Measuring Levels of Students' Anxiety in Information Seeking Tasks

Muhammad Asif Naveed
University of the Punjab, Lahore, Pakistan
School of Governance and Society
University of Management and Technology, Lahore, Pakistan

Kanwal Ameen
University of the Punjab, Lahore, Pakistan
Email: kanwal.ameen@pu.edu.pk

This study measured information seeking anxiety among postgraduate students of the University of the Punjab, Lahore. Survey method using questionnaire was employed to conduct this investigation. The questionnaire consisting of an Information Seeking Anxiety Scale and demographic variables was administered in students, selected through convenient sampling procedure, for data collection. The results indicated that a large majority (n=207, 82.4%) of the respondents experienced more than low anxiety in the information seeking process. No significant relationship was found between age, gender, faculty and information seeing anxiety scores of these students. Conversely, there were significant differences in anxiety scores of students based on the program of study, stage of study, and computer proficiency. The results provide useful insights for guidance of information professionals dealing with reference and research services, especially those engaged in designing information literacy curricula and managing information literacy instructions.

Keywords Information Seeking Anxiety; Information Behaviour; Information Literacy; Postgraduate Students; Pakistan.

Background of the Study

Anxiety has always been demonstrated as a fundamental, ubiquitous, and persistent characteristic in the information search process (Kuhlthau, 1988, 1991, 1993; Wilson, 1999, Young & Seggern 2001). It causes not only "different cognitive, emotional, and behavioral effects in students" but also affects their information seeking self-efficacy and academic performance (Erfanmanesh, Abrizah & Karim, 2012, p. 21). It has been found that students, rather than staff, faced information overload most commonly in libraries (Meier, 1963). Mellon (1986) explored how university students became anxious while looking for information they needed and found that they were stymied in research by feeling "scary, overpowering, lost, helpless, confused" (p. 162) and were "unable to approach the problem logically or effectively" (p. 163). Abusin and Zainab (2010) were of the view that "If the student cannot find what he is looking for he would feel depressed and sad for the time and effort wasted" (p. 71). Chowdhury and Gibb (2009) found that barriers associated with information seeking activities might trigger and heighten anxiety in information search process. Kohrman (2003) described that 'information seeking anxiety' construct was

more common among postgraduate students because they made extensive use of information due to the complexity of their research.

Research examining anxiety in information seeking context is meager. Most of these studies investigated anxiety in the information seeking process as a contributing factor to the library anxiety and assessed this by using library anxiety scales such as LAS, MLAS, AQAK (Abdul Karim & Ansari 2010; Anwar, Al-Kandari & Al-Qallaf, 2004; Anwar, Al-Qallaf, Al-Kandari, & Al- Ansari, 2012; Bostick, 1992; Erfanmanesh, 2011; Jiao & Onwuegbuzie 1997a, 1998, 1999; Jiao, Onwuegbuzie, & Lichtenstein, 1996; Onwuegbuzie, 1997; Onwuegbuzie & Jiao 1997; Shoham & Mizrachi, 2004; Van Kampen, 2003, 2004). An extensive search for available research on information seeking anxiety revealed that the study of Erfanmanesh, Abrizah, and Abdul Karim's (2012) appears first that had addressed this phenomenon. Realizing that information seeking anxiety was an independent and separate phenomenon and considering the drastically changed information environment, Erfanmanesh, Abrizah, and Abdul Karim (2012) decided to develop and validate an Information Seeking Anxiety Scale (ISAS) for postgraduate students.

Beginning with a list of 93 information seeking anxiety related statements, each with a 5-point Lickert scale, administered in two phases and using a variety of statistical analyses, they developed ISAS which consists of 47 statements. This 47 item 5-point Likert-type instrument has six dimensions, namely, barriers with information resources (14 statements, α=0.868), computer and internet barriers (10 statements, α=0.726), barriers associated with library (11 statements, α=0.815), barriers with searching for information (7 statements, α=0.802), technical barriers (7 statements, α=0.809), and topic identification barriers (5 statements, α=0.825). These factors collectively explained 35.37 percent of the variation in information seeking anxiety. Furthermore, the internal reliability assessment using Cronbach's alpha 0.902 for the overall scale which means that this scale was 90 percent reliable. The high value of alpha coefficient of each subscale as well as the total instrument indicated acceptable internal reliability or consistency of ISAS. The results indicated that the newly developed scale had satisfactory face, content, and construct validity as well as internal reliability.

