

The prevalence and correlates of information seeking anxiety in postgraduate students¹

Mohammadamin Erfanmanesh¹, A. Abrizah² and
Noor Harun Abdul Karim²

¹Department of Knowledge & Information Science,
Faculty of Educational Sciences & Psychology,
Shahid Beheshti University, Tehran, IRAN

²Department of Library and Information Science,
Faculty of Computer Science and Information Technology,
University of Malaya, Kuala Lumpur, MALAYSIA

e-mail: amin.erfanmanesh@gmail.com (corresponding author);
abrizah@um.edu.my; nharun@um.edu.my

ABSTRACT

This study aims to determine the prevalence and correlates of information seeking anxiety among a group of postgraduate students at a research-intensive university in Kuala Lumpur, Malaysia. The 38-item Information Seeking Anxiety Scale was administered to 375 postgraduate students drawn from a population of 11000 using stratified random sampling method. Results of the study revealed that information seeking anxiety is a prevalent phenomenon among postgraduate students. Different levels (low, mild, moderate and severe) of information seeking anxiety were reported to have experienced by 96.5% of the postgraduate students studied. Among the various demographic factors, gender, level of study, age and frequency of library use were found to be correlates of information seeking anxiety. Conversely, no associations were found between various subscales of the information seeking anxiety and nationality, information literacy skills instruction received, academic major and frequency of the Internet use. The implications of the findings are discussed.

Keywords: Information seeking anxiety; Information seeking process; Prevalence; Correlates; Postgraduate students; Malaysia.

INTRODUCTION

Anxiety, a general term for several disorders that cause nervousness, fear and apprehension, has been defined as an affective feeling of fear or uneasiness caused by apprehension or anticipation of negative outcomes (Van Kampen 2003). This feeling has been identified as one of the most important barriers in academic environments, which has caused different cognitive, affective, and behavioral effects in students, and has had an impact on their educational performance (Erfanmanesh 2011). To date, several forms of anxiety in educational setting have been studied. However, of all the forms of academic-

¹ This paper has been presented at the Fourth International Conference of Libraries, Information and Society 2012 (ICOLIS 2012), Inclusion and Outreach in Libraries, Petaling Jaya, Malaysia, 19-21 November 2012.

related anxiety, frustration associated with the search for information resources in libraries or information systems appears to be among the most prevalent and important anxieties, because virtually most, if not all, students are required to conduct a research as part of completing their academic programme which needs an extensive search and use of information resources (Onwuegbuzie, Jiao and Bostick 2004).

Information seeking anxiety can be interpreted as the fear and/or apprehension of searching for information resources during the information seeking process. This type of anxiety has been documented in the literature as a prominent phenomenon in students (Mellon 1986; Kuhlthau 1993; Van Kampen 2003; Onwuegbuzie, Jiao & Bostick 2004; Erfanmanesh, Abrizah and Karim 2012). However, despite the presence of anxiety during the information seeking process among students (Kuhlthau 1993; Onwuegbuzie, Jiao and Bostick 2004; Erfanmanesh, Abrizah and Karim 2012), and the fact that academic related anxiety has been found to impede students' academic achievement (Jiao, Onwuegbuzie and Lichtenstein 1996; Onwuegbuzie, 1997; Onwuegbuzie, Jiao and Bostick 2004), prior to the present study, no research has examined empirically the prevalence and correlates of the information seeking anxiety construct. As a result, the purpose of the current study was to determine the prevalence and levels of information seeking anxiety among a group of postgraduate students at a research intensive university in Malaysia. Moreover, the association between demographic variables and various dimensions of the information seeking anxiety was investigated. Understanding the prevalence and correlates of the information seeking anxiety among postgraduate students may enable academic librarians to devise methods and learning experiences that begin to reduce this anxiety and, thus, prepare postgraduate students to be more successful in their research.

LITERATURE REVIEW

An extensive review of the literature on information seeking anxiety was conducted for this study. No previous literature was found concerning the prevalence and levels of information seeking anxiety. Additionally, the correlates of this phenomenon have yet to be empirically investigated in a group of postgraduate students. As a result, this section only reviews some available literature with regard to the existence of this phenomenon in students. In one of the first studies, Mellon (1986) stated that "students become so anxious about having to gather information in a library for their research papers that they are unable to approach the problem logically or effectively" (p. 163). Four years later, Kuhlthau (1990) found that anxiety is a natural occurrence during the information seeking process which may begin during any one of the six (6) stages of the research process. In another study, Dalrymple and Zweizig (1992) found that some of the negative feelings like frustration, anxiety, tension, and confusion were reported by participants during the information seeking in card and Online Public Access Catalogues. Nahl and Tenopir (1996) studied affective aspect of the searching behavior of novice users and found that hesitation, fear, anxiety and other negative feelings affecting search strategies. Branch (2001) found that uncertainty, frustration, doubt, and anxiety to be the common emotions while searching for information resources using the CD-ROM encyclopedias among junior high school students. In another research which conducted among undergraduate students by Young and Von Seggern (2001), anxiety has been reported as the most prevalent negative feeling during the information seeking process. Cheng (2004) indicated that negative feeling like anxiety was indeed important factors involved in students' information seeking process. Hyldegard (2006) explored Kuhlthau's Information Search Process (ISP) model in a group-based educational setting and reported existence of anxiety

and frustration in the beginning, middle, and the end of the process. Additionally, Chowdhury and Gibb (2009) found that uncertainty and anxiety may occur due to a number of information seeking activities, and may also be created because of some problems associated with information seeking. Review of the existing literature shows a gap in empirical studies concerning the prevalence and antecedents of the information seeking anxiety construct.

