

**Journal Obtaining Methods and Journals access among Ophthalmologists: a Study in India**

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Abstract

The journals are the strong foundation pillars for the doctors' evidence based medical practice. The purpose of this study is to determine journal obtaining methods and journal access among ophthalmologists. The study design is cross-sectional and convenience sampling method is adopted. A structured questionnaire was used to collect data. SPSS 18 PASW Statistical package was used for statistical analysis. Frequencies, percentages, Mann Whitney U test, Kruskal-Wallis test, chi-square were used in the study. Around 633 ophthalmologists working in 47 academic eye hospitals from 16 states of India were included in the study. The study results revealed that the majority of the ophthalmologists obtain journal from online open database. E-archive, etc. The statistical test results showed up that there exist a significant difference between ophthalmologists' journal obtaining methods and institution type. Majority of the ophthalmologists are accessing less than 5 journals. There exists an association between ophthalmologists' journal access with age and experience. Since the journal obtaining methods differ by institution type, they should adhere to different strategies to promote the journal usage behavior among ophthalmologists. The journal access had an association with age and experience. Targeting the right group with right strategies create an impact in the no. of journals accessed by the ophthalmologists.

Keywords: Journals use; Ophthalmologists; Journal obtaining methods; Information seeking behavior;
User study

1. Introduction

Journals are the primary source which publish and disseminate scientific and scholarly information to the professionals. They publish scientific evidences through articles, reviews, case reports, clinical trials results, etc. The articles published in medical journals through several rigorous screening processes -



blind peer reviews. The accumulated knowledge stored in the journal issues exhibit the information trends in the particular professional field. The journals are the strong foundation pillars for the doctors' evidence based medical practice.

The Eye Doctors - Ophthalmologists obtain, access and use journals to satisfy their information need. They seek journals for their medical practice, research, teaching and more specifically to keep themselves updated. This study intends to explore how the ophthalmologists obtain journals. The expected outcome of the study will be helpful to the ophthalmic librarians, ophthalmic institutions, and ophthalmic community.

A survey method is used to find out the journal obtaining methods of ophthalmologists. A total of 633 ophthalmologists working in 47 academic eye hospitals from 16 states of India were included in the study. This particular study is a part of the main study "Information Needs and Seeking Behaviour of Ophthalmologists in Academic Eye Hospitals in India".

2. Review of Literature

King, D. W., et al (2003) investigated the patterns of journal use by faculty at three diverse universities Tennessee, Pittsburgh, Drexel. The study reported that the most of the reading from personal subscriptions is almost exclusively from print and most reading from the library collection is in electronic format at the two universities where electronic collections are well established. Recently published articles tend to be obtained from personal subscriptions, but older articles are obtained more frequently from library collections. Tenopir, C., et al. (2007) examined the Journal reading patterns and preferences of pediatricians. Six hundred sixty-six pediatrician pediatricians participated in the survey. The results revealed that pediatricians read many journal articles each month and read heavily from personal subscriptions. Tenopir, C., King, et al. (2009) investigated the electronic journals and changes in scholarly article seeking and reading patterns. Majority of the science faculty uses journal article as a source of information for their work. They examined the sources of articles read by the faculty. The medical faculty members continue to hold an average of five to six personal subscriptions, including many supplied by medical or pharmaceutical supply companies. For other faculty, subscriptions were dominated by the scholarly societies to which they belong. The proportion of readings that come from personal subscriptions has steadily declined and readings from library collections was in the increasing mode. The other sources such as web sites and separate articles from colleagues were in the third position. Sánchez-Tarragó,(2009) studied about the journal reading and publishing patterns of Cuban health researchers. A total of 530 respondents were included in the study. The study results revealed that 35 percent of the professionals surveyed first became aware of the article they had last consulted by reviewing a website. Around 49 percent of those surveyed had read their latest article retrieved directly



upon the computer screen. Most of the researchers consulted believe that they have access to very few or only some of the necessary articles, which could again be explained by the financial straits of the country, impeding subscription to printed and electronic journals. Niu, X., et al. (2010) conducted a national study of information seeking behavior of academic researchers in the United States. The respondents showed a strong preference for electronic versions of resources rather than print formats. The electronic journals were accessed through two primary methods: the library and open access electronic journals. Khan and Shafique, (2011) surveyed the Information needs and information-seeking behavior of college faculty at Bahawalpur. A total of 56 faculties were included in the study. Majority of the faculties responded that they obtain information sources from their institutional Libraries.

