

Impact of Teaching Scientific Search Methods and Increasing Familiarity with Databases on the Reduction of Information Seeking Anxiety in Students of Dentistry in the University of Medical Sciences, Iran

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Abstract

Background: The negative impact of anxiety on information seeking is of great importance and it has been studied in different ways worldwide. Based on the results of such studies, it is possible to identify different aspects of information seeking anxiety, to design different tools to assess it, to evaluate personal and social factors affecting it, and to identify various methods to inhibit and reduce it. Hence, the current study aimed to evaluate the effect of teaching scientific search methods and increasing familiarity with databases on reducing the level of anxiety among students of dentistry at the Zahedan University of Medical Sciences, Iran.

Methods: The current survey included all students of the faculty of dentistry at the Zahedan University of Medical Sciences in the academic year of 2015 - 16 as the study population. A total of 60 volunteers were selected by convenience sampling and were randomly allocated to 2 groups of 30, as the experimental and control groups. The information seeking anxiety scale was used to collect data.

Results: The present findings revealed the effectiveness of teaching interventions on reducing the level of information seeking anxiety among students using the independent t test. Specifically, findings revealed a reduction in the anxiety caused by barriers to using information resources ($t = 3.79$; P value = 0.001), by the barriers to using the computer and Internet ($t = 5.35$; P value = 0.001), and by information seeking and topic selection barriers ($t = 2.50$; P value = 0.015). However, the intervention had no effect on the level of anxiety caused by barriers to using the library ($t = 0.89$; P value = 0.373) and technical barriers ($t = 0.68$; P value = 0.495).

Conclusions: Considering the findings of the current study, some measures can be taken to reduce information seeking anxiety in students, especially in the academic environment. Hence, it is recommended to design other studies to further evaluate information seeking anxiety.

Keywords: Teaching, Information Seeking, Anxiety, Students of Faculty of Dentistry at the University of Medical Sciences

1. Background

Anxiety is a common psychological barrier and it causes various cognitive, emotional, and behavioral complications; negative effects on mental and physical health; and reduces performance. Anxiety makes students feel uncomfortable in libraries and while using databases; therefore, they tend to leave the place before getting a result or show lower interest to using libraries. The negative effect of information seeking in students has been investigated in different studies worldwide (1). Multitude surveys have been conducted in the area of psychology and in interdisciplinary areas to identify different types of anxiety, design different instruments to assess anxiety, evaluate personal and social factors influencing anxiety, and provide different methods to inhibit anxiety (2).

Several types of anxiety have been identified based on their origin. The anxiety limited to the academic and university environment is called "academic anxiety" (3). Anxiety is a familiar experience for everyone who has had the chance to experience an academic environment. Anxiety caused by using databases, that caused by using a computer and the Internet, exam anxiety, library anxiety, and research anxiety are examples of academic anxiety (4). On the other hand, information seeking anxiety is a type of academic anxiety that is especially observed in PhD students, who are required to use databases and need to seek information at different stages of the PhD course. Information seeking anxiety is defined as "fear and stress during information seeking in the library or using an information system while getting ready or even thinking of the search" (5).

Erfanmanesh, in an article entitled, "The level of information seeking anxiety in the Iranian students of higher education in a University in Malaysia" indicated that although information seeking anxiety was a common complication among the sampled students and 96.5% of the students experienced different levels of anxiety, the total anxiety score was moderate. Further, among the 6 information seeking anxiety subscales assessed, the highest level of anxiety was observed in "barriers to information resources" and the lowest was in "barriers to using the computer and Internet" (6).

Bagheri, Shabani, and Abedi in a study entitled "effect of information consulting on the reduction of library anxiety and library behaviors among the users of Shahid Tavakoli library in Fouladshahr, Iran," evaluated the effect of consultation on reducing library anxiety and behaviors of public libraries users. They showed a significant difference in the pretest and posttest scores on library anxiety between the intervention and control groups. In other words, results indicated that holding information consulting sessions in public libraries significantly reduced library anxiety in the users (P value ≤ 0.50) (7).

