

**COMMUNICATION PATTERNS AND INFORMATION SEEKING
BEHAVIOUR OF MEDICAL RESEARCHERS / SCIENTISTS
- A SURVEY.**

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Dr.B.Solomon Raju, Lecturer in Library Science
Tarlupadu College Of Education, Tarlupadu, Prakasam (District)
Andhra Pradesh, INDIA
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4.0 Introduction

The phenomenon of information deluge or information flood has created a number of problems to information workers in respect of the retrieval of information exhaustively, expeditiously, pinpointedly and with precision. The factors like quantitative growth of users, diversified nature of user's needs, multidisciplinary nature of research, development of nascent subjects etc., have aggravated the gravity of the problem further. A number of techniques both quantitative and qualitative are being used by the information managers to tide over the problem. Surveys focussed on users to understand their information seeking behaviour is one of the important techniques available for fruitful user-based information service.

User satisfaction is an obvious measure to evaluate the efficiency and effectiveness of a library and information system. User studies are the vital means to trace out user satisfaction. The basic assumption behind user studies is that they will unravel the existing situation and envisage future information needs and demands. Identification of the users is the first step while planning a survey. The users in this survey

are Health Science Researchers/Scientists working at ICMR institutes (India).

This chapter focuses on an opinion oriented survey. Efforts were made to ascertain the views of the respondents about the state of the library facilities available for them through their institute libraries. Efforts were also made to ascertain the communication patterns and information seeking behaviour of the scientists. An endeavour was made to seek user's suggestions for the improvement of the existing system.

4.1 Methodology

The survey is the basis to find facts and suggest remedial actions in any social situation. It is a powerful technique, because, within known limits of error, the responses of a relatively small sample of people can be generalized. Data can be gathered contacting and questioning individuals, and their behavioural dimension can be analyzed.

Owing to its advantages, inspite of its limitation in the study of complex human behaviour, the survey method has been chosen to gather data from the researchers of ICMR institute libraries.

The user study also, as indicated in chapter III has been restricted to ten ICMR permanent research institutes, located in southern and western India, as shown in the map.

Survey method is based upon the sampling from a large population, as it is difficult to study the entire population. Hence, 50% of researchers in each ICMR institute have been selected following stratified random sample technique

Table 41(a) shows the distribution of responses received from the selected ICMR permanent institutes.

TABLE 4.1(a)

Distribution of Responses Received from the Selected ICMR Permanent Institutes

Name of the Institute	Total Population of Scientists	Questionnaires Distributed	Response Received
Centre for Research in Medical Entomology, Madurai	4	3	2
Enterovirus Research Centre, Mumbai	7	4	3
Food & Drug Toxicology Research Centre, Hyderabad	19	10	8
Institute of Research in Reproduction, Mumbai	35	18	14
Institute of Immunohaematology, Mumbai	24	12	10
Institute of Research in Medical Statistics, Chennai	13	6	4
Laboratory Animal Information Services Centre, Hyderabad	9	5	4
National Institute of Nutrition, Hyderabad	64	32	28
Tuberculosis Research Centre, Chennai	55	27	19
Vector control Research Centre, Pondichery	42	21	18
Total	272	138	110

The detailed analysis of the researchers/scientists in different institutes is explained in Table 4.1(b).

TABLE 4.1(b)

The Number of Researchers / Scientists Responded from Different Institutes

Name of the Institute	SR	JR	TOTAL
Centre for Research Medical Entomology, Madurai	1	1	2
Enterovirus Research Centre, Mumbai	1	2	3
Food & Drug Toxicology Research Centre, Hyderabad	4	4	8
Institute of Immunohaematology, Mumbai	4	6	10
Institute of Research in Medical Statistics, Chennai	2	2	4
Institute of Research in Reproduction, Mumbai	6	8	14
Laboratory Animal Information Services Centre, Hyderabad	2	2	4
National Institute of Nutrition, Hyderabad	9	19	28
Tuberculosis Research Centre, Chennai	11	8	19
Vector Control Research Centre, Pondichery	8	10	18
Total	48	62	110

As the table 4.1(b) reveals the total number of senior researchers responded is forty-eight and the total number of junior researchers is

sixty-two. So, the total number of researchers/ scientists responded is one hundred and ten in number (79.71%).

4.2. Data Collection

The data from the selected sample was gathered using a structured questionnaire.

Basing on the objectives of the survey, the questionnaire was designed and tested before the final questionnaire has been compiled. The questionnaire has been finalized after a pre-test, by ten researchers at random at National Institute of Nutrition, Hyderabad. The questions which the users find difficult to answer or need some clarification, have been altered in the final questionnaire. The time required to answer the questionnaire has been calculated as 15 minutes for the scientists. The design of the final questionnaire included the following aspects :

- a) The first five questions of the questionnaire consisted of classificatory variables, including name and designation, subject specialization years of experience and details of their publications.
- b) The subsequent questions are concerned with the scientists' communication patterns, their preference to formal and informal channels
- c) Further series of questions are concerned with the priority of information sources and how they locate information, the use of the library by the scientists and the adequacy of the library services and also the access to online services by the scientists.

d) Finally the respondents have been asked to make suggestions in order to improve their institute libraries.

After collecting the data, suitable tables have been formulated for each aspect and the percentages of their performance are analyzed. The analysis of the survey reveals that some of the findings are really startling. Results of the survey are analyzed and displayed hereunder.

4.3 Results of the Survey and Analysis

The first few questions of the questionnaire are concerned with the user's identification. This data is correlated with other findings, wherever necessary and inferences are drawn. Furthermore, whenever the rankings are obtained, the rank third and above are grouped for the purpose of tabulation and analyzed with a view that the first two rankings are more important.

4.3.1 Communication Patterns of the Scientists

Information is generated through a number of communication channels. Information and its Communication are intrinsic to the practice of science. Research, stimulated often by new information, is sustained by the continuing flow of information, and when completed, again yields new information. This, in turn, generates a fresh cycle of creation and discovery. Channels are the means by which ideas, opinions, facts and interpretations are communicated. These channels may be formal - conference papers, publication in journals, research reports, preprints, books, records, slides, audio tapes, etc., or informal - after dinner discussions, casual meetings with colleagues, correspondences, group discussions, etc. The line between formal and

informal channels is difficult to draw, a reasonable approximation might be that formal channels are susceptible of use by a number of people, not necessarily at the same time, while informal channels operate on an individual interpersonal communication basis. To ascertain the preference of health science researchers for formal and informal means of communication, a question has been asked to indicate their preferences.

TABLE 4.2(a)

Preference to Channels of Communication

CHANNELS OF COMMUNICATION	SR (48)	JR (62)	TOTAL (110)
FORMAL	26 (54.16)	34 (54.84)	60 (54.54)
INFORMAL	22 (45.84)	28(45.16)	50 (45.46)

$$\chi^2 = 0.00493 \text{ (df=1) } p=0.95$$

The response indicates that the researchers have a slight inclination for formal over informal means as 55% preferred this mode of communication, while only 45% preferred informal. The previous studies conducted by wood¹, Menzel², Mayada³ and Friedlander⁴ indicated that majority researchers prefer informal communication over formal means. The findings here, are in contrast to the established notions. The reason may be, in India, the communication facilities are very poor, and hence, letters and personal contacts are the primary means of communication.

There is not variation among senior and junior researchers over their preference to communication channels as the figures 54.16% and 54.84% for formal and 45.84% and 45.16% for informal indicates.

In the chi square analysis insignificant difference was found out among senior and junior researchers over their preference to communication channels.