3. Objectives

- To investigate the journal obtaining methods of ophthalmologists.
- To examine the journal access of ophthalmologists

4. Hypotheses of the study

- i. The journal obtaining methods among ophthalmologists differ by gender.
- ii. The journal obtaining methods among ophthalmologists differ by age group.
- iii. The journal obtaining methods among ophthalmologists differ by designation.
- iv. The journal obtaining methods among ophthalmologists differ by experience.
- v. The journal obtaining methods among ophthalmologists differ by institution type.
- vi. The journal access among ophthalmologists differ by gender.
- vii. The journal access among ophthalmologists differ by age group.
- viii. The journal access among ophthalmologists differ by designation.
- ix. The journal access among ophthalmologists differ by experience.
- x. The journal access among ophthalmologists differ by institution type.

5. Methodology

The main purpose of the study was to find out the journal access and obtaining methods among ophthalmologists. The research design adopted for this study was cross-sectional. Convenience sampling method was found appropriate to enroll the wide-spread ophthalmologist population and the same was followed in the study. A structured questionnaire was used as a data collection tool to record the ophthalmologists' journal obtaining methods and journal access. A total of 633 ophthalmologists from 47 academic eye hospitals in 16 states of India were included in the study. The collected data were entered into data-entry software, purposefully developed for the study. The software was developed in Microsoft Visual Basic 6.0 with backend SQL Server 2000. For further analysis, the data stored in SQL Server 2000



was extracted into Ms-Excel 2007 spreadsheets. MS-Excel 2017 was used to organize and tabulate the data. SPSS 18 PASW Statistical package was used for statistical analysis. Frequency counts and Ranks were used to find out the most common attitude of ophthalmologists. The Mann Whitney U test was used to examine ophthalmologists' journal obtaining preferences with gender. The Kruskal-Wallis test was used to examine the ophthalmologists' journal obtaining preferences with age, designation, experience, and institution type. Chi-square and Fishers Exact test were used to examine the ophthalmologists' journal access with gender, age, designation, experience, and institution type.

6. Analysis

The ophthalmologist demographic details - gender, Age, Designation category, Experience, Job nature, status of profession are examined with frequency count, percentage and presented in Table 1.

Table 1
Ophthalmologists Demographic details

S. No.	Characteristic	Ophthalmologists (C)	Percentage (P)
Gender			
1	Male	339	53.55%
2	Female	294	46.45%
Age			
1	Less than or equal to 30	217	34.28%
2	31 to 40	298	47.08%
3	41 to 50	89	14.06%
4	51 to 60	21	3.32%
5	61 and above	8	1.26%
Designation Category			
1	Medical Officer / Medical Consultant / Ophthalmic Teaching Staff / Management Staff	365	57.66%
2	Fellows	254	40.13%
3	Senior Residents	14	2.21%
Experience			
1	Less than or equal to 5 years	411	64.93%
2	6 to 10 years	121	19.12%
3	11 to 15 years	40	6.32%
4	16 to 20 years	30	4.74%
5	21 years and above	31	4.90%
Type of Institution			
1	Corporate	77	12.16%
2	Government	41	6.48%
3	Not for Profit Organization / Trust	515	81.36%
Total		633	



Among the 633 ophthalmologists, 294 are female, 339 are male. Majority of the ophthalmologists are male and it is of 53.55%. Majority of the ophthalmologists are within the age group 31 to 40 and it is of 47.08%. Majority of the ophthalmologists are working as a medical officer or medical consultant or ophthalmic teaching staff or managing the hospital and it is of 57.66%. Majority of ophthalmologists have working experience of less than or equal to 5 years and it is of 64.93%. Majority of the ophthalmologists are working in not for profit organization / Trust and it is of 81.36%. This study intends to analyze the journal obtaining method and access behavior of the ophthalmologists.