RESEARCH METHODOLOGY

Subjects and Sampling

The purposes of this study are (a) to investigate whether information seeking anxiety is a prevalent phenomenon among postgraduate students; and (b) to identify the nature of association between students' demographic variables and various dimensions of the information seeking anxiety construct. The target population of the study comprised 11000 postgraduate students enrolled in various graduate programmes at a research intensive university in Kuala Lumpur, Malaysia. Using the Krejcie and Morgan's (1970) sampling table and to obtain 95% confidence interval (5% error rate), 365 postgraduate students provided the sample for the current study. Applying a stratified random sampling method, a sample was drawn from the population. Of the 375 participants, 190 (50.7%) students were males and 185 (49.3%) students were females. In terms of level of study, 267 (71.2%) participants were master's level students with the remaining 108 (28.8%) participants being doctoral level students. Concerning the students' academic major, 122 postgraduate students were studied in engineering which comprised the largest group with 32.5% of the total participants. The next largest academic major was arts, humanities, social sciences and education (32.3%), followed by pure sciences (30.9%) and small group of medical sciences disciplines (4.3%). Regarding the student's nationality, non-Malaysian students made up (68.5%) of the participants with the remaining (31.5%) of the respondents being Malaysian. Additionally, 144 (38.4%) students reported having participated in at least one information literacy skills instruction session. Finally, ages of the participants ranged from 22 to 52 years old, with a mean age of 30 years.

Instrument

Participants were asked to complete the Information Seeking Anxiety Scale (ISAS). The ISAS, developed by Erfanmanesh, Abrizah and Karim (2012), is a 38-item, 5-point Likert-format instrument which assesses levels of information seeking anxiety. The instrument contains seven subscales, namely, (a) barriers associated with libraries, (b) barriers associated with information resources, (c) barriers associated with computers, the Internet and electronic resources, (d) technological barriers, (e) affective barriers, (f) barriers associated with topic identification, and (g) access barriers. Scores for the total scale, which range from 38 to 190, were used as an overall measure of information seeking anxiety, with higher scores on the scale representing greater degree of information seeking anxiety. Additionally, a higher score on any sub-scale of the ISAS represents higher anxiety as it pertains to that particular dimension. The scale was found to have satisfactory face, content, and construct validity as well as internal consistency to generate both valid and reliable scores (Erfanmanesh, Abrizah and Karim 2012). For the present study, scores from the subscales yielded alpha reliability coefficients ranging from 0.730 (access barriers) to 0.832 (barriers associated with libraries).

Data Analysis

The Statistical Product and Service Solutions (SPSS) version 18 was the software package used for analysis of data. In order to determine the prevalence of information seeking anxiety, mean anxiety score was computed for the overall scale as well as each of the seven (7) subscales. The researchers also utilized Anwar, Al-Kandari and Al-Qallaf's (2004) proposed levels of library anxiety as a useful way to analyze levels of information seeking anxiety. Moreover, three (3) types of inferential statistics were carried out to determine the correlates of the information seeking anxiety construct include Independent sample t-test, one way ANOVA and Pearson product moment correlation tests.

RESULTS

Prevalence of Information Seeking Anxiety

In order to examine the prevalence of information seeking anxiety, mean anxiety score was computed for the total ISAS as well as each of the seven (7) subscales. By comparing mean scores, information seeking anxiety could be compared across the full scale and its subscales. A higher score indicated higher levels of anxiety. The overall information seeking anxiety mean score was 88.31, which was virtually the same as the median, at 88.39. The standard deviation was 16.43 with the minimum score being 39.94 and the maximum score being 135.16 for a range of 95.22. With regard to the seven (7) subscales, mean anxiety scores range from a low of 7.14 to a high of 23.26. In particular, based on the mean score for various subscales of the ISAS, "barriers associated with libraries" (M=23.26, SD=6.29) was found to be the most important source of information seeking anxiety among postgraduate students, followed by "barriers associated with information resources" (M=21.54, SD=4.15), "technological barriers" (M=14.81, SD=4.07), "affective barriers" (M=12.34, SD=3.46), "access barrier" (M=11.51, SD=2.62) and "barriers associated with topic identification" (M=7.55, SD=2.14). The results of the study revealed that postgraduate students reported to have experienced the lowest level of information seeking anxiety related to "barriers associated with computers, the Internet and electronic resources" subscale (M=7.14, SD=2.68). Information seeking anxiety total score for the sample of the study indicated that while information seeking anxiety is present, the overall level is not high. Table 1 displays the descriptive statistics for each of the seven (7) dimensions of the ISAS as well as the overall scale (See Table 1).

