information within the lower echelons of Primary Health Care (PHC) service delivery. Although it is an academic study, the investigation of access to and use of health information in rural Uganda is an applied piece of research, the purpose of which was to illuminate and understand the nature and sources of human and societal concerns or problems.

In this study, the word information was used in a broad or general sense to include information as a physical entity (e.g. in books), but also as facts, advice as well as opinions. Information was a resource that had to be tapped, and a commodity that gained value as it passed along the information production chain. This paper focuses on the use to which information is put after it has been accessed. Information use usually leads to changes in the user's state of knowledge, behaviour, values or beliefs.

The above points are not intended to be merely definitional, but to show the holistic approach employed in the study. Furthermore, the paper discusses the use of information based on a qualitative rather than a quantitative approach. This means that the 'value of information' reported in the paper emerged out of the data inductively, rather than from testing *a priori* hypotheses.

Background

Most information researchers in Sub-Saharan Africa have focused on information sources and needs.[1–3] It has been suggested that there is a need to shift

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*This is an edited version of a paper presented at the 8th International Congress on Medical Librarianship, London, 2–5 July 2000.

the focus of research from an examination of the information sources to an exploration of the role of information in people's everyday lives, work, organization or social setting: 'Most of the literature we have reviewed appears to take information use as non-problematical: the concern is mainly with the factors that create the need for information and the factors that affect the choice of information sources and channels … information use was an under-researched area'.[4] Several studies, however, which focus on information retrieval in developed countries have highlighted the use of retrieved materials. Florance[5] cites some of this work, for example 'Scura & Davidoff reported that 20% of retrieved articles affected patient management by changing a treatment decision, providing information that might change treatment in the future, or preventing certain diagnostic or therapeutic manoeuvres (a stop function) …'.[5]

Previous studies in Sub-Saharan Africa have been concerned with district headquarters staff or district hospitals[6] and have not included other areas and levels of health provision such as rural health units. This study attempted to bridge this gap. Furthermore, most previous studies have used quantitative methods of data collection.[1] Some have recognized that there is need for a different approach—'More in-depth studies … in developing countries … can serve as slices of a richer picture, contributing to a better understanding …'.[6]

The use of cheaper and faster methods of collecting data, through the development of rapid survey methodologies, has become popular in developing countries, where health budgets are not sufficient for the kind of methods needed to produce in-depth results to inform policy. As Macintyre[7] noted, however, the drive to cut costs may sacrifice the quality of data collected, and may result in more expense through misdirected policies.

The problem of methods is not unique to developing countries, but, as Ellis[8] has pointed out, it is a general problem in the field of information science—'Traditionally, the field of user studies has been characterized by a rather stereotyped approach to research design and an orientation toward quantitative methods, the most frequently used technique being to employ some form of structured questionnaire and basic statistical analysis. This is ideal for obtaining an overall quantitative picture of information use by a particular group but it is ill-suited for providing a more authentic picture of [health workers'] perceptions of their information environment'.[8]

For this reason, quantitative methods were considered unsuitable for providing an in-depth view of the use of information by health workers, and a qualitative approach was adopted in this study. It also considered the recommendations by several authors[8–10] about the need for conceptualization and models in information science.

Methodology

Grounded theory was used as an analytical tool in this study, which was conducted within a holistic–inductive paradigm. Thus, a phenomenon was studied in its entirety without reducing it to a few variables. Data were collected on individual occurrences of the phenomenon. In subsequent analysis, patterns, themes and categories emerging from the data were identified inductively rather than deductively. The type of qualitative analysis that was considered to be most compatible with a holistic–inductive paradigm was grounded theory. This is because of its ability to generate plausible theory from the data in a systematic manner.

