

Knowledge of Shahid Beheshti dental school faculty members about open access electronic journals

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Objectives Considering the gap of information about the perspectives of faculty members regarding the available online scientific resources, this study aimed to assess the knowledge of Shahid Beheshti Dental School faculty members about open access (OA) electronic journals.

Materials and Methods In this descriptive, cross-sectional study, a questionnaire was used to collect information of 68 faculty members of Shahid Beheshti Dental School in 2013–2014. The questionnaire asked for demographic information and contained questions regarding the level of knowledge, use of electronic databases, etc. To assess internal consistency of the questionnaire, in a pilot study, Cronbach's alpha was considered to be 0.89. Content validity was assessed to determine the validity of the questionnaire. Data were analyzed using SPSS and descriptive statistics, such as percentage, mean, and standard deviation and non-parametric tests, such as binomial, Friedman, Kruskal Wallis, and Mann–Whitney tests.

Results The mean (\pm standard deviation) score of acquaintance with OA electronic journals, the mean score of using these journals and the mean score of attitude of faculty members toward these journals were 3.45 ± 0.7 , 2.76 ± 0.88 and 3.13 ± 0.4 , respectively.

Conclusion Level of acquaintance of faculty members with OA journals was moderate while their usage was lower than moderate. Their attitude was also moderate. Faculty members must be informed and instructed to use OA journals more frequently.

Keywords electronic journals, faculty members, knowledge

Introduction

Publishers interact with researchers by publishing articles in scientific journals, which is the most effective way to propagate new updates in science. Advances in information technology led to creation of electronic journals, which are widely accessible.¹ Electronic journals have a number of advantages over published journals. Thus, they are becoming increasingly popular. However, not all electronic journals are open access (OA) (free) and most of them require a subscription fee. Many journals require a fee for downloading/printing an article. The subscription fees for the published and electronic journals increase annually, which limits the access to these journals for many researchers. Thus, free, OA journals are gaining the spotlight since researchers can no longer acquire the necessary information only through the traditional system of publication.² OA journals are defined as electronic journals published by financial support of a person or an organization and the readers do not pay any fee for accessing the articles. They can freely read, download, send or print the articles of these journals. Acceptance of a manuscript in these journals often requires evaluation and confirmation of contents by a few reviewers (although it is not the case in some OA journals). The author remains in charge and holds the copyright of his/her own article.^{3–5} OA journals enhance access to new scientific developments and increase citations.⁶ Number of these journals is increasing and there are many OA journals on medicine, and basic and applied sciences, which are indexed in Biosis, ChemAbs, Medline, SSCI/SCI and ISI.⁷ According to DOAJ index, there were 9,201 OA journals up to November 2016, out of which, 600 were related to medicine.⁸ According to a review study, of 908 selected articles in the field of dentistry, 416 had been published in OA journals (45.8%). The rate of OA articles significantly varied ($P < 0.0001$) from 20% for articles on cleft lip and palate

to 69.3% for articles on orthodontics.⁹ Considering the fact that many OA journals, especially those on medicine, are indexed in the same accredited indexes as journals with subscription fees, authors are becoming more interested in publishing in these journals.¹⁰ OA of research institutes, scientific societies and universities to resources can promote knowledge, and medical and dental fields are no exception to this rule. Physicians all around the world need to have access to the most recent findings in medicine. In this regard, electronic, OA journals can greatly enhance access to scientific information. Considering the increase in number of universities and the emphasis placed on promotion of quality of education and research projects, researchers must have enhanced access to scientific publications. Also, by publishing in these journals, researchers can more easily spread their findings worldwide.^{5,11} Information is limited on the aspects of this topic in dentistry. Thus, this study aimed to assess the knowledge, usage and access of faculty members of Shahid Beheshti Dental School to OA journals.

Materials and Methods

This descriptive, cross-sectional study was conducted on the faculty members of Shahid Beheshti Dental School in 2013–2014. First, a researcher-made questionnaire was designed which included demographic and specific questions. The questionnaire was standardized by determining its validity and reliability. The questionnaire was administered among 10 experts to determine its content validity. Items that at least nine experts did not consider it to be essential [based on Lawshe index ($n_e - N/2$)/ $N/2$ = content validity ratio (CVR) and CVR-critical of Wilson index were removed].^{12–14} Given the 10 experts ($N = 10$) and the number of people who considered it fundamental ($n_e = 9$), the coefficient equals 0.8, the approximation corresponding to at least nine positive