Table 1: Descriptive Statistics for Overall Scale and Various Subscales

<i>Subscale</i>	<i>Mean</i>	<i>Median</i>	<i>Mode</i>	<i>SD</i>	<i>Variance</i>	<i>Min</i>	<i>Max</i>
Barriers with Libraries	23.26	23.2	18.2	6.29	39.6	9.1	42.4
Barriers with Information Resources	21.54	22.28	24.57	4.15	17.25	6.14	30.71
Barriers with Computers	7.14	6.5	6.5	2.68	7.19	3.25	16
Technological Barriers	14.81	14.66	10.33	4.07	16.57	5.17	24.67
Affective Barriers	12.34	12.4	10.4	3.46	11.96	4.20	21
Barriers with Topic Identification	7.55	8	9.33	2.14	4.58	2.33	11.67
Access Barriers	11.51	12	13	2.62	6.85	4.25	16.25
Overall Scale	88.31	88.39	65.05	16.434	270.07	39.94	135.16

The study also determined levels of information seeking anxiety in quantitative linear scale (Table 2). Results of study revealed that the largest segment of the participants (69.2%) were reported to have experienced mild level of information seeking anxiety, while moderate and severe levels of information seeking anxiety were reported only by 52 (13.9%) and six (1.6%) postgraduate students, respectively. Additionally, the number of respondents who experienced no anxiety (3.5%) or low anxiety (11.8%) was quite small. However, it is important to note that 96.5% of the respondents did face different levels (low, mild, moderate and severe levels) of the information seeking anxiety. Hence, information seeking anxiety is a prevalent phenomenon among postgraduate students studied.

Table 2: Levels of Information Seeking Anxiety for Overall Scale and Various Subscales

<i>Subscale</i>	<i>No Anxiety</i>	<i>Low Anxiety</i>	<i>Mild Anxiety</i>	<i>Moderate Anxiety</i>	<i>Severe Anxiety</i>
Barriers with Libraries	7(1.9%)	50(13.3%)	257(68.5%)	54(14.4%)	7(1.9%)
Barriers with Information Resources	13(3.5%)	44(11.8%)	275(73.2%)	40(10.7%)	3(0.8%)
Barriers with Computers	-	69(18.4%)	247(65.9%)	45(12.0%)	14(3.7%)
Technological Barriers	15(4.0%)	53(14.1%)	252(67.2%)	51(13.6%)	4(1.1%)
Affective Barriers	11(2.9%)	51(13.6%)	238(63.5%)	73(19.5%)	2(0.5%)
Barriers with Topic Identification	7(1.9%)	86(22.9%)	244(65.1%)	38(10.1%)	-
Access Barriers	10(2.7%)	60(16.0%)	258(68.8%)	47(12.5%)	-
Overall Scale	13(3.5%)	44(11.8%)	260(69.2%)	52(13.9%)	6(1.6%)

Gender and Information Seeking Anxiety

The results of running an independent sample t-test for each of the seven (7) dimensions of the information seeking anxiety with gender as the independent variable showed statistically significant mean difference [t (373) =3.009, p<0.05] between male (M=20.911, SD=4.108) and female (M=22.188, SD=4.109) postgraduate students with regard to their scores on “barriers associated with information resources” dimension. Additionally, statistically significant mean difference [t (373) =2.474, p<0.05] was found between male (M=11.181, SD=2.715) and female (M=11.845, SD=2.475) postgraduate students with regard to their scores on “access barriers” dimension of the information seeking anxiety. The differences found between female and male postgraduate students in mean anxiety values of other five (5) subscales of information seeking anxiety were not statistically significant (See Table 3). Hence, gender appears to be a correlate of information seeking anxiety.

Nationality and Information Seeking Anxiety

The results of running a series of independent sample t-test revealed no statistically significant mean differences for any of the seven (7) subscales of the information seeking anxiety with the antecedent variable, nationality. As can be seen in Table 4, none of the mean differences were found to be statistically significant. Hence, nationality appears not to be a correlate of information seeking anxiety.

Table 3: Means and Standard Deviations for Information Seeking Anxiety Dimensions as a Function of Gender

Sub-scales	Male		Female		P value
	Mean	SD	Mean	SD	
Barriers with Libraries	23.372	6.615	23.147	5.959	0.730
Barriers with Information Resources	20.911	4.108	22.188	4.109	0.003 *
Barriers with Computers	7.275	2.912	7.013	2.423	0.346
Technological Barriers	14.472	4.110	15.168	4.008	0.098
Affective Barriers	12.086	3.349	12.610	3.555	0.142
Barriers with Topic Identification	7.556	2.089	7.556	2.198	0.998
Access Barriers	11.181	2.715	11.845	2.475	0.014 *

* p<0.05

Table 4: Means and Standard Deviations for Information Seeking Anxiety Dimensions as a Function of Nationality

