It is generally recognised that knowledge in medicine is expanding rapidly. The rate of expansion in sciences has been estimated in terms of what is known as the "doubling period" which is defined as the number of years in which the total amount of knowledge doubles itself. As this rate of growth of knowledge continues unabated, it is almost impossible for practitioners to keep themselves up-to-date. In the light of these analyses, it is obvious that knowledge acquired by doctors through medical degrees/ diplomas has validity only for a limited period.

The knowledge explosion in medicine places heavy responsibilities on medical specialists to be aware of the new advances in medicine for improved diagnosis and patient care. The expansion of medical knowledge, the greater awareness and consciousness towards medical information among health professionals lead to a demand for continuing access to information.

Accumulation and assimilation of information does not end when a prospective doctor finishes his formal schooling, rather, the process continues throughout his life. The prospective doctor also transmits some messages/information at the same time as he is receiving information from external sources.

At present, an emphasis is laid on the medical specialists knowing about the sources of information that could supplement their own knowledge on diagnosis and patient care. For this, they must be able to
employ complex and varied systems of information sources and channels. The added dimension of knowing or having access to information sources and channels places the specialist in a dual role, namely, the acquisition and transmission of information.

Seeking or gathering of information by medical specialists in developing countries becomes a difficult task on two grounds, i.e., doctors themselves are busy in dealing with patients and do not find enough time to seek information; and the concept of information itself is more complex as it is associated with variables such as 'nascent', 'reliable', 'cost', 'value', etc.

As specialisation increases the need for cross-fertilisation of ideas also increases; at the same time, the expansion of the volume of information makes this more difficult. It tends to aggravate many of the problems that medical specialists face in acquiring reliable information.

The medical specialist often cannot find the information he wants because retrieval is too difficult or too time consuming. The reasons for this are many, but an important one is the haphazard way in which data accumulates. Rapid retrieval of information is difficult because we do not always know in advance how the data will be used.

While most specialists have their own personal libraries, they also make extensive use of medical libraries, abstract services and bibliographic services. The busy specialist medical practitioner may find little time for any of these and get most of his information from associates and at meetings and make a concentrated effort to keep informed by using all possible channels including the information supplied by medical firms. The examples cited are not exhaustive and
only point out the complexities of information needs for the medical specialists.

The periodical revalidation of knowledge among doctors and keeping them up-to-date in their field is a problem to be discussed not only by the doctors but also information societies. This has direct impact on human beings in the society and any lacuna or handicap leads to eternal loss to the survival of human kind.

When the doctor turns to external sources for information, various information systems are available for his use, e.g. formal systems and informal systems. The formal system represents all of the institutionalized or organisational arrangements established for transmitting and acquiring information. The 'informal' system represents all oral or interpersonal communication.

Information seeking behaviour is the complex activity involved in acquiring and organising data; literature and its surrounding context. The study of information seeking behaviour and the use of information systems or channels of communication by a group of individuals has been a part of communication research efforts for several years.

The concept of information need has proved to be elusive one and difficult to define. Information seeking and information need have received even more attention from researchers than definition of information. In general, the literature falls into two broad categories—some studies attempt to determine the nature of the need while others attempt to distinguish between levels of perception.

Researchers have used the term in a variety ways. Needs, demands and wants have been used interchangeably although they may not be identical. Need is further complicated by necessity to distinguish
among expressed, unexpressed or unfelt needs, the latter being the most difficult to identify. Based on information seeking behaviour needs have been categorised as immediate or deferred. Activities associated with satisfying immediate needs are identified as information seeking behaviour. Those associated with deferred needs will be defined as information gathering behaviour. A distinction is generally drawn between basic and applied research studies in dealing with information need. In this context information seeking behaviour is an example of applied research.

Several authors of review publications have given major criticisms of past investigations on information needs; information use; seeking behaviours; gathering patterns of individuals. The criticisms were: (a) The use of defective methodology, (b) The lack of sound conceptualisation and underlying theory and (c) Utility of the studies.

The present approaches or mechanisms in practice in libraries and information centres in understanding users' information needs in all its 'individuating particularities' seems to be not sufficient and effective in providing more useful and effective documentation service. Hence deliberately planned attempts/studies in understanding the users and their information seeking behaviours are warranted. The present study is an attempt in this direction.

In this study an attempt was made to find out:

(a) The various types of information needs of medical specialists of the Madras City.

(b) Their accurate demands of medical information and their satisfaction as to both quality and quantity of information that is exposed to them.
(c) The various information services offered by medical research institutes for supplying information to the medical specialists in the City.

(d) Various types of information systems and services used by medical specialists in the Madras City.

(e) The ways and methods adopted by medical specialists in Madras City for seeking information.

(f) Whether personal variables and work-setting variables have any relation to their use of information systems.

(g) Whether barriers such as lack of time, institutional problems, sophisticated information systems and factors of economic viability are coming in the way of medical specialists for their access to nascent information.

(h) If the design of an optimum information system for medical specialists in Madras City is warranted.

