Library Use by Biomedical Scientists in India in Digital Era
Prabhat Ranjan* and Surya Nath Singh**


ABSTRACT
The present paper discusses the current status of biomedical research libraries in India and their perceived importance as reading places and subscription sources of information. Total 1013 scientists of 51 institutes under two central ministries i.e. Ministry of Health & Family Welfare and Ministry of Science & Technology were taken under study. Total 313 questionnaires were considered useful to the study. It was found that libraries are important to the scientists and 43% of them visit the library at least once a week. Libraries are useful as a subscription source of information. The main obstruction in visiting the libraries were the online resources available as open and closed access. Poor library services and resources were found obstruction for 10.3% of respondents. Electronic format was used more than print format by a larger number of biomedical scientists. It is suggested to improve the IT skills of library staffs and to increase online services to library users.

KeyTerms: Biomedical Libraries, Online Resources, Library use, Electronic Resources, Library Anxiety

INTRODUCTION
The present era is notified by the wide expansion of electronic resources and availability of them on the World Wide Web. The fast information communication has minimised time lag between information generation, publication and retrieval which has also changed the roles of information intermediaries including libraries. Libraries are now being turned into service-oriented institutions at the place of collection-oriented institutions to satisfy its patrons at electronic platforms. A large proportion of information is now availed by its publishers on clouds where intermediaries including libraries play their roles as a channel only. Electronic presence of information on computer screens has minimized the visits to the libraries and sometimes anxieties are observed among the information intermediaries including libraries. Scientists being an information producers as well as information consumers seek information exhaustively and pin-pointedly on their concerned subjects expeditiously. They are active users of information; however there is less number of studies directly focussed upon their information needs and attitude to seek information. The present study is aimed to discover the status and importance of biomedical research libraries in India based on the opinions and views of its users i.e. scientists.

OBJECTIVES
- To know about the status of libraries as subscription sources of information for the biomedical scientists in India.
- To know about the present status of physical visits to libraries and discover the reasons of lesser visits if there are.
- To compare the use status of electronic and print in the digital era for different resources on the basis of usage in India by the biomedical scientists.
- To ascertain if biomedical scientists are satisfied with overall library services.

SCOPE AND LIMITATIONS
The study is limited to four research organizations and some autonomous institutes under two ministries of central government of India i.e. Ministry of Health & Family Welfare and Ministry of Science & Technology. The four such organizations are Indian Council of Medical Research (ICMR), Council of Scientific & Industrial Research (CSIR), Department of Science &
There are plenty of studies on different aspects of information sources and services in India and abroad. Only a few biomedical libraries were found fully automated in India despite a good number of libraries with library management software (57.5% of Indian medical libraries had such software) Farahi & Gandhi. Internet was found the most popular information source at the start of the millennium as well as today Hewison; Vicente et al.; Umesh & Chandrashekhar. Search engines and open access resources have availed information anywhere anytime at the cost of Internet charges only, minimising the visits to libraries Nazim & Saraf; Xiao, 2010. De Groote et al. found that Google was used more frequently than the MEDLINE database in the colleges of medicine, nursing, pharmacy, dentistry, public health and applied health sciences in the United States. However, fewer visits to the libraries are not new problems and were reported before Internet age also in several studies Nkereuwon; Strother, Lancaster & Gardiner; Al-Shanbari & Meadows; Folster; Spath & Buttlar, and other places. Vaughan found that print only journals were being obsolete after subscription of Science Direct online database in Duke University Chemistry Library. Use of e-books also increased gradually Velde & Ernest; Nicholas, Rowland et al.; Rowland et al.; Hannigan; Folb et al. However, some studies show that students having experience of e-books still preferred print textbooks Hannigan; Rowland et al. E-books were used more frequently by medical students than the faculty members Folb et al. Students in technology and medical sciences found using more electronic books than students in history and languages Slater; Ming-der Wu & Shin-Chuan Chen. Users liked the convenience of e-books because of their online availability without time and space limitations.

Workplaces were found prime locations for information access by the largest number of professionals Adams & Bonk; Monopoli et al. In a study in Thapar University, Punjab, libraries were found less used than hostels and computer centres for electronic information access by students Kaur & Verma. However, some libraries were estimated better for online information access Parameshwar & Patil. The libraries were estimated as a more comfortable place than a cyber café by researchers due to their serene environment Chiemeke et al. Vondracek found the same that students seek comfort, convenience and quiet in extra-library and library environments, rely on knowledgeable individuals for research assistance and conduct the majority of their research online from home.

