

Information Literacy for Healthcare Professionals – Learning from Studies in Human Information Behaviour (HIB)

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Introduction

Human information behaviour (HIB) is a complex, academic sub-discipline of Information Science, sometimes also referred to as information seeking studies (ISS) and information seeking and retrieval studies (IS&R). It covers the study of how people seek information, how they use databases and the WWW as well as other information resources, and also why they prefer not to seek information or are unaware of their information needs. Although studies of user needs have been important for library and information services over many decades, there is a growing interest in information seeking and HIB which forms the wider context. Gaining a better understanding of the information behaviour of library users (including healthcare professionals), should help us in improving information services, websites, portals, and also information literacy programmes.

The paper will take a very practical look at how information literacy programmes for healthcare professionals can draw on findings from HIB studies, and how healthcare professionals can be better prepared to deal with the complexities of their own information needs as well as in understanding the information needs and information behaviour of patients. This should also help them in supporting patients in their growing exploration of the Internet as an information resource for health-related information.

The importance for healthcare professionals to have access to information as well as information skills is widely acknowledged. Concern has, however, also often been raised about healthcare professionals not having sufficient skills in the use of information communication technology (ICT) and information seeking, or interest in the use of information resources – in spite of the fact that there is increased emphasis on the need for evidence-based healthcare practices and decisions, as well as for patient education.

Many useful publications have appeared on information literacy skill programmes for healthcare professionals, how to teach database or Internet searching, the use of email and discussion lists, etc. (e.g. Booth, 2007; Fox, Richter & White, 2003; Shorten, Wallace & Crookes, 2001). This paper acknowledges the importance of discussions on the planning and content of workshops and information literacy programmes, assessment methods, teaching methods, reflections on instructional design for information literacy programmes, etc., but would like to explore a different avenue: what do we need to understand about the *information behaviour* of healthcare professionals when designing and offering information literacy programmes, and how can we use such understanding in teaching information literacy as a life-long skill?

Numerous research reports have appeared on information behaviour including the relevant theories and models of information behaviour (e.g. reviews by Case, 2006a, b; Courtright 2007; Fisher, Erdelez & McKechnie, 2005, as well as reports on individual projects e.g. Tannery et al 2007). The purpose of this paper is not to provide an in depth review of such literature, but to offer practical advice based on their findings. In line with such a practical approach, the paper will try to avoid extensive lists of references.

The following are a few of many reasons to reflect on how HIB studies can support information literacy programmes:

- Increasing urgency to develop information literacy based on evidence-based practices (Echlin & Rees, 2002; Edgars, Greenberg & Remmer, 2002; Estabrooks, O’Leary, Ricker & Humphrey, 2003; Jacobs, Rosenfeld & Haber, 2003).
- Increasing emphasis on life-long learning and information literacy as a life-long skill.
- Concerns for information failures in healthcare (Macintosh & Choo, 2006).
- Increased use of the Internet for basic and continuing education amongst various groups of healthcare professionals as well as for professional support in stress-full situations (e.g. Cobb & Baird, 1999). Meier (2000:241) e.g. refers to the therapeutic use of online discussion groups by social workers.
- Increased use of the Internet by patients and family members, and increased awareness of the importance for patient education (Dickerson, Boehmke, Ogle & Brown, 2006).
- Need for more emphasis on the use of information in decision making, and the involvement of healthcare professionals in research and scholarly writing. According to the Oncology Nursing Society (ONS) oncology nurses, e.g. require clinical, educational and inspirational publications. They need to access cutting-edge information and “encourage narratives” (ONS website: <http://www.ons.org>).
- Need to weigh the benefits of information seeking and information monitoring against information overload. Johnson (2003:737) declares: “Yet, information seeking can be viewed as having many negative consequences. Most threatening to management and to health professionals is their loss of control, since information seeking can be inherently destabilizing”.