Oye et al. indicated that computer self-efficacy, computer anxiety, and positive attitude toward technology significantly influenced the willingness and tendency of students toward using information technology in Nigeria (8).

Results of a study by Aziz and Hassan, in Panjab, India, showed a significant difference in computer anxiety in favor of male students compared with their female peers, and indicated a remarkable impact of having a personal computer on the reduction of computer anxiety in students (9).

Considering the complicated information seeking process, and the need for searching and using information resources in the PhD course, PhD students have been found to experience high degrees of stress and anxiety. Further, the information seeking anxiety has imposes negative effects on their mental health. Hence, according to the findings of previous studies, sufficient education on, and familiarity with information resources, can reduce information seeking anxiety (10). The need for the current survey was identified in the multiplicity of barriers to the information seeking of students; for example, lack of familiarity with databases. To fill the gaps, it is believed that familiarizing students with databases and teaching them different methods of conducting scientific searches can prevent interruptions in research projects and reduce information seeking anxiety in students. A part of the anxiety regarding higher education can be expected to reduce following familiarization with databases and teaching the basics of searching using electronic resources. Since the prevalence of information seeking anxiety has not yet been evaluated

among the Iranian students, the current study aimed at determining the effectiveness of teaching scientific search methods and increasing familiarity with databases on the reduction of information seeking anxiety in a group of students of dentistry at the Zahedan University of Medical Sciences, Zahedan, Iran.

2. Methods

The current study employed a descriptive-analytical model. In descriptive studies, the researcher does not interfere with the situation, status, and role of the variables, and he/she does not try to change or control them. Thus, descriptive studies aim to reveal the current conditions, and describe and express them. All students of the faculty of dentistry at the Zahedan University of Medical Sciences, in the academic year of 2015-16, were included in the study population. A total of 60 students were selected by random convenience sampling using a random numbers table.

The current sample was selected in 2 stages; first, the students were invited to participate in the study via a 2-week call-announcement at the university. Then, a list of all volunteers was created, and, using random sampling, 60 subjects were selected and assigned randomly to the intervention and control groups.

The information seeking anxiety scale (ISAS) developed by Erfanmanesh, Abrizrah, and Karim (11) was used to collect the data. The ISAS comprises 47 items that are rated on a 5-point Likert scale ranging from 1 to 5 (completely disagree, disagree, neutral, agree, and completely agree). Since the ISAS is a standard instrument, it has been used in several studies, and its validity and reliability has been considered acceptable. As the population of the current study was different from that of other similar studies, to ensure the validity and reliability of the ISAS, the scale was reevaluated by the current researcher. To do this, after providing the Persian translated version of the scale, following consultation with some experts, the ISAS was evaluated by several dentistry students. Subsequently, students' comments and suggestions were examined, and appropriate changes were made based on the comments of experts and professors. To evaluate the validity of the ISAS, the Cronbach's alpha was measured using SPSS, and it was found to be 0.87. As a Cronbach's alpha of 0.7 or above is considered good, the present value was in the acceptable range.

The intervention group was trained in a 6-session workshop; Session 1: Introduction and familiarization with a computer, Session 2: The Internet and history of reputable databases, Session 3: Principles of electronic information resources, Session 4: Principles of searching in reputable databases, Session 5: Familiarization with ScienceDirect, and Session 6: Familiarization with Sage and

Proquest databases. The protocol of the workshop was approved by 4 qualified and experienced professors prior to its implementation. The Kolmogorov-Smirnov test was used to evaluate the normality of the quantitative data, to choose the appropriate (parametric or non-parametric) test for further analysis. Since the pretest scores of all study variables were distributed normally, parametric tests were used to analyze the data. Additionally, to select the appropriate statistical test, the similarities between the groups were determined, and accordingly, the independent t test was employed. According to the results of the independent t test, no significant difference was observed between the groups in their pretest and posttest scores on the evaluated variables. Hence, both groups were considered to exhibit similar anxiety levels based on the pretest scores. To evaluate the similarities between the pretest and posttest scores of the groups, the independent t test was used. After the training workshop, the control and intervention groups completed the ISAS. The posttest and pretest scores were compared with each other and the effectiveness of the training workshop was measured. The same workshop was held for the control group after the posttest, to conform to ethical consideration standards.