The journal obtaining methods of the ophthalmologists had been ascertained based on ten variables with a five point scale such as “1-Never”, ”2-Rarely”, “3-Seldom”, “4-Often” and “5-Most Often”. The internal consistency of the variables were measured by Cronbach’s alpha (Alpha >0.70 is considered as acceptable). The alpha coefficient for the variables is 0.7342 which indicates that the variables have relatively high internal consistency. Number of responses, percentage, mean, standard deviation, median, and rank are shown in Table 2. Ranks were assigned based on mean and standard deviation.

Table 2

Journal Obtaining Methods – Summary

S. No.	Description	Never (%)	Rarely (%)	Seldom (%)	Often (%)	Most Often (%)	Mean (SD)	Median	Rank
1	Personal subscription to print journals	107 (16.9%)	140 (22.1%)	140 (22.1%)	180 (28.4%)	66 (10.4%)	2.93 (1.26)	Seldom	6
2	Personal subscription to online version of journals	115 (18.2%)	124 (19.6%)	144 (22.7%)	188 (29.7%)	62 (9.8%)	2.93 (1.27)	Seldom	7
3	From online open database. e-archive, etc	16 (2.5%)	38 (6%)	105 (16.6%)	322 (50.9%)	152 (24%)	3.88 (0.93)	Often	1
4	Library’s physical collection	35 (5.5%)	74 (11.7%)	125 (19.7%)	286 (45.2%)	113 (17.9%)	3.58 (1.08)	Often	4
5	Library’s online electronic version	45 (7.1%)	61 (9.6%)	117 (18.5%)	252 (39.8%)	158 (25%)	3.66 (1.16)	Often	3
6	Interlibrary loan	238 (37.6%)	114 (18%)	125 (19.7%)	107 (16.9%)	49 (7.7%)	2.39 (1.34)	Rarely	8
7	Through sponsorship	289 (45.7%)	112 (17.7%)	114 (18%)	78 (12.3%)	40 (6.3%)	2.16 (1.29)	Rarely	10
8	By sending request to authors	238 (37.6%)	151 (23.9%)	107 (16.9%)	96 (15.2%)	41 (6.5%)	2.29 (1.29)	Rarely	9



9	Through memberships in association / societies	81 (12.8%)	79 (12.5%)	140 (22.1%)	238 (37.6%)	95 (15%)	3.3 (1.24)	Often	5
10	From Colleagues / Friends / Known contacts	24 (3.8%)	52 (8.2%)	135 (21.3%)	305 (48.2%)	117 (18.5%)	3.69 (0.99)	Often	2

It can be seen from Table 2 that "From online open database. e-archive, etc" was the first preference of ophthalmologists. It is followed by "From Colleagues / Friends / Known contacts" and "Library's online electronic version" which were their second and third preferences. The least preference was "Through sponsorship". The mean value of the responses ranges between 2.16 and 3.88. The standard deviation of the responses ranges between 0.93 and 1.34. The overall summary results revealed that majority of the ophthalmologists obtain journal from online open database. e-archive, etc.

The journal obtaining methods of both female and male ophthalmologists were analyzed further and ranks were assigned based on mean and standard deviation. The mean, standard deviation, rank and Mann Whitney U test results were shown in Table 3.

Table 3

Journal Obtaining Methods vs Gender

S. No	Description	Female		Male	
		Mean (SD)	Rank	Mean (SD)	Rank
1	Personal subscription to print journals	2.94 (1.26)	6	2.93 (1.27)	7
2	Personal subscription to online version of journals	2.93 (1.26)	7	2.94 (1.28)	6
3	From online open database. e-archive, etc	3.88 (0.95)	1	3.88 (0.91)	1
4	Library's physical collection	3.54 (1.1)	4	3.62 (1.07)	4
5	Library's online electronic version	3.56 (1.23)	3	3.74 (1.09)	2
6	Interlibrary loan	2.32 (1.35)	8	2.45 (1.33)	8
7	Through sponsorship	2.13 (1.3)	10	2.18 (1.29)	10
8	By sending request to authors	2.23 (1.27)	9	2.34 (1.29)	9
9	Through memberships in association / societies	3.31 (1.23)	5	3.28 (1.25)	5
10	From Colleagues / Friends / Known contacts	3.73 (0.99)	2	3.66 (0.99)	3