Further analysis has been carried out to ascertain any variations in the preference of communication channels by medical researchers / scientists depending on the subject area/theme of their research. Hence, an institution-wise analysis has been done and the results have been tabulated in Table 4.2(b).

TABLE 4.2 (b)

Institution-wise Analysis of Preference to Channels Of Communication

NAME OF THE INSTITUTION	FORMAL	INFORMAL
Centre for Research Medical Entomology, Madurai	50% (1/2)	50% (1/2)
Enterovirus Research Centre, Mumbai	67% (2/2)	33% (1/3)
Food & Drug Toxicology Research Centre, Hyderabad	63% (5/8)	37% (3/8)
Institute of Immunohaematology, Mumbai	60%(6/10)	40%(4/10)
Institute of Research in Medical Statistics, Chennai	50% (2/4)	50% (2/4)
Institute of Research in Reproduction, Mumbai	57%(8/14)	43%(6/14)
Laboratory Animal Information Services Centre, Hyderabad	50%(2/4)	50%(2/4)
National Institute of Nutrition, Hyderabad	54%(15/28)	46%(13/28)
Tuberculosis Research Centre, Chennai	53%(10/19)	47%(9/19)
Vector Control Research Centre, Pondichery	50%(9/18)	50%(9/18)

(The number in brackets indicates the no. of responses/the total no. of responses)

The figures in the table indicate that much variation is not there among formal and informal channels of communication in any of the individual institution. There is a lever towards formal means of communication in almost all institutes except in CRME, IRMS, LAISC and VCRC, where both the means have been considered of equal importance. Therefore, it can be inferred that the theme of the research work in which the scientists are engaged in, do not change the preference in use of communication channels.

TABLE 4.2 (c)

Channels of Communication

CHANNELS OF COMMUNICATION	SR (48)	JR(62)	TOTAL(110)
Formal :			
a) Conference papers	4(8.33)	8(12.90)	12(10.90)
b) Publication in Journals	44(91.66)	40(64.51)	84(76.36)
c) Research Reports	---	14(22.58)	14(12.72)
d) Preprints	---	---	---
Informal :			
a) Inter-personal communication	28(58.33)	26(41.93)	54(49.09)
b) Group Discussions	2(4.16)	14(22.58)	16(14.54)
c) Discussion at Conferences / Seminars	18(37.5)	18(29.03)	36(32.72)
d) Informal conversations and personal letters	---	4(6.45)	4(3.63)
e) Telephone conversations	---	---	---
f) E-mail / online	---	---	---

When they were asked to mention the formal channels used by them in order of priority, publication in journals takes the top rank by 76.36%. 12.72% scientists are making use of research reports and 10.9% scientists use conference papers as their first priority. The findings correspond to previous studies carried out elsewhere in this regard.

The senior 91.66% and Junior 64.51% of scientist preferred journals; however, 22.58% of juniors preferred research reports while seniors did not consider it as a useful channel of communication.

The informal channels used by the scientists in order of priority are interpersonal communication 49.09%, discussions at conferences / Seminars 32.72% and group discussions 14.54%. Here again, the telephone, E-mail, etc., have drawn a blank, which are primarily used as communication channels by scientists of the West. This is because of non-availability of these facilities to medical scientists.

TABLE 4.3

Reasons for preference to Informal Channels

Reasons for preference to informal channels	Rank	SR(48)	JR(62)	Total(110)
To Meet the practical needs	1	2 (4.16)	14(22.58)	16(14.54)
	2	4(8.33)	6(9.67)	10(9.09)
	3	6(12.5)	2(3.22)	8(7.27)
	0	36(75.10)	40(64.51)	76(69.09)
Peer group discussion	1	6(12.5)	10(16.12)	16(14.54)
	2	4(8.33)	6(9.67)	10(9.09)
	3	6(12.5)	4(6.45)	10(9.09)
	0	32(66.6)	42(67.7)	74(67.27)
To obtain reinforcement from Kindred Spirit	1	2(4.16)	--	2(1.81)
	2	--	--	--
	3	--	--	--
	0	46(95.83)	62(100)	108(98.18)
To establish potentially valuable contacts	1	6(12.5)	4(6.45)	10(9.09)
	2	4(8.33)	4(6.45)	8(7.27)
	3	6(12.5)	2(3.22)	8(7.27)
	0	36(75.00)	52(83.87)	88(80.00)
To exchange information	1	6(12.5)	4(6.45)	10(9.09)
	2	4(8.33)	4(6.45)	8(7.27)
	3	2(4.16)	4(6.45)	6(5.45)
	0	36(75.00)	50(80.64)	86(78.18)
To satisfy psychological needs	1	--	2(3.22)	2(1.81)
	2	--	--	--
	3	--	--	--
	0	48(100.00)	60(96.77)	108(98.18)

When they were asked to mention the reasons for preference to informal channels, Table - 4.3 shows, the reasons cited are that it meets the practical needs (14.54%) and provides an opportunity for peer group discussions (14.54%). The other reasons seem to be of less importance. This may be because either 1) the scientists are matured and do not require support of other colleagues, or 2) they might not have recognized the importance of informal communication; or 3) as

already indicated, due to lack of facilities. In comparison, Junior Scientists (22.58) have been more satisfied with informal channels due to the fact that they meet their practical needs and also helpful for peer group discussion (16.12).

4.3.2 Information through invisible colleges

In these days, a number of researchers / scientists concentrated on the concept of “invisible colleges”, which is a network of persons within a discipline who are bound into an informal group by reasons of similar interest. These persons frequently exchange information. A question was asked to know the existence of invisible colleges among the researchers/scientists working in ICMR institutes.

TABLE 4.4

Existence of Invisible Colleges
(Structured Informal Communication Network)

Existence of Invisible Colleges	SR(48)	JR(62)	TOTAL(110)
YES	16(33.33)	40(64.51)	56(50.90)
NO	32(66.67)	22(35.48)	54(49.09)

$$\chi^2 = 10.52626 \text{ (df=1) } p = 0.01.$$

Statistically highly significant differences are noticed in the chi square test, among senior and junior researchers with regard to their getting information through invisible colleges

It can be observed through Table 4.4 that 49.09% of the respondents expressed that they were not quite familiar with the

expression "invisible colleges". But 50.90% of the scientists mentioned that they have been getting information through such channel. This supports the findings of the first question wherein 45.46% of the users do not prefer informal communication. In comparison, Junior Scientists (64.51) have been more aware of the concept than Senior Scientists(33.33).

In another question the respondents have been asked whether these invisible colleges are advantageous or not to analyze whether the importance of this mode of communication has any weightage from medical scientists' view..

TABLE 4.5

ADVANTAGE OF INVISIBLE COLLEGES IN VIEW OF SENIOR AND JUNIOR RESEARCHERS

ADVANTAGE OF INVISIBLE COLLEGES	SR (48)	JR(62)	TOTAL(110)
YES	20(41.66)	36(58.06)	56(50.90)
NO	28(58.33)	26(41.93)	54(49.09)

$$\chi^2 = 2.91084(df=1) p = 0.10.$$

The table 4.5 reveals that 50.90% of the respondents expressed that invisible colleges are advantageous, that means almost 50% have negated the concept. The investigator feels that there is a need to create an awareness among medical scientific community regarding the informal communication by invisible colleges, which is a well-recognized

mode of communication to channelise research information in real time without much waiting for formal channels.

Chi square analysis indicates significant differences among Junior and Senior researchers with regard to invisible colleges.

