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Baccalaureate nursing students' anxiety related computer literacy: a sample from Jordan

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Abstract

The learning environment extends beyond the classroom, in a way, necessitating integration of computer literacy with education, establishing e-learning culture within future nursing education and facilitating life-long learning, which goes hand in hand with reshaping the future of the nursing practice. Despite the rapid integration between computers and different health care issues, studies indicated that nursing students have extremely low levels of computer literacy. Therefore, the purpose of this study was to assess the anxiety-related computer literacy rates of a few nursing students in Jordan. A convenient sample of 441 undergraduate nursing students was selected. A descriptive study utilised a self-administered questionnaire of the Arabic version of the Computer Anxiety Rating Scale and Computer Literacy Scale Data between 20 May and 30 July 2009. Study results indicated that there was a significantly negative relationship between computer anxieties and computer literacy rates. This implies the need for frequent use of computers in various educational and training activities. Frequent use of the computer would reduce computer anxiety and thus enhance computer literacy rates.

Keywords

baccalaureate nursing students, computer anxiety, computer literacy, Jordan, nursing informatics

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Background

Health Care Informatics (HCI) is known as the study of the retrieval, storage, presentation, sharing and use of biomedical information, data and knowledge for providing care, solving problems and making decisions (Shortliffe and Blois, 2001). There are many specialised disciplines under HCI, such as Nursing Informatics (NI). In this context, NI is defined as: 'a combination of computer science, information science and nursing science designed to assist in the management and process of nursing data, information and knowledge to support the practice of nursing and the delivery of nursing care', (Graves and Corcoran, 1989: 227). NI focuses on nursing management of information and how nurses acquire, manipulate, store, present and use such information. In 1992, the American Nurses Association recognised NI as a specialty comprised of three aspects, including computer literacy (CL), information literacy and nursing science. In this context, CL is defined as 'the ability to use a computer' (Winter et al., 1997) It includes the basic knowledge of using computers and the ability to design programs and systems, as well as possessing the skills to achieve health system goals.

The learning environment extends beyond the classroom in a way necessitating integration of CL with education, establishing e-learning culture within the future of the nursing education and facilitating life-long learning, which goes hand in hand with reshaping future nursing practice (Panagiotakopoulos and Koustourakis, 2001; Vekiri and Chronaki, 2008). Since the mid-1980s, several health care leaders and organisations have continued to request incorporating NI in nursing education and to educate nursing students and practicing nurses about the core of NI competences (such as word processing, electronic mail, Internet, World Wide Web, databases, spreadsheets and bibliographic retrieval) (Staggers et al., 2001; Fetter, 2009).

The increased presence of electronic networks in today's health care environment creates a greater demand for nursing students who are able to access and evaluate electronic information (Mcdowell and Ma, 2007). Basic computer skills are no longer just an asset but a requirement. The task of the instructor in this regard is to ensure nursing students are competent amid technological (computer) surroundings. Computer literacy (CL) is important for nursing students in enhancing their experiences of computer based applications to reshape their future professional development, as well as influencing their abilities in accessing patient information from any location at any time (Graveley et al., 1999). CL as part of NI has become an essential requirement for a successful professional career.

Despite the rapid integration between computers and different health care issues, studies have indicated that nursing students have low levels of CL (McNeil et al., 2006; Fetter, 2009). Many factors may contribute to the low reported level of CL. An example of this is the feeling of anxiety towards computers and their use (McNeil et al., 2006; Baloglu and Cevik, 2008). There are numerous possible factors, including culture, computer experience and demographic characteristics (Gassert and McDowell, 1995; Bozionelos, 2001; Wilfong, 2006; Mcilroy et al., 2007; Li and Kirkup, 2007).