The rationale behind the paper is to

- increase awareness of the value of HIB studies.
- find a closer link between theory and research and how these are applied in practice (e.g. in developing information literacy programmes).
- stimulate interest in HIB research in the healthcare sector from a practical perspective.
- enhance the opportunities for teaching information literacy as a life-long skill to healthcare professionals.
- pave the way for a more in-depth reflection and link to the subject literature.

Aspects that will be discussed

Although there are many aspects of importance from HIB research, only a few have been selected for discussion in this paper. The selection is based on personal perception of aspects that links to the reasons offered for reflecting on HIB research in the planning of information literacy programmes for healthcare professionals. The aspects to be discussed include:

- Awareness of information needs and the value of information.
- Healthcare professionals as persons-in-context.
- The importance of affective issues in the daily tasks of healthcare professionals and the role of emotions (e.g. being anxious, frustrated, bored or unmotivated).
- Importance of personality and learning style on information needs and the success of information seeking.
- Importance of everyday-life information needs and how this may overlap with task-related information needs.
- Realities of barriers to information seeking and how to deal with these.

There are many other aspects that could be addressed, for example considering differences between generations (e.g. the so called Net or Google generation vs baby boomers or digital immigrants), preferences for informal communication and how these can be linked to collaboration and communities of practice, information encountering, the value of the accidental discovery of information and serendipity, anxiety, creativity, expectancy value, sense-making, habits, etc. Due to time-constraints for the paper these will not be discussed.

Definition of concepts

Information literacy

Numerous definitions of information literacy can be found in the subject literature (e.g. the ALA definition:

<http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm#ildef>). For purposes of this paper, the definition by Johnston and Webber (as cited by Boon, Johnston & Webber 2007:205) will be used. They define information literacy as “the adoption of appropriate information behaviour to obtain, through whatever channel or medium, information well fitted to information needs, together with critical awareness of the importance of wise and ethical use of information in society”. To promote appropriate practices of information behaviour, we first need to understand where people come from, how they seem to be behaving and how such behaviour can be shaped or adapted to promote information literacy skills at higher levels of effectiveness. This will include information seeking as well as information use.

Fourie (2006) calls for information literacy programmes to incorporate skills in information monitoring while Fourie and Claasen-Veldsman (2007a, b) for example explore the possibilities of current awareness services (CAS – services for information monitoring; also referred to as alerting services) for oncology nurses, as well as their

needs for CAS. This adds a further dimension to information literacy as being essential to keep up with rapid changes in professional (healthcare) environments.

Healthcare professionals

Healthcare professionals include physicians, physician assistants, support staff, nurses, therapists, psychologists, veterinarians, dentists, optometrists, pharmacists, and a wide variety of other individuals regulated and/or licensed to provide some type of health care (Wikipedia http://en.wikipedia.org/wiki/Healthcare_professionals; date 10 August 2007). Medical social workers can also be included.

HIB studies have been reported on family doctors or general practitioners, midwives, physicians, oncologists, oncology nurses, critical care nurses, social workers, dieticians, pediatric nurses, educators in healthcare contexts, clinical nurses, practice nurses, etc. (Dee & Stanley, 2005; McKnight, 2006).

Human information behaviour

Many interpretations of human information behaviour have been offered in the subject literature. A widely accepted definition is the encapsulating definition of Wilson (1999b:249). He explains information behaviour as "the totality of human behavior in relation to sources and channels of information, including both active and passive information-seeking and information use". Fisher, Erdelez and McKechnie (2005:xix) define information behaviour as "how people need, seek, give and use information in different contexts". For purposes of this paper information behaviour is interpreted as:

- healthcare professionals' awareness of their information needs and how they deal with these;
- the different types of information healthcare professionals may need (e.g. factual information, retrospective searches, information to stay abreast, opinion papers, inspirational information);
- their interest or lack of interest in information;
- the information sources and channels that they prefer;
- the factors that influence their behaviour to search for information and in using it;
- all reactions and responses concerning information.

