Health information acquisition in British and Brazilian hospitals

by

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Dedication

To the ones I love,

Luiz Eduardo,

Luiz Henrique and

Luiz Eugenio

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Abstract

The information transfer in the context of hospitals in two countries, the UK and Brazil has been observed and analysed. This entailed identifying patterns of information use and need by medical professionals and ancillaries in both countries, and especially in determining deficiencies in satisfying such needs. The first part of the project has involved participant observation of both medical and library/information staff during visits by the former to the hospital library. After observing the information-related activities of each group and their interactions, subjects have been interviewed to determine their own views of their information-seeking activities. The observations have been carried out at the two types of hospital, and in both the UK and Brazil. The first type is a hospital with a medical school; the second is a major hospital, but not attached to a medical school. (Part of the study is intended to pinpoint informational differences due to differing organisational emphases.) The second part of the project has involved the use of questionnaire and interview to gather data on how health professionals find information outside the library. Interviews were applied after the application of the questionnaires to gather more details on topics not covered by questionnaires. The results cast light on the similarities and differences of the British and Brazilian informational environments. The conclusions examine the guidelines that, particularly for Brazilian hospitals, were drawn from the data such as, the need to implement translation services in Brazilians' libraries in order to facilitate the use of materials from abroad (journals especially), to encourage librarians to make the appropriate planning in order to have the proper budget to develop the collections according to users' needs, to encourage users to use electronic publications where telecommunication infrastructure is available, as they seem to be cheaper than the printed versions, to develop the habit of doing users' studies as a management tool in order to have a closer picture of users' habits and needs.

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CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The prime aim of the present investigation is to look in a detail at the process of acquisition of information by medical staff and allied professionals in the context of a developing country (Brazil) and a developed country (the UK). This means including not only the strategies they apply to find information, but also the reasons or situations that provoke their need for information acquisition, and a description of the context in which their information needs and information acquisition from different information sources occur.

User studies relating to health care information cover various kinds of health professionals, as well as patients and health managers. Although this has been an area of study since the 1940s, some categories of user have received more attention than others. Studies have, in particular, centred mainly on medical practitioners. Research has also paid more attention to the use of library material, and to the evaluation of specific information services, than to the overall information acquisition behaviour of health professionals while they perform their professional activities. In terms of methods of data-gathering on these activities, the literature reports a predominance of one type of research instrument - questionnaires - and the use of quantitative analysis.

The present investigation studies the information acquisition habits of more than one category of health professional (i.e. both medical practitioners and nurses) in relation to their working roles and environments. It also focuses on the professionals'

information acquisition both as individuals, when they face various situations relating to their working activities, and as groups of individuals, when they function within a variety of information systems.

As the central idea of this investigation is to study the information acquisition habits of health professionals in a holistic way, the application of only one type of information- gathering instrument or method would not be the most efficient form of data collection. Different methods have therefore been applied in order to give as many details as possible about the subjects' behaviour. Data were collected by means of 1) observation and interview while users visited the libraries, 2)observation while they interacted with library staff at the enquiry desk, 3)questionnaires and interviews, in order to have a broad picture of the use of information sources besides those found in the libraries. Statistical analysis was applied to both questionnaire and interview data to see whether there are significant differences in the process of information acquisition between the UK and Brazil, and, if so, whether these can be related to differing information environments. Although there are obviously great differences (economical, social, political) between the two countries, a study like the present should bring out the differences, and maybe the similarities, that exist between medical libraries and medical staff behaviour in the two countries. The findings could help improve the design of hospital information units in Brazil.

1.1.1 Objectives of the Study:

This research proposes:

- To explore patterns of information acquisition when medical staff visit their hospital library;
- To explore patterns of behaviour when medical staff interact with library staff as they seek information;

- To explore patterns of information-seeking when medical staff seek information from sources other than those found in libraries;
- To compare the information acquisition patterns of medical staff in various environments and contexts.

1.2 Background

1.2.1 Brazil

Officially the Federal Republic of Brazil, a country in South America, covering an area of 3,286,487 sq. miles (8,511,965 sq. km), nearly half of the continent's total land area and occupying 4,600 mi (7,400 km) 40 percent of its Atlantic coastline. The capital is Brasilia. Brazil borders on every country in South America except Ecuador and Chile. Brazil has the largest population of any Latin-American state, yet, although its population has increased very rapidly, its mean density remains low, at 49 persons per sq. mi. The population in 1991 was estimated at 160,737,489. It is skewed towards young people: 32% of the population were below the age of 15 and only 5% over 65. The Brazilian population is characterised by its rapid growth, its youth, its diverse origins and its geographic mobility. The birth rate remains at a high 31 per 1,000 population. A family planning programme has been developed to provide maternal and child health information and services for the population. The death rate has been progressively reduced. The youthfulness of the population contributes directly to the high birth rate.

A democratic regime prevailed in Brazil from 1945 to 1964, during which time the capital was moved from Rio de Janeiro to Brasilia. In 1964, the government instituted economic policies that aggravated Brazil's inflation, and the President was overthrown by an army revolt. The next five presidents were all military leaders. Censorship was imposed, and much of the opposition was suppressed amid charges of

torture. In the 1974 elections, the official opposition party made gains in the chamber of deputies, and some relaxation of the censorship occurred. However, the skewed income distribution and inflation led to a severe economic recession. Foreign debt became amongst the largest in the world.

Since the return to civilian rule in 1985, successive Brazilian governments have introduced economic and financial plans to curb high inflation and the large budget deficits. In 1991, a National Reconstruction Plan was introduced to promote growth and investment and reduce the role of the state. State monopolies in ports, communications and fuels were reduced and agricultural and industrial subsidies ended. A sixth economic plan was introduced in 1993 to continue to cut spending and accelerate privatisation.

The most radical and successful plan so far was introduced in February 1994, when the government and Congress agreed the first balanced budget in 20 years and created a US$16 billion social emergency fund as the first stage to financial stability. An interim currency pegged to the UK dollar, known as the Real Unit Value, was introduced in March 1994 as the second stage. In July 1994, a new non-inflationary currency, the Real, was introduced. By mid-1995, inflation had been reduced from 2,000 per cent annually to two per cent per month, bringing about economic stabilisation and an increase in foreign exchange reserves to US$40,000 million. In February 1995, the privatisation programme was reactivated, and the oil industry, telecommunication, electricity supplies, gas distribution and coastal shipping were privatised. In April 1994, Brazil signed an agreement to reschedule its US$52,000 million debt to 750 foreign commercial banks.

Brazil has a developing market economy, based principally upon manufacturing, trade, and financial services. The gross national product (GNP) per capita was estimated at US$2,770 in 1992.

Primary education is compulsory and is the responsibility of state governments and municipalities. At this level, approximately 12 per cent attend private schools. Secondary education is largely the responsibility of state and municipal governments, although a small number of very old foundations remain under direct federal control. Over 33 per cent of all pupils at this level attend private schools. Higher education is available in federal, state, municipal and private universities and faculties. The literacy rate (1991) is 81%.

Brazil's life expectancy at birth (1995) is 57 years for males and 67 years for females. Births (per 1,000 pop.) equal 21. Deaths (per 1,000 pop.) equal 9. Natural increase: 1.2%. In 1990, there were 35,701 hospitals and clinics (11,843 private), of which 7,280 were for in-patients (5,246 private). Hospital beds: 1 per 270 persons. Physicians: 1 per 848 persons. Infant mortality (per 1,000 live births 1995) is 57.

The National Institute for Social Security provides benefits for sickness, disability, old age and maternity. Health conditions in Brazil vary according to size of income and region. In general, however, health conditions are poorest in rural areas, which often suffer from a shortage of doctors and trained nurses. A health programme initiated in 1984 was designed to adapt available health-care resources to the needs of the public. Contributions are paid by employees (according to their salaries), and employers. Every person is entitled to use the services. Their effectiveness is limited, however, because the private sector operates the great majority of hospitals.

Medical Libraries

The organisational structure of most university medical libraries in Brazil is as sub-units of the main university library. Therefore, most medical libraries have had to limit their acquisition of information resources to accord with the main library budget, thus

seriously limiting access to the range of information available in the field. The printing and publishing industries in Brazil are not well developed (including the University publishing houses), and medical libraries depend largely on European and American publishing houses for their journal collection. Poor bibliographic control makes the retrieval of medical literature difficult. Although the most important Brazilian medical journals are covered by the international standard indexing and abstracting services, such as Index Medicus (MEDLARS) and Biological Abstracts, a great part of the literature relevant to the local health conditions in the country are not well documented.

Efforts have been made to improve this situation. Since the creation of the Latin American and Caribbean Health Sciences Information Centre, formerly the Regional Library of Medicine (Biblioteca Regional de Medicina - BIREME), established by PAHO (Pan-American Health Organisation) in Sao Paulo in 1967, efforts have been made to establish a vigorous regional reference information system on health. Its strategy is based on the delivery of specialised technical support to smaller, but similar centres, most of them linked to universities. These are located in most of the countries in the region, to foster their development. BIREME co-ordinates a network of libraries and documentation centres on health which are supervised in each country by a national co-ordinating centre designated by the government.

In 1985, BIREME started to decentralise the gathering as well as the processing of health-related literature generated in the region, implementing a standard methodology and standard terminology. The bibliographic records generated at the many co-operating centres and those prepared by BIREME itself are stored in a database called LILACS (Literatura Latino Americana en Ciencias de la Salud: Latin American Health Sciences Literature). In 1986, 12,000 records were entered into LILACS. From 1987, this figure has been growing by 15,000 records each year. In addition, BIREME is supposed to provide several services to the network, such as:

bibliographic searches (on LILACS and on a subset of the MEDLARS database), document delivery, selective dissemination of information and training.

The progress of the BIREME network faced several problems due to inadequate resources and capabilities, chief among which has been the lack of efficient and reliable communication links between the members of the network. Access by the local centres to the central database (LILACS), which they were collectively helping to construct, was unfortunately hindered by all sorts of technical and financial difficulties stemming from the need for data communication facilities between and within the countries involved. This situation not only prevented the centres from profiting from the results of their co-operative activity, but also contributed to weakening their motivation to continue their efforts toward the progress of the whole system.

Bibliographic databases, like LILACS, do not need to be updated as frequently as (say) financial databases. In view of this, the application of a non-erasable data storage medium, such as CD-ROM, to which access can be obtained by small inexpensive personal computers, appeared not only effective, but less costly. Distribution could be easily done via the dispersed centres. During December 1986, with the participation of a representative from BIREME, the first steps of the pre-mastering process for the planned CD-ROM were attempted, employing a reduced data set from LILACS. The first issue of the CD-ROM contained four databases together with a thesaurus and user manuals. The first database contained 50,000 bibliographic references on health-related literature produced in Latin America during the previous five years. These included descriptions of articles, monographs and non-conventional documents, with authors, titles, publishing data, abstracts and keywords for each item.

Using the infrastructure developed for the BIREME project, medical libraries received from a governmental research agency in Brazil financial support to expand their collection of databases in CD-ROM, and to improve services to the users of medical libraries. Unfortunately, libraries linked to non-teaching hospitals in Brazil that do not participate as a co-operative centre of BIREME did not have the same development opportunities as those involved with the PAHO Project. Hence, despite this existing network, much more has to be done before Brazilian medical libraries can offer all the appropriate services to their users.

1.2.2 United Kingdom of Great Britain and Northern Ireland

Great Britain is the geographical name of that island of the British Isles which comprises England, Scotland and Wales (so called to distinguish it from 'Little Britain' or Brittany). By the Act of Union, 1801, Great Britain and Ireland formed a legislative union as the United Kingdom of Great Britain and Ireland. Since the separation of Great Britain and Ireland in 1921, Northern Ireland remained within the Union which is now the United Kingdom of Great Britain and Northern Ireland.

The country covers an area of 94,251 sq. mi. The UK population in 1992 was estimated at 58,295,119. Age distribution shows 19% of the population less than 15 years old and 16% over 65. Population density is 619 per sq.mi. The gross national product (GNP) was estimated at US$980,2 bln. in 1992, about US$17,760 per capita.

UK life expectancy at birth (1995) is 74 years for males and 80 for females. Births per 1,000 population: 13. Deaths per 1,000 population: 11. Natural increase: 0.3%. Hospital beds: 1 per 146 persons. Physicians: 1 per 611 persons. Infant mortality per 1,000 live births (1995): 7. The literacy rate (1992) is 100%.

The National Health Service (NHS) in England and Wales started on 5 July 1948 under the National Health Service Act, 1946. There are separate Acts for Scotland and for Northern Ireland, where the Health Services are run on similar lines to those in England and Wales. The NHS is a charge on the national income in the same way, e.g. as the armed forces. Every person normally resident in this country is entitled to use any part of the services, and no insurance qualification is necessary. Most of the cost of running the service is met from the national exchequer, i.e., from taxes.

Since 1948 a weekly NHS contribution has been payable by employees and the self-employed. In 1957, this contribution was extended to employers. For convenience, this contribution is collected with the National Insurance contribution and for 1992-93 was estimated to be £4,597m. for Great Britain (£3,971m. for England and Wales). The NHS is funded 13% by these contributions, 82% by general taxation, 3.5% by charges for drugs and dental treatment and the rest from other receipts. Health authorities may raise funds from voluntary sources; hospitals may take private paying patients.

The National Health Service and Community Care Act, 1990, provided for a major restructuring of the NHS. From 1 April 1991, health authorities became the purchasers of health care, concentrating on their responsibilities to plan and obtain services for their local residents by the placement of health services contracts with the appropriate units. Day-to-day management tasks became the responsibility of hospitals and other units, with whom the contracts are placed, in their capacity as providers of care.

Regional Health Authorities have a key strategic role in the management structure of the reformed NHS. They are agents for managing change and for ensuring the implementation of government policies. District Health Authorities and Family Health Service Authorities are directly accountable to them, and the Region functions as an

active link between these authorities and the NHS Management Executive at the Department of Health. In April 1996 the Regional Health Authorities were replaced by eight NHS Executive Regional Offices.

The key responsibility of District Health Authorities is to ensure that the health needs of their local communities are met. They have the purchasing power to commission hospital and community health services for their residents. In doing so they have a duty to ensure that high standards are maintained and that they are securing the best possible value for money. Under the revised arrangements for the management of family health services, Family Practitioner Committees, which had previously been directly responsible to the Secretary of State for Health, became Family Health Services Authorities, accountable to Regional Health Authorities.

NHS Trusts are established as self-governing units within the NHS. Trusts are responsible for the ownership and management of the hospitals or other establishments or facilities vested in them, and for carrying out the individual functions set out in their establishment orders.

General practitioners with at least 7,000 patients (6,000 in Scotland) may apply for fundholding status, responsible for their own NHS budget. 2,040 practices had done this by 1994.

The NHS broadly consists of hospital and specialist services, general medical, dental and ophthalmic services, pharmaceutical services, community health services and school health services. All these services are free of charge, except for such things as prescriptions, spectacles, dental and optical examinations, dentures and dental treatment, amenity beds in hospitals and some of the community services, for which charges are made (with certain exemptions). In the UK there were (1991) 33,464 general medical practitioners (G.P's), (1989) 17,830 general dental practitioners and

(1991) 298,300 qualified nurses and midwives. There were (1990) 338,630 average daily available hospital beds in the UK.

Medical libraries

Britain is well equipped with medical libraries. The royal colleges, the medical societies and the teaching and research institutes have between them accumulated a rich storehouse of literature. The greatest concentration of libraries is in London and includes those of the Royal Society of Medicine, the Wellcome Institute for the History of Medicine, the British Medical Association and the royal colleges.

The undergraduate medical schools in London also have good libraries, which cater for the hospital medical staff and for the postgraduate research staff. The majority of the librarians, like their provincial colleagues, give instruction in the use of the library and proper exploitation of the literature, and by so doing make an important contribution to the early training of research workers.

The combined library resources of the University of London Library at Senate House and those of its constituent schools and colleges are vast. The University of London is a federal university with no centralised library system. The task of co-ordination is carried on by the Federal Library Co-ordinating Services (FLCS), formally constituted in 1973, whose staff are based at the University Library. Initiatives of major importance have been undertaken by the implementation of LIBERTAS, working in co-operation with the librarians throughout the University. (LIBERTAS is a suite of software programs designed by Swalcap Library Services Ltd to handle library routine procedures). Access to LIBERTAS is over JANET (Joint Academic Network) (Stone, 1990). It provides both cataloguing and issue modules. A number of the larger colleges and universities in the country have acquired the same software in order to provide a common approach to library systems.

The need for continuing medical education has led in recent years to the establishment of a number of postgraduate medical centres, sited mainly in non-teaching hospitals in the provinces. Their aim is to provide a suitable adequately-equipped location for the postgraduate teaching of hospital staff and general medical and dental practitioners, and at the same time to cater for consultants, junior hospital staff and general practitioners who wish to meet to discuss problems of common interest. The first purpose-built postgraduate medical centre was opened in 1963. Many of these centres have only small libraries; in most cases a regional network has been developed covering all libraries within the area administered by the Regional Health Authority and backed up by the relevant university medical libraries.

Excellent medical libraries are maintained in the provincial English medical schools - Birmingham, Bristol, Cambridge, Cardiff, Leeds, Leicester, Liverpool, Manchester, Newcastle upon Tyne, Nottingham, Oxford, Sheffield, Southampton - and in other parts of the UK. Medical societies, too, are active in the provinces, but most of their libraries have now been incorporated into local hospital or university medical libraries.

The continuous growth of scientific literature, the proliferation of the periodical literature and the interconnection of one discipline with another make it almost impossible for any one library to be completely self-sufficient; other sources must be tapped. The most recent trend in Britain as well as in the United States has been the development of library networks; approaches are varied but the objectives are common. On both sides of the Atlantic, standards of service to the user have been raised through co-ordination and co-operation to make more effective use of local and regional resources. In the UK, regionally organised library services to National Health Service staff began, effectively, with the appointment of a Regional Librarian in the Wessex Region in 1967. The NHS Regional Librarians Group was formally instituted in 1976. Today 8 regions, into which the NHS in England is administratively divided,

together with Scotland, Wales and Northern Ireland, are all represented in the Group, either by holders of the designated post of Regional Librarian or by the librarian of a major library having regional contact and support (Forrest and Carmel, 1987).

University medical schools libraries in the UK are typically attached to the University Library. Although they form a sub-unit of this system, they have their own budget which comes from two different sources: the University and the NHS. The non-teaching hospitals libraries are funded by the NHS and by the hospital for which they provide a service.

CHAPTER TWO

INFORMATION ACQUISITION - review of literature

The focus of this Chapter is on the development of user studies, in general, and in health care, more specifically, from the 1950s to 1990s. It is not intended to present an exhaustive history of user studies, but progress of methodology and theory in this area should be emphasised. The study begins with older references, moving to new works in order to describe conceptual changes that have occurred in the area. In discussing the progress of information acquisition in health care, the focus is again primarily on the search for new methodological approaches. Besides such progress, this review covers the topics developed by this research, i.e., categories of population; use of information sources and channels; factors that affect the acquisition of information. Brazilian user studies are reviewed in both, general and health care aspects. Although some of the works are therefore not related to the subject field of health professionals, they provide useful information on how Brazilians use information.

2.1 The state of information acquisition in general

In 1981, Wilson concluded that 'during the last 40 years the majority of the research in Library and Information Science has been focused either on user studies or the design of information retrieval systems'. Today, though user studies are still an important topic of research, the greater concern is with the design of information retrieval systems which use information technology.

Crawford, in 1978, estimated that, over the past 30 years, some 1,000 papers on user behaviour and the use of information systems had been published. The figure had been based on a listing by Atkin of over 600 such studies published between 1950 and 1970,

and a growth rate of over 30 studies a year, estimated from a count of entries in Information Science Abstracts (1975-77). Later, in 1986, Dervin and Nilan found more than 300 potentially relevant citations since 1978. 'During the past decade', according to Renecker (1993), ' well over one thousand studies have been conducted in the areas of information needs and uses and information seeking behaviour. Despite the proliferation of studies, however, we have a very limited understanding of the processes that drive information seeking or the variables that influence it'.

Work in the area of user studies can be traced back to the period immediately following the second World War. Two seminal papers were presented by Bernal and Urquhart during the Royal Society Conference in 1947, 'which provided a great stimulus to the study of the information, document, and library requirements of scientists' (Brittain, 1982).

In 1971, Wood considered that 'an increasing number of user studies is being carried out in Eastern Europe and in the USSR , but there has been no major work reported and consequently the review of user studies from 1966 to 1970 considers mainly British and American investigations'(Wood, 1971). Two years later, Lin and Garvey (1972), noted that the literature of user studies showed that systematic studies of information needs and uses had become a truly international phenomenon. The beginning of the 1970s saw programmes in a range of nations (such as Canada, The Netherlands, Russia and East Germany) to study the information needs and uses of scientists and technologists

In the 1950's and 1960's user studies were almost entirely focused on the information needs of scientists from both pure and applied scientific disciplines (Taube, 1959). Until 1971, ARIST reviews included studies in science and technology only. The first period of user study, which lasted until the mid-sixties, according to Martyn (1974), was largely concerned with the users of scientific and technical information, this being

traditionally the area in which information problems were most generally felt and in which information workers were most active. Most studies were carried out on relatively small numbers of subjects, drawn either from members of specific disciplines, or from the scientific population as a whole, or, less frequently, from among the users of particular systems.

By the end of the seventies, user studies had progressed from the restrictive notion of information user as the scientist/technologist to a broad concept of user as any individual seeking information. As the field of user studies turned its attention to the social sciences and humanities, where general descriptions of users were still lacking, the scope of studies enlarged. By 1986, a review by Dervin and Nilan covered not only any discipline, but also any kind of user in a variety of environments. Scientists were no longer regarded as the exclusive users of information; every member of a community, profession or organisation, every individual, in sum, is now acknowledged as an information user who can be studied.

To take a specific example, user studies have been pursued at Sheffield University's Department of Information Studies since 1963. During the 1960s and the first half of 1970s, user studies featured prominently in student dissertations. The work of students reflected methodological advances and experimentation in user study activities generally. By 1969, information issues not confined to library contexts were making their appearance in student dissertations. Studies concentrating upon information needs, information use, information-seeking behaviour and communication practices of special groups became increasingly frequent in subsequent years.

The late 1960s and the 1970s were years in which user studies flourished. Most were aimed at furthering understanding of forms of information behaviour in the expectation that such knowledge could be used to improve information services of all

types. The work produced by INFROSS (1971), encouraged staff at the department to introduce, in 1973, a new Master's programe for social science information specialists. Due to the work being developed in the Department, the Centre for Research on User Studies (CRUS) was established at Sheffield University in 1975. CRUS became a centre which advised on user study methods, held courses, published methodological guides and conducted research. The first major contribution of CRUS was to review the state of the art of user studies (Ford, 1977).

In subsequent years, CRUS developed a variety of projects focusing on methodological problems and solutions. Three areas were covered in particular: humanities, education and business information. The use of medical literature was also studied (Ford, 1980). Beal (1985) drew on the growing interest of librarians in community profiling to produce a comprehensive guide to the range of techniques associated with profiling activities. It is considered the standard work in this area. Valuable courses and seminars based on methodological issues were provided, as well as advice on user research matters. Between 1978 and 1984 over 400 librarians and researchers contacted CRUS to seek this kind of advice.

Parallel with user studies at CRUS, T.D.Wilson developed intensive, qualitative, forms of data gathering in a project designed to examine the information needs and information services in local authority social services departments (Wilson et al. 1978). Project INISS (Wilson et al., 1978; Wilson & Streatfield, 1980) was conceived as an action research project. (For details see 2.3.3 New models). The principal researchers, David Streatfield and T.D.Wilson, continued to run workshops on information in social services departments for almost 10 years after the end of the project.

At the end of 1984 the BLR&DD substantially reduced the amount of financial support which it provided for CRUS. The decision brought about a complete change

of staff, and more pressing financial imperatives. Despite the change of name to Consultancy and Research Unit, user studies remained the prime focus of CRUS research.

2.2 Problematic areas in user studies until the 1970s

2.2.1 Methods and methodology

The methods and methodology of user studies have been the target of constant criticism. In a review of the existing literature in 1959, Taube (1959) questioned its validity as a guide to improving information services. In the first Annual Review of Information Science and Technology (ARIST) paper on this topic in 1966, Menzel emphasised his search for quantitative studies and tried to establish working definitions and concepts. He pointed out, in his final comments, that despite the observed technical improvement of user studies, 'researches still fail to take advantage of the available contributions of behavioural science'. Another review complained that techniques have been used in a 'crude' and 'precarious' way (Herner & Herner, 1967). Paisley (1968) expressed concern over the field's failure to adopt the sound methods of its own best work.

A characteristic of user studies in the 1960s is the application of single methods of collecting data. By and large, they are descriptive studies, and hypothesis testing is not the main objective (Herner & Herner, 1967). Brittain (1975) reviewed the state of user studies from a purely methodological point of view. He criticised in detail questionnaires and interviews, pointing out that: a) questions were often defined from the point of view of the information specialist, who was often biased towards formal information systems and assumed a similar bias in the case of the user; b) data was based upon what the interviewee was able to recall at a certain point in time; data was not gathered over a period, to find out changing patterns; c) studies were biased

towards information needs that could usually satisfied via documents. On the one hand, he suggested that existing techniques could be improved by a) collecting data about the user needs from the user point of view; b) performing longitudinal rather than single studies; c) applying more rigorous statistical analysis. On the other hand, he recommended the application of new approaches, such as the Delphi technique, to predict future information needs together with continuous assessment of user behaviour to monitor the performance of a specific information system.

Brittain (1982) pointed out that one of the problems of present-day user studies is that the basic methods have gone largely unchanged over the years, although the objectives of user studies have changed appreciably. Although many methods have been tried for the assessment of information requirements, questionnaires and interviews have predominated (Brittain, 1982). Rohde (1986) noted other methods that have been used, although some rarely. One such is observation. (There are various types of this: structured - derived from participant observation - involves placing an observer in a social setting to observe activities, following pre-determined categories, which are defined as of interest to the research; participative - a type of observation that allows researchers to experience activities directly, to get the feel of what events are like, and to record their own perceptions) Other relatively rare approaches include experiments, simulations, and analysis of various records or documents, such as circulation records, statistical records, diaries and publications in various formats (Herner and Herner, 1967; Ford, 1977; Crawford, 1978). Two techniques used in analysing these records or documents are citation analysis and content analysis.

Each method has its weaknesses and biases, so a number of studies have either refined techniques, for example, using the critical incident approach in questionnaires, interviews, or both, to provide internal checks against bias (Crawford, 1978; Ford, 1977; Herner and Herner, 1967; Paisley, 1968). Although early user studies were

criticised for not employing the more sophisticated methods which had been developed (Menzel, 1966), it was also noted that the complexity of the task (identifying users' varied information needs) required more sophisticated quantitative techniques, capable of greater detail and accuracy than any which had yet been developed (Lipetz, 1970; Martyn, 1974; Menzel, 1966).

2.2.2 Models of information communication

Herner & Herner (1967) proposed that user studies should be understood in terms of a communication model that distinguishes between information sources as originators of messages, users as recipients of messages, channels/media as means to transfer messages, activities performed by originators/recipients to send/receive messages and the messages that become information when they are received by the user. They define information as messages that have been acknowledged by the user, and as a consequence they identify two types of information need: a) information needs in terms of the messages themselves, i.e. the contents of the messages; b) information needs in terms of the means selected to satisfy them.

The communication model of information transference has been useful to display the complex phenomena that user studies attempt to explain, particularly at a time when user studies were firmly focused on library-related information sources. It has helped to decide at the design stage of a user study, whether the study is focused on components such as sources, users, messages, or on interactions between these components, as, for example, reading, searching catalogues/indexes, attending conferences, etc.

Another conceptual framework to understand user needs and to interpret user studies was formulated by Paisley (1968). The user (in his case, still the scientist or technologist) interacts with ten different systems. They are: the cultural system, the

political system, the membership group, the reference group, the invisible college, the formal organisation, the work team, the individual, the legal/economic system and the formal information system. The first eight systems (from the macro-environment of the scientist's culture to the micro-environment of the scientist's individual mind) are inclusive of each other, supporting eventually the individual's own information system; while the last two, the legal/economic system and the formal information system, are superimposed onto any of the former. Each of them possesses their own flow of information; therefore information needs and the means to meet them are particular to the specific system. This goes a step further than Herner & Herner. While the latter propose a model to understand the basic process a user study has to deal with, Paisley offers a conceptual framework that displays all the different environments where this communication process can happen. However, when we look at the studies in his review, we realise that techniques have become more sophisticated and results are richer, but that theory has not grown in the same way.

Wood (1971), in his user studies review, remarked that 'an overview of the whole field of user investigations during the last five years reveals little change in the basic methodology employed. The self-administered questionnaire often backed up before, and sometimes after, by interview, remains the principal means of collecting data regarding information transfer as a whole'. As more sophisticated methods were developed, it became possible to analyse more variables, and the use of multivariate analysis techniques made possible correlations with composite characteristics of users. The most commonly used variables were demographic, e.g. sex, race, age, but they provided little insight into the pattern of user information-seeking behaviour. (D'Elia, 1980; Zweizig and Dervin, 1977).

Many studies, however, did not take advantage of the advances in methodology. Presentation of data was frequently descriptive, tests of significance and other techniques of statistical analysis were often ignored (Ford, 1977). The approach was

frequently via an examination of each variable independently of all other variables, with no attempt to determine the degree to which the variables overlapped and were thus redundant (D'Elia, 1980; Zweizig and Dervin, 1977). Even where sophisticated methodology was used, it was obscured by poor conceptualisation, resulting in, for example, a study with carefully considered variables which backed away from the issue of how the variables should be treated (Paisley, 1968). Paisley illustrates this problem with a study of North American Aviation, carried out in 1966; it was a methodologically sophisticated study, but weak in analysis because of a "conceptualisation gap". He concluded that "conceptual poverty is independent of methodological richness". In some cases, sophisticated analysis techniques were used on data which did not warrant it, and, in others, good data were collected which were not exploited fully because their potential was not recognised (Herner and Herner, 1967).

Crawford (1978) was more optimistic, commenting, 'most use studies have continued to be practical ventures, but there is evidence of increasing refinement in conceptualisation and methodology. Sophisticated social science concepts combined with quantitative techniques have produced both effective case reports and field studies... utilising well-designed survey instruments; carefully selected, stratified, random sampling; and appropriate techniques of statistical analysis...Slowly, valid and empirical data are being accumulated which, in time, will contribute to a unifying theory of information needs and uses'. Others, however, were less optimistic than Crawford and noted a lack of progress, especially in terms of system design.

User studies took a long step forward when the environment in which information is used was considered, and a distinction was made between the cognitive and social aspects of use of information. Borrowing from a number of social science fields, researchers began using a variety of non-demographic variables to describe and

predict user behaviour and needs better. Mick et al. (1980) organised these variables as follows: individual attributes, work environment attributes and task attributes combined with individual and information variables to provide a model of information-seeking behaviour that not only describes the individual's behaviour but also the information flow within a given organisation. 'When considered in relation to one another, these (task, job and environment) variables provide a description of the dynamics of information flow in the organisation and can be used to identify barriers to information flow. It is important to understand, however, that organisations (like individuals) are unique and that cross-organisational analysis must involve higher-level systems to which organisations belong, and not generalisation from one organisation to another. Information travels through diffuse, complex paths. Individual information behaviours are the product of complex interactions involving personal attitudes, background, role, function, specific task situation, environment, etc. It is highly unlikely that any two individuals would display the same information behaviours, even in response to similar task and environmental situations' (Mick et al. 1980). Thus, user's behaviour cannot be reduced to a definite set of laws of general application.

The personal, professional, and psychological characteristics in work roles outlined by Summers et al. (1983) fit into this scheme, as do the factors identified by Crawford (1978): cognitive and social aspects of information use; the several environments within and outside the user; types of issues, for example, micro (immediate and administrative-level policy) and macro (nationally significant); different information processing styles. Attributes outside the work place can affect use of other information systems, for example, the mass media; social networks--both formal and informal group involvement; location in the physical environment, for example, distance of residence from the library; personality attributes; and attitudes toward information, new media and technology (Zweizig and Dervin, 1977). A rich array of variables have been used in more recent user and information needs studies, and the non-demographic attributes have provided new information about users, yielding, for

example, more significant, non-redundant correlations with library use (Zweizig and Dervin, 1977).

2.2.3 Comparison of results

Attempts to compare studies in order to assess progress led to the conclusion that the data could not be correlated: each study stood in isolation with no obvious links that would enable it to be compared to other studies (Skelton, 1973). The studies had differing objectives, and there were no standardised, generally accepted methodologies, forms of data analysis, presentation, or reporting; in addition, there were differing samples, scales, and definitions (Brittain, 1982; Faibisoff and Ely, 1976; Ford, 1977; Skelton, 1973). At the time of INFROSS (Investigations into Information Requirements of the Social Sciences) attempts were made to compare the results from social science user studies one with another, and also to compare major groups of social science users with science users (Bath University, 1971; Line, 1971). It proved to be very difficult (Skelton, 1973). The studies either contained factors which were not comparable, or, where the studies were comparable, they were of low validity, poor quality, or otherwise inadequate. Even where the same research methods were used, there were problems of comparability. In fact, the results of the studies may have increased the general understanding of the communication patterns of professionals, but 'many of the results are of more interest perhaps to the sociologist of science than they are to the average practising librarian or information scientist' (Brittain, 1982).

2.2.4 The Hypothetico-deductive model

The "hypothetico-deductive" model of research, with its emphasis on the statistical analysis of data collected under experimental conditions, evolved in the natural and physical sciences, and the social science adaptation of this model has been the predominant means for studying information needs and uses (Hounsell & Winn,

1981). This traditional model of research has been considered as deriving from positivism. The positivist view is of a deterministic world which is discoverable, describable, and predictable (Dervin, 1980), and thus 'people can be reduced to a set of variables which are somehow equivalent across persons and across situations' (Streatfield, 1983).

Hughes (1980) enumerates the four basic characteristics of positivism as: a) reality is external to the knower; b) epistemology is the central issue of philosophy; c) there is unity of method between the natural and the social sciences; d) facts and values are distinguished - the former lie within the domain of science; the latter are dismissed. Positivism understands reality as being independent from the knower; reality has an objective existence of its own. This assumption has its equivalent in the notion of information as independent of the user. Information, or more strictly speaking recorded information, has an objective existence of its own that allows for its storage, organisation and retrieval, i.e. information exists independently of, and externally to, human action and thought (Dervin, 1977, 1980; Swift et al., 1979). Information is a thing which can be transferred from one person to another like a brick (Dervin et al., 1982 a), and knowledge can be accumulated brick by brick (Swift et al., 1979). As a logical consequence, the more the user knows about the formal organisation of information, the better he or she can exploit it. This assumption has prevailed in the design of information systems for decades (Dervin, 1977), and it is still behind the notion of end-user training. It has also meant that positivist user studies aim at isolating variables and testing their relationships. Quantitative data have been preferred to qualitative data, and statistical analysis has been the prevailing model of explanation (Rohde, 1986; Ellis, 1993). This style of research exemplifies what Burrel & Morgan (1985) refer to as the objectivist approach to social science - characterised by a realist ontology, positivist epistemology, deterministic view of human nature, and nomothetic methodology (Ellis, 1993).

Streatfield (1983) sees the positivist paradigm as underlying much of library and information science research, as well as system design. The confusing of quantity with quality in evaluation, the notion of the independent nature of knowledge captured in publications, the accumulation of these publications to represent fields of knowledge, the attempts to create universal classification schemes and general thesauri based on the assumption that all fields of knowledge can be consistently viewed in a particular way and related to each other and thus described and their terminology defined (Streatfield, 1983; Swift et al., 1979), and the customary definitions of information user, information use, information need, user studies, and user education are all seen as stemming from the positivist legacy. People can be matched with the information product which they need, and users can be taught to adapt their behaviour so that they can benefit fully from the use of information services already available (Streatfield, 1983; Dervin, 1976, 1977; Dervin et al., 1980).

2.2.5 Concluding comments

In 1982, J.M. Brittain reviewed the problems of user studies in the previous two decades and concluded that, although the number of user studies had increased greatly during the 1960s and 1970s, 'resulting in an enormous quantity of data about the information gathering, seeking and using behaviour of a large number of scientists, applied scientists, social scientists, practitioners, administrators, government officials, school teachers, educationalists, and, finally, members of the general public, there were no generally acceptable theoretical guidelines to make sense of this huge mass of data'.

The lack of a unifying theory might account, in part, for the little progress which had been made in applying the results of the studies to systems design (Skelton, 1973). Theoretical guidelines were needed to make sense of the scattered findings and huge mass of data which had been accumulated (Brittain, 1982; Paisley, 1968). Lipetz,

(1970) noted however, that there were a number of meaningful pieces of theory available and awaiting evaluation. He speculated that 'there appeared to be a theory gap in the past because of differences in educational background between experimenters (largely from the social sciences and humanities) and theorists (often from the physical sciences)'.

Brittain (1982) also noted that some areas had been neglected and needed to be studied; most user studies paid far more attention to formal communication than to informal channels. This emphasis was acceptable when user studies were carried out in institutions of research and higher education, but as user studies were extended into environments where professionals do not have easy access to documents and library and information services, the concentration upon formal communications system became less and less appropriate. In addition, few studies paid attention to what happens to documents once they reach users: information scientists and librarians have for the most part ignored it (Brittain 1982; Wilson 1981). The supply of documents and information needs to be 'tuned' to estimates of the probability of user interest and user success in solving scientific and social problems. Although information scientists and libraries have paid a good deal of attention to the concept of the relevance of retrieved documents, they have ignored for the most part the concept of reinforcement as developed in psychology (Brittain, 1982).

The natural outgrowth of these critiques of the state of research suggested the requirement for a different approach to information need and user studies. Typically, the attempt has been made to deal with individuality in a normative way, that is, each individual is seen as a juxtaposition of attributes extending across time and space. The more we know about these attributes, the better we can predict behaviour. Yet, despite the development of complex multivariate designs and the addition of more variables, little can be predicted about information needs or information-seeking behaviour by studies using traditional methods (Dervin, 1980; Dervin et al., 1976);

1982b; Zweizig and Dervin, 1977). The usual assumption is that only by introducing more variables will it be possible to account for the variance (Dervin, 1980), but this approach is not only unwieldy, it is of questionable usefulness for planning information services (Zweizig and Dervin, 1977).

2.3 The Change in research paradigm

In the early 1980s, a change of paradigm was thus far more imperative than methodological improvements. However, the change did not happen abruptly, on the contrary it developed gradually over the last decade. There has been a move away from the traditional macro-approach--studying large groups via questionnaires or structured interviews--to a micro-approach, involving more intensive study of small groups via observation and unstructured interview techniques (Ellis, 1993).

New theoretical constructs have emerged. Information has begun to be viewed as a user, rather than an observer construct, and this shift in perspective has had implications for predicting information behaviour (Dervin, 1980). The external, absolute information view led to attempts to try to predict information use based on people's demographic and personality traits, assuming a cross-situational consistency. Even with the improvement in measuring techniques, however, trait variables were never able to predict much of the variance in behaviour. In their place, a situational theory has begun to emerge, and as situational variables have been tested, they have proved to be more powerful predictors than the cross-situational variables (Dervin, 1980).

Basic to situational theory is the assumption that the factor common to all situations is that people move through time and space, making their own sense of the world in order as they go. This view has led to hypotheses predicting the when and what of information-seeking as well as the nature of situations in which the seeking will occur.

These hypotheses, then, predict the conditions of information use, rather than assuming that information will be used; they are generalizable, because they address the uniqueness of situations (Dervin, 1980; Dervin et al., 1980).

Various assumptions underlie situational theory. Information is viewed as being able to provide only an incomplete, rather than complete description of reality, and it is essentially internal, a part of an individual frame of reference, rather than an object which exists externally (Dervin et al., 1982b). Information is that which informs. It is the individual who makes sense of the information, constructs reality, and decides the utility of the information in a given situation (Atwood & Dervin, 1981; Dervin, 1976, 1977; Dervin et al., 1976, 1980, 1982a,b). This concept of information rests on the assumption that external and internal realities are different, but in constant interaction because of the individual's intervention. An advance in this sort of study of information-seeking behaviour came with Dervin and Nilan (1986). They were concerned with the need to move from system-oriented studies to user-oriented studies, and to develop user-oriented research alternatives for the study of information needs and uses. Hence, they asserted the need not just for the introduction of new methods or variables, but also a shifting from the traditional paradigm that had guided information science research.

2.3.1 The User-centred approach

Six categories are defined by Dervin and Nilan (1986) to show the differences between the "traditional' and the proposed 'alternative' paradigm: l)objective vs. subjective information (the conception of information as objective versus subjective); 2)mechanistic, passive vs. constructivist, active users (information users as passive recipients of objective information versus purposive, self-controlling, sense-making beings); 3)trans-situationality vs. situationality (user information behaviour applied across situations versus behaviour understood as the result of dialogue between

system and user, in which need articulation goes through situationally bound iterations); 4)atomistic vs. holistic views of experience (the study of user behaviour primarily in the context of user interaction with the system versus holistic approaches that focus on the whole social interaction); 5)external behaviour vs. internal cognition (focus on external behaviour versus cognitive behaviour); 6)chaotic vs. systematic individuality (focus on individual behaviour, which yields too much variation for systems to integrate versus the need to deal with individuality in user behaviour).