Research works were found a prominent reason for information access by scientists in Tennessee by Tenopir & King. Library subscriptions are being increased where own subscriptions are being decreased for online resources in the digital era King as some studies prevail. However, paediatricians were found reading heavily from personal subscriptions, read from both electronic and print journals Tenopiret al. All these lead to us to assume that libraries are important for subscription of information resources despite somewhat lesser visits to the libraries. Electronic resources are found generally more used than print resources for more types of resources.

**Methodology**

To accomplish the objectives of the study, an online survey was organised to know the practices and views of biomedical scientists. The survey was proposed at 95% confidence level and ±5% confidence interval. A questionnaire was structured to know the views and opinions of respondents at the given issue. Survey Monkey online software was used to collect the data and generating master sheet. Microsoft Excel was used for calculating the data and presenting it in graphical forms. The central tendency of data was obtained for each question. Further, a comparison was made on the basis of designation levels of the scientists. Scientists were grouped into three groups based on their salary structure and designations.

Total 1013 scientists were considered for the study where the number of scientists with the availability of email IDs was only 974. However, due to various issues, the questionnaire could be delivered to 702 scientists only. More than 325 questionnaires were received for the study in which some had much incompleteness and could not be considered for the study. Hence the number of questionnaires considered for the study was only 313.

**Data Analysis**

In this section, data was analysed after data entry, counting and calculation. The data has been presented in tables and charts.

**Demographic Structure of the Respondents**

Number of respondents in lowest and highest age groups (21-30 years and ‘more than 60’ respectively) is minimal. The largest number of respondents is in the age group 31-40 years (35.1%) followed by age groups 41-50 years (31.9%) and 51-60 Years (27.5%). More than two thirds (70.3%) of respondents are males and the rest are females. Almost half (49.2%) of respondents are at a middle level (Scientist – D/E/F) of designations followed by designations of Scientist B/C (32.3%) and Scientist G/H (18.5%) (Table 1).

<table>
<thead>
<tr>
<th>Age (in Years)</th>
<th>Number</th>
<th>Percentage</th>
<th>Gender</th>
<th>Number</th>
<th>Percentage</th>
<th>Designation</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>4</td>
<td>1.3%</td>
<td>Female</td>
<td>93</td>
<td>29.7%</td>
<td>Scientist – B/C</td>
<td>101</td>
<td>32.3%</td>
</tr>
<tr>
<td>31-40</td>
<td>110</td>
<td>35.1%</td>
<td>Male</td>
<td>220</td>
<td>70.3%</td>
<td>Scientist – D/E/F</td>
<td>54</td>
<td>49.2%</td>
</tr>
<tr>
<td>41-50</td>
<td>100</td>
<td>31.9%</td>
<td>Total</td>
<td>313</td>
<td>100%</td>
<td>Scientist – G/H</td>
<td>88</td>
<td>18.5%</td>
</tr>
<tr>
<td>51-60</td>
<td>86</td>
<td>27.5%</td>
<td></td>
<td>4</td>
<td>3.5%</td>
<td>Total</td>
<td>313</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>11</td>
<td>3.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not specified</td>
<td>2</td>
<td>0.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>313</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reason To Less Frequency Library Visit

It was found that fewer visits to the libraries are mostly due to the availability of materials online everywhere (62.3% of respondents selected this option). However poor library services (4.8%) and weak collections (5.5%) are also reasons for lesser visits for which libraries fail to beaccountable. Shortage of time (17.2% of users selected this option) is also an important factor that restricts library visits by the users. In some other studies, search engines were found reasons for lesser visits to the libraries Nazim & Saraf; Xiao5, 6 which are identical to this study.

Purpose of Information Access

In a question in this study, respondents were asked their different purposes to access information in libraries. This question had multiple choice options.

Preferred Format of Information for Different Resources

Expansion of electronic resources is visible in any type of libraries; however selections of format for different resources are different. Previous studies on this matter confirm that some resources are being preferred in print format yet. Therefore in a question, respondents were asked what their selections were from print and electronic for different resources. The question had a number of sub-questions and responses to each sub-question were calculated separately (fig. 3). It is obvious that this question does not deal with a format of reading.

Almost two thirds (63.5%) of respondents were found satisfied with the overall library services. The rest (17.3%) of respondents selected ‘can’t say’ option. Hence it is clear that most of the biomedical scientists are satisfied with the overall services of their libraries in India.