Sample

This study, however, differed from the grounded theory as originally defined by Glaser & Strauss[11] in that it did not use theoretical sampling. The sampling strategy of this study was determined by PHC as it was operating in Uganda, and followed a purposeful sampling strategy as described by Patton.[12]

Thirty-four health workers were interviewed: eight medical doctors, 10 clinical officers, six registered nurses/midwives, five enrolled nurses/midwives, and five nurse aides/traditional birth attendants (TBAs). In this study, in-depth information from a relatively small number of people, who were information-rich, was considered to be more valuable than less depth from a larger sample. Patton[12] pointed out that 'there are no rules for sample size in qualitative inquiry. Sample size

depends on what you want to know, the purpose of the inquiry, what is at stake, what will be useful and what can be done with available time and resources … The validity, meaningfulness and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the analytical capabilities of the researcher than with sample size'.

Data collection

A semi-structured interview schedule with open questions was used. The questions were designed to study people's experiences, behaviours, knowledge and opinions. Interviewees answered the same questions, which enhanced the comparability of responses (and facilitated cross-case analysis), while the open nature of questions allowed further probing into the responses, which greatly enriched the data collected. Furthermore, the interview schedule included a question on critical incidents. Interviewees described these incidents in detail, which highlighted a number of issues including how the information satisfied a need or solved a problem.

Analysis

The analysis followed a grounded theory approach, as already indicated. Grounded theory is a method that uses a systematic set of procedures to develop an inductively derived theory or model about a phenomenon. In this method, one does not begin with theory, then prove it; rather, one begins with an area of study and what is relevant to that area is allowed to emerge.[13]

Categories were generated inductively after cross-case analysis and open coding was done for each question in the interview. This involved an analysis of each question, noting key remarks, concepts or categories on sheets of paper, cross-referenced to interview occurrences (interviewee number(s), interview question(s) and field notes page), which as described by Ellis[8] 'represented a kind of item–on term approach.' Cross-case coding of each question in the interview schedule meant that all the data in each question and from each interviewee was covered thus leading to analytical exhaustivity.

The original Glaser & Strauss[11] version of the grounded theory was used because of its open approach to analysis. Hence open coding was followed by selective coding, which is 'selecting examples from the transcripts to illustrate in a concrete form the abstract features of the model'.[8] Indeed interpretation of data must include the perspectives and voices of the people, because interpretations are sought for an understanding of the actions or patterns of actions of the individuals being studied. Some interviewee responses are given; these are based on verbatim notes and are quoted in italics.

Findings

Although previous models of information behaviour[14] tend to give prominence to information needs, in this study, 'value of information' emerged as a core category and a driving force in the various information actions reported. In a few situations, however, constraints intervened and consequently overwhelmed the value of information. Thus, 'constraints to information use' must also be considered.

Value of information

This referred to the role and significance of information in health workers' professional and personal lives, and in their activities. These could be grouped into five sub-categories:

- Clinical work
- Information dissemination
- Decision making
- Administration
- Detection

Most of the concepts that emerged from the analysis of information use (e.g. clinical, preventive and academic) were similar to those that emerged from the analysis of information needs (in the main study), but with some differences in the details of the properties. This shows that information was valuable in satisfying the needs of health workers, and it confirms the relationship between needs and use of information that had been highlighted by Wilson.[10] The need for, and value of, 'updating' was found in all the sub-categories, but it was generally a means to an end, rather than an end in itself, for example:

'new malaria drug combination/regimes which are much superior than the old ones are suggested for resistant cases … it offers better alternatives which enable us to manage patients better and to update one's knowledge.' (Doctor)

'I get to know about new trends and methods of ante- and post-natal care, and management of labour which enables me to do my work better.' (Private midwife)

Furthermore, the value of information was vividly demonstrated in critical incidents, which also highlighted the various needs for information in emergencies and showed how information was used to solve problems and/or satisfy needs. In one case a clinical officer sought information from a handbook (a physical entity), to check for the dose of medicine that he wanted to prescribe to a patient with a profuse nose bleed. In another case a doctor sought information from CME materials and a book, as well as advice from a colleague, which enabled them to carry out an operation that they had never performed before. Information was therefore used in the management of patients, which included diagnosis and treatment. Furthermore, in all the above cases, health workers gained knowledge.