In another study, Erfanmanesh, Abrizah, and Abdul Karim (2014) examined the prevalence of information seeking anxiety in postgraduate students at Malaysian university using ISAS. The mean score was computed for the overall scale and its sub-dimensions to determine the prevalence of information seeking anxiety among postgraduate students. The mean score and standard deviation for the overall information seeking anxiety was 88.3 and 16.4 respectively. The results of the mean score and standard deviation gave rise to seven (7) sub-scales, namely, barriers associated with library (M=23.261, SD=6.293), barriers with information resources (M=21.541, SD=4.153), technological barriers (M=14.816, SD=4.07), affective barriers (M=12.345, SD=3.458), access barriers (M=11.509, SD=2.617), topic identification barriers (M=7.556, SD=2.141) and computer and internet & electronic resources barriers (M=7.146, SD=2.682). The results indicated that 96.5 percent of the sample had experienced different levels (low, mild, moderate, and severe) of information seeking anxiety. Furthermore, these also indicated the

appropriateness of ISAS (face, content, construct validity and internal reliability) to determine information seeking anxiety among postgraduate students.

However, no study appears to have been conducted so far using ISAS outside Malaysia. It was, therefore, decided to measure information seeking anxiety among postgraduate students of University of the Punjab using ISAS. The results of this study provided useful insights to information professionals especially those who design information literacy curricula, manage information literacy instruction, and conduct information seeking skills sessions for students. Moreover, these results can also be used as a guide by the psychologist for psychotherapy of the students having emotional problems regarding information seeking anxiety. This study is also a worthwhile contribution to the existing research relevant to academic related anxieties in general and information seeking anxiety in particular because there was only a single study by Erfanmanesh, Abrizah, and Karim (2014) that addressed this phenomenon up till now.

Research Objectives

1. To identify the levels of information seeking anxiety among postgraduate students
2. To explore the nature of association between information seeking anxiety scores and demographic variables of these students.

Methods and Procedures

This study utilized a questionnaire survey containing the Information Seeking Anxiety Scale (ISAS) and some demographic variables. The Information Seeking Anxiety Scale (ISAS) was developed by Erfanmanesh, Abrizah, and Abdul Karim (2012) using 300 postgraduate students (59% female and 41% males) having different subject and geographical backgrounds in Malaysia. This measure was reported 90 percent reliable to measure information seeking anxiety construct. Moreover, ISAS also had satisfactory face, content, and construct validity. The ISAS contained 47-statements (both positive and negative) with a 5-point Likert scale (i-e Strongly Agree; Agree; Undecided; Disagree; Strongly Disagree). Demographic data were used to group participants according to their age, gender, program, field, stage of study, and computer proficiency.

The sample consisted of 297 postgraduate students from the Faculty of Science and Faculty of Behavioural and Social Sciences of the University of the Punjab. These students were selected using convenient sampling technique because the selection of participants using simple random or stratified random sampling was not possible due to the time limitation and accessibility issues. Although, the population was listed and identifiable but their availability via random selection was not possible due to the non-availability of lists along with their contacts. Also because, most of these students, especially those completed their course work and working on their synopsis and thesis, visit their departments by appointment with their supervisors. It was, therefore, decided to use convenient sampling technique for participants' selection.

The questionnaire was administered to participants personally using social contacts of the researcher by visiting each department with written permission from departmental head and consent of the respondents for participation in survey. The teachers and the librarian of each

department played a very important role in data collection. A total of 262 filled questionnaires were received with a response of 88%. The returned questionnaires were reviewed for completeness of information. Of the 262 cases, 251 provided complete data for entire survey instrument and demographic variables. The 11 cases (4.1%) with incomplete and insufficient information were excluded leaving a final response of 251 (84.5%). Then the negative statements were reversed to score all the statements in the same direction. The data analysis was done by applying both descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS). The composite mean score for overall Information Seeking Anxiety Scale was also calculated by summing up the responses of each participant to determine the levels and correlation of information seeking anxiety among students. The inferential statistics such as Pearson correlation coefficient, independent sample t-test, and analysis of variance (ANOVA) were used to determine relationships between information seeking anxiety and demographic variables.

