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# **Evaluation of Knowledge and skills of Health Library Professionals in Karnataka: A Study**

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## **Abstract :**

The purpose of the survey is to ascertain health science library professionals about their knowledge and skills in professionals development in enhancing their knowledge in day to day their work environment. 218 questionnaire were administered personally and 183 dully filled in questionnaire were received with response rate of 84.94% and were considered for analysis. The study findings that The male professionals in the first three categories are shown as between 70-85% and the highest is in the Pharmacy institutions. The Age group 36-40 has in total 54 (29.51%) of all the professionals taken together. The data reveals that 175 (95.63%) have stated in positive that the participation helps them to update their knowledge and skills. It is found 90.71% professionals attend and participate in the Seminars, conferences and the number of conferences attended during last five years are 78(42.6%) with 1-5 of such meetings and 69(37.7%) for the frequencies 6-10.

Key Word : Knowledge and Skills; Performance; Health Science librarianship; manpower; India

## **Introduction**

A health science library is a specialized library. It may be a physical or virtual library housed in a hospital, medical school, school of public health, or other health care body of institution. It makes the uniqueness and importance of information need on a patient care and on the health science environment. In general a hospital library focuses on education of health professionals; students, research in the medical science, and patient care. The libraries whether, physical, virtual or hybrid in hospitals or in academic institutions, the role of health science library has to provide access to information. The responsibility of the health science librarian is to provide quality health information at the time of need, at the place of need, to whoever needs it. The term medical library, health science library, hospital library are used interchangeable used and for the most represent the same entity. In recent years the information on patient records is also being linked with the library resources with the advent and application of information communication technology which as emanated the evidence based medicine and thus evidence based librarianship.

## **Literature Review**

According to Hegg, who has cited in Blakiston (2011) debates that “continual professional development for librarians is essential due to one of these two reasons:” “a)

the fear of becoming obsolete or trying to manage and adapt to changing environment.” But inferentially, the latter is not possible without upgrading the knowledge and skills. Blakiston (2011) upholds that library organisations essentially have to as professional institutions should provide “continual learning that upkeep librarians in their mission for continuous education and training in order to be effective in their profession thereby improving productivity and support the library in its undertaking to remain competitive in all fronts.” In their paper Selznick (1957); Prahlad and Hamel (1990) state thus, “ever-changing roles and unstable job descriptions force libraries and librarians to adjust and adapt to the situation in order to remain pertinent in today’s information society.”

A research was carried out by Kealy (2009) “on the required re-skilling of librarians for future libraries with specific reference to the University of Melbourne Library, Australia.” The said University “Library underwent major restructuring in terms of its vision for the library” in the years 2006 and 2007 and also there was change in the “organisational structure and service model.” “This was largely in response to the library becoming more technologically advanced by offering information technology services and multimedia services within the background of new undergraduate degrees being offered at the university.” This is an analogous “example of an organisation needing to adapt and being flexible in a fluctuating environment in order to remain pertinent to the time and also being competitive “

In another similar study “Selematsela and Du Toit (2007) identified technical and non-technical as different competencies within the LIS fraternity. 67 librarians were contacted across nine libraries and the questions were aimed at getting information on required competencies within the area of information literacy”. On the other hand the some essential “non-technical competencies included are interpersonal skills, empathizing and supportiveness.” The study also investigated “those knowledge and skills sets essential for a changing library.”

## **Objectives of the Study**

To enhance knowledge to meet the ongoing demands and needs of health science professionals, by acquiring the contemporary knowledge and skills, to facilitate with good information and to create an appraisal to the best users’ satisfaction, there is need for appropriate knowledge and skills possessed by the health science library professionals. The objectives of the research as follows:

- To study the existing knowledge and skills of health science library (HSL) professionals in the country
- Are these skills and knowledge are enough to maximize the information services to the health science library personnel.
- To study the knowledge and skills as acquired by HSL professionals on the job.
- To identify the motivational factors among HSL professionals for acquiring knowledge and skills on job (internal and external factors).
- To study the performance level of highly and that of less motivated personnel

## Data Analysis and Result

The study adopted survey method and used a questionnaire to collect data from the library professionals working the health science institutions. A stratified sampling method was adopted as health science educational institutions are spread six regions and from each zone a specific number of educational institutions. are reckoned in the sample as detailed in Chapter – 1 under methodology. So this made a sample 96 medical, dental, pharmacy and nursing educational institutions and the data was collected selecting these 96 health science institutions' library professionals and the details of professionals' responses in each of the four category of institutions is presented in Table – 1.