Subscale	Malaysian		Non-Malaysian		P value
	Mean	SD	Mean	SD	
Barriers with Libraries	22.501	6.714	23.609	6.071	0.113
Barriers with Information Resources	21.688	4.074	21.473	4.195	0.642
Barriers with Computers	7.209	2.788	7.116	2.637	0.756
Technological Barriers	15.248	4.381	14.617	3.912	0.163
Affective Barriers	12.342	3.672	12.346	3.362	0.992
Barriers with Topic Identification	7.542	2.122	7.562	2.153	0.931
Access Barriers	11.538	2.642	11.496	2.611	0.885

p>0.05

Level of Study and Information Seeking Anxiety

The results of running an independent sample t-test for each of the seven (7) dimensions of the information seeking anxiety with level of study as the independent variable showed statistically significant mean difference [t (373) =2.277, p<0.05] between master’s level students (M=7.345, SD=2.631) and doctorate level students (M=6.652, SD=2.755) with regard to their scores on “barriers associated with computers, the Internet and electronic resources” dimension. Additionally, statistically significant mean difference [t (373) =3.235, p<0.05] was found between master’s level students (M=12.707, SD=3.415) and doctorate level students (M=11.448, SD=3.415) with regard to their scores on the “affective barriers” dimension of information seeking anxiety. The differences found between master’s and doctoral level students in mean anxiety values of other five (5) subscales of information seeking anxiety were not statistically significant (Table 5). Hence, level of study appears to be a correlate of information seeking anxiety.

Information Literacy Skills Instruction Received and Information Seeking Anxiety

The results of running a series of independent sample t-test revealed no statistically significant mean differences for any of the seven (7) subscales of the information seeking anxiety with the antecedent variable, information literacy skills instruction received. Table 6 indicates that none of the mean differences were found to be statistically significant. Hence, information literacy skills instruction received appears not to be a correlate of information seeking anxiety.

Table 5: Means and Standard Deviations for Information Seeking Anxiety Dimensions as a Function of Level of Study

Sub-scales	Master		PhD		P value
	Mean	SD	Mean	SD	
Barriers with Libraries	23.645	6.301	22.310	6.198	0.063
Barriers with Information Resources	21.792	4.196	20.919	3.996	0.065
Barriers with Computers	7.345	2.631	6.652	2.755	0.023 *
Technological Barriers	15.016	3.890	14.319	4.464	0.133
Affective Barriers	12.707	3.415	11.448	3.415	0.001 *
Barriers with Topic Identification	7.665	2.139	7.287	2.131	0.121
Access Barriers	11.570	2.603	11.358	2.660	0.480

* p<0.05

Table 6: Means and Standard Deviations for Information Seeking Anxiety Dimensions as a Function of Information Literacy Instruction Received

Sub-scales	Yes		No		P value
	Mean	SD	Mean	SD	
Barriers with Libraries	23.237	6.763	23.298	5.478	0.927
Barriers with Information Resources	21.397	4.293	21.771	3.921	0.397
Barriers with Computers	7.127	2.734	7.175	2.605	0.867
Technological Barriers	14.608	4.257	15.149	3.740	0.211
Affective Barriers	12.239	3.512	12.515	3.373	0.452
Barriers with Topic Identification	7.520	2.209	7.613	2.033	0.685
Access Barriers	11.307	2.647	11.833	2.544	0.058

p>0.05

Academic Major and Information seeking anxiety

The results of running a series of one way ANOVA (Table 7) revealed that no statistically significant mean differences existed for any of the seven (7) subscales of the information seeking anxiety with the antecedent variable, academic major. None of the mean differences were found to be statistically significant. Hence, academic major appears not to be a correlate of information seeking anxiety.

Age and Information Seeking Anxiety

Conducting a series of Pearson product moment correlation test for each of the seven (7) dimensions of the information seeking anxiety with age as the independent variable revealed: (a) a statistically significant but weak negative relationship between age and “barriers associated with libraries” subscale $r=-0.135$, $p=0.009$; (b) a statistically significant but weak negative relationship between age and “barriers associated with information resources” subscale $r=-0.123$, $p=0.017$; and (c) a statistically significant but weak negative relationship between age and “affective barriers” subscale $r=-0.103$, $p=0.047$. No statistically significant relationships were found between postgraduate student’s age and information seeking anxiety associated with the other four (4) subscales of the ISAS (Table 8). Hence, age appears to be a correlate of information seeking anxiety.