The population sample selected for this study are confined only to medical specialists who belong to clinical areas and residing in the Madras City and working in prominent hospitals. The investigator has taken maximum efforts for acquisition of reliable data from medical specialists by employing the combination of several methods of investigation i.e. questionnaire, interview and verification of records of medical institutions. The primary data thus collected, is analysed by using statistical techniques, and graphical representation.

The following nine hypotheses were formulated to achieve the purpose of the study and to examine the various aspects on information seeking behavior and other cognate issues regarding the medical specialists of the Madras City.
1. Male and female medical specialists are equally alert in seeking information.

2. Medical specialists with different lengths of service are equally alert in seeking information through "informal sources".

3. Medical specialists with different lengths of service are equally alert in seeking information through "formal sources".

4. 'Seniors' (i.e., those with longer service in years) in medical profession are less keen to seek 'nascent' information as compared to 'juniors'.

5. Different types of specialisation have no effect regarding specialists' awareness of National Medical Information Centres.

6. Medical specialists of various specialisations are equally favourable for the provision of computerised medical services.

7. Different types of specialisations have no association in respect of medical specialists' awareness about various medical information sources.

8. The number of years of practice of medical specialists has no association with respect to their number of informative book collections.

9. Different types of specialisation have no effect on attendance to conferences/workshops/seminars.

The above study has several limitations such as not exploring all fields of medical specialisation and all levels of doctors. It is
limited only to medical specialists who possess postgraduate medical degree and other higher qualification in their specific specialisation. Only ten specialisations, namely, Cardiology Dermatology, E.N.T., General Medicine, Gynaecology, Neurology Ophthalmology, Orthopedics, Paediatrics Surgery are covered. The investigator selected only prominent hospitals of the Madras City.

CONCLUSIONS

The analysis basically is of inductive nature, that is going from the 'Particular to General' in as much as the conclusions drawn are sought to be projected as valid conclusions and inferences to the whole population of Madras-based medical specialists belonging to the various types of the medical specialities.

The findings of the present study on analysis are:

1. There is no apparent difference evident in the general usage of the information sources with regard to 'sex' parameter, that is, the male and female medical specialists (hypothesis 1).
2. Medical specialist with varying service-lengths are equally alert in seeking information through formal as well as informal sources (hypothesis 2 and 3).
3. 'Seniors' in the medical profession (irrespective of sex) are less enthusiastic to information acquisition as compared to 'junior specialists', especially with regard to 'nascent' to information (hypothesis 4).
4. Male and female medical specialists irrespective of their specialisation are equally aware about National Medical Information centres (hypothesis 5).

5. Medical specialists belonging to the various types of specialisations are equally favourable to the proposal for setting up computerised medical information services (hypothesis 6).

6. Different types of specialisations have little role in explaining variation in respect of medical specialists awareness about various medical information sources (hypothesis 7).

7. The years of professional experience (service length) of medical specialists has no role with regard to the nature or tendencies toward book-collections, as a channel to improve information bank (hypothesis 8).

8. Variations in conference (or workshops or seminar) attendance are not explainable by reasons of belonging to different specialisation (hypothesis 9).

The picture on the whole that emerged from the comprehensive statistical analysis may be summed up in the following.

(1) Strong Points

(a) Medical specialists' professional growth (i.e. after acquiring a specialised qualification) is generally related to the information seeking habits (Table 6.19).
(b) Computerised information retrieval appears to be advantageous and its cost is of little concern to the medical specialists in Madras city (hypothesis 6 and Table 6.28).

(c) Junior specialists tend generally to be more keen about 'nascent' information than the 'senior specialists' (hypothesis 4).

(ii) Weak Points

(a) the number of years of medical practice (i.e., length of experience) appears not to participate in the choice of the types of information systems sought or employed by the medical specialists in the Madras city (hypothesis 7).

(b) Medical specialists of Madras city appear to underestimate the potential of the existing available medical information sources without optimally utilising the same (Table 6.22).

(c) In addition, the specialists appear to be after securing additional information channels (Table 6.30).

(iii) Desirable Situation

(a) Medical specialists with different types of specialisations' background are equally keen to the proposal for installation of computerised medical services (hypothesis 5).

(b) Male and female specialists are equally alert and enthusiastic, generally in information seeking habits (hypothesis 2, 3 and 5).

(iv) Areas Needing Special Attention

(a) The journals subscription rate of medical specialists is very low and therefore requires special incentive measures for improving the
enthusiasm in the medical specialists into more technical journal-reading habits (Table 6.20A).

(b) Medical specialists owning personal libraries are also scant (neurology being somewhat different). This may be due to the prohibitive cost-causes, which situation may be partly improved by such measures as subsidising and others from governmental or other charitable institutional resources.

In conclusion, we may sum up that the general picture emerging out of the sample-survey analysis, while may not be termed as particularly discouraging still cannot be considered as optimum. It needs toning up measures in more than one direction. The overall situation, by and large, appears to be congenial, pointing to further desirable and useful scopes.