Table – 1 Number of Responses received from the Institutions

SI No	Category of Institutions	Numbers
1	Medical	108
2	Dental	33
3	Pharmacy	21
4	Nursing	21
Total		183

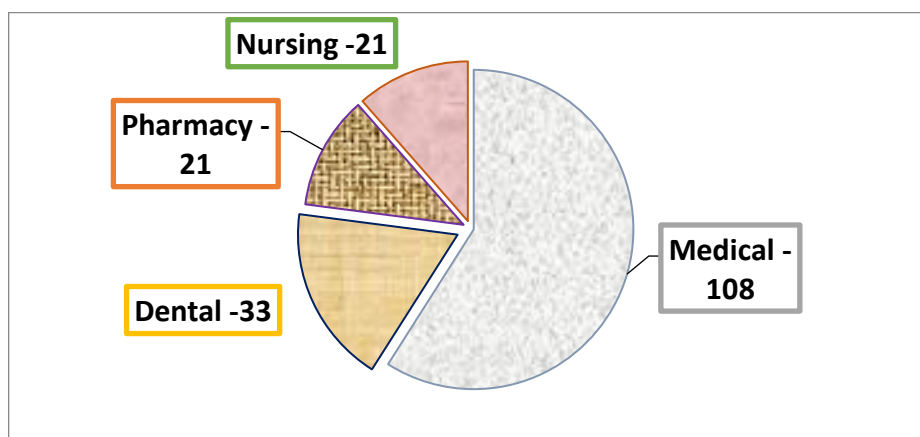


Fig. 1: Number of Responses received in each category

**Gender-wise and Age-wise Distribution**

The study collected Gender-wise and Age-wise data from the respondents. The distribution of the data is presented in Tables and Graphs.

The Table – 2 presents the data by Gender of the health science library and information professionals. It reveals that majority of professionals in Medical, Dental and Pharmacy colleges are male and only in Nursing colleges the dominance is of females.

Table – 2 Gender Wise distribution of Health Science Library Professionals

Gender	Category of Institutions				Total
	Medical	Dental	Pharmacy	Nursing	
Male	75 (69.44%)	26 (78.79%)	18 (85.71%)	9 (42.86%)	128 (69.95%)
Female	33 (30.56%)	7 (21.21%)	3 (14.29%)	12 (57.14%)	55 (30.05%)
Total	108	33	21	21	183

The male professionals in the first three categories are shown as between 70-85% and the highest is in the Pharmacy institutions. No specific reasons can be assigned to this kind of frequency, excepting that the Nursing colleges have more female educants than in the other three and it may be presumed that in Library also the preferences are for the female professionals and so on.

In the context of Age-wise distribution of the health science library and information professional in the four categories of institutions the data are presented in Table -3. The ages of the professionals are grouped between 25 to 51+ years with five year frequencies.

The data from the Table – 3 shows that most professionals are in the age-group of 36-45 and the same is highlighted in the Table. It a more closer observations at the Total distribution is made, the Age group 36-40 has in total 54 (29.51%) of all the professionals taken together. Only in the case of Dental college library and information professionals the age-group 46-50 has higher proportion than the other three. In case of Nursing colleges no representation is found in the case of 46-50 and 51+ age groups. It is interesting to know that most professionals are in middle age groups and some are within

40 years of age and there is scope for them to the upgrade their knowledge and skills as they still have about two decades of service in the profession.