Table 7: Academic Major and Various Dimensions of the Information Seeking Anxiety

<i>Sub-scales</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Squares</i>	<i>F</i>	<i>Sig.</i>
Barriers with Libraries	Between Groups	266.789	3	88.930	2.268	0.080
	Within Groups	14544.842	371	39.204		
	Total	14811.632	374			
Barriers with Information Resources	Between Groups	36.345	3	12.115	0.701	0.552
	Within Groups	6415.377	371	17.292		
	Total	6451.722	374			
Barriers with Computers	Between Groups	32.487	3	10.829	1.511	0.211
	Within Groups	2658.707	371	7.166		
	Total	2691.194	374			
Technological Barriers	Between Groups	27.412	3	9.137	0.550	0.649
	Within Groups	6169.059	371	16.628		
	Total	6196.471	374			
Affective Barriers	Between Groups	65.464	3	21.821	1.837	0.140
	Within Groups	4406.885	371	11.878		
	Total	4472.348	374			
Barriers with Topic Identification	Between Groups	13.755	3	4.585	1.000	0.393
	Within Groups	1700.800	371	4.584		
	Total	1714.555	374			
Access Barriers	Between Groups	35.099	3	11.700	1.717	0.163
	Within Groups	2527.868	371	6.814		
	Total	2562.967	374			

p>0.05

Table 8: Correlation between Age and Various Dimensions of the Information Seeking Anxiety

<i>Sub-scales</i>	<i>Correlations</i>	
	<i>Pearson Correlation</i>	<i>Sig.</i>
Barriers with Libraries	-0.135 *	0.009
Barriers with Information Resources	-0.123 **	0.017
Barriers with Computers	-0.071	0.169
Technological Barriers	-0.088	0.090
Affective Barriers	-0.103 **	0.047
Barriers with Topic Identification	-0.100	0.054
Access Barriers	-0.089	0.086

* Correlation is significant at the 0.01 level (2-tailed).

**Correlation is significant at the 0.05 level (2-tailed).

Frequency of Library Use and Information Seeking Anxiety

The results of running a series of Pearson product moment correlation test between each of the seven (7) dimensions of the information seeking anxiety with frequency of library use as the independent variable revealed a statistically significant but weak negative relationship between frequency of library use and “access barriers” dimension $r=-0.114$, $p=0.028$. In other words, as the postgraduate student’s frequency of library use increased, their information seeking anxiety related to the “access barriers” dimension decreased. No statistically significant relationships were found between postgraduate student’s frequency of library use and other six (6) subscales of the Information Seeking Anxiety Scale (Table 9). Hence, frequency of library use appears to be a correlate of information seeking anxiety.

Table 9: Correlation between Frequency of Library Use and Various Dimensions of the Information Seeking Anxiety

<i>Correlations</i>			
<i>Sub-scales</i>	<i>Pearson Correlation</i>	<i>Sig.</i>	
Barriers with Libraries	-0.100	0.054	
Barriers with Information Resources	-0.048	0.357	
Barriers with Computers	-0.028	0.586	
Technological Barriers	-0.041	0.424	
Affective Barriers	-0.083	0.110	
Barriers with Topic Identification	0.069	0.180	
Access Barriers	-0.114*	0.028	

* Correlation is significant at the 0.01 level (2-tailed).

Frequency of the Internet Use and Information Seeking Anxiety

The results of running a Pearson product moment correlation test between each of the seven (7) dimensions of the information seeking anxiety with frequency of the Internet use as the independent variable revealed no statistically significant relationships (Table 10). Hence, frequency of the Internet use appears not to be a correlate of information seeking anxiety.

Table 10: Correlation between Frequency of the Internet Use and Various Dimensions of the Information Seeking Anxiety

<i>Correlations</i>			
<i>Sub-scales</i>	<i>Pearson Correlation</i>	<i>Sig.</i>	
Barriers with Libraries	-0.098	0.058	
Barriers with Information Resources	-0.056	0.284	
Barriers with Computers	-0.065	0.209	
Technological Barriers	-0.056	0.280	
Affective Barriers	-0.085	0.102	
Barriers with Topic Identification	0.004	0.944	
Access Barriers	-0.048	0.350	

DISCUSSION

This study has determined the prevalence of the information seeking anxiety construct among a group of postgraduate students at a research intensive university in Malaysia. Additionally, the association between eight (8) demographic variables include gender, level of study, academic major, nationality, information literacy skills instruction received, age, frequency of library use as well as frequency of the Internet use and various dimensions of the information seeking anxiety construct was investigated. In order to estimate the prevalence of information seeking anxiety, mean and standard deviation for each of the subscales as well as the overall scale were calculated. The results of the study revealed that “barriers associated with libraries” dimension was the most important source of information seeking anxiety among postgraduate students. Conversely, postgraduate students were reported to have experienced the lowest levels of information seeking anxiety associated with “barriers associated with computers, the Internet and electronic resources” dimension. Based on severity of information seeking anxiety, 3.5% of students were reported as no anxious, 11.8% were found to be low anxious and 69.2% were

reported as mild anxious. Additionally, 13.9% and 1.6% of students were found to experience moderate and severe levels of information seeking anxiety, respectively. According to the results, while information seeking anxiety is a prevalent phenomenon among postgraduate students and different levels (low, mild, moderate and severe) of anxiety is present in 96.5% of subject studied, but the overall level is not high.