The emergence of the user-centred approach proposed that information-related phenomena might be studied from the user's perspective and that system design and evaluation are centred on the user, not the system. Nilan & Hert (1992) followed this approach when they presented a generalised method for incorporating user problem-solving processes into system design. Savolainen (1993) called for a shift from an intermediary-centred approach to a user-centred one, and showed how sense-making theory can be applicable to Library and Information Science.

2.3.2 The Qualitative approach

Another response to the dissatisfaction with research results using traditional methods has been to develop what have been called qualitative methods of research. The state of uncertainty concerning the variables and the complexity of their interactions makes information-seeking research a subject where the set of techniques and the empirical approach of qualitative research, used successfully in sociology, anthropology, and other fields, as particularly appropriate and useful (Reneker, 1993).

A number of new methods have emerged, including participant observation and content analysis of the culture of an organisation as seen in naturally occurring talk or written documents, sometimes referred to as ethnomethodology. The quantitative approach with its emphasis on numbers and its quest for generalisation is seen as

depersonalising information provision and information use, and isolating them from the settings in which they occur. Though this is acceptable for obtaining an overall picture of information use by a particular group, it does not provide a fully authentic picture of researchers' perceptions of their information environment and of their information-seeking activities (Ellis, 1993).

Wilson (1981) argued the importance for employing qualitative research in user studies: 'Qualitative research seems particularly appropriate to the study of the needs underlying information-seeking behaviour because:

- our concern is with uncovering the facts of everyday life of the people being investigated;
- by uncovering these facts we aim to understand the needs that exist which press the individual towards information-seeking behaviour;
- by better understanding of those needs we are able better to understand what meaning information has in the everyday life of the people;
- and by all of the foregoing we should have a better understanding of the user and be able to design more effective information systems'.

2.3.3 New models

New directions in research on information needs and use have been emerging in two distinct areas. One is the development of a methodology using situational theory and is concerned with the needs of individuals in a variety of situations. The primary researchers in this area are Dervin and her colleagues (Dervin et al., 1976, 1980, 1982a,b; Dervin, 1992). The other area is information needs as they arise in work settings or as a result of work tasks, which is typified by the work of Streatfield and Wilson, who have been developing methods for designing and studying information service systems which break away from preconceived notions about appropriate services, and attempt to incorporate phenomenological strategies (Rohde, 1986).

A methodology developed especially to study the needs, images, and satisfaction of users from their own point of view is the sense-making approach. Dervin (1992), who developed the method, has explained that it is neither purely quantitative nor qualitative, but rather includes both approaches, in complementary way; it applies quantitative empirical approaches to the study of qualitative aspects of information seeking. The methodology is based on the theoretical constructs proposed as an alternative to absolute information theory, and addresses individual differences in time--space perceptions and information seeking and use (Dervin et al., 1982b; Dervin, 1992). Dervin sees individuals moving along a time-space continuum that is constantly shifting. Such a world requires that we strive to make sense of ourselves and our environment through continual adjustments. We construct cognitive maps of our environment that are constantly being altered and refined as we experience new information. We are changed by new information, which thus changes how we interpret information past and future. We do not just adapt to a static world, but create a reality that changes with us. The sense-making model which derives from this constructivist paradigm is basically a cognitive approach to information seeking, in that it recognises information as something that involves internal cognitive processes (see Chapter Four for additional information on this topic).

Two other researchers, whose work seems closely related to Dervin's cognitive, sense-making approach to information seeking, and who present ways of implementing most of the elements of the paradigm shift, are Belkin (Anomalous States of Knowledge Approach), and Taylor (User-Values Approach). Each of these researchers focuses on different facets of the user's information need. Both approaches reflect awareness of the constructivist approach and of the sense-making model.

Belkin's approach is based on the hypothesis that an information need arises from an anomaly in the individual's knowledge state (Belkin, 1980, 1982). Belkin emphasises that the approach does not focus on information needs, but on people in problematic situations, with views of the situations that are incomplete or limited in some way. Because individuals cannot easily express what they do not know, or what is missing, questions submitted to information systems based on the individual's request will not adequately represent what is needed. In this context, users are viewed as being in anomalous states of knowledge (ASK), in which it is difficult to speak of, or even recognise what is missing. Because they face gaps, lacks, uncertainties and incoherence, they are seen as being unable to specify what is needed to resolve the anomalies.

In order to get around this difficulty, Belkin focuses instead on a 'problem statement', which the individual prepares, describing how the information need developed. Here Belkin is taking account of context, of the situational elements of the information need. At this point Belkin and Dervin are in agreement: exploring the user's situation (Belkin's problem statement) is key, and understanding the gap (Belkin's anomaly) is important. Belkin is taking a cognitive approach in trying to understand how the user has conceptualised his problem.

Belkin's concern is representing the user's problem statement via an information retrieval system. To do so, he converts the words of the statement (i.e., the nature of the problematic situations that lead them to the search, and what sorts of information they would like to have) into a semantic network representing connections between the terms. The context, or situation, as represented by the problem statement, has been converted to a series of words and stems. The situation descriptions are then analysed by computer to develop statistical word occurrence and association portraits, providing the frequency with which the respondent used word roots and the degree to which different word roots occurred in the problem statements in close proximity to

each other. The same statistical portrait is used to describe abstracts in the database, and then different strategies are used to match the word-association picture of the users with those of the abstracts. Thus, context is no longer relevant, except as part of a semantic net, where the frequency of the words is what establishes proximity.

The user-value approach comes from Taylor (1984, 1985) and MacMullin & Taylor (1984). Taylor has been interested in the user for over 20 years. In his classic paper on question-negotiation, Taylor (1968) described four stages involved in the development of a need-related question, beginning with the inarticulate stirring of uneasiness and concluding with the negotiated system-ready question. His approach here is clearly cognitive. The process he describes, that of struggling to express a need and of seeking information to resolve it, is clearly that of sense-making. MacMullin & Taylor (1984) call for making the user's problem the central focus. They are concerned with eventually identifying different classes of problem and linking them to different information traits that users are more likely to value when faced with each class of problem. Related work with the purpose of linking different cognitive and/or situational problem situations to different information traits has been carried out by Ford (1980), Garvey et al.(1979), Mohr (1978), Paisley (1980), and Farradane (1979, 1980a,b).

Wilson's (1982) theory exemplifies the other area that research on information needs and use has been exploring - information needs which arise in work settings, or as a result of work tasks. Wilson proposes that information-seeking behaviour should be understood as the search strategies carried out by the user in order to satisfy needs. In his explanation of interrelationships between different areas in the field of user studies, Wilson draws attention to interrelationships between concepts used in the field. He suggests that information- seeking behaviour results from the recognition of some need, perceived by the user, and the user may made demands upon several systems, such as formal (information systems), or other sources. Users may seek information

from other people, rather than systems - that is when interpersonal 'information exchange' occurs.

Whatever information the seeker finds, it will be 'used', and this 'use' can be recognised as satisfying, or failing to satisfy the given need. These needs can be divided into three categories:

1. physiological needs (need for food, water, shelter, etc.);
2. affective needs (need for attainment, for domination, etc.);
3. cognitive needs (need to learn a skill, to plan, etc.).

These three categories are interrelated, and they are influenced by the user's work environment, as well as by the social, political and physical environments in which the user lives. Personal needs motivate information-seeking in many instances, but social roles, and more particularly, work roles generate a great deal of information-seeking, and this is more likely to require the involvement of some kind of information system.

Project INISS (Research Project on Information Needs and Information Services in Local Authority Social Services departments) (Wilson & Streatfield, 1980) is a good example of how the change from a 'scientific paradigm' to a 'naturalistic paradigm' (i.e., from a quantitative approach to a qualitative approach) occured gradually. The major purposes of the study were to investigate the information needs of staff in social service departments and to develop ideas on how best to respond to these needs. The authors undertook the first phase of the study using the structured observation method developed by Mintzberg (1973). This was followed, in the second phase, by a structured interview survey to collect additional data, verify conclusions from the first phase, and test hypotheses about information behaviour and its relationship to other personal and organisational characteristics. The research was begun with the intention of working within the traditional scientific paradigm, and thus the decision to use structured observation was not a result of a predilection for qualitative research. In

fact, the choice of method in Wilson's words was 'an accident', when he found, by chance, a copy of Minstzberg's **The Nature of Managerial Work** on a colleague's desk. In fact, the method was used to collect quantitative data about communication and information-seeking events, but there was dissatisfaction with the results. It became obvious during the research that there would be advantages in combining quantitative and qualitative methods of analysis. Structured observation proved to be a successful way to collect the necessary data. As a consequence of the great amount of data to be analysed, it was decided to apply qualitative analysis, in the form of narrative reporting, as a parallel presentation to statistical analysis (Wilson et al., 1978; Wilson & Streatfield, 1980).

A further elaboration of Wilson's model of information-seeking behaviour has been made by Streatfield in the context of the EMIE Project (Educational Management Information Exchange Project). While Wilson's model is centred on the idea of information-seeking to satisfy needs arising from the individual's roles and environment, Streatfield's model assumes that needs are goal-directed, and the attainment of these goals poses problems that may require information-seeking (Wilson, Streatfield & Wersig, 1982). This model actually reinforces Wilson's theory. Thus, goals are defined by the individual, or by the organisations he or she belongs to, at different work and social levels. The individual needs and the collective needs related to these goals can only be specified by the individuals concerned. The information-seeking strategies are selected and executed according to the nature of the required information, individual skills, availability of resources and experience in dealing with them.

Another sort of approach was taken by Mick et al. (1980), who proposed a management-oriented model for describing and studying information behaviour. A detailed questionnaire was designed to provide a total picture of all factors affecting

the information behaviours of individuals in an organisational setting, focusing on five areas:

1. detailed description of the individual;
2. the individual's attitudes toward information;
3. the individual's perception of management attitudes toward information behaviour;
4. an assessment of information behaviours and practices; and
5. attitudes toward specific attributes of information products and services.

The questionnaire was used in two separate studies of engineers and scientists. Hypotheses derived from a model using primarily environmental and situational variables were tested, and all but one were confirmed. Interventions aimed at changing behaviour should be based on variables which can be controlled, such as task, job, and setting. Information services and programmes should be designed to support a broad spectrum of information needs and behaviour. User studies, to be usable, must focus on policy-relevant variables. A final observation was that information-producing and information-seeking behaviours are closely linked: one reason information systems are not better accepted is that they fail to provide linkage between these activities (Mick et al., 1980).

Wilson (1990) reviewed the latest research on user studies carried out at the Department of Information Studies at Sheffield University. He noted that research done by Ellis, Vedi and Brown has a common characteristic - a preference for qualitative interpretations which are based on a 'grounded theory' approach.

Grounded theory is a style of qualitative analysis that focuses on generating theory and grounding that theory in data. Developed by Glaser and Strauss (1967), the approach might be described as having a spiral configuration. It is an approach which involves the creation of theory on the basis of collected data. The spiral effect comes

from the process of continuing data analysis - from the initial stages of data gathering to the final processes of theory development. The method of analysis has four aspects: comparing incidents applicable to each category, integrating categories and their properties, delimiting the theory, and constructing the theory (Glaser & Strauss, 1967). Grounded theory is compatible with a holistic view (i.e., it studies phenomena in their entirety, taking into account all the themes that are involved); a naturalistic approach, concerned not with the passive "nature" of positivist science, but with the active and self-defining social world of human construction (Lincoln & Guba, 1985). Herbert Blumer (1969), defined naturalistic study as 'investigation that is directed to a given empirical world in its natural, ongoing character instead of to a simulation of such a world, or to an abstraction from it (as in the case of laboratory experimentation), or to a substitute for the world in the form of a preset image of it'; an inductive approach (that is, researchers develop concepts, insights, and understanding from patterns in the data, rather than collecting data to assess preconceived models, hypotheses, or theories). These form the three components of the holistic-inductive paradigm (Patton, 1980).

There are a number of other examples of this kind of approach. Smithson (1990) followed graduate students, who were required to write a short dissertation, and examined how they went about looking for information. Sullivan and Seiden (1985) wanted to discover problems and difficulties users had with OPACs. They asked 13 respondents to search a set of five prepared questions, and based their analysis on thinking-aloud, oral protocols recorded while searching. Chen & Dhar (1991) investigated cognitive processes involved in searching an on-line catalogue. They collected oral protocols and transaction logs from 34 interactions between users and reference librarians, and 30 interactions between users and the catalogue. Dillon & McKnight (1990) used the ready-made repertory grid analysis to study how users describe their uses of different texts, and developed a classification of types of texts according to user-perceived differences. This classification can help determine how

best to represent non-linear text in hypertext. Hert & Nilan (1991) interviewed respondents while they were in the process of searching an on-line public access catalogue (OPAC), in order to explore various aspects of the actions they performed.

In a conference held in 1992, several speakers proposed new theoretical frameworks - such as hermeneutics, cultural historical perspective, cognitive viewpoint, general systems theory and cybernetics. Radford (1992) proposed the work of Michel Foucault as a new approach for Library and Information Science. Most speakers recommended a non-reductionist and interdisciplinary view.

Fidel (1993), however, has suggested that Library and Information Science may need to develop its own qualitative methods and procedures, and adds that 'it would be useful if investigators described not only the findings of their investigations, but also their methodological path, with all its challenges, retreats, and successes. With such descriptions, Library and Information Science can inductively develop a methodological framework and a set of procedures adequate for its own research'.

2.4 The State of information acquisition in health care

The first bibliography of user studies in the medical field was published in 1961. It was compiled by Walter Boeck, and was entitled **'An Annotated Bibliography of Studies on the Flow of Medical Information to Practitioners'.** In 1962, Boeck supplemented his previous work with Part II of his bibliography. In 1964, Davies and Baily compiled an annotated bibliography of 428 user studies dated from the 1920s to 1963. The bibliography includes a number of user studies of medical practitioners.

In 1965, Sherrington reviewed the user studies done between the end of the World War 2 and the mid-sixties. Sherrington listed 162 items on the flow of medical information, including the works cited by Boeck. Sherrington's bibliography indicates

that many of the studies were sponsored by professional associations, publishers of journals, drug companies, or carried out by individuals from the health professions. The users, in most cases, were general medical practitioners in the USA, randomly selected within a state, or a region, or across the whole USA. The studies were source-oriented. Most of them related to the use of information sources, such as the library, the card catalogue, the journals, and other forms and channels of information sources.

Sherrington (1965) identified 11 channels of communication: postgraduate courses, conferences and meetings, exhibits, colleagues, motion pictures, sound recordings, radio, television, journals, direct mail, sales representatives. He also identified five dimensions: needs, availability, exposure, recall and action; and six methods of data collection: questionnaires, interviews, telephone surveys, review of records, diaries, observation and testing. As a result of this classification, Sherrington's bibliography showed that:

1. the focus of research had previously been centred upon the use of postgraduate courses and journals;
2. data collection had relied on questionnaires, closely followed by interviews.

In 1975, Waldhart published a bibliography on the communication of information in science, social science and technology. The bibliography included 1288 studies, among which 57 information use studies were in the field of medicine. Ten years later, in 1985, Stephen Osiobe published a review of the literature on the use of information resources by health professionals and their information-seeking behaviour. Osiobe (1985) highlighted several variables that influence the use of sources as identified by various studies, namely, practice, engagement in research and educational programmes, professional age, locus of practice, accessibility, speciality and departmental affiliation. He also discussed the serious problems that limit the free flow

of health information, in general, with special reference to those encountered in the developing world; the problems of modern medical education and how these relate to information dynamics in the sciences are highlighted.

Osiobe's review showed that: a) research and academic involvement leads to heavy use of library-related information sources, such as journals, bibliographies, abstracts and indexes, etc., and on-line searching; b) the use of medical journals takes priority over other sources as the first way of learning about advances in medicine and new drugs; c) there had been a decline in the use of drug industry-based sources of information, such as pharmaceutical representatives; d) pharmacists and medical students use textbooks more frequently than journals; e) there is a relationship between speciality, locus of practice, experience, type of practice and rank and the use of certain information sources; f) pharmacists and clinical librarians are important information resource persons and their role in patient management was increasingly being recognised; g) information needs related to diseases, adverse reactions to drugs, dose, therapeutic uses of drugs, availability, methods of administration and toxicity vary from one category of health professional to another; h) health professionals make use of a wide range of information resources (which include both formal and informal sources) due to the fragmentation of knowledge and the growth of the body of literature; and i) the requirement to keep abreast of new developments demands retraining on a continuous basis.

In developing countries, the issue of free flow and utilisation of information in the health sciences is linked to the following factors: a) tight bureaucratic control in some medical libraries; b) journal acquisition problems (poor postal services, obtaining foreign exchange for payment, special import licence schedule to buy books and journals, central acquisition and processing dependent on the main university libraries, limited financial resources); c) poor printing and publishing industries; d) dependency on European and American publishing houses; e) poor bibliographic control.

In 1988, Elayyan reviewed the literature on information use by physicians. Two major categories of information sources were concerned:

1. the use of formal or printed sources of information, including the use of medical libraries; and
2. the use of informal or non-printed sources of information.

The author concluded by suggesting that most user studies offered information on specific questions or objectives, but did not provide sufficient information for the design of a medical library or information system. Elayyan particularly noted that:

1. there was insufficient detail to allow a comparison of population (i.e. categories of users);
2. the samples were not representative;
3. there was difficulty in comparing the categories of information sources investigated in user studies;
4. there were few studies of the actual use of information sources by physicians under varying conditions; and
5. many areas in the field had not been investigated at all.

In 1993, Marshall reviewed the past studies of clinicians' information-seeking behaviour as a basis for discussing various library programmes and services designed to deliver information to clinicians. Particular attention was paid to the impact of information on clinical decisions and patient care and to developments in end-user searching of health care databases.

2.4.1 Methods and Methodology

Wilkin (1981) described library and information research in health care as a) focused on user needs and evaluation of experimental services; b) targeted at medical doctors,

while other categories of users had been neglected; c) dependent on questionnaires for data collection. As we have seen in the previous section, dissatisfaction with the advances in user studies led, in the 1980s, to a reformulation of the conceptual approach. New theories of information and communication legitimated alternative models of research, and these opened new directions in the study of information-seeking behaviour. One of these was in the field of health care, more specifically in the field of patients' information-seeking behaviour. Dervin and her colleagues developed a qualitative methodology to study the communication patterns of patients in different health settings. The first stage was to propose an alternative paradigm based on the assumptions that: a) information was relative to individual and context; b) the communication process was a receiver construction; c) the use of information should be understood from the user point of view; and d) that use was eventually shaped by the user in terms of his/her own perceived needs. The second stage was to apply situational theory to study the patients' visits to the doctor (Dervin et al., 1980).

They did not advocate a purely qualitative approach. Their aim was to achieve a better understanding of patients' patterns of communication in order to predict their information-seeking. The prediction of patient behaviour required measures of information-seeking. They derived these measures from content analysis of in-depth interviews and tested the predictive power of a priori situational measures (e.g. number of times the patient had donated blood) against time-space bound situational measures (e.g. importance of the event for the blood donor) in a study of blood donors and how they perceived that their experience (Dervin, Nilan & Jacobson, 1981).

The work of Dervin and her team has probably been the most important contribution from America, because not only did they apply a new technique, but they critically revised the whole set of assumptions that had been the basis for user studies until then. The hypothetico-deductive paradigm has not been abandoned altogether; its

success in health care, as in any other field, depends on the purpose of the research. Ludwig, Mixter and Emanuele (1988) have applied it satisfactorily to monitor end-user searching at a medical academic library. Similarly, Skinner & Miller (1989) have carried out a descriptive study of the use of journals by registered nurses. Progress has occurred regarding the techniques of data collection. Interviews on their own or complemented by other methods have been used.

Questionnaires administered via interviews were used to gather data by Stinson & Mueller (1980) in their survey of health professionals' information habits and needs. Systematic observation and in-depth interviews were used at the Central Medical Library of Helsinki University in Finland in the study by Sievanen-Allen (1982) of user behaviour at a medical library and its implications for the user education. The combination of several techniques to gather data on different aspects and to validate results has also been tried. An important contribution in that respect was the study of medical practitioners' information needs by Brember & Leggate (1982, 1985) and Brember (1985). They applied a combination of semi-structured interviews, questionnaires, feedback forms, direct observation, reference tracing, and analysis of library records to study different aspects of the use of libraries by medical staff in the teaching hospitals and departments of Oxford University. It was basically a quantitative survey, but with a qualitative interpretation of the results (when Checkland's soft system methodology was applied).

The use of Critical Incident Technique in interviews was used to sample clinical information needs by Northup et al. (1983). To describe information requests expressed during the clinical teaching of physicians, medical house staff, and medical students in a general medicine training programme, Osheroff et al. (1991) used the method of participant observation. They developed a coding scheme for describing information requests, and applied it to create a subset of strictly clinical requests. A study of communication among physicians caring for patients in four general medicine

settings within an academic department of medicine at the University of Pittsburgh was carried out by Forsythe et al., (1992), who also employed participant observation.

The progress of research in exploring several categories of users in health care and trying a variety of data collection techniques, is providing some consistent and useful findings that can be used in the design of information services for health professionals (Marshall, 1993). However, there are still some unexplored areas that need additional research, such as certain categories of users (non-physician groups), or studies which examine the actual information needs arising in clinical settings (Ellis, 1987; Marshall, 1993).

2.4.2 Studies on the information-acquisition habits of health professionals

The results of researches on information-acquisition habits are discussed below. The sections cover the following topics: a) the type of information that users seek in a library; b) the reasons users seek information in the libraries; c) the level of satisfaction of library users; d) the types of professional information needed by health professionals; e) the sources and channels of information used by health professionals and their priorities; and f) the factors that affect information acquisition.

Studies of categories of health professionals

The studies examined in this review vary in terms of population. Some of them have studied single categories, eg. only physicians (Friedland, 1973; Neufeld & Woodsworth, 1972; Koughan & Timour, 1973; Strasser, 1978; Connely, 1990; Marshall, 1992), or only medical students (Herner, 1959; Wender et al., 1977; Wildemurth et al., 1994; Rankin, 1992).

Other studies have made comparisons between the patterns of information acquisition of physicians and students (Northup et al., 1983; DaRosa et al., 1983; Brember & Leggate, 1985; Louis Harris & Associates, 1987; Woolf & Benson, 1989; Osheroff, 1991; Forsythe et al., 1992). Other groups have compared several categories of user, such as, teachers and/or researchers and other health professionals (Menzel, 1966a,b; Mayada, 1969; Farmer & Guillaumin, 1979; Davis, 1994), or physicians and other health professions (Fazzone & DeSimone, 1984; Stinson & Mueller, 1980; Sievanen-Allen & Oberg, 1982; Curtis et al., 1993); further comparisons have been made between other categories of health professionals, such as nurses, biologists, dentists, physical therapist, biotechnologists, etc. (Rao, 1987; Corcoran-Perry & Graves, 1990; Salasin & Cedar, 1985; Wakeham, 1993; Curtis et al., 1993; Rolinson, 1996).

The number of such studies into patterns of information acquisition and use in the health-care field indicate that it is a topic of great interest. However, compared to the amount of literature on physician and medical students, relatively little has been written about the information seeking and use patterns of allied health professionals, in general, or of nurses, in particular. There is also insufficient detail to allow a comparison of the categories of users described in the majority of the studies e.g. the population described as "physicians" often includes full-time faculty, research physicians, specialists and general practitioners, etc. (Elayyan, 1988).

2.4.3 Use of information sources and channels

Various distinctions have been drawn in the literature between different information sources. Some distinguish between sources inside (internal) and outside (external) an organisation: others between formal and informal. These classifications are based on the audience, content of information and in the way information is stored and retrieved. Formal information sources are directed to large audiences, the information content is relatively old, allows little feedback and generally is permanently stored and

retrieved. On the other hand, informal information sources have small audiences, involve direct interchange between the selected audience and the source, supply up-to-date information, utilise considerable feedback and they are neither permanently stored nor retrieved (Garvey & Griffith, 1968).

Formal and informal sources and channels

Numerous possible sources of medical information have been identified that are potentially relevant to helping health professionals solve their problems. These include textbooks, handbooks, professional journals, conference proceedings, formal courses, bibliographies, personal files, pharmaceutical representatives, colleagues, specialists, mass media, patients, audio-visual programmes and computerised databases, among others. The preferences physicians have for these sources, and how they access them depend on several factors, such as the type of problems, the situation they face, etc.

Several studies have revealed that printed materials, especially medical texts and professional journals, represent the major sources of information used by health professionals. Thus, printed materials are the source of information most often mentioned by physicians as the primary method used to solve particular problems. Back in 1959, Herner reported on a study dealing with the information habits and patterns of American medical scientists, noting that where formal searches of information are done, they tend to lean more heavily on formal channels (such as scholarly and bibliographic publications). Neufeld & Woodsworth (1972) noted that staff physicians work primarily from journals, whereas residents prefer the use of textbooks. Koughan & Timour (1973), studying the information habits of urban and rural physicians, found that they devote most of their reading time (74%) to personal subscription journals and textbooks, followed by unsolicited medical literarure (material that they did not request or pay for by subscription or membership), and library materials. Roach & Addington (1975) reported the preference of physicians for

journal articles in order to keep up-dated. Strasser (1978) came to a similiar conclusion, noting that journals were by far the most frequently used source of information among respondents as a whole, followed by personal contact with colleagues, and then books. She reported that respondents personally subscribed to an average of 4.1 professional journals, with nearly 40% claiming five or more subscriptions. Farmer & Guillaumin (1979) found that clinical faculty are extremely knowledgeable about the literature in their specific fields. Most browse through the new periodical issues in the library regularly to supplement information from journals which they receive in their offices. For literature on immediate patient care problems, clinical faculty and fellows tend to rely on suggestions from colleagues, available reprint files, and departmental libraries.

In 1980, Stinson & Mueller reported from their survey of 258 physicians of various specialities that the medical literature was the most commonly used source of information, and that contact with professional colleagues was the second. When the physicians were asked to indicate their various local sources of medical literature, their personal libraries were the source most often used. Unsolicited medical literature was the second most often used source, followed by the hospital library, medical school library, and medical society library. Clinically-oriented newsletters with a collection of short articles on a general subject, post-graduate education programmes and audio-visual materials are used to a lesser extent. Stross & Harlan (1981), in trying to find out how primary care physicians (family physicians and internists) knew of a new hypertension management programme reported in the literature, found that 80% of the family physicians were aware of the results through medical journals, and 50% of the internists learned of it from journals. Northup et al. (1983) came to the conclusion that physicians typically consult easily accessible sources. Proportionally, physicians consult more colleagues and journal articles (often located in a personal reprint file), while medical students use more books. Libraries were used to a similar extent by medical students and physicians. Da Rosa et al., (1983) reported that

medical students rely heavily on textbooks as the primary source of information. The Index Medicus was also a popular source for information. Salasin & Cedar (1985) noted that respondents in the field of rural mental health services in Washington, D.C. valued periodicals and research reports.

Brember & Leggate (1985) identified three types of users, each with a distinctive information-seeking behaviour: the practitioner, who seeks as much information as is necessary to deal with a clinical situation; the researcher, who seeks as much information on his/her research topic as is possible; and the practitioner-researcher, who varies his/her information-seeking behaviour according to the situation, i.e., the practitioner-researcher gathers information selectively for clinical problems and extensively for research topics. In common with other categories of users, practitioners regard journals and books as of primary importance. They also value and use the facility for photocopying journal articles and bibliographic services, such as Current Contents, along with specialised publications. The practitioner-researcher regards journals, books, photocopying and bibliographic services as most important. Of the three types, services are valued and used most. The fact that all users seemed to be so preocupied with library-related information sources was presumably related to the focus of the study, which was on use of libraries.

In Gruppen et al.'s study (1986), primary care internists commonly used medical literature. Louis Harris & Associates (1987), showed that medical professionals and students were still primarily dependent on the printed word, as opposed to the newer computerised sources of medical information, and that they continued to rely mainly on their personal collections of books and journals. In a study of medical information needs of faculty members and housestaff at an academic medical centre, Woolf & Benson (1989) found that the sources of reference information most commonly used by faculty and housestaff were textbooks and colleagues. Textbooks were used more

frequently by housestaff than by faculty. This was also true of handbooks, the third most frequently used information source by housestaff.

Grefsheim et al., (1991) reported that, in terms of traditional, textual information, most senior scientists had personal subscriptions to the major journals in their field, which they read with some urgency on arrival. The health sciences library was used as the primary resource only for bibliographic database access and books (55% and 50%, respectively). Forty-five percent indicated their personal collections were their primary resource for books. The journals used most often, and which were rated so highly as a source of information, were primariy from personal collections (85%), although a number of the respondents (45%) also checked the health sciences library as a likely source for this type of material. Ranking's (1992), comparison between medical students involved in problem-based learning and in conventional medical school curricula showed that PBL students were the more frequent library users, used information resources that supported the independent learning process, acquired information-seeking skills at an earlier stage in their medical education, and reported greater ease in using these skills. Wakeham (1993), studying nurses and their information needs, found that, when seeking information for personal interest, an individuals's own journals and colleagues were used; students were more likely to use a library in such cases than were qualified staff. Libraries were often visited (once a week) to supply information for course work and research, though private journal collections were also used. Such journal collections were also popular when looking, or preparing, for a new course or job. Rolinson et al. (1996), found that there was an overall similarity between the responses from the different institutions they investigated; with research journals appearing as the most important source throughout. Some differential patterns emerged from different institutions. An agricultural faculty and a research establishment used books, newpaper/magazines and government publications more, and electronic sources less than a school of biology and a pharmaceutical laboratory. Theses are only of much importance at universities.

Although some health professionals make use of their own literature (journals and books), libraries are still the place where they find useful information. Overall, users are satisfied with the service they receive. Strasser (1978), reported that among the health care practitioners surveyed, nearly 61% had asked a medical libararian for work-related information within the previous year. Of these, 61.8% rated the information received as "adequate", 28.9% as "more than adequate", and 9.2% as "less than adequate". Sievanen-Allen & Oberg (1982), noted that the satisfaction rate of users of the Central Medical Library of Finland was high: 90% of the users said that they received from the library either all, or part, of the wanted documents/information. The Rochester study (Marshall, 1992) asked whether the information provided by the library saved the physician time, and 84.7% agreed that this was the case. The physicians indicated that information provided by hospital libraries had a substantial impact on their clinical decisions and on the subsequent care of patients. Crist et al. (1994) also reported a high level of user satisfaction. The results of their study confirmed that the library is seen as a key resource that patrons use frequently and consider central to their work. In fact, 87% of the respondents said they were "satisfied" or "very satisfied" with the library.

Despite this general satisfaction, commentary by physicians has revealed some problems. Suggestions by physicians who did not use the library (Stinson & Mueller, 1980) for improving medical libraries were: 1) making relevant material available; 2) making more material available; and 3) making current material available. Responses that occurred less often were 1) make personnel available to help find relevant material; 2) have a more convenient hospital location; 3) have a more convenient library location; and 4) provide more convenient library hours. Louis Harris & Associates (1987) and Willianson et al. (1989) reported similar results on the use of medical literature. They showed that the medical literature is not a heavily used source of information among practitioners. Some of the reasons were that the journal

literature is seen as having an "unmanageable size"; the papers relevant to particular problems are not concentrated in subject-specific journals; too much time is needed to digest and synthesize what is relevant, valid, and worth further attention. The development of computerised access to massive literature and information databases seems to have helped meet the suggestions physicians made back in 1980s, (Gruppen, 1990), but barriers still remain to the physicians' use of the libraries. Physicians are not uniform in their information needs, or strategies, and their preferences for seeking information; this indicates the need for health sciences libraries to determine the needs, preferences and use patterns of their clientele.

Reliance on informal sources of information appears to be particularly strong in the medical area. Physicians can, in fact, use a variety of informal, or non-library related sources of information such as:

- personal contacts and discussions with colleagues and medical consultants from inside and outside the hospital via telephone, fax, electronic mail (more recently), or face-to-face;
- professional meetings, seminars and workshops;
- medical conferences at the local, national and international levels;
- radio and television medical programmes;
- pharmacists and pharmaceutical representatives.

Contact with professional colleagues, from their own hospital or outside their hospitals, is a regular practice in their daily work. Surveys have shown that colleagues are a popular source of medical information in terms of day-to-day information exchange. Scientific meetings (at various geographical levels) are highly valued. More recently, health professionals have begun using electronic mail as a means of contacting colleagues, along with telephone calls and faxes. Herner (1959) reported that in terms of daily information exchange, medical scientists rely more on informal tools, such as person-to-person communication.

A sociological study of how physicians adopted a new antibiotic drug was conducted by Coleman et al., (1966). Although physicians became aware of the new drug through the medical literature and from pharmaceutical representatives, this knowledge alone was not usually sufficient to persuade the physician to start prescribing the new drug. Sharing of personal experiences by physician 'opinion leaders' in the community turned out to be a key element in the adoption process.

Habits of information gathering of urban and rural physicians were investigated by Koughan & Timour (1973). They show that the second most important source of information is contacts with colleagues, followed by 'group discussions'. Friedlander (1973) suggested, on the basis of previous user studies, that the choice of formal vs. informal sources is influenced by experience, type of work, task and accessibility. The study of information needs of practising physicians by Strasser (1978) found that contact with colleagues was the second most important source of information. Family practitioners and obstetricians/gynaecologists used colleagues more frequently than journal papers for information. The use of pharmaceutical representatives was also marked among these two groups. The non-written sources most frequently used by physicians were seminars, workshops and conferences, followed by computerised information services, library reference services, video, slide and tape programmes, and current awareness services. Farmer & Guillaumin (1979) found that, although clinical faculty are extremely knowledgeable about the literature on immediate patient care problems, they tend to rely on suggestions from colleagues, available reprint files, and departmental libraries. Likewise, residents and interns often turn to faculty and fellows for reading suggestions, rather than go through traditional library channels.

Stinson & Mueller (1980) conducted interviews with more than 400 randomly selected health professionals to identify the sources of information they used to keep up-to-date with advances in medicine. They found that professional colleagues were

the second most common source. Health professionals in urban counties used professional colleagues more than those in rural or semi-urban counties, and individuals in institutional practice used professional colleagues more than those in solo or group practice. Information obtained from association meetings was the third most common source, with continuing education courses the fourth. The use of audio-visual materials was another popular method of obtaining information. Stross & Harlan (1981) reported that colleagues were the second most important source of knowledge about a new hypertension management programme reported in the literature. Colleagues outside the work unit were the most frequently used sources by respondents in the field of rural mental health services in Washington, DC: 17% of the sources listed by respondents were colleagues outside their work unit and 16% were colleagues inside their work unit. Only 4% and 6% were Health and Human Services Washington and regional staff, respectively. HHS Washington staff was most valued by researchers; whilst planners gave the highest rating to HHS regional staff. Conferences, state staff and colleagues outside the organisation were most valued by volunteers. Colleagues in the organisation were most valued by students (Salasin & Cedar, 1985). Brember & Leggate (1985) noted that a researcher is likely to get the most up-to-date information on current research through meetings and personal contacts, rather than through publications. In Gruppen et al.'s study (1986) family practitioners often consulted with colleagues about treatment and management.

Connelly et al. (1990) investigated the knowledge resource preferences of family physicians and found that **Physician's Desk Reference (PDR)** was used slightly more often than daily.Colleagues, both within the same speciality and in another speciality, were approached more frequently than weekly to obtain information to answer clinical questions. The findings of Corcoran-Perry & Graves (1990) indicate that cardiovascular nurses used oral and written sources with equal frequency. However, oral contact exchanges with other nurses were the most frequent source of supplemental information. Grefsheim et al. (1991), assessing the information needs of

researchers in the field of biotechnology, found that scientists obtained information from three major sources: their own experiments, personal communication with other scientists and textual material (print or electronic). The best occasions for face-to-face contact were scientific meetings. The scientists attended an average of three meetings a year, one of which was a large meeting. The other two were smaller and more specialized. Telephone calls and, increasingly, electronic mail provided the means of keeping in contact with colleagues and collaborators on a day-to-day basis. Wakeham (1993), studying nurses and their information needs, found that the main sources for patient and client care were nursing colleagues and ward-based information. When seeking information for personal interest, an individual's own journals and colleagues were used. Davis (1994) evaluated practices of research scientists in terms of information-handling techniques. He found that, of the scientists receiving current awareness output directly, 68% received it in electronic form (via e-mail, on disk or via Oracle). Altogether, 58% of his sample of scientists used electronic mail. Other information gathering/communication activities used by scientists were: oral communication (face to face or via telephone); written communication (including e-mail and fax); attendance at meetings, seminars and conferences; preprints from colleagues; unpublished research papers or results in a refereeing capacity.

Hall (1995) investigated physical therapists in a private-practice setting and reported that 82% of the respondents consulted colleagues or peers more than fifteen times a year, when making clinical or practice-management decisions. This again made colleagues the most frequently used source of information. Rolinson et al. (1996), investigating the information usage by biological researchers, found that they attend laboratory meetings frequently. With exception of those at a research establishment, attendance at departmental seminars was also high. External meetings and conferences were naturally attended less often, but a majority of the respondents had participated in these during the preceding year. Discussion with one's immediate colleagues were a

major source of research information. Externally, the use of fax and electronic mail as a means of research communication was appreciable.

Some studies on the use of information sources by health professionals have looked at the sequence of information sources. In 1980, Hibberd and Meadows described the information-seeking behaviour of hospital doctors linked to the prescription of new drugs as a three-stage process: a) awareness as a consequence of information provided by the pharmaceutical industry; b) evaluation based on the reading of scientific journals and colleagues' opinions; c) routine prescription checked in drug formularies. The strategies vary with the specific reason for seeking information, and they basically rely on printed literature or face-to-face communication.

Manning and Denson (1980) in the study of how internists learned about the drug cimetidine, reported the use of sources such as medical journals, discussion with colleagues, continuing medical education courses and pharmaceutical representatives. Lockyer et al., (1985) noted that specialists used journals and discussions with colleagues when deciding to change their drug-prescribing practices and family practitioners more often used consultations and pharmaceutical representatives.

Some studies carried out in developing countries have reported similarities in the use of information sources and channels with developed countries. . A study developed in four Nigerian hospitals by Ojo (1980) showed that medical doctors most frequently used formal information sources and documents channels, especially if they had years of experience, higher levels of participation in professional activities, advanced degrees, or work in health institutions with liberal fringe benefits and frequent inservice education programs. A similar study was conducted in 1984 by Osiobe who studied the use of information sources by the faculty and students of medical schools in Nigeria. The findings of the study indicated that journals were the most important source of information for faculty, while monographs and textbooks were the most

important source of information for medical students. Private information files and personal contacts with colleagues were shown to be important sources for both the faculty and the medical students.

In a study of the information-seeking behaviour of scientists at the National Institute of Nutrition, in Hyderabad, India, Rao (1987) found that scientists regularly consulted journals and books for their current information needs. Scientists also consulted other sources in the following descending order: reprints, report literature, information bulletin, institutional reports, new digest, official reports, press release, notices, and pamphlets and memoranda. Scientists also utilised considerably the documentation services offered by the National Institute of Nutrition. A majority (66%) of the scientists used newspapers. About 37% of the users obtained information from both radio and TV. Library sources are used by 33% for their current information needs, whilst 12% depend on colleagues, and 27% seek information generated by other scientists through seminars and meetings. Most of the scientists frequently attend seminars, talks/lectures, conference/meetings and symposia to keep track of recent information.

The information needs of academic medical scientists were investigated at Chulalongkorn University in Bangkok, Thailand. The study showed a high use of libraries as information providers, followed by experts and other colleagues in the profession. Thai medical scientists rely heavily on information from abroad (Premsmit, 1990).

Ranking order of preferences

Several studies have produced rank orderings of physicians' preferences for various information sources. The orders vary somewhat depending on the sources included in the study and the nature of the study's focus. One set of ranking for the USA put

seminars, workshops and conferences in first place, followed by computerised information services, library reference services, video, slide and tape programmes, and current awareness services. The order of priorities, however, differed somewhat among the younger doctors and among rural and urban physicians in private practice. Those who had received their M.D.'s since 1965 favoured video, slide and tape programmes, computerised information services, exhibitions and current awareness services, in that order. Rural physicians in private practice selected seminars, workshops, and conferences, library reference services, exhibitions; with video, slide and tape programmes and computerised information services tied for fourth place. Urban physicians in private practice wanted current awareness services; seminars, workshops and conferences; computerised information services; with video, slide and tape programmes, personal contact with colleagues, and exhibitions all tied for fourth place (Strasser, 1978). One ordering ranked professional meetings as most preferred, followed by formal courses, colleagues, books, journals, videocassettes, audiocassettes, chart audits, and, finally, drug company representatives (Ferguson & Caplan, 1987). Another found that formal postgraduate lectures, direct discussion with consultants and medical journals were more favoured than tape or slide presentations, films and information lectures (Murray-Lyon, 1977). A North-American ordering of information-source preferences specifically related to cancer problems consisted of medical literature, professional colleagues, association meetings, continuing medical education courses, pharmaceutical representatives, patients and the American Cancer Society (Stinson & Mueller, 1980). Yet another study found a basic pattern of preferences for information sources starting with textbooks or journals, followed by informal consultations with colleagues, with community specialists, and with specialists outside the community (Gruppen et al., 1987). The ranking of sources for cardiovascular nurses when seeking supplemental information was, in order of preference: other nurses, other personnel, textbooks, manual, and research articles (Corcoran-Perry & Graves, 1990).