Each of the five sub-categories of 'value of information' is discussed here below:

Clinical work. Information was reported to have been valuable in health workers' clinical work, which involved diagnosis, treatment, delivery of care and other formal and informal clinical tasks such as counselling or provision of advice to patients. Some sources of information were reported to have provided valuable information that was applied in various clinical activities as indicated below:

'The short course I attended about "Integrated Management of Childhood Illnesses" (IMCI) updated me a lot. I also got the latest (1997) edition of IMCI manual. Before then, some paediatric diseases were very difficult to handle … actually we didn't know how to manage them, so we used to refer such cases to the district hospital, and some used to die on the way! But now, I know what to do and I have also had some sessions with my staff. All in all, this health centre is now in a better position to effectively handle childhood illnesses'. (Clinical officer in charge of a sub-county health centre)

'The presence of CME materials in a hospital where I worked before coming here used to give me confidence and peace of mind about the management of surgical cases because I was able to perform certain procedures, I had never performed before, just by referring to these materials and following the guidelines or instructions. Since I came here, I feel the gap … I feel professionally "insecure" without these materials …'. (Doctor)

Information dissemination. This was further subdivided into: Academic work, Professional support and Preventive work. The various information dissemination sessions clearly illustrate the point that information gains value as it passes along the production chain.

Academic work—Information was reported to have been applied in the training of lower level health workers, such as enrolled nurses, nurse aides, TBAs and community health workers. One midwife commented:

'The ToT (Training of Trainers) seminars and the information I read here and there helps me a lot in the various training sessions I carry out, e.g. training younger midwives and TBAs about safe deliveries, prevention of HIV/AIDS, the importance of referrals, etc.'. (Midwife)

Health workers also used information to generate different types of information. These included: various reports, training manuals, conference/seminar papers or articles, proposals, leaflets, charts and posters.

For reports, all the health workers interviewed reported that they produced periodical reports on a monthly, quarterly and/or annual basis. The reports consisted of information compiled mainly from patients' registers/records, statistics and activities of the health units such as Family Planning, immunization, ante- and post-natal services, as well as rural outreaches based on community needs assessments. In the case of field health workers, the reports included information from service delivery areas, seminars/sessions held in

communities, disease outbreaks, etc. The reports were submitted to the District Medical Office, and in the case of private and/or field health workers, reports were also submitted to the Governing body for example the Church or NGO, as well as to the Local authority for example LC3 (sub-county) chairperson or health committee. The reports were in turn used for planning and provision of improved health services.

As well as this, health workers used the information they accessed to write research proposals; while others wrote project proposals for funding.

'I use books, patient records, reports of our rural outreach activities, etc. to write proposals to funders to support this unit and our activities … you know this is a church founded health unit but the demand for the services is too much … The proposal I have just written and submitted for funding was about "Integration of malaria control and water protection for improved health" '. (Clinical officer)

Professional support—Health workers also reported that they used health information in training their juniors informally on the job, in answering their questions and/or in guiding them professionally in their work/activities. In addition, all the medical doctors interviewed reported that they provided monthly support supervision to lower health units: health centres and DMUs.

'I keep updating and guiding nurses and medical assistants here in the hospital … whenever I get new information; but also, I usually ask them questions and when I find gaps in their knowledge, I provide the information. I also do the same during the monthly supervisory visits to health centres in Kalungu county (Masaka district) and Sembabule district.'

'This hospital is in charge of 2 sub-counties, so we train health workers on the job and supervise them in their health units.'

The above findings generally agree with those of Wood *et al.*,[15] which showed that 'All GPs are producers as well as users of information…. All the GPs produced at least some of the following information: patient health care information, updates of the patient records, patient referral letters/medical reports for other agencies, information for trainees, information for other teaching, work for continuing professional education, reports to the FHSA, information for practice meetings/talks, internal practice reports, information for committees/groups and professional advice.'