Jordan, a developing country with noticeable changes in technology use, suffers from lack of CL preparation of students and hardship in adapting to rapid advancement and changes in the health care sector (Rajab and Baqain, 2005). One of the many indicators is the computer competency exam, which is a mandatory requirement for first year students (freshmen), needing computer skills. The results of nursing students, between 2001 and 2009 at one of the largest governmental universities, have revealed variable levels of

computer competency. A high proportion (range between 56.29% and 89.71%) of students failed the exam. Many students reported they suffered anxiety and severe difficulty during the completion of the exam. These results raise the important issue of the need to understand what factors influence the CL of student nurses. The problem is most of the exams are online; therefore, they require the use of the computer. This contributes to the students' computer anxiety and lack of knowledge about computers. This also places instructors in a dilemma to keep pace with the demands of an evolving student CL level (Rajab and Baqain, 2005). Therefore, it is important to study factors influencing students' CL.

In light of several current computer-related educational reforms in Jordanian institutions, the results of the present study are anticipated to provide valuable information to bridge the gap in the literature about computer use in third-world countries, with limited resources, represented here by Jordan. In Jordan, many hospitals have adopted computers as integral components for the care of a patient. Health care is changing rapidly, as it seeks new ways to improve health care quality and safety for patients. The swift development in computer technology and the wide availability of personal computers (PCs) along with the Internet, e-mail and various nursing literature retrieval has changed practice environments. Applications have changed both the study and the practice environments in nursing and other health care disciplines.

Furthermore, because CL is a growing focus of research, there remains a need for further researches and studies. This is particularly true in nursing education, where there is limited research about CL among nursing students. The purpose of this study is to specifically assess anxiety-related CL from a sample of nursing students. The current study will establish grounds for future research work in the field of NI and provide evidence of the need to emphasise NI.

The research questions are as follows.

- (1) What are the factors predicting computer anxiety of a sample of nursing students?
- (2) What is the relationship between computer anxiety and CL?

Methodology

A non-experimental, cross-sectional, descriptive, correlation design was used. It is anticipated to be appropriate for understanding and describing new phenomena.

Setting

The study was conducted at one of the largest universities in the region, the Jordan University of Science and Technology (JUST). Each year the university grants over 3000 students bachelor's and master's degrees in different specialties. The JUST started with 110 faculty members and is currently hosting 750 faculty members, of which 109 are full professors. The nursing faculty at the JUST is also the largest faculty in the region. It hosts an undergraduate program (Bachelor of Science in Nursing, BSN), a bridging program (Diploma to BSN), and a graduate program (Master of Science in Nursing

(MSN)). In 2009, the faculty of nursing student body consisted of 1828 graduate and undergraduate nursing students from different nationalities.

Sample

All undergraduate BSN nursing students at the JUST, available at the time of data collection (20 May–30 July 2009), were eligible to participate. In 2009, the number of undergraduate students was 1699 (first year = 329, second year = 401, third year = 468, fourth year = 501). A convenience sample was utilised. A sample size was determined based on Cohen's (1992) guidelines using a conventional α of 0.05, power of 0.8, medium effect size and regression analysis, revealed a sample size of 98 subjects. Over-sampling was utilised to gain increased understanding, as well as to overcome participant attrition. In order to get a representative sample of all the different years, proportional stratified sampling (based on the academic year) was used whereby the sample included 65 (19%) at first year, 96 (24%) at second year, 131 (27%) at third year and 159 (30%) at fourth year, resulting in a prospective total sample of 451 baccalaureate students.

Instrument

The study utilised anonymous self-reported questionnaires. The questionnaire is composed of three parts. The first part of the questionnaire includes demographic characteristics, including educational level and school system at the secondary level (scientific and healthy). The educational system in Jordan consists of a two-year cycle of pre-school education, 10 years of compulsory basic education, and two years of secondary academic (science or art) or vocational (industrial, health, agriculture, religion or commercial) education stream after which the students sit for a General Certificate of Secondary Education exam – Tawjihi. Students belonging to the scientific stream or health branch of the vocational stream are the only students permitted to study nursing. In addition, the first part of the questionnaire includes a question about the type of program entry to the school of nursing (regular or bridging) and computer experiences. Additional questions requested information about the number of computer courses previously studied (computer skills, International Computer Driving License (ICDL) and programming), as well as how long the student had used computers and how familiar they were with them.