4.3.3 Communication of Research Progress

The research in any field is continuum and the researcher wants to exchange the progress of research in the field of his interest. This exchange facilitates not only informing the current developments but also avoiding duplicate efforts. Respondents were asked to indicate the channels used by them to communicate their research progress.

TABLE 4.6

Communication of Research progress among Senior and Junior Researchers

Communication of research progress	RANK	SR(48)	JR(62)	TOTAL(110)
Peer Group Discussion	1	6(12.5)	8(12.9)	14(12.72)
	2	4(8.33)	6(9.67)	10(9.09)
	3	6(12.5)	6(9.67)	12(10.90)
	0	32(66.66)	42(67.74)	74(67.27)
Conference Papers	1	8(16.66)	8(12.9)	16(14.54)
	2	6(12.5)	6(9.67)	12(10.90)
	3	6(12.5)	4(6.45)	10(9.09)
	0	28(58.33)	44(70.96)	72(65.45)
Printed Publications	1	32(66.66)	46(74.19)	78(70.90)
	0	6(12.5)	8(12.9)	14(12.74)
	3	2(4.16)	6(9.67)	8(7.27)
	0	8(16.66)	2(3.22)	10(9.09)

70.90% of the respondents ranked the printed publications as their first priority, while for 12.74% it is second priority and conference papers were ranked as one by 14.54%, while 12.72% of scientists preferred peer group discussions, to communicate their research results. The figures 65.45% and 67.27% of no response to conference papers and peer group discussions reveal their least priority in view of medical scientists. There are a number of medical journals (approximately 4,000) and the scientists might feel that they can reach out to wider audience with the help of print than limiting the communication of their research results at local level. In comparison, both the Senior (66.66) and Junior (74.19) scientists have preferred printed publications for communication of research progress.

4.3.4 Location of Retrospective Literature

Research starts on the basis of the previous knowledge. Hence, retrospective literature is essential for a researcher to understand the subject and to identify the lacunae wherein he can start his research work.

Respondents were asked to indicate the frequency with which they use various sources to locate retrospective literature. The question has listed six sources that can be used to locate information. The results are summarized in Table 4.7.

TABLE 4.7

Location of Retrospective Literature

Location of Retrospective Literature	SR(48)	JR(62)	TOTAL(110)
Scanning Primary Sources	12(25.00)	16(25.80)	28(25.45)
Citations from other works	16(33.33)	8(12.90)	24(21.81)
Abstracting / Indexing Periodicals	8(16.66)	18(29.03)	26(23.63)
Consulting personal collection	2(4.16)	8(12.90)	10(9.09)
Review Articles	2(4.16)	--	2(1.81)
Use of online searching	8(16.66)	12(19.35)	20(18.18)

$\chi^2 = 11.89511$ (df=5) p=.05.

Response to the question, which actually related to retrospective search, indicated that (Table 4.7) out of six possible methods, there was clear preference for some. The method "Scanning primary sources" was checked by 25.45% to give it the first rank, closely followed by the method "Abstracting and Indexing periodicals" (23.63%). The other methods in the subsequent ranks were, "citations from other works" 21.81% (third rank); "use of online searching " 18.18% (fourth rank) and "Consulting personal collection" 10% (fifth rank). However, there is

slight variation between senior and junior researchers. While 33.33% of senior researchers preferred citations, only 12.90% of junior researchers preferred them. Further, abstracting and indexing periodicals is more preferable (29.03%) to junior researchers while only 16.66% of seniors ranked it. Senior Researcher preference to citations from other works may be because they are very much helpful in the latter stages of research work. Junior Researchers preference to abstracting and indexing periodicals may be for its helpfulness in the early stages of their research work.

The dependence between location of retrospective literature and research experience is significant at $p = 0.05$. Hence it is significant.

4.3.5 Location of Current Information

Keeping abreast of current developments in one's own field is mandatory for all the scientists. Hence, an in-depth analysis of this aspect of information behaviour was made, by including a question on methods followed to locate current information. Four methods have been given as responses, the results are displayed in Table 4.8.

TABLE 4.8

Methods adopted by scientists for location of current information

Methods of Location of Current Information	SR(48)	JR(62)	TOTAL(110)
Physical Scanning of Current Journals	28(58.33)	24(38.70)	52(47.27)
Current Contents	20(41.66)	30(48.38)	50(45.45)
Personal Collection	--	4(6.45)	4(3.63)
Recommendations from Colleagues	--	2(3.22)	2(1.81)

$\chi^2 = 7.06154$ (df=3) p =0.10.

Out of the four possible methods or channels to locate current information, the most preferred channel was found to be, as shown in Table 4..8, "Physical scanning of current journals" 47.27%, followed by "Current contents" 45.45%, "Personal collections" 3.63% and "Recommendations from Colleagues" 1.81% . Senior Researchers have slight inclination for scanning current journals (58.33%), while Junior Researchers preferred current contents (48.38%). Hence, it can be inferred that physical scanning of journals followed by current contents are methods generally adopted by medical scientists to locate current information. The other two variables "personal collection" and "recommendations from colleagues" are insignificant in their opinion. One of the startling revelation is the non-dependence on " personal collection" which indicates that the scientists may not have adequate personal collections. Further, 1.81% of "recommendation from colleagues" indicate that little peer group communication is existing which further supports the insignificant use of informal channels.

Statistically significant differences are noticed in the chi square analysis for the methods adopted by senior and junior researchers for the location of current information.

4.3.6 Use of Abstracting Journals

Abstracting journals play a vital role in the access to medical information by users. There are many indexing and abstracting tools in the field of health science, such as Index Medicus, Excerpta Medica, Chemical Abstracts, Biological Abstracts, Tropical Diseases Bulletin and so on. Keeping in view of the importance of indexing and abstracting tools to medical scientists, a few questions were asked to ascertain researcher's information use habits.

TABLE 4.9

Importance of abstracting journals for senior and junior researchers

Importance of abstracting journals	Sr(48)	Jr(62)	Total(110)
YES	48(100.00)	62(100.00)	110(100.00)
NO	---	--	--

When asked about the importance of abstracting journals (Table 4.9), all the scientists responded positively (100%). This indicates that the scientists have recognized the role of secondary sources of information which facilitates to identify and locate primary sources with full text.

TABLE 4.10

Frequency of the use of abstracting journals by senior and junior researchers

Frequency of the use of abstracting journals	SR(48)	JR(62)	TOTAL(110)
Once a week	18(37.5)	16(25.80)	34(30.90)
Twice a week	4(8.33)	10(16.12)	14(12.72)
Once in a month	22(45.83)	24(38.70)	46(41.81)
Sparingly used	4(8.33)	12(19.35)	16(14.54)

$$\chi^2 = 5.07644 \text{ (df =3) } p = 0.200.$$

About the frequency of the use of abstracting journals (Table 4.10) 41.81% of scientists are using once in a month, 30.90% of scientists once in a week and 12.72% of the scientists twice in a week and the rest (14.54%) are using sparingly. Senior researchers seem to be more frequent users as the figures 37.5%, 8.33% and 45.83% indicate. While 19.35% of Junior researchers sparingly use abstracting journals, only 8.33% of seniors use them sparingly.

The table reveals that the use of abstracting journals is very much encouraging among the medical scientists as the frequency of use in once in a week for 30.90% of scientists. However, 41.81% are using them once in a month. The reason may be the nature of research they are engaged in. The chi square test also reveals that the frequency of the use of abstracting journals by senior and junior researchers is significant.

However, to ascertain the specific reasons for not using abstracting journals a question has been included. Since all the respondents are making use of these secondary sources, the question stands invalid and hence, not analyzed.