3. Results

Results of the current study evaluated the effect of 6 hypotheses related to the impact of familiarization with scientific search methods and databases on the reduction of information seeking anxiety in the study population, based on different barriers. The mean \pm standard deviation (SD) of the scores before and after the training, t and P values, and the hypotheses have been presented in [Table 1](#).

To evaluate the study hypotheses, first, the pretest scores were subtracted from those of the posttest to compute difference scores. The difference indicated the changes in the anxiety scores between the pretest and posttest. Then, the independent t test was used to compare the score changes between the groups. Results indicated a significant difference between the groups in the anxiety caused by barriers to using information resources (P value = 0.001). In other words, the score on anxiety caused by barriers to using information resources reduced by 3.07 points in the intervention group, but only by 0.06 in the control group. Thus, anxiety caused by barriers to using information resources reduced substantially in the intervention group, as compared to that in the control group. Accordingly, the first study hypothesis was approved.

As compared to the pretest scores, the posttest scores on the anxiety caused by barriers to using the computer and Internet reduced by 6.35 points in the intervention group, while the control group exhibited a reduction of

only 0.72. The difference between the groups was significant (P value = 0.001). Accordingly, the scores on the anxiety caused by barriers to using the computer and Internet reduced more substantially in the intervention group, and the second hypothesis of the study was approved.

According to the results of the current study, there was no significant difference in the scores of anxiety caused by barriers to using the library between the groups (P value = 0.373). Hence, the third hypothesis of the study was rejected.

Further, the scores on the anxiety caused by information seeking barriers reduced more substantially in the intervention group as compared with the control group. Therefore, the fourth hypothesis was approved.

Results of the study showed a reduction of 0.69 points in the posttest score on anxiety caused by technical barriers in the intervention group, as compared with that of the pretest, while the same showed an increase by 0.44 points in the control group. However, the difference between the groups was nonsignificant (P value = 0.495).

Finally, results of the independent t test analysis on the anxiety caused by study topic selection indicated a reduction of 2.07 points in the posttest scores, as compared with pretest scores, in the intervention group; while, the control group exhibited a reduction of only 0.93 points. Thus, reduction in anxiety caused by study topic selection was more substantial in the intervention group and the difference between the groups was significant (P value = 0.001); therefore, the sixth study hypothesis was approved.

4. Discussion

According to the findings of the current study on the impact of teaching scientific search methods and increasing familiarity with databases on information seeking anxiety among the students of the faculty of dentistry at the Zahedan University of Medical Sciences, Zahedan, Iran; the level of anxiety caused by barriers to using information resources reduced significantly in the intervention group after the training program, as compared with the control group. This finding indicated the effectiveness of the training program. Although no other similar study was found, some previously conducted studies indicated similar results. For example, Erfanmanesh and Basirian Jahromi (6), in a study entitled "the effect of teaching library skills and tours on familiarization with library on the anxiety level of students," investigated the effects of a workshops on library skills and a tour on familiarization with the university library in 75 students of the intervention group and those of a control group who received no intervention. According to their results, although no significant differences were observed among the scores of the 3 groups,

Table 1. Results of the Independent t Test to Compare the Groups Based on the Studied Variables