The second part includes the Computer Anxiety Rating Scale (CARS) to assess computer anxiety. The CARS consists of 19 statements with two points scale of 0 (strongly disagree) and 1 (strongly agree). The scale includes 10 negative statements and nine positive statements. However, on data analysis, all positive statements were reversed to be negative statements. The mean score was used as a cutoff point to measure computer anxiety (Weil and Rosen, 1995; Beckers and Schmidt, 2001; Sam et al., 2005; Hsu et al., 2006; Mcilroy et al., 2007; Tekinarslan, 2008). Therefore, the higher one scores above the mean, the higher the anxiety level.

The third part includes Stagger's Nursing Computer Experience Questionnaire (SNCEQ) to measure CL, which was modified after obtaining permission from the author (Dr Nancy Stagers). The questionnaire was translated to Arabic and back translated to English to assess the consistency of the items. It consists of three subscales including 38 items. The first subscale is General Computer Applications, which consists of 20 items. It is a description of computer and Internet applications, Microsoft Windows[®], Microsoft Office[®] and basic

software programming. It was modified to include 14 items relating to the cultural perspective and expectations of computer use by undergraduate students. For example, the items related to project management, staff scheduling and calculating budget were deleted. One item was added: the use of computers to communicate with instructors. For this subscale many studies used the means as the cutoff point to measure the CL level (Marasovic et al., 1997; Murthy, 2004; Sam et al., 2005; Mei Hsu et al., 2009). Therefore, the higher the score above the mean, the higher the literacy level. The second subscale, the Clinical or Hospital Information System Applications, includes questions related to the information system applications in the working area, such as results reporting, patient care planning, documentation, discharge plans, computer system design and computer system evaluation. There are 18 items measured with a five-point Likert scale (0 = none, 4 = extensive); however, this subscale was excluded because these undergraduate students are not involved with the hospital information system. The third subscale, Formal Computer Knowledge, consists of 5 items with a five-point scale (0 = none, 4 = extensively or more). It includes questions about computer course characteristics. The subscale also includes 13 items pertaining to reasons for avoiding the use of computers. The content validity of the questionnaire was reviewed by two of the academic staff from the JUST with PhD degrees in NI and adult health nursing.

Pilot study

A pilot study was conducted at the School of Nursing at the JUST to test the instrument's psychometric properties and the time required to complete the questionnaire and clarity. Twenty nursing students completed the questionnaire within 5–15 minutes. The CARS (19 items) reliability revealed an alpha coefficient of 0.71 and the SNCEQ (32 items) reliability revealed an alpha coefficient of 0.86.

Ethical considerations

The participants had full disclosure about the risks and benefits of the study. They were assured there was no risk. They were also assured that participation was voluntary and they could withdraw from the study at any time without any penalty (for example, it would not affect their grades). In addition, they were assured that all the information obtained would be anonymous by assigning numbers to participant's questionnaire, keeping it in locked place and deleting the data completely once the study was concluded. Completing and returning the questionnaire at the end of the class implied the participant's consent to participate in the study.

Data collection and procedures

Approval to conduct the study was obtained from the Institutional Review Board (IRB) at the JUST. Data was collected from 20 May to 30 July 2009. Permission was also obtained from the nursing faculty. The students were approached in the classroom setting. With the instructor's permission, the questionnaire was distributed at the end of the class. The undergraduate classes were chosen through arrangement with instructors. The researchers and instructors decided when and how to approach possible participants. Participants were informed about the purposes of the study. They were provided with the questionnaire along with a cover letter.