Gender, level of study, age and frequency of library use were found to be antecedents of the information seeking anxiety construct using a series of independent sample t-test and Pearson product moment correlation coefficient test. Conversely, nationality, information literacy skills instruction received, academic major and frequency of the Internet use had no statistically significant effect on any of the seven (7) dimensions of the information seeking anxiety construct. With regard to gender differences in the levels of information seeking anxiety, female postgraduate students reported experiencing statistically significantly higher levels of anxiety related to “barriers associated with information resources” and “access barriers” dimensions than male postgraduate students. This finding somewhat supports that of Shoham and Mizrachi (2001) and Karim and Ansari (2011) who found females tend to express higher levels of library anxiety than their male counterparts. Additionally, significantly higher computer and Internet anxiety in females was reported by Chua, Chen and Wong (1999) and Todman (2000).

Level of study was also found to be a correlate of information seeking anxiety. The results of the study showed that master’s level students exhibited significant greater levels of information seeking anxiety stemming from “barriers associated with computers, the Internet and electronic resources” and “affective barriers” dimensions than did doctoral level students. This finding somewhat supports that of Bostick’s (1992), Jiao, Onwuegbuzie and Lichtenstein’s (1996), and Onwuegbuzie, Jiao and Bostick’s (2004), who found library anxiety declines linearly as a function of year of study. A plausible explanation for this finding could be that doctoral level students have more experience in searching for a research topic, finding related information resources, conducting a literature review, writing a research proposal and eventually settling on the dissertation topic in comparison to master’s level students. With regard to the relationship between age and information seeking anxiety, results of the study revealed statistically significant but weak negative relationships between postgraduate students’ age and three (3) subscales of the ISAS, namely, “barriers associated with libraries”, “barriers associated with information resources” and “affective barriers”. The finding that older students reported lower information seeking anxiety than did younger students was in contrast to some previous studies which suggested that older students may have more difficulty in using computer and information technologies to perform information search and retrieval tasks than younger students (Rousseau et al. 1998; Czaja et al. 2001). Consistent with the results of the current study, Jiao, Onwuegbuzie and Lichtenstein (1996), Jiao and Onwuegbuzie (1997) and Shoham and Mizrachi (2001) found an inverse correlation between age and library anxiety.

Results of the study revealed that frequency of library use had a statistically significant effect on “access barriers” dimension of the information seeking anxiety construct. In other words, students who used university library more frequently reported lower levels of information seeking anxiety associated with “access barriers” dimension than those who used university library less frequently. Nevertheless, although a relationship between information seeking anxiety and frequency of library use was found, the casual direction is unknown. That is, it is unknown whether infrequent visits increase anxiety levels or whether high levels of anxiety culminates in library avoidance. It is hoped that further

research will shed more light on this relationship. Additionally, no statistically significant relationships were found between frequency of the Internet use and various dimensions of the information seeking anxiety construct. In contrast to this finding, Ben Omran (2001), Shoham and Mizrachi (2001) and Collins and Veal (2004) found that the increment in frequency of the Internet use decrease levels of Internet and library anxiety.

Finding also indicates that academic major has no statistically significant effect on any of the seven (7) subscales of the information seeking anxiety construct. This finding somewhat conflicts with that of Yang, Mohamed and Beyerbach (1999) and Ben Omran (2001) who reported academic major differences in levels of library and computer anxiety. Nationality was also found to not be a correlate of information seeking anxiety. This finding is somewhat in conformity with that of Jiao, Onwuegbuzie and Lichtenstein (1996) and Shoham and Mizrachi (2001) who found no nationality differences in levels of library anxiety. Finally, no statistically significant mean differences were found between students who have received information literacy skills instruction and those who have not received information literacy skills instruction with regard to their scores on various dimensions of the information seeking anxiety construct. This finding is somewhat in contrast to that of Jiao, Onwuegbuzie and Lichtenstein (1996), Cleveland (2004), Kracker (2002) and Nicholas, Rudowsky and Valencia (2007) who reported the effect of information literacy skills instruction as an antecedent on various subscales of the library anxiety construct.

Implications for Library Outreach Services

The relatively high prevalence of information seeking anxiety among postgraduate students strongly suggests the need for increased awareness of this phenomenon. By being aware of the prevalence of anxiety and characteristics of students who are at-risk, librarians and administrators will be in a better position to provide services and instructions which is the most effective to reduce levels of anxiety and, thus, prepare students to be more successful in their research. Additionally, many researchers assert that if anxious students are made aware that others are feeling the same way, their own anxiety may be reduced (Carlile 2007). It is therefore suggested that librarians inform students that the negative feelings experienced by most students in several stages of the information seeking process are normal. Bringing the concept of information seeking anxiety into information literacy skills instruction programs is a useful way to increase students' awareness about this phenomenon. Additionally, sharing other students' fears and difficulties during the information seeking process via video, brochure, discussion or humorous tales can serve to lessen students' fear.