The predominance of the use of medical journals over the other sources to learn about recent developments in medicine and the new drugs may be explained through such reasons as: journals report the findings of original research; they are more reliable than other information sources because quality control is better; the periodicity of journal publications is typically more frequent than that of most other printed sources. The dependence of students on textbooks may be explained by the fact that a textbook presentation of facts is more systematic and assumes less knowledge than other printed sources.

There is no doubt, however, of the value placed on informal communication. The time limitations and the needs of patients demanding immediate action, appear to be reasons why communication with colleagues with similar interests is considered as one of the most important source of ideas. It is also seen as one of the most important means of keeping track of current developments among health professionals.

2.4.4 Factors affecting information acquisition

To study the use of information resources, it is necessary to identify the factors that may affect the process. Physicians' characteristics (such as age, experience, educational level, language ability, status, sex, speciality), practice characteristics (including geographical locus of practice, institutional setting, community size) and the availability of specialists, colleagues and educationally influential physicians or opinion leaders have been found to be major factors affecting information acquisition by health professionals. For the purpose of this study, information in the literature on seniority (experience), age, speciality, geographical locus of practice, institutional setting and community size is reviewed briefly below.

Age, experience and speciality (physical characteristics)

The influence of age and experience of the individual on information acquisition habits has been demonstrated in several studies. A investigation carried out by Herner et. al. (1966), demonstrated that in hospitals with a large number of younger physicians, the use of the hospital library could be greater than in a hospital with a population of older physicians. Neufeld & Woodsworth (1972), surveying the self-education patterns of physicians in Toronto, found that senior residents subscribed to more speciality journals and read more of these in hospital libraries than did junior physicians. Heal came to a similar conclusion in 1978, noting that general practitioners who were licensed more than 20 years previously hardly used libraries, unlike the younger generation of general practitioners. In a study of Michigan physicians, Kotre (1972) noted that physicians spend approximately three hours a week reading professional journals. Those physicians who were specialists, or who were younger, tended to rely more on professional journals than other types of physicians. Younger physicians read journals from cover to cover, while older physicians seem to skim the articles.

There also appear to be speciality-related differences. Friendland (1973) observed a significant relationship between speciality and the use of formal and informal sources. Psychiatrists were mainly responsible for the variance, tending to use more informal sources than formal sources, whereas the reverse was true of surgeons. Those in theoretical fields are more likely to use formal sources; those in applied fields are more likely to use informal sources. One of the conclusions reached by Friedland was that research demands more use of formal sources than teaching, administration or clinical work. In 1978, Strasser studied the use of information by practising physicians in New York State. The results of the study show a correlation between the use of certain information sources and involvement in academic medicine (research or education). Significant relationships were shown between engagement in medical research projects, medical education program and use of papers in journals; seminar,

workshops, conferences; library reference services; MEDLARS and request for information from medical librarians. Other findings of the study were a) the youngest doctors (in terms of recency of training) used library-related information sources more; b) the oldest doctors tended to depend less on colleagues for professional information than the youngest doctors, who were involved in person-to-person consultation more frequently; c) use of certain sources was affected by professional speciality; d) drug information ranked very high with both family practitioners and anaesthesiologists.

Stinson & Mueller (1980) found that, as a physician's professional age increased, his or her use of professional colleagues decreased. This would tend to indicate that younger physicians, more than older ones, used professional colleagues as information sources. As a group, physicians with more professional experience used pharmaceutical representatives as information sources more than younger ones, and those in general or family practice responded using more regularly than those in other specialities. Physicians with a greater professional age used unsolicited medical literature more than younger ones. General or family practice physicians used such literature more than those in other specialities. Family physicians in multispeciality group practice reported less frequent knowledge-seeking behaviour than those in single-speciality practice (Connelly, et al. 1990).

In 1980, Hibberd and Meadows carried out a survey of 155 hospital doctors in the United Kingdom to discover how they found out about new drugs. The result show that two factors seem to affect the importance that hospital doctors attached to promotional sources of information. These were:

1. the length of time the doctor has been in medical practice: junior doctors relied more often on textbooks; and

2. the place of qualification: those qualifying outside the United Kingdom tended to use promotional materials to a greater extent than those qualifying within the United Kingdom.

A study developed in four Nigerian hospitals by Ojo (1980) showed that medical doctors most frequently used formal information sources and documents, especially if they had several years of experience, higher levels of participation in professional activities, advanced degrees, or work in health institutions with liberal fringe benefits and frequent in-service education programmes. Sievanen-Allen & Oberg (1982) found that medical doctors involved in internal medicine used the library more than others. Lockyer and colleagues (1985) found that specialists used journals and discussions with colleagues more often in deciding to change their drug-prescribing practices in comparison with family practitioners, who more often used consultations and pharmaceutical representatives. More generally, family practitioners often consulted with colleagues about treatment and management, while primary care internists more commonly used medical literature (Gruppen et al. 1986).

In disagreement with other authors (e.g. Line, 1969; Heal, 1978; Hibberd & Meadows, 1980; Osiobe, 1985), Gruppen and colleagues (1987, 1990), found that the level of experience, either in general or with a particular problem, did not influence physicians' preferences for different information sources. More likely, differences between older and younger physicians were due to differences in their training, as well as to differential access to, and familiarity with various information sources. Such differences are probably most apparent in relation to computerised resources; today's medical students are increasingly making routine use of computers in their training, a technology that was largely irrelevant to physicians even ten years ago.

The findings of the several studies on the relation between age, experience and speciality and the acquisition of professional information indicate that younger

physicians appear to make greater use of hospital libraries, of library-related sources (journals and textbooks), of professional colleagues as information sources and of computerised resources than their older counterparts. In contrast, older physicians more often used pharmaceutical representatives, subscribed to more speciality journals and used unsolicited medical literature. Younger physicians read journals cover-to-cover, while older physicians skim the articles. Specialists rely more on professional journals than those in general practice. Psychiatrists are more dependent on informal sources of information than formal ones. In contrast, surgeons, medical doctors representing internal medicine, and the ones involved in theoretical fields rely more on formal and library related sources than others. Anaesthesiologists had the highest interest in drug information and radiologists had less interest in routine patient care than surgeons.

Locus of practice, institutional setting and community size (environmental characteristics)

The place of practice, institutional setting and community size have been explored as influencing variables in the use of information in some studies. Strasser (1978) compared the responses of rural physicians in private practice with the mean responses of all physicians. In no case did their use of printed sources exceed the mean, and, in most instances, printed sources were used with less than average frequency. When these doctors were directly compared with their urban counterparts in private practice, marked differences were noted in source use. This group of rural physicians made appreciable use of sales representatives as information sources, this being the only channel which the rural doctors used more often than the urban private practitioners. Notably less frequent use by rural doctors was found with six of the nineteen items: bibliographies, indexing services, library reference services, computerised information services, seminars and catalogues. Most other sources are only somewhat less frequently used by them than by the urban doctors. She also found

a correlation between the use of certain information sources and involvement in academic medicine (research or education).

The influence of the geographical focus of practice, institutional setting, experience and speciality on the use of information sources was studied in 1980 by Stinson & Muller. Their results showed that:

1. health professionals in urban areas made more use of professional colleagues than those in rural or semi-urban areas;
2. individuals in institutional practice used professional colleagues more than those in solo or group practice.

The work environment appeared as the decisive factor in shaping the information-seeking behaviour of the users. In a study of medical library users by Brember & Leggate (1985), it was found that the teaching hospital setting gave the survey a strong research bias and the results cannot necessarily be extended to non-teaching hospitals. Teaching hospitals have characteristics not found in other hospitals: they arise from the association of patient care with medical education and research. The greater availability of colleagues and specialists probably underlies the finding that physicians in larger communities made greater use of community specialists and colleagues than did those in smaller communities. The latter more often indicated a preference for outside specialists (Stinson & Muller, 1980; Gruppen et al. 1989). Louis Harris & Associates (1987), in a study of medical professionals and students, reported that office-based physicians were less well-informed than those in teaching or research settings.

The studies reviewed above indicate that the locus of practice can be an important determinant of the range of the information resources to which a medical practitioner can have ready access. Usually, the major information service facilities, such as libraries, information centres, data bases and documentation centres, are all located in

urban centres. The greatest number of health professionals in all specialities are also located in urban centres. Consequently, physicians in urban centres have greater access to a wider range of information sources than is available to those in rural areas. Correspondingly, rural physicians in private practice depend on printed sources of information more than do urban doctors, since they are relatively isolated from other sources.

Research and academic involvement typically leads to heavy use of library-related information sources (such as journals, bibliographies, abstracts and indexes, and on-line searching). Physicians involved in research and teaching make greater use of library resources than practicing physicians. The latter make greater use of face-to-face communication with collegues.

2.4.5 Type of professional information needed by health professionals

The demand for different types of professional information naturally varies from one category of health professional to another. Wender et al. (1977) found that among physicians and medical students, the highest percentage of searches were in the category of diseases, along with chemicals and drugs. Strasser (1978) noted that family practicioners and anaesthesiologists ranked drug information highest. Physicians reported a greater need for information on the latest treatments, diagnostic guidelines and pharmaceuticals, while information on the interpretation of patient signs and symptoms might be under-used by experienced doctors (Woolf & Benson, 1989). Covell et al. (1985) found that internists involved with ambulatory patient care required immediate information on the treatment of specific conditions (31% of information requests); the diagnosis of physical findings or symptoms (25%); and drug information (11%). Similarly, Northup et al., (1983) found that the topics accounting for the vast majority of physician information queries were diseases (49%), drugs (23%) and procedures (19%). Williamson et al. (1989) found that

physicians put drug information at, or near, the top of patient-care information needs. Corcoran-Perry & Graves (1990) reported that cardiovascular nurses needed data about specific aspects, such as tracking equipment, medications and reports; general patient data; patient-specific medication data; domain knowledge about medications; tracking people; patient-specific laboratory data. Most of the information needs are thus related to diseases, adverse reactions to drugs, dose, therapeutics uses of drugs, availability, methods of administration and toxicity.

2.4.6 Reasons health professionals seek information

The need to keep abreast of new developments in the field, to solve specific clinical problems, and for teaching, are some of the reasons health professionals seek information. The activity the health professionals are involved in, the situations they face, and their motivation to seek information are closely related. Neufeld & Woodsworth (1972) found that residents study primarily because of examinations, while the reading of staff physicians was directed toward solving specific clinical problems. Strasser (1978) reported that the greatest reason for family practitioners and anaesthesiologists to seek information was to find out about new developments in some area of specialization. Stinson & Mueller (1980) reported that, when health professionals were asked how they kept abreast of recent developments, they cited a clinically-oriented newsletter, post-graduate education programmes and the use of audio-visual materials. Brember & Leggate (1985) found that practitioners' main reasons for seeking information are to keep up-to-date and for clinical problems. Secondary reasons are writing, teaching and research. Researchers seek information mainly for their research interests and for keeping up-to-date. Secondary reasons are for writing and, to a lesser extent, teaching. The practitioner-researcher seeks information mainly for research interests, writing, and keeping up-to-date. Clinical problems and teaching are secondary reasons. Wakeham (1993), in a study of nurses and their information needs, noted that they needed information for course work,

research, and when looking, or preparing for, a new course or job. The need to keep abreast of new developments in the field is easily identified in the literature as major reason health professionals need professional information.

2.5 The Brazilian contribution to information acquisition studies

Some of the Brazilian user studies reviewed in the process of writing this thesis have a limited value for the present study. However, they have been included in this review of the literature in the hope that they may provide useful insights into the ways Brazilians acquire information.

The topic 'library user studies' began to develop in Brazil in the 1970s. The literature related to this type of research during the period of 1971 to 1981 covers only 20 works. The reformulation of the curriculum of the Library Studies Schools during the 1970s made user studies a significant topic in the majority of the Brazilian Library Schools. The 20 studies appearing in the 1970s were produced by post-graduate students working on their Masters' theses at the Instituto Brasileiro de Informacao em Ciencia e Tecnologia (IBICT). Studies related to needs, use of information and use of communication channels were a particular concern of the research developed during 1972-1979. The use of information in university communities and the information-seeking habits of users of university libraries also began to be investigated in this period (Pinheiro, 1982).

In the 1980s, some efforts were made to study the interaction between users of scientific and technical information and their libraries through an analysis of the process of the technology transfer and the library (Lucas, 1987). Studies dealing with users of specialised libraries and university libraries were mostly concerned with:

- evaluation of the use of resources, services and information systems;

- the nature of needs, demands and flow of information;
- identification and characterisation of information-seeking behaviour.

Some reviews of the literature on user studies carried out in Brazil exit, but the great majority are dissertations and theses (Onike & Monteiro, 1981; Coelho et al., 1989; Lima, 1992). Reviews of the state-of-the-art of user studies, examining the concepts and developments, findings, tendencies, generalisations, criticisms and limitations of the investigations, are found in the works of Rabello (1983), Figueiredo (1983; 1985, 1990), Kremer (1984), Faria (1986), Vergueiro (1988), Giacometti (1990).

2.5.1 Methods and methodology

As to methodology, the studies were primarily descriptive, gathered data by means of questionnaires and/or interviews, and used quantitative analysis to present the results. The Critical Incident technique was applied in some questionnaires (Kremer, 1980; Andrade, 1981; Dilan, 1985). These were applied studies, whose essential aim was to improve a particular library or information service. With few exceptions, the studies lacked a cohesive theory, and the methodology reflected the lack of experience of research in this area (Pinheiro, 1982).

2.5.2 Use of formal and informal information sources and channels

Some studies in Brazil have examined the use of information sources. Souza et al. (1977) investigated the interests and information habits of engineers and other professionals with university degrees working in PETROBRAS (The Brazilian Petroleum Company). The study revealed that the sources mostly used by the respondents were books, journals and reports, followed by personal contacts with colleagues and their own notes. Personal contact as a source for keeping up-to-date was used by a large proportion (77.6%) of the members of the group under study.

Almeida & Falkenbach's (1977) study revealed that users of the libraries and information centres of the Empresas de Energia Eletrica in Brazil (ELETROBRAS, ELETROSUL, CELF, CBEE, and Light) particularly rely for their work on books, journals, technical reports and personal contacts. Figueiredo & Castro (1980) conducted a study to analyse the behaviour of information users in the Instituto de Pesquisas Energeticas e Nucleares (IPEN), Sao Paulo. They found that users with bachelors' degrees value books and journals as their main sources, followed by reports and handbooks. Users with post-graduate degrees (masters and Ph.D.) valued journals as the most important source, followed by reports and conferences. Professionals at the Research Centre of Petrobras graded internal and external reports of projects as the first and second most used sources of information. Personal notes came in third place (Andrade, 1981).

Kremer (1984) conducted a study of the users of libraries of the Pontificia Universidade Catolica do Rio de Janeiro. Her data revealed that academic users (lecturers) placed in priority order foreign books (monographs and textbooks) and foreign journals, proceedings, theses, dissertations, personal contacts with colleagues and indexes and bibliographies. Another study of information acquisition habits was made by Dilan (1985) at the Fundacao de Ciencia e Tecnologia of Rio Grande do Sul (Cientec). The work revealed that staff used formal sources of information the most, followed by contacts with colleagues from within and outside the Institution. A study conducted by the Instituto Nacional de Tecnologia, Nucleo de Informacao sobre Corrosão (1986) found that Brazilian engineers and technicians consult first their private collections. Freire (1987) studied the transfer of technological information to rural workers in Rio Grande do Norte, emphasising the barriers that exist in the communication flow between the rural organisation that assists the workers (Empresa de Assistencia Tecnica e Extensao Rural - Emater-RN) and the workers.

2.5.3 *Information acquisition in health care*

The studies of health care users in Brazil have concentrated on medical libraries at the universities. Some relate to studies of the use of formal information sources (Braga et al., 1981; Noronha, 1987); others are concerned with the general needs of students and academic staff (Garcia, 1981; Metchko, 1980; Carvalho et al., 1987). Topics such as frequency of using the library, use of the library collection, adequacy of the library building for the needs and number of users, problems encountered by users in exploiting the library materials, evaluation of library staff services, and language barriers have concerned the majority of the researchers (Noronha et al., 1990; Garcia, 1981; Reis, 1978; Carvalho, 1987).

Reis (1978) studied the use of MEDLARS in Brazil in order to identify the frequency of its use and the Brazilian journal titles considered most important by the users. The results showed that the MEDLINE system is of great importance to the Brazilian biomedical community, though the use of other systems and informal reference sources is also important.

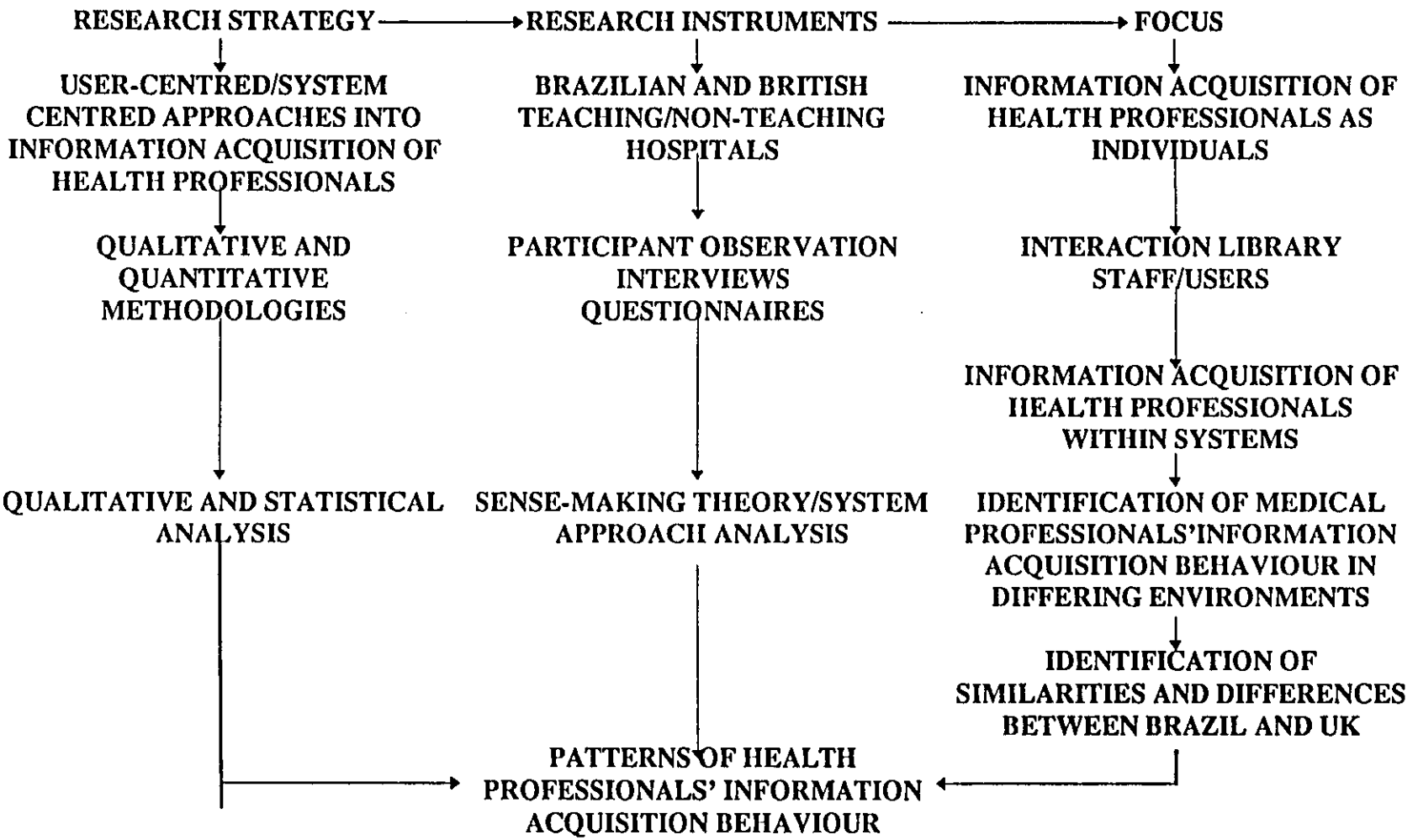
Poblacion & Silva (1980) investigated users from two different types of medical school (governmental and private), and two categories of students (undergraduate medical students and student-nurse on post-graduate courses. The aim of the project was to evaluate the bibliographic , human and financial resources of the medical libraries and information centres. Questionnaire responses were obtained, but the data were not tested for significance.. The most important results were:

- 16.6% of the undergraduate students valued the quality of the libraries they used as 'regular' or 'bad'; 33.3% of the post-graduate students graded the libraries the same way;
- 46.7% of the undergraduate students used the library weekly; 43.3% of the post-graduate students used the library daily;

- 46.7% of the post-graduate students used journals, whereas only 6.7% of the undergraduate students mentioned using the source of information; 16.7% of the post-graduate students used audio-visual materials, compared with 3.3% of the undergraduate students;
- 53.3% of the post-graduate students used the librarians as source of information regularly;
- 70% of the post-graduate students used journals as a mean to keep track of new developments;
- 86.7% of the post-graduate students used reference materials (indexes and abstracts), compared with 40% of the undergraduates;
- 93.3% of the undergraduate students and 100% of the post-graduates considered the formal training courses developed by libraries to be of great importance.

The needs and uses of information resources by students and academic staff involved in the post-graduate biomedical course of the Federal University Fluminense was the subject of a study by Garcia (1981). The work revealed that the use of formal information sources predominated for both students and academic staff. The language barrier was considered a very important aspect that need to be evaluated by the libraries. Interaction between users and librarians was another point highlighted by users as needing consideration.

Figure 3.1 - GENERAL DESIGN OF THE STUDY



CHAPTER THREE
DESIGN OF THE STUDY

3.1 METHODOLOGICAL APPROACH

3.1.1 Theoretical framework

The central theme of this investigation is to study **how medical staff acquire information in differing environments** so building up a holistic picture of the way medical staff interact with information sources in general, rather than how they use a specific information service or unit. Thus the research requires a rather different methodological approach from those used in traditional user studies. The approach of this study is based on a paradigm that considers information-seeking behaviour as a phenomenon resulting from the interaction between individuals and information sources, in the context of the situations faced by individuals when an information gap occurs. The settings and people are looked at holistically and from a humanistic perspective.

3.1.2 Theoretical approaches to information-seeking used in this study

Information-seeking behaviour almost always occurs in a situation where an individual, or group of individuals faces a situation and need to solve a particular problem, and to decide between various alternative ways of doing so. Various aspects of information-seeking behaviour need to be examined: the type of situation individuals face, the way they decide to seek information to bridge the gap faced, the assistance that the information gives them. The paths individuals select to find information and the nature of information provision within various information systems is looked at here in terms of a systems approach. This approach will be used

to look at health professionals as they function within their various environments or information systems, and to identify the variables that affect their behaviour within those systems. Two approaches - by Dervin and by Wilson - will be examined here.

User-centred approaches

Two theoretical approaches and models have provided the basic ideas for this research. Both look at the behaviour of users in the context of their work-related situations. In the first, Dervin's cognitive approach to information-seeking behaviour is used. This applies mainly to individuals, so Dervin's cognitive approach will be used to investigate the information-seeking behaviour of medical staff when they visit a library and interact with the information sources and library staff. The second part explores the information-seeking behaviour of medical staff in terms of the different contexts or systems within which they operate. Wilson's systems approach will be used here to examine how different categories of user access various information sources within their total social system, not only the formal information system.

The cognitive approach

As outlined in the literature survey, there have been challenges to logical positivism or positivistic science within the social sciences generally in recent years. Phenomenologists have questioned the way in which the social scientist views and studies human beings and their environment (Dervin, 1980; Streatfield, 1983; Swift et al., 1979). The positivist view is of a deterministic world which is discoverable, describable, and predictable (Dervin, 1980), and thus "people can be reduced to a set of variables which are somehow equivalent across persons and across situations" (Streatfield, 1983). The core assumption underlying information theory is that information exists independently of and externally to human action and thought (Dervin, 1977, 1980; Swift et al., 1979). On this view, the value of information lies in its ability to describe reality, potentially completely, thereby reducing uncertainty and allowing people to function more effectively (Dervin, 1977, 1980). Information is a

thing which can be transferred from one person to another like a brick (Dervin et al., 1982a), and knowledge can be accumulated brick by brick (Swift et al., 1979).

Out of the challenges to information theory in the communications field, new theoretical constructs are beginning to emerge. Information is beginning to be seen as a user, rather than an observer construct, and this shift in perspective has implications for predicting information behaviour (Dervin, 1980). The external, absolute information view led to attempts to try to predict information use based on people's demographic and personality traits, which assumed a cross-situational consistency. Even with the improvement in measuring instruments, however, trait variables were never able to predict much of the variance in behaviour. In their place a situational theory has begun to emerge, and as situational variables have been tested, they have proved to be more powerful predictors than the cross-situational variables (Dervin, 1980). A number of assumptions, which can be seen as counterpoints to information theory, underlie situational theory. Information is seen as being able to provide only an incomplete, rather than complete description of reality, and it is essentially internal, a part of an individual frame of reference, rather than an object which exists externally (Dervin et al., 1982b). It is the individual who makes sense of the information, constructs reality, and decides the utility of the information in a given situation (Atwood and Dervin, 1981; Dervin, 1976, 1977; Dervin et al., 1976, 1980, 1982a,b).

The model used for the first part of this investigation derives from Dervin's constructivist model of information. The *sense-making model* is basically a cognitive approach to information seeking, in that it recognises information as something that involves internal cognitive processes. The user of information becomes the focus in this sense-making model. Information becomes "whatever an individual finds 'informing'" (Dervin, 1977). The sense-making model sees information as subjective, situational, holistic, and cognitive (Dervin and Nilan, 1986). It focuses on understanding information within specific contexts, and on understanding how

information needs develop and how they are satisfied. It regards the user not as a passive receiver of external information, but as the centre of an active, ongoing process of change.

Dervin's method for studying information needs employs the "situation-gap-use" metaphor. She argues that all information needs happens from a discontinuity or "gap" in one's knowledge. The gap develops out of a specific "situation", and individuals attempt to bridge the gap through employing various tactics. What gets them over the bridge are called "uses" or "helps" (Dervin, 1992). Health professionals, like any other individual, move along a time-space continuum that is constantly shifting. Such a situation requires that they strive to make sense of themselves and their environment through continual adjustments. Performing their routine activities, i.e. teaching, research and patient care, they face "gaps" or "discontinuities" in their knowledge. In order to fill these "gaps" they have to use strategies. In order to examine the strategies of information-seeking and use associated with problem-solving practices, Dervin introduces some metaphoric conceptions connoting moving from one place to another in everyday life. Thinking and perceiving (i.e. moving forward in the "cognitive terrain") is like taking steps through experiences, with each moment in time-space a new step. The step may be a representation of past behaviour, but it is always theoretically a new step because it occurs in a new moment in space-time (Dervin, 1992).

The steps relating to "gap-defining" and "gap bridging" are the cognitive strategies found useful in answering questions. This is not an obvious task, because gap-defining and gap-bridging depend on individual, and situational factors. Gaps are not always easily identifiable, and people may find it difficult to articulate them in detail. While some requests are simple and/or straightforward, others are not. It is important in a user-centred, constructivist model, as Kuhlthan (1993) points out, to distinguish between the types of requests; simple, complex, very broad, very specific, vague,

ambiguous, or incomplete. The types of request mentioned by Kuhlthan are easily identified in both teaching and non-teaching hospital libraries in both countries, Brazil and the UK.

Fig. 3.5 illustrates the sense-making metaphor. Assume a human being taking steps through a series of experiences: each moment, a new step. The step may be a repetition of past behaviour, but it is always theoretically a new step because it occurs at a new moment in time-space. Assume a moment of discontinuity in which step-taking turns from a free-moving journey to a halt. Focus on the individual at this moment of discontinuity. Determine how the individual interprets and bridges this moment: what strategy he or she uses to define the situation; how he or she conceptualises the discontinuity as a gap and the bridge across it; how he or she moves to bridge the gap; how he or she proceedes with the journey after crossing the bridge.

Fig. 3.4 pictures the sense-making triangle. The metaphor (Fig. 3.5) constructs the sense-making triangle of situation-gap-help/use. As an individual moves through an experience, each moment is potentially a sense-making moment. The essence of that sense-making moment is assumed to be addressed by focusing on how the actor defined and dealt with the situation, the gap, the bridge, and the continuation of the journey after crossing the bridge.

Systems approach (Fig. 3.6)

Wilson's model of information-seeking paths views the user as functioning within a variety of information systems. He suggests that information-seeking behaviour results from the recognition of some need, perceived by the user. The user may make demands upon formal systems and from other people. The use of people as

information source involves the element of "information exchange", recognised by sociologists and social psychologists as a fundamental aspect of human interaction.

Wilson's model of information-seeking paths covers all the possible information sources that the user might contact when involved in information-seeking activities. He defines the paths used by information seekers directly, or used on their behalfs by the information system and its subsystems, and groups them into four groups or categories. Category A is the user's life-world, defined by Wilson (1981) "as the totality of experiences centred upon the individual as an information user". Within this life-world, one important sub-world will be the world of work, within which will exist various 'reference groups', with which the user identifies: fellow professionals, the peer group within an organisation and so on. Category B is represented by the information system with two sub-systems: the mediators and technology. Category C contains the universe of knowledge, which, as defined by Wilson, "is an abstract concept which embraces all knowledge-related objects, events and phenomena and, as such, clearly interacts with the 'physical universe'. Finally, Category D is the embodiments of knowledge: these might be documents or people who can help the user satisfy his or her needs. The letters in Wilson's model represent the paths: a, b, c, and d - identify search strategies by a user independent of any information system; e and f - identify search paths involving either a mediator or an information system's technology; g, h, and i - identify search strategies employed by a mediator to satisfy a user's demand for information; j and k - identify strategies employed by a sophisticated technology on behalf of either the user or the mediator.

3.1.3 Information-seeking behaviour models used in this study

On the basis of Dervin's and Wilson's approaches, two models have been developed to explain how medical staff behave when they need information. The first model describes health professionals' information-seeking behaviour in terms of the

individual (Fig. 3.2). The second model represents the information-seeking behaviour of health professionals within their various social systems (Fig. 3.3).

Description of the model of health professional information-seeking behaviour as an individual (cognitive approach) (Fig. 3.2)

This model supposes the recognition of an information gap by an individual: this is followed by a definition of the gap, a definition of strategies, strategies taken, and, finally, the information conceptualised. Within the environment in which they live, health professionals face moments in time-space contexts where actions change from continuing activity to a halt. At this moment, they try to understand the situation and decide which tactics or strategies they should use to bridge the gap faced. Gap-bridging involves the cognitive strategies found useful in answering the questions. Sense is then the product of the whole process.

Description of the model of health professionals information-seeking behaviour within social systems (system approach) (Fig. 3.3)

Within their social world, users may make demands upon several information systems: formal systems, informal systems and people. Health professionals make demands upon several information systems. Each system offers various sources of information.

Own formal information sources These include all printed material gathered by health professionals to build up his or her own collection, e.g.books, journals, etc.

Colleagues' information sources These are information sources owned by colleagues that health professionals use to exchange information, e.g. books, journal articles, etc.

Formal information sources Formal printed or electronic material found in the libraries or information units used by health professionals, e.g. their own hospital library, University library, Departmental libraries, other hospitals' libraries, etc.

Informal information sources · These include such sources as contacts with colleagues during informal discussions, conferences (within their hospital or outside) national and international meetings, media information, pharmaceutical representatives, electronic lists, etc.

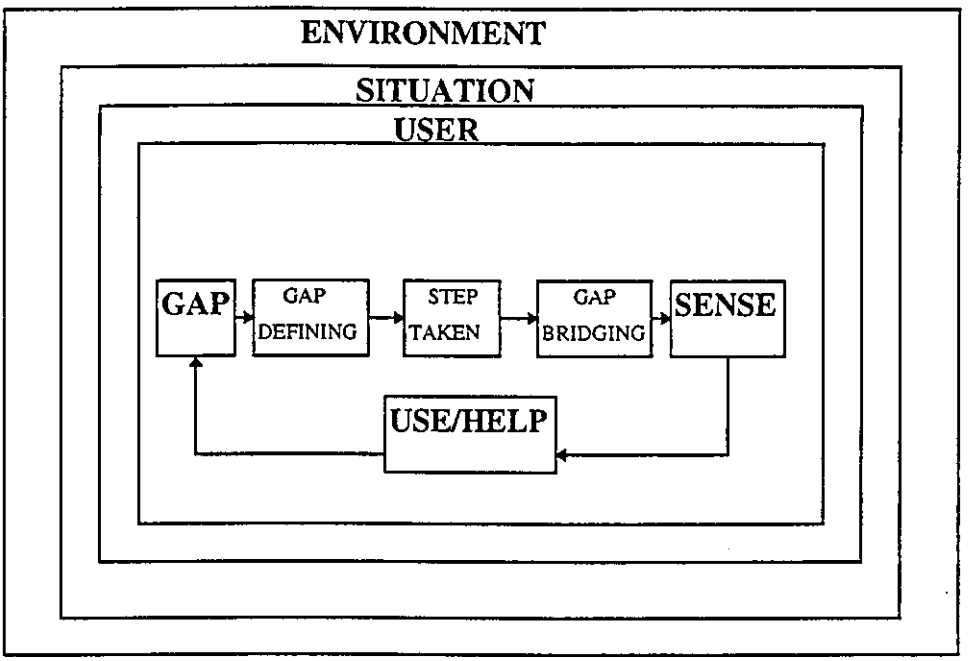


Figure 3.2

Model of health professional information-acquisition behaviour in terms of the individual

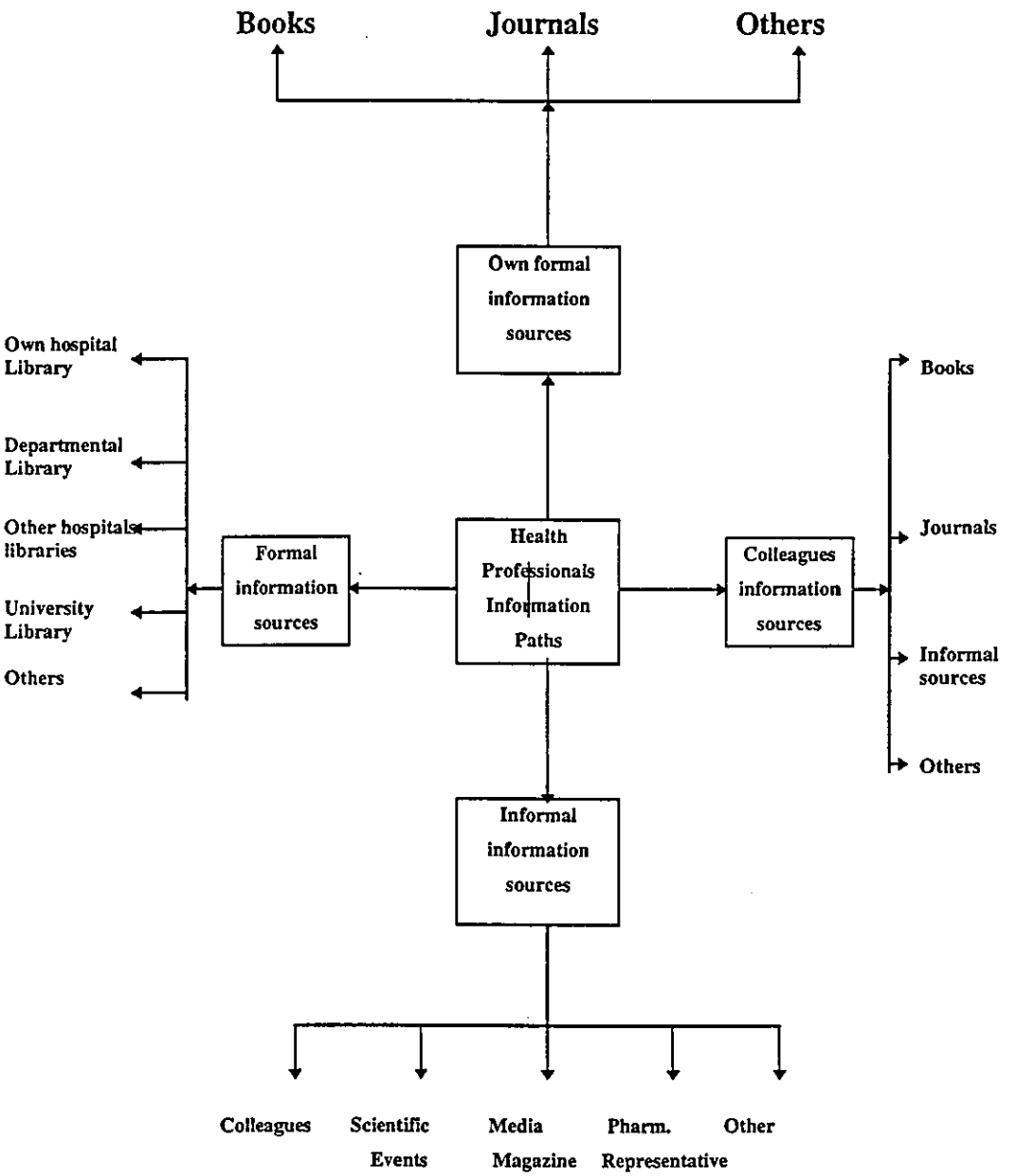


Figure 3.3

Micro-model of health professionals when they seek information within information systems

