

## CHOOSING THE SCIENTIFIC JOURNAL FOR PUBLISHING RESEARCH WORK: PERCEPTIONS OF MEDICAL AND DENTAL RESEARCHERS

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### Abstract

**Background and aim.** With the increasing demand to publish due to 'publish or perish' culture among research and academic institutions, the choice of a journal for publishing scientific articles becomes very important. A publication with many citations and high impact factor can propel researchers in their academic careers. The aim of this study is to explore the perceptions of medical and dental researchers in India about the important criteria to consider while selecting scientific journals for publishing their research.

**Methods.** 206 faculty staff members from three medical and five dental institutions were selected through convenience sampling. The study participants completed a questionnaire with 24 closed ended questions on various factors related to journal selection for publication. Factors such as publication frequency, journal citation, indexing, peer-review, impact factor, publication fees, acceptance or rejection rate, publishing house, previous submission and online submission process were considered. The responses were recorded using a Likert scale. Cronbach's alpha as a measure of internal consistency or homogeneity was 0.909. Descriptive statistics and Mann-Whitney U test were employed for comparison of responses among study participants.

**Results.** The mean weight of 24 criteria on a scale of 0 to 4 varied between 2.13 and 3.45. The results showed that indexing of journal ( $3.45 \pm 0.74$ ), online submission ( $3.24 \pm 0.83$ ), impact factor ( $3.11 \pm 0.91$ ), peer-review process ( $3.0 \pm 1.02$ ) and publication fees ( $2.99 \pm 1.11$ ) were among the most important criteria to consider in journal selection.

**Conclusions.** Of the 24 factors considered by health researchers for journal selection, the most important were Journal indexing, online submission, impact factor, peer-review and publication fees. Compared to dental researchers, medical researchers perceived open access and peer-review process as significantly more important criteria.

**Keywords:** journal impact factor, journal indexing, peer review, publications

### Introduction

A scientific journal is defined as a periodical publication aimed at a particular discipline [1]. The first journals were the French 'Journal des Savants' and the British 'Philosophical Transactions of the Royal Society' that appeared in 1665 [2]. General medical journals began at the end of the 18th century and specialist medical journals at the beginning of 20th century; later came the subspecialty

journals [3]. Journals are the basic source of current information in any science based field and are the main formal information channels for scientific communications [4]. One of the major goals of these scientific channels is to disseminate qualified scientific information [5]. It is difficult for clinicians, scientists and health policy analysts to keep up with more than 2 million new research articles published each year in medical and scientific journals [6]. Furthermore, many published reports are of poor to average methodological quality and most of the scientific articles are never cited. One approach to facilitate the identification

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of sound medical evidence is to identify high quality journal [6].

The choice of a journal is the most important and least understood decision made in the course of publishing a scientific article. The process of finding a suitable journal to publish the research findings requires a certain degree of expertise, which not all the researchers have. The choice of a journal is very important as the field is rapidly changing, with new publication opportunities constantly arising (e.g., electronic journals) and more traditional outlets of communication (e.g., print journals) adapting to new technology [7]. There are many variables influencing the selection of a journal for manuscript submission. Journal variables to consider include: visibility of the journal, focus of the journal and how well it matches with the topic of interest, impact factor of the journal, timeliness of the editorial office process, journal accessibility, publication costs, and the governance of journal [8-9].

A well-written article, novel in concept and scientifically sound research design qualifies for a good paper. The demand to publish due to 'publish or perish' culture among research and academic institutions is increasing. A highly ranked publication can propel young researchers in their academic careers. The system of publication credit points brought about by the Medical Council of India (MCI) and Dental Council of India (DCI) has spurred the race for academicians to increase their number of publications [10-11]. This publication credit system has been encouraging. However, unethical publication practices such as unjustified co-authorship, plagiarism, and other publication misconduct have led to the spawning of a large number of "predatory scientific journals" that follow unethical editorial practices [12-13]. Choosing the right journal for a manuscript can be a challenging exercise, and many factors are likely to influence the final decision. Hence, this study was conducted with the objective to explore perceptions of medical and dental researchers in India about the important criteria to consider while selecting scientific journals for publishing their research.