Data Analysis and Results

The analysis of data collected in this inquiry is presented as follows:

Sample composition

Of the 251 respondents, there were 97 males and 154 females, 180 MPhil students and 71 PhD students, and 110 students from Faculty of Behavioural and Social Sciences and 141 students from Faculty of Science. The age range of these respondents was 22 to 45 years. A large majority (n=233, 92%) of the respondents (females 149, males 84) fall in the age bracket of 22 – 33 years which is quite encouraging that Pakistani students go for postgraduate education in early and active age of their lives. In addition, there were only a small number of participants such as four and nine who fall in the age bracket of 34 – 39 year and 40+ respectively.

Levels of Information Seeking Anxiety

This study determined levels of information seeking anxiety quantitatively on the basis of ISAS using a five-point Likert scale. Average anxiety scores were calculated using the responses provided by 251 participants against each statement of the ISAS scale. The distribution of these average anxiety scores is plotted in Fig. 1 which shows a clear indication of normal distribution of data as it approaches the symmetrical bell-shaped pattern of normal distribution. The sample mean (μ) of the averages of information seeking anxiety scores is 3.38 and sample standard deviation (σ) of .365 which was used to identify cut off points for the levels of information seeking anxiety groups.

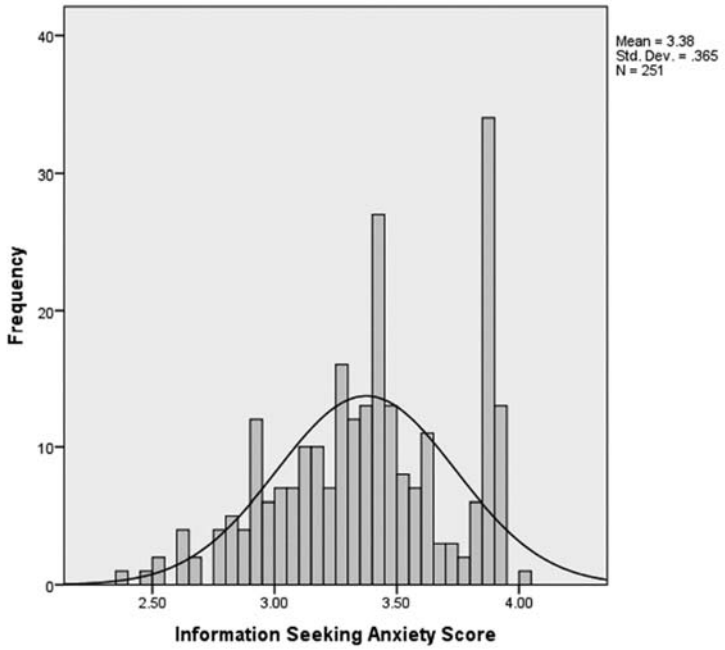

Figure 1. Histogram of averages of information seeking anxiety scores.

The researchers used Anwar, Al-Kandari and Al-Qallaf 's (2004) suggested levels of library anxiety as a useful criterion to identify levels of information seeking anxiety because the data fulfilled the assumptions of normal distribution (as shown in Fig. 1). This measure has also successfully been used by Erfanmanesh, Abrizah, and Abdul Karim (2014) to determine levels of information seeking anxiety for sub-dimensions and total scale as well. The proposed five levels of library anxiety included "no anxiety, low anxiety, mild anxiety, moderate anxiety, and severe anxiety" (Anwar et al., 2004, p. 274). According to the suggested criterion, one is mild anxious if his average anxiety score is within one standard deviation of the mean, i-e, M ± SD. An individual has low anxiety if his mean anxiety score falls 'outside one standard deviation but

within two standard deviations from the mean', i-e, between M – 2SD and M – SD. On the other hand, if anxiety scores fall within M + SD and M + 2SD, then one can say that there is moderate anxiety. There will be no anxiety if average anxiety score is below M – 2SD. Moreover, there will be severe anxiety if the average anxiety score is above M + 2SD. Based on this criterion, the associated cut off points for levels of information seeking anxiety were determined. Table 1 presents score ranges against the proposed levels of information seeking anxiety.