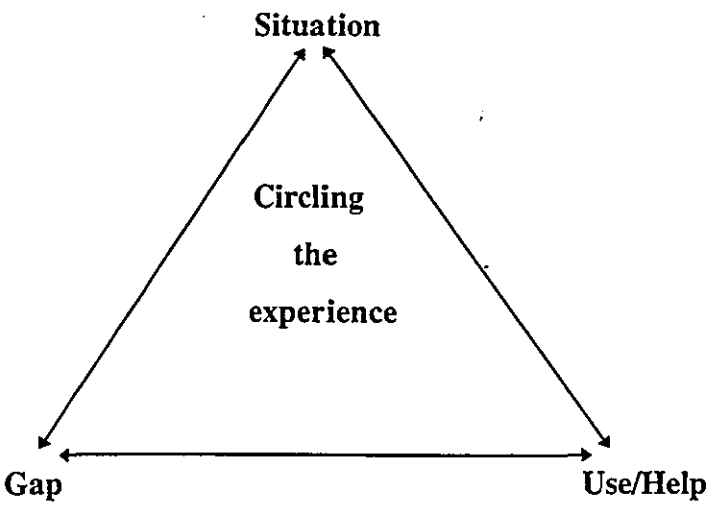


Figure 3.4

The Sense-making triangle

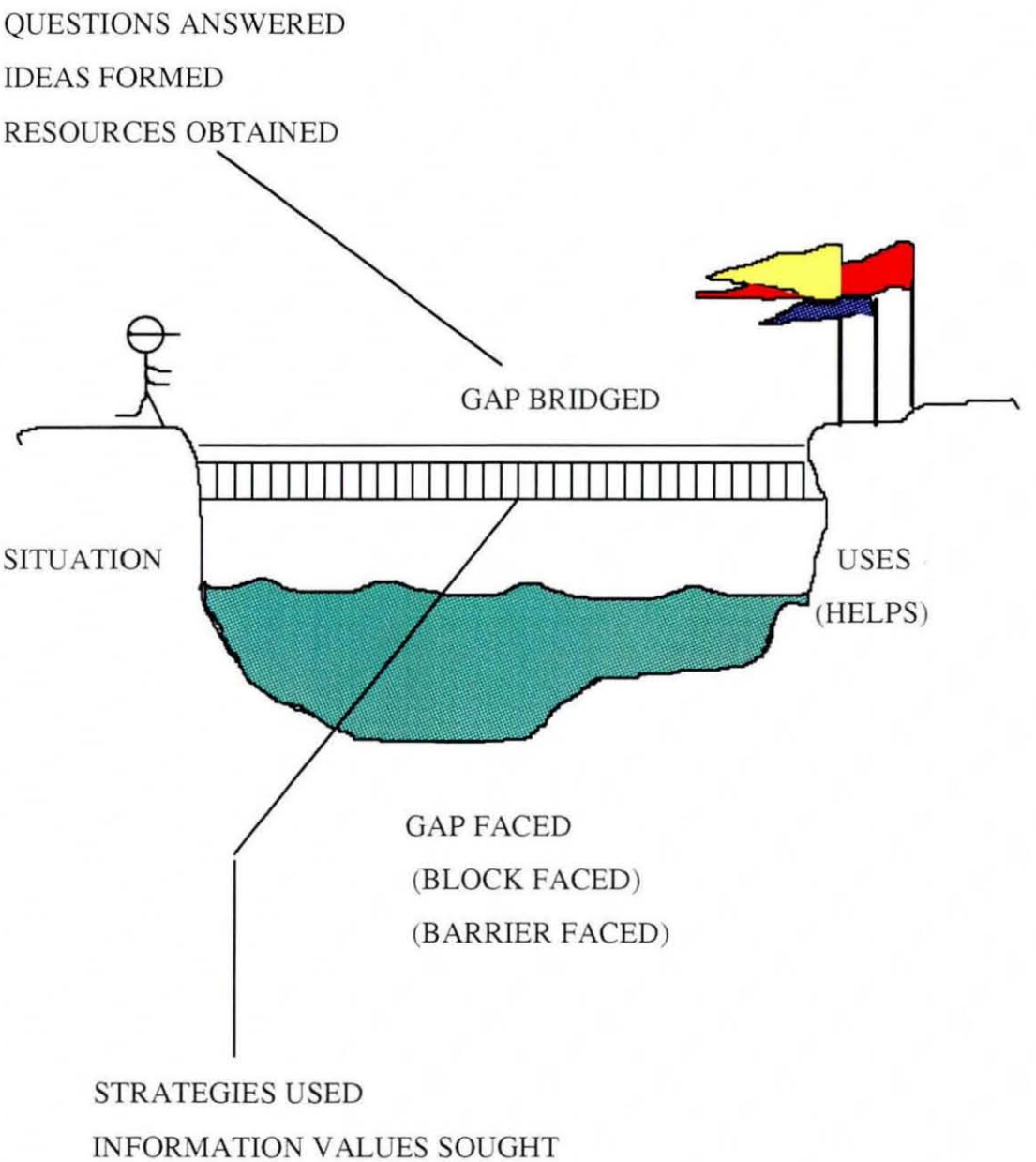


Figure 3.5 - The Sense-making metaphor

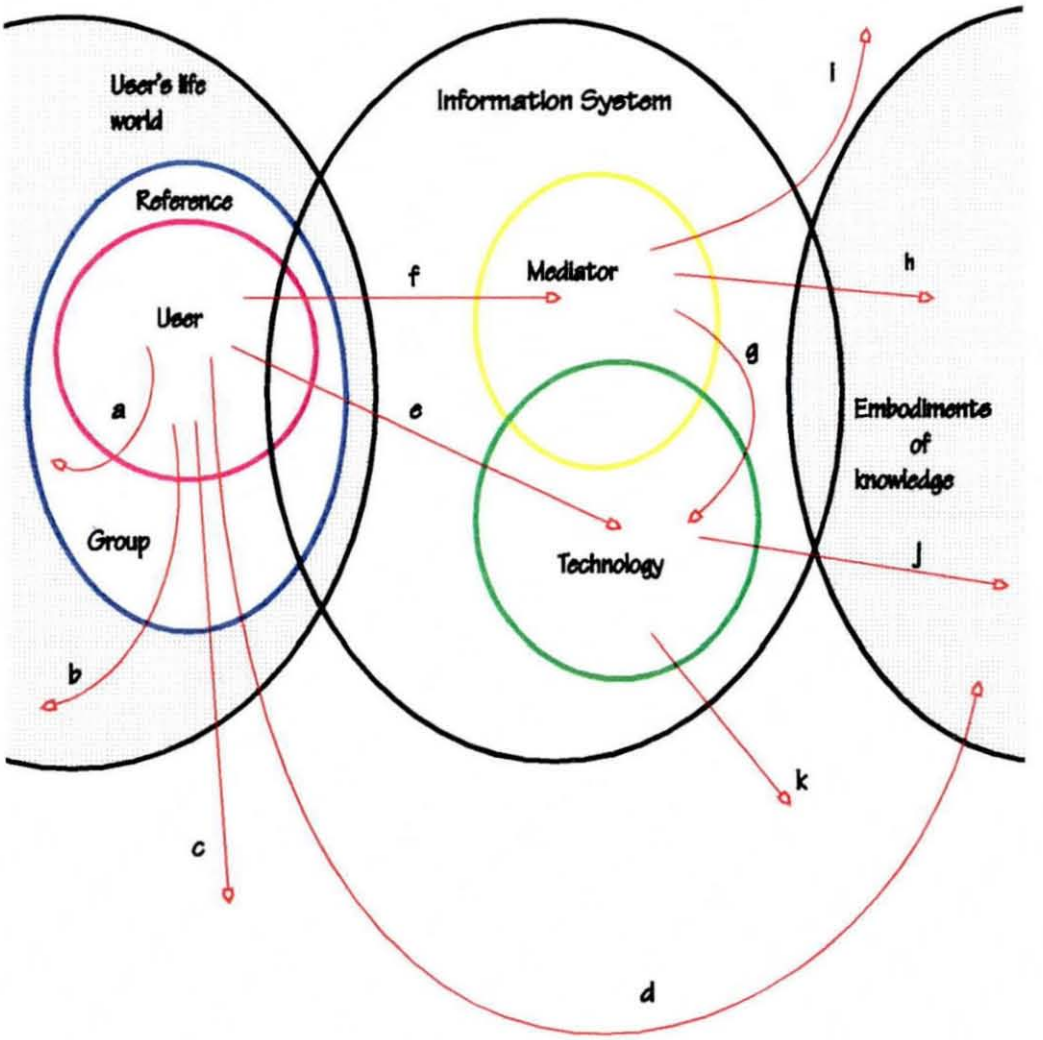


Figure 3.6

Wilson's model of information-seeking paths

3.2 Methodology

The models generated for this investigation relate to the information-seeking behaviour of health professionals both while they look for information in the medical libraries as individuals, and also while they perform their work roles as practitioners, researchers or academics. A holistic view of the information users, therefore, implies an in-depth study of health professionals, considering the environment in which they perform their professional tasks, the situations they face when seeking information, and the formal and informal systems they interact with to obtain information

In order to capture the information-seeking habits of health professionals in depth and, at the same time, obtain a broader view of their behaviour, the use of different methods of data gathering seems to be appropriate. The data-gathering method used in the first stage of this study was a variant of participant observation, the basic data-gathering method of social and cultural anthropology. This involved gathering information by combining observation of individuals with discussion with them, while they are engaged in their normal information-gathering activities. The use of this method was appropriate for this stage because the health professionals information-seeking behaviour was being looked at in the context of a specific environment - the medical library.

Questionnaires and interviews were used to collect data during the second part of this investigation. This explored how health professionals behave when they seek information from sources other than those found in libraries, i.e. colleagues, newspapers, magazines, pharmaceutical representatives, scientific events, etc. In this second phase, a larger number of respondents was approached in a variety of work settings. The use of questionnaires seemed appropriate in this context, complemented by interviews of a smaller group to explore details that could not be obtained through the use of questionnaires.

3.2.1 Environment of the Investigation

In considering the environmental factors that might affect communication, a basic distinction has to be drawn between teaching and non-teaching hospitals. Brember and Leggate (1982) point out that "teaching hospitals have characteristics not found in other hospitals which arise from the association of patient care with medical education and research". Thus, there should be a much stronger emphasis on research and teaching activities in teaching hospitals, but a stronger emphasis on patient care in non-teaching hospitals. The other important characteristic is that, outside the teaching hospitals, libraries are small in size with few staff. The present investigation should determine whether these variables affect the behaviour of medical staff in the two types of hospital when they search for information.

Various factors have guided the selection of the institutions in which to carry out the present study - especially mission, importance in the geographical area and accessibility. The first need was to find an appropriate teaching hospital in the UK. This had necessarily to be linked to a university with a strong biomedical research orientation and related teaching mission. The University of Leicester represented the most accessible medical school in geographical terms for carrying out the study. The importance of the Leicester Royal Infirmary N.H.S. Trust in the area, its size and research mission assessed as reflecting good UK practice. The ability to gain access to high-level personnel (Directors and Librarians) and to gain their support was of critical importance.

The second selection choice concerned non-teaching hospitals. Though teaching and research could be present, patient care had to be the strongest emphasis. It therefore seemed appropriate to look for hospitals that did not have links to medical schools. Hemel Hempstead and St. Albans were selected. Both cities are within the same

geographic limits of North West Hertfordshire; Hemel Hempstead General Hospital concentrates on the provision of complex and emergency care, while St. Albans City Hospital offers integrated outpatient care, and day case and planned surgery. Between them, they cover the ranges of hospital specialities, with typical library support. The senior staff also agreed to help with the study and offered the facilities of both hospitals.

The selection of the sites in Brazil followed the same criteria as those applied in the UK, for mission, importance and accessibility. Due to size of the country, the investigation had to be concentrated in one region. The area selected was the Northeast of Brazil, where the development of information services for medical professionals is less developed at present. The university hospital library selected is linked to one of the largest universities in the area (12,000 students), so it possesses basic similarities with the university hospital library in the UK (10,000 students) in terms of size and services. The other two hospitals are not directly linked to teaching, though they receive some residents and internists for their last year of studies. Like most non-teaching hospitals in Brazil, they have only limited library support. Like the British hospitals, they are important in their area, being the two largest in the city in terms of attendance of patients (inpatient care and outpatient care). The corresponding Brazilian teaching hospital studied was therefore the University Hospital of the Federal University of Ceara; the two non-teaching hospitals were the State General Hospital and the Caesar Calls Hospital, in Fortaleza, Ceara.

3.2.2 Definition of the sample

The population sample was thus based on teaching hospitals and non-teaching hospitals and medical professionals and nurses. In other words, the selection was based on type of hospital and occupational position.

The first stage of the investigation concentrated on information acquisition from formal sources in the library. The second stage investigated the interaction between medical staff and library staff. The third stage of the investigation examined the use of information sources, other than those found in the library, by medical staff. Altogether, 120 library users were observed and interviewed at each teaching hospital library, and 20 library users at each of the non-teaching hospital libraries in Brazil and in the UK. The latter numbers were decided on the basis that a minimum of 30-40 respondents was desirable for proper statistical analysis. A larger number was desirable in the teaching hospital to allow for inter-comparison across the greater range of different categories of respondent.

Observations were carried out over a period of two weeks at each library, with both the days and the time of the day varied so as to obtain a representative sample of visitors, regardless of their preferred times for visiting the library. This period of time also ensured that an adequate number of visitors could be interviewed. The second stage of the project involved the observation of library users and staff at the enquiry desk. Observations were carried out over a period of one week at each library.

The third stage of the project involved the distribution of questionnaires. It was decided to distribute the questionnaires to 10% of the staff of the teaching hospital and the same percentage for the other two hospitals. Altogether, 320 questionnaires were distributed at the teaching hospital and 200 in the two non-teaching hospitals in the UK. In other to draw comparisons between the hospitals in both countries, the same number (320) was used in the teaching hospital in Brazil, and 200 in the non-teaching hospitals. To obtain more detail, 30 interviews were carried out at each teaching hospital and 20 in both non-teaching hospitals, representing some 10% of the number of questionnaires distributed in each hospital. The sample of medical staff was again chosen so as to provide some basis for statistical validation.

3.3 Research Instruments

When choosing between research techniques, it is useful to define the problem, consider the approach, and then identify the appropriate technique. If the research is intended to find out how people carry out activities in public, watching them is the approach and observation the technique. To find out what people think, asking them is the approach, and techniques include interviews and questionnaires. With participant observation, the researcher becomes involved in the lives of the respondents, an approach which has the advantage of close-up experience. Interviews are widely used to elicit not only information about respondents, but also what they think of an issue or situation. They are useful mechanisms for probing not just behaviour and experience, but also opinions, values, beliefs and feelings. These are ways of eliciting information at first hand and in-depth from respondents or informants. Questionnaires are the technique used to ask a large number of people what they think about situations that they have experienced in the past.

3.3.1 Observation and Interview

During the first two stages of this investigation two methods were used - observation and interview - effectively a form of participant observation - to obtain feedback that is helpful both qualitatively and quantitatively. The technique of participant observation enabled the researcher to observe the behave of the library users while they were in an immediately relevant setting. In the subsequent interviews, the subjects could give their own assessments of their ongoing actions.

The investigation is based on the observation of visitors to a hospital library as they pursue their information activities, during two weeks in each hospital. Information on the way they used the various sections of the library was noted, while they were being observed. Immediately after the completion of an activity, the visitor was questioned regarding his/her background, interests and reason for carrying out the observed

activity. (Visitors had previously been warned by a notice at the entrance of the library that such a survey was in progress.)

The interviews were carried out *in situ* (e.g. if the respondent had been consulting a book, he/she would be interviewed at the book stack immediately after the book had been returned to the shelf). As the questions were raised immediately on completion of the actions, there was less chance for the subjects to be selective in their memories. Respondents were selected at random. In the teaching hospital libraries, the observer moved at intervals to different *loci* in order to cover the various areas of activity (e.g. book stack, new journals, CD-ROM station). The other hospital libraries were sufficiently small for the whole area to be observed from one point.

The interview questions were designed to elicit information on each user's background, interests and immediate information concern. They were told that the interview would be completed in five minutes, though many respondents were prepared to talk for longer. The questions posed were:

- What is your position in this hospital?
- How long have you been working in this (geographical) area?
- What is your speciality?
- What information were you looking for?
- Why do you need it?
- Did you find what you wanted?
- Did you encounter any problems?
- If yes, what is your next step?

The first three questions were concerned with background and interest. The second question was intended to separate short-term users of the library from long-term users.The next two questions focused on the information sought, whilst the final three questions were concerned with outcome.

Besides making direct use of library facilities, visitors also frequently posed queries to library staff, either in the library, or remotely by telephone. Observations were therefore made at the enquiry desk, recording both direct and telephone queries, for a further period of one week in each library.

The third stage of the project required the collection of quantitative data in order to have a broad picture of use of information sources others than the ones found in the libraries. The need here was to obtain data that would enable comparisons to be draw between categories of user. Questionnaire and interviews were used for this purpose.

3.3.2 Questionnaire and Interview

Questionnaire structure

The questions could be grouped under four headings:

1. Background;
2. Research production;
3. Information sources utilisation;
4. Information channels restrictions.

Individual use of information and information systems is responsive to situational conditions. It is expected that different categories of individuals (eg. consultants, junior doctors, nurses or anaesthetics) will face different information situations due to the different roles they play. For this investigation, three variables have been used to describe medical staff: seniority, job type and speciality.

Background

Individuals with longer experience are expected to utilise different information sources from those with shorter experience. The same can be expected of medical staff who occupy different positions and have different specialities. The first three questions were therefore:

1. How long have you been working in this health area?
2. What position do you currently hold?
3. What is your main speciality?

The fourth question is concerned with the range of daily activities of individuals. It is expected that medical staff who devote different proportions of their time to different activities will have different ways of acquiring information about them. Hence, the final question in this group was:

4. What proportion of your time do you devote to each of the following? patient care, administration, research, teaching.

Research production

It was expected that medical staff who produce research would have different ways of acquiring information from those who do not produce research publications. The number of items published or accepted for publication when correlated with information types and sources, may provide an indicator of how active medical staff are in information-seeking. This led to the following question:

5. Have you produced any research publication during the last 24 months? Yes/No. If yes, estimate numbers of items (journals articles, review articles, short communications, books, chapter in books, reports, others).

Information sources utilisation

Three questions are related to the utilisation of information types and sources of information. At this stage, the three most common medical activities were considered. For each question the medical staff were asked to relate their answer to each of the categories (patient care, research, and teaching). The list contains eight types of professional information expected to be used by medical staff.

6. Which of the following types of professional information do you need for your work? Basic scientific and medical information, information on "the state of the art", new procedures/new drugs, drug information, clinical audit, prognosis, diagnosis, therapy.

In addition, eight information sources were identified, and respondents were asked to rank the most important two in each of the three categories - patient care, research, and teaching.

7. Which are the most important information sources you use in your work? Personal information sources, departmental information sources, colleagues information sources, discussion with colleagues, hospital library, university library, information from external sources, other.

Respondents were then asked to indicate whether they used each of eleven information sources "at least once a month" or "less than once a month".

9. Please indicate the frequency with which you have used these various information sources during the last 24 months. Your own journals, your own books, internal meetings, external meetings within the country, external international meetings, discussion with colleagues from your hospital, discussion with colleagues

from other hospital, pre-prints/off-prints, radio/television programmes, newspapers/magazines, pharmaceutical representatives.

Information channels restriction

The final question was designed to see whether medical staff find restrictions in their use of channels of information and whether, if so, the restrictions act as barriers to obtaining information. They were asked to indicate the degree of restriction by circling the appropriate number (0 for no restrictions; 1 for some restrictions; 2 for high restrictions). They were also asked to indicate whether the restriction was due to financial causes.

Question number eight: To what extent are there restrictions on your use of the following channels for obtaining information? Travel to attend conferences, seminars, etc., phone calls, e.mail, photocopying services, fax.

The formulation of hypotheses

The hypotheses formulated are based, in most of the cases, upon the literature discussed in Chater Two. The independent variables are related to the personal characteristics of health professionals. The dependent variables are: research production, information sources and information channels restrictions faced by health professionals.

a) Hypotheses on the influence of Position

- NULL HYPOTHESIS 6.1: Position does not influence the need for certain types of professional information by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.1: Position makes a difference to the need for certain types of professional information by health professionals in Brazil.

- NULL HYPOTHESIS 6.2: Position does not influence the need for certain types of professional information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.2: Position makes a difference to the need for certain types of professional information by health professionals in the UK.
- NULL HYPOTHESIS 6.3: Position does not influence the actual use of certain sources of information by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.3: Position does influence the actual use of certain sources of information by health professionals in Brazil.
- NULL HYPOTHESIS 6.4: Position does not influence the actual use of certain sources of information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.4: Position does influence the actual use of certain sources of information by health professionals in the UK.
- NULL HYPOTHESIS 6.5: Position does not influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.5: Position does influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- NULL HYPOTHESIS 6.6: Position does not influence the degree of restriction to use information channels by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.6: Position does influence the degree of restrictions on the usage of information channels by health professionals in the UK.

b) Hypotheses on the influence of Speciality

- NULL HYPOTHESIS 6.7: Speciality does not influence the need for certain types of professional information by health professionals in Brazil .

- ALTERNATE HYPOTHESIS 6.7: Speciality makes a difference to the need for certain types of professional information by health professionals in Brazil.
- NULL HYPOTHESIS 6.8: Speciality does not influence the need for certain types of professional information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.8: Speciality makes a difference to the need for certain types of professional information by health professionals in the UK.
- NULL HYPOTHESIS 6.9: Speciality does not influence the actual use of certain sources of information by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.9: Speciality does influence the actual use of certain sources of information by health professionals in Brazil.
- NULL HYPOTHESIS 6.10: Speciality does not influence the actual use of certain sources of information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.10: Speciality does influence the actual use of certain sources of information by health professionals in the UK.
- NULL HYPOTHESIS 6.11: Speciality does not influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.11: Speciality does influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- NULL HYPOTHESIS 6.12: Speciality does not influence the degree of restrictions on the usage of information channels by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.12: Speciality does influence the degree of restrictions on the usage of information channels by health professionals in the UK.

c) Hypotheses on the influence of Seniority

- NULL HYPOTHESIS 6.13: Seniority does not influence the need for certain types of professional information by health professionals in Brazil .
- ALTERNATE HYPOTHESIS 6.13: Seniority makes a difference to the need for certain types of professional information by health professionals in Brazil.
- NULL HYPOTHESIS 6.14: Seniority does not influence the need for certain types of professional information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.14: Seniority makes a difference to the need for certain types of professional information by health professionals in the UK.
- NULL HYPOTHESIS 6.15: Seniority does not influence the actual use of certain sources of information by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.15: Seniority does influence the actual use of certain sources of information by health professionals in Brazil.
- NULL HYPOTHESIS 6.16: Seniority does not influence the actual use of certain sources of information by health professionals in the UK.
- ALTERNATE HYPOTHESIS 6.16: Seniority does influence the actual use of certain sources of information by health professionals in the UK.
- NULL HYPOTHESIS 6.17: Seniority does not influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- ALTERNATE HYPOTHESIS 6.17: Seniority does influence the degree of restrictions on the usage of information channels by health professionals in Brazil.
- NULL HYPOTHESIS 6.18: Seniority does not influence the degree of restrictions on the usage of information channels by health professionals in the UK.

- ALTERNATE HYPOTHESIS 6.18: Seniority does influence the degree of restrictions on the usage of information channels by health professionals in the UK.

d) Hypotheses on the influence of Productivity

- NULL HYPOTHESIS 6.19: There is no difference in the use of sources between health professionals who have produced research and health professionals who have not produced research publications in Brazil .
- ALTERNATE HYPOTHESIS 6.19: There is a difference in the use of sources between health professionals who have produced research and health professionals who have not produced research publications in Brazil.
- NULL HYPOTHESIS 6.20: There is no difference in the use of sources between health professionals who have produced research and health professionals who have not produced research publications in the UK.
- ALTERNATE HYPOTHESIS 6.20: There is a difference in the use of sources between health professionals who have produced research and health professionals who have not produced research publications in the UK.

Data analysis methodology

The data analysis method applied to test these various hypotheses was the chi-squared test. The master file data were processed into a format appropriate for statistical analysis with the SPSS (Statistical Package for Social Science) software. The analysis provided both frequency data and statistical information necessary for the acceptance or rejection of the hypotheses. The hypotheses testing and discussion are presented in Chapter Six.

Interview structure

The interview questions were designed to identify aspects of the information-seeking behaviour of medical staff which had not been covered in the questionnaire (or that had been covered superficially).

The questions could be grouped under four headings:

1. Personal information
2. Research publication
3. Informal communication
4. Concluding question.

Personal information

These two questions are designed to explore the ways in which medical staff obtain information about recent developments in their area, how dependent they are on research from other countries, and if they find any barriers to obtaining information generated in other countries.

1. How do you keep track of recent developments in your area?
2. Do you keep track of research in other countries? If so, how?

The idea of the next two questions is to find out whether they keep an information collection of their own, and, if so, which kind of material they prefer to have in their own collection.

3. To which journal titles do you subscribe?
4. How many books related to your work do you buy per year?

Research publication

Question number five is designed to investigate whether or not medical staff are involved in the production of research, to what extent the involvement is voluntarily,

how important they consider this type of activity, and what kind of barriers they encounter in performing this activity. Question number six is designed to explore the means medical staff use to have their results disseminated.

5. To what extent do you regard producing research publication as a part of your work?

6. How do you decide where to publish your results?

Informal communication

The amount of new information in any particular field is usually large and growing. This can affect the way in which information is disseminated. The idea here is to explore the way medical staff communicate among themselves.

7. Do you work as a member of a team?

8. Where and when do you have your most useful discussion with your colleagues?

9. What are the main types of information you receive and send through e-mail?

10. Apart from sources already mentioned (journals/books/conferences), do you find any other external sources of information useful?

Concluding question

The idea here is to investigate what motivates medical staff to achieve their goals.

11. What do you consider the most important stimuli or sources for new ideas in your work?

CHAPTER FOUR

RESULTS WITHIN THE LIBRARY

The results presented in this Chapter Four are related to data collected while users visited the library at teaching and non-teaching hospitals in the UK and Brazil. They cover the stage during which the researcher observed the users' information-seeking behaviour while they used materials in different sections of the library, i.e., at the current journals section, book collection, back issues of journals, reference materials, and search system. Notes were taken during the observation. As soon as the subjects finished whatever activity they were performing, interviews were carried out related to that activity in order to ascertain the users'own viewpoints on what they were doing.

4.1 Observation and Interview

4.1.1 Data gathered through observation in the UK and Brazil

Data gathered through observation at teaching and non-teaching hospital libraries in the UK

The library at the teaching hospital in the UK is heavily used by students, not all medical. Final-year male medical students can often be identified by the way they dress (eg. always wear ties). Students use any area of the library as their studying place; they use their own materials a great deal, take notes while reading the books, and leave their belongings on the tables and chairs when they have to leave the library (to attend classes, to have lunch, etc.). Sometimes they hold discussions (on

professional matters, or just casual conversation). They visit the shelves many times looking for books; they spend a great deal of their time standing by the shelves browsing and selecting appropriate material. Students also use the journal current issues area, but they browse the journal shelves much more rarely. Basically, the library is for them a place for study of all kinds, though this is centred on the library collection.

A great amount of library use by health professionals (doctors and nurses) occurs as brief visits, except at break hours, when they stay longer, reading and relaxing (sometimes sleeping). They visit the current issues area, browse through the new journals issues, sometimes scanning several different titles while standing by the shelves, whilst at other times they take the issues to the tables. During break hours, they browse more thoroughly, sometimes reading a whole article or articles. During working hours, they look for a specific information. When they find some of interest, they take notes, or take the issue, or issues, to the issue desk, or to the photocopying machine. When they visit the back issues collection they always carry a list of references. Occasionally, they bring several volumes to a table and skim through them, looking for any material of interest.

A great majority of the users in the library at any time are young, mostly students. Older professionals come to see the librarian and to order a biblioDiagramic search, or to make an information enquiry. Junior doctors use the databases on CD-ROM, and some use audio-visual materials. This is rarely the case amongst older professionals.

The libraries sited at non-teaching hospitals in the UK are smaller than the university medical school library. They are usually very quiet, and do not offer a large studying area. Professionals come to the library to look for books and journals; to find out what is new; to use the photocopying machine; and to talk to the librarian. They usually go to the librarian's office to discuss their information needs, and to request

searches on specific topics. They also receive the articles they have requested through inter-library loan when they come to the library.

Data gathered through observation at teaching and non-teaching hospital libraries in Brazil

The teaching hospital library in Brazil is always crowded. Students occupy all available tables during the majority of the library opening hours. They discuss their information needs with the staff at the issue desk, they receive instructions on how to use the library catalogue and to find books in the collection from them. Residents and professionals also ask for assistance from the librarians, especially when they need to read journals, or to have a bibliographic search done. Some of the consultants have their 'preferred librarian', whom they 'trust' to find solutions to their information problems. Users do not have access to databases on-line, or on CD-ROM; they, especially the students, use the printed Index Medicus for their searches. This information source is also often preferred by junior doctors. When they need to do a search and do not want to use the printed source, they ask librarians to do it. The librarians search the MEDLINE and LILACS databases on CD-ROM. Some times it takes two or three days to have the printout ready for the users, due to the volume of work.

Libraries at non-teaching hospitals are much smaller than at the teaching library. Junior doctors, consultants, and residents visit the library, some of them every day, although they know that the chance of finding new material is small. They use the library to study (residents), to hold group discussions (when they are developing a project, before a formal meeting, etc.), to photocopy all sorts of materials, and to talk to the librarian.

4.1.2 Data gathered through interview

For aid analysis, the most important formal sources - books and journals - were divided into categories relating to the motivation of the information seeker. Some usage is driven by the need to obtain a particular item of information (this is labelled 'specific use here). Alternatively, users may indulge in some form of browsing, or looking for items of possible interest (labelled 'general' use here). This division leads to four categories - specific/general and book/journal. Usage of reference materials (i.e. abstracts, databases, dictionaries, etc.) was recorded separately, since these always seemed to be used to satisfy specific information needs. A small group of respondents did not come to the library in order to seek information (e.g. they brought their own material to read). These have been labelled 'NSI' (no specific information). A final category was use of library services (e.g. photocopying). The reasons users gave for seeking information have been grouped into five categories--for personal learning, patient care, teaching, research, and other.

The tables and diagrams given below analyse the data collected in terms of the above categories. The tables present the results of each question, grouped by type of hospital (teaching and non-teaching) in both the UK and Brazil. The data are converted to percentages to allow for easy comparison between the two countries. The diagrams provide an alternative view of the similarities and differences in the users' information acquisition patterns.

Characteristics of respondents

In this section, the number of respondents and percentage by position are presented for teaching and non-teaching hospitals in both the UK and Brazil.

Table 4.1 - Distribution of respondents of the teaching hospital library by position in the UK

Position	n	%
Medical student	25	20.8
Junior Doctor*, Consultant	25	20.8
Lecturer, Professor	11	9.2
Nurse**	12	10.0
Technicians	15	12.5
Other students	32	26.7
Total	120	100.0

*House Officer, Senior House Officer, Registrar, Senior Registrar

** Nurse, Staff nurse, Ward Sister, Sister

Table 4.2- Distribution of respondents of the non-teaching hospital libraries by position in the UK

Position	n	%
Junior Doctor*, Consultant	25	62.5
Nurse**	10	25.0
Medical Student	2	5.0
Midwife	3	7.5
Total	40	100.0

*House Officer, Senior House Officer, Registrar, Senior Registrar

**Staff Nurse, Ward Sister, Sister

Table 4.3 - Distribution of respondents of the teaching hospital library by position in Brazil

Position	n	%
Medical student	31	25.8
Junior Doctor*, Consultant	25	20.8
Lecturer, Professor	10	8.4
Nurse**	12	10.0
Technician	24	20.0
Other students	18	15.0
Total	120	100.0

*House Officer, Senior House Officer, Registrar, Senior Registrar

**Staff Nurse, Ward Sister, Sister

Table 4.4 - Distribution of respondents of the non-teaching hospital libraries by position in Brazil

Position	n	%
Junior Doctor*, Consultant	23	57.5
Nurse**	1	2.5
Medical Student	3	7.5
Resident	13	32.5
Total	40	100.0

*House Officer, Senior House Officer, Registrar, Senior Registrar

**Staff Nurse, Ward Sister, Sister

Tables 4.1, 4.2, 4.3, and 4.4 give the information on the sample of teaching and non-teaching hospitals libraries in the UK and Brazil, for the first part of this investigation. In the UK, at the teaching hospital library (Table 4.1), students (medical and others), and junior doctor/consultants were the categories with highest participation among all categories. In Brazil (Table 4.3), at the same type of hospital library, medical students and junior doctors/consultants were similarly the best represented. At non-teaching hospital libraries in the UK (Table 4.2), junior doctors/consultants and nurses were the two categories well represented in the sample. In Brazil, for the same type of libraries (Table 4.4), junior doctors/consultants and residents dominated the total sample.

Information sought at the teaching and non-teaching hospital libraries in the UK and Brazil

Table 4.5 and diagram 4.1 show the results on usage of library materials and services in teaching hospital libraries in the UK and Brazil. In the UK, the usage concentrates on specific information sought from books (33.8%) and from journals (33.8%). A similar concentration is found in Brazil, but books are more important and journals less so. The use of books to find general information did not occur in either country. Table 4.6 and Diagram 4.2 present the results by priority, by country. Apart from the usage of general information from journals and usage of library services, the others show the same sequence of preference in the two countries.

Table 4.7 and Diagram 4.3 give the results on usage of library materials and services in non-teaching hospital libraries in the UK and Brazil. In the UK, the usage of materials again emphasises specific information from books (35.0%) and from journals (32.5%). In Brazil, there was some usage for all types of information, but specific information from books dominates (68.2%).

Table 4.8 and Diagram 4.4 compare usage of library materials and services between non-teaching hospital libraries in the UK and Brazil in terms of priorities. Ranking in the UK is generally similar to that in Brazil but the percentages differ considerably. In Brazil, the usage of books for specific information forms over two-thirds of the total usage. Specific information from journals comes in second place with only 13.6% of usage. In the UK, there is a balance between the use of specific information from books and specific information from journals (35.0% and 32.5%, respectively). The usage of general information from journals and no specific information usage differ between the two countries. UK makes higher usage of general information from journals than Brazil (UK-14.0%; Brazil-2.3%). Going to the library for no specific reason represents 6.8% of the total usage of the library in Brazil, but there is no use of this sort in the UK.

Question: What information were you looking for?

Table 4.5

Information sought at the teaching hospital libraries in the UK and Brazil

Information sought	UK	%	Brazil	%
Spec/books	43	33.8	64	42.4
Gen/books	0	0.0	0	0.0
Spec/journals	43	33.8	40	26.5
Gen/journals	10	7.9	2	1.3
Spec/ref.mat.	23	18.1	24	15.9
NSI	4	3.2	7	4.6
Lib.services	4	3.2	14	9.3
Total	127	100.0	151	100.0

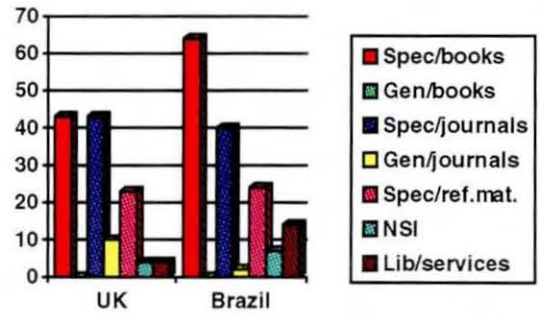


Diagram 4.1

Information sought at the teaching hospital libraries in the UK and Brazil

Table 4.6

Information sought at the teaching hospital libraries in the UK and Brazil by priority

Information sought	UK %	Information sought	Brazil %
Spec/books	33.8	Spec/books	42.4
Spec/journals	33.8	Spec/journals	26.5
Spec/ref.mat.	18.1	Spec/ref.mat.	15.9
Gen/journals	7.9	Lib. Serv.	9.3
NSI	3.2	NSI	4.6
Lib. Serv.	3.2	Gen/journals	1.3
Gen/books	0.0	Gen/books	0.0

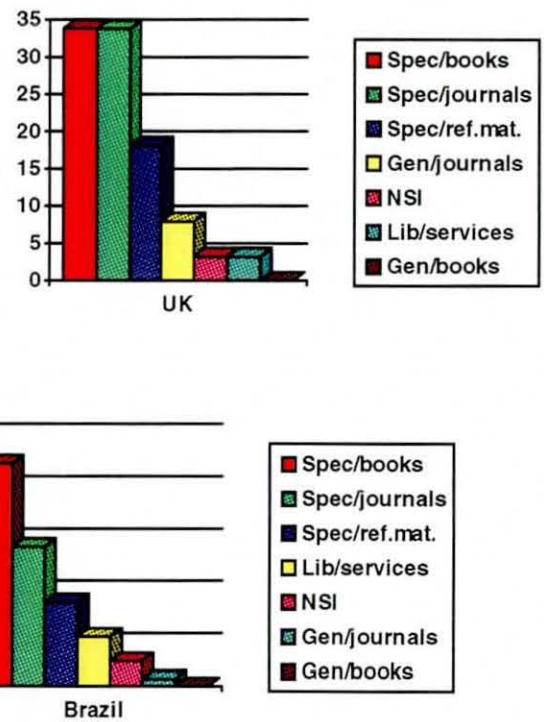


Diagram 4.2

Information sought at the teaching hospital libraries in the UK and Brazil by priority

Table 4.7

Information sought at the non-teaching hospital libraries in the UK and Brazil

Information sought	UK	%	Brazil	%
Spec/books	15	35.0	30	68.2
Gen/books	2	4.6	1	2.3
Spec/journals	14	32.5	6	13.6
Gen/journals	6	14.0	1	2.3
Spec/ref.mat.	4	9.3	2	4.5
NSI	0	0.0	3	6.8
Lib.services	2	4.6	1	2.3
Total	43	100.0	44	100.0

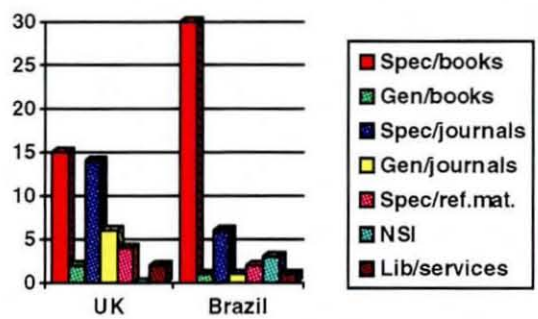


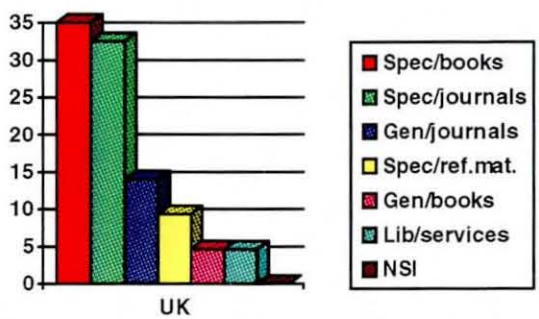
Diagram 4.3

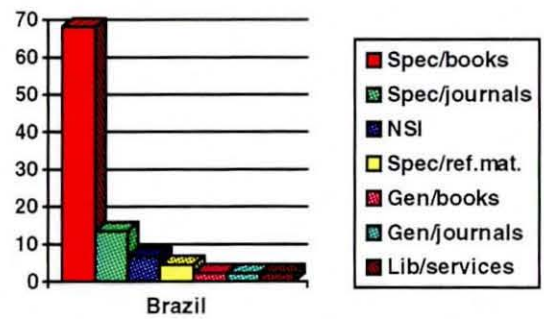
Information sought at the non-teaching hospital libraries in the UK and Brazil

Table 4.8

Information sought at the non-teaching hospital libraries in the UK and Brazil by priority

Information sought	UK %	Information sought	Brazil %
Spec/books	35.0	Spec/books	68.2
Spec/journals	32.5	Spec/journals	13.6
Gen/journals	14.0	NSI	6.8
Spec/ref.mat.	9.3	Spec/ref.mat.	4.5
Gen/books	4.6	Gen/books	2.3
Lib. Serv.	4.6	Gen/journals	2.3
NSI	0.0	Lib.Serv.	2.3





Diagrams 4.4

Information sought at the non-teaching hospital libraries in the UK and Brazil by priority

Reasons users seek information at the teaching and non-teaching hospital libraries in the UK and Brazil

Table 4.9 and Diagram 4.5 record the reasons users give for seeking information at teaching hospital libraries in the UK and Brazil. In the UK, users go to the library for learning purposes (39.2%) - i.e. to get up-dated, to prepare for examinations, training sessions, to support lectures, to support practice - and for research reasons (37.7%). In Brazil, the reasons are very similar to those in the UK: as table 4.10 and diagram 4.6 show.

Table 4.11 and diagram 4.7 show the reasons users seek information at non-teaching hospital libraries in the UK and Brazil. Learning is the main reason in both countries. Table 4.12 and diagram 4.8 indicate that ranking is similar for both countries.

Question: Why do you need this information?