Importance of Libraries to Users

In the present era of online information, the Internet has changed the definition of a successful library. At present time fewer visits to the libraries do not entitle it a poor remark as a library are forwarding its services to each person at their laptop/desktop directly. Therefore a question was framed to know the existing importance of libraries in the mind of the biomedical scientists.

Usage statistics of various kinds of resources for different users were calculated. Table 2: Designation-Wise Satisfaction with Library Services shows the percentage of satisfied respondents for each item. The largest number of respondents has considered libraries as most important to them. They constitute more than one third (34.9%) of the total sample. (28.4%) and (21.9%) of them consider the libraries moderately and much important respectively. Only 14.7% (12.2% selecting less important and 2.5% selecting the least important) of respondents remarked libraries below than average important. At a scale where ‘5’
represent very important and '1' represents the least important, the average score obtained is 3.74 i.e. libraries are much important to the respondents. This is opposite concord to the worries expressed by Folster that library and librarians are not supposed to be primary sources of information.11.

Table 3: Importance of Libraries to Users

<table>
<thead>
<tr>
<th>Option</th>
<th>Least Important (1)</th>
<th>Less Important (2)</th>
<th>Moderately Important (3)</th>
<th>Much Important (4)</th>
<th>Extremely Important (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>7 (2.5%)</td>
<td>34 (12.2%)</td>
<td>79 (28.4%)</td>
<td>61 (21.9%)</td>
<td>97 (34.9%)</td>
</tr>
</tbody>
</table>

Table 4: Comparisons based on Designation Levels of the Scientists

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Question</th>
<th>Type of Inference Analysis</th>
<th>D. F.</th>
<th>$\chi^2$ Value/F-Ratio</th>
<th>Critical Value</th>
<th>Significance of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Frequency of Library Visits</td>
<td>$\chi^2$</td>
<td>12</td>
<td>11.190</td>
<td>21.026</td>
<td>No</td>
</tr>
<tr>
<td>2.</td>
<td>Reasons to Less Frequency of Library Visits</td>
<td>$\chi^2$</td>
<td>10</td>
<td>4.848</td>
<td>18.307</td>
<td>No</td>
</tr>
<tr>
<td>3.</td>
<td>Satisfaction with Library Services</td>
<td>$\chi^2$</td>
<td>4</td>
<td>7.384</td>
<td>9.488</td>
<td>No</td>
</tr>
<tr>
<td>4.</td>
<td>Purpose of Information Access and Use</td>
<td>$\chi^2$</td>
<td>2</td>
<td>0.551</td>
<td>5.991</td>
<td>No</td>
</tr>
<tr>
<td>5.</td>
<td>Preferred Format of Information for Different Resources</td>
<td>$\chi^2$</td>
<td>2</td>
<td>1.831</td>
<td>5.991</td>
<td>No</td>
</tr>
<tr>
<td>6.</td>
<td>Subscription Sources of Information</td>
<td>ANOVA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Importance of Libraries to Users</td>
<td>ANOVA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

The present study came out with some similar and some different results than previous studies on general and specialised users of information. Libraries were found an important place in terms of subscription sources of information. Library visits were also found positive, where some of the previous studies had indicated minimisation in library visits and use Nagy; Grefsheim & Rankin; Xiao. Reason for lesser visits was prominently the availability of information available everywhere online which is similar to other studies Nazim & Saraf; Xiao; Folb et al.5, 6, 13. Research works were found the purpose of information access by most of the biomedical scientists which is similar to the previous studies Tenopir & King31. Status of electronic vs. print in case of journals (serial publications) and books (non-serial publications) were identical to earlier studies Ming-der Wu & Shin-Chuan Chen; Nikkar & Mooghali; Velde & Ernest; Rowlands & Clark et al.; Rowland et al.; Hannigan; Folb et al., however, books were tended to be used in print-is more reflected in this study.17, 18, 20, 21, 22, 23, 13. Overall libraries were considered important in view of biomedical scientists in India which does not support the worries of Folster11. Hence, the study discloses that libraries are in a good status in spite of a decrease in the frequency of library visits.

CONCLUSION

Library subscriptions are used more than personal subscriptions for both the formats i.e. electronic and print. Preferences to electronic resources were found more common for serial publications than non-serial publications. Literary books and newspapers are preferred in print till to yet. Library visits by biomedical scientists are satisfactory as 43% of them visit the libraries at least once a week. Libraries are important at present digital age also for the biomedical scientists in India. Libraries should avail several remote services that can make the task of accessing information easy and deliberate.
REFERENCES