## Methods

The study was conducted for a period of three months among the three medical and five dental institutions of Indore, India. Among the 3 medical institutions included, one was Government medical institute and other two were private self-financing institutions. Similarly, out of five dental institutions included, one was Government Dental institute and the others were private self-financing institutions.

Permissions were obtained from the institutions. Ethical clearance was obtained from Institutional review board of Sri Aurobindo Institute of Medical Sciences, Indore. All faculties present on the day of institutional visit and who have published research paper in any scientific journals were invited to participate. A total of 206 faculty

staff from 3 medical and 5 dental institutions completed the questionnaire. The study sample consisted of 99 medical researchers and 107 dental researchers. All participants were assured of anonymity and confidentiality.

A structured questionnaire was developed considering all the factors that influence the selection of a journal for publication.

### *Study tool*

For development of questionnaire, an item pool was developed through a review of literature of previous studies and also through subjective selection of items. Item pool was reviewed for its comprehensiveness, relevance, and clarity. All the items believed to be appropriate for the given topic were selected.

The questionnaire was designed to have 3 parts. Questions related to demographic variables and research affiliations were addressed in the first part of questionnaire. The next section included open-ended questions to know about their research and publication practices. Their primary area of research, number of publications, research projects and position as an editor, a reviewer or an invited author was also asked about.

The third part of questionnaire consisted of 24 closed ended questions on various factors related to journal selection for publication. Factors such as publication frequency, journal citation, indexing, peer-review, impact factor, publication fees, acceptance or rejection rate, publishing house, previous submission and online submission process were considered.

The responses were recorded on a five-point Likert scale scoring: not important (0), slightly important (1), fairly important (2), very important (3) and extremely important (4).

### *Validity and reliability of study tool*

The face and content validation was carried out with two subject experts and conducting a focused group discussion of a small representative sample of 10 study subjects. Cronbach's alpha as a measure of internal consistency or homogeneity of questionnaire was 0.909 and was not improving by any item deletion; it was decided to have all the 24 items in the questionnaire. Test-retest reliability to measure external consistency was assessed on 10 study subjects with two-weeks interval between two observations. The correlation coefficient was 0.7 indicating good reproducibility and reliability.

### *Data collection*

A self-administered questionnaire was distributed to the faculty members and requested to be completed in a day. The Investigator also provided contact details in case of any doubts regarding the questions. Follow-up visit to institution was scheduled on the next day. Completed questionnaires not received on the follow-up visit were collected on subsequent visits to the institutions. To ensure completeness, participants were interviewed if response to any question was found missing.

**Statistical analysis**

The data collected was entered into a Microsoft Excel data sheet and analyzed using Statistical Package for Social Sciences (SPSS, IBM Version 20.0). Descriptive statistics was used to describe data in terms of frequency, percentage, mean and standard deviation. Mann-Whitney U test was employed to assess and compare the responses between medical and dental researchers. Two-tailed p-value of less than 0.05 was considered statistically significant.

**Results**

The results are based on the responses to a self-administered questionnaire from 206 health researchers of five dental (n=107) and three medical (n=99) institutions. The age range of health researchers varied from 26 years to 68 years with mean age of 40.36 (±9.35) and with mean teaching experience of 10.17 (±8.65) years (Table I).