TABLE 4.11

Abstracting / Indexing Periodicals Most Commonly Used By Senior And Junior Researchers

Abstracting / indexing periodicals	RANK	SR(48)	JR(62)	TOTAL(110)
Index Medicus	1	14(29.16)	26(41.93)	40(36.36)
	2	6(12.5)	20(32.25)	26(23.63)
	3	4(8.33)	8(12.9)	12(10.90)
	0	24(50.00)	8(12.9)	32(29.09)
Excerpta Medica	1	4(8.33)	--	4(3.63)
	2	2(4.16)	--	2(1.81)
	3	--	2(3.22)	2(1.81)
	0	42(87.50)	60(96.77)	102(92.72)
Tropical Decease Bulletin	1	14(29.16)	14(22.58)	28(25.45)
	0	6(12.5)	4(6.45)	10(9.09)
	3	4(8.33)	6(9.67)	10(9.09)
	0	24(50.00)	38(61.29)	62(56.36)
Biological Abstracts	1	4(8.33)	12(19.25)	16(14.54)
	2	6(12.5)	8(12.09)	14(12.72)
	3	4(8.33)	6(9.67)	10(9.09)
	0	34(70.83)	36(58.09)	70(63.63)
Chemical Abstracts	1	6(12.5)	--	6(5.45)
	2	2(4.16)	2(3.22)	4(3.63)
	3	4(8.33)	--	4(3.63)
	0	36(75.00)	60(96.77)	96(87.27)

The actual source titles that were used by the respondents were taken note of and the top five common titles of abstracting periodicals being used in most of the institutions were, Index Medicus, 36.36%; Tropical Disease Bulletin, 25.45% ; Biological Abstracts, 14.54% ; Chemical Abstracts, 5.45%, and Excerpta Medica 3.63%, as the first priority. The second priority is in almost similar order of 26% Index

Medicus, 14% Biological abstracts, 10% Tropical Diseases bulletin, 4% Chemical abstracts and 2% Excerpta Medica. Excerpta Medica is the most non preferred secondary source as 92.72% do not use it.

For 41.93% of Junior researchers, Index Medicus is the top priority while for 32.25%, it is second choice. However, for 50% of Senior researchers, it is not a primary source and their choice between various sources has been diffused.

Most of the respondents have been using the above channels in combination. It was observed that a 38.5% of respondents have been using three channels and "Index Medicus" was one of the secondary source most often chosen along with other channels.

4.3.7 Pattern of Library Use

No other aspect of a library system looks superficially so easy, yet actually, so extraordinarily difficult to measure is its use. The utility of a library can be determined by the feedback from clientele. It is said that a library is judged by its use and not by its collection alone. Thus, the surveyor's job is to contact the users and find out the utility of the library in terms of adequacy of collection, services, physical facilities and shortcomings of the institutes in providing the services with remedial suggestions from users.

Responses were obtained on how exactly the library of one's own institution was used, how often the library was visited and whether any other library is being used to satisfy their information requirements.

4.3.7.1 Frequency of using the Library

The frequency of visit to a library indicates its intrinsic value in disseminating information. This question has been given four ratings, viz., i) Daily, ii) Once in a week, iii) Fortnightly iv) Monthly. The results are displayed in table 4.12.

TABLE 4.12
Frequency Of The Use Of Library

Frequency of use	SR(48)	JR(62)	TOTAL(110)
Daily	14(29.16)	28(45.16)	42(38.18)
Once a week	32(66.66)	28(45.16)	60(54.54)
Fortnightly	2(4.16)	6(9.67)	8(7.27)
Monthly	--	--	--

$$\chi^2 = 5.23634 \quad (df = 2) \quad p = 0.05$$

Regarding frequency of visit (Table 4.12), it was found that 54.54% of the respondents visited the library atleast once a week and more than 38.18% almost every day. At the same time, 8% of them preferred to visit fortnightly. The figures indicate that the clients are making optimum use of libraries, which is an encouraging factor. Significant feature is that Junior researchers, visit to library is more frequent than Senior, because 45.16% of Juniors visits daily in contrast to 29.16% by Seniors. A probable reason for this difference is that senior might have more personal collections.

The analysis of the above table reveals that the institutional library facilities are being fully used by the user community which may be an indication to the adequacy of library facilities.

Statistically significant differences are noticed by chi square test also among senior and junior researchers for the frequency of the use of library.

4.3.7.2 Types of other libraries used

A single library alone cannot satisfy all the information requirements of the researchers/scientists. Hence they may visit other libraries to get the information required by them. Table - 15 reveals some of the libraries used by the researchers scientists. A question has been asked regarding the use of other libraries by respondents. Table 4.13 reveals facts regarding use of other libraries.

TABLE 4.13

Use Of Other Libraries

Use Of Other Libraries	SR(48)	JR(62)	TOTAL(110)
YES	28(58.33)	54(87.09)	82(74.54)
NO	20(41.66)	8(12.90)	28(25.45)

$$\chi^2 = 11.79602 \text{ (df =2) } p = 0.01$$

As Table 4.13 reveals 74.54% of the respondents have been making use of other libraries. It further indicates that majority the Juniors are visiting other libraries (87.09%) than the Seniors (58.33%). The reason may be, as already stated, the Juniors may require more information in their initial years of research while the senior might be having more personal collections gathered during their career.

Through chi square analysis significant difference is observed among Senior and Junior researchers in the use of other libraries.

The visits to other libraries indicate that the institutional libraries may not have comprehensive collection which makes the medical researchers to visit other libraries. Hence, with a view to find out the institutions whose scientists are visiting and using other libraries, a further analysis has been made and the results are provided in Table 4.14.

Table 4.14

Institution Wise Analysis Of Use Of Other Libraries

NAME OF THE INSTITUTION	FORMAL	INFORMAL
Centre for Research Medical Entomology, Madurai	100% (2/2)	0% (0/0)
Enterovirus Research Centre, Mumbai	67% (2/3)	33% (1/3)
Food & Drug Toxicology Research Centre, Hyderabad	75% (6/8)	25% (2/8)
Institute of Immunohaematology, Mumbai	70%(7/10)	30%(3/10)
Institute of Research in Medical Statistics, Chennai	75% (3/4)	25% (1/4)
Institute of Research in Reproduction, Mumbai	86% (12/14)	14% (2/14)
Laboratory Animal Information Service Centre, Hyderabad	75%(3/4)	25%(7/4)
National Institute of Nutrition, Hyderabad	75%(21/28)	25%(7/28)
Tuberculosis Research Centre, Chennai	68%(13/19)	32%(6/19)
Vector Control Research Centre, Pondichery	72%(13/18)	28%(5/18)

(The number in brackets indicates the no. of responses/the total no. of responses)

The figures in the table indicates that maximum number of researchers of all institutions studied, are making use of other libraries. In CRME 100%, IRR 86%, NIN, FDTRC and IRMS 75% and in the rest of the institutions about 70% of the researchers have been making use of other libraries. Hence, it can be concluded that dependence on other libraries by researchers is an inevitable phenomenon of ICMR Institutes.

To identify the types of libraries which provides relevant information to medical scientists/researchers, data has been gathered and analyzed. The details are provided in Table 4.15.