Preventive work—This included health education, i.e. sensitisation/awareness raising about disease prevention and control, mobilization of the public to prevent or control health problems by using health facilities and services like FP, and various information dissemination sessions in the communities. One registered nurse/midwife commented:

'Prolife International has a branch in Uganda, and there is a Prolife desk at MADDO (Masaka Diocesan Development Office) which provides us with books, newsletters, pamphlets and video tapes about abortion and related topics that I use a lot in health education. Two of the pamphlets were translated in Luganda which makes them easy to use in this area … actually I use them a lot to counsel people; for example, in the last two weeks I had two cases: a student of S6 (high school) and a married woman who wanted to abort and came to me for advice. I talked to them, showed them a video about the dangers of abortion and gave them the pamphlets to read; they came back later after they had decided not to.' (Registered nurse/midwife)

Information dissemination in health units, as part of clinical tasks was considered under clinical work.

Making decisions. This included decisions concerning personal health as well as other issues. However decisions made in clinical tasks were classified under clinical work. One of the comments on personal health was received from a clinical officer:

'Charity begins at home … the information I receive first and foremost is useful to my life and that of my family … I use the health knowledge I get personally to improve my health. For example, nutrition information is very valuable to me personally—I have had to change my diet, I followed

the guidelines I read in those magazines and it has helped me a lot. I also use my personal experience to advise patients – especially those with hypertension and ulcers … when you talk about something you have done or experienced personally, it sounds more real, I am told … Our training didn't go into much detail about nutrition, so the information I get now is new and very useful.' (Clinical officer)

Several health carers started press cuttings files, and another one took the important step of registering the clinic, as well as being cautious about illegal abortions:

'I heard from colleagues … but didn't take them seriously until I read the New-vision (newspapers) and saw clinics including some "big" clinics that had been de-registered and closed because of carrying out criminal abortion. I am now very cautious about these things … my clinic was not even registered, so I went to Kampala for registration.'

Administration. Information was also valuable in the issues of planning and administration in general.

'I got to know about the cholera outbreak, which helped us (the nursing home) to plan, e.g. by stocking the necessary drugs and fluids needed in treating cholera patients.' (Doctor)

Detection. This involved detection of diseases and/or other health problems in the area; once detected, then preventive work such as health education would follow to try to prevent or control the disease/problem.

'The information we receive enables us to monitor health issues in the district … for example, I usually contact veterinary doctors, entomologists, agriculturists, etc., for surveillance purposes … the data I get from them helps us, as a district, to predict the epidemiological trends of say, malaria.' (Doctor)

Constraints to information use

As observed by Wilson,[4] the fact that there is a need for information and the sources of information are available and accessible is no guarantee that the information contained therein will be used. In this study, although some information was accessed, a number of constraints intervened to stop its use. These included:

Quality of information. Rural health workers needed more information in terms of quantity, but most importantly, they needed better quality information. The quality of some of the information accessed constrained its use as illustrated below:

Some information was too technical, too advanced or not applicable:

'Some of the few books we have here (at the sub county health centre) are too technical … some include very advanced equipment (this was in reference to management of heart diseases) which are not available here … so, the information in the former is not understood, while that in the latter is not applicable. I think some of these books are meant for medical doctors not nurses.' (Nurse in charge of a health centre)

Some information was not relevant:

'Information in some of the textbooks we have about paediatrics, public health, internal medicine and pathology is not very relevant to our current tropical health situation because they were written in the West … the focus is not tropical medicine.' (Doctor)

'Although I still get the Lancet, though irregularly, I find that about 90% of its articles are not relevant or applicable to Uganda's situation especially to a doctor practising in a rural hospital … if you are a lecturer in a medical school, it may be relevant.' (Doctor)