**Table I.** Demographic characteristics of study participants.

	Health Researchers		Total
	Medical (n=99)	Dental (n=107)	
Age Mean (±S.D*)	44.57 (±9.49)	36.44 (±7.33)	40.36 (±9.35)
Gender Male n(%)	75 (75.8)	67 (62.6)	142 (68.9)
Gender Female n(%)	24 (24.2)	40 (37.4)	64 (31.1)
Teaching experience Mean(±S.D*)	12.8 (±9.1)	7.7 (±7.1)	10.17 (±8.65)

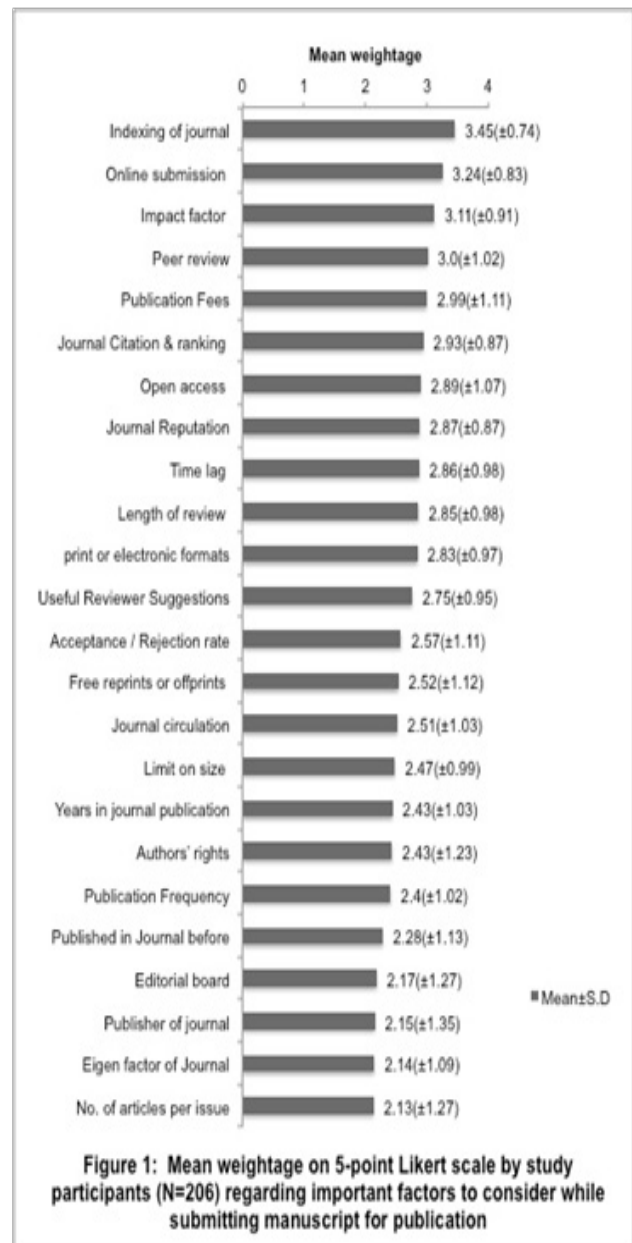
S.D\* = Standard Deviation

The manuscript preparation practices of the study participants are shown in Table II: 59.7 percent of health researchers indicated that they would prepare the manuscript by selecting a suitable journal and following the author guidelines, while, 40.3 percent would prepare the manuscript in a standard format and then modify according to the journal to which they will be submitting.

**Table II.** Manuscript preparation practices.

Practices	Medical Faculty n(%)	Dental Faculty n (%)	Total Faculty n (%)
Select the Journal and Follow author guidelines for manuscript preparation	67 (67.7)	56 (52.3)	123 (59.7)
Prepare manuscript, search for suitable journal and then modify according to guidelines	32 (32.3)	51 (47.7)	83 (40.3)
Total	99 (100)	107 (100)	206 (100)

The frequencies of the responses of health researchers are shown in Table III. These frequencies were multiplied with weight of not-important (0) to extremely important (4) and summed to obtain the overall weight of the factor. The mean weight on a scale of 0 to 4 for each of the 24 criteria included was calculated and it varied between 2.13 and 3.45. Figure 1 shows all the factors arranged from highest to lowest weight. The important factors with higher mean weight considered by the participants for journal selection were the indexing of journal (3.45±0.74), Online submission (3.24±0.83), Impact factor (3.11±0.91), Peer-review process (3.0±1.02) and Publication fees (2.99±1.11). Factors considered least important were the Editorial board (2.17±1.27), Journal publisher (2.15±1.35), Eigen factor (2.14±1.09) and number of articles published per issue in the journal (2.13±1.27).