Rank is derived for each gender group based on the mean and standard deviation of ophthalmologists' preferences. The ranks show up that most of the female and male ophthalmologists prefer "From online open database. e-archive, etc".



A Mann Whitney U test was conducted to determine whether there is any difference between ophthalmologists' preferences on journal obtaining methods and gender. The mean rank for male ophthalmologists was 313.58. The mean rank for female ophthalmologists was 320.95. The test showed that there doesn't exist a significant difference between ophthalmologists preference and gender (P-value=0.613). The test result revealed that the male and female ophthalmologists have similar behavior in obtaining the journals.

The journal obtaining preferences of ophthalmologists in different age groups were analyzed further and ranks were assigned based on mean and standard deviation. The mean, standard deviation, rank and Kruskal-Wallis test results are shown in Table 4.

Table 4
Journal Obtaining Methods Vs Age Group

S.No.	Description	Less than or equal to 30		31 to 40		41 to 50		51 to 60		61 and above	
		Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank
1	Personal subscription to print journals	2.9 (1.28)	7	2.95 (1.26)	7	2.84 (1.28)	7	3.33 (1.28)	6	3.25 (1.04)	2
2	Personal subscription to online version of journals	2.91 (1.3)	6	2.97 (1.27)	6	2.85 (1.27)	6	2.95 (1.2)	7	3 (0.76)	5
3	From online open database. e-archive, etc	3.86 (0.92)	1	3.91 (0.93)	1	3.85 (0.96)	1	3.95 (0.97)	1	3.38 (0.74)	1
4	Library's physical collection	3.6 (1.02)	4	3.6 (1.11)	4	3.49 (1.14)	3	3.52 (1.21)	4	3.25 (0.71)	2
5	Library's online electronic version	3.63 (1.1)	3	3.79 (1.12)	2	3.4 (1.32)	5	3.57 (1.36)	3	2.63 (0.92)	8
6	Interlibrary loan	2.24 (1.28)	8	2.5 (1.37)	8	2.26 (1.34)	10	2.95 (1.36)	8	2.5 (1.07)	9
7	Through sponsorship	1.98 (1.18)	10	2.2 (1.33)	10	2.31 (1.39)	9	2.76 (1.22)	10	2.38 (1.19)	10
8	By sending request to authors	2.12 (1.19)	9	2.29 (1.33)	9	2.55 (1.33)	8	2.9 (1.26)	9	2.75 (0.89)	7
9	Through memberships	3.2 (1.2)	5	3.29 (1.25)	5	3.48 (1.32)	4	3.67 (1.15)	2	3.25 (0.71)	2



	in association / societies										
10	From Colleagues / Friends / Known contacts	3.76 (0.93)	2	3.71 (1)	3	3.63 (1.05)	2	3.38 (1.02)	5	2.88 (0.99)	6

Rank is derived for each age group based on the mean and standard deviation of ophthalmologists' preferences. The ranks show up that most of the ophthalmologists in age groups "Less than or equal to 30", "31 to 40", "41 to 50", "51 to 60", "61 and above" prefer "From online open database, e-archive, etc.". A Kruskal-Wallis H test was conducted to determine if ophthalmologists' preferences differ with age groups. The mean ranks for the age groups were Less than or equal to 30 (305.43), 31 to 40 (323.06), 41 to 50 (315.48), 51 to 60 (371.26), 61 and above (279.56) respectively. The test showed that there doesn't exist a significant difference between ophthalmologists preference and age groups ($\chi^2(2) = 3.393$, P-value=0.494). The test result revealed that the ophthalmologists in all age groups have similar behavior in obtaining the journals.