Table 4.9

Reasons users seek information at the teaching hospital libraries in the UK and Brazil

Reasons	UK	%	Brazil	%
Learning	51	39.2	64	47.1
Patient Care	4	3.1	12	8.8
Teaching	11	8.5	4	3.0
Research	49	37.7	50	36.7
Others	15	11.5	6	4.4
Total	130	100.0	136	100.0

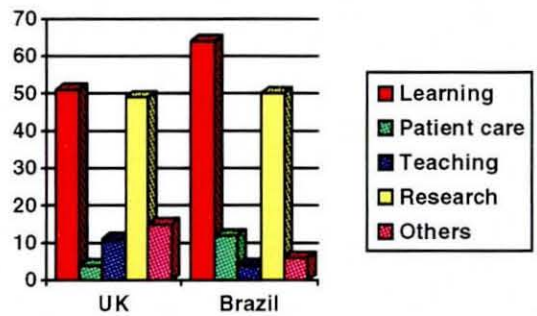


Diagram 4.5

Reasons users seek information at the teaching hospital libraries in the UK and Brazil

Table 4.10

Reasons users seek information at the teaching hospital libraries in the UK and Brazil by priority

Reasons	UK %	Reasons	Brazil %
Learning	39.2	Learning	47.1
Research	37.7	Research	36.7
Others	11.5	Patient Care	8.8
Teaching	8.5	Others	4.4
Patient Care	3.1	Teaching	3.0

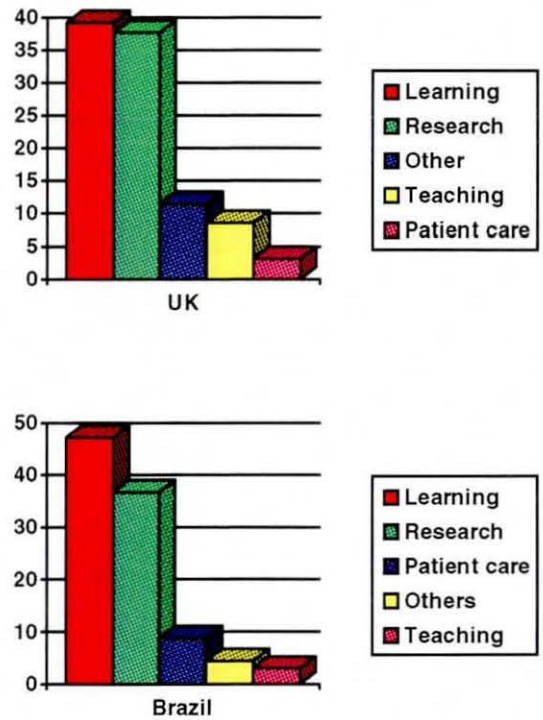


Diagram 4.6

Reasons users seek information at the teaching hospital libraries in the UK and Brazil by priority

Table 4.11

Reasons users seek information at the non-teaching hospital libraries in the UK and Brazil

Reasons	UK	%	Brazil	%
Learning	26	54.2	25	49.0
Patient Care	8	16.6	11	21.6
Teaching	5	10.4	3	5.9
Research	2	4.2	3	5.9
Others	7	14.6	9	17.6
Total	48	100.0	51	100.0

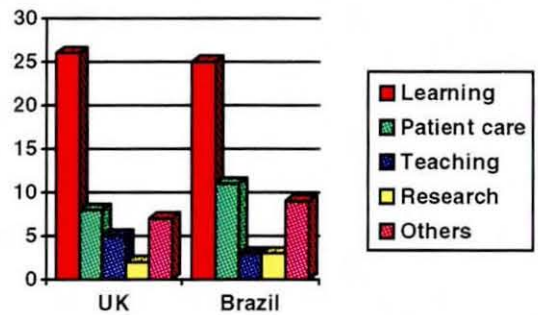


Diagram 4.7

Reasons users seek information at the non-teaching hospital libraries in the UK and Brazil

Table 4.12

Reasons users seek information at the non-teaching hospital libraries in the UK and Brazil by priority

Reasons	UK %	Reasons	Brazil %
Learning	54.2	Learning	49.0
Patient Care	16.6	Patient Care	21.6
Others	14.6	Others	17.6
Teaching	10.4	Teaching	5.9
Research	4.2	Research	5.9
Total	100.0	Total	100.0

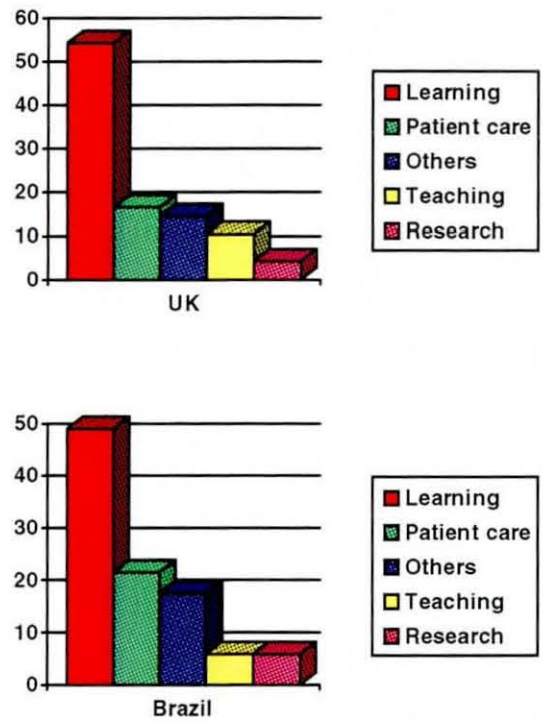


Diagram 4.8

Reasons users seek information at the non-teaching hospital libraries in the UK and Brazil by priority

Level of satisfaction of users at the teaching and non-teaching hospital libraries in the UK and Brazil

The contents of tables 4.13 and 4.14 and diagrams 4.9 and 4.10 suggest that most people can find what they want in their libraries. However, comments during the interviews indicate that this mostly reflects users' knowledge of library facilities. The real situation is reflected in the contents of tables 4.15 and 4.16 and diagrams 4.11 and 4.12, where it is clear that there are far great difficulties in finding the required information in Brazil than in the UK.

Question: Did you find what you were looking for?

Table 4.13

Level of satisfaction of users at the teaching hospital libraries in the UK and Brazil

Answer	UK	%	Brazil	%
Yes	95	79.8	114	90.5
No	9	7.6	12	9.5
Some	15	12.6	0	0.0
Total	119	100.0	126	100.0

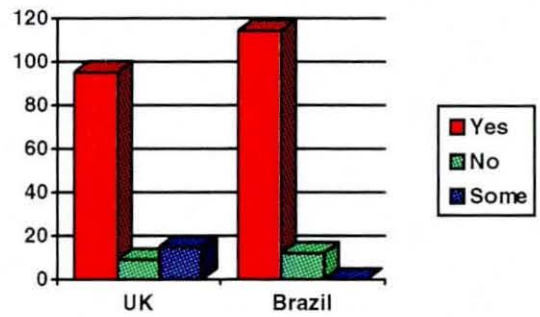


Diagram 4.9

Level of satisfaction of users at the teaching hospital libraries in the UK and Brazil

Table 4.14

Level of satisfaction of users at the non-teaching hospital libraries in the UK and Brazil

Answer	UK	%	Brazil	%
Yes	37	97.4	35*	87.5
No	1	2.6	5	12.5
Some	0	0.0	0	0.0
Total	38	100.0	40	100.0

*40% of this total were reading their own materials

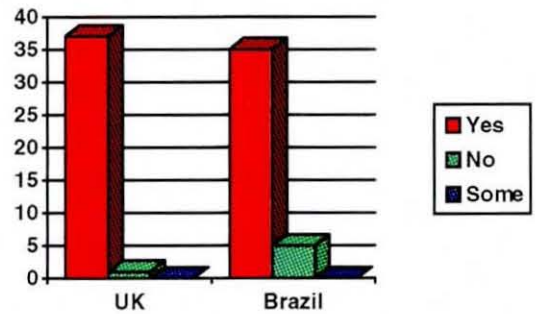


Diagram 4.10

Level of satisfaction of users at the non-teaching hospital libraries in the UK and Brazil

Question: Did you have any problem to find what you wanted?

Table 4.15

Problems encountered at the teaching hospital libraries in the UK and Brazil

Answer	UK	%	Brazil	%
Yes	15	12.7	114	90.5
No	100	84.7	12	9.5
Some	3	2.6	0	0.0
Total	118	100.0	126	100.0

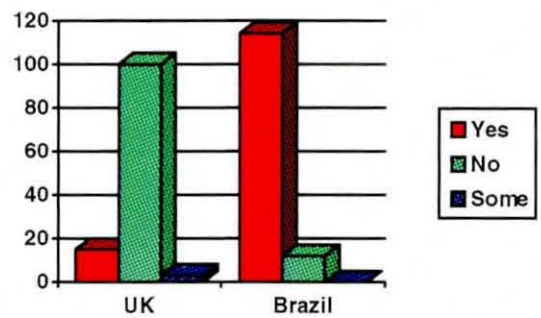


Diagram 4.11

Problems encountered at the teaching hospital libraries in the UK and Brazil

Table 4.16

Problems encountered at the non-teaching hospital libraries in the UK and Brazil

Answer	UK	%	Brazil	%
Yes	5	12.5	39	97.5
No	32	80.0	1	2.5
Some	3	7.5	0	0.0
Total	40	100.0	40	100.0

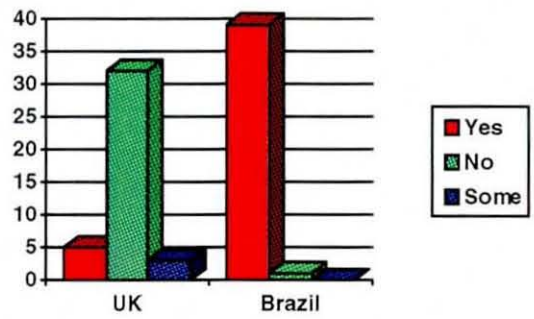


Diagram 4.12

Problems encountered at the non-teaching hospital libraries in the UK and Brazil

4.1.3 Data gathered through observation at the enquiry desk in the UK

The second part of this investigation deals with how users of medical libraries interact with library staff when they need information. Users were observed as they contacted the staff available at the enquiry desk, and the nature of their enquiry noted. The following results relate to the interaction that occurred in the teaching hospital libraries in the UK and Brazil. Corresponding observations could not be made at the non-teaching hospital libraries, where there was no enquiry desk.

Data collected from observing the library staff interacting with users and vice-versa was divided into six topics:

l) Sources used by library staff to respond to questions
2) Means used by library users to raise questions
3) Library ability to respond to questions using its own resources
4) Time spent by library staff in supplying answers
5) Level of complexity of questions
6) Frequency of questions x time spent

Table 4.17a
Sources used by the library to respond to questions at the teaching hospital libraries in the UK (routine repetitive actions)

Action/Question	cls	cd	ol	db cd	ps	ls
Reservation on LIBERTAS System	*					
Return books or journals	*					
Return inter-library loan books	*					
Issue books/Renew books	*					
Issue books/Renew books (user in debt fine or overdue)	*					
Request a headphone						*
Wants a BMJ last issue						*
Buy a photocopy card						*
Register at library						*
Telephone renews	*					
Telephone reservations	*					
Book CD-ROM database						*
Reservation of books on display	*					
Inter-library loan request	*					
Where are back issues of journals?						*

cls-computer library system
cd-computer database(on-line)
ol-other library(ies)
dbcd-database on CD-ROM
ps-printed sources (reference materials)
ls-library staff

Sources used by the library to respond to questions

Table 4.17a and 4.17b show the requirements and questions of users in the teaching hospital library in the UK, together with the sources library used to respond to them. Six sources were identified, i.e. library computer system, on-line database, other libraries' collections, database on CD-ROM, printed reference sources, and library staff. The library computer system is used in a great majority of the cases to provide information to users. Library staff are mainly involved to attend to routine actions.

Table 4.17b
Sources used by the library to respond to questions at the teaching hospital library in the UK (referral questions)

Questions	cls	cd	ol	db cd	ps	ls
Have you got anything on community health care and the elderly?	*					
How to use MEDLINE on CD-ROM?				*		
What have you got on statistics of illegal abortion?	*				*	
Have you got the 1992 publication on Mental Health in Children Act?	*		*			
What books do you have on how to write a case study?	*					*
I'd like a search done on Physiological Health Effects from the use of LINDANE		*				
Have you got a journal called (user gave abbreviation)	*					
Why am I not finding this title in the library collection?	*					
Have you got a book on how to get research grants?	*					*
What have you got on the Segoian Syndrome?		*				*
What have you got on Community Mental Health?	*					
What have you got on Communication Disorders in Ethnic Minorities?				*		
I need a literature search on Children in Hospital-Play in Hospital-Emotional needs on Children in Hospital		*				
How to abbreviate this journal title? (new title, library does not hold it in the collection)	*		*		*	
How to find out information on Cardiac Measurements?		*		*		
I need articles on Blood Coagulation		*				
What books do you have on Social Conditions and Health?	*					

cls-computer library system
cd-computer database(on-line)
ol-other library(ies)
dbcd-database on CD-ROM
ps-printed reference materials
ls-library staff

Table 4.18a
Means employed by users to raise questions at the teaching hospital library in the UK (routine repetitive actions)

Action/Question	in person	by phone	by terminal/ ol	library system
Reservation on LIBERTAS System	*	*	*	*
Return books or journals	*			
Return inter-library loan books	*			
Issue books/Renew books(2)	**(2)	*(2)	*(2)	*
Issue books/Renew books-overdue/fine	*			
Request a headphone	*			
Wants a BMJ-last issue	*			
Buy a photocopy card	*			
Register at library	*			
Telephone renews		*		
Telephone reservations		*		
Book CD-ROM database	*	*		
Reservation of books on display	*	*	*	*
Inter-library loan request			*	*
Where are back issues of journals?	*			

by terminal/ol-by terminal outside the library

Means employed by users to raise questions

Table 4.18a and 4.18b show the means employed by users to raise questions in the teaching hospital library in the UK. Users come to the library in person, or use the telephone to make their requests, or send the requests via computer terminals outside the library, or use the terminals available in the library. Although users have several ways to approach the library services, coming to the library in person is the preferred route, followed by using the telephone. Referral questions are raised with library staff by phone, as well as such routine repetitive requests as to reserving or renewing books, or booking a CD-ROM database. Users also employ the library computer system to make reservations, request inter-library loans and renew books. They either use the terminals available in the library, or outside the library, e.g. in their offices.

Table 4.18b
Means employed by users to raise questions at the teaching hospital library in the UK (referral questions)

Questions	in person	by phone	by terminal/ ol	library system
Have you got anything on Community Health Care and the Elderly?	*			
How to use MEDLINE on CD-ROM?	*			
What have you got on statistics of illegal abortion?		*		
Have you got the 1992 publication on Mental Health in Children Act?		*		
What book do you have on how to write a case study?		*		
I'd like a search done on Physiological Health Effects from use of LINDANE		*		
Have you got a journal called (user gave abbreviation)		*		
Why am I not finding this title in the library collection?	*			
Have you got a book on how to get research grants?		*		
What have you got on the Segoian Syndrome?	*			
What have you got on Community Mental Health?	*			
What have you got on Communication Disorders in Ethnic Minorities?	*			
I need a literature search on Children in Hospital-Play in Hospital-Emotional Needs of Children in Hospital	*			
How to abbreviate this journal title? (new title, library does not hold it in the collection)		*		
How to find out information on Cardiac Measurements?	*			
I need articles on Blood Coagulation	*			
What books do you have on Social Conditions and Health?		*		

by terminal/ol-by terminal outside the library

Table 4.19a
Teaching hospital library ability to respond to questions using its own resources - UK (routine repetitive actions)

Action/Question	not able	able at once	able s/d	able f/d
Reservation on LIBERTAS System		*		
Return books or journals		*		
Return inter-library loan books		*		
Issue books/Renew books		*		
Issue books/Renew books-overdue/fine		*		
Request a headphone		*		
Wants a BMJ-last issue		*		
Buy a photocopy card		*		
Register at library				*
Telephone renewals		*		
Telephone reservations		*		
Book CD-ROM database		*		
Reservation of books on display		*		
Inter-library loan request				*
Where are back issues of journals?		*		

able s/d-able the same day
able f/d-able following days

Library ability to respond to questions

Tables 4.19a and 4.19b show the ability of the teaching hospital library to respond to questions using its own resources. In some cases, the library was not able to respond satisfactorily to the questions; in other cases, it was able to respond either at once, or later in the same day, or in subsequent days. Excluding registering at the library and inter-library loan requests, all the routine library actions were responded to by the library at once. Registering at the library and inter-library loan requests took longer due to the procedures library staff have to follow in order to accomplish those tasks. In terms of referral questions, the library is less able to provide appropriate responses. In some cases, the library did not have the necessary material to answer users' requests; in other cases, the library fulfilled the request on the same day, and in others, especially literature searches, it took an average of 2-3 days to prepare printouts for users.

Table 4.19b
Teaching hospital library ability to respond to questions using its own resources - UK (referral questions)

Questions	not able	able at once	able s/d	able f/d
Have you got anything on Community Health Care and the Elderly?	*			
How to use MEDLINE on CD-ROM?			*	
What have you got on statistics of illegal abortion?	*			
What book do you have on how to write a case study?			*	
I'd like a search done on Physiological Health Effects from use of LINDANE				*
Have you got a journal called (user gave abbreviation)	*			
Why am I not finding this title in the library collection?		*		
Have you got a book on how to get research grants?	*			
What have you got on the Segoian Syndrome?	*			
What have you got on Community Mental Health?			*	
What have you got on Communication Disorders in Ethnic Minorities?	*			
I need a literature search on Children in Hospital-Play in Hospital-Emotional Needs of Children in Hospital				*
How to abbreviate this journal title? (new title, library does not hold it in the collection)	*			
How to find out information on Cardiac Measurements?				*
I need articles on Blood Coagulation				*
Have you got the 1992 publication on Mental Health in Children Act?	*			
What books do you have on Social Conditions and Health?	*			

able s/d-able the same day
able f/d-able following days

Table 4.20a
Level of complexity of questions raised at the teaching hospital library in the UK (routine repetitive actions)

Action/Question	user/s	user/c	LS/s	LS/c
Reservation on LIBERTAS System	*		*	
Return books or journals	*		*	
Return inter-library loan books	*		*	
Issue books/Renew books	*		*	
Issue books/Renew books-overdue/fine	*		*	
Request a headphone	*		*	
Wants a BMJ-last issue	*		*	
Buy a photocopy card	*		*	
Register at library		*		*
Telephone renewals	*		*	
Telephone reservations	*		*	
Book CD-ROM database	*		*	
Reservation of books on display	*		*	
Inter-library loan request		*		*
Where are back issues of journals?		*	*	

user/s-simple for user
user/c-complex for user
LS/s-simple for library staff
LS/c-complex for library staff

Level of complexity of questions

Tables 4.20a and 4.20b examine the levels of complexity of questions raised by users at the teaching hospital library in the UK. Four categories were used to classify the level of complexity, depending on whether they were - simple for users, complex for users, simple for library staff, or complex for library staff. The routine repetitive actions show a similar pattern, in that, when the action is simple for users, it is simple for library staff, as well. Registering in the library and requests for inter-library loans are the exceptions, i.e. complex both for users and for library staff. Sometimes users encountered problems in expressing what they were seeking, but library staff found little difficulty in arriving at an answer. Examples included when users could not find back issues of journals, could not use MEDLINE on CD-ROM, or could not find a certain title in the library's collection.

Table 4.20b
Level of complexity of questions raised at the teaching hospital library in the UK (referral questions)

Questions	user/s	user/c	LS/s	LS/c
Have you got anything on Community Health Care and the Elderly?		*		*
How to use MEDLINE on CD-ROM?		*	*	
What have you got on statistics of illegal abortion?		*		*
What book do you have on how to write a case study?	*			*
I'd like a search done on Physiological Health Effects from use of LINDANE	*			*
Have you got a journal called (user gave abbreviation)		*		*
Why am I not finding this title in the library collection?		*	*	
Have you got a book on how to get research grants?	*			*
What have you got on the Segoian Syndrome?		*		*
What have you got on Community Mental Health?		*		*
What have you got on Communication Disorders in Ethnic Minorities?		*		*
I need a literature search on Children in Hospital-Play in Hospital-Emotional Needs of Children in Hospital		*		*
How to abbreviate this journal title? (new title, library does not hold it in the collection)	*			*
How to find out information on Cardiac Measurements?		*		*
I need articles on Blood Coagulation	*			*
Have you got the 1992 publication on Mental Health in Children Act?	*			*
What books do you have on Social Conditions and Health?		*		*

user/s-simple for user
user/c-complex for user
LS/s-simple for library staff
LS/c-complex for library staff

Users often found it difficult to formulate referral questions, and library staff often found it difficult to provide a full answer. Even when some questions were easily formulated and understood by users, they were still complex for library staff to deal with. Examples of such cases are when the user needed a book on how to write a case study, or when a literature search was needed on 'Effects from use of LINDANE'

Frequency of actions and time spent in accomplishing them

Table 4.21
Frequency of actions and time spent in accomplishing them at the teaching hospital library in the UK

Actions	Freq/ day	Time spent	min/d ay	%
Issue and Renewals	97	2min	194	44.0
Inter-library loan	6	2min	12	2.7
Booking MEDLINE on CD-ROM	6	2min	12	2.7
Reservation	5	2min	10	2.3
Return book	53	2min	106	24.1
Buy Photocopying Card	7	2min	14	3.2
Headphone	3	2min	6	1.3
Register at Library	3	2min	6	1.3
Location back issues/books	4	2min	8	1.8
Advertisements on jobs abroad	3	2min	6	1.3
BMJ/Last issue	6	2min	12	2.7
How to use MEDLINE on CD-ROM	1	10mi n	10	2.3
Searches and Referral Questions	3	15mi n	45	10.3
Total	-	-	441	100.0

4.1.4 Data gathered through observation at the enquiry desk in Brazil

Table 4.22a - Sources used by the library to respond to questions at the teaching hospital library in Brazil (routine repetitive actions)

Action/Question	lc	ps	edf	ID	db	B/C	ol	Kard ex	ls
Return Books			*	*					
Issue books/renew books			*	*					
Register at library			*						
Inter-library loan						*	*		
Payment of fine			*						
Request journal issues								*	
Instructions on how to make bibliographic references									*

lc-library catalogue (books) ps-printed sources edf-enquire desk file
ID-users'identification card db-MEDLINE/LILACS B/C-BIREME and COMUT
ol-other library ls-library staff

Table 4.22b - Sources used by the library to respond to questions at the teaching hospital in Brazil (referral questions)

Questions	lc	ps	edf	ID	db	B/C	ol	Kardex	ls
Does the library have this book? (user gave the title)	*								
Does the library hold this journal? (user gave the title)								*	
What can I read on cancer of the mouth?	*								
I need statistics on odontological services for the low income population		*							
What do you have on sleeping disorders?					*				
What have you got on cardiac measurements?					*				
Where do I find information on infection in babies at high risk?					*				
What have you got on breast cancer?					*				
What do you have on the Klinefilter Syndrome?	*								
I need a book on research methodology	*								
I have to do a search on meningitis	*								*
I need information on infections in hospitals	*								
What do you have about hyperthyroidism without goitre?					*				
I need a bibliographic search on cardiac rhythm and asthma					*				
Journal articles on neoplasia of Fallopian tubes					*				
I need articles on levels of toxicity of aniline (methemoglobilia)					*				

lc-library catalogue (books) ps-printed sources edf-enquire desk file
ID-users'identification card db-MEDLINE/LILACS B/C-BIREME and COMUT
ol-other library ls-library staff

Sources used by the library to respond to questions

The library does not use a computerised system to carry out routine actions. For this reason, some facilities cannot be offered to the users; reservation of library materials is one of them. Journals are not available for loan. As the library does not have a programme for binding the issues, it is very risky to let the issues leave the library. They are used either for reading in the library, or for photocopying. The enquiry desk file is the heart of the system for issuing and renewing books, and for keeping track of information about users. Inter-library loan is, in the great majority of cases, provided by the Latin American Centre for Health Information in Sao Paulo (BIREME), and by the National Inter-library Loan Service (COMUT). Sometimes other libraries in the university system are used to provide journal articles. The library keeps track of the journal collection through a Kardex File.

Table 4.23a - Means employed by users to raise questions at the teaching hospital library in Brazil (routine repetitive actions)

Action/Question	in person	by phone
Return Books	*	
Issue books/renew books	*	
Register at library	*	
Inter-library loan	*	
Payment of fine	*	
Request journal issues	*	*
Instructions on how to make bibliographic references	*	*

Table 4.23b - Means employed by users to raise questions at the teaching hospital library in Brazil (referral questions)

Questions	in person	by phone
Does the library have this book? (user gave the title and/or author)	*	*
Does the library hold this journal? (user gave the title)	*	*
What can I read on cancer of the mouth?	*	
I need statistics on odontological services for the low income population	*	
What do you have on sleeping disorders?	*	
What have you got on cardiac measurements?	*	
Where do I find information on infection in babies at high risk?	*	
What have you got on breast cancer?	*	
What do you have on the Klinefilter Syndrome?	*	
I need a book on research methodology	*	
I have to do a search on meningitis	*	
I need information on infections in hospitals	*	
What do you have about hyperthyroidism without goitre?	*	
I need a bibliographic search on cardiac rhythm and asthma		*
Journal articles on neoplasia of Fallopian tubes	*	
I need articles on levels of toxicity of aniline (methemoglobilia)	*	

Means employed by users to raise questions

Tables 4.23a and 4.23b show the means employed by users to raise questions in the teaching hospital library in Brazil. Coming to the library in person is the preferred route to approach the library.

Table 4.24a - Teaching hospital library ability to respond to questions using its own resources - Brazil (routine repetitive actions)

Action/Question	not able	able at once	able s/d	able f/d
Return Books		*		
Issue books/renew books		*		
Register at library				*
Inter-library loan				*
Payment of fine		*		
Request journal issues		*		
Instructions on how to make bibliographic references		*	*	*

able s/d - able the same day
able f/d - able following days

Library ability to respond to questions

Tables 4.24a and 4.24b show the ability of the teaching library to respond to questions using its own resources. Similarly to the UK, in Brazil, in some cases, the library was not able to respond satisfactorily to questions; some other cases, it was able to respond either at once, or later in the day, or in subsequent days. The library was able to respond to routine actions at once. In terms of referral questions, the library is less able to provide appropriate responses.

Table 4.24b - Teaching hospital library ability to respond to questions using its own resources - Brazil (referral questions)

Questions	not able	able at once	able s/d	able f/d
Does the library have this book? (user gave the title and/or author)		*		
Does the library hold this journal? (user gave the title)		*		
What can I read on cancer of the mouth?	*			
I need statistics on odontological services for the low income population	*			
What do you have on sleeping disorders?				*
What have you got on cardiac measurements?				*
Where do I find information on infection in babies at high risk?				*
What have you got on breast cancer?			*	
What do you have on the Klinefilter Syndrome?	*			
I need a book on research methodology		*		
I have to do a search on meningitis		*		
I need information on infections in hospitals				*
What do you have about hyperthyroidism without goitre?	*			
I need a bibliographic search on cardiac rhythm and asthma			*	
Journal articles on neoplasia of Fallopian tubes			*	
I need articles on levels of toxicity of aniline (methemoglobilia)	*			

Level of complexity of questions

Tables 4.25a and 4.25b examine the levels of complexity of questions raised by users at the teaching hospital library in Brazil. The same categories used for the UK were used here to classify the level of complexity. The routine actions, although simple for the users, are not always simple for library staff. Users often found some facility to formulate referral questions, but the library often found it difficult to provide full answer.

Table 4.25a - Level of complexity of questions raised at the teaching hospital library in Brazil (routine repetitive actions)

Action/Question	User/s	User/c	Ls/s	Ls/c
Return Books	*		*	
Issue books/renew books	*		*	
Register at library	*			*
Inter-library loan	*			*
Payment of fine	*			*
Request journals issues		*		*
Instructions on how to make bibliographic references		*	*	

user/s - simple for user user/c - complex for user
Ls/s - simple for library staff Ls/c - complex for library staff

Table 4.25b - Level of complexity of questions raised at the teaching hospital library in Brazil (referral questions)

Questions	user/s	user/c	Ls/s	Ls/c
Does the library have this book? (user gave the title and/or author)	*		*	
Does the library hold this journal? (user gave the title)	*		*	
What can I read of cancer of the mouth?	*			*
I need statistics on odontological services for the low income population		*		*
What do you have on sleeping disorders?	*			*
What have you got on cardiac measurements?	*			*
Where do I find information on infection in babies at high risk?	*			*
What have you got on breast cancer?	*		*	
What do you have on the Klinefilter Syndrome?	*			*
I need a book on research methodology	*		*	
I have to do a search on meningitis	*		*	
I need information on infections in hospitals	*			*
What do you have about hyperthyroidism without goitre?	*			*
I need a bibliographic search on cardiac rhythm and asthma		*		*
Journal articles on neoplasia of Fallopian tubes	*		*	
I need articles on levels of toxicity of aniline (methemoglobilia)		*		*

user/s - simple for user user/c - complex for user
Ls/s - simple for library staff Ls/c - complex for library staff

Frequency of actions and time spent in accomplishing them

Table 4.26
Frequency of actions and time spent in accomplishing them at the teaching hospital library in Brazil

Action	Freq/ day	Time Spent	min/ day	%
Issue and Renewal	146	3min	438	36.4
Register at Library	3	10min	30	2.6
Return Book	81	4min	324	27.1
Location book and/or journal	12	5min	60	5.1
Inter-library loan	25	3min	75	6.3
Searches and Referral Questions	18	15min	270	22.5
Total	-	-	1207	100.0

CHAPTER FIVE

RESULTS OUTSIDE THE LIBRARY

5.1 Data gathered through questionnaire

Questionnaires were distributed in Brazil and in the UK to health professionals based in teaching and non-teaching hospitals (a total of 520 in each country). The overall response rate was 40.0% (207 replies) in Brazil and 33.0% (171) in the UK.

5.1.1 Characterisation of population studied

Sample in Brazil

Of the 207 health professionals, 10.1% were Consultants; 41.1%, Junior Doctors; and 35.7% nurses. Internal medicine is the commonest speciality among the respondents (45.4%). The highest percentage of their time was spent on activities linked to patient care; 44.0% of the respondents spent over 60% of their time in Patient Care activities. Other activities, such as Research, Teaching, and Management, make up less than 21.0% of their time. Altogether, 33.8% of the respondents have between 10 to 20 years of experience. The following Tables (5.1 to 5.4) break down the characteristics of the respondents by position, speciality, distribution of time, and experience.

Table 5.1 - Distribution of respondents by position (Brazil)

Position	Frequency	
	n	%
Management (1)	27	13.0
Consultant	21	10.1
Junior Doctor	85	41.1
Nurse (2)	74	35.7
Total	207	100.0

1-management, technician, scientist
2-nurse, sister

Table 5.2 - Distribution of respondents by speciality (Brazil)

Speciality	Frequency	
	n	%
Internal Medicine	94	45.4
Surgery	24	11.6
Anaesthetics (1)	64	30.9
Basic Science	25	12.1
Total	207	100.0

1-anaesthetics, paediatrics, others

Table 5.3 - Distribution of respondents by percentage of time of involvement with hospital activities (Brazil)

Time	Patient Care		Management		Research		Teaching	
%	n	%	n	%	n	%	n	%
0 - 20	25	12.1	148	71.5	183	88.4	178	86.0
21 - 60	75	36.2	45	21.7	20	9.7	26	12.6
61 - higher	91	44.0	14	6.8	3	1.4	3	1.4
no answer	16	7.7	-	-	1	0.5	-	-
Total	207	100.0	207	100.0	207	100.0	207	100.0

Table 5.4 - Distribution of respondents by number of years in the geographical area (Brazil)

Position	Years of Experience					
	0-2	2-5	5-10	10-20	20-high	Total
Management	6	2	8	11	-	27
Consultant	-	-	1	11	9	21
Junior Doctor	15	20	29	21	-	85
Nurse	11	18	16	27	2	74
Total	32	40	54	70	11	207

Sample in the UK

Of the 171 health professionals, 33.9% were Consultants; 26.3%, Junior Doctors; and 18.1% nurses. Anaesthetics, and paediatrics are the commonest specialities among the respondents (45.6%). The highest percentage of their time was spent on activities linked to patient care; 54.4% of the respondents spent over 60% of their time in patient care activities. Other activities such as research, teaching, and management make up 21.0% of their time. The respondents' experience is concentrated into two intervals of time: 27.5% have between 2 to 5 years experience, and another 27.5% have between 10 to 20 years experience. The following Tables (5.5 to 5.8) break down the characteristics of the respondents by position, speciality, distribution of time, and experience.

Table 5.5 - Distribution of respondents by position (UK)

Position	Frequency	
	n	%
Management (1)	37	21.7
Consultant	58	33.9
Junior Doctor	45	26.3
Nurse (2)	31	18.1
Total	171	100.0

1-management, technician, scientist
2-nurse, sister

Table 5.6 - Distribution of respondents by speciality (UK)

Speciality	Frequency	
	n	%
Internal Medicine	54	31.6
Surgery	25	14.6
Anaesthetics (1)	78	45.6
Basic Science	14	8.2
Total	171	100.0

1-anaesthetics, paediatrics, others

Table 5.7 - Distribution of respondents by percentage of time of involvement with hospital activities (UK)

Time	Patient Care		Management		Research		Teaching	
%	n	%	n	%	n	%	n	%
0 - 20	26	15.2	111	64.9	164	95.9	163	95.3
21 - 60	52	30.4	43	25.1	5	2.9	6	3.5
61 - higher	93	54.4	17	9.9	2	1.2	1	0.6
no answer	-	-	-	-	-	-	1	0.6
Total	171	100.0	171	100.0	171	100.0	171	100.0

Table 5.8 - Distribution of respondents by number of years within the geographical area (UK)

Position	Years of Experience					
	0-2	2-5	5-10	10-20	20-high	Total
Management	8	9	5	13	2	37
Consultant	7	7	10	25	9	58
Junior Doctor	17	21	6	1	-	45
Nurse	5	10	4	8	4	31
Total	37	47	25	47	15	171

5.1.2 Production of research by health professionals in Brazil and in the UK

Production of research by health professionals in Brazil

Only 23.2% of the respondents published research during the period between 1993-1995. Journal articles were the most frequent type of publication (26.6%). Tables 5.9 and 5.10 give the break down of the number of respondents who have published and the type of publication.

Table 5.9 - Percentage and number of publications -1993-95 (Brazil)

Answer	n	%
No	159	76.8
Yes	48	23.2
Total	207	100.0

Table 5.10 - Percentage and number of respondents who have produced research in Brazil (1993-95)

Position	No	%	Yes	%	Total	
	n		n		n	%
Management	26	16.3	1	2.1	27	13.0
Consultant	14	8.8	7	14.6	21	10.1
Junior Doctor	63	39.6	22	45.8	85	41.1
Nurse	56	35.3	18	37.5	74	35.7
Total	159	100.0	48	100.0	207	100.0

Table 5.11 - Percentage and number of types of research publications (Brazil)

Type of publication	n	%
Journal article	21	26.6
Review	11	14.0
Short communication	7	8.8
Book	4	5.1
Chapter in book	7	8.8
Report	15	19.0
Other	14	17.7
Total	79	100.0

Table 5.12 - Percentage and number of types of research publications by position in Brazil (1993-95)

Type of res.publ.	Management		Consultant		Junior Doctor		Nurse		Total	
	n	%	n	%	n	%	n	%	n	%
Journal article	-	-	3	42.8	10	26.3	8	24.1	21	26.6
Review	-	-	-	-	9	23.7	2	6.1	11	14.0
Short Communic	-	-	1	14.3	4	10.5	2	6.1	7	8.8
Book	-	-	1	14.3	2	5.3	1	3.0	4	5.1
Chapter in Book	-	-	1	14.3	4	10.5	2	6.1	7	8.8
Report	-	-	-	-	6	15.8	9	27.3	15	19.0
Other	1	100.0	1	14.3	3	7.9	9	27.3	14	17.7
Total	1	100.0	7	100.0	38	100.0	33	100.0	79	100.0

Production of research by health professionals in the UK

Almost 40% of the respondents published research during the period between 1993-1995. Journal articles are the most frequent type of publication (76.5%). Tables 5.11 and 5.12 give the break down of the number of respondents who have published and the type of publication.

Table 5.13 - Percentage and number of publication -1993-95 (UK)

Answer	n	%
No	103	60.2
Yes	68	39.8
Total	171	100.0

Table 5.14 - Percentage and number of respondents who have produced research in the UK (1993-95)

Position	No	%	Yes	%	Total	
					n	%
Management	25	24.3	11	16.2	36	21.2
Consultant	24	23.3	34	50.0	58	34.1
Junior Doctor	22	21.3	23	33.8	45	26.5
Nurse	32	31.1	-	-	32	18.2
Total	103	100.0	68	100.0	171	100.0

Table 5.15 - Percentage and number of types of research publications (UK)

Type of publication	n	%
Journal article	52	38.0
Review	18	13.1
Short communication	22	16.1
Book	3	2.3
Chapter in book	18	13.1
Report	12	8.7
Other	12	8.7
Total	137	100.0

Table 5.16 - Percentage and number of types of research publications by position in the UK (1993-95)

Type of res.publ.	Management		Consultant		Junior Doctor		Nurse		Total	
	n	%	n	%	n	%	n	%	n	%
Journal article	6	33.3	28	35.0	18	45.0	-	-	52	37.7
Review	1	5.5	12	15.0	5	12.5	-	-	18	13.0
Short Communic.	4	22.3	10	12.5	8	20.0	-	-	22	16.0
Book	-	-	3	3.7	-	-	-	-	3	2.2
Chapter in Book	1	5.5	14	17.6	3	7.5	-	-	18	13.0
Report	2	11.1	10	12.5	1	2.5	-	-	13	9.4
Other	4	22.3	3	3.7	5	12.5	-	-	12	8.7
Total	18	100.0	80	100.0	40	100.0	-	-	138	100.0

5.1.3 Need for professional information by health professionals in Brazil and in the UK

This section presents results on the need that health professionals have for the following types of professional information:

- Basic scientific and medical information
- Information on "the state of the art"
- New procedures/new drugs
- Clinical Audit
- Prognosis
- Diagnosis
- Therapy.

For the purpose of linking these needs with the main activities performed, the various types of professional information are correlated with such activities as "Patient Care" (PC), "Research" (RES) and "Teaching" (TEA).

Need for professional information by health professionals in Brazil

Table 5.17 shows that the highest frequencies of need for professional information as a whole, occur when health professionals perform activities related to Patient Care (PC). The highest priorities in this category were for "Basic scientific and medical information", followed by "Therapy" and "New procedures/new drugs". Different results were obtained for the other two categories - "Research" and "Teaching": less professional information is required for these activities. For "Research", "Basic scientific and medical information" is again the first choice (48.3%), and "State of the art" lowest (16.4%). For teaching activities, "Basic scientific and medical information" also comes first (41.5%), with "Prognosis" having the lowest priority (15.9%).

Need for professional information by health professionals in the UK

Table 5.18 shows the frequencies of use of professional information in the UK. The highest percentages of use are once more related to Patient Care. The most needed type of professional information here was "Basic scientific and medical information", followed by "New procedures/new drugs" and "Therapy". "Basic scientific and medical information" is the only type of professional information that is needed by more than half the respondents in Research and Teaching (Research--53.2%; Teaching--63.2%).

Table 5.17 - Types of professional information needed by health professionals in Brazil

Type of information	PC No		PC Yes		RES No		RES Yes		TEA No		TEA Yes	
	n	%	n	%	n	%	n	%	n	%	n	%
Basic scientific and medical	57	27.5	150	72.5	107	51.7	100	48.3	121	58.5	86	41.5
State of the art	170	82.1	37	17.9	173	83.6	34	16.4	170	82.1	37	17.9
New procedures/ new drugs	68	32.9	139	67.1	134	64.7	73	35.3	142	68.6	65	31.4
Drug information	85	41.1	122	58.9	162	78.3	45	21.7	164	79.2	43	20.8
Clinical Audit	120	58.0	87	42.0	169	81.6	38	18.4	157	75.8	50	24.2
Prognosis	94	45.4	113	54.6	164	79.2	43	20.8	174	84.1	33	15.0
Diagnosis	75	36.2	132	63.8	166	80.2	41	19.8	169	81.6	38	18.4
Therapy	59	28.5	148	71.5	165	79.7	42	20.3	160	77.3	47	22.7

Table 5.18 - Types of professional information needed by health professionals in the UK

Type of information	PC No		PC Yes		RES No		RES Yes		TEA No		TEA Yes	
	n	%	n	%	n	%	n	%	n	%	n	%
Basic scientific and medical	31	18.1	140	81.9	80	46.8	91	53.2	63	36.8	108	63.2
State of the art	60	35.1	111	64.9	92	53.8	79	46.2	92	53.8	79	46.2
New procedures/ new drugs	37	21.6	134	78.4	102	59.6	69	40.4	107	62.6	64	37.4
Drug information	50	29.2	121	70.8	127	74.3	44	25.7	117	68.4	54	31.6
Clinical Audit	64	37.4	107	62.6	114	66.7	57	33.3	121	70.8	50	29.2
Prognosis	68	39.8	103	60.2	139	81.3	32	18.7	120	70.2	51	29.8
Diagnosis	50	29.2	121	70.8	130	76.0	41	24.0	111	64.9	60	35.1
Therapy	47	27.5	124	72.5	111	64.9	60	35.1	96	56.1	75	43.9

5.1.4 Frequency of use of information sources by health professionals in Brazil and in the UK

This section presents results on the frequency of usage of the following information sources:

- own journals
- own books
- internal meetings
- external meetings within the country
- external international meetings
- discussion with colleagues from their own hospitals
- discussion with colleagues from other hospitals
- pre-prints and offprints
- radio/TV programmes
- newspapers/magazines
- pharmaceutical representatives.

For the purpose of linking the frequency of use with the main activities of respondents, the various sources of information are correlated with three types of activities: "Patient Care" (PC), "Research" (RES) and "Teaching" (TEA).

Frequency of use of information sources by health professionals in Brazil

Table 5.19 suggests that the frequency of use of some sources of information such as external international meetings, pre-prints and offprints, by health professionals in Brazil, is very low in the Patient Care context. The number of sources which are little used increases for Research and Teaching. Books are the source with the highest percentage use across all three categories of Patient Care, Research, and Teaching. Journals and colleagues are also relatively popular sources.