TABLE 4. 15

Types of other Libraries Used

TYPES OF OTHER LIBRARIES	RANK	SR(48)	JR(62)	TOTAL(110)
Medical College Library	1	14(29.16)	16(25.80)	30(27.27)
	2	12(25.00)	14(22.58)	26(23.63)
	3	10(20.83)	12(19.35)	22(20.00)
	0	12(25.00)	20(32.25)	32(29.09)
British Council Library	1	10(20.83)	6(9.67)	16(14.54)
	2	8(16.66)	6(9.67)	14(12.72)
	3	4(8.33)	8(12.9)	12(10.90)
	0	26(54.16)	42(67.74)	68(61.81)
USIS Library	1	4(8.33)	--	4(3.63)
	0	--	2(3.33)	2(1.81)
	3	2(4.16)	--	2(1.81)
	0	42(87.5)	60(96.77)	102(92.72)
NML	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)
Hospital Library	1	--	6(9.67)	6(5.45)
	2	2(4.16)	2(3.22)	4(3.63)
	3	4(8.33)	--	4(3.63)
	0	42(87.5)	54(87.09)	96(87.27)

The use of Medical College Library seems to be more preferable to Senior as well as Junior researchers as the figures, 29.16% and 25% of Seniors and 25.80% and 22.58% of Juniors, indicate. The British Council Library also appeared to be important for Senior researchers than for Juniors. However, a startling revelation is that none of them have mentioned the use of National Medical Library. It is a fact to be noted and further investigated to ascertain the realities since a National Library is supposed to cater to all kinds of information requirements in that discipline. Another revelation is the non-use of hospital libraries. It may not be out of place to mention here, that in India, the organisation of hospital libraries is lagging behind and a very few hospitals have libraries that are ill-maintained. The reason is that

the concept of clinical librarianship has not gained any momentum in the country.

4.3.7.3 Purpose of using the Library

The researcher/scientist will have information requirements for various purposes, such as research, teaching, consultancy, self improvement, writing books and articles. Table 4.16(a) shows the purpose for which the researcher/scientist seeks information from the library and the responses are displayed and the percentages are given in figures.

TABLE 4.16(a)

PURPOSE OF VISITING LIBRARY

Purpose of Visiting Library	RANK	SR(48)	JR(62)	TOTAL(110)
To gather current literature	1	20(41.66)	36(58.06)	56(50.90)
	2	14(29.16)	4(6.45)	18(16.36)
	3	6(12.5)	14(22.58)	20(18.18)
	0	10(20.83)	8(12.9)	16(14.56)
To be abreast of Current developments	1	24(50.00)	22(35.48)	46(41.81)
	2	16(33.33)	18(29.03)	34(30.90)
	3	4(8.33)	12(19.35)	16(14.56)
	0	4(8.33)	10(16.12)	14(12.72)
To write reports or papers	1	--	--	--
	0	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)
Preparation for teaching	1	2(4.16)	--	2(1.81)
	2	--	2(3.22)	2(1.81)
	3	--	--	--
	0	46(95.83)	60(96.77)	106(96.36)
To use reference material	1	2(4.16)	4(6.45)	6(5.45)
	2	2(4.16)	2(3.22)	4(3.63)
	3	2(4.16)	--	4(3.63)
	0	40(83.33)	56(90.32)	56(50.90)

With regard to the purpose of visiting library (Table 4.16) 50.90% of respondents expressed that their main purpose of visiting the library

is to get literature on current information and 41.81% to be abreast of current information. Other reasons seem to be trivial. However, the Seniors marked to be abreast of current developments as 50% ranked it as 1st and 33.33% as 2nd. The Juniors visit library to gather current literature as the figures 58.06% indicates and very few Senior (4.16%) and Junior (6.45%) researchers visit library for the use of reference materials.

4.3.7.4 Method of Locating Information

Library contains information, embodied in recorded form, books, periodicals, non-book materials etc. There are certain methods to identify and locate the information, such as using catalogues, consulting librarian, searching abstracting/indexing periodicals, book reviews, etc. To ascertain the users information seeking habits they have been asked to rank their priorities among the seven options listed.

TABLE 4.16(b)

Locating Information From The Library

Locating Information from the Library	RANK	SR(48)	JR(62)	TOTAL(110)
Using library catalogue	1	28(58.33)	32(51.61)	60(54.54)
	2	12(25.00)	8(12.9)	20(18.18)
	3	6(12.5)	4(6.45)	10(9.09)
	0	2(4.16)	18(29.00)	20(18.18)
Consulting Librarian	1	--	6(9.67)	6(5.45)
	2	4(8.33)	--	4(3.63)
	3	2(4.16)	2(3.22)	4(3.63)
	0	42(87.5)	54(87.29)	106(96.36)
Abstracting / Indexing Periodicals	1	14(29.16)	16(25.80)	30(27.27)
	2	8(16.66)	4(6.45)	12(10.90)
	3	6(12.5)	10(16.12)	16(14.54)
	0	20(41.66)	32(51.61)	52(47.27)
Book Reviews	1	2(4.16)	2(3.22)	4(3.63)
	2	--	2(3.22)	2(1.81)
	3	2(4.16)	--	2(1.81)
	0	44(91.66)	58(93.54)	102(92.72)
Citations from other works	1	4(8.33)	6(9.67)	10(9.09)
	2	4(8.33)	4(6.45)	8(7.27)
	3	6(12.5)	2(3.22)	8(7.27)
	0	34(74.83)	50(80.64)	84(76.36)
With the help of colleagues	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)
Inter Personal communication	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)

Replies to the question on locating information from the library (Table 4.16(b)) state that 54.54% respondents have been using library catalogue and 27.27% using abstracting/indexing periodicals to get their information from the library and very few scientists are consulting librarian, 5.45% refer citations from other works, 9.09% and book reviews, 3.63% to get their information. There is not much variation

between senior 58.33% and Junior 51.61% researchers in this aspect as both preferred library catalogue.

4.3.8 Adequacy of their own Library Collection

Every library should procure and provide adequate library materials to its reader community. If the library collection is good, the image of the library will be high. If the collection is poor, the image will go down. The books and periodical collection form the backbone of library holdings. Though quantity is not the measure to justify the holdings of the library, the user opinion might be an indication of both quantity and quality which should be taken with concern.

The respondents are asked to give their opinion regarding the adequacy of library collection available in their institute library under five ratings viz., Excellent, Adequate, Fair, Inadequate and Poor.

TABLE 4.17(a)

Adequacy of the Library Collection on the Subject field of Interest

Adequacy of Collection	SR(48)	JR(62)	TOTAL(110)
Excellent	12(25.00)	8(12.90)	20(18.18)
Adequate	14(29.16)	34(54.83)	48(43.63)
Fair	10(20.83)	18(29.03)	28(25.45)
Inadequate	12(25.00)	2(3.22)	14(12.72)
Poor	--	--	--

$$\chi^2 = 17.05637 \text{ (df -3) } p = 0.01$$

Table 4.17(a) indicates that 20% of respondents opined that their collection is excellent while 48% of the respondents said that the library collection is adequate for their purpose and 28% said that the collection is fair. However, Seniors seem to be not satisfied fully as the figures

25% under inadequate and 20.83% under fair indicate. Only 55% (approx.) expressed their satisfaction.

Statistically significant differences are noticed in senior and junior researchers for the adequacy of the library collection on the subject field of interest, as the chi square values indicate.

However, a point to be noted here is that the adequacy or otherwise of collection varies from one library to another. Hence, a further analysis has been made to identify the richness of resources among the institutional libraries from the user point of view.