responses is essentially the same as that of Lawshe and Wilson indices meets the same. To assess internal consistency of the questionnaire, in a pilot study, the Cronbach's alpha was determined and Cronbach's alpha was considered to be 0.89. To assess its reliability with a test-re test the questionnaire was given to the pilot samples at two intervals of 10 days and the correlation coefficient between the responses was determined and items with a correlation coefficient of less than 0.7 were excluded. Correlation coefficient to answer all remaining items varied from 0.79 to 0.93 after standardization. The questionnaire was administered among 103 faculty members; out of which, 68 (66%) willingly filled out and returned the questionnaires. There were 42 (61.8%) males and 26 (38.2%) were females. Collected data were analyzed using descriptive and analytical statistics through SPSS. Descriptive statistics including the mean, percentage and standard deviation and non-parametric tests such as binomial, Friedman, Kruskal–Wallis and Mann–Whitney tests were used. A two-part questionnaire was used for data collection in this study. The first part asked for demographic information of respondents including sex, level of education, academic degree, and work experience. The second part included seven multiple choice questions regarding different aspects of this research project and 15 closed questions regarding the attitude of faculty members toward OA journals. Closed questions were Likert-scale with responses ranging from completely disagree to completely agree.

Results

The questionnaire was administered among 103 faculty members; out of which, 68 (66%) willingly filled out and returned the questionnaires. There were 42 (61.8%) males and 26 (38.2%) were females. Of all, 63 (92.6%) were DMD, MS and five (7.4%) had PhD. Four (5.9%) were full professors, 22 (32.4%) were associate professors and 42 (61.8%) were assistant professors. In terms of work experience, six (8.8%) had less than 5 years, eight (11.8%) had 5–10 years, 15 (22.1%) had 10–15 years, 19 (27.9%) had 15–20 years and 20 (29.4%) had over 20 years of work experience. To prioritize the needs, the mean rank of each factor was calculated. The variable with the lowest mean rank had the highest priority. Data showed that faculty members used textbooks, electronic journals, Internet, published journals, electronic books, CDs, and DVDs, respectively, to obviate their scientific needs and the difference in the mean ranks was statistically significant in this regard ($P = 0.001$, Table 1). They used electronic journals mainly for research, writing a manuscript, education, and instruction, obviate the therapeutic needs of patients and acquiring general knowledge, respectively. The results showed a significant difference in the mean ranks in this regard ($P = 0.001$, Table 2). A five-point Likert scale was used to assess the level of acquaintance of respondents to OA journals. The mean and standard deviation of acquaintance score was found to be 3.45 ± 0.70 . The response choices to the question regarding the use of electronic journals were as follows: "I have not used them so far," "I have used them in limited cases," "I frequently use them" and "I use them very often and I have also published manuscripts in these journals." The mean score was found to be 2.76 ± 0.88 . The questionnaire used for assessment of attitude of faculty members contained 15 closed Likert-scale questions with answer choices ranging from completely agree to

Table 1. Priorities of the faculty members to obviate their scientific needs

Variable	Mean rank
Textbooks	2.65
Electronic journals	2.85
Internet	2.86
Published journals	3.18
Electronic books	3.57
CD and DVD	5.88

Table 2. Priorities of the faculty members for the reason to use electronic journals

Variable	Mean rank
Research projects	2.22
Writing manuscripts	2.46
Education and instruction	2.28
Obviate patients' therapeutic needs	3.88
Acquiring general information	4.16

completely disagree. The mean score was found to be 3.13 ± 0.42 (Table 3). Non-parametric Mann–Whitney test was used to compare gender, level of education, acquaintance score, usage score and attitude score. The null hypothesis was that the mean score would be the same in males and females and DDS, MS and PhD members. The P -value was found to be equal to 0.765 for acquaintance, 0.104 for usage, and 0.117 for attitude toward OA journals when comparing males and females. Thus, the difference in this regard was not significant between males and females. The P -value was found to be equal to 0.331 for acquaintance, 0.516 for usage and 0.274 for attitude toward OA journals when comparing PhD and DDS, MS members. Thus, the difference in this regard was not significant between DDS, MS, and PhD members. The Kruskal–Wallis test was used to assess the correlation of academic degree, work experience, acquaintance, usage, and attitude of faculty members toward OA journals. The P -value was found to be equal to 0.925 for acquaintance, 0.054 for usage and 0.180 for attitude toward OA journals when comparing academic degree. Thus, the difference in this regard was not significant. The P -value was found to be equal to 0.328 for acquaintance, 0.946 for usage, and 0.200 for attitude toward OA journals when comparing work experience of the faculty members. Thus, the difference in this regard was not significant. Non-parametric binomial test was used to analyze the level of acquaintance, usage and attitude of faculty members. By setting a cut-off point, the results showed that the level of acquaintance was moderate while the usage was below moderate. Their attitude was moderate (Table 4). Regarding the financial support of OA journals, 17 (25%) mentioned the authors, 16 (23.5%) mentioned the publisher, 15 (22.1%) mentioned advertisements, 14 (22.6%) mentioned universities and governmental organizations, four (5.9%) mentioned selling of published work and two (2.9%) mentioned private organizations to pay for expenses. To prioritize the advantages and problems of using OA journals, the mean rank of each factor was calculated such that the variable with the lowest mean rank had the highest priority. The advantages (based on