Learning from studies on human information behaviour

To be effective in information seeking, we need to deepen our understanding of our behaviour and factors that influence such behaviour. In the light of the rapid increase in patients searching the Internet, and the growing number of publications on their information needs and information behaviour (e.g. in the contexts of cancer, HIV/AIDS, mental health, pregnancy and multiple sclerosis), it seems appropriate to make healthcare professionals aware that they also need to be sensitive to patients' information seeking behaviour – they may have experiences similar to those of healthcare professionals, in identifying information needs, seeking information and other facets of information behaviour.

Awareness of information needs

It seems fair to assume that healthcare professionals, like other professionals, will seek information if they experience a need for information, e.g., if considered necessary for their tasks – especially for complex and information intensive tasks (Vakkari 2003) or problem solving. In HIB literature we often talk about sense-making and experiencing a gap between what is known by a person and what should be known. As will be pointed out in this section, people are often not aware of such a gap or the fact that information may make a difference in how they complete their jobs, cope with everyday life tasks, etc.

Information needs are (is supposed to be) based on an understanding of tasks and the potential impact of information (e.g. making sense of something, taking decisions, making recommendations). Information needs and the expressions thereof are however very complex and can occur frequently in different contexts, with different levels of intensity, related to different intentions, etc. They are seldom once off experiences and often changes during the process of information seeking. From HIB studies, we know a number of things about information needs. Healthcare professionals should be made aware of these, and where possible they should be helped to find links to the potential value of information.

- (1) People can be unaware of their information needs or information needs can be dormant. Healthcare professionals need to be alerted to the fact that they may not always realise that there is a gap between what they know (their knowledge-base) and what they need to know (e.g. cancer nurses reporting that they do not need any information on breast cancer (Fitch, Chart, & Parry, 1998)). Although alerting services may lead to information overload, it may be one way for healthcare professionals to become aware of areas where they need to expand their knowledge-base. It especially needs to be stressed that the need for information is not always obvious (there are many factors contributing to this – to be addressed in following sections) and that the identification and formulation of an information need are certainly very difficult. When explaining reference interviews, Harter (1986:145) e.g. cites Taylor as explaining “Without doubt, the negotiation of reference questions is one of the most complex acts of human communication. During this process, one person tries to describe for another person not something he knows, but rather something he does not know”.
- (2) People do not always realise how information can make a valuable contribution to the completion of particular tasks, e.g. not realising that information may help them to cope with job-related stress or to deal with patients’ questions (e.g. directing patients to useful websites). Awareness of information that can help in fulfilling task-related needs could be explicitly addressed in information literacy programs. Typical tasks for a particular context or group of healthcare professionals can also be plotted against information sources such as books, articles, websites, etc. Patient education especially is a task that can be explored as an example of the value of seeking information.

- (3) Information needs can be ignored for many reasons, or people may intentionally decide not to react. Such reasons include that it may be inconvenient having information contradicting one's own point of view, or it may be expensive and time consuming to find the information. Reasons found in the subject literature for ignoring information needs or deciding not to seek information can be shared with healthcare professionals with a request that the validity of the reasons should be carefully considered in their individual circumstances (e.g. they cannot afford to attend a conference or buy a book, but may still be able to read conference papers on a website, or they may not be able to subscribe to commercial database services, but can search PUBMED or subscribe to individual tables of content services, or they may not have time to read academic research articles, but could scan the abstracts of such articles). People may also avoid information, because they fear information overload or confusion or, because avoidance of information is their way of coping with stressful situations.
- (4) Many factors may influence information needs, or the lack of experiencing such needs, e.g. inadequate access to ICT, inadequate computer and information skills, age, gender, and perceptions that information seeking is not allowed while at work (this may of course also be the reality). Lack of motivation, lack of time, lack of privacy, long working days, emotionally intense jobs, etc. have also been noted as factors influencing information needs.
- (5) Although information is associated with informed decisions, it does not always lead to decision-making. Jepson *et al* (2007:890) declares: "However, information may have little part to play in the choices people make. Rather, it may have more impact on outcomes such as satisfaction and anxiety". (The decision to use or not use information will depend on the individual who sought or encountered the information.) The value of seeking and collecting information may therefore be questioned. In such cases, reasons for not using information could be explored. The effective use of information is often considered to form part of information literacy. It is a skill that healthcare professionals need to develop and constantly practise to enhance their abilities to effectively use information (e.g. in evidence-based decision making, research and scholarly writing).
- (6) A variety of types of information may be needed, e.g. factual information, supportive information, and sometimes in research situations, review information. Healthcare professionals' information needs as reported in the subject literature may be shared e.g. nurses reporting that they are interested in information on drug therapy and diagnosis. Such needs for types of information can also be plotted against potentially useful resources. Different types of information may be needed in different contexts. Healthcare professionals in an academic context may be interested in research reports, while others may be interested in textbook information or treatment protocol. The type of information needed will once again depend on how they view their tasks.