Providing information literacy skills programs was reported to be an effective method to ease students' difficulties in library environment (Onwuegbuzie, Jiao and Bostick 2004). However, results of the current study revealed that participation in information literacy skills instruction sessions had no statistically significant effect on any of the seven (7) dimensions of the information seeking anxiety construct. The possible reason behind such a result might be due to the method of instruction provided for postgraduate students in the university studied. Academic librarians and administrators should conduct experimental studies using pre- and post-test method utilizing the Information Seeking Anxiety Scale (ISAS) to measure the effectiveness of information literacy skills instruction programs on reducing information seeking anxiety. They might also consider studies that assess the differences in reduction of information seeking anxiety due to different types of information literacy skills programs like formal class setting, small group sessions, one-on-one encounters, written guides and brochures, audiovisual presentations and computer-assisted instruction. More decreases in information seeking anxiety could then be

associated with success of the treatment. Additionally, the role of academic reference services and reference librarians in reducing students' negative feelings during the process of information seeking is crucial. Reference librarians are playing a major role in interpreting students' inquiries, identifying appropriate sources, teaching and assisting students to find information related to their research and deciding whether or not the retrieved information is useful or adequate, which all can help students overcome their anxiety. Furthermore, to facilitate postgraduate students' library research, providing individualized reference services by librarian liaisons who are expert in that area of research can help students handling the intricacies and challenges of the information seeking process.

Results of the study showed that "barriers associated with libraries" dimension was the most problematic source of information seeking anxiety among postgraduate students. By providing students with positive information seeking experience in university library - and this includes friendly, approachable and accessible staff and non-threatening environment - students may feel more confident and comfortable with using the library for conducting research. Some previous researchers recommended that if librarians are seen as visible, approachable, and unthreatening and conduct reference interviews in a professional manner that is sensitive to students' fears and concerns, students may begin to feel more comfortable in seeking help when they feel lost or anxious (Carlile 2007). Additionally, the literature shows that the manner in which library décor and furniture are placed can either help reduce or increase users' anxiety levels. The library space and layout, building, location of stacks and equipments, lighting and temperature also make a difference in users' behaviour and emotions. As a result, it is very important for librarians to make efforts to create a pleasant environment for students to conduct their research.

"Barriers associated with information resources" was also found to produce low, mild or moderate levels of information seeking anxiety in 95.7% of postgraduate students studied. Librarians should make their best effort in selection, acquisition, organizations and promotion of collection to increase availability, accessibility, novelty, quality and ease of use of information resources for postgraduate students. Additionally, providing maximum access to full text resources may help reduce information seeking anxiety of students. Because some levels of information seeking anxiety were reported due to "barriers associated with computers, the Internet and electronic resources" as well as "technological barriers", librarians should monitor library equipments used by students for information seeking, checking periodically that all machinery are functioning properly and assisting students to solve mechanical problems. Finally we should mention that, along with the efforts made by librarians in acquisition, organization and dissemination of information in academic libraries, investigating psychological barriers which hinder students from use of information resources as well as finding methods to overcome these barriers could also be beneficial.

CONCLUSION

The present study was conducted to address a gap in the literature by determining the prevalence and correlates of the information seeking anxiety construct among a group of postgraduate students. However, one cannot address all theoretical and methodological issues, many questions remained unanswered, and new ones are raised in the process of research. As such, further research is needed in other research intensive universities in Malaysia to determine whether anxious students possess the same characteristics. Future

studies should also investigate the nature of the relationship between levels of information seeking anxiety and different personal, educational, and psychological variables. Additional research on providing information literacy skills instruction to postgraduate students with an objective of information seeking anxiety reduction is also required. By conducting research which examines interventions aimed at reducing information seeking anxiety, librarians will not only increase their levels of professionalism, but will ultimately help to make libraries a positive place for as many students as possible.

ACKNOWLEDGEMENT

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

- Anwar, M. A., Al-Kandari, N. M. and Al-Qallaf, C. L. 2004. Use of Bostick's Library Anxiety Scale on undergraduate biological sciences students of Kuwait University. *Library & Information Science Research*, Vol. 26, no. 2: 266-283.
- Ben Omran, A. I. 2001. *Library anxiety and internet anxiety among graduate students of a major research university*. PhD thesis. Pittsburg: University of Pittsburgh.
- Bostick, S. L. 1992. The development and validation of the Library Anxiety Scale. PhD thesis. Michigan: Wayne State University.
- Branch, J. L. 2001. Information seeking process of junior high school students: A case study of CD-ROM encyclopedia use. *School Libraries Worldwide*, Vol. 7, no. 1: 11-27.
- Carlile, H. 2007. The implications of library anxiety for academic reference services: A review of the literature. *Australian Academic & Research Libraries*, Vol. 38, no. 2: 129-147.
- Cheng, Y. 2004. *Thoughts, feelings, and actions: Quantitative comparisons of interactions and relationship among three factors in college students' information seeking*. PhD thesis. Indiana: Indiana University.
- Chowdhury, S. and Gibb, F. 2009. Relationship among activities and problems causing uncertainty in information seeking and retrieval. *Journal of Documentation*, Vol. 65, no. 3: 470-499.
- Chua, S. L., Chen, D. and Wong, A. F. L. 1999. Computer anxiety and its correlates: A meta-analysis. *Computers in Human Behavior*, Vol. 15: 609-623.
- Cleveland, A. M. 2004. Library anxiety: A decade of empirical research. *Library Review*, Vol. 53, no. 3: 177-185.
- Collins, K. and Veal, R. 2004. Off-campus adult learners' levels of library anxiety as a predictor of attitudes toward the internet. *Library & Information Science Research*, Vol. 26, no. 1: 5-14.
- Czaja, S. J., Sharit, J., Ownby, R., Roth, D. L., and Nair, S. 2001. Examining age differences in performance of a complex information search and retrieval task. *Psychology & Aging*, Vol. 16, no. 4: 564-579.
- Dalrymple, P. W. and Zweizig, D. L. 1992. Users' experience of information retrieval systems: An exploration of the relationship between search experience and affective measures. *Library & Information Science Research*, Vol. 14, no. 2: 167-181.
- Erfanmanesh, M. 2011. Use of multidimensional Library Anxiety Scale on education and psychology students in Iran. *Library Philosophy & Practice*, Paper 563: 10p. Available at: <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1594&context=libphilprac>.