Table 5.19 - Frquency of use of information sources by health professionals in Brazil

Sources	PC No use		PC Less than once/month		PC At least once/month		RES No use		RES Less than once/month		RES At least once/month		TEA No use		TEA Less than once/month		TEA At least once/month	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Own journals	59	28.5	24	11.6	124	59.9	115	55.6	33	15.9	59	28.5	126	60.9	18	8.7	63	30.4
Own books	29	14.0	16	7.7	162	78.3	100	48.3	21	10.1	86	41.5	115	55.6	15	7.2	77	37.2
Internal meetings	63	30.4	47	22.7	97	46.9	138	66.7	39	18.8	30	14.5	130	62.8	26	12.6	51	24.6
External meetings within Brazil	123	59.4	73	35.3	11	5.3	150	72.5	50	24.2	7	3.4	156	75.4	47	22.7	4	1.9
External international meetings	146	70.5	59	28.5	2	1.0	167	80.7	39	18.8	1	0.5	165	79.7	39	18.8	3	1.4
Disc. coll. own hospital	33	15.9	50	24.2	124	59.9	130	62.8	26	12.6	51	24.6	128	61.8	18	8.7	61	29.5
Disc. coll. other hospitals	92	44.4	61	29.5	54	26.1	141	68.1	40	19.3	26	12.6	144	69.6	35	16.9	28	13.5
Pre/off prints	165	79.7	36	17.4	6	2.9	181	87.4	20	9.7	6	2.9	181	87.4	22	10.6	4	1.9
Radio/TV	106	51.2	51	24.6	50	24.2	153	73.9	33	15.9	21	10.1	155	74.9	28	13.5	24	11.6
Newspaper/ magazine	61	29.5	48	23.2	98	47.3	124	59.9	30	14.5	53	25.6	128	61.8	34	16.4	45	21.7
Pharm. Rep.	106	51.2	66	31.9	35	16.9	155	74.9	34	16.4	18	8.7	161	77.8	46	22.2	-	-

Table 5.20 - Frequency of use of information sources by health professionals in the UK

Sources	PC No use		PC Less than once/month		PC At least once/month		RES No use		RES Less than once/month		RES At least once/month		TEA No use		TEA Less than once/month		TEA At least once/month	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Own journals	16	9.4	21	12.3	133	77.8	41	24.0	38	22.2	92	53.8	35	20.5	60	35.1	76	44.5
Own books	19	11.1	33	19.3	119	69.6	47	27.5	54	31.6	70	40.9	39	22.8	52	30.4	80	46.8
Internal meetings	15	8.8	33	19.3	123	71.9	58	33.9	66	38.6	47	27.5	53	31.0	65	38.0	53	31.0
External meetings within UK	25	14.6	136	79.5	10	5.8	52	30.4	112	65.5	7	4.1	55	32.2	109	63.7	7	4.1
External international meetings	64	37.4	107	62.6	-	-	79	46.2	92	53.8	-	-	85	49.7	85	49.7	1	0.6
Disc. coll. own hospital	14	8.2	9	5.3	148	86.5	54	31.6	47	27.5	70	40.9	44	25.7	46	26.9	81	47.4
Disc. coll. other hospitals	24	14.0	101	59.1	46	26.9	53	31.0	87	50.9	31	18.1	57	33.3	97	56.7	17	9.9
Pre/off prints	54	31.6	82	48.0	35	20.5	71	41.5	72	42.1	28	16.4	74	43.3	80	46.8	17	9.9
Radio/TV	44	25.7	108	63.2	19	11.1	69	40.4	94	55.0	8	4.7	65	38.0	94	55.0	12	7.0
Newspaper/ magazine	37	21.6	98	57.3	36	21.1	66	38.6	85	49.7	20	11.7	62	36.3	93	54.4	16	9.4
Pharm.Rep.	46	26.9	91	53.2	34	19.9	73	42.7	88	51.5	10	5.8	73	42.7	98	57.3	-	-

Frequency of use of information sources by health professionals in the UK

Table 5.20 suggests that the frequency of use of information sources by health professionals in the UK varies with type of the activity. Health professionals again make the highest percentage use of information when they are involved in Patient Care. Journals are the most frequently used source of information across all categories, followed by books. Overall meetings and discussions with colleagues appear to be used more frequently in the UK than in Brazil.

5.1.5 Restrictions on the use of information channels in Brazil and in the UK

This section presents results on the frequency of restrictions , (including financial restriction), which health professionals face when using various information channels. The following channels are considered:

- conferences, seminars, etc.;
- phone calls;
- e.mail;
- photocopying;
- fax.

The degrees of restrictions are categorised as follows:

- no restriction;
- some restriction;
- high restriction;
- financial restriction.

Restrictions on the use of information channels by health professionals in Brazil

Tables 5.21 and 5.22 suggest that restrictions on attending conferences, and other scientific events are high, and are mainly due to financial problems. There are also

some restrictions on the use of the other channels mentioned in the questionnaire, especially e.mail and fax.

Table 5.21 - Restrictions on the use of information channels (Brazil)

Channels	No Restriction		Some Restriction		High Restriction	
	n	%	n	%	n	%
Conferences, seminars, etc.	20	9.7	74	35.7	113	54.6
Phone Calls	90	43.5	83	40.1	34	16.4
E.mail	34	16.4	46	22.2	127	61.4
Photocopying	87	42.0	93	45.0	27	13.0
Fax	41	19.8	88	42.5	78	37.7

Table 5.22 - Financial restrictions on the use of information channels (Brazil)

Channels	Financial Restriction			
	No	%	Yes	%
Attend conference	58	28.0	149	72.0
Phone Call	178	86.0	29	14.0
E.mail	175	84.5	32	15.5
Photocopying	177	85.5	30	14.5
Fax	167	80.7	40	19.3

Restrictions on use of information channels by health professionals in the UK

Tables 5.23 and 5.24 suggest that there are some restrictions on attending events, such as conferences, seminars, etc., and that these are mainly due to financial problems. The use of other sources seems to have very low degree of restriction.

Table 5.23 - Restrictions on the use of information channels (UK)

Channels	No Restriction		Some Restriction		High Restriction	
	n	%	n	%	n	%
Conferences, seminars, etc.	33	19.3	114	66.7	24	14.0
Phone Calls	127	74.3	38	22.2	6	3.5
E.mail	112	65.5	17	9.9	42	24.6
Photocopying	114	66.7	51	29.8	5	2.9
Fax	110	64.3	39	22.8	22	12.9

Table 5.24 - Financial restrictions on the use of information channels (UK)

Channels	Financial Restriction			
	No	%	Yes	%
Attend conference	68	39.8	103	60.2
Phone Call	153	89.5	18	10.5
E.mail	157	91.8	14	8.2
Photocopying	138	80.7	33	19.3
Fax	154	90.1	17	10.0

5.1.6 Information sources selected by health professionals in Brazil and in the UK by priority

This section presents results on the most important information sources used by health professionals in their work. They were asked to rank the most important two in each category (i.e., patient care, research, and teaching). The sources are:

- Personal information;
- Departmental information;

- Colleagues' information;
- Discussion with colleagues;
- Hospital library;
- University library;
- External sources;
- Others.

Information sources selected by health professionals in Brazil by priority

Table 5.25 - Ranked information sources according to priority (Patient Care) - Brazil

Sources	1st priority (%)	Sources	2nd priority (%)
Personal information	64.3	Disc. with colleagues	22.8
Department information	14.3	Department information	17.2
Disc.with colleagues	10.0	Colleagues' information	14.3
University library	7.2	Personal information	12.8
Colleagues' information	2.8	External sources	11.5
Hospital library	1.4	University library	10.0
External sources	-	Hospital library	10.0
Others	-	Others	1.4

Table 5.26 - Ranked information sources according to priority (Research) - Brazil

Sources	1st priority (%)	Sources	2nd priority (%)
University library	38.6	External sources	25.0
Personal information	13.6	University library	20.4
Department information	11.4	Personal information	16.0
Colleagues' information	11.4	Hospital library	16.0
Hospital library	9.1	Department information	6.8
External sources	9.1	Disc. with colleagues	6.8
Disc. with colleagues	6.8	Colleagues' information	4.5
Others	-	Others	4.5

Table 5.27 - Ranked information sources according to priority (Teaching) - Brazil

Sources	1st priority (%)	Sources	2nd priority (%)
Personal information	50.0	Hospital library	20.0
University library	19.0	External sources	20.0
Department information	14.3	Personal information	17.5
Hospital library	7.1	Department information	12.5
Colleagues' information	4.8	Disc. with colleagues	12.5
Disc. with colleagues	2.4	University library	12.5
External sources	2.4	Colleagues' information	2.5
Others	-	Others	2.5

Information sources selected by health professionals in the UK by priority

Table 5.28 - Ranked information sources according to priority (Patient Care) - UK

Sources	1st priority (%)	Sources	2nd priority (%)
Personal information	35.1	Disc. with colleagues	29.3
Disc. with colleagues	24.5	Hospital library	29.3
Department information	16.0	Department information	12.0
External sources	8.5	External sources	12.0
Hospital library	7.4	Personal information	10.8
Colleagues' information	5.3	Colleagues' information	3.3
Others	2.1	University library	2.2
University library	1.1	Others	1.1

Table 5.29 - Ranked information sources according to priority (Research) - UK

Sources	1st priority (%)	Sources	2nd priority (%)
Hospital library	37.8	External sources	23.3
University library	19.0	Personal information	17.8
Department information	13.5	Disc. with colleagues	16.4
External sources	12.2	Hospital library	16.4
Personal information	8.1	Department information	11.0
Disc. with colleagues	4.0	Colleagues' information	6.8
Colleagues' information	2.7	University library	6.8
Others	2.7	Others	1.5

Table 5.30 - Ranked information sources according to priority (Teaching) - UK

Sources	1st priority (%)	Sources	2nd priority (%)
Personal information	46.0	Hospital library	37.1
Department information	25.3	Department information	14.8
Hospital library	12.0	External sources	13.6
External sources	8.3	Disc. with colleagues	11.1
Disc. with colleagues	3.6	Personal information	8.6
University library	2.4	University library	8.6
Colleagues' information	1.2	Colleagues' information	3.7
Others	1.2	Others	2.5

5.2 Data gathered through interviews

The following summary presents the information gathered through interviews performed after the questionnaire survey. The purpose of these interviews was to obtain more details about the behaviour of health professionals, when they seek information. The nature of the interview was explained in Chapter 3.

5.2.1 Data gathered from teaching hospitals in the UK and Brazil

Keeping track of recent developments

Tables 5.31 and 5.32 present the results of responses given to this question by health professionals in teaching hospitals in the UK and Brazil. In terms of keeping track of recent developments in their area, health professionals in the UK value journal articles, scientific events and colleagues or knowledgeable people. Pharmaceutical representatives, media and books form a group of second choice. Consultants regard journals as of primary importance, followed by events, colleagues, media, pharmaceutical representatives. Journal articles and colleagues are the major sources of information for Junior Doctors; they also consider events to be useful, but have relatively little interest in books, pharmaceutical representatives or the media. Nurses value journal articles and events, followed by colleagues, pharmaceutical representatives and media as sources of information. For other positions, colleagues are the major source of information. For Brazilian health professionals based in teaching hospitals, events are the major source of information in terms of keeping track of recent developments in their area. Journal articles and knowledgeable people are also considered valuable sources. Consultants regard events as of primary importance. They also value journal articles and colleagues. Journal articles and events are similarly the major source of information for Junior Doctors. They also value colleagues as an information source. Nurses regard events and colleagues as of primary importance. They also value pharmaceutical representatives, media and

books. Other positions consider journal articles, events, colleagues and the media as primary sources, and also value pharmaceutical representatives and books.

Table 5.31

How users keep track of recent developments in teaching hospitals in the UK

Position	No.	Recent Developments					
		1	2	3	4	5	6
Consultant	11	8	7	5	0	3	3
Junior Doctor	9	5	4	5	2	2	2
Nurse	6	5	5	4	2	4	4
Others	5	3	3	5	2	4	4
Total	31	21	19	19	6	13	13

1-journals 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media

Table 5.32

How users keep track of recent developments in teaching hospitals in Brazil

Position	No.	Recent Developments					
		1	2	3	4	5	6
Consultant	13	10	13	9	0	0	2
Junior Doctor	10	10	10	8	2	0	3
Nurse	6	3	6	6	3	5	5
Others	3	3	3	3	1	2	3
Total	32	26	32	26	6	7	13

1-journals 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media

Research from other countries

The level of interest in research from other countries varies between UK and Brazil, but the information sources they use for this purpose show a similar profile. In the UK, 61.3% of the population studied agreed that they follow research in other countries, and that journal articles are their major source. They also value colleagues and events. In Brazil, 87.5% of health professionals agreed that they follow research in other countries, and that journal articles are their major source of information. They also value events and colleagues.

Table 5.33

How users from teaching hospitals in the UK learn about research from other countries

Position	No.	Research from other countries							
		No	Yes	1	2	3	4	5	6
Consultant	11	4	7	5	4	4	0	0	1
Junior Doctor	9	2	7	7	1	1	0	0	0
Nurse	6	3	3	2	0	1	0	0	0
Others	5	3	2	1	0	1	0	0	0
Total	31	12	19	15	5	7	0	0	1

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media

Table 5.34

How users from teaching hospitals in Brazil learn about research from other countries

Position	No.	Research from other countries							
		No	Yes	1	2	3	4	5	6
Consultant	13	0	13	13	10	6	0	0	0
Junior Doctor	10	0	10	10	8	5	0	0	1
Nurse	6	3	3	3	0	3	0	0	0
Others	3	1	2	2	1	1	0	0	1
Total	32	4	28	28	19	15	0	0	2

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media

Acquisition of a personal collection (journals and books)

In terms of the number of journal titles to which health professionals subscribe, 71.0% in the UK and 68.7% in Brazil subscribe to one or two titles. The majority of health professionals in the UK (58.1%) buy an average of one to two books per year. The rest are evenly divided between buying no books and buying 3-5 books. In Brazil, 46.9% buy an average of one to two titles per year; the remainder buy more.

Table 5.35

Number of journal titles to which users in teaching hospitals in the UK subscribe

Position	No.	Journals subscriptions			
		0	1-2	3-5	+5
Consultant	11	0	6	5	0
Junior Doctor	9	0	7	2	0
Nurse	6	0	6	0	0
Others	5	0	3	2	0
Total	31	0	22	9	0

Table 5.36

Number of journal titles to which users in teaching hospitals in Brazil subscribe

Position	No.	Journals subscriptions			
		0	1-2	3-5	+5
Consultant	13	0	7	3	3
Junior Doctor	10	0	8	2	0
Nurse	6	0	6	0	0
Others	3	2	1	0	0
Total	32	2	22	5	3

Table 5.37

Number of books that users in teaching hospitals in the UK buy per year

Position	No.	Books/year			
		0	1-2	3-5	+5
Consultant	11	3	8	0	0
Junior Doctor	9	2	3	4	0
Nurse	6	1	5	0	0
Others	5	0	2	3	0
Total	31	6	18	7	0

Table 5.38

Number of books that users in teaching hospitals in Brazil buy per year

Position	No.	Books/year			
		0	1-2	3-5	+5
Consultant	13	0	5	3	5
Junior Doctor	10	0	5	5	0
Nurse	6	0	4	2	0
Others	3	0	1	2	0
Total	32	0	15	12	5

Colleagues as source of information

The most useful discussions health professionals have with their colleagues in teaching hospitals in the UK are at meetings, conferences, workshops, seminars, and during medical audit. They also recognise that they exchange useful ideas while they are in clinics, wards, offices and theatres. The coffee room is the third place in terms of priority.

In Brazil users recognise that the most useful discussions are held when they are in the clinics, wards, offices, and theatres. Meetings, conferences, workshops, seminars, and medical audit are their second priority, and discussion while they are in the coffee room is their third.

In the UK, the preferences broken down by position follows the same distribution in general terms. In Brazil, Consultants and Junior Doctors find meetings and other events to be the primary occasions on which they exchange useful ideas, while Nurses and other positions prefer discussing during clinics, wards, or while they are involved in theatres.

Table 5.39

Most useful discussions with colleagues for users in teaching hospitals in the UK

Position	No	1	2	3
Consultant	11	11	10	1
Junior Doctor	9	9	9	3
Nurse	6	6	4	5
Others	5	5	4	2
Total	31	31	27	11

1-meetings, conferences, workshops, seminars, medical audit; 2-clinics, wards, office, theatres; 3-coffee room

Table 5.40

Most useful discussions with colleagues for users in teaching hospitals in Brazil

Position	No	1	2	3
Consultant	13	13	12	0
Junior Doctor	10	10	8	0
Nurse	6	2	5	2
Others	3	1	3	0
Total	32	26	28	2

1-meetings, conferences, workshops, seminars, medical audit; 2-clinics, wards, office, theatres; 3-coffee room

External sources

In the UK, external colleagues are regarded as of primary importance, followed by external events, training, media, patients, pharmaceutical representatives, magazines and, finally, tapes. In Brazil, external colleagues are again seen as a major source of information, followed by external events, training, media, magazines, patients, pharmaceutical representatives and, finally, tapes. All groups of staff in the UK place external colleagues and events first in terms of value for information acquisition, though Junior Doctors and Nurses also value training. The same priorities for the different grades exist in Brazil.

Table 5.41

External sources that users in teaching hospitals in the UK find useful

Position	No.	1	2	3	4	5	6	7	8
Consultant	11	10	5	0	0	0	0	10	0
Junior Doctor	9	9	3	1	2	0	7	9	3
Nurse	6	6	3	2	3	2	6	6	3
Others	5	5	1	4	2	1	5	5	2
Total	31	30	12	7	7	3	18	30	8

1-colleagues/knowledgeable people; 2-media (TV,newspaper); 3-pharmaceutical representatives; 4-magazines; 5-tapes; 6-training; 7-seminars, symposiums, conferences; 8-patients.

Table 5.42

External sources that users in teaching hospitals in Brazil find useful

Position	No.	1	2	3	4	5	6	7	8
Consultant	13	13	4	0	1	0	0	13	1
Junior Doctor	10	10	3	1	1	0	10	10	3
Nurse	6	6	3	4	4	0	6	6	3
Others	3	3	2	1	1	2	3	2	0
Total	32	32	12	6	7	2	19	31	7

1-colleagues/knowledgeable people; 2-media (TV,newspaper); 3-pharmaceutical representatives; 4-magazines; 5-tapes; 6-training; 7-seminars, symposiums, conferences; 8-patients.

Stimuli for new ideas

In both the UK and Brazil professional events are the most important stimuli for new ideas. Journal articles are also valued by health professionals in both countries.

Table 5.43

Stimuli for new ideas for users in teaching hospitals in the UK

Position	No.	1	2	3	4	5	6	7
Consultant	11	11	8	10	6	4	10	11
Junior Doctor	9	9	6	9	3	4	6	9
Nurse	6	6	-	-	-	-	6	6
Others	5	5	2	2	3	1	1	5
Total	31	31	16	21	12	9	23	31

1-external meetings, courses, conferences; 2-up-dated colleagues; 3-research problems; 4-teaching, lectures; 5-new techniques/new technologies; 6-patient conditions/new problems; 7-journals, pre-prints, reviews.

Table 5.44

Stimuli for new ideas for users in teaching hospitals in Brazil

Position	No.	1	2	3	4	5	6	7
Consultant	13	13	10	10	7	3	12	13
Junior Doctor	10	10	6	8	1	3	9	10
Nurse	6	6	2	-	-	1	6	4
Others	3	3	1	1	-	1	-	2
Total	32	32	19	19	8	8	27	29

1-external meetings, courses, conferences; 2-up-dated colleagues; 3-research problems; 4-teaching, lectures; 5-new techniques/new procedures; 6-patient conditions/new problems; 7-journals, pre-prints, reviews.

5.2.2 Data gathered from non-teaching hospitals in the UK and Brazil

Keeping track of recent developments

Tables 5.45 and 5.46 present the results of the responses given to this question by health professionals in non-teaching hospitals in the UK and Brazil. In terms of keeping track of recent developments in their area, health professionals in the UK consider journal articles, events and colleagues, or knowledgeable people, as their top priorities. Consultants regard journals and events as of primary importance, followed by colleagues. Journal articles are the major source of information for Junior Doctors; they also consider books as an important source. Nurses value colleagues, followed by media, journal articles, events and books. For other positions, journal articles are of primary importance, followed by scientific events. For Brazilian health professionals based in non-teaching hospitals, journal articles are the major source of information in terms of keeping track of recent developments in their area. Events and knowledgeable people are also considered valuable sources, followed by books and pharmaceutical representatives.

The priorities for the different groups are similar to those in the UK. Consultants regard journal articles as of primary importance. They also value events and books. Journal articles are the major source of information for Junior Doctors. They also value events, colleagues, and pharmaceutical representatives as information source. Nurses regard colleagues as of primary importance. They also value journals and events. Other positions consider journal articles and events as primary sources; they also value books.

Table 5.45

How users keep track of recent developments in non-teaching hospitals in the UK

Position	No.	Recent Developments					
		1	2	3	4	5	6
Consultant	7	7	7	2	0	2	0
Junior Doctor	7	6	1	3	4	0	2
Nurse	3	1	1	3	1	0	2
Other	4	4	3	0	0	0	0
Total	21	18	12	8	5	2	4

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media.

Table 5.46

How users keep track of recent developments in non-teaching hospitals in Brazil

Position	No.	Recent Developments					
		1	2	3	4	5	6
Consultant	11	11	9	2	4	2	0
Junior Doctor	2	2	1	1	0	1	0
Nurse	5	3	3	4	0	1	0
Other	2	2	2	0	1	0	0
Total	20	18	15	7	5	4	0

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media.

Research in other countries

Though the amount of interest in keeping track of research in other countries varies between UK and Brazil, the profile of the information sources they use for this purpose is very similar. In the UK, 71.4% of the population studied agreed that they followed research in other countries: they regard journal articles as the major source of information. In Brazil, all health professionals agreed that they keep track of research in other countries, and they, too, regard journal articles as their major source of information. They also value events and colleagues. In both the UK and Brazil, journal articles are regarded as the most useful source by all categories of staff.

Table 5.47

How users in non-teaching hospitals in the UK learn about research from other countries

Position	No.	Research from other countries							
		no	yes	1	2	3	4	5	6
Consultant	7	3	4	3	3	1	0	0	0
Junior Doctor	7	1	6	6	0	0	0	0	0
Nurse	3	2	1	1	0	0	0	0	0
Other	4	0	4	3	3	2	0	0	0
Total	21	6	15	13	6	3	0	0	0

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media.

Table 5.48

How users in non-teaching hospitals in Brazil learn about research from other countries

Position	No.	Research from other countries							
		no	yes	1	2	3	4	5	6
Consultant	11	0	11	8	4	4	0	1	0
Junior Doctor	2	0	2	2	0	0	0	0	0
Nurse	5	0	5	5	1	0	0	0	0
Other	2	0	2	1	0	0	0	1	0
Total	20	0	20	16	5	4	0	2	0

1-journals; 2-conferences, congress, seminars, meetings, tutorials, training; 3-colleagues, knowledgeable people; 4-books; 5-pharmaceutical representatives; 6-media.

Acquisition of a personal collection (journals and books)

In terms of the number of journal titles to which health professionals in non-teaching hospitals in the UK subscribe, 57.2% take 3-5 titles and 42.8% take either one or two. In Brazil, 40% subscribe to one or two journal titles, whilst 35% take 3-5.

Table 5.49

Number of journal titles to which users in non-teaching hospitals in the UK subscribe

Position	no.	Journal subscriptions (# titles)			
		0	1-2	3-5	+5
Consultant	7	0	0	7	0
Junior Doctor	7	0	3	4	0
Nurse	3	0	3	0	0
Other	4	0	3	1	0
Total	21	0	9	12	0

Table 5.50

Number of journal titles to which users in non-teaching hospitals in Brazil subscribe

Position	no.	Journal subscriptions (# titles)			
		0	1-2	3-5	+5
Consultant	11	0	5	4	2
Junior Doctor	2	0	1	1	0
Nurse	5	3	1	1	0
Other	2	0	1	1	0
Total	20	3	8	7	2

Table 5.51

Number of books that users in non-teaching hospitals in the UK buy per year

Position	no.	Books/year			
		0	1-2	3-5	+5
Consultant	7	2	5	0	0
Junior Doctor	7	2	1	4	0
Nurse	3	0	3	0	0
Other	4	0	0	2	2
Total	21	4	9	6	2

Table 5.52

Number of books that users in non-teaching hospitals in Brazil buy per year

Position	no.	Books/year			
		0	1-2	3-5	+5
Consultant	11	0	4	3	4
Junior Doctor	2	0	1	1	0
Nurse	5	0	4	0	1
Other	2	0	1	1	0
Total	20	0	10	5	5

Colleagues as source of information

The most useful discussions health professionals have with their colleagues in non-teaching hospitals in the UK are during meetings, conferences, workshops, seminars, medical audit and tutorials. They also recognise that they exchange useful ideas while they are in clinics, wards, offices and theatres. The coffee room is the third place in terms of priority. In Brazil, users recognise that their most useful discussions are held in the clinics, wards, offices and theatres. Meetings, conferences, workshops, seminars, and medical audit are their second priority, and discussion while they are in the coffee room is their third.

Table 5.53

Most useful discussions with colleagues for users in non-teaching hospitals in the UK

Position	no.	A	B	C
Consultant	7	7	4	1
Junior Doctor	7	7	7	0
Nurse	3	2	2	0
Other	4	5	1	1
Total	21	21	14	2

A-meetings, workshops, seminars, medical audit, tutorials; B-clinics, wards, offices, theatres; C-coffee room

Table 5.54

Most useful discussions with colleagues for users in non-teaching hospitals in Brazil

Position	no.	A	B	C
Consultant	11	9	8	0
Junior Doctor	2	2	1	0
Nurse	5	1	5	1
Other	2	0	2	0
Total	20	12	16	1

A-meetings, workshops, seminars, medical audit, tutorials; B-clinics, wards, offices, theatres; C-coffee room.

External sources

In the UK, colleagues are regarded as of primary importance, followed by events, media, pharmaceutical representatives, training, and, finally, tapes and patients. In Brazil, the media are regarded as a major source of information, followed by colleagues, pharmaceutical representatives, events, tapes, training and, finally, magazines and patients. Consultants in the UK regard external colleagues as major source; they also value TV and newspaper reports and professional events as valuable sources. For Junior Doctors, colleagues and scientific events are regarded as of primary importance, followed by training. Nurses regard media as an important source, followed by colleagues and pharmaceutical representatives. Other positions regard colleagues, as major source, followed by media, pharmaceutical representatives and training. In Brazil, TV and newspapers are of primary importance for Consultants, followed by external colleagues, pharmaceutical representatives and events. Junior Doctors regard pharmaceutical representatives, tapes and training as of primary importance. Colleagues, media, tapes and events are the major sources for Nurses. Other positions regard colleagues as of major importance, followed by pharmaceutical representatives.

Stimuli for new ideas

The stimuli for new ideas differ considerably between the two countries. In non-teaching hospitals in the UK, health professionals nominate sources such as meetings, colleagues, patients, motivated team members, new technologies, journals articles and changing routine. Brazilian health professionals regard infra-structural conditions, such as recognition, better working conditions, better salaries and respect, as more important.

In the UK patient conditions are considered an important motivation for developing new ideas. Up-to-date colleagues are another useful stimulus. In Brazil, good working conditions come first, but are followed by patient conditions. Consultants and Junior Doctors in the UK both regard patient conditions as of primary importance. Nurses consider changing routine to be a valuable stimulus, whilst other positions regard up-dated colleagues as the major source of new ideas. In Brazil, good working conditions are regarded by both Consultants and Junior Doctors as a major source of new ideas. Nurses regard motivated team members as a valuable stimulus for new ideas. Other positions again stress good working conditions and recognition as major sources.

Table 5.55

External sources that users in non-teaching hospitals in the UK find useful

Position	no.	1	2	3	4	5	6	7	8
Consultant	7	3	2	1	0	1	0	2	0
Junior Doctor	7	3	0	0	0	0	2	3	0
Nurse	3	1	2	1	0	0	0	0	0
Other	4	2	1	1	0	0	1	1	1
Total	21	9	5	3	0	1	3	6	1

1-colleagues/knowledgeable people; 2-media (TV,newspaper); 3-pharmaceutical representatives; 4-magazines; 5-tapes; 6-training; 7-seminars, symposiums, conferences; 8-patients.

Table 5.56

External sources that users in non-teaching hospitals in Brazil find useful

Position	no.	1	2	3	4	5	6	7	8
Consultant	11	4	7	2	1	0	0	2	0
Junior Doctor	2	0	0	1	0	1	1	0	0
Nurse	5	2	2	0	0	2	1	2	1
Other	2	2	0	1	0	0	0	0	0
Total	20	8	9	4	1	3	2	4	1

1-colleagues/knowledgeable people; 2-media (TV,newspaper); 3-pharmaceutical representatives; 4-magazines; 5-tapes; 6-training; 7-seminars, symposiums, conferences; 8-patients.

Table 5.57

Stimuli for new ideas for users in non-teaching hospitals in the UK

Position	no.	1	2	3	4	5	6	7
Consultant	7	2	2	4	0	0	1	0
Junior Doctor	7	0	1	5	0	0	2	0
Nurse	3	0	0	0	0	1	0	2
Other	4	2	3	1	1	1	0	0
Total	21	4	6	10	1	1	3	2

1-external meetings, courses, conferences; 2-up-dated colleagues; 3-patients conditions/new problems; 4-motivated team members; 5-new technologies; 6-journals; 7-changing routine.

Table 5.58

Stimuli for new ideas for users in non-teaching hospitals in Brazil

Position	no.	1	2	3	4	5	6	7
Consultant	11	0	0	6	2	4	3	3
Junior Doctor	2	0	0	1	1	1	0	0
Nurse	5	2	3	1	0	2	0	0
Other	2	1	0	1	0	0	0	0
Total	20	3	3	9	3	7	3	3

1-professional recognition and respect; 2-motivated team members; 3-good working conditions; 4-good salaries; 5-patient conditions/new problems; 6-up-dated colleagues; 7-work with residents and internists.

CHAPTER SIX

DISCUSSION

The results will be presented in this Chapter in the following order:

- analysis of the results of interviews within the library;
- analysis of the results of observation at the enquiry desk;
- analysis of the results of the questionnaire survey outside the library;
- analysis of the results of interviews outside the library.

6.1 Analysis of the information-acquisition behaviour of health professionals in the UK and Brazil while using the library

The cognitive approach

As previously discussed in Chapter Three, the analysis of the first stage of this investigation (i.e., observing and interviewing people while they visit the library), is based on the assumptions of the cognitive approach. Individual information needs occur because of a discontinuity, or gap in one's knowledge. The gap develops out of a specific situation, and individuals attempt to fill the gap via tactics that apply to the specific situation. The need and the situation influence the decisions taken by individuals in terms of the information sources they use. Although the decisions and the steps taken are likely to be a repetition of previous experience, theoretically a new step is being taken because it occurs in a new moment of space-time.

6.1.1 Information sought at the teaching and non-teaching hospital libraries in the UK and Brazil

The results of the observation/interviews at the libraries (with the two non-teaching hospitals amalgamated together in each country) show a number of similarities, both between the responses from teaching and non-teaching hospitals and between the UK and Brazil. As far as information sought is concerned, books are extensively used as information sources in all cases, and they are primarily used for seeking specific information everywhere. The preferences of users for information sought in teaching hospital libraries in the UK, and Brazil are very similar. The one striking difference relates to journals, which are clearly used much more in non-teaching hospitals in the UK, than in Brazil. In both countries, personnel seek specific information from books, journals and reference materials. The use of books and journals for general information is very low. There are two basic reasons for this difference in journal usage. The first relates to availability. Library budgets in Brazil, have been greatly affected by inflation. Coupled with the rapidly increasing cost of journals, this means that Brazilian medical libraries cannot afford to purchase the spread of titles available in their British counterparts (See Chapter One for details.) Secondly, many major medical journals are in English, and the majority of Brazilian medical staff are not fluent readers of this language, although they manage to some extent read foreign journals. These are general problems in Brazilian hospitals, but both are much more acute in the non-teaching hospitals.

The data can be sub-divided further by staff category for both the UK teaching hospital and the Brazilian teaching hospital, in view of the number of respondents involved. Applying the book/journal and specific/general division introduced previously, it is apparent that few users are looking for general information. There are, however, clear differences in the relative usage of books and journals for retrieving specific information. Thus students tend to use books more than journals, whilst medical and academic staff consult journals more than books. These differences

apply equally to Brazil and the UK. Nursing and technical staff in the UK, use books and journals to about the same extent. In Brazil, few nursing or technical staff visit the library at all.

Several studies conducted into the use of printed information sources have reported similar results. As noted in the review of the literature (Chapter Two), journals and books are generally regarded as of great importance by respondents. The review of the literature (Chapter Two) also shows that physicians use primarily journals, whilst students prefer the use of textbooks (e.g. Neufeld & Woodsworth (1972); Northup et al. (1983).

6.1.2 Reasons users seek information in the teaching and non-teaching hospital libraries in the UK and Brazil

The reasons users gave for seeking information have been grouped into five categories - for personal learning, patient care, teaching, research and other. Again, there are some similarities across all types of hospital - notably in the emphasis on personal learning - but there is also a clear-cut difference between teaching and non-teaching hospitals in the two countries. The former, not surprisingly, give much greater emphasis to research information, whilst the latter, relatively, give a somewhat greater emphasis to patient care information. (The difference was significant at the 0.05 confidence level.)

Medical staff in the UK, are mainly concerned with information relating to patient care and research, whereas academic staff primarily seek information relating to teaching and research. Brazilian medical staff seek primarily information relating to patient care and learning, and academic staff are mainly concerned with research and learning. Medical students are almost entirely concerned with information for learning purposes in the UK, Brazilian students also emphasise learning, but mention research as a motivation more often than their British counterparts. This must be a

consequence of the emphasis now given to research by the medical schools in Brazil, as a result of a national programme (Scientific Initiation) funded by the Brazilian Government. This encourages medical students to participate in research projects under the supervision of a Project Co-ordinator (a Tutor). The various groups develop their projects in the University Laboratories, and, every year, the Universities promote a two or three-day workshop to present and discuss the works with the medical community.

British nursing staff, in this survey, came into the library particularly for teaching information (e.g. to help in the production of an educational package) and for research information. It is possible, however, that this is due to the time when the study was made, and that what it actually reflects is activity by nursing staff who were completing their post-basic registration course. Otherwise, nurses in the UK, might well be more concerned with learning. In Brazil, nurses main concern was to solve problems related to patient care.

These results accord with data in the literature reported in Chapter Two (e.g. Brember & Leggate (1985); Wakeham (1993). Students study primarily because of examinations, while the reading of staff physicians is directed toward solving specific clinical problems, for research interests, and keeping-up-dated. The results also confirm that nurses seek information related to patient care.

The most obvious result from a comparison of the interviews in the UK and Brazil was the similarity in the types of information being sought by different categories of respondent. From this viewpoint, the information requirements of library customers at the two teaching hospitals, on the one hand, and at the four non-teaching hospitals, on the other, can be regarded as comparable. However, the information activities within these groups show some difference.

Applying the sense-making theory assumes that the ways in which people see knowledge gaps will be related to the ways in which they try to bridge them. Figures 6.1 to 6.6 represent this assumption for the libraries in the UK and Brazil. Learning, Research, Teaching, and Patient Care are considered situations which lead to gaps. The types of material provide the strategies used by individuals to bridge the gaps, and the usage, or otherwise, of sources depends on the strategies applied.