Table – 3 Age-wise distribution of Health Science Library Professionals

Category of Institution	AGE GROUPS (in No. of Years)						Total
	25 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51+	
Medical	16 14.81%	12 11.11%	24 22.22%	25 23.15%	18 16.67%	13 12.04%	108
Dental	2 6.06%	3 9.09%	6 18.18%	5 15.15%	11 33.34%	6 18.18%	33
Pharmacy	1 4.76%	2 9.52%	10 47.62%	5 23.81%	3 14.29%	0 0.0%	21
Nursing	3 14.3%	2 9.5%	14 66.7%	2 9.5%	0 0.0%	0 0.0%	21
Total	22 12.03%	19 10.38%	54 29.51%	37 20.22%	32 17.48%	19 10.38%	183 100%

#### 4.1.1 Designations, Qualifications and Experience:

The Table - 4 and Table – 5 present the data on Designation and Qualifications of the library and information professionals working in the four categories of health science educational institutions.

The Table – 4 reveals that highest number of library professionals are in the grade of Assistant Librarians with 23.81 the lower strength is Chief Librarians and Senior Librarians who probably head the library.

Table – 4: Designation-wise health science library and information professionals

Category of Institution	DESIGNATIONS					Total
	Chief Librarian	Senior Librarian	Librarian	Deputy Librarian	Assistant Librarian	
Medical	13 12.04%	11 10.19%	22 20.37%	1 .92%	61 56.48%	108
Dental	1 3.03%	2 6.06%	16 48.48%	2 6.06%	12 36.37%	33
Pharmacy	2	0	14	0	5	21

	9.52%	0.0%	66.67%	0.0%	23.81%	
Nursing	1	0	15	0	5	21
	4.76%	0.0%	71.43%	0.0%	23.81%	
Total	17	13	67	3	83	183
	9.29%	7.1%	36.61%	1.64%	45.35%	100%

Despite having the conditions laid down by the regulatory authorities of higher educational sector like AICTE and MCI, the post of librarians in medical colleges are not filled by many institutions and it is evident from the data presented in Table -4 above. If the first three designations are reckoned to head the libraries less than 50% of the health science educational institutions have these positions as identified under this study. The table reveals that 57% of the libraries have Deputy Librarians and Assistant Librarians.

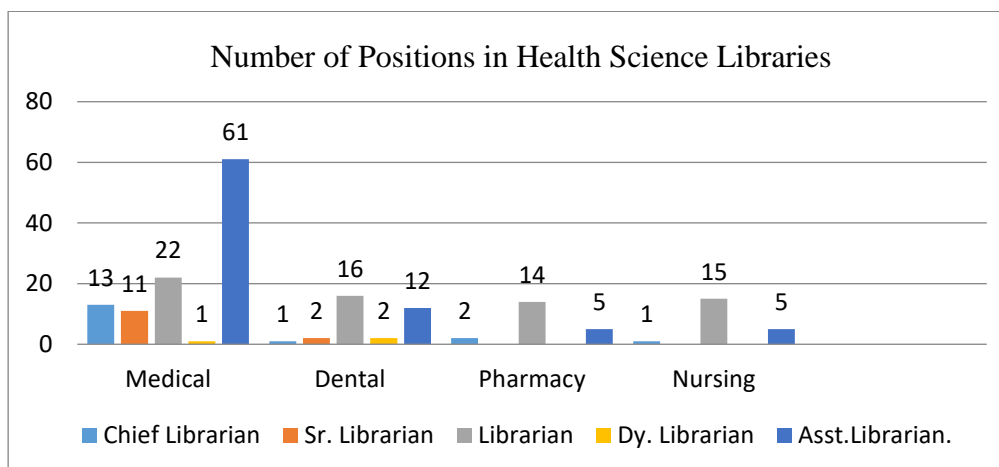


Fig-2 : Strength of Library manpower in Health Science Libraries

However the conditions in the case of Dental, Pharmacy and Nursing Colleges seem to be far better than the medical colleges. In case of these colleges there is post of librarian deemed to be heading the library and in this the position of pharmacy and nursing colleges is far better than the dental colleges which show more that 75% of these colleges have post of librarian. It can be observed that no definite staff formula had been followed by any of these health science educational institutions. The lack of adequate strength of library and information professionals is definitely going to affect the library and information services and also motivation to have required knowledge and skills too.