- Erfanmanesh, M., Abrizah, A. and Karim, N.H.A 2012. Development and validation of the Information Seeking Anxiety Scale. *Malaysian Journal of Library & Information Science*. Vol. 17, no. 1: 21-39.
- Hyldegard, J. 2006. Collaborative information behavior: Exploring Kuhlthau's Information Search Process model in a group-based educational setting. *Information Processing & Management*, Vol. 42, no. 1: 276-298
- Jiao, Q. C., Onwuegbuzie, A. J. and Lichtenstein, A. A. 1996. Library anxiety: Characteristics of at-risk college students. *Library & Information Science Research*, Vol. 18, no. 2: 151-163.
- Jiao, Q. C. and Onwuegbuzie, A. J. 1997. Antecedents of library anxiety. *Library Quarterly*, Vol. 67, no. 4: 372-389.
- Kracker, J. 2002. Research anxiety and students' perceptions of research: An experiment. Part I. Effect of teaching Kuhlthau's ISP model. *Journal of the American Society for Information Science & Technology*, Vol. 53, no. 4: 282-294.
- Krejcie, R.V. and Morgan, D.W. 1970. Determining sample size for research activities. *Educational and Psychological Measurements*, Vol. 30: 607-610
- Kuhlthau, C. C. 1990. The information search process: From theory to practice. *Journal of Education for Library & Information Science*, Vol. 31, no. 1: 72-75.
- Kuhlthau, C. C. 1993. *Seeking meaning: A process approach to library and information services*. Norwood, NJ: Ablex.
- Mellon, C. A. 1986. Library anxiety: A grounded theory and its development. *College & Research Libraries*, Vol. 47, no. 2: 160-165.
- Nahl, D. and Tenopir, C. 1996. Affective and cognitive searching behavior of novice end-users of a full-text database. *Journal of the American Society for Information Science & Technology*, Vol. 47, no. 4: 276-286.
- Nicholas, M., Rudowsky, C. and Valencia, J. M. 2007. Who's afraid of the big bad library? Paper presented at the 13th National Conference of the Association of College and Research Libraries, Baltimore, Maryland, 29 March-April 1, 2007.
- Karim, N. H. A. and Ansari, N. 2011. Examining the effects of gender, nationality and bibliographic instruction on library anxiety. *Malaysian Journal of Library & Information Science*, Vol. 16, no. 2: 141-154.
- Onwuegbuzie, A. J. 1997. Writing a research proposal: The role of library anxiety, statistics anxiety and composition anxiety. *Library & Information Science Research*, Vol. 19, no. 1: 5-33.
- Onwuegbuzie, A. J., Jiao, Q. C. and Bostick, S. L. 2004. *Library anxiety: Theory, research, and applications*. Lanham, Md.; Oxford: Scarecrow Press.
- Rousseau G., Jamieson B., Rogers W., Mead S. and Sit R. 1998. Assessing the usability of on-line library systems. *Behavioral & Information Technology*, Vol. 17 no. 5: 274-281.
- Shoham, S. and Mizrachi, D. 2001. Library anxiety among undergraduates: A study of Israeli B. Ed. Students. *Journal of Academic Librarianship*, Vol. 27, no. 4: 305-319.
- Todman, J. 2000. Gender differences in computer anxiety among university entrants since 1992. *Computers & Education*, Vol. 34 no. 1: 27-35.
- Van Kampen, D. J. 2003. *Library anxiety, the information search process and doctoral use of the library*. PhD thesis. Florida: University of Central Florida.
- Yang, H. H., Mohamed, D., and Beyerbach, B. 1999. An investigation of computer anxiety among vocational technical teachers. *Journal of Industrial Teacher Education*, Vol. 37, no. 1: 64-82.
- Young, N. J. and Von Seggern, M. 2001. General information seeking in changing times: A focus group study. *Reference & Users Services Quarterly*, Vol. 41, no. 2: 159-169.