- (7) The intensity (or urgency) of information needs depends on the intensity of the task and whether the task can be considered information rich or information poor. The tasks of some healthcare professionals (e.g. oncology nurses) may seem very routine like (e.g. when considering the administration of treatment or the monitoring of vital signs such as blood pressure and fever), with strong dependence on information provided by doctors and oncologists – it would thus seem as if they experience low intensity for information other than that provided by the oncologists or doctors. But there may be much more to their jobs. Without it being realised, information that can be used in patient education and dealing with the emotional aspects of their job, may, e.g. make a very useful contribution to their job satisfaction and the joy and fulfilment they may find in the affective component of their jobs.

Healthcare professionals as persons-in-context

Healthcare professionals are often associated with the services professions. Leckie et al. (1996) and McKnight (2007) have e.g. noted that service professionals' information seeking behaviour differs from that of academics. They find themselves in different contexts which can concern specific tasks (e.g. administering treatment, diagnosing medical problems, therapy, research, or prescription of treatment) as well as different work environments (e.g. academic hospitals, private clinics or rural areas) – each which may impact on their information behaviour. They may have a professional identity and proud in their work, or they may rely very strongly on other professionals such as doctors to take responsibility for providing information when and where required.

Each specific work environment may bring expectations and realities that may impact on information seeking. McKnight (2007:70) for example explains: “No one can retrieve reliable literature and systematically review it while watching monitors, checking on patients, administering and verifying therapies, and answering telephone calls”... “They respect research-informed practice and want the best of what academia and libraries can give them to support the care of their patients. However, their duties leave no room for such pursuits.”... “Given the economic realities of health care, hospital administrators are unlikely to pay nurses for off duty time for such pursuits. What they do, they have to do on their own time”.

Context can be interpreted in terms of the specific physical environment and ICT facilities, financial support available, as well as in terms of the occupation as such (including the accompanying role and tasks). Sometimes needs and roles may also overlap with those of other occupations and roles. Hospital managers may e.g. show some overlap with the information behaviour of managers in general, which means that we should consider what is relevant to healthcare professionals when planning information literacy programmes, but we should also be alert to what can be learned from HIB for other disciplines and groups.

Healthcare professionals need to understand that their context includes the specific job context as well as the wider environment in which they operate (e.g. the socio-cultural and political-economic environment). The following can be noted:

- Expectations for healthcare professionals to use information (e.g. expectations by management, the government or pressure from patients).
- The nature of the work with e.g. theoretical work such as in academic and research contexts versus practical applications such as treatment, care, and administration.
- ICT infrastructures and Internet access.
- Physical and emotional demands of jobs. Healthcare professionals may experience that they are too tired or emotionally drained to care for information. On the other hand information may help them to cope with stress-full situations (Meier 2000).
- Interest from patients for information seeking. Healthcare professionals are increasingly expected to deal with the result of patients seeking information on the Web. Some has also reported performing searches for patient information (Jackson et al. 2007:95). (In some contexts, e.g. affluent academic communities, there may be greater demands from patients for information and involvement in decision-making.)