Some information provided nothing new:

'Some seminar topics keep being repeated, which is a waste of time and resources, yet there is so much that we still need to learn.' (Nurse in charge of a health centre)

'Most local radio and TV messages on AIDS and other STIs don't offer anything new to me … Similarly, there is hardly anything new in those radio messages about malaria … nothing much

is provided to health workers, particularly those who have been to medical or paramedical schools recently.' (Several interviewees)

Theory versus practice. With this constraint, unlike quality of information, health workers reported that although the information they had received led to changes in their state of knowledge, they could not put the knowledge into practice:

'The doses of some medicines as recommended in the textbooks I have differ from what is being practised here. For example, in my textbook which is a bit old though—1990 edition, injectable chloroquine is recommended to be given 6 hourly but when I came to this hospital, 3 months ago—before this I was working as an assistant DMO, I had not practised yet—I found that it was given 12 hourly and the patients got better! The same applies to quinine doses. I spent some time arguing with staff on my ward but I lost the argument. So, my books and my knowledge seem not to be functional in these aspects … Probably current literature would help, but I doubt whether the older people working on my ward base their doses on current literature.' (Doctor)

Discussion

The findings of this study show the effect of information on the various activities of the health workers studied. The findings have demonstrated the applicability of information in solving medical and health problems. These findings agree with those of Urquhart[16] which highlighted the impact of information on nurses' clinical knowledge and general patient care, personal updating, coursework, and in training.

On the other hand, the study identified several constraints to information use that need to be addressed as indicated under 'Implications' below. Although there has been considerable emphasis on the factors affecting access to information, this study has shown that while information may be accessed, its quality may render it inappropriate to the needs of the rural health workers. Hence both access factors and the quality of information need to be taken seriously by information providers. Furthermore, the 'gap' between theory and practice needs more research to further our understanding and to learn from the experiences of other health workers with an aim of narrowing that gap.

Implications

The findings of the study have several implications for information provision to health workers in rural areas, as well as for further research.

Since the quality of information was a major constraint to information use, the following are some of the recommendations made by health workers:

Level. The quality of information should be improved such that books and other information sources sent to health workers take into account the different levels, i.e. nurse aides, enrolled nurses, registered nurses/clinical officers and doctors, so that books for doctors are not sent to nurses or vice versa. This would enhance information use. Furthermore, publications or documents meant for a wider audience like the Ministry of Health projects—STIs, CDD and Reproductive health documents, and the CME materials should have sections: for doctors, paramedicals, general so that one reads what is relevant to her/him.

Applicability and relevancy. Documents sent to rural health workers should contain information that is relevant to tropical health, and can be applied in a rural setting.

Reference materials. Considering the importance of CME materials in the management of emergencies, and noting that many health workers are isolated or work alone, yet currently the CME materials are only sent to hospitals, leaving smaller health units without. It is therefore important that the distribution of the materials is widened to include health centres and DMUs.

Lastly, a list of documents that health workers mostly used/referred to in their work has emerged as one of the bi-products of this study. This will be compared with that of the Blue Trunk Library collection. If some titles were missing, a proposal will be made to include them because they will be some of the most commonly used documents by rural health workers.

Limitations

Several limitations were identified in the main study. These included the problems of lack of a common language to interview/collect data and the slow manual analysis of an enormous amount of information generated by open questions. Some interviewees reported 'research fatigue', that is fatigue about being the subject of research with hardly any tangible personal benefits accruing at the end of the exercise. This could have affected the quality of data collected from such individuals.

Conclusion

The study has succeeded in giving an in-depth view of the use of information by health workers in rural Uganda. We have progressed from knowing about the sources of information to how the information is actually used once it is accessed, and how valuable it is in the activities of health workers. The 'value of information' elaborated in this study and the actions that proceed from its use, show how a successful information process leads to active contribution to health care. While it is not strictly possible to generalize the findings from this purposive sample to all rural areas, it is likely that the issues identified in this study will apply to other health workers in rural Uganda.