Table 3. Attitude of faculty members toward open access journals

Items	Percent (frequency)				
	Completely disagree	disagree	No comments	agree	Completely agree
1. OA journals are better than other journals	17.6% (12)	33.8% (23)	41.2% (28)	2.9% (2)	4.4% (3)
2. OA journal data are up-to-date	—	4.4% (3)	47.1% (32)	30.9% (21)	17.6% (12)
3. OA journals have appropriate and high quality judgment	5.9% (4)	22.1% (15)	52.9% (36)	13.2% (9)	5.9% (4)
4. OA journals have faster publication than other journals	—	2.9% (2)	47.1% (32)	32.4% (22)	17.6% (12)
5. OA journals have higher visibility of journal	4.4% (3)	5.9% (4)	55.9% (38)	19.1% (13)	14.7% (10)
6. OA journals have citation validity	4.4% (3)	29.4% (20)	35.3% (24)	29.4% (20)	1.5% (1)
7. OA journals have more readership	—	11.8% (8)	45.6% (31)	33.8% (23)	8.8% (6)
8. OA journals are prestigious	2.9% (2)	35.3% (24)	51.5% (35)	8.8% (6)	1.5% (1)
9. OA journals make article authors famous	—	10.3% (7)	70.6% (48)	17.6% (12)	1.5% (1)
10. OA journals author is known by academic and research communities	1.5% (1)	8.8% (6)	58.8% (40)	30.9% (21)	—
11. OA journals have the possibility of encouraging and supporting the author	—	7.4% (5)	51.5% (35)	38.2% (26)	2.9% (2)
12. OA journals have high research credibility	—	32.4% (22)	48.5% (33)	16.2% (11)	2.9% (2)
13. OA journals have high impact factor	—	14.7% (10)	67.6% (46)	13.2% (9)	4.4% (3)
14. OA journal usage have optimal use of time	2.9% (2)	2.9% (2)	51.5% (35)	29.4% (20)	13.2% (9)
15. OA journal such as BMC (Bio Med Central) has higher acceptance standard	1.5% (1)	25.0% (17)	63.2% (43)	5.9% (4)	4.4% (3)

Table 4. Binomial non-parametric test results

Variable	Group	Level	Number	Probability	P-value
Acquaintance with open access journals	1	≤3	37	0.54	0.545
	2	>3	31	0.46	
Usage of open access journals	1	≤3	54	0.79	0.001
	2	>3	14	0.21	
Attitude toward open access journals	1	≤3	21	0.31	0.068
	2	>3	47	0.69	

priority) were reported to be free access to full texts, easy and fast access, cutting down publishing expenses, and protection by the copyright law ($P = 0.001$, Table 5). The respondents reported the problems (based on priority) as follows: Not having adequate scientific credibility, inadequate citation to articles published in these journals, difficult access to Internet and inadequate knowledge about how to access these journals ($P = 0.001$, Table 6).

Discussion

This descriptive, cross-sectional study was conducted on 68 out of 103 faculty members of Shahid Beheshti Dental School. The results showed that the faculty members mainly used textbooks, electronic journals, Internet, published journals, electronic books, CDs, and DVDs to obviate their scientific needs. This finding showed that published sources were the first choice of faculty members to obviate their scientific needs. Faculty members use electronic journals for research, writing manuscripts, education and instruction, obviating the therapeutic needs of patients and acquiring general information.