Table 1

Proposed Levels of Information Seeking Anxiety

Level of anxiety	Ranges of average score
No anxiety	0.00 – 2.64
Low anxiety	2.65 – 3.01
Mild anxiety	3.02 – 3.74
Moderate anxiety	3.75 – 4.10
Severe anxiety	4.11 – 5.00

Fig. 2 indicates the levels of information seeking anxiety for the 251 respondents based on the classification given in Table 2. These figures indicated that majority of participants 151 (60.1%) experienced mild level of anxiety which was followed by moderate anxiety 56(22.3%) and low anxiety 36 (14.3%). There were a very limited number of participants who experienced no anxiety 8(3.2%). None of these student faced sever anxiety. Nevertheless, it was interesting to note that the largest segment (n=207, 82.4%) of the sample did face more than low anxiety.

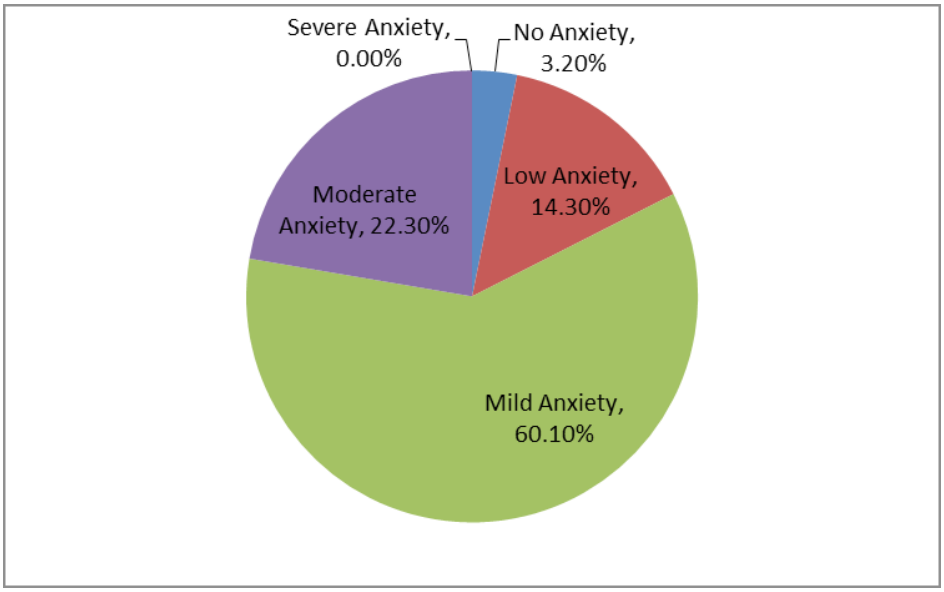

Figure 2. Pie chart of levels of information seeking anxiety score

Age and Information Seeking Anxiety

A Pearson correlation coefficient was used to test the relationship between age and information seeking anxiety scores of the students. The results found that there was no correlation between the age and information seeking anxiety scores of these students (P =.857 > 0.05). The indication of no statistical difference in feelings of information seeking anxiety among students of different ages is not quite surprising because the largest segment (n=233, 93%) of the

sample had almost same age group, that is, 22–33 years.

Gender and Information Seeking Anxiety

It was hypothesized that there is no significant difference in the average information seeking anxiety scores and average factor scores for male and female postgraduate students. A one-tailed independent samples t-test was used to compare the mean difference in index of information seeking anxiety (ISA) between males (n = 97) and females (n = 154). The Type I error rate was set at alpha = 0.05. As given in Table 2, there was no significant difference between males (M= 3.3603) and females (M = 3.3844), (t = -.477, df = 162.949, p>0.05) indicating that there is no evidence to reject the null-hypothesis that the male and female students have similar average scores at 0.05 level of significance.