**Figure 1:** Mean weightage on 5-point Likert scale by study participants (N=206) regarding important factors to consider while submitting manuscript for publication

**Table III:** Frequency distribution of study participants' responses (N=206) regarding factors related to journal selection for scientific publication.

Factor	Not Important	Slightly Important	Fairly Important	Very Important	Extremely Important
	n (%)	n (%)	n (%)	n (%)	n (%)
Journal Reputation	1 (0.5)	10 (4.8)	56 (27.2)	85 (41.3)	54 (26.2)
Years in journal publication	10 (4.9)	21 (10.2)	77 (37.4)	65 (31.5)	33 (16.0)
Publication Frequency	12 (5.8)	18 (8.8)	78 (37.9)	70 (33.9)	28 (13.6)
Articles per issue	15 (7.3)	42 (20.4)	72 (34.9)	53 (25.8)	24 (11.6)
Editorial board	29 (14.0)	32 (15.6)	63 (30.6)	47 (22.9)	35 (16.9)
Journal circulation	7 (3.4)	26 (12.6)	65 (31.6)	70 (33.9)	38 (18.5)
Journal Citation & ranking	3 (1.5)	6 (2.9)	50 (24.3)	89 (43.2)	58 (28.1)
Journal Publisher	26 (12.7)	37 (17.9)	54 (26.2)	52 (25.3)	37 (17.9)
Acceptance / Rejection rate	12 (5.8)	24 (11.7)	46 (22.4)	82 (39.8)	42 (20.3)
Journal Indexing	1 (0.5)	3 (1.5)	17 (8.2)	66 (32)	119 (57.8)
Online submission	0 (0)	5 (2.5)	37 (17.9)	66 (32)	98 (47.6)
Print or electronic formats	6 (2.9)	7 (3.4)	59 (28.6)	76 (36.9)	58 (28.2)
Open access	9 (4.4)	10 (4.9)	46 (22.4)	70 (33.9)	71 (34.5)
Publication Fees	7 (3.4)	14 (6.8)	44 (21.4)	50 (24.2)	91 (44.2)
Peer review	5 (2.5)	13 (6.3)	38 (18.5)	70 (33.9)	80 (38.8)
Useful Reviewer Suggestions	5 (2.5)	10 (4.9)	65 (31.4)	76 (36.9)	50 (24.3)
Length of review	3 (1.5)	15 (7.3)	54 (26.2)	70 (33.9)	64 (31)
Time lag	3 (1.5)	14 (6.8)	54 (26.3)	71 (34.4)	64 (31)
Limit on size of manuscript	7 (3.4)	24 (11.7)	70 (33.9)	74 (35.9)	31 (15)
Having Published in journal before	18 (8.7)	25 (12.1)	76 (36.9)	55 (26.7)	32 (15.6)
Impact factor	3 (1.5)	5 (2.5)	41 (19.9)	74 (35.9)	83 (40.2)
Eigen factor of journal	42 (20.4)	16 (7.8)	49 (23.8)	67 (32.5)	32 (15.5)
Authors' rights	20 (9.7)	26 (12.6)	49 (23.8)	67 (32.5)	44 (21.4)
Free reprints or offprints	10 (4.9)	30 (14.6)	50 (24.3)	73 (35.4)	43 (20.8)