The journal obtaining methods of ophthalmologists in different designation groups were analyzed further and ranks were assigned based on mean and standard deviation. The mean, standard deviation, rank and Kruskal-Wallis test results were shown in Table 5.

Table 5
Journal Obtaining Methods Vs Designation

S.No.	Description	Medical Officer		Fellows		Senior Residents	
		Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank
1	Personal subscription to print journals	2.96 (1.27)	6	2.93 (1.25)	7	2.29 (1.2)	7
2	Personal subscription to online version of journals	2.93 (1.26)	7	2.98 (1.27)	6	2.21 (1.37)	8
3	From online open database. e-archive, etc	3.82 (0.99)	1	3.98 (0.84)	1	3.57 (0.76)	2
4	Library's physical collection	3.55 (1.12)	4	3.65 (1.01)	4	3.07 (1.27)	3
5	Library's online electronic version	3.59 (1.21)	3	3.8 (1.05)	2	3 (1.36)	5
6	Interlibrary loan	2.38 (1.33)	8	2.42 (1.34)	8	2.29 (1.54)	6
7	Through sponsorship	2.19 (1.3)	10	2.11 (1.27)	10	2.14 (1.56)	9
8	By sending request to authors	2.34 (1.29)	9	2.23 (1.27)	9	2.07 (1.27)	10



9	Through memberships in association / societies	3.35 (1.21)	5	3.22 (1.24)	5	3.07 (1.73)	3
10	From Colleagues / Friends / Known contacts	3.64 (1)	2	3.77 (0.95)	3	3.79 (1.31)	1

Rank is derived for each designation group based on the mean and standard deviation of ophthalmologists’ preferences. The ranks show up that most of the ophthalmologists in designations “Medical Officers”, “Fellows” prefer “From online open database. e-archive, etc”. Most of the ophthalmologists in designation “Senior Residents” prefer “From Colleagues / Friends / Known contacts”.

A Kruskal-Wallis H test was conducted to determine if ophthalmologists’ preferences differ with designation groups. The mean ranks for the designation groups were Medical Officer (313.82), Fellows (326.11), and Senior Resident (234.57) respectively. The test showed that there doesn’t exist a significant difference between ophthalmologists preference on journal obtaining methods and designation groups ($\chi^2(2) = 3.594$, P-value=0.166). The test result revealed that the ophthalmologists in different designations have similar behavior in obtaining the journals.

The journal obtaining methods of 633 ophthalmologists in different experience groups were analyzed further and ranks were assigned based on mean and standard deviation. The mean, standard deviation, rank and Kruskal-Wallis test results were shown in Table 6.

Table 6
Journal Obtaining Method vs Experience

S.No.	Description	Less than or equal to 5 years		6 to 10 years		11 to 15 years		16 to 20 years		21 and above years	
		Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank
1	Personal subscription to print journals	2.87 (1.26)	7	2.88 (1.42)	6	2.9 (1.35)	7	3.35 (1.14)	4	3.06 (1.23)	7
2	Personal subscription to online version of journals	2.88 (1.29)	6	2.78 (1.37)	7	3.03 (1.3)	6	2.84 (1.04)	7	3.18 (1.2)	6
3	From online open database. e-archive, etc	3.86 (0.9)	1	3.68 (1.05)	2	3.67 (1.12)	1	3.77 (0.99)	1	4.07 (0.9)	1
4	Library’s physical collection	3.55 (1.05)	4	3.5 (1.13)	3	3.27 (1.31)	4	3.55 (0.99)	3	3.8 (1.11)	4
5	Library’s online	3.65	3	3.35	5	3.23	5	3.32	5	3.98	2



	electronic version	(1.13)		(1.37)		(1.38)		(1.33)		(1.02)	
6	Interlibrary loan	2.38 (1.35)	8	2.33 (1.42)	9	1.77 (1.04)	10	2.45 (1.21)	9	2.6 (1.34)	8
7	Through sponsorship	2.13 (1.28)	10	2.28 (1.47)	10	1.83 (0.99)	9	2.42 (1.2)	10	2.24 (1.36)	10
8	By sending request to authors	2.21 (1.28)	9	2.43 (1.32)	8	2.5 (1.31)	8	2.55 (1.09)	8	2.41 (1.33)	9
9	Through memberships in association / societies	3.2 (1.22)	5	3.45 (1.26)	4	3.47 (1.36)	3	3.65 (0.98)	2	3.45 (1.3)	5
10	From Colleagues / Friends / Known contacts	3.67 (0.97)	2	3.73 (1.04)	1	3.6 (1.1)	2	3.19 (0.91)	6	3.91 (0.97)	3