Furthermore, the methodological approach used in the study proved valuable for future application in related studies in several ways, for example:

- **Sampling** health workers in the lower levels of PHC allowed a combination of disciplines —medicine, nursing, midwifery as well as apprenticeship (in the case of TBAs)—with job patterns—private practice/health unit based, community workers—and provided a qualitative view of their information accessibility and use.
- A semi-structured interview **method** provided a rich insight into the interviewees' uses of health information and proved to be a better alternative to an interview guide because it reduced variations among different interviewers, and ensured that interviewees answered the same questions, which facilitated cross case analysis.
- A holistic inductive approach with a grounded theory **analysis** can be used to study information behaviour in general, as well as access to, and use of information by health workers or other professionals like agriculturists in particular, in rural Africa.

Further research

Information use is a complex phenomenon; further studies require a sound methodological approach that is capable of enhancing our understanding of the phenomenon studied. Researchers could select, from the findings of this study, one or more subcategories and their properties, for in-depth research in a particular district or institution to be able to ascertain the pattern of information use and the sources that provide the information. Furthermore, issues concerning constraints to information use, which emerged inductively from this study, should be investigated further to generate more suggestions to practical solutions to this problem.

Finally, the use of grounded theory also requires further attention from information researchers; this will enable us to understand the nature of people's experiences, and will complement the results of previous studies, the majority of which were quantitative.

Acknowledgements

This study was funded by the Kulika Charitable Trust. The author is very grateful to the sponsors, and to the interviewees for allowing her to interrupt their busy schedules.

References

1 Apalayine, G. B. & Ehikhamenor, F. A. The information needs and sources of Primary Health Care workers in the Upper East Region of Ghana. *Journal of Information Science* 1996, **22**, 367–373.

2 Lundu, M. C. *The justification for establishing and maintaining a nation wide library service, with special reference to the library and the process of national development in Zambia*. PhD Thesis, University of Sheffield, 1982.

3 Musoke, M. G. *Health care library services in Uganda*. M. Lib. Dissertation, University of Wales—Aberystwyth, 1985.

4 Wilson, T. Information behaviour: an interdisciplinary perspective. *Information Processing & Management* 1997, **33**, 551–572.

5 Florance, V. Medical knowledge for clinical problem solving: a structural analysis of clinical questions. *Bulletin of Medical Library Association* 1992, **80**, 140–149.
6 Forster, M. E. L. *Health informatics in developing countries: an analysis of two African case studies*. PhD Thesis, University of London, 1990.
7 Macintyre, K. E. *Trade offs between precision and cost: a field test of rapid survey methods for family planning evaluation*. PhD Thesis, University of North Carolina, 1997.
8 Ellis, D. Modelling the information—seeking patterns of academic researchers: a grounded theory approach. *Library Quarterly* 1993, **63**, 469–486.
9 Roberts, N. A search for information man. *Social Science Information Studies* 1982, **2**, 93–104.
10 Wilson, T. On user studies and information needs. *Journal of Documentation* 1981, **37**, 3–15.
11 Glaser, B. G. & Strauss, A. L. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine de Gruyter, 1967.
12 Patton, M. Q. *Qualitative Evaluation and Research Methods*. London: Sage Publications, 1990.
13 Strauss, A. & Corbin, J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park: Sage Publications, 1990.
14 Wilson, T. Exploring models of information behaviour: the 'Uncertainty' project. *Information Processing & Management* 1999, **35**, 839–849.
15 Wood, F., Palmer, J., Ellis, D., Simpson, S. & Bacigalupo, R. Information in primary health care. *Health Libraries Review* 1995, **12**, 295–308.
16 Urquhart, C. & Davies, R. EVINCE. the value of information in developing nursing knowledge and competence. *Health Libraries Review* 1997, **14**, 61–72.