Variable	Intervention Group, N = 30	Control Group, N = 30	Independent t Test Analysis	
	Mean ± SD	Mean ± SD	P value	t
Changes in anxiety caused by barriers to using information resources	-3.07 (3.48)	-0.06 (2.40)	3.79	0.001
Changes in anxiety due to barriers to using the computer and internet	-6.35 (4.30)	-0.72 (3.61)	5.35	0.001
Anxiety caused by barriers to using the library	-3.92 (9.75)	-1.82 (7.81)	0.89	0.373
Anxiety caused by information seeking barriers	-1.96 (3.34)	-0.13 (2.01)	2.50	0.015
Anxiety caused by technical barriers	-0.69 (5.26)	0.44 (7.12)	0.68	0.495
Anxiety caused by study topic selection	-2.07 (2.87)	0.93 (3.81)	3.34	0.001

the level of library anxiety reduced significantly in the students who attended the tour on familiarization with the library. Scoyok et al., evaluated the effect of computer-based training on the level of library anxiety among freshmen and showed that the students who attended the training course on familiarization with library and classifications had lower levels of library anxiety as compared with the control group (12).

According to the results of current study, the anxiety caused by barriers to using the computer and Internet reduced significantly in the intervention group as compared with the control group, which was consistent with the results of some other studies. For example, a study on the effect of a 3-day training course on the level of anxiety caused by computer in the secretariat staff of a university showed a significant reduction in anxiety caused by computer use among the attenders (13). Anxiety caused by barriers to using the computer and Internet results from factors such as attitude toward computer and internet use, computer and internet skills, and use of internet resources (14). In addition to the other components of the intervention program, the current study investigated the effects of familiarization with the computer and Internet, basics of computer use, and familiarization with software and hardware (such as modem for internet use). Therefore, the program may have been effective in reducing the level of information seeking anxiety pertaining to using the computer and Internet among the students.

Results of the current study showed that the training program had nonsignificant effect on the level of library anxiety in the intervention group as compared with the control group. The anxiety caused by library barriers results from library facilities and structure, attitude toward library use, interaction with librarians, lighting and temperature in the library, policies and rules, and website and the online public access catalogue of the library (11). Since such types of anxiety mostly are associated with factors apart from students' personal conditions, it may be diffi-

cult to change these aspects. The best way to cope with these anxieties is the proper design and management of libraries (15).

The current study also indicated that the anxiety caused by the barriers to information seeking significantly reduced in the intervention group as compared to that in the control group. The result is consistent with those of Barrow and Chris (1985), Scoyok (2003), Biabangard (2001), Erfanmanesh and Basirian Jahromi (2011), and Pashaei et al. (2009) (16). Kuhlthau is one of the first theorists who proposed the theory of the information seeking process. His model is considered as the only information seeking process theory that considers the mental and emotional aspects of the user along with other cognitive and physical aspects. According to this model that was developed, in 1991, following a 6-year study and 5 studies conducted in the actual environment of schools, universities, and public libraries, the user goes through the following 6 stages of information seeking: task initiation, selection, exploration, focus formulation, collection, and presentation, and he/she may experience different negative thoughts such as doubt, confusion, uncertainty, bewilderment, frustration, despair, disappointment, etc., considering his/her personal thoughts and actions toward the process. This in turn may cause anxiety (17). According to Kuhlthau, such anxiety is referred to as information seeking anxiety. On the other hand, the anxiety caused by barriers to information seeking is caused by factors associated with users' feelings that occur during the different stages of information seeking (6). Hence, it seems that information seeking anxiety deals with every stage of the process of information seeking. The educational intervention implemented in the current study aimed at promoting the information and skill levels of the students in the scientific information seeking process. Hence, by the end of the program, the intervention group showed better results on information seeking, and accordingly, the information seeking anxiety reduced significantly in this group.

Results of the current study also indicated that the educational intervention could not affect the anxiety caused by technical barriers. This type of anxiety results from different factors such as limited number of computers, low-speed internet, rapid changes in library technologies, fear of destroying the machinery, and technical terms related to the computer and Internet (18). Such type of information seeking anxiety is mostly associated with technical barriers. Similar to library anxiety, this type of anxiety should be treated by increasing facilities and equipment in the university environment.