Diagram 6.1 - INFORMATION-ACQUISITION OF USERS AT THE NON-TEACHING HOSPITAL LIBRARIES IN THE UK

SITUATION STOP - LEARNING

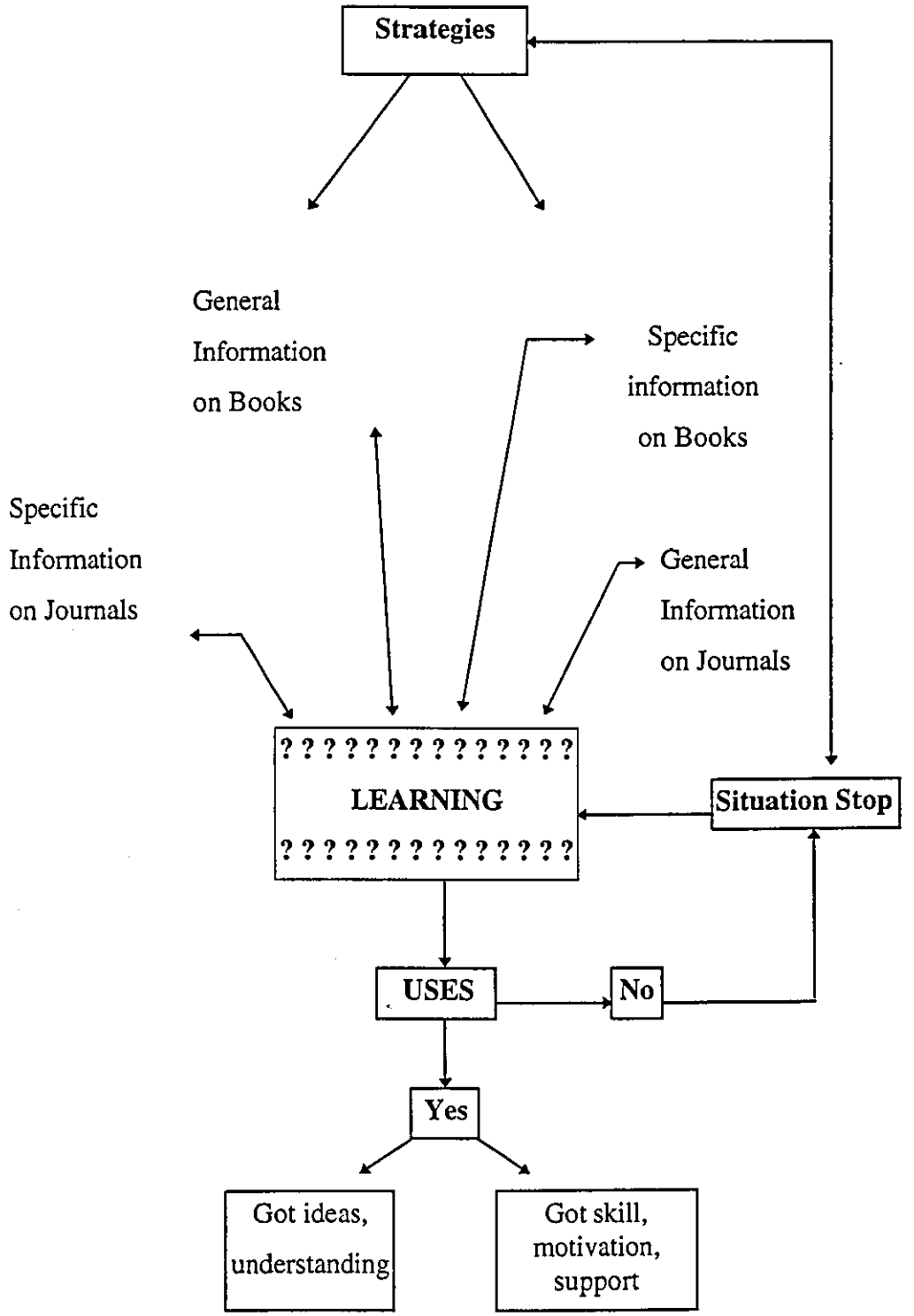


Diagram 6.2 - INFORMATION-ACQUISITION OF USERS AT THE NON-TEACHING HOSPITAL LIBRARIES IN THE UK

SITUATION STOP - RESEARCH

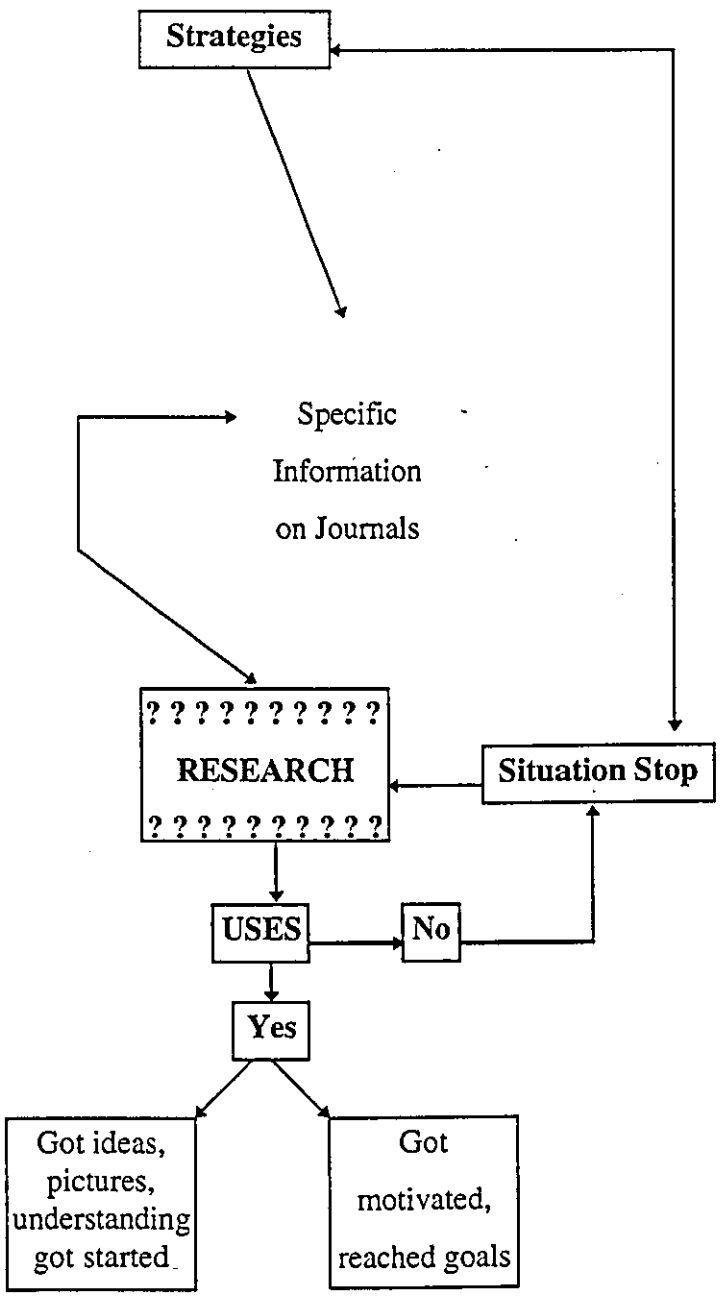


Diagram 6.3 - INFORMATION-ACQUISITION OF USERS AT THE TEACHING HOSPITAL LIBRARY IN THE UK

SITUATION STOP - LEARNING

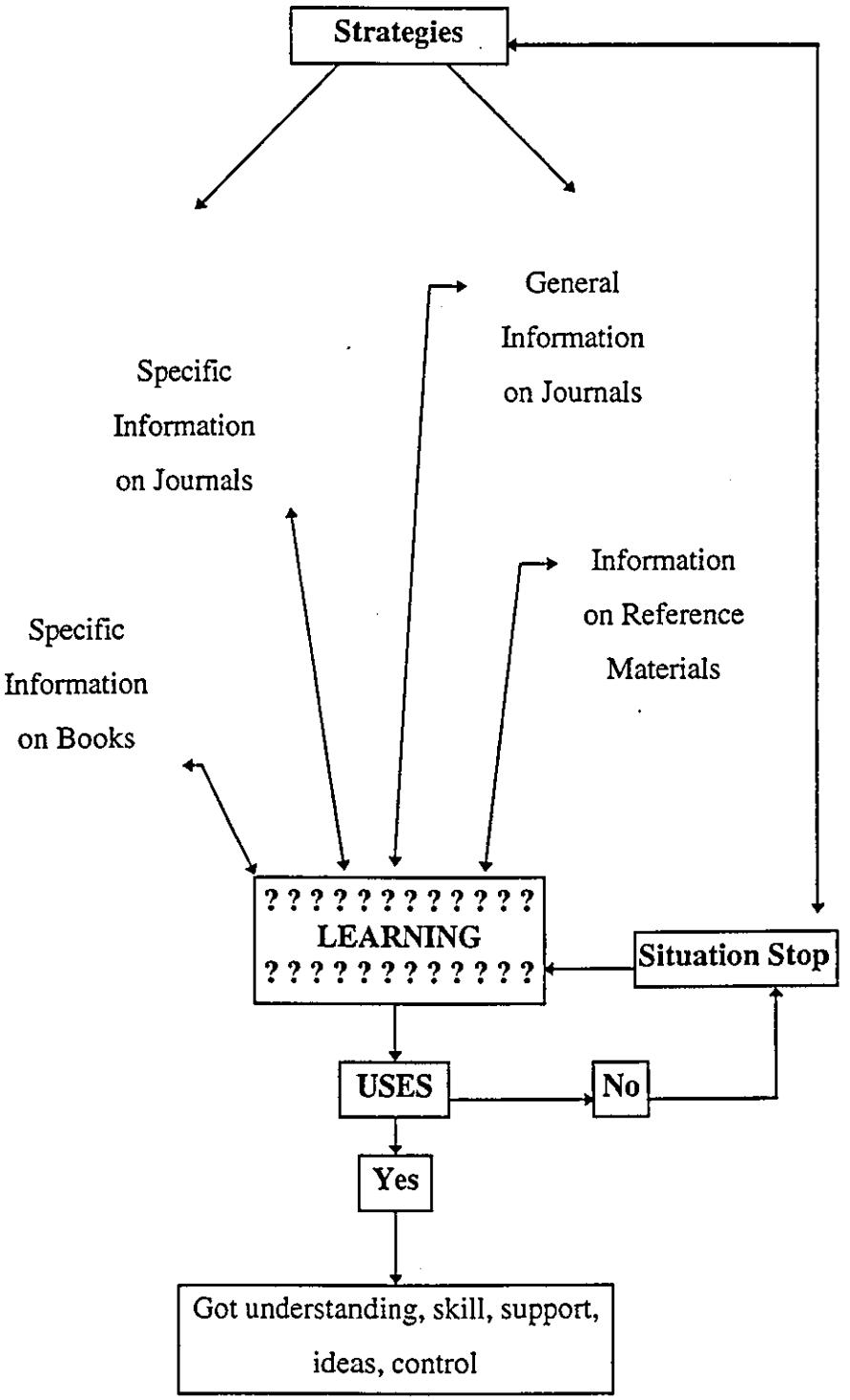


Diagram 6.4 - INFORMATION-ACQUISITION OF USERS AT THE NON-TEACHING HOSPITAL LIBRARIES IN BRAZIL

SITUATION STOP - PATIENT CARE

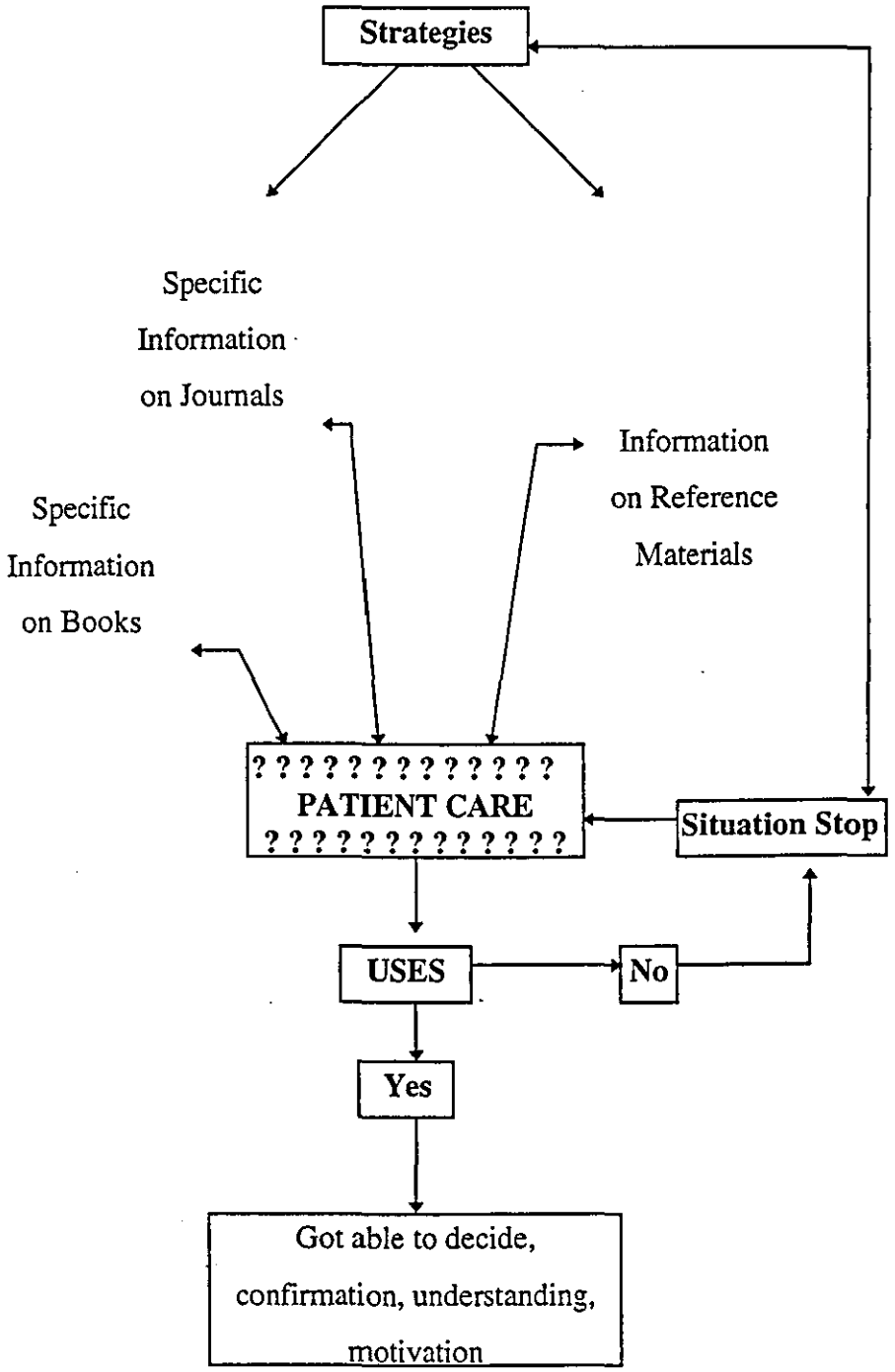


Diagram 6.5 - INFORMATION-ACQUISITION OF USERS AT THE NON-TEACHING HOSPITAL LIBRARIES IN BRAZIL

SITUATION STOP - TEACHING

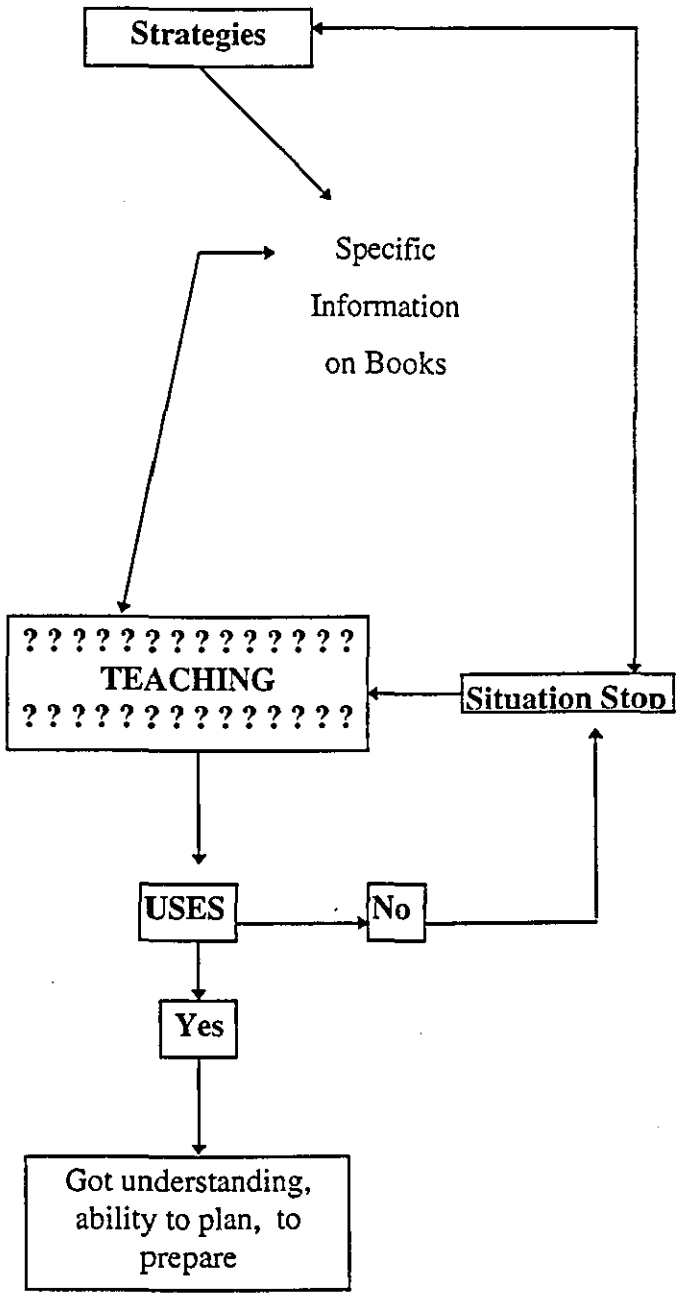
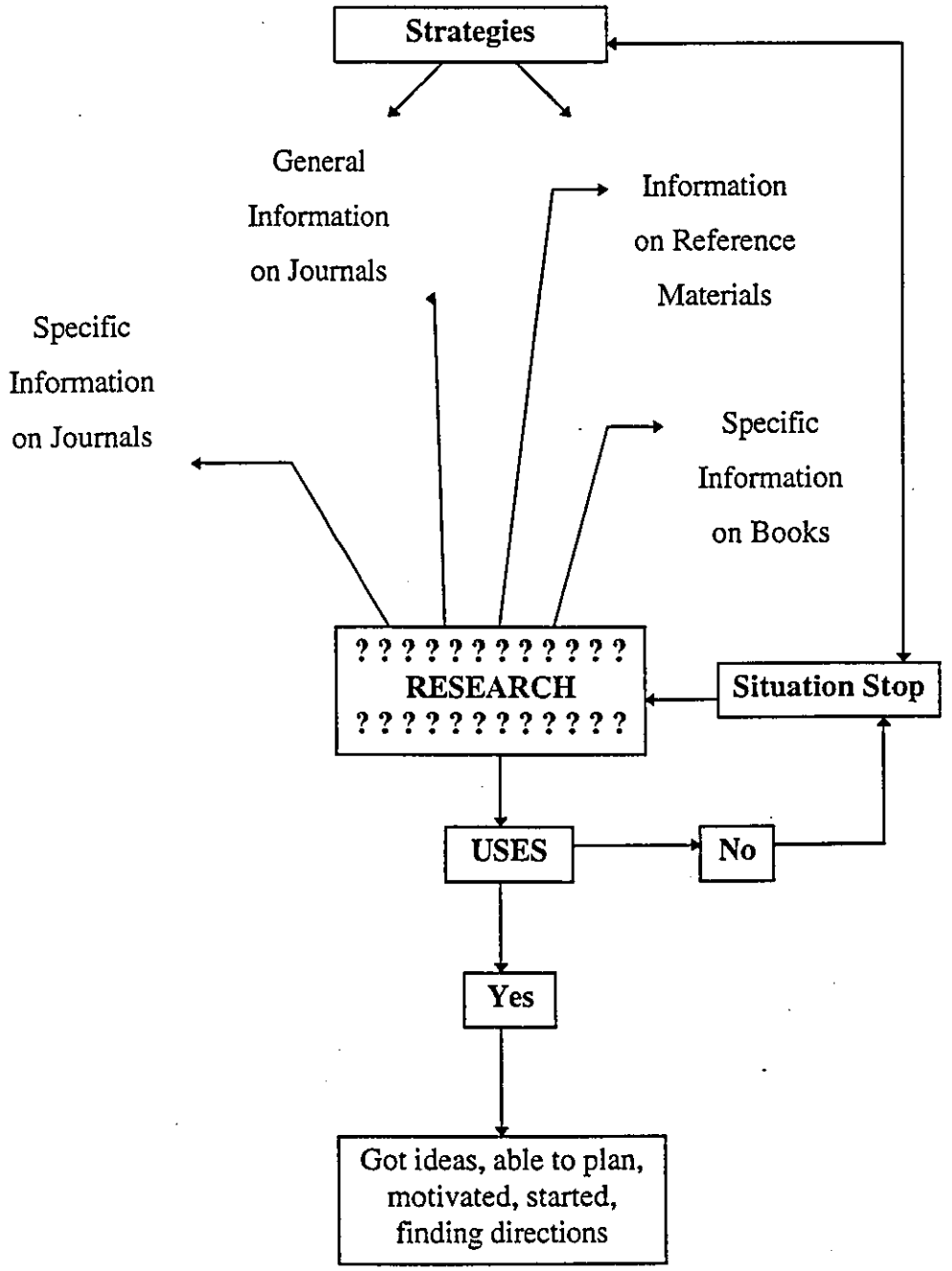


Diagram 6.6 - INFORMATION-ACQUISITION OF USERS AT THE TEACHING HOSPITAL LIBRARY IN BRAZIL

SITUATION STOP - RESEARCH



6.1.3 Level of satisfaction of users in teaching and non-teaching hospital libraries in the UK and Brazil

The results on level of library-users satisfactions suggest that most people can find what they want in their library. However, comments during the interviews indicate that this mostly reflects users' knowledge of library facilities, rather than their actual needs. The less that was available, the lower the expectations to be satisfied. For example, dissatisfied library customers in the UK, teaching hospital were commenting on such things as database limitations and the problems of acquiring information in a speciality that was just beginning to grow - matters that were beyond the control of the library. By way of contrast, satisfied customers in the Brazilian teaching hospital often mentioned the library's ability to acquire information from elsewhere. For example, one respondent explained that only a single title was available in the library on clinical nutrition, but this gave access via its citations to a wider range of literature using inter-library loan. In the UK, acquisition via inter-library loan was seen as a poor substitute for having the material immediately available to hand, and so was not regarded as an advantage of the library. It is equally clear that expectations regarding the libraries at non-teaching hospitals were much lower in Brazil. Most users of these expected that it would be necessary to supplement library resources with materials that they had acquired themselves, to a far greater extent than was necessary for their counterparts in the UK. Differences between the UK and Brazil in level of satisfaction at teaching hospitals showed a significant difference at the 0.01 level.

Table 6.1
Level of satisfaction between the UK and Brazil in teaching hospital libraries at the 0.01 confidence level.
(X2=20.1, df=2, Coef. Sig. 0.01)

Country	Yes	No	Some	Total
UK	95	9	15	119
Brazil	114	12	0	126
Total	209	31	15	245

British doctors have available up-to-date reviews of clinical procedures and information on the effectiveness of treatments. Such material would obviously be of value in Brazil. Unfortunately, there is insufficient funding to support a systematic programme of translation into Portuguese, or to establish centres for the dissemination of information along the lines found in the UK. One constant theme in all the Brazilian hospitals, which was absent from UK responses, was the problem of out-of-date information, especially in the source accessed most - books. As one user commented: "The books are very old. It is very dangerous to use old books: we do not know if the information is still valid". Another repeated theme was the difficulty of extracting information from foreign-language material (usually in English). A user remarked: "The library does not buy new books in my area. I do not read English, and there are only a few books available". Clearly, the currency of the information and the language used to convey it are far more important in Brazil, than in the UK.

6.1.4 Interaction between library users and library staff

The second stage of this investigation involved the observation of library users and staff at the enquiry desk in the two teaching libraries. (Enquiries at the other libraries were too limited in number and type to add to the analysis.)

The types of enquiry encountered can be divided into two groups - those relating to library operations and those seeking reference information. Examples of the former

would be reserving a book, or purchasing a card for the photocopier. Examples of the latter include such questions as:

- Have you got anything on community health care and the elderly?
- How do I find information on cardiac measurements?

In the UK, enquiries in the first category were typically made in person, though reservations or renewal of loaned material and inter-library loan enquiries were often made by telephone or on-line in the UK. Queries in the second category were made about equally in person or via the telephone. In Brazil, as the library does not use any sort of automated system to accomplish the routine actions, enquiries in the category of routine repetitive actions were made in person, and only in a few cases via the telephone. The same is true where reference information is concerned. In the UK, operational questions were almost always answered either from the librarian's personal knowledge or via reference to the library computer system. Apart from the library system, searches on-line and on CD-ROM are often used to provide information on referral questions. Library staff knowledge is used mainly to attend to routine actions, and as a second source when the first choice source does not provide the required answer. Other libraries' collections and printed reference sources are used rarely. In Brazil, the enquiry desk card file is the heart of the system for issuing, renewing books and for keeping track of records on customers. Actions related to use of journals (inter-library loan, searches) are dealt with by different staff who use the computer separately.

In both countries, reference questions nearly always required more resources and time. In the UK, to answer for example, one request concerned how to abbreviate the title of a journal that the library did not hold. This involved checking via the library computer system and printed sources, together with reference to another library. In both countries, most operational questions could either be answered immediately, or (as with interlibrary loans) after a standard delay period. On the contrary, in the

contrary, in the British teaching library the only reference question answered immediately was — Why cannot I find this title in the library? (The answer was given at once by checking the library collection and orders on the computer. In Brazil, , the library was able to answer some reference questions immediately due to staff familiarity with the materials that students frequently used. This applied, for example, to queries about standard textbooks and journals.

It proved impossible to provide a comprehensive answer to nearly half of the reference questions asked. The reasons differed, though some were partly related to the resources that could be accessed. For example, one query received in the British teaching hospital concerned the "Segoyan syndrome". An extensive, but unsuccessful search by the library staff convinced the enquirer that she must have written down the name incorrectly. An enquiry in the Brazilian teaching hospital about hyperthyroidism without goitre also produced no information. It was assumed, in this case, since the Consultant had a patient being treated in the hospital, that information on the condition would exist somewhere. The library tried a search on both databases available (MEDLINE and LILACS), but no information was found. Another, related to cancer of the mouth, could not be answered satisfactorily because of the level of information the user (a first-year medical student) wanted. A literature survey via the databases was not appropriate and the library did not have any more accessible information, as in a book.

Queries can be looked at in another way. Some present simple requirements to both librarian and library user. Examples are returning a book, or purchasing a card for the photocopier. Others are more difficult for the user, but still simple for the librarian. An example is how to use MEDLINE on CD-ROM, or looking for materials the user requires from the library collection. But most reference questions fall into a third category. They are easily formulated by the enquirer, but are difficult for the librarian to answer.

In the UK, the majority of the difficult cases were due to the type of question users asked. For example, one user wanted a copy of the 1992 on Mental Health in Children Act. At that time, it was a new government regulation and the library had not acquired the publication yet. A different sort of example is information on how to write a case study, or how to get research grants; books on research methodology and funding are more likely to be found in another library, rather than in a medical library.

In Brazil, the level of complexity was often determined by the fact that only the librarian searches the literature via computer. Every request has to be written down in the proper form after the interview with the user, and the search must be processed afterwards. Most time overall is taken on routine activities, but the reference questions are most time-consuming. Allowing for the difference in number of staff, the per capita distribution of activities is similar in the two teaching libraries. No data comparable with these results have been found in the literature.

6.2 Analysis of the information-acquisition behaviour of health professionals in the UK and Brazil outside the library

The systems approach

As discussed in Chapters Two and Three, the assumptions that underlie this stage of the investigation are based on the systems approach. In this, individuals seek information from a variety of systems, each of which might have potentially useful information. The information consumers are also information providers within their own environments, and are therefore involved in "information exchange", a fundamental aspect of human interaction.

6.2.1 The influence of position on information-acquisition by health professionals

Some data in the literature suggest that the positions held by health professionals may influence the way they acquire information in their professional lives. Data to test this assumption for Brazilian and British health professionals were provided by Questions Two, Six, Eight and Nine. For analysis, the different positions were grouped into four categories: 1 - management, technician, scientist, other; 2 - consultant; 3 - junior doctor; 4 - nurse, sister. To test whether or not Position influences the need of health professionals In Brazil, for different types of professional information, we used data provided by Questions Two and Six. Chi-squared tests were run for all types of professional information against all categories of position. Six out of twenty-four tests were eliminated from the analysis because 25% or more of the expected frequencies were less than five. Of the 18 remaining types of professional information, the following tested sigificatly with position at the 0.01 confidence level (Tables 6.1-6.4). On the basis of this analysis, we can conclude that certain types of professional information and certain positions are related in terms of differential usage

Table 6.2
Types of professional information versus position at the 0.01 confidence level
Clinical Audit related to teaching
(X2=18.38, df=3, Coef.Sig.0.000)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	10	47.6	62	73.0	58	78.4
Yes	11	52.4	23	27.0	16	21.6

Table 6.3
Types of professional information versus position at the 0.01 confidence level
New procedures/new drugs related to teaching
(X2=11.66, df=3, Coef.Sig.0.008)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	12	57.1	56	65.9	48	64.8
Yes	9	42.9	29	34.1	26	35.2

Table 6.4
Types of professional information versus position at the 0.01 confidence level
Basic scientific and medical information related to teaching
(X2=20.90, df=3, Coef.Sig.0.000)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	6	28.6	48	56.5	42	56.7
Yes	15	71.4	37	43.5	32	43.3

Table 6.5
Types of professional information versus position at the 0.01 confidence level
New procedures/New drugs to patient care
(X2=14.25, df=3, Coef.Sig.0.002)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	8	38.1	25	29.4	18	24.3
Yes	13	61.9	60	70.6	56	75.7

The contents of Tables 6.2 to 6.5 suggest that Junior Doctors and Nurses have a similar pattern of need for all four types of professional information, e.g. when types of information are related to Teaching activity, the two categories have a low need for information on Clinical Audit, New Procedures/new drugs and Basic Science. This

reflects their basic patient care orientation. The data on Consultants suggest that they need information on Clinical Audit and Basic Science much more than Junior Doctors and Nurses do. The need for new procedures/new drugs related to teaching is low for all three categories, whilst new procedures/new drugs related to patient care constitute a high need for all three categories. Teaching seems to be an activity more related to Consultant status. Thus their need for information related to this activity is higher than for the Junior Doctors and Nurses. As discussed in Chapter Two, the literature suggests differences in the requirements of faculty and housestaff for certain types of professional information. Basic Science information is considered more important by faculty than by housestaff.

Where patient care is concerned, all three categories show a similar pattern of high-level information need, as they do for new procedures/new drugs. The literature suggests that for physicians, the highest percentage of information searches related to diseases, chemicals and drugs, and procedures. Physicians also sought information for immediate patient care decisions, as well. Nurses need both specific and general patient data: patient-specific medication data are another high priority for them.

Data to test the same questions for British health professionals were provided by Questions Two and Six. Chi-squared tests were run for all types of professional information against all categories of position. The following types of professional information correlated significantly with position at the 0.01 confidence level (Tables 6.6-6.8). On the basis of this analysis we can conclude that certain types of professional information and certain positions are related in terms of usage.

Table 6.6
Types of professional information versus position at the 0.01 confidence level
Clinical audit related to teaching
(X2=11.57, df=3, Coef.Sig.0.008)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	32	55.2	37	82.2	22	71.0
Yes	26	49.8	8	17.8	9	29.0

Information on clinical audit, which relates to teaching, is of low interest to Junior Doctors and Nurses; it is more relevant to Consultants.

Table 6.7
Types of professional information versus position at the 0.01 confidence level
Diagnosis related to patient care
(X2=23.14, df=3, Coef.Sig.0.000)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	13	22.4	6	13.3	9	29.0
Yes	45	77.6	39	86.7	22	71.0

The need for information on diagnosis related to patient care seems to be high for all three categories, but especially for Junior Doctors. All three categories are clearly highly involved with clinical problems in their work. Referring to the literature discussed in Chapter Two, diagnostic information has been reported by physicians, as one type of information for which they have considerable need.

Table 6.8
Types of professional information versus position at the 0.01 confidence level
State of the art related to patient care
(X2=14.80, df=3, Coef.Sig.0.001)

Need	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
No	12	20.7	15	33.3	19	61.3
Yes	46	79.3	30	66.7	12	38.7

Nurses have a low need for information on the state-of-the-art as it relates to patient care. Consultants and Junior Doctors are more likely to require this information to make decisions on conditions, diagnosis, and treatments for patients.

Data to test whether or not position influences the use of certain sources of information by health professionals in Brazil, were provided by Questions Two and Nine. Chi-squared tests were run for all types of sources of information against all categories of position. Seventeen out of thirty-three tests were eliminated from the analysis because 25% or more of the expected frequencies were less than five. Of the sixteen remaining sources of information, the following correlated significantly with position at the 0.01 level of confidence.

Table 6.9
Sources of information versus position at the 0.01 confidence level
Discussion with colleagues from own hospital related to teaching
(X2=22.48, df=6, Coef.Sig.0.000)

Frequency	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
Less than once/month	3	14.2	7	8.2	7	9.5
At least once/month	13	62.0	29	34.1	16	21.6
No use	5	23.8	49	57.7	51	68.9

Table 6.10
Sources of information versus position at the 0.01 confidence level
Use own journals related to research
(X2=17.80, df=6, Coef.Sig.0.006)

Frequency	Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%
Less than once/month	0	0.0	15	17.6	16	21.6
At least once/month	7	33.3	25	29.4	25	33.8
No use	14	66.7	45	53.0	33	44.6

Table 6.9 suggests that Consultants frequently exchange information with colleagues. Some two-thirds of Consultants, when developing their teaching activities, use discussion with colleagues from their own hospital as source of information at least once a month. Junior Doctors and Nurses have a much lower frequency of usage. This can presumable be linked in part to the lower level of interest in teaching amongst these groups. The literature points more generally to importance of colleagues as a source of information, as was noted in Chapter Two..

The frequency of use of one's own journals for Research shows a similar pattern for all three categories of health professionals (Table 6.10). Usage is low for Junior Doctors and Nurses, and lower still for Consultants. It seems that this is not a very important source of information where research is concerned. Staff are more likely to turn to the journal collection in their library. In contradiction to this, the literature reports that most medical professionals have personal subscriptions to the major journals in their field. Again, when physicians have been asked to indicate their local sources of medical literature, their personal libraries were the source most often used.

The explanation may be that personal subscriptions are commoner in the USA, where the majority of the studies reported in the literature were carried out, than in many other countries.

To test the assumption that position influences the use of certain sources of information by health professionals in the UK, we used data provided by Questions Two and Nine. Chi-squared tests were run for all 11 information sources against all categories of positions. Altogether 18 out of 33 tests were eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the 15 remaining sources of information, the following correlated significantly with position at the 0.01 confidence level.

Table 6.11
Information sources versus position at the 0.01 confidence level
Radio/TV programmes related to patient care
(X2=30.63, df=6, Coef.Sig. 0.000)

Frequency	Management		Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%	n	%
No use	11	29.7	17	29.3	11	24.5	5	16.1
Less than once/month	23	62.2	38	65.5	33	73.3	14	45.2
At least once/month	3	8.1	3	5.2	1	2.2	12	38.7

Table 6.12
Information sources versus position at the 0.01 confidence level
Newspapers/magazines related to patient care
(X2=29.93, df=6, Coef.Sig. 0.000)

Frequency	Management		Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%	n	%
No use	9	24.3	16	27.6	9	20.0	3	9.7
Less than once/month	21	56.7	33	56.9	33	73.3	11	35.5
At least once/month	7	19.0	9	15.5	3	6.7	17	54.8

Table 6.13
Information sources versus position at the 0.01 confidence level
Newspapers/magazines related to research
(X2=23.28, df=6, Coef.Sig. 0.000)

Frequency	Management		Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%	n	%
No use	12	32.4	25	43.1	19	42.2	10	32.3
Less than once/month	18	48.6	30	51.7	26	57.8	11	35.5
At least once/month	7	19.0	3	5.2	0	0.0	10	32.2

The results show that, although health professionals with different positions use information with different frequencies, the differences are statistically significant for

only three of the 11 information sources tested. These are: Radio/TV programmes related to Patient Care; Newspapers/magazines related to Patient Care; Newspapers/magazines related to Research.

Nurses make use of radio and TV programmes in connection with patient care appreciably more frequently than the other categories, though a majority in all categories make some use of them. The literature does not report many studies of this source of information, but scientists in India use both radio and TV programmes as a means to acquire medical information. In a similar way, the usage pattern by Nurses of newspapers/magazines in connection with patient care seems to be different from the other categories of health professionals. Again, they make a frequent use of this source, though it is occasionally employed by a majority of all categories. Finally, the some assertion can be made of the use of newspaper/magazines in connection with research. Consultants and Junior Doctors once more use this source of information less frequently than Nurses. It may be noted that the literature concentrates on the use of newspaper and magazine articles by nurses, rather than doctors.

To test the assumption that position influences the degree of restriction on the usage of some information channels by health professionals in Brazil, data provided by Questions Two and Eight can be examined. Chi-squared tests were run for all five information channels where type of restriction could be related to position. Four out of 10 tests were eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the six remaining tests, only one channel correlated significantly with position at the 0.01 level of confidence.

Table 6.14
Degree of restriction on the usage of information channels
Phone Calls
(X2=23.75, df=6, Coef.Sig. 0.000)

Degree of Restriction	Management		Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%	n	%
No Restriction	8	29.6	12	57.1	48	56.5	22	29.7
Some Restriction	11	40.7	3	14.3	29	34.1	40	54.1
High Restriction	8	29.7	6	28.6	8	9.4	12	16.2

In terms of access to the telephone, Consultants and Junior Doctors appear to face less restriction than Nurses and Management. The proportion of 'high restriction' responses noted by Consultants is rather surprising. It may relate to the fact that they are more likely to make long-distance calls.

To test the same assumption for health professionals in the UK, we used the data provided by Questions Two and Eight. Chi-squared tests were run for all five information channels where type of restriction could be related to position. Six out of 10 tests were eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the four remaining tests, only one channel correlated significantly with position at the 0.01 level of confidence. It appears that there are more restrictions on Junior Doctors and Nurses using fax in their institutions than for people in management positions, or Consultants. This accords with what is known of use of fax more generally.

Table 6.15
Degree of restriction on the usage of information channels
Fax
(X2=17.56, df=6, Coef.Sig. 0.007)

Degree of Restriction	Management		Consultant		Junior Doctor		Nurse	
	n	%	n	%	n	%	n	%
No Restriction	29	78.4	39	67.2	26	57.8	16	51.6
Some Restriction	7	19.0	15	25.8	12	26.7	5	16.1
High Restriction	1	2.6	4	7.0	7	15.5	10	32.3

6.2.2 The influence of Speciality on information-acquisition by health professionals

Some data in the literature suggest that the specialities in which health professionals work may influence the way they acquire information in their professional life. Data to test this assumption for Brazilian health professionals were provided by Questions Three and Six.

For analysis, the different specialities were grouped into four categories: 1- internal medicine; 2- surgery; 3-anaesthetics; 4-basic science. Chi-squared tests were run for all types of professional information against all categories of specialities. Seven out of twenty-four tests were eliminated from the analysis because 25% or more of the expected frequencies were less than five. Of the seventeen remaining types of

professional information, the following correlated significantly with speciality at the 0.01 level of confidence (Tables 6.16 and 6.17).

Table 6.16
Types of professional information versus speciality at the 0.01 confidence level
Prognosis related to patient care
(X2=14.20, df=3, Coef.Sig. 0.002)

Need	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No	33	35.1	13	54.2	29	45.3	19	76.0
Yes	61	64.9	11	45.8	35	54.7	6	24.0

Table 6.17
Types of professional information versus speciality at the 0.01 confidence level
Therapy related to patient care
(X2=24.64, df=3, Coef.Sig. 0.000)

Need	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No	19	20.2	9	37.5	14	21.9	17	68.0
Yes	75	79.8	15	62.5	50	78.1	8	32.0

Health professionals involved in Basic Science differ from their colleagues in other specialities in terms of prognosis and therapy for patient care. This difference is not, of course, surprising. A little more surprising is the lower emphasis on both prognosis and therapy in surgery, as compared with internal medicine or anaesthetics. Results

reported in the literature suggest that surgeons have greater than average interest in routine patient care.

Data to test the same hypothesis for health professionals in the UK, were provided by questions Three and Six. The same four specialities were used for the analysis. Chi-squared tests were run for all types of professional information against all categories of specialities. One out of twenty- four tests was eliminated from the analysis because 25% of the expected frequencies was less than five. Of the remaining types of professional information, the following correlated significantly with speciality at the 0.01 level of confidence (Tables 6.18-6.20).

Table 6.18
Types of professional information versus speciality at the 0.01 confidence level
Prognosis related to patient care
(X2=14.12, df=3, Coef.Sig. 0.002)

Need	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No	12	22.2	10	40.0	36	46.2	14	71.4
Yes	42	77.8	15	60.0	42	53.8	4	28.6

Table 6.19
Types of professional information versus speciality at the 0.01 confidence level
Therapy related to patient care
(X2=12.69, df=3, Coef.Sig. 0.005)

Need	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No	11	20.4	4	16.0	23	29.5	9	64.3
Yes	43	79.6	21	84.0	55	70.5	5	35.7

Table 6.20
Types of professional information versus speciality at the 0.01 confidence level
Drug related to teaching
(X2=11.56, df=3, Coef.Sig. 0.009)

Need	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No	40	74.1	18	72.0	45	57.7	14	100.0
Yes	14	25.9	7	28.0	33	42.3	0	0.0

In terms of drug- related information for teaching, all categories of professionals have low need for this specific information (with anaesthesiologists slightly higher). This result has also been noted in the literature, where it has been found that drug information ranks highest with anaesthesiologists.

To test the assumption that speciality influences the use of certain sources of information by health professionals in Brazil, we used data provided by Questions Three and Nine. Chi-squared tests were run for 11 information sources: Seventeen out of 33 tests were eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the sixteen remaining sources of information, the following correlated significantly with speciality at the 0.01 level of confidence (Tables 6.21-6.23).

Table 6.21
Information sources versus speciality at the 0.01 confidence level
Own journals related to patient care
(X2=16.87, df=6, Coef.Sig. 0.009)

Frequency	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No use	19	20.2	6	25.0	20	31.3	14	56.0
Less than once/month	12	12.8	5	20.8	4	6.2	3	12.0
At least once/month	63	67.0	13	54.2	40	62.5	8	32.0

The pattern of use of one's own journals, according to Table 6.21, is very similar for all categories except Basic Science. This result can be understood in terms of the lack of interest in Patient Care by professionals involved in Basic Sciences. It will be noted that a majority of the respondents in all the other categories use this source of information at least once a month. The literature indicates a tendency on the part of health professionals to build their personal collections, and some studies suggest they have a preference for this type of information source.

Table 6.22
Information Sources versus speciality at the 0.01 confidence level
Internal meetings related to patient care
(X2=31.86, df=6, Coef.Sig. 0.000)

Frequency	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No use	17	18.1	10	41.7	19	29.7	17	68.0
Less than once/month	18	19.1	5	20.8	19	29.7	5	20.0
At least once/month	59	62.8	9	37.5	26	40.6	3	12.0

Professionals involved in specialities related to internal medicine and anaesthetics make use of internal meetings as an information source for Patient Care much more frequently than the other two categories. Table 6.22 also suggests that Surgeons use this source of information less than their colleagues in other medical specialities, but more than professionals involved in Basic Science. The literature suggests, more generally, that those in theoretical fields are more likely to use formal sources; those in applied fields are more likely to use informal sources.

The data presented in Table 6.23 suggest that again professionals involved in Basic Science make less usage of newspapers/magazines for Patient Care information: the reason has already been discussed. All other categories make appreciable use of this source of information.

Table 6.23
Information sources versus speciality at the 0.01 confidence level
Newspapers/magazines related to patient care
(X2=25.67, df=6, Coef.Sig. 0.000)

Frequency	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No use	22	23.4	6	25.0	16	25.0	17	68.0
Less than once/month	26	27.6	9	37.5	11	17.2	2	9.0
At least once/month	46	49.0	9	37.5	37	57.8	6	24.0

When the influence of speciality on the use of information sources by health professionals in the UK was tested with data provided by Questions Three and Nine, only one source correlated significantly at the 0.01 confidence level, but it was eliminated from the analysis because some 60% of the expected frequencies were less than 5. However, three correlated significantly at the 0.05 confidence level. One was eliminated because 25% of the expected frequencies were less than 5. The other two sources were: Pre-prints/off-prints when used for Research, and Newspapers/magazines when used for Patient Care.

To test the possible influence of speciality on restrictions to the use of information channels by health professionals in Brazil, data from Questions Three and Eight were used. Chi-squared tests were run for all five information channels where type of restriction could be related to categories of speciality. Four out of ten tests were

eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the six remaining tests, only one channel correlated significantly at the 0.01 confidence level (Table 6.24). The results indicate that personnel in Basic Science had the least restriction on phone calls, and Surgery the most. It may be that a problem here was differing opportunities for physical access to a telephone.

Table 6.24
Degree of restriction on the usage of information channels
Phone Calls
(X2=23.08, df=6, Coef.Sig. 0.000)

Degree of Restriction	Internal Medicine		Surgery		Anaesthetics		Basic Science	
	n	%	n	%	n	%	n	%
No Restriction	39	41.5	5	20.8	25	39.1	21	84.0
Some Restriction	37	39.4	14	58.3	29	45.3	3	12.0
High Restriction	18	19.1	5	20.8	10	15.6	1	4.0

To test whether, or not, the speciality influences restrictions on the use of information channels by health professionals in the UK, data provided by Questions Three and Eight were used. Chi-squared tests were run for all five information channels where restriction could be related to all categories of speciality. Four out of ten tests were eliminated from the analysis because 25% or more of the expected frequencies were less than 5. Of the six remaining tests, no channel correlated significantly at the 0.01 or 0.05 confidence levels. Hence, speciality does not influence the degree of restriction faced by health professionals in the UK.

6.2.3 The influence of experience on information-acquisition by health professionals

It is possible that senior health professionals use types of information and information sources differently from their colleagues who have fewer years experience in the institution. To test whether or not this assumption is true, data from Questions One and Six were first used to see whether experience influences the need for certain types of professional information by health professionals in Brazil. Chi-squared tests were run for all eight types of professional information and related to the three activities, patient care, research and teaching in terms of length of experience. No type of information correlated significantly with experience at the 0.01 confidence level. Only one type correlated significantly with experience at the 0.05 confidence level (Drug information related to Patient Care).

To test this same assumption for health professionals in the UK, data provided by Questions One and Six were used. Chi-squared tests were run for all eight types of professional information and related to the three activities, patient care, research and teaching in terms of length of experience. No type of information correlated significantly with experience at the 0.01 confidence level. Results show that we have to accept that experience does not influence the need for certain types of professional information by health professionals in the UK.

In order to verify whether or not experience influences the use of certain sources (rather than types) of information by health professionals in Brazil, data provided by Questions One and Nine were used. Chi-squared tests were run for all eleven information sources and related to the three activities, patient care, research and teaching in terms of length of experience. No information source correlated significantly with experience at the 0.01 confidence level. One source correlated significantly at the 0.05 confidence level (e.mail with financial restriction).