TABLE 4.17(b)

User's View On Adequacy Of Information Sources In Their Institutional Libraries

NAME OF THE INSTITUTION	Excellent	Adequate	Fair	In-adequate	Poor
Centre for Research Medical Entomology, Madurai	0	0	50% (1/2)	50%(1/2)	0
Enterovirus Research Centre, Mumbai	0	67% (2/3)	33% (1/3)	0	0
Food & Drug Toxicology Research Centre, Hyderabad	0	62% (5/8)	38% (3/8)	0	0
Institute of Immunohaematology, Mumbai	20% (2/10)	50% (5/10)	20% (2/10)	10% (1/10)	0
Institute of Research in Medical Statistics, Chennai	0	50% (2/4)	50% (2/4)	0	0
Institute of Research in Reproduction, Mumbai	29% (4/14)	35% (5/14)	29% (4/14)	7% (1/14)	0
Laboratory Animal Information Service Centre, Hyderabad	25% (1/4)	50% (2/4)	25% (1/4)	0	0
National Institute of Nutrition, Hyderabad	21% (6/28)	39% (11/28)	21% (6/28)	15% (5/28)	0
Tuberculosis Research Centre, Chennai	16% (3/19)	53% (10/19)	21% (4/19)	10% (2/19)	0
Vector Control Research Centre, Pondichery	22% (4/18)	34% (6/18)	22% (4/18)	22% (4/18)	0

(The number in brackets indicates the no. of responses / the total no. of responses).

When the individual libraries are studied to assess their adequacy from user's view point , variations could be identified. While 20% of I.I.H. 29% of I.R.R., 25% of L.A.I.S.C., 21% of N.I.N., 16% T.R.C. and 22% of V.C.R.C. scientists expressed that their library collections are excellent CRME scientists opined that their libraries' collections are fair or inadequate. Further, 67% of ERC, 62% of FDTRC, 50% of IRMS

researchers opined that the collections are adequate. However, the collection of NIN and VCRC are also not completely satisfactory to all users as almost equal number have cited it as excellent and inadequate. For eg., 21% stated that the collections of NIN are excellent while 18% opined inadequate. Similarly, an equal number of 22% of V.C.R.C. scientists expressed it as excellent and inadequate. However, none of them stated that their library collections are poor.

Hence, it can be inferred that there is variation in the opinion of users regarding the collections of their libraries. Further, the opinions vary even within an organisation. This clearly indicates that none of the libraries are able to satisfy all kinds of research information to their users. Moreover, the NIN Library, generally believed as one of the best ICMR libraries, also is not an exception to this situation.

The 'adequacy of collection' is a broad aspect and hence the aspect has been further probed to know the specific area of collection, which the user opined as adequate. The Table 4.18(a) reveals the results.

TABLE 4.18(a)
Area of the Collection Considered Adequate

Areas of the collection	RANK	SR(48)	JR(62)	TOTAL(110)
Text Books	1	12(25.00)	14(22.58)	26(23.63)
	2	6(12.5)	6(9.67)	12(10.90)
	3	8(16.66)	4(6.45)	12(10.90)
	0	22(45.83)	38(68.29)	60(54.54)
Reference Books	1	--	4(6.45)	4(3.63)
	2	2(4.16)	--	2(1.81)
	3	--	2(3.22)	2(1.81)
	0	46(95.83)	56(90.32)	102(92.72)
Journals	1	30(62.5)	38(61.29)	68(61.81)
	2	6(12.5)	8(12.90)	14(12.72)
	3	4(8.33)	6(9.67)	10(9.09)
	0	8(16.66)	10(16.12)	18(16.36)
Abstracts and Indexes	1	6(12.5)	6(9.67)	12(10.90)
	2	4(8.33)	4(6.45)	8(7.27)
	3	6(12.5)	2(3.22)	8(7.27)
	0	32(66.66)	50(80.64)	82(74.54)
Research Reports	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)
Bibliographies	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)

Referring to the question on the area of the collection considered adequate, 61.81% of respondents mentioned journals and 23.63% consider textbooks as adequate. Research reports and Bibliographies draws a blank. Both Senior and Junior researchers are unanimous in their expression that journals are adequate as 62.5% and 61.29% expressed respectively a similar opinion. Next to journals, both Senior (25%) and Junior (22.5%) researchers have expressed that textbooks are adequate. The research reports, which are supposed to play a vital

role in disseminating the research information and the methodologies of research, etc., are inadequate in these libraries as 100% of the sample gave it last priority which indicates the inadequate possession of these sources.

A further analysis has been made to assess the user's opinion, institution-wise, as the collection of different types of sources may vary from one institute library to another. The details are presented in Table 4.18(b).

TABLE 4.18(b)

User's view on Adequacy of Information Sources In Their Institutional Libraries

NAME OF THE INSTITUTION	Text Book	Reference books	Journals	Abstract & Indexes	Research reports	Bibliographies
Centre for Research Medical Entomology, Madurai	50% (1/2)	0	50% (1/2)	0	0	0
Enterovirus Research Centre, Mumbai	33% (1/3)	0	67% (2/3)	0	0	0
Food & Drug Toxicology Research Centre, Hyderabad	25% (2/8)	0	62% (5/8)	13% (1/8)	0	0
Institute of Immunohaematology, Mumbai	20% (2/10)	0	70% (7/10)	10% (1/10)	0	0
Institute of Research in Medical Statistics, Chennai	25% (1/4)	0	75% (3/4)	0	0	0
Institute of Research in Reproduction, Mumbai	14% (2/14)	7% (1/14)	65% (9/14)	14% (2/14)	0	0
Laboratory Animal Information Services Centre, Hyderabad	25% (1/4)	25% (1/4)	50% (2/4)	0	0	0
National Institute of Nutrition, Hyderabad	21% (6/28)	4% (1/28)	57% (16/28)	18% (5/28)	0	0
Tuberculosis Research Centre, Chennai	32% (6/19)	5% (1/19)	53% (10/19)	10% (2/19)	0	0
Vector Control Research Centre, Pondichery	22% (4/18)	0	72% (13/18)	6% (1/18)	0	0

(The number of brackets indicates the no. of responses/ the total no. of responses)

As indicated in the table there is not much variation among the institutes regarding the collection of various sources. The journals as they provide the primary information, seem to be adequate in almost all institutes as 50% and above scientists are satisfied with this collection.

Journals are followed by books and the opinion of researcher on this type of source varies from one institute to another. CRME respondents are equally satisfied with books (50%). Further, abstracts are available in only six institutes and the level of adequacy also is not significant. Lack of research reports is certainly a startling revelation which has been revealed in libraries' survey also, and this aspect requires further data to find out the causes.

Hence, it can be concluded that the data reveals that according to the user's view, the journals collections in the libraries under survey is high. The collection of reference books, abstracts and indexes, research reports and bibliographies is very poor in the opinion of users. The reason may be due to the availability of nascent, pin-pointed and up-to-date information in the journals, the institutes might be giving priority to subscribe them.

4.3.9 Use of Library Services

The ICMR institute libraries should provide information services that are useful to the researchers/scientists. Important services include user orientation service, reference service, loan service, inter-library loan service, bibliographic service, CAS/SDI, online services, CD-search, Trend and State-of-the-art reports, etc.

Respondents have been asked to indicate the adequacy of the library services, the preference among these library services and the drawbacks in the existing system. Tables.4.19 to 4.22 presents the findings.