Finally, the findings of the current study indicated a reduction in the anxiety caused by barriers to topic selection in the intervention posttest scores (by 2.07 points), while the control group exhibited a reduction of merely 0.93 points. Further, the difference between the groups was significant. The results indicated that the current intervention could reduce the level of topic selection anxiety in the students owing to the promotion of their information seeking skills. The finding was consistent with those of Barrow and Chris (1985), Scoyok (2003), Biabangard (2002), Erfanmanesh and BasirianJahromi (2011), and Pashaei et al. (2009).

The anxiety caused by barriers to topic selection results from factors such as topic selection, searching keywords selection, an initiation of information seeking process (8). The topic selection anxiety mainly develops prior to the searching process, but according to the present findings, if the student benefits from proper information seeking skills, the anxiety reduces significantly (19).

The present study aimed to introduce an educational intervention to reduce information seeking anxiety in the students of dentistry at the Zahedan University of Medical Sciences. The ISAS was used to collect the data. The study population was selected because this group of students engages in extensive use of information resources, particularly databases, for research and academic tasks. In addition, different, specific, and multidisciplinary databases available in dentistry increased the appropriateness of this study population. During the study, the author encountered new points on information seeking anxiety that could not be predicted before the implementation of the educational intervention, which resulted in repeated use of the test. Unpredictability of searching time, slow speed of access to results, researcher's physical presence, and various software and hardware were among factors affecting the conduction of study.

The study population included 500 dentistry students of the Zahedan University of Medical Sciences, and the ISAS was used as the data collection tool. Results of the current study indicated that although information seeking anxiety was experienced by the study population, the educa-

tional intervention reduced the same. The intervention could also reduce the anxiety caused by the barriers to using information resources, to using the computer and Internet, to information seeking, and to topic selection. However, the program had no impact on the level of anxiety caused by barriers to using the library and technical barriers. Considering the results of the current study, measures can be performed to reduce information seeking anxiety in the students, specifically in universities and colleges. Additionally, future studies should design and examine new methods to reduce information seeking anxiety in university students (20).

Since the author deeply complicated with the topic of the research, the weaknesses and strengths of the current and other similar studies were revealed. Hence, the author could provide several recommendations for future research, some of which have been listed below:

- It is recommended to conducted similar studies on the students of other faculties and universities.
- It is suggested to use the employed cost-effective and short-time educational intervention to reduce information seeking anxiety in the students.
- Considering the results of the current study, it is recommended to conduct more studies on information seeking anxiety to accurately evaluate the variable.
- It is recommended to conduct studies to identify other methods for reducing information seeking anxiety.

Supplementary Material

Supplementary material(s) is available [here](#).

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References

1. Abusin KA, Zainab AN. Exploring library anxiety among sudanese university students. *Malaysian J Library Inform Sci*. 2010;15(1):55-81.
2. Presno C. Taking the byte out of internet anxiety: Instructional techniques that reduce computer/internet anxiety in the classroom. *J Educ Comput Res*. 1998;18(2):147-61. doi: 10.2190/uy72-5tg8-0lt5-au4l.
3. Chua SL, Chen DT, Wong AFL. Computer anxiety and its correlates: a meta-analysis. *Computer Human Behav*. 1999;15(5):609-23. doi: 10.1016/s0747-5632(99)00039-4.
4. Erfanmensch ME. The study of the amount of anxiety in information seeking graduate students: a case study of Iranian students in Malaysia (In Persian). *Bulletin Library Inform*. 2012;2(2):53-72.