Rank is derived for each experience group based on the mean and standard deviation of ophthalmologists' preferences. The ranks show up that most of the ophthalmologists in the experience groups "Less than or equal to 5 years", "16 to 20 years", "21 and above years" prefer "From online open database. E-archive, etc.". Most of the ophthalmologists in the experience group "6 to 10 years" prefer "From Colleagues / Friends / Known contacts". Most of the ophthalmologists in the experience group "11 to 15 years" prefer "From Colleagues / Friends / Known contacts".

A Kruskal-Wallis H test was conducted to determine if ophthalmologists' preferences differ with experience groups. The mean ranks for the experience groups Less than or equal to 5 years (307.03), 6 to 10 years (300.19), 11 to 15 years (297.72), 16 to 20 years (325.05), 21 and above years (359.13) respectively. The test showed that there doesn't exist a significant difference between ophthalmologists preference on journal obtaining methods and experience groups ($\chi^2(2) = 8.393$, P-value=0.078).The test result revealed that the ophthalmologists with different experiences have similar behavior in obtaining the journals.

The journal obtaining methods of ophthalmologists working in different institution types were analyzed further and ranks were assigned based on mean and standard deviation. The mean, standard deviation, rank and Kruskal-Wallis test results were shown in Table 7.

Table 7
Journal Obtaining Methods vs Institution Types

S.No.	Description	Government		NGO		Corporate	
		Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank



1	Personal subscription to print journals	3.37 (1.32)	3	2.91 (1.27)	7	2.86 (1.13)	7
2	Personal subscription to online version of journals	2.95 (1.24)	6	2.93 (1.29)	6	2.94 (1.17)	6
3	From online open database. e-archive, etc	3.51 (1.03)	2	3.93 (0.91)	1	3.75 (0.95)	1
4	Library's physical collection	3.22 (1.27)	5	3.69 (1.03)	4	3.05 (1.13)	5
5	Library's online electronic version	2.76 (1.37)	7	3.81 (1.07)	2	3.1 (1.25)	4
6	Interlibrary loan	2.17 (1.38)	10	2.46 (1.36)	8	2.04 (1.13)	9
7	Through sponsorship	2.29 (1.49)	9	2.18 (1.3)	10	1.94 (1.12)	10
8	By sending request to authors	2.29 (1.49)	8	2.31 (1.29)	9	2.17 (1.15)	8
9	Through memberships in association / societies	3.29 (1.33)	4	3.27 (1.24)	5	3.44 (1.2)	3
10	From Colleagues / Friends / Known contacts	3.54 (1.12)	1	3.71 (0.97)	3	3.65 (1.01)	2

Rank is derived for each institution type group based on the mean and standard deviation of ophthalmologists' preferences. The ranks show up that most of the ophthalmologists working in Government prefer "From Colleagues / Friends / Known contacts". Most of the ophthalmologists working in the institution types "NGO" and "Corporate" prefer "From online open database. e-archive, etc".

A Kruskal-Wallis H test was conducted to determine if ophthalmologists' preferences differ with institution types. The mean ranks for the institution types were Government (275.56), NGO (326.51), and Corporate (275.45). The test showed that there exist a significant difference between ophthalmologists preference on journal obtaining methods and institution types ($\chi^2(2) = 7.489$, P-value=0.024). The test result revealed that the ophthalmologists working in different institution types have different behavior in obtaining the journals.