By means of a situation analysis (e.g. people involved, available ICT), tasks analysis (e.g. administration, treatment, monitoring), a literature survey (e.g. what has been reported on the specific group's information needs and information behaviour), as well as environmental scanning (e.g. demands from the profession for evidence-based decision, pressure for informed decision-making by patients) the context for a specific group of healthcare professionals can be explored. This can be used to help in understanding the information behaviour of healthcare professionals as well as in supporting them in focusing their information seeking within such a context.

One of the most important aspects of such a “context” is the individual healthcare professional's understanding of the context – his/her own knowledge, understanding and experience (e.g. Ingwersen and Järvelin (2005) in their cognitive and socio-cognitive views of information retrieval (a narrower concept for information seeking)).

Affective issues in the daily tasks and the role of emotions

Information seeking can be linked to physiological needs, affective needs (e.g. anxiety), and cognitive needs (Wilson 1999a, b). A number of HIB researchers, e.g. Kuhlthau (1991) have pointed out the affective component of information seeking behaviour. People will go through different phases in information seeking (e.g. beginning, exploring, retrieving, evaluating, using) and may experience different emotions during these steps or phases e.g. frustration, confusion, despair, excitement, and satisfaction. Healthcare professionals should realise that such emotions are normal – and should be prepared to (i) experience such emotions and (ii) to support patients having similar experiences. Sometimes the frustration will be to such an extent, that people will just give up seeking information, or they will decide that the information is good enough without actually

considering the quality of the information. Information literacy programs should highlight such phases and emotions that may typically (but not necessarily always) be expected.

Information seeking can also result *because* of emotional experiences. Healthcare professionals may e.g. be driven by affective issues to seek information such as deeply caring for patients, trying to bring comfort to patients or to soothe their anxiety. By understanding the affective reasons for information seeking, healthcare professionals can be encouraged to use information for inspiration and job satisfaction.

In certain stressful situations it may also happen that they avoid information. Case et al. (2005) reports on a literature survey on the avoidance of information. The survey focussed on such avoidance with regard to genetic screening and cancer patients. In stressful situations people can actively seek information or they can ignore/avoid information – this applies to personal as well as work environments. Some want detailed information and some scant information. Baker (2005) refers to monitoring and blunting in explaining how people actively seek or avoid information in their efforts to cope with stressful situations. People may avoid information because information makes them feel uncomfortable, and scared. (Fear of information overload is thus not the only reason for avoiding information.)

Personality and learning style

Personality and learning style have been shown to impact on information seeking, relevance judgements, and the use of information. This includes attitude (e.g. professional curiosity) and creativity. In seeking for information on a risky medicine, we can e.g. distinguish between risk avoiders and risk takers (Lion & Meertens, 2001). Other personality types that have been noted include extraversion, neuroticism, agreeableness, conscientiousness and openness to experience (Heinström 2000). Learning styles noted include deep learning, instrumental (surface) learning, strategic learning, field dependant and field independent learning (Ford, Miller & Moss, 2003; Limberg 1999). Heinström (2000) e.g. found that a strategic approach to learning and a conscientious personality shows some correlation. It is associated with orderly and systematic search behaviour, based on much effort, the consultation of fairly many sources, planning of searches in advance and a confident ability to judge relevance. Healthcare professionals should be made aware that their learning style and personality will impact on how they apply their information skills. They need to understand themselves in order to work on facets that may hinder them in effective information seeking and improving their information skills – especially the use of information.