5. Christopherson KM, Weatherly JN. The effect of visual complexity when playing a slot-machine simulation: the role of computer experience, computer anxiety, and optimism. *Computers Human Behav.* 2006;**22**(6):1072-9. doi: [10.1016/j.chb.2004.03.031](https://doi.org/10.1016/j.chb.2004.03.031).
6. Cleveland A. Library anxiety: a decade of empirical research. *Library Review.* 2004;**53**(3):177-85. doi: [10.1108/00242530410526583](https://doi.org/10.1108/00242530410526583).
7. Bagheri M, Shabani A, Abedi MR. Effect of information counseling on library anxiety and library behaviors among users of public libraries (In Persian). *J Res Info Sci Public Libraries.* 2014;**19**(4):569-81.
8. Oberman C. Avoiding the cereal syndrome, or critical thinking in the electronic environment. *Library Trends.* 1991;**39**(3):189-202.
9. Aziz S, Hassan H. A study of computer anxiety of higher secondary students in Punjab. *Int J Soc Sci Educ.* 2012;**2**(2):264-73.
10. Chowdhury S, Gibb F. Relationship among activities and problems causing uncertainty in information seeking and retrieval. *J Documentation.* 2009;**65**(3):470-99. doi: [10.1108/00220410910952438](https://doi.org/10.1108/00220410910952438).
11. Deryakulu D, Caliskan E. A twin study of computer anxiety in Turkish adolescents. *Cyberpsychol Behav Soc Netw.* 2012;**15**(4):212-8. doi: [10.1089/cyber.2011.0499](https://doi.org/10.1089/cyber.2011.0499). [PubMed: [22394420](https://pubmed.ncbi.nlm.nih.gov/22394420/)].
12. Oye ND, Lahad NA, Rahim NZA. Computer self-efficacy, anxiety and attitudes towards use of technology among university academicians: A case study of university of Port Harcourt-Nigeria. *Inter J Computer Sci Technol.* 2012;**3**(1):213-9.
13. Gross M, Latham D. Attaining information literacy: An investigation of the relationship between skill level, self-estimates of skill, and library anxiety. *Library Inform Sci Res.* 2007;**29**(3):332-53. doi: [10.1016/j.lisr.2007.04.012](https://doi.org/10.1016/j.lisr.2007.04.012).
14. Barbeite FG, Weiss EM. Computer self-efficacy and anxiety scales for an Internet sample: testing measurement equivalence of existing measures and development of new scales. *Computers Human Behav.* 2004;**20**(1):1-15. doi: [10.1016/s0747-5632\(03\)00049-9](https://doi.org/10.1016/s0747-5632(03)00049-9).
15. Orr C, Allen D, Poindexter S. The effect of individual differences on computer attitudes. *J Org End User Comp.* 2001;**13**(2):26-39. doi: [10.4018/joeduc.2001040103](https://doi.org/10.4018/joeduc.2001040103).
16. Necessary JR, Parish TH. The relationship between computer usage and computer-related attitudes and behaviors. *Education.* 1996;**116**(3):384-7.
17. Erfanmensch ME, Dideghah F, Mohamadi M. Library anxiety among students of the faculty of education and psychology based on their contextual characteristics (In Persian). *J National Studies Librarianship Inform Organization.* 2014;**24**(4):42-61.
18. Jiao QG, Onwuegbuzie AJ, Bostick SL. Racial differences in library anxiety among graduate students. *Library Review.* 2004;**53**(4):228-35.
19. Mellon CA. Library anxiety: A grounded theory and its development. *College Res Libraries.* 1986;**47**(2):160-5. doi: [10.5860/crl_47_02_160](https://doi.org/10.5860/crl_47_02_160).
20. Hassan SS, Solangi AR, Agheem MH, Junejo Y, Kalwar NH, et al. Ultra-fast catalytic reduction of dyes by ionic liquid recoverable and reusable mafenamic acid derived gold nanoparticles. *J Hazard Mater.* 2011;**190**(1-3):1030-6. doi: [10.1016/j.jhazmat.2011.04.047](https://doi.org/10.1016/j.jhazmat.2011.04.047). [PubMed: [21561710](https://pubmed.ncbi.nlm.nih.gov/21561710/)].