As a result of the above conclusions on the information seeking behaviour of medical specialists of Madras city, it is felt that suggestions and general guidelines for a medical information system for Madras city doctors would enhance the value of the present study. In the proposed plan, it became necessary to suggest both improvement of existing information system and to explore the possibility of providing information infrastructure for medical specialist through information technology.

In the proposed plan a network of medical information centres in the city is suggested and the provision of the information facilities is discussed. Suggestions on useful hardware and software have been given. The plan suggested, however, has its own limitation in the sense that it is lacking full information on the information infrastructure of the medical institutions of the city. The financial implications would
not be worked out in meticulous detail particularly for the reason that prices of the hardware and software in the country are fast coming down and any estimate would only be unreliable.

SUGGESTIONS

Basing on the conclusions of this study the following suggestions are made.

(1) Medical specialists of the Madras city are in need of primary information materials (e.g. journals, reports etc.), for their references. Hence medical libraries of the Madras city should carry out more individualised information services such as Selective Dissemination of Information (SDI) and Current Awareness Service (CAS) and clinical librarian's programme. The problem of non use of information sources and centres by medical specialists due to heavy clinical work coupled with teaching and research will be minimised, when such services are provided.

(2) The Medical information centres of the Madras City should provide extension services to enable the doctors to be aware of new medical information sources and services. As doctors are facing paucity of time the medical information centre should provide reliable information at their doorstep by using necessary modern communication systems.

(3) As a part of awareness programme, the medical libraries of the Madras city should conduct small courses so as to enable them to be aware of the generation of nascent information by national, international medical research institutes.

(4) Medical information materials available in all medical college
libraries and medical research centres are to be accessible to all the medical specialists residing in the Madras city irrespective of their belonging to any particular medical Institute.

(5) Private medical Practitioners and doctors attached to medical colleges in the Madras city may be given opportunity to have on-line search to national and international medical data bases on free of cost. If costs are there, it should be met by the concerned Institutes.

(6) The Government should allow the doctors to spend more time for using formal information channels. They must also be given scope for attending high level medical conferences and inservice educational programmes so as to enable them to use informal communication channels.

(7) Obstacles to inter-personal information seeking should be removed wherever it is possible. Within the hospital and outside the hospital, effective communication services for doctors should be employed which otherwise enhances medical information flow among the doctors.

(8) Although medical specialist are supposed to purchase some of their own information resources e.g. professional journals and books, the institutions should provide some money for them as a part of their fringe benefits for purchasing some materials as well. In this way, doctors will subscribe more professional journals and buy more books that are judged to be good for clinical work, research and teaching.

(9) The National Medical Association through their branches should take up the responsibility in inviting 'eminent persons'in the different
medical disciplines and to arrange extension lectures and meetings between professionals so as to enable them to discuss on current medical topics and updating their medical knowledge.

(10) The Government of India should lay down a clear National Information policy in health sciences and make it obligatory on the part of the National Medical research institutes to flow the information generated to needy doctors.

(11) National Information System on Science and Technology (NISSAT) should undertake the responsibility in not working the medical libraries in India and providing medical information to the doctors. They should also take responsibility of supplying hard copies of the journals to the doctors.

(12) Xeroxing facilities and other modern reprographic methods are to be employed in every medical college of the City in order to provide copies of the articles to the doctors.

(13) The Indian Medical Library Association with the help of Indian Library Association and Indian Association for Special Libraries and Information Centres (IASLIC) prepare medical library standards for all health institutes.

(14) The Indian Medical Association should establish medical resource centres/informatics in specialised disciplines to meet the individual requirements of the doctors.

(15) The Medical libraries in the Madras city should develop the collection of non-book materials eg. tapes, video cassettes, Audio Visual materials along with documents.

(16) Indian Medical Association should start the establishment of regional medical association centre at Madras to guide the medical
specialists in all levels.

(17) Computed abstracts and indexes of the articles are to be provided to the doctors. An expert system in minute medical disciplines is to be established for medical specialists of Madras City. The cost must be economical and viable for the use of the doctors.

(18) A rapport between private medical practitioners in the city and medical specialists of various institutes in the Madras city are to be maintained. Periodical clinical meetings are to be conducted for effective discussions on diseases of local areas.

(19) The government should have a clear policy and encouragement in sending the doctors abroad for acquiring higher qualifications.

(20) Library Schools of the country should train suitable manpower to medical information systems in the country.

Further areas of Research and Investigation

As an outcome of this study certain areas have emerged as possible areas of interest for further research and investigation. For example, similar parallel studies can be conducted on information seeking behaviour of medical specialists in other major cities of India. Similarly, the investigations can be extended to non-clinical medical personnel. Some of the specialisations left out of investigation in this study can also be covered in future researches. As a proposal for immediate or the near future implementation of an information network system, the actuals of expenditure (recurring and non-recurring) can be worked out as a project study for medical information system for any of the major cities of India or for Madras City itself.