Everyday-life information needs

Being a healthcare professional does not exclude one from everyday life information needs on which a number of studies have been reported. These are not specifically linked to healthcare professionals, but need to be noted. According to Savolainen and Kari (2004) information behaviour needs to be seen in the larger context of life-world or

everyday-life. Information literacy skills learned/practiced for the work context can be transferred to fulfil everyday-life information needs (e.g. helping children to find information for homework assignments or making travel arrangements). What has been learned and practised with regard to everyday-life information needs can also be transferred to the work situation (e.g. using search engines and advanced search techniques). In a healthcare context especially information found for professional reasons may eventually sometimes also be needed in personal context (e.g. being diagnosed with a life-threatening disease).

Dealing with barriers

It is important to find a balance between barriers and solutions and the potential value of information. Barriers can include the following: inadequate access to ICT infrastructures and the Internet, inadequate access to information resources, inadequate computer and Internet skills, inadequate information literacy skills, lack of time, lack of energy, lack of opportunity, lack of personal curiosity, inadequate support from employers for promoting evidence-based practice. McKnight (2007:71) e.g. explains: "... nurses still do not have time to read more than a few paragraphs (if that) on the job". Tannery et al (2007:18) notes: "Or were the barriers more personal in nature, such as poor computer skills, distrust of technology, or lack of professional curiosity? Did they perceive cues in the environment that discouraged the use of these resources, such as disparagement from supervisors or a perception that consulting the professional literature during work hours is wasting time."

Although there are certainly numerous barriers that can keep healthcare professionals from information seeking, such barriers should be acknowledged and where possible alternatives or solutions should be searched e.g. stimulating professional curiosity by linking tasks to useful information, directing healthcare professionals to information that can support patients in their quests for information and dealing with emotional aspects of their illnesses, or counteracting lack of time and energy by exploring the possibilities of collaboration and networking.

Preferences and perceptions

A number of preferences and perceptions have been reported with regard to healthcare professionals. Healthcare professionals sometimes seem to prefer to consult colleagues, drug reference manuals, textbooks, and protocol manuals (Tannery et al, 2007; Cogdill, 2003). There is also strong reliance on doctors for information. Such preferences should be noted and used as starting points in information literacy programs, before directing healthcare professionals to other information sources they may find useful.

There may also be misconceptions, which in particular need to be addressed in information literacy programs, e.g. that searching the Web is equivalent to a thorough literature search, or that all information found on the Internet is of a poor quality, and that patients should be advised to avoid the Internet at all cost (Barnett-Queen, 2001).

Conclusion

Apart from helping healthcare professionals to develop skills in the formulation of search strategies, selecting search terms, and using a variety of information resources such as databases and search engines, they should be supported in understanding their information behaviour and using such understanding to enhance their information literacy skills.

Although there are many aspects of information behaviour that can impact on information literacy, the following have been noted in this paper: the awareness of information needs and the value of information; healthcare professionals as persons-in-context; the importance of affective issues in the daily tasks of healthcare professionals and the role of emotions; the importance of personality and learning style on information needs and the success of information seeking; the importance of everyday-life information needs and how this may overlap with task-related information needs, as well as the realities of barriers to information seeking and how to deal with these. These should be brought to the attention of healthcare professionals and also further explored with regard to specific groups of healthcare professionals and specific contexts. In addition there are also other aspects as mentioned in the introduction that may be explored. More can be identified from the review articles of Case (2006a) and Courtright (2007) and the books by Fisher, Erdelez and McKechnie (2005) and Case (2006b).

Healthcare professionals need to be alerted to the fact that their situations, their needs for information, and their preferences will constantly change. Although their ability to interpret their information needs, as well as to effectively seek and use information should constantly improve if practiced, they should also expect to continue having difficulty in pinpointing information needs and finding useful. Each situation that requires information may have unique elements and complexities of its own. Information literacy is a life-long skill which can be expected to increase in importance – especially in the healthcare context where healthcare professionals do not only have to deal with their own needs, but also with increasing demands from patients for information as well as questions arising from their Internet searching. Against this background fear of information overload should not be used as an excuse to avoid information, but should be actively addressed in our research efforts.

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