The ophthalmologists were asked to how many journals they are accessing. The journal access frequency variable is measured with 5 values namely, Less than 5, 5 to 9, 10 to 14, 15 to 19, and Greater than 19. The journal access frequency variable was analyzed in total and with gender, age, designation, experience, and institutions. The results were presented in Table 8. The Chi-square test and Fishers Exact test were used to examine the statistical association between ophthalmologists' journal access frequency with gender, age, designation, experience, and institutions.

Table 8
Journal access among Ophthalmologists



S.No.	Description	Less than 5	5 to 9	10 to 14	15 to 19	Greater than 19	P Value
	Gender						0.8
1	Female	139	98	39	5	13	
2	Male	150	117	45	5	22	
	Age						0.036**
1	Less than or equal to 30	108	71	24	3	11	
2	31 to 40	142	97	44	4	11	
3	41 to 50	29	35	13	2	10	
4	51 to 60	7	11	0	1	2	
5	61 and above	3	1	3	0	1	
	Designation						0.307#
1	Medical Officers	153	135	50	8	19	
2	Fellows	128	77	31	2	16	
3	Senior Residents	8	3	3	0	0	
	Working Experience						0.0001**
1	Less than or equal to 5	220	120	46	6	19	
2	6 to 10	18	15	6	0	1	
3	11 to 15	8	13	6	2	1	
4	16 to 20	10	13	3	1	4	
5	21 and above	33	54	23	1	10	
	Institution type						0.262#
1	Government	19	10	7	1	4	
2	Not for Profit Organization	241	176	66	6	26	
3	Corporate	29	29	11	3	5	
	Total	289	215	84	35	10	
	Percentage	45.66%	33.97%	13.27%	5.53%	1.58%	

** - (P value <0.05 and test result is significant); # - Fishers Exact test is used

The test result shows up that 289 ophthalmologists are accessing less than 5 journals which is about 45.66% and it is the most popular option chosen by the ophthalmologists. 215 ophthalmologists are accessing 5 to 9 journals which is about 33.97%. 84 ophthalmologists are accessing 10 to 14 journals which is about 13.27%. The test results shows up that there is an association between no. of journals



accessing and age (P value 0.036), Working experience (P value 0.0001**).The statistical test results revealed that the journal accessing behavior of ophthalmologists in different age groups differ and they don't follow a similar pattern. And also the test results revealed that the journal accessing behavior of ophthalmologists with different working experience differ and they don't follow a similar pattern.

7. Conclusion

Around 633 ophthalmologists working in 47 academic eye hospitals from 16 states of India were included in the study. The study aims to determine the journal obtaining methods of ophthalmologists. The study results revealed that the majority of the ophthalmologists obtain journal from online open database. E-archive, etc. The statistical test results showed up that there exist a significant difference between ophthalmologists' journal obtaining methods and institution type. The ophthalmologists prefer "Online Open databases" to obtain journals. This information should be an encouraging and motivational element to the Open Access Movement Supporter. This also indicates that the ophthalmologists avail "online access", "electronic resources" opportunities provided by the Information Communication Technology. The no. of journals accessed by the ophthalmologists is less than 5 journals and had an association with age and experience of ophthalmologists.

The study results would be helpful to the ophthalmic librarians, ophthalmic institutions, journal publishers and service providers to understand the ophthalmologists' journal obtaining methods and journal access. Since the journal obtaining methods differ by institution type, the institutions should adhere different strategies to promote the journal usage behavior among ophthalmologists based on their institution type. The ophthalmic librarians should enhance their information literacy programs and user orientation programs with online database usage mechanism sessions. This kind of training programs would be helpful to the ophthalmologists to avail the full benefits of Open access database. The ophthalmic institutions should provide adequate infrastructure to support the ophthalmologists' online database access. The journal publishers should index their journals in online databases to expand their reach of information to the ophthalmologists. So the journal publishers should ensure to take necessary steps for indexing and updating their journal information in online databases. The Online database service providers may launch and rejuvenate their information services to target more audience. The journal access had an association with age and experience. Targeting the right group with right strategies create an impact in the no. of journals accessed by the ophthalmologists.

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