The Table – 5 shows the qualifications possessed by the library and information professionals working the health science educational institutions considered under the purview of this study. It can be stated that for library and information professionals there are now ample opportunities to improve their qualifications both in basics and in specializations such a health science librarianship, digital libraries and library automation and networking. Besides these there are Open University courses in them and also many

of them are also offering doctoral programmes too. In the light of these characteristics the tabulated data could be observed and can be interpreted as 66.12% of them have stagnated at Masters degree level and more than 8% are Ph.D. degree holders.

Table – 5: Qualification-wise distribution of health science library and information professionals

Category of Institutions	QUALIFICATIONS					Total
	BLISc	MLISc	M.Phil.	Ph.D.	MPhil and PhD	
Medical	9 8.33%	63 58.33%	24 22.22%	11 10.19%	1 0.93%	108
Dental	1 3.03%	26 78.79%	4 12.12%	2 6.06%	0 0.0%	33
Pharmacy	0 0.0%	16 76.20%	4 19.04%	1 4.76%	0 0.0%	21
Nursing	2 9.52%	16 76.20%	2 9.52%	1 4.76%	0 0.0%	21
Total	12 6.56%	121 66.12%	34 18.58%	15 8.19%	1 0.5%	183 100

The Table – 6 shows the experience of the library and information professionals working in health science educational institutions. The experience is formed into groups of five years intervals, from 1 year to 26+ years.

Table – 6 : Experience of health science library and information professionals

Category of Institutions	No, of Years of Experience						Total
	1 to 5 Years	6 to 10 Years	11 to 15 Years	16 to 20 Years	21 to 25 Years	26+ Years	
Medical	12 11.12%	29 26.85%	27 25.0%	14 12.96%	16 14.81%	10 9.26%	108
Dental	2 6.06%	8 24.24%	7 21.21%	7 21.21%	4 12.13%	5 15.15%	33
Pharmacy	3 14.29%	3 14.29%	8 38.09%	6 28.57%	1 4.76%	0 0.0%	21
Nursing	5 23.82%	7 33.33%	7 33.33%	2 9.52%	0 0.0%	0 0.0%	21
	22 12.03%	47 25.68%	49 26.78%	29 15.84%	21 11.47%	15 8.20%	183 100%



The data from the Table reveals that more than 50% of them are in the range of 6-15 years experience. It is also observed that in case of Nursing colleges, more number of LIS professionals are in the range of 1-5 years whereas in the case of medical, dental and pharmacy college library professionals its shows higher experience professionals. In case of Nursing it is higher only in the interval of 1-5 years.

#### 4.1.2 Up-dating Professional Knowledge and Related activities:

In LIS there are number of opportunities and avenues are there in India for the professionals to keep informed about the professional activities and also to update their knowledge by attending to seminars and conferences and also to subscribing to mailing lists like LisForum and Discussion groups of the kind. The data collected for these queries are presented in Table Nos. 7 to 13.

#### 4.1.3 Membership of Mailing Lists to LIS Forums:

In the Table – 7 the data on Membership to discussion/lisforum are presented. It shows that only 60.66% of library and information science professionals in this context are members of some LIS discussion forum. But it is expected that it could have been higher as they are subscription free sites.

Table -7 : Member of Discussion forum /LIS forum by LIS professionals

Category of Institutions	Responses		Total
	Yes	No	
Medical	67 62.04%	41 37.96%	108
Dental	21 63.64%	12 36.36%	33
Pharmacy	12 57.14%	9 42.86%	21
Nursing	11 52.38%	10 47.62%	21
<b>Total</b>	<b>111</b> <b>60.66%</b>	<b>72</b> <b>39.34%</b>	183 100%

The distribution among all category of health science institutions is almost equitable, except in pharmacy and nursing colleges it is slightly lower. However it can be noted that for medicine more number of conferences and seminars are held every year and during the period under mentioned is also not satisfactory and that it should be more in this case because the number of institutions is more in this case also.