Table 2

Mean Differences in Information Seeking Anxiety Scores based on Gender (N=251)

Variable	*Male*	*Female*	*t-statistics*	*P value*
	M SD	M SD		
Info-seeking anxiety	3.36 .43	3.38 .32	-.477	.634

Information Seeking Anxiety and Program of Study

An independent sample t-test was used to compare the mean difference in index of information seeking anxiety (ISA) between MPhil (n = 180) and PhD (n = 71) students. As presented in Table 3, the mean difference is statistically significant and mean scores of MPhil students (M = 3.3429, SD = 3.4567) were less than PhD students (M = 3.4567, SD = .36907), t = -2.240, p = 0.026. This indicates that PhD students are more likely to have higher information seeking anxiety as compared to MPhil students.

Table 3

Mean Differences in Information Seeking Anxiety Scores based on Program of Study (N=251)

Variable	*MPhil*	*PhD*	*t-statistics*	*p-value*
	M SD	M SD		
Info-seeking anxiety	3.34 .36	3.45 .37	-2.24	.026*

**P < .05*

Information Seeking Anxiety and Faculty

A one-tailed independent samples t-test was used to compare the mean difference in the index of information seeking anxiety (ISA) among students belonging to Faculty of Behavioural and Social Sciences (n = 110) and Faculty of Sciences (n = 141). The Type I error rate was set at alpha

= 0.05. As given in Table 4, the mean score of students from the Faculty of Behavioural and Social Sciences (M = 3.4255, SD = .38050) is greater than the students from Faculty of Sciences (M = 3.3358, SD = .34925), t = 1.940, p = 0.054). Although P-value (.054) is greater than alpha value (.05), it is very close to 0.05 level of significance which indicates that students from the Faculty of Behavioural and Social Sciences are more likely to have higher information seeking anxiety as compared to the students of the Faculty of Science. The more anxiety among students who belong to Faculty of Behavioural and Social sciences is not surprising and quite logical because the nature of their research problem is different, in terms of complexity, neutrality, ontology, epistemology, and methodology, than students from the faculty of science.

Table 4

Mean Differences in Information Seeking Anxiety Scores based on Faculty (N=251)

Variable	*Faculty of Behav. & Soc. Sciences* M SD	*Faculty of Sciences* M SD	*t-statistics*	*P value*
Info-seeking anxiety	3.43 .38	3.34 .35	1.94	.054

Information Seeking Anxiety and Number of Publications

In order to test the correlation between the number of publications and information seeking anxiety scores of the students, a Pearson Correlation test was utilized. The results indicated that there was no relationship between number of publications and information seeking anxiety score of these students (p = .142 > 0.05). This is quite surprising that even having more research experience did not indicate any statistical difference in information seeking anxiety among these postgraduate students which means that these postgraduate students adopt informal ways while seeking needed information. This may be due to the lack of or even possibly non-existence of training sessions by the library staff on information seeking skills in creating awareness about formal or professional ways of information seeking.

Information Seeking Anxiety and Aomputer Proficiency

One-Way ANOVA was used to test the differences in information seeking anxiety (ISA) among students in accordance with their computer proficiency. One-Way ANOVA results indicated a significant difference between the mean scores of the students having different levels of computer proficiencies [F (2, 248) = 7.448, p = .001 < 0.05]. Moreover, a post hoc analysis using the Tukey's HDS pair-wise comparison was utilized to locate the most different means of information seeking anxiety. The results in Table 5 indicated that mean score for the low computer proficiency (M = 3.71) was significantly different than high (M=3.29) and moderate (M = 3.38) levels of computer proficiency. However, moderate level of

computer proficiency did not significantly differ from high level of computer proficiency. These results clearly indicated that students having low computer proficiency were more anxious than the students having high as well as moderate computer proficiency because they scored higher means and tend to agree with the statements that express information seeking anxiety. These results indicate that anxiety in information seeking process can be reduced by equipping students with computer literacy.