Table 5. Priorities of the faculty members regarding the advantages of using open access journals

Variable	Mean rank
Free access	1.81
Easy and fast access	1.81
Saving money	3.65
Copyright law	2.74

Table 6. Priorities of the faculty members regarding problems in using open access journals

Variable	Mean rank
Lack of scientific credibility	1.82
Inadequate citation	2.18
Difficult access to Internet	2.65
Not knowing how to access these journals	3.34

This study showed that faculty members did research to achieve the highest level of instruction and research qualitatively, which was in line with the results of Tenopir et al.¹⁵ They showed that faculty members of Tennessee University mainly used different scientific resources for research. The current results revealed that the acquaintance of faculty members with OA electronic journals was moderate. Sheikh analyzes the awareness, use and attitudes of Pakistani faculty members toward scholarly open access. Although majority of the Pakistani faculty members (71.5%) were aware of the scholarly open access before this survey, their awareness level about open access-related resources and initiatives was very low.¹⁶ Abdekhoda et al.¹⁷ assessed the acquaintance and attitude of 163 faculty members of Tehran University toward OA journals and found that they had relatively low acquaintance with these journals. Difference in research by students and faculty members is due to their different needs since faculty members are responsible for instruction along with research and must have greater acquaintance with scientific resources compared to students. In the current study, use of OA journals was lower than moderate, which was in agreement with the study by Ghazi Mirsaeed et al.¹⁸ The reason may be the selective use of faculty members since they choose their scientific source according to the needs of their students. In the current study, the respondents believed that the financial support for such journals is provided by the authors, publishers, advertisements, universities, and governmental organizations, selling the published sources or private organizations. In the study by Kazemi et al.,¹⁹ the financial sources were believed to be the authors, universities and governmental organizations, selling published sources, advertisements and non-governmental organizations. In both studies, the respondents believed that the authors are mainly responsible for financial support of these journals. Another study stated that OA journals are not actually free, but they can be accessed by the authors free of charge.²⁰ Optics Express is among the OA journals that receives fee from the authors while British Medical Journal accepts advertisements to cover its expenses. Many OA journals may use both methods to cover their expenses.²¹ The advantages of using OA electronic journals were prioritized as follows: Free access to full text articles, easy and fast access, decreasing the publication costs and protection by the copyright law. Free access to full texts of articles and easy access were the first priorities for researchers. Increased accessibility increases the impact factor of the journal.²¹ The authors of a previous study stated that OA journals are widely used due to their availability and easy access.²² Also, some studies have discussed the significance of fast and cheap dissemination of knowledge through these journals²⁰ and have reported that the final goal of these journals is to increase the impact of studies and their findings. Another study discussed that these journals are easily accessible and free, which are considered great advantages and are in agreement with the findings of the current study. Kaba

reported the possession of positive perceptions about OA journals. They believe that OA resources are useful and trustworthy for scholarly and research activities.²³ Problems and concerns regarding the use of OA electronic journals included lack of scientific credibility, inadequate citation to articles published in these journals, difficult access to Internet and not knowing how to access these journals. Kazemi et al.¹⁹ stated the main problems of OA electronic journals to be lack of familiarity with these journals, requiring computer and Internet skills and inadequate citations to the articles published in these journals. According to Bjork et al.¹⁰ and Saberi²¹ most electronic journals that are freely accessible through the database for electronic journals have scientific value. Liu²⁴ concluded that the accuracy of information is the first priority for the respondents when assessing scientific sources. According to Shuva²⁵ some negative perceptions about OA journals include the notion that OA journals are not widely accepted in our society as a platform for research and are not always peer reviewed. Considering the fact that many OA journals are indexed in credible indexes, they are widely accessed and used by researchers.^{20,22} Another study reported that most authors need fast and easy access to their articles and high citations.^{11,25,26} Another study conducted in Shahid Beheshti University reported that articles affiliated to this university had the highest rate of citations.²⁷ However, some faculty members believed that free electronic journals do not have adequate credibility. This concern seems to be due to the lack of knowledge about the reviewing process in these journals. Most OA journals, similar to other journals, have a precise scientific reviewing process to ensure that the accepted articles have high scientific value.^{20,21}

Conclusion

The current study showed that the attitude of faculty members toward electronic OA journals was moderate. Their acquaintance was moderate while their usage was below moderate. Acquaintance and usage of these journals were not significantly different between males and females, DDS, MS and PhD members, members with different academic rankings, and members with different work experience. This highlights the need for further familiarization of faculty members with these journals. Librarians can greatly help in this respect and help find OA journals to take a step forward toward promotion of knowledge and quality of research at both national and international levels.

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