**Table IV:** Comparison of mean Weights among medical and dental researchers using Mann-Whitney U test.

Factors	Health researchers				p value
	Medical		Dental		
	Mean	Std. Deviation	Mean	Std. Deviation	
Journal Reputation	2.99	0.83	2.78	0.90	0.09
Years in journal publication	2.70	0.97	2.20	1.03	0.00*
Publication Frequency	2.62	0.99	2.22	1.02	0.01*
No. of articles per issue	2.40	1.12	1.90	1.02	0.00*
Editorial board	2.37	1.26	1.91	1.25	0.01*
Journal circulation	2.78	1.00	2.27	1.02	0.00*
Journal Citation & ranking	3.07	0.76	2.81	0.96	0.07
Publisher of journal	2.48	1.26	1.90	1.23	0.00*
Acceptance / Rejection rate	2.75	1.03	2.41	1.17	0.04*
Indexing of journal	3.47	0.68	3.43	0.81	0.99
Online submission	3.36	0.75	3.14	0.89	0.09
Print or electronic formats	2.95	0.88	2.74	1.04	0.18
Open access	3.19	0.90	2.62	1.15	0.00*
Publication Fees	3.05	0.98	2.93	1.22	0.85
Peer review	3.29	0.81	2.74	1.13	0.00*
Useful Reviewer Suggestions	2.80	0.87	2.72	1.04	0.96
Length of review	2.94	0.91	2.79	1.06	0.39
Time lag	2.93	0.94	2.81	1.02	0.54
Limit on size	2.72	0.89	2.25	1.04	0.00*
Published in Journal before	2.53	1.12	2.06	1.11	0.00*
Impact factor	3.23	0.83	3.00	0.96	0.09
Eigen factor of Journal	2.48	1.34	1.84	1.30	0.00*
Authors' rights	2.35	1.33	2.50	1.13	0.51
Free reprints or offprints	2.73	1.09	2.35	1.13	0.01*

\* p&lt;0.05 = Statistically significant

A comparison of mean weight of the factors among medical and dental researchers is shown in Table IV. Except one (Author's right), for all other 23 factors considered, the mean weight scores of medical researchers were higher compared to dental researchers. A statistically significant difference in mean weight scores was observed between medical researchers and dental researchers in terms of 13 factors ( $p < 0.05$ ). Although factors like Journal indexing, online submission, impact-factor, journal ranking and publication fees were scored to be important factors by both groups, no significant difference in mean weights was found ( $p > 0.05$ ). A significantly higher weight was given by the medical researchers to Open access ( $3.19 \pm 0.9$ ) and peer-review process ( $3.29 \pm 0.81$ ) compared to dental researchers ( $p < 0.05$ ).

### Discussion

The objective of this research was to understand the factors that an author ought to contemplate when selecting a journal for submission of their manuscript. Academics in Indian health scenario require conducting research and publishing results. Since the submission and evaluation process can easily take months and academic researchers are expected to submit a manuscript to only one journal at any given time, the proper selection of a journal is critical to publishing success [14].

About two thirds of health researchers in the present study, reported to follow the practice of preparing by selecting a suitable journal beforehand and following the author guidelines. Linda et al. argue that researchers need to select a particular journal before you begin writing, in order to specifically aim your writing [14]. Harper suggests "Before writing the manuscript, the author (or authors) should have a journal in mind for submission. This is important for the author in determining what guidelines and writing style to follow" [15].

In the present study, the respondents were academicians who had some research experience and a minimum one scientific research publication. Presently, many were involved in their postgraduate students' research. Researchers as a Principal-investigator in any funded project were very few. The publishing habit and research rating systems also vary among different countries. In India, the MCI and DCI credit highest points to a publication indexed in PubMed or in specialty journals published by professional associations [10-11].

To 13 of the 24 criteria, medical researchers gave significantly more importance in their perceptions compared to dental researchers. Even where differences have not been statistically significant, dental researchers were almost always more reserved than medical researchers in their perceptions about the importance of all but one criterion (author's rights). This could be due to a more moderate, or pragmatic nature of dental researchers compared to medical

researchers, to different expectations or backgrounds. It could even more likely be due to confounding factors like age and teaching experience, which differed significantly between medical and dental researchers.

Visibility leads to accessibility and readership. Indexing of the journal was given much importance by the health researchers in this study. Shokraneh F et al., report that coverage and indexing of journals by main bibliographic databases is the best criteria in selecting visible journals [5]. To find the required papers, most of the biomedical researchers search PubMed. It is a free popular vast resource that includes MEDLINE and PubMed Central. Therefore, the coverage of journal in PubMed is a good option for the judgment on visibility. Other free indexing database of relevance may be Google Scholar [5]. The MCI and DCI consider the articles published in PubMed indexed journals with high publication credit points [10-11]. Having an indexed publication shall also higher chances of citations. All these might concur to make the indexing of a journal the most important criterion.