Table 5

Tukey's Post-hoc for Information Seeking Anxiety and Computer Proficiency (N=251)

Tukey HSD a, b

Computer Proficiency	N	Subset for alpha = 0.05		F statistics	P value
		a	b		
High	61	3.28		7.448	.001**
Moderate	178	3.38			
Low	12		3.7125		

** P < 0.05. Means for groups in homogeneous subsets are displayed. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Information Seeking Anxiety and Study Stage

One-Way ANOVA was used to test the differences in information seeking anxiety (ISA) scores of students in accordance with their study stage. The results of One-way ANOVA (Table 6) revealed significant differences in the mean anxiety scores of students with regard to different study stages [F (2, 248) = 23.110, p = .000 < 0.05). In addition, a post hoc analysis using the Tukey's HDS pair-wise comparison was conducted to identify the most different means of information seeking anxiety. These results revealed a statistically significant mean difference between the scores of students who were at synopsis writing stage and those who were at the stage of course work and thesis writing. However, the mean difference between the students who were at coursework stage and thesis writing stage was not statistically significant.

Table 6

Tukey's Post-hoc for Information Seeking Anxiety and Study Stage (N=251)

Tukey HSD a, b

Stage of Study	N	Subset for alpha = 0.05		F statistics	P value
		A	b		
Course Work	104	3.2296		23.110	.000**
Thesis Writing	49	3.3362			
Synopsis Writing	98		3.5490		

** $P < 0.05$. Means for groups in homogeneous subsets are displayed. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Discussion and Conclusions

There seems to be a very weak interaction between the reference/research librarians and postgraduate students because the results of this study indicated that a large majority of the participants (n=207, 82.4%) experienced more than low anxiety, that is, mild and moderate anxiety while seeking for information they needed. These results were consistent with existing research of Erfanmanesh, Abrizah, and Abdul Karim (2014) as they reported that a large majority (85%) of the respondents of their study experienced more than low anxiety. These results might have very serious implications not only on the academic performance and self-efficacy of postgraduate students but also on the quality of their research productivity and might result in decreasing their research productivity. Research is mainly decision-making and every decision that postgraduate students make needs to be informed. In order to make informed, effective, and efficient decisions, the postgraduate students are required to seek need-based, accurate, reliable, valid, and timely information.

If the postgraduate students experience anxiety in information seeking process and they don't get relevant and timely information, the quality of their decisions and research may be compromised. The research students cannot make effective and efficient use of databases while conducting their research due to their low information seeking self-efficacy. As a result, they might produce low quality research that could not be published in good quality journals. On the other hand, the government through higher education institutions or Higher Education Commission is investing huge sums of money on database subscription annually in order to increase research productivity in terms of quantity and quality. If the situation as found at the University of the Punjab was more or less true at other Pakistani universities, the money that HEC spent on database subscription (approximately 10 billion rupees annually) was being wasted or in danger of being wasted.

Results revealed non-significant age and gender differences on information seeking anxiety

scores of the postgraduate students. These results are in line with the findings of Anwar et al. (2004) who reported that there were no significant differences in the average library anxiety scores of male and female students. On the other hand, these results had contradictions with the findings of Abusin (2010) and Abusin and Zainab (2010) that there was a significant difference between the mean anxiety scores of males and females. In addition, the mean score of males were higher than females indicating that male students had higher anxiety than females in library search process.

Conversely, there were significant differences in anxiety scores of students based on the program of study, stage of study, and computer proficiency. The results indicated that PhD students were more anxious than MPhil students which are quite logical because they seek information intensively as compared to MPhil students due to the complexity and depth of their research. Moreover, results showed that the students who were at synopsis writing stage experienced more anxiety than those who were at the stage of course work and thesis writing. The indication of more anxiety at the synopsis writing stage is not surprising and quite logical because students at this stage go for an independent and intensive seeking of information as compared to coursework stage of study. Also, the students have little understanding of the topic and its boundaries in the beginning of synopsis writing stage and have lack of awareness about how to search for needed information. In addition, the students at the course work stage mainly do directed information seeking the students whereas at thesis writing stage, they do more focused information seeking because they already understand the topic and have clarity in mind rather than anxiety.

The results of current study indicated the need for a separate 'information skills department' within academic libraries responsible for students' information skills development. The outcome will be information literate students who might be able to produce a higher quality and quantity of research that ultimately result in the sustainable socio-economic and socio-political development of the society. Initially, the students who are at synopsis writing stage should be the main target by the library staff regarding training in information seeking skills along with computer proficiency.

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