As there are number of lis-forum portals, the respondents were asked as to how many to these sites they are subscribing – from 1 – 4 portals. Interestingly more than 23% of LIS professionals are not subscribing to any of the discussion forums. Again the

distribution of responses quantitatively is also of quite nearer to one another. Only in case to extent of 39.4% are subscribers to one only one of the lisforum discussion and mailing list sites. Of the pharmacy and nursing colleges subscriptions to three sites is higher compared to medical and dental colleges.

Table - 8: Individual Discussion forum of LIS forum by professionals.

Category of Institutions	Any 1	Any 2	Any 3	Any 4	No Answer	Total
Medical	37 34.26%	25 23.15%	6 5.55%	5 4.63%	35 32.41%	108
Dental	17 51.51%	4 12.1%	9 27.3%	0 0.0%	3 9.1%	33
Pharmacy	5 23.80%	4 19.04%	9 42.86%	1 4.76%	2 9.52%	21
Nursing	4 19.04%	4 19.04%	10 47.61%	0 0.0%	3 14.31%	21
Total	63 34.4%	37 20.2%	34 18.6%	6 3.3%	43 23.5%	183

The next inquiry in this regard is the membership to Medical Library Association. It is observed from the Table- 9 that 23.15% is the nominal expenditure in the cases of higher educational institutions.

It is found from the Table – 9 data that 84.15% of the respondents are the members of the state association (s). Very few and quite negligible are members of National library associations. For both state and national associations it is higher than the national association. It can be a matter of concern that the LIS professionals should be members of their respective professional organizations so that they get to know-how on on-going professional development . It is interesting to note that in the case of Pharmacy and Nursing again the membership of the professionals even in this case is poor and that they should join the mainstream by joining the group and also meet the professional challenges.

Table – 9: Membership of Library Association

Category of Institutions	Association Scope			Total
	State	National	State and National	
Medical	86	4	18	108
	79.63%	3.7%	16.67%	
Dental	29	0	4	33
	87.88%	0.0%	12.12%	
Pharmacy	20	1	0	21

	95.24%	4.76%	0.0%	
Nursing	19	0	2	21
	90.48%	0.0%	9.52%	
Total	154	5	24	183
	84.15%	2.73%	13.12%	100%

#### 4.1.4 Participation in Conferences and Seminars:

The next professional development activity is by attending and or participation in Seminars, conferences, workshop etc., organized by several organizations throughout the year. It is observed from the Table -10 that attendance in Pharmacy; Nursing and Pharmacy colleges have higher order and was assigned

Table -10 :Participation in Seminars / Conference/Workshop by the Professionals

Category of Institutions	Responses		Total
	Yes	No	
Medical	97	11	108
	89.81%	10.19%	
Dental	31	2	33
	93.94%	6.06%	
Pharmacy	19	2	21
	90.48%	9.52%	
Nursing	19	2	21
	90.48%	9.52%	
Total	166	17	183
	90.71%	9.29%	

Category of Institutions	Frequencies of Durations				Total
	Once in 3 Months	Once in 6 months	Once in 12 months	Once in 24 months	
Medical	24	17	<b>59</b>	8	108
	22.22%	15.74%	<b>54.63%</b>	7.41%	
Dental	11	6	<b>13</b>	3	33
	33.33%	18.18%	<b>39.39%</b>	9.1%	
Pharmacy	0	11	<b>9</b>	1	21
	0.0%	52.38%	<b>42.86%</b>	4.76%	
Nursing	2	8	<b>9</b>	2	21
	9.52%	38.1%	<b>42.86%</b>	9.52%	
Total	37	42	<b>90</b>	14	183
	20.22%	22.95%	<b>49.18%</b>	7.65%	

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icipation in Scientific Meeting by LIS professionals

It is a good response as 90.71% professionals attend and participate in the Seminars, conferences held in the country. The distribution is almost fairly uniform and only in the case of Dental instiions the response is higher than other three categories, in medical colleges it is lower than the others. However participation can definitely be considered as one of the means of upgrading professional knowledge and skills and they are as a matter of fact considered as the “Invisible Colleges” as defined by Price (1963).