TABLE 4.19
Preference to the Library Services

Preference to the library services	RANK	SR(48)	JR(62)	TOTAL(110)
Reference Services	1	20(41.66)	26(41.93)	46(41.81)
	2	10(20.83)	8(12.90)	18(16.36)
	3	4(8.33)	6(9.67)	10(9.09)
	0	14(29.16)	22(35.48)	26(23.63)
Bibliographic Services	1	8(16.66)	8(12.90)	16(14.54)
	2	4(8.33)	6(9.67)	10(9.09)
	3	6(12.5)	4(6.45)	10(9.09)
	0	30(62.5)	44(74.96)	74(67.27)
CAS	1	10(20.83)	6(9.67)	16(14.54)
	2	6(12.5)	4(6.45)	10(9.09)
	3	4(8.33)	2(3.22)	6(5.45)
	0	28(58.33)	50(80.64)	78(70.90)
SDI	1	--	--	--
	2	--	--	--
	3	--	--	--
	0	48(100.00)	62(100.00)	110(100.00)
Reprography	1	--	4(6.45)	4(3.63)
	2	--	--	--
	3	--	--	--
	0	48(100.00)	58(93.54)	106(96.3)
Loan	1	--	4(6.45)	4(3.63)
	2	2(4.16)	--	2(1.81)
	3	--	2(3.22)	2(1.81)
	0	46(95.83)	46(74.19)	102(92.72)
Inter- Library loan Services	1	4(8.33)	--	4(3.63)
	2	2(4.16)	2(3.22)	4(3.63)
	3	--	--	--
	0	42(81.5)	60(96.77)	102(92.72)
Online	1	6(12.5)	14(22.58)	20(18.18)
	2	4(8.33)	4(6.45)	8(7.27)
	3	4(8.33)	2(3.22)	6(5.45)
	0	36(70.83)	42(67.74)	76(69.09)

The main question dealt with the type of services which the respondents use to obtain information. The Table 4.19 illustrates that the services viz., reference services 41.81%, Online services 18.18%, Bibliographic services 14.54% and CAS 14.54% are the most frequently used services as they ranked as first priority respectively. Loan

(92.72%) and inter-library loans (92.72%) services are of least priority while reprography (96.3%) and SDI (100%) almost draw a blank. There is not much variation between Senior and Junior researchers regarding the Reference Service as 41.66% and 41.93% ranked them as first priority respectively. The opinion is almost similar per Bibliographic Services also as the figures 16.66% and 8.33% of Seniors and 12.90% and 9.67% of Juniors indicate first and second priorities. Regarding the CAS, the Seniors preference of 20.88% is more than the Juniors i.e., 9.67%. Online is preferred more by Juniors (22.58% and 6.45%) than Seniors (12.5% and 8.33%). A Significant revelation is that SDI has not been noted as a preferred service. The reason may be that the libraries are not offering this service for various reasons.

The ultimate aim of any library is to achieve user satisfaction by catering to their information requirements through adequate and efficient information services. To sought the opinion of users in this regard, a question has been asked and the responses tabulated in Table 4.20.

TABLE 4.20
Adequacy of the Services

Adequacy of the services	SR(48)	JR(62)	TOTAL(110)
YES	34(70.83)	52(83.87)	86(78.1)
NO	14(29.16)	10(16.12)	24(21.81)

$$\chi^2 = 2.69596 \text{ (df = 1) P= 0.10.}$$

Regarding the adequacy of services, Table 5.20 reveals that 78.1% of the respondents said that the services are adequate. Further, the Juniors are more satisfied (83.87%) than the Seniors (70.83%), this is a natural phenomenon as the Senior researchers expect more personalized services like SDI.

Hence, it can be inferred that the majority (78.1%) are satisfied with the information services available in their institutions.

The chi square values indicate statistically significant differences among Junior and Senior researchers for the adequacy of the services.

The respondents have been asked to mention the reason, if any, to feel that the services are inadequate. Table 4.21 reveals the findings.

TABLE 4.21

Reasons for Inadequate Services

Reasons for inadequate services	SR(48)	JR(62)	TOTAL(110)
Lack of Physical Facilities	2(4.16)	2(3.22)	4(3.63)
Lack of assistance from library staff	--	--	--
Inadequate Collection	12(25.00)	--	12(10.90)
Required Services not available	--	--	--

$$\chi^2 = 0.13714 \text{ (df = 1) } P = 0.20.$$

Reasons for inadequate services are inadequate collection 10.90%, and lack of physical facilities 3.63%. It can be interpreted from the figures that these reasons are not much effective in the use of library services, and what all required is a little more attention on these factors.

Statistically significant differences is observed in chi square values among senior and junior researchers when they were asked to explain the reason for inadequate services.

4.3.10 Special Services

The use of a research library depends on the awareness of the user on the availability of specific services. The research libraries, being special libraries, ought to provide a variety of information repackaging services as listed in Table 4.22. The users have been asked whether they are aware of these special services.

TABLE 4.22
Awareness Of Special Services

Awareness of special services	SR(48)	JR(62)	TOTAL(110)
Abstracts	20(41.66)	25(40.32)	45(40.90)
Indexes	20(41.66)	25(40.32)	45(40.90)
Subject Bibliographies	20(41.66)	23(37.09)	43(39.09)
Copies of the first paper of articles	2(4.16)	3(4.83)	5(4.54)
Content list of Periodicals	2(4.16)	5(8.06)	7(6.36)
Documentation List	20(41.66)	23(37.09)	43(39.09)
State of the art report	--	--	--
Trend report	--	--	--
Digest Services	--	--	--
Translation Service	--	--	--

$$\chi^2 = 0.13714 \text{ (df = 5) } P = 0.20.$$

Table 4.22 reveals that the respondents are aware of the following special services, namely, abstracts 40.90%, Indexing 40.90% subject bibliographies 39.09%, documentation lists 39.09% etc. 4.54% of the respondents are aware of the other services like copies of the first paper of article and content list of periodicals 6.36%. None of them are aware of the special services like state-of-the-art report, Trend report, Digest services and Translation services. This indicates the poor

state of affairs of information services offered to health science researchers. The opinions of Senior and Junior researchers are almost similar in this regard. The researcher's personal observation also indicates that the services are limited to conventional reference and lending and there is a need to serve the medical researcher / scientist with a variety of repackaging services in his chosen field like digests, trend reports, state-of-the-art, etc.

The chi square analysis reveals that statistically significant difference is there among senior and junior researchers for the availability of special services.

4.3.11 Use of Online Facility

Online access to information became an essential service in the contemporary information environment to provide the user with real time, shared information. However, online service is not a regular feature in India for all kinds of users and hence the medical scientists have been asked for their preference of this service. The results are tabulated in Table 4.23.

TABLE 4.23
Preference To Online Service

Preference to online service	SR(48)	JR(62)	TOTAL(110)
YES	44(91.66)	60(96.77)	104(94.54)
NO	4(8.33)	2(3.22)	6(5.45)

$\chi^2 = 1.36856$ df=1 p = 0.30

The significant findings is that 94.54% of the respondents, covering 96.77% of Junior researchers and 91.66% of Senior researchers prefer this service.

Statistically significant difference is observed among senior and junior researchers for the preference to online services, as the chi square values indicate.

The users certainly make use of any service if it is beneficial to them in one way or the other. Hence, the respondents have been asked to give reasons for preferring online service.

TABLE 4.24
Reasons For Preferring Online Service

Reasons for preferring online service	SR(48)	JR(62)	TOTAL(110)
Unlimited free access	26(54.16)	38(61.29)	64(58.18)
Economy of time	14(29.16)	16(25.80)	30(27.27)
Accuracy of Information	8(16.66)	8(2.90)	16(14.54)

$\chi^2 = 0.61142$ (df=2) p = 0.95

The reasons for preferring online services (Table 4.24) are that 58.18% respondents favoured online access because of its unlimited free access, 27.27% preferred because of the economy of time and 14.54% because it gives accuracy of information. The opinion of Senior and Junior researchers is almost similar on this aspect as unlimited free access is said to be the prime reason for 54.16% and 61.29% of Senior and Junior's respectively; followed by economy of time for 29.16% and 25.80%. The chi square values displayed also reveals that there is no significance on the opinion on online services between Senior and Junior researchers.