To test the same assumption for health professionals in the UK, data provided by Questions One and Nine were used. Chi-squared tests were run for all eleven information sources, and related to the three activities, patient care, research and teaching in terms of length of experience. No source of information correlated significantly with experience at the 0.01 confidence level. Five sources correlated significantly at the 0.05 confidence level. Three were eliminated for having 40% of the cells with less than 5. The remaining two are:

- Internal meetings related to research,
- Pharmaceutical Representatives related to patient care.

To test the hypothesis that experience influences restrictions on the use of information channels by health professionals in Brazil, data provided by Questions One and Eight were used. Chi-squared tests were run for all five information channels, and related to degrees of restriction and financial restriction as a function of experience. No channel correlated significantly with experience at the 0.01 confidence level. The same tests were carried out with data provided by Questions One and Nine in order to see whether experience influences restrictions on the use of information channels by health professionals in the UK. No information source correlated significantly with experience at the 0.01 confidence level.

6.2.4 The influence of productivity on information-acquisition by health professionals

It is possible that the productivity levels of health professionals may influence their use of information sources. To test whether or not this is true for health professionals in Brazil, data provided by Questions Five and Nine were used. Chi-squared tests were run for all eleven information sources, and related to patient care, research and teaching as a function of productivity. Eleven sources of information correlated significantly with productivity at the 0.01 confidence level. Of these, three were

eliminated from the analysis for having a third of the cells with frequency less than 5. Of the remaining sources of information, the following correlated significantly with productivity at the 0.01 confidence level (Tables 6.25-6.32).

Table 6.25
Information sources versus production of research at the 0.01 confidence level
Use of own journals related to research
(X2=14.95, df=2, Coef.Sig. 0.000)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	100	62.9	21	13.2	38	23.9	159	100.0
Yes	15	31.2	12	25.0	21	43.8	48	100.0

The data in Table 6.24 suggest that health professionals who publish research make considerable use of their own journals as a source of information for research (over two-thirds). Among those who do not publish research the percentage use of this source of information is much lower. Table 6.25 similarly suggests that productive researchers also use their own journals more for teaching purposes. The literature indicates that personal collections are valued by physicians as a primary source of information, but medical libraries are much more used when they need to do information searches.

Table 6.26
Information sources versus production of research at the 0.01 confidence level
Use of own journals related to teaching
(X2=11.96, df=2, Coef.Sig. 0.002)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	107	67.3	12	7.5	40	25.2	159	100.0
Yes	19	39.6	6	12.5	23	47.9	48	100.0

Table 6.27
Information sources versus production of research at the 0.01 confidence level
Use of own books related to research
(X2=12.85, df=2, Coef.Sig. 0.001)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	86	54.1	11	7.0	62	38.9	159	100.0
Yes	14	29.2	10	20.8	24	50.0	48	100.0

Health professionals who have produced research also make more use of their own books as a source of information both in connection with research (Table 6.27) and teaching (Table 6.28).

Table 6.28
Information sources versus production of research at the 0.01 confidence level
Use of own books related to teaching
(X2=15.12, df=2, Coef.Sig. 0.000)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	100	63.0	9	5.6	50	31.4	159	100.0
Yes	15	31.2	6	12.5	27	56.3	48	100.0

Table 6.29
Information sources versus production of research at the 0.01 confidence level
Internal meetings related to teaching
(X2=19.10, df=2, Coef.Sig. 0.000)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	111	69.8	20	12.6	28	17.6	159	100.0
Yes	19	49.5	6	12.5	23	48.0	48	100.0

Table 6.29 indicates that internal meetings are used as a source of information by more than half of the group of productive researchers when they are involved in teaching activities.

Table 6.30
Information sources versus production of research at the 0.01 confidence level
External meetings within the country related to research
(X2=10.56, df=2, Coef.Sig. 0.005)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	124	78.0	31	19.5	4	2.5	159	100.0
Yes	26	54.1	19	39.6	3	6.3	48	100.0

Although health professionals value external events as source of information, they do not use them very frequently. More productive researchers use them more that those with no research publications. Budget restrictions in the majority of the hospitals and low incomes are the main obstacles to attending such meetings faced by health professionals in Brazil.

Table 6.31
Information sources versus production of research at the 0.01 confidence level
Newspapers/magazines related to research
(X2=26.11, df=2, Coef.Sig. 0.000)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	110	69.2	20	12.6	29	18.2	159	100.0
Yes	14	29.1	10	20.8	24	50.0	48	100.0

As Tables 6.31 and 6.32 indicate, newspapers and magazines are sources of information that are used quite frequently by research-active health professionals both

for their research and for their teaching. The literature reports some studies of professions which indicate they attach importance to media information.

Table 6.32
Information sources versus production of research at the 0.01 confidence level
Newspapers/magazines related to teaching
(X2=15.68, df=2, Coef.Sig. 0.000)

Research Publications	No use		Less than once/month		At least once/month		Total	
	n	%	n	%	n	%	n	%
No	110	69.2	21	13.2	28	17.6	159	100.0
Yes	18	37.5	13	27.1	17	35.4	48	100.0

To see whether, or not, there are differences in the usage of sources by research-active and research-inactive health professionals in the UK, tests were carried out with data provided by Questions Five and Nine. Chi-squared tests were run for all eleven sources of information related patient care, research and teaching as a function of productivity. Seventeen information source correlated significantly with productivity at the 0.01 confidence level. All of these were eliminated from the analysis for having a third or more of cells with frequency less than 5. Similarly, ten sources were correlated significantly at the 0.05 confidence level, but they were all eliminated from the analysis for having a third or more of cells with frequency less than 5.

6.2.5 A comparison of Brazil and the UK

The results of the interviews performed to complement the information gathered through questionnaires also show some similarities between the UK and Brazil. In terms of keeping track of recent developments, health professionals in teaching

hospitals in the UK rely primarily on journal articles, meetings and colleagues. In Brazil, meetings precede journal articles and colleagues. Journal collections in Brazilian libraries do not always have the most important titles, or if they hold them, there is some discontinuity in the collection. Brazilian health professionals therefore, regard meetings as of great value.

Chi-squared tests were run on the same type of data from non-teaching hospitals in the UK and Brazil, but the results had to be eliminated from the analysis because a third of the cells had a frequency of less than 5. Comparing the results, however, it appears that there is a general similarity in the way health professionals keep track of recent developments in non-teaching hospitals in the UK and Brazil: journals, conferences, congress, seminars, meetings, etc., and colleagues are the sources regarded as of primary importance.

Some two-thirds of the population from the teaching hospital in the UK agreed that they get to know about research from other countries mainly through reading journals. At the same time, 87.5% of Brazilian health professionals from teaching hospital obtained information on research from abroad both through reading journal articles and from attending conferences, congresses, etc. Similar results were obtained from non-teaching hospitals; 71.4% of health professionals in non-teaching hospitals in the UK agreed they looked for research from other countries, whereas the figure in Brazil was 100.0%. Due to the problems of journal acquisition, Brazilian professionals always mention meetings as a method of becoming aware of recent information in their area of interest.

In terms of number of journal titles that health professionals subscribe to, there is some similarity between the UK and Brazil; more especially, the majority of health professionals in teaching hospitals subscribe to either one, or two titles in both countries. Over a quarter in both the UK and Brazil subscribe to three or more

journals. In terms of position, 54% of Consultants subscribe to one, or two journals; the remainder subscribe to more. By way of comparison, 80% of Junior Doctors subscribe to one, or two journal titles, and the remaining 20% to more.

The majority of health professionals in the UK (58.1%) buy an average of one, or two books per year, 22.6% buy between 3 and 5 titles, and 19.3% do not buy any books. In Brazil, 46.9% buy an average of one, or two titles per year, 37.5% between 3 and 5 titles, and 15.6% more than 5 titles: none buy no books.

In the UK, 72.7% of Consultants buy one, or two titles per year, and 27.3% to do not buy any. This compares with Junior Doctors of whom 44.5% buy between 3 and 5 titles, 33.3% between 1 and 2, and 22.2% do not buy any books per year. Amongst Nurses, 83.3% buy an average of one, or two books per year; 16.7% do not buy any books. Finally, 60% of personnel in other positions buy three or more books, and 40% either one, or two per year.

In Brazil, 38.5% of Consultants buy one, or two books per year; the remainder buy more. Amongst Junior Doctors, half acquire one, or two titles, and the other half acquire more. Two thirds of Nurses buy one, or two titles and the rest more. For personnel in other positions these proportions are reversed. It seems that the problems with journal and book acquisition by libraries forces Brazilian health professionals to have their own collections to a greater extent than their counterparts in the UK.

The majority of health professionals in non-teaching hospitals in the UK subscribe to between 3 and 5 journal titles, and the remainder to one, or two. In Brazil, 40% subscribe to one, or two journal titles, 35% to between 3 and 5, and 10% to more than 5 titles. In addition, 15% do not subscribe any journal title.

In such hospitals in the UK, the proportions subscribing to one, or two journals titles is zero for Consultants, 42.9% for Junior Doctors, 100% for Nurses, and 75% for personnel in other positions. The distribution of subscriptions for 3 to 5 titles is: Consultants--100%; Junior Doctors--57.1%; Nurses--zero, and Others--25%.

In Brazil, the equivalent figures for Consultants are: 45.5% of Consultants subscribe to one, or two journal titles, 36.4% to 3-5, and 18.1% to more than 5 titles. In comparison, 50% of Junior Doctors subscribe to one, or two journal titles, and 50% to between 3 and 5. None have more than five subscriptions. Of Nurses, 20% of subscribe to one, or two journal titles, 20% to between 3 and 5, and 60% do not subscribe to any title. Finally, amongst those in other positions, half subscribe to one, or two journal titles, and the other half between 3 and 5 titles.

Altogether, 42.8% of health professionals In the UK, buy one, or two books per year, 28.6% buy between 3 and 5 titles, 9.5% buy more than 5 books, and 19.1% do not buy any books. The corresponding figures in Brazil are: 50% buy one, or two titles per year, 25% between 3-5 titles, and 25% buy more than 5 titles.

In the UK, 71.4% of Consultants buy one, or two titles per year, whilst 28.6% do not buy any. In comparison, 57.1% of Junior Doctors buy between 3 and 5 titles, 14.3% buy one, or two, and 28.6% do not buy any books per year. All the Nurses surveyed buy one, or two books per year. Half of the personnel in other positions buy 3-5 books, and the remainder buy more than five titles of books per year.

In Brazil, 36.4% of Consultants buy one, or two per year, 36.4% buy more than five titles, and 27.2% buy 3-5 books. Half of the Junior Doctors acquire one, or two titles, and the other half between 3 and 5. Amongst Nurses, 80% buy one, or two titles and 20% more than 5 books. Half of the personnel in other positions buy one, or two books, and half between 3 and 5 books per year.

Health professionals' reliance on their colleagues as information sources has been reported in the literature and already in this investigation in previous sections. British health professionals in teaching hospitals indicated in this survey that they consider meetings, conferences, seminars, etc., to be the best occasions for discussions. Their Brazilian counterparts pointed rather to clinics, wards, offices and theatres. It seems that Brazilians prefer to discuss with their colleagues actual problems on which they are working, rather than those appearing in colleagues investigations. The coffee room is a popular place for discussion in the UK, but not in Brazil. In Brazil, coffee is usually served in the individuals' offices.

The most useful discussions health professionals have with their colleagues in non-teaching hospitals in the UK are at meetings, conferences, workshops, seminars, medical audit and tutorials. They also recognise that they exchange useful ideas while they are in clinics, wards, offices and theatres. The coffee room comes third place in terms of priority. In Brazil, users in non-teaching hospitals believe that the most useful discussions are held in the clinics, wards, offices and theatres. Meetings, conferences, workshops, seminars and medical audit are their second priority. In this case, they did mention discussions over coffee at a lower priority.

When health professionals at teaching hospitals were asked to indicate other information sources, apart from the ones already mentioned, they frequently repeated ones that had already been specified. The only new additions were training courses, tapes and patients. The same result was obtained in the non-teaching hospitals. This underlines the fact that meetings, colleagues and journals are the most important sources of information for health professionals.

Similarities also occurred between the two countries when health professionals were asked to name sources from which they got new ideas for their work. Health

professionals from teaching hospitals in the UK and Brazil mentioned external meetings, courses, conferences and journals as of primary importance, followed by patient conditions, research problems, up-dated colleagues, and lectures. A Chi-squared test showed no significant difference between the two countries.

At the non-teaching hospitals in the UK, patients' conditions were mentioned as the primary source for new ideas, followed by up-to-date colleagues. For Brazilian health professionals working in non-teaching hospitals, better working conditions was mentioned very frequently as a necessary condition for innovation. Patient problems were the second most important stimulus for generating new ideas for their work. Because of low salaries, Brazilian doctors have to work under great pressure. They usually have two, or more jobs in different hospitals, usually far from each other, in order to make a reasonable income at the end of the month. One of them in the course of an interview mentioned that, at that time of the day (it was 11 am.), he had already driven from one hospital in the town centre (where he had another job) and that, after 4 p.m., he had to leave to start consultations at a private clinic. Although health professionals in the UK also mentioned pressure of work, they typically worked within a better defined environment.

CHAPTER SEVEN
CONCLUSIONS

As noted in previous Chapters, the purpose of this investigation has been to study the perceptions medical practitioners have of their own information acquisition from sources found both within and outside the medical libraries. These perceptions have been traced via observation and discussions with them of specific information activities they are performing and, more generally, through questionnaires to find out how they acquire a wider spread of information.

The approaches used in this investigation made it possible to develop a picture of the information habits and preferences of users from different perspectives. The cognitive approach employed helped identify these information habits and preferences of users in the context of the medical library. Using this approach aided the identification of the paths chosen by users to find the information they needed. The question of how users find solutions for their information problems outside the libraries was explored via a systems approach using an integrated questionnaire/interview methodology. The combination of specific studies within the library and more general studies outside proved helpful in developing a librarian-oriented view of the information activities within hospitals. The choice of hospitals and the sizes of the samples were such that the results of the present investigation can, with appropriate caution, be generalised.

As a part of the design of this study, a series of hypotheses were generated (see Chapter 3). It can now be asked how these hypotheses have fared in the light of the discussions in Chapter 6.

Hypotheses on the influence of position on information-acquisition by health professionals:

a) on the basis of the analysis, we can conclude that certain types of professional information and certain positions are related in terms of differential usage. In Brazil and in the UK, health professionals have a similar pattern of need for types of information. In Brazil, clinical audit related to teaching, new procedures/new drugs related to teaching, basic scientific and medical information related to teaching and new procedures/new drugs related to patient care correlated significantly in terms of usage. In the UK, the following types of professional information correlated significantly in terms of usage: clinical audit related to teaching, diagnosis related to patient care and state-of-the-art related to patient care;

b) in Brazil, sources of information used by health professionals showed correlation with position. The following correlated significantly: discussion with colleagues from own hospital related with teaching and own journals related to research. In the UK, the following information sources correlated significantly with position: radio/TV programmes related to patient care, newspapers/magazines related to patient care and newspapers/magazines related to research;

c) in Brazil, position influenced the degree of restriction on the usage of phone calls as information channel. In the UK, fax usage restrictions were influenced by position.

Hypotheses on the influence of speciality on information-acquisition by health professionals:

a) In Brazil, the following types of professional information correlated significantly with speciality: prognosis related to patient care and therapy related to patient care. In the UK, prognosis related to patient care, therapy related to patient care and drug information related to teaching;

b) In Brazil, the following information sources correlated significantly with speciality: own journals related to patient care, internal meetings related to patient care and newspapers/magazines related to patient care. In the UK, no sources of information correlated significantly with speciality;

c) In Brazil, restrictions on the usage of only one information channel correlated significantly with speciality - phone calls. In the UK, no information channel correlated significantly with speciality.

Hypotheses on the influence of experience on information-acquisition by health professionals:

a) In Brazil, drug information related to patient care correlated significantly with experience at the 0.05 confidence level. In the UK, no type of information correlated significantly with experience;

b) In Brazil, one source of information correlated significantly at the 0.05 confidence level (e.mail with financial restriction). In the UK, no source of information correlated significantly with experience;

c) In Brazil and in the UK, experience did not influence restrictions on the use of information channels by health professionals.

Hypotheses on the influence of productivity on information-acquisition by health professionals:

a) In Brazil, the following information sources correlated significantly with productivity: own journals related to research, own journals related to teaching, own books related to research, internal meetings related to teaching, external meetings within the country related to research, newspapers/magazines related to research and newspapers/magazines related to teaching. In the UK, all information sources were

eliminated from the analysis for having a third or more cells with frequency less than 5.

7.1 The findings

Having looked at each hypothesis individually, it is appropriate, finally, to summarise the main results. The first point to emerge from this study is that the types of information requirement that medical practitioners have of their hospital library differs appreciably with the status of the library (teaching or non-teaching), but less with country (in this case, Brazil and the UK). Similarly, the types of activity carried out by library staff with, or for users in teaching hospital libraries have much in common between Brazil and the UK. Where the difference comes is in user expectations of library facilities. The information environment is clearly more restricted in Brazil than in the UK. This is reflected, for example, in the relative availability of journals, and the ability to up-date library collections.

Brazilian practitioners have adapted to information restrictions in a number of ways. They often purchase their own material out of necessity (though they may read material so purchased in the library); they refer to books when their UK counterpart might turn to a journal; they are more reconciled to using inter-library loans than their opposite numbers in the UK. This last point does not mean that they would not rather have the material close to hand. It is simply that they are grateful for the new possibilities of acquiring information that improvements in inter-library loan have opened up.

Nevertheless, they recognise that this adaptability may bring problems. They note, in particular, the problem of using out-of-date information (which can be a serious matter in medicine). In addition, a number of medical practitioners in Brazil, mainly in non-teaching hospitals, experience difficulties in coping with foreign languages.

Consequently, even when they obtain appropriate information, they may have problems in fully comprehending it.

There are some similarities across all types of hospital in the reasons users have for seeking information. The emphasis in all hospitals is on personal learning, but some differences were found between teaching and non-teaching hospitals in the two countries; teaching hospitals give much greater emphasis to research information, while non-teaching hospitals give a relatively greater emphasis to patient care information.

When categories of medical staff are considered, there are some differences between hospitals in the UK and Brazil. Medical staff in the UK are mainly concerned with information relating to patient care and research, whereas academic staff seek primarily information relating to teaching and research. In Brazil, medical staff seek primarily information relating to patient care and learning, and academic staff are mainly concerned with research and learning. Brazilian students also emphasise learning, but research is mentioned by them more often than their counterparts in the UK. Overall, research is a more important theme in British hospitals than in Brazilian. At the same time, where teaching is carried out, the British staff appear to give more emphasis to information acquisition than do their Brazilian equivalents.

The ability of British libraries to assist users is much higher than it is for Brazilian libraries. Very often Brazilian libraries in teaching and non-teaching hospitals do not have an automated system to help users. Brazilian libraries still use a card catalogue as the main instrument for locating materials in the library. As users are not very knowledgeable in the use of the library, staff in Brazilian libraries are continuously busy answering elementary questions and locating materials in the shelves. Although the libraries may offer literature searches on medical databases, access to terminals is

restricted to the library staff, (indeed, some staff are permanently dedicated to this type of work).

Brazilian and British health professionals have similar needs for professional information in order to perform their work. This is reflected, for example, in the finding that basic scientific and medical information is the most important type of professional information in both countries, independent of the type of hospital. Differences can be related to national conditions. Books are highly used by Brazilian health professionals, while their British counterparts mentioned external meetings within the country. This reflects geographical factors, as well as financial ones. Thus it was found that attending conferences, congresses, seminars, and other meetings was considered an important and efficient way of keeping track of new developments. However, restrictions on attending these events, especially financial restrictions, operated differentially in Brazil and the UK. It should be noted that staff in non-teaching hospitals in Brazil see better working conditions and salaries as essential before information can be used in an innovative way.

Brazilian health professionals showed a greater interest in knowing about research from other countries than their counterpart in the UK. In both countries, journal articles are considered the best way to keep track of research from abroad, but access to them is worse in Brazil. Although private collections of material are an important source of information for work in both countries, health professionals in the UK and Brazil have differing levels of purchases. In the UK, they buy, on average, one or two books per year, while in Brazil they buy appreciably more.

7.2 The implications

This investigation has some implications for medical libraries, more especially for those in Brazil. The main implications are:

- since journals are considered the primary source of information for keeping track of recent developments in medicine, Brazilian medical libraries must find some way of increasing access to them;
- Brazilian medical libraries must initiate policies for their collection development with clearer links to users' needs;
- Brazilian librarians should monitor users' needs on a regular basis in order to offer more effective services;
- a greater availability of automated information would be widely accepted as a way of improving the currency of the information provided by Brazilian medical libraries (on-line electronic journals, for example);
- the implementation of translation services would be a major help in overcoming language problems.

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APPENDIX 1

DESCRIPTION OF LIBRARIES IN THE UK AND BRAZIL

LIBRARIES IN UK

Clinical Sciences Library

The major part of the collection at this branch is devoted to the clinical practice of medicine, nursing, etc. It also includes material for the management and delivery of health care, and related subject areas.

Loan collection

- The books for loan are shelved on the 1st floor. There is no separate section for "short loan books"; they are shelved in with the other books.
- There are most relevant Government reports, but many more of them are held at the main branch of the University Library in the Official Publications Section.

The Clinical Library has a standing order for most of the World Health Organisation publications, particularly those that are relevant to Europe. These are shelved in the classified sequence with the other books for loan.

Reference collections

- Reference books (for use in the library only) are shelved on the ground floor. They include standard reference material (encyclopaedias, dictionaries, directories etc.), copies of texts recommended to medical students, and standard texts covering the major clinical specialities.
- Some books relevant to Fellowship examinations are in a separate section on the ground floor. The medical student examination papers (samples and previous year's papers) are also shelved here.
- Statistical data, contained in selected series, and other publications which contain numerical data on health, are brought together in a section on the ground floor, near the current issues of journals.

Audio-visual facilities

- There is a small collection of videos and tape slide presentations. They are not ordinarily for loan, but may be taken out for group teaching sessions.
- Earphones for use with the videos and the tape/slide collections in the library are available from the Enquiry desk.
- The Leicester Royal Infirmary slide collection is held in the library. These slides may be loaned for a few days. The collection is currently being listed on a computer database, but this is not yet operational.

Journals

- The latest issue of each journal is displayed at the far end of the ground floor. They are arranged alphabetically by their titles.
- All the other, back issues of the journals are shelved in the same alphabetical order on the 1st floor. They are normally for use in the library only.

LIBERTAS - the Library's automated system at CSL

There are two terminals on the ground floor and one on the first floor, which give access to the automated services of the University of Leicester Library:

News and information about the library and its branches;

- A listing of the newer and more popular books and every journal title in each of the three branches;
- Information about users' borrowing, reservations etc. (a card and security number are needed).

Literature Searching

Printed abstracts and journals

These are arranged alphabetically by their titles on the ground floor.

Computerised databases

- A five year backrun of MEDLINE and the Ethnic Health File are available to readers on the CD-ROM machines.

- The computerised forms of EMBASE and the Science Citation Index, Social Science Citation Index etc. (BIDS) are available by licence agreement with the University for University of Leicester staff and students only.
- The Oxford Database of Prenatal Trials, which is a computerised register of controlled trials in prenatal medicine is available for use on an IBM machine.
- More extensive literature searches, using these and other databases for research purposes, can be done.

Leicestershire Medical Historical Collection

The journals and 20th Century books are shelved on the first floor. For access to the rest of the collection readers must fill in a registration form at the Enquiry Point.

Opening Hours

- 9.00 - 22.00 hours weekdays
- 9.00 - 18.00 hours Saturdays
- 14.00 - 21.00 hours Sundays.

Staff

- Librarian in Charge
- Deputy/Information Librarian
- Lending (one person)
- Book orders (one person)
- Inter library loans (one person
- Journals (two persons)
- General administration (one person).

Hemel Hempstead General Hospital Library

The Medical Library is situated in a portakabin by the Accident and Emergency entrance to the hospital behind the junior mess lodge. It is open to all health service staff. There is out of hours key access. The library has 1600 books and 100 current journals. Most areas of medicine and health are covered. A catalogue of the book stock is available, part in a card index and part (more recent stock) as a computer print out in folders in the library. A holdings list of journals held in the library is also available.

Photocopying

- A photocopier is available. Users may photocopy, or ask to have photocopied, articles or pages from books subject to Copyright Regulations.

Requests

- Any book or article not immediately available may be requested. A wide network of local and national libraries are used to supply items on inter-library loan.

Subject Searches

- Library staff can carry out manual or computer literature searches. MEDLINE on CD-ROM is available in the library. Searches can be done by staff or individuals can learn to search for themselves.

Staff

- Librarian (one) Library Assistant (one)

Opening Hours

- Monday - Thursday 9.30am - 5.00pm
- Friday 9.30am - 4.30pm.

St Albans City Hospital Library

The staff library is located in the Postgraduate Centre and is open to all health service staff. For out of hours access a key to the Postgraduate Centre may be obtained on payment of a deposit. The Library has 3500 books and 120 current journals. Most areas of medicine and the health services are covered. A catalogue of the books is available on the library computer and printed out in blue folders in the Library. A holdings list of which journals are held is also kept in the Library.

Photocopying

- A photocopier is available. Users may photocopy, or ask to have photocopied, articles or pages from books subject to Copyright Regulations.

Subject Searches

- Library staff can carry out manual or computer literature searches. They also have MEDLINE on CD-ROM which one can learn to use or have searches done by the Librarian.

Staff

- Librarian (one) Library Assistant (one)

Opening Hours

- Monday - Thursday 9.30am - 5.00pm
- Friday 9.30am - 4.30pm.

LIBRARIES IN BRAZIL

University Hospital Library

The library has 20.319 books and 327 current journals. Most areas of medicine and health are covered.

Loan collection

- The entire collection is available for loan, books and journals except the reference materials, such as abstracts, indexes, dictionaries, etc.

Literature Searching

- Printed abstracts and journals
- Computerised databases (MEDLINE and LILACS)
- The library carries out computer literature searches. MEDLINE on CD-ROM is available and MEDLINE and LILACS (Latin American Database on Health Information) are also available on-line when connected to BIREME (Latin American Centre for Information on Health Sciences), located in Sao Paulo, Brazil.

Photocopying

- A photocopier is available. Users ask to have photocopied articles or pages from books.

Opening Hours

- 7.00 - 18.00 hours weekdays

Staff

- Librarian in Charge
- Information Librarian (one person)
- Lending (four persons)
- Interlibrary loan (one person)
- Indexing (one person)

- Journals (one person)
- Library Assistant (two persons)

State General Hospital Library

The library has 1033 books and 37 current journals that the library receives on donation from publishers; 35 Brazilian titles and 2 from abroad. The books and journals are not available for loan. The users use them within the library or have them photocopied in the library.

Opening hours

- 7.00 - 17.30 hours weekdays.

Staff

- Librarian in charge
- Library Assistant (two persons).

Ceasar Calls Hospital Library

The library has only 540 books and does not subscribe any title of journals. There are some collections but no current journals.

Opening Hours

- 8.00 - 16.00 hours daily
- 18.00- 20.00 hours daily.

Staff

- Librarian in Charge
- Library Assistant (one person).

APPENDIX 2

QUESTIONNAIRE (ENGLISH VERSION)

DILS
Loughborough University of Technology Department of Information and Library Studies

TRANSFER OF INFORMATION AMONG HEALTH PROFESSIONALS

The basic aim of this project is to examine the problems of information transfer in the context of hospitals in two countries, the UK and Brazil. This entails identifying patterns of information use and need by medical professionals and ancillaries in both countries, and especially determining deficiencies in satisfying information needs. It is intended that this study will be used to help provide effective information assistance in Brazilian hospitals.

Last year we undertook a study of the use of library facilities at the LEICESTER ROYAL INFIRMARY. We would like to ask your co-operation once again to help complete this study.

We have studied, via participant observation and interview, the way in which medical staff obtain information through their hospital libraries. Now we are starting to study how medical staff obtain information from sources outside the hospital library.

This questionnaire has been designed with your time and patience in mind, so the majority of questions only require you to tick the appropriate box. We would be most grateful if you could answer the questions, and return the questionnaire, via the internal mail to:

Dr. John Todd
Chief Executive Department
LEICESTER ROYAL INFIRMARY.

We may need to interview some respondents to this questionnaire in order to obtain a little more detail. The interviews will only last for approximately ten minutes, but if you would prefer not to be approached, please tick the box below.

No ( )

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

TRANSFER OF INFORMATION AMONG HEALTH PROFESSIONALS

1. **How long have you been working in this health area?** years ☐☐ ☐☐ months

2. **What position do you currently hold?** _____

3. **What is your main speciality?** _____

4. **What proportion of your time do you devote to each of the following?**

Patient Care	☐☐	%
Administration	☐☐	%
Research	☐☐	%
Teaching	☐☐	%

5. **Have you produced any research publication since 1st January 1993?**

yes ☐
no ☐

If yes, please estimate numbers of items (published or accepted for publication) in the adjoining column:

	Number
Journal Articles	☐☐
Review Articles	☐☐
Short Communications	☐☐
Books	☐☐
Chapters in Books	☐☐
Reports	☐☐
Others	☐☐

6. **Which of the following types of professional information do you need for your work ?**

	Patient Care	**Research**	**Teaching**
• Basic scientific and medical information	☐	☐	☐
• Information on "the state of the art"	☐	☐	☐
• New procedures/new drugs	☐	☐	☐
• Drug information	☐	☐	☐
• Clinical Audit	☐	☐	☐
• Prognosis	☐	☐	☐
• Diagnosis	☐	☐	☐
• Therapy	☐	☐	☐

7. **Which are the most important information sources you use in your work?**
Please rank the most important two in each of the three categories by ticking the appropriate boxes.

Role	Patient Care		Research		Teaching	
SOURCES	First Priority	Second Priority	First Priority	Second Priority	First Priority	Second Priority
1. Personal Information Sources						
2. Departmental Information Sources						
3. Colleagues' Information Sources						
4. Discussion with Colleagues						
5. Your Hospital Library						
6. University Library						
7. Information from External Sources						
8. Others						

8. **To what extent are there restrictions on your use of the following channels for obtaining information?** Please circle the appropriate number in the first column. **If the restriction is due to financial causes,** please also tick in the second column.

0 = no restrictions 1 = some restrictions 2 = high restriction

Channels	Degree of restriction	Financial restriction
• Travel to attend conferences, seminars, etc.	0 1 2	☐
• Phone calls	0 1 2	☐
• E-mail	0 1 2	☐
• Photocopying services	0 1 2	☐
• Fax	0 1 2	☐

Please turn over

9. Please indicate the frequency with which you have used these various information sources since lst January 1993. Tick appropriate boxes.

SOURCE	Patient Care		Research		Teaching	
	At least once/ month	Less than once/ month	At least once/ month	Less than once/ month	At least once/ month	Less than once/ month
1. Your own journals						
2. Your own books						
3. Internal meetings						
4. External meetings within the UK						
5. External international meetings						
6. Discussions with colleagues from your hospital						
7. Discussion with colleagues from other hospitals						
8. Pre-prints/off prints						
9. Radio/Television programmes						
10.Newspapers /magazines						
11.Pharmaceutical representatives						

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

After completion please return to:

Dr. John Todd
Chief Executive Department
Leicester Royal Infirmary

DILS
Loughborough University of Technology Department of Information and Library Studies

TRANSFER OF INFORMATION AMONG

HEALTH PROFESSIONALS

The basic aim of this project is to examine the problems of information transfer in the context of hospitals in two countries, the UK and Brazil. This entails identifying patterns of information use and need by medical professionals and ancillaries in both countries, and especially determining deficiencies in satisfying information needs. It is intended that this study will be used to help provide effective information assistance in Brazilian hospitals.

Last year we undertook a study of the use of library facilities at the St. Albans City Hospital and Hemel Hempstead General Hospital. We have studied, via participant observation and interview, the way in which medical staff obtain information through their hospital libraries. The preliminairy results indicated that you often obtain information from sources other than the ones found in your libraries. Now we are starting to study how medical staff obtain information from these external sources.

This questionnaire has been designed with your time and patience in mind, so the majority of questions only require you to tick the appropriate box. It will not take more than ten minutes of your time. We have selected a representative sample from the staff of both hospitals, including medical staff, technicians, physiotherapists, laboratory technicians and administration. We would be most grateful if you could answer the questions, and return the questionnaire, via internal mail to:

Helena Mendes
c/o Dr. M. Bryant
The Post Graduate Centre
Hemel Hempstead General Hospital
Hillfield Road
Hemel Hempstead
Herts HP2 4AD.

We may need to interview some respondents to this questionnaire in order to obtain a little more detail. The interviews will only last for approximately ten minutes, but if you would prefer not to be approached, please tick the box below.

No ( )

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

TRANSFER OF INFORMATION AMONG HEALTH PROFESSIONALS

1. **How long have you been working in this health area?** years ☐☐ ☐☐ months

2. **What position do you currently hold?** _____

3. **What is your main speciality?** _____

4. **What proportion of your time do you devote to each of the following?**

Patient Care	☐☐ %
Administration	☐☐ %
Research	☐☐ %
Teaching	☐☐ %

5. **Have you produced any research publication since 1st January 1993?**

yes ☐
no ☐

If yes, please estimate numbers of items (published or accepted for publication) in the adjoining column:

	Number
Journal Articles	☐☐
Review Articles	☐☐
Short Communications	☐☐
Books	☐☐
Chapters in Books	☐☐
Reports	☐☐
Others	☐☐

6. **Which of the following types of professional information do you need for your work ?**

	Patient Care	Research	Teaching
• Basic scientific and medical information	☐	☐	☐
• Information on "the state of the art"	☐	☐	☐
• New procedures/new drugs	☐	☐	☐
• Drug information	☐	☐	☐
• Clinical Audit	☐	☐	☐
• Prognosis	☐	☐	☐
• Diagnosis	☐	☐	☐
• Therapy	☐	☐	☐

7. **Which are the most important information sources you use in your work?**
Please rank the most important two in each of the three categories by ticking the appropriate boxes.

Role	Patient Care		Research		Teaching	
SOURCES	First Priority	Second Priority	First Priority	Second Priority	First Priority	Second Priority
1. Personal Information Sources						
2. Departmental Information Sources						
3. Colleagues' Information Sources						
4. Discussion with Colleagues						
5. Your Hospital Library						
6. University Library						
7. Information from External Sources						
8. Others						

8. **To what extent are there restrictions on your use of the following channels for obtaining information?** Please circle the appropriate number in the first column. **If the restriction is due to financial causes,** please also tick in the second column.

0 = no restrictions 1 = some restrictions 2 = high restriction

Channels	Degree of restriction	Financial restriction
• Travel to attend conferences, seminars, etc.	0 1 2	☐
• Phone calls	0 1 2	☐
• E-mail	0 1 2	☐
• Photocopying services	0 1 2	☐
• Fax	0 1 2	☐

Please turn over

9. **Please indicate the frequency with which you have used these various information sources since lst January l993. Tick appropriate boxes.**

SOURCE	Patient Care		Research		Teaching	
	At least once/ month	Less than once/ month	At least once/ month	Less than once/ month	At least once/ month	Less than once/ month
1. Your own journals						
2. Your own books						
3. Internal meetings						
4. External meetings within the UK						
5. External international meetings						
6. Discussions with colleagues from your hospital						
7. Discussion with colleagues from other hospitals						
8. Pre-prints/off prints						
9. Radio/Television programmes						
10.Newspapers /magazines						
11.Pharmaceutical representatives						

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

APPENDIX 3

QUESTIONNAIRE (PORTUGUESE VERSION)

Loughborough University of Technology

LOUGHBOROUGH, LEICESTERSHIRE, LE11 3TU
Telephone: 01509 263171 Telex: 34319

DEPARTMENT OF INFORMATION AND LIBRARY STUDIES
Head of Department: Professor Margaret Evans

TRANSFERÊNCIA DA INFORMAÇÃO ENTRE PROFISSIONAIS DE SAÚDE

O objetivo principal deste Projeto é examinar os problemas que ocorrem na transferência da informação no contexto de Instituicões de saúde em dois países, Reino Unido e Brasil. Isto permitirá identificar padrões de uso e necessidades de informação dos profissionais de saúde em ambos os países e, principalmente, determinar as deficiências que ocorrem no atendimento dessas necessidades.

A primeira parte deste Projeto foi estudar o uso das facilidades oferecidas pelas bibliotecas. Estudamos, através de observação e entrevista, a maneira como os profissionais de saúde obtêm informação através de suas bibliotecas. Os resultados preliminares indicaram que tais profissionais utilizam com freqüência outras fontes de informação além daquelas fornecidas pelas bibliotecas. Agora estamos iniciando o estudo de como estes profissionais obtêm informação dessas fontes externas.

Este questionário foi elaborado tendo em mente o seu tempo e paciência, daí a maioria das questões necessitar apenas de uma indicação no espaço apropriado. Não levará mais de dez minutos do seu tempo. Selecionamos uma amostra representativa dos profissionais desta Instituição, incluindo médicos, enfermeiros, farmacêuticos, fisioterapeutas, nutricionistas e profissionais ligados à Administração. Ficaríamos bastante agradecidos se este questionário fosse devolvido o mais rápido possível à equipe que está colaborando na aplicação deste instrumento de coleta de dados.

AGRADECEMOS DESDE JÁ A SUA COLABORAÇÃO

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1. **Ha quanto tempo você trabalha nesta Instituição ?** anos ☐☐ ☐☐ meses

2. **Que posição você ocupa ?** _____

3. **Qual e a sua especialidade ?** _____

4. **Que proporção do seu tempo você dedica a cada uma das seguintes atividades ?**

Trato com Pacientes	☐☐	%
Administração	☐☐	%
Pesquisa	☐☐	%
Ensino	☐☐	%

5. **Você publicou algum trabalho desde primeiro de janeiro de 1993?**

sim ☐
não ☐

Se respondeu positivamente, estime o numero de itens (publicados ou aceitos para publicação) na coluna ao lado:

	Número
Artigos de Periódico	☐☐
Artigos de Revisão	☐☐
Comunicações	☐☐
Livros	☐☐
Capítulos de Livros	☐☐
Relatórios	☐☐
Outros	☐☐

6. **Quais dos seguintes tipos de informação profissional você necessita para o seu trabalho ?**

	Trato com Pacientes	**Pesquisa**	**Ensino**
• Informação médica e científica básicas	☐	☐	☐
• Informação sobre "o estado da arte" (review)	☐	☐	☐
• Novos procedimentos/novas drogas	☐	☐	☐
• Informação sobre medicamentos	☐	☐	☐
• Auditoria Clínica (Sessão Clínica)	☐	☐	☐
• Prognóstico	☐	☐	☐
• Diagnóstico	☐	☐	☐
• Terapia	☐	☐	☐

7. **Quais são as mais importantes fontes de informação que você utiliza no seu trabalho?**
Aponte no espaço apropriado as duas mais importantes em cada categoria.

Atividades	Trato com Pacientes		Pesquisa		Ensino	
FONTES	Primeira Prioridade	Segunda Prioridade	Primeira Prioridade	Segunda Prioridade	Primeira Prioridade	Segunda Prioridade
1.Fontes de informação pessoal						
2. Fontes de informação do Departamento ou setor de trabalho						
3. Fontes de informação de colegas						
4. Discussão com colegas						
5. Biblioteca da instituição						
6. Biblioteca da Universidade						
7. Fontes externas de informação						
8. Outras						

8. **Até que ponto você encontra restrições ao uso dos seguintes canais para obter informação ? Circule o número apropriado na primeira coluna.**
Se a restrição se dever a motivos financeiros, tique a segunda coluna.

0 = sem restrições 1 = algumas restrições 2 = muita restrição

Canais	Nível de restrição			Restrição Financeira
• Viagens para conferências, seminários, congressos, etc.	0	1	2	☐
• Chamadas Telefônicas	0	1	2	☐
• Correio Eletrônico (E-mail)	0	1	2	☐
• Xerox	0	1	2	☐
• Fax	0	1	2	☐

9. Indique com que freqüência você utiliza as seguintes fontes de informação desde primeiro de janeiro de 1993. Tique o espaço apropriado.

ATIVIDADES	Trato com Pacientes		Pesquisa		Ensino	
FONTES	Pelo menos uma vez ao mês	Menos de uma vez ao mês	Pelo menos uma vez ao mês	Menos de uma vez ao mês	Pelo menos uma vez ao mês	Menos de uma vez ao mês
1. Seus próprios periódicos						
2. Seus próprios livros						
3. Reuniões internas						
4. Reuniões externas dentro do Pais						
5. Reuniões externas internacionais						
6. Discussões com colegas do seu Hospital						
7. Discussões com colegas de outros Hospitais						
8. Pre-prints/off prints						
9. Programas de radio/televisão						
10. Jornais e revistas						
11. Representantes farmacêuticos						

MUITO OBRIGADA PELA SUA COLABORAÇÃO.