It is found that the organising library and information science conferences and seminars has been quite frequented in recent years. It can be estimated that on an average one conference or seminar or a workshop a day is held in India. Hence the LIS professionals have a very good opportunity to participate in them more frequently that before say about one or decades ago. Realizing this fact the health science library and information professionals were asked as how frequently they attend the conferences and seminars beginning with once in three months or once in six months or once in a year and so on. The data collected from the respondents is presented in Table -11.

It is quite evident from the Table that attending conferences and seminars is found to be once in a year as it cannot be more frequent unless one it involved directly with many conferences at a time, like the organizers, session chairperson or director or so on. Once in two years is quite less frequent and other durations are inferentially lower than once in 12 months and higher than once in 24 months.

Table -12.:Number of Seminars /conference and Workshop attended in the last 5 years

Category of Institutions	Number of Seminars etc.					Total
	1 to 5	6 to 10	11 to 15	16+	Can't Say	
Medical	44	47	5	7	5	108
	40.74%	43.52%	4.63%	6.48%	4.63%	
Dental	15	9	6	2	1	33
	45.46%	27.27%	18.18%	6.06%	3.03%	
Pharmacy	8	8	2	0	3	21
	38.09%	38.09%	9.53%	0.0%	14.29%	
Nursing	11	5	4	0	1	21
	52.38%	23.81%	19.05%	0.0%	4.76%	
Total	78	69	17	9	10	183
	42.63%	37.7%	9.29 %	4.92%	5.46%	100%

In continuation of the frequency of attending professional scientific meetings, the next query is on number of conferences attended by the respondents in the last five years. The replies to the query are presented in the Table -12. The results of the survey are quite natural as the numbers comes within the frequencies of once in a year and so on. The number of conferences attended during last five years are 78(42.6%) with 1-5 of such meetings and 69(37.7%) for the frequencies 6-10. Taken together it is in the frequency of once in a year and that could be a fair assumption in this regard. The next question was "Does participation helps to update knowledge and Skills?". The responses are presented in Table 13.

Table – 13: Does Participation help to update Knowledge and Skills?

Category of Institutions	Responses		Total
	Yes	No	
Medical	105	3	108
	97.22%	2.78%	100.0%
Dental	29	4	33
	87.88%	12.12%	100.0%
Pharmacy	20	1	21
	95.24%	4.76%	100.0%
Nursing	21	0	21
	100.0%	0.0%	100.0%
Total	175	8	183
	95.63%	4.37%	100.0%

The data reveals that 175 (95.63%) have stated in positive that the participation helps them to update their knowledge and skills. Only a small number of them state as “No”. It is interesting to know the 100% Nursing professional agree to the fact that it helps to improve their knowledge and skills and similarly, the medial and pharmacy library professionals are also equally high in this regard.

In the next query the librarians were asked ‘to what extent the participation in the scientific activities has helped them to upgrade knowledge and skills professionally. The data are presented in Table -14.

Table -14: To what extent does participation helps to upgrade (N=183)

Aspects	Extent of Rating				
	Great Extent	Some Extent	Little Extent	Not at all	Can't Say
I get to know best practices	57	92	13	10	11
	31.16%	50.27%	7.1%	5.46%	6.01%
It helps in exchange of knowledge among professionals	67	88	13	5	10
	36.62%	48.09%	7.1%	2.73%	5.46%
It helps me know the sources for knowledge & skill enhancement	62	87	17	9	8
	33.88%	47.54%	9.29%	4.92%	4.37%
It keeps me informed of trends and developments	83	87	6	1	6
	45.36%	47.54%	3.28%	.54%	3.28%
The deliberations help gain new knowledge	78	76	11	10	8
	42.62%	41.54%	6.01%	5.46%	4.37%
The sessions help acquire new	66	89	12	8	8

skills.	<b>36.07%</b>	<b>48.63%</b>	6.56%	4.37%	4.37%
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It is shown that for all aspects that have “Greatly and Some extent: have helped them to upgrade their professional knowledge and skills. The aggregate results are 36.07% for the option “Great extent” and 48.63% to ‘Some Extent” which come to represents nearly 85% of the total. Among the six aspects the respondents opine that ‘It keeps me informed of trends an developments”. So as already observed in the previous questions the scientific meetings like Conferences and Seminars have a role to gain professional knowledge and skills as they involve good deliberations and discussion and the participants get the benefits out of these meetings. The overall summary show that these scientific meeting should be attended by LIS professionals and in particular the youngsters.