Open access advocates free and full access of papers. Peet RK argues that nearly all young scientists read journals almost exclusively in digital format, and are even reluctant to look for articles from "primitive" journals that are not yet available in digital format [16]. Findings suggest that although deliberate open access publishing continues as a minority activity amongst publishing authors, there has been a fairly significant rise in authors' awareness of open access. Swan and Brown presented findings on reasons authors choose open access such as free access (92%), speed (87%), and wide-audience (71%) [17]. Publication cost in author-pay model and copyright issue with open access journals are highly debated. Evidence has shown that many authors are in opposition to these fees and have reported that they are not prepared to pay for open access publishing [18]. For open access to work, resources for page charges need to be available to authors from research grants, new granting agency programs, publication funds of home institutions, or other sources.

Free submission and publication is a significant factor for individual health researchers. In the presence of external funding or grants, authors would not be deterred to publish by paying publication charges and may even consider journal reputation with high impact and open access. However, the previous publications and much of their research by the health professionals sampled in this study is self-sponsored. Grant-writing and external funding are still not fully explored by Indian health researchers.

Impact Factors should be treated with caution. Until the deficiencies in the system have been corrected and its limitations better understood, the impact factor remains a relatively crude index of the value of a particular journal. Publishing papers in high impact journals increases the possibility to get cited [5]. According to Jones, authors should not overemphasize the Impact Factor of a journal [19].

Rather, they should give more consideration to the speed and efficiency of the editorial handling of their manuscripts, and to the quality and timeliness of the peer review. In a time when electronic publishing has become more common, the quick (and often free) availability of research results on the Internet might, in many cases, compete with measures of impact such as the Impact Factor [7].

In contrast to Impact factor, Eigen-factor attempts to rate the influence of journals and is a measure of journal's importance to the scientific community [20]. The Eigen-factor ranks journals in a manner similar to that used by Google for ranking the importance of websites in a search. The lack of awareness of this new rating system among the study sample may have led to consider it as less important.

Previously, Erica Frank reported the factors affecting the initial submission to a journal in the following descending order: journal's prestige; makeup of the journal's readership; whether the journal usually publishes articles on the topic; likelihood of manuscript acceptance; size of journal circulation; rapidity of manuscript turnaround; existence of good editors; likelihood of useful reviewer suggestions; a history of having published in that journal previously; colleagues' recommendations; the likelihood of useful bio-statistical suggestions; the existence of editors who are personally known to the author; and the likelihood of press attention [21]. The present study also considers many of these factors, but higher importance was given to newer trend of indexing, online submission, open access and journal impact factor. More recently Rowlands, Nicolas, and Huntingdon, found prestige of the publication based on reputation or impact factor, as well as type of research and speed, to be essential in the decision making process for all authors [22]. Gasparyan AY in his editorial highlights the global opinions from academicians that relevance of research field, impact factor and indexation are the top three determinants of submission. Open access and publication fees were the least important factors [23].

The results of this study should be carefully generalized, as it is difficult to attribute behavioral changes of respondents to each single factor only by one assessment of sample. Also the potential selection bias from convenience sampling limits the representation of results to target population. Social desirability bias could also play a role, as all the respondents were researchers with academic commitment in institutions. However, the study provides an insight on various attributes of journal selection and it will be interesting to explore these issues in more depth.

In conclusion, of the 24 factors considered by health researchers for journal selection, the most important are Journal indexing, online submission, impact factor, peer review and publication fees. Both medical and dental researchers have similar views on important criteria related to journals. But, the medical researchers gave significantly more importance to open access and peer- review process compared to dental researchers.

The quality of journal is a multifaceted notion and authors must recall their publication goals, appropriateness and important selection criteria before final decision.

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