The user community under study have been asked to indicate reasons, if any, for not preferring the online service and a question has been included to this effect. As an insignificant number of respondents, i.e., 6 out of 110 marked the column, it has not been tabulated.

However, some of the reasons for not preferring online service by the six respondents are the cost factor, problem with telecommunication links, provides only bibliographic information and not a primary information, and majority of reference are not available locally, in the same order.

4.3.12. Online Vs Manual

India being a developing country, is still showing a progress in offering network services and the institutes have their own limitation like cost, availability of technology and communication links etc., to provide these services. So, the members of the ICMR institutes are, in general, accustomed to manual services. Hence, a question has been put forth to

study the attitude of researchers towards online services Vs manual services.

The sample users have been asked to indicate whether they would like to have the online services over manual. The Responses are provided in Table 4.25

TABLE 4.25

Whether Online Services Replace Or Supplement Manual Services

Online Replace Or Supplement Manual Services	SR(48)	JR(620)	TOTAL(110)
To replace manual services	6(12.5)	26(41.93)	32(29.09)
To supplement manual services	42(8.75)	36(58.06)	78(70.90)

$$\chi^2 = 11.36379 \text{ (df=1) } p = 0.01$$

70.90% of respondents prefer online services to supplement manual services than to replace them. This indicates that the users have recognized the worth of the manual services offered by their libraries. In other words, researchers are accustomed to manual services and realized their advantages, hence wants to continue them. At the same time they would like to get the advantage of online service also, hence they preferred online to supplement manual rather to replace it.

Statistically significant difference is observed among senior and junior researchers on the issue of online services to replace or supplement manual services, as indicated by chi square values.

4.3.13 MEDLINE services

The MEDLINE services play a prominent role in the dissemination of worldwide published health science literature to the biomedical community as and when desired by them. It provides up-to-date information as great an extent as possible and its citation help in locating original sources. It is thus essential for a medical researcher to make use of this service to get global access to information. To assess the use of this service by the users of ICMR institute libraries, a question has been asked.

TABLE 4.26

Knowledge Of Online Access To Information

Aware of MEDLINE Access	SR(48)	JR(62)	TOTAL(110)
YES	40(83.33)	56(90.32)	96(87.27)
NO	8(16.66)	6(9.67)	14(12.72)

$$\chi^2 = 1.18984 \quad (df=1) \quad p = 0.30$$

As revealed in Table 4.26, about 87.27% of the respondents expressed that they have knowledge of MEDLINE access to health science information. 90.32% of Junior researchers have awareness of

this service over 83.33% of seniors. It can be inferred that the users are aware of the MEDLINE facility and its contribution in disseminating medical, health and allied information to medical students, academicians, researcher/scientists and practitioners.

As indicated by chi square values significant difference is observed among senior and junior researchers with regard to their knowledge of online access to information.

a. Use of MEDLINE

Awareness of a service is different from its use. Hence the respondents have been asked to indicate the use of MEDLINE services. An encouraging factor is that 81.81% are making use of this service. The Junior researchers 83.87% have an edge over their Seniors 79.16% in the use of MEDLINE services as indicated in Table 4.27.

TABLE 4.27

Use of MEDLINE Services

Use of MEDLINE Services	SR(48)	JR(62)	TOTAL(110)
YES	38(79.16)	52(83.87)	90(81.81)
NO	10(20.83)	10(16.12)	20(18.18)

$$\chi^2 = 0.40248 \quad (df=1) \quad p= 0.50$$

Statistically significant difference is noticed among senior and junior researchers for the use of MEDLINE services, as revealed by chi square values .

b. Source of MEDLINE Services

In India, MEDLINE services are available through ICMR-NIC network. However, the outlets within the country are many like commercial vendor, Direct from ICMR-NIC, New Delhi Centre or the terminal of their own institute. Table 4.28 shows the details.

TABLE 4.28

Source of MEDLINE Service

Source of MEDLINE service	SR(48)	JR(62)	TOTAL(110)
Institution Library	28(58.33)	40(64.51)	68(61.81)
ICMR - NIC	8(16.66)	10(16.12)	18(16.36)
Commercial Vendor	2(4.16)	2(3.22)	4(3.63)
Any other	--	--	--

$$\chi^2 = 0.44835 \quad (df=2)$$

$$p = 0.95$$

The responses from Table 4.28 reveal that 61.81% of the respondents use through the institute library, 16.36% through ICMR-NIC and the remaining 3.63% through commercial vendors. The difference in the use of MEDLINE service can be attributed to the availability of this service only four out of ten institutions surveyed. The uses of the non-available libraries have to access it direct are through NICNET which they may feel as cumbersome. It can be interpreted that ICMR institute libraries are striving to provide global access to information through MEDLINE service to their user community.

Chi square test indicates a significant difference among senior and junior researchers opinion on the use of MEDLINE services.

4.3.14 Comments and Suggestions by Users

As a final part of the questionnaire, respondents have been asked to give suggestions for the improvement of their institutional library. The suggestions are recapitulated and presented under different broad headings as follows :

a. Physical Facilities

The respondents have suggested the following for the improvement of physical facilities :

- A well-planned building should be constructed for library which helps in arranging the books and journals in a most organised manner.
- Need more space for reading and need for cubicles.
- Provide more number of generators as the frequent power-cuts cause lots of inconvenience

b. Finance

- Many respondents have suggested to have more grants
- Institute library should have adequate funds to subscribe for journals which are in demand to satisfy the research needs of scientists engaged in specialized subjects.
- The budget for the library should be increased so that more books can be purchased and modern appliances can be used.
- More funds needed to subscribe for journals and books for adequate research information.

c. Library Staff

It appears that the users are not satisfied with inadequate and unqualified staff as their suggestions include

- There must be sufficient library personnel to assist and guide researchers/scientists.
- Adequate training should be imparted to the staff of the library.

d. Library Collection

The suggestions regarding library collection include :

- More number of recent books, journals and back volumes of periodicals are needed.
- Recent advances in concern specialization must be subscribed ; all recent advance series and yearbook series should be made available regularly.
- Indent all journals that are published in India.
- Acquire more number of reference books.
- Medical literature of academic importance on audio and video cassettes and on microfilms should be procured.

e. Services

The remarks for the improvement of services include

- The authorities should make efforts to see that the library services are improved to meet the basic requirements of researchers /scientists.
- Library should be developed as an autonomous body even though it serves an institution, pooling all the funds and resources and

developing on modern lines. Management of library should have an innovative approach.

f. Online Facility

Many of the respondents have suggested for the provision of online services. Some of the suggestions are as follows:

- The scientists should have free access to online search so that he/she should be able to collect information without the assistance of the library staff.
- Online service can be mediated through library. They will pave the way to update the literature in all fields pertaining to one's research, which will be available to all other staff too, if kept in the library.
- CD-ROM services are much more accessible to the scientist. It is better to have some more computers.
- It is better to have networking with other leading libraries in India.

Information seeking/communication behaviour of health science researchers/scientists working in ICMR institutes, as revealed through the present survey, appears to have a very close resemblance to findings from similar surveys conducted elsewhere except for preference to formal communication, even though information resources and accessibility differs. The similarity could be due to the fact that information behaviour to a great extent forms a part of research practice and scientific tradition. The ICMR researchers/scientists have also been carrying forward the same scientific tradition and hence have very similar information gathering / communication behaviour.

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