## **Major Findings of the study**

### **Gender-wise and Age-wise Distribution**

- The male professionals in the first three categories are found to be in the range of 70-85% and the Pharmacy institutions has as high as 85.71% and Nursing Colleges have least with 42.86. Nursing colleges on the other hand have more females with 57.14% than in the other three institutions
- The ages of the professionals are the next findings.  
It is found that in the Age group 36-40; has 29.51% of all the professionals taken together, but in the case of Dental colleges the library and information professionals’ age-group falling in the range 46-50 has higher proportion than the other three. In Nursing colleges no representation is found in the case of 46-50 and 51+ age groups.
- It is interesting to know that most professionals are in the middle age groups and some are within 40 years of age and there is scope for their growth.

### **Professional Information on Health Science Library Professionals**

- Professional Information:**
- It is found that highest number are in the grade of Assistant Librarians with 23.81% and the lower strength is of Chief Librarians and Senior Librarians with 9.29% and 7.1% respectively who would be heading the library and information centres.
  - It is found to be condition that less than 50% of the health science libraries are being headed by the Librarians, considering the first three designations as eligible to head the libraries as identified under this study.

- It is also found that 57% are designated as Deputy Librarians and Assistant Librarians.
- It is found that the conditions about the library heads are better in Dental, Pharmacy and Nursing than in the medical colleges.
- It is found in these colleges there is post of librarian deemed to be heading the library. The position of pharmacy and nursing colleges is far better than the dental colleges which show more than 75% of these colleges have post of librarian. It was also noted that no definite staff formula is followed by any of these health science educational institutions.

In summary the findings imply that “The lack of adequate strength of library and information professionals” is affecting the library and information services and also motivation to have required knowledge and skills too.

- Since there are ample opportunities for improving library science qualifications, the study found that 66.12% possess Masters degree and 8%+ are Ph.D. degree holders.
- By experience the study found more than 50% of them are in the range of 6-15 years except in case of Nursing colleges, they are in the range of 1-5 years, but for medical, dental and pharmacy college professionals are in higher experience range.

#### **Up-dating Professional Knowledge and Related activities:**

#### **Membership of Mailing Lists to LIS Forums:**

- 60.66% of library and information professionals are members of some LIS forum
- It is found that more than 23% of LIS professionals are not subscribing to any of the discussion forums. Again 39.4% are subscribers to one and only one LIS forum discussion and mailing list sites. The pharmacy and nursing colleges subscribed to three sites.
- 84.15% of the respondents are the members of the state association (s).

#### **5.4 Participation in Conferences and Seminars:**

- It is found 90.71% professionals attend and participate in the Seminars, conferences and the number of conferences attended during last five years are 78(42.6%) with 1-5 of such meetings and 69(37.7%) for the frequencies 6-10.

Further 95.63% opined participation helps to update their knowledge and skills and 100% nursing professional agreed that it helps to improve their knowledge and skills and so also medical and pharmacy library professionals.

- The ratings for the extent of benefits derived from attending the conferences as shown that, in aggregate 36.07% stated “Great extent” and 48.63% to ‘Some Extent’. Overall the respondents opined that ‘It keeps me informed of trends and developments’.



The study also found the Continuing Professional development for life long learning was essential with nearly 80% respondents justifying this fact. But the 'Lack of Professional recognition with 85.24% was a big gap.

## Conclusion

It has identified two types of changes in health science information environment and they are management and organisational changes which affect the library organisation and its management. It will affect the management of resources – from print to virtual media. An attempt is made to bring together the profile of medical profession from ancient times and the knowledge associated with it. It also tried to bring home the knowledge and skills required by health science librarianship and has not ignored the fact that with the changes in the health science itself the libraries' preparedness is also one of the important factors.

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