Data analysis

Data was analysed using Statistical Package for Social Science (SPSS) for windows version 16. Descriptive statistics (mean frequency, SD) were used to describe the sample characteristics. Multiple regressions were used to assess factors influencing computer anxiety. Correlation was used to assess the association between computer anxiety and CL.

Results

A total of 451 questionnaires were distributed among undergraduate nursing students at the JUST. The response rate was 100%. Ten questionnaires were excluded because of the missing data totalling more than 20% (two from the first year and eight from the fourth year). Therefore, the total number of participants was 441. Data was entered into SPSS, coded and organised.

Characteristics of the sample

The participants' ages range between 18 and 34 years, with a mean of 20.8 years. Of the participants ($N=441$), 57.1% ($n=252$) were male and 42, or 9% ($n=189$), were female. A point worth mentioning is that in Jordan, at some point in time, there were many more male nurses than in other countries. However, this trend changed with the new rules and regulations established by the Ministry of Higher Education and Scientific Research in 2008, which relates to the gender proportion of new students accepted into the Jordanian Academic Nursing Programs at all universities (i.e. to increase the ratio of female:male students admitted to the nursing programs of all public and private Jordanian universities to 70:30). More than two thirds ($n=340$, 77.1%) of the participants were in the scientific stream in high school and 20.9% ($n=101$) were in the health stream. The university admission system used by the participants includes the regular system for 435 students (98.6%) and the bridging system for only six students (1.4%). Table 1 lists the participants' demographic characteristics.

A high proportion of undergraduate nurse students in the study ($n=267$; 60.5%) have obtained one computer-related course and only 19 students (4.3%) have obtained two courses. A significant number of students had taken a computer skills course ($n=263$; 59.6%) and others had taken courses in Visual Basic Course ($n=2$; 0.4%) and ICDL Course ($n=21$; 4.8%). Of those students who took computer courses, 224 (50.8%) reported that they were tremendously beneficial. Table 2 provides the description of the computer courses taken by undergraduate students before entering university.

The experience in using computers ranged between one and 12 years, with a mean of 4.65 years ($SD=2.34$) and weekly working hours on a computer ranged between one and 70 hours, with a median of 6 ($SD=8.34$)

Participants' computer anxiety

Several studies used the mean as the cutoff point to measure the computer anxiety level of students (Beckers and Schmidt, 2001; Sam et al., 2005; Hsu et al., 2006; Mcilroy et al., 2007; Tekinarslan, 2008). In the current study, the mean of the computer anxiety level was 5.96 ($SD=3.52$). A high proportion of students had computer anxiety ($n=204$; 46.3%) and high number of students (58%) revealed that they are afraid of losing files or information when using the computer.

Table 1. Participants' characteristics

Characteristics	Frequency	%
Age		
M 20. 8 years		
SD = 2.757		
R = 18–34		
Gender		
Male	252	57.1%
Female	189	42.9%
Secondary school stream		
Scientific	340	77.1%
Health	101	22.9%
University admission system		
Regular	435	98.6%
Bridging	6	1.4%
Education year level (student year of education)		
Undergraduate		
First year	63	14.3%
Second year	96	21.8%
Third year	131	29.7%
Fourth year	151	34.2%
N = 441		

Table 2. Computer course-related information of the undergraduate nurse students

Characteristics	F	%
Computer experience		
Per year		
Mean 4.65years, (SD = 2.34, R = 1–12)		
Hours per week		
Mean 8.78 hours, (SD = 8.34, R = 1–70)		
Computer course before entering university		
Yes	286	64.9%
No	155	35.1%
Number of computer courses		
None	155	35.1%
One course	267	60.5%
Two courses	19	4.3%
Types of computer courses		
Computer skills	263	59.6%
Visual basic	2	0.4%
ICDL	21	4.8%
Benefit of computer courses		
Yes	224	50.8%
No	62	14.1%
N = 441		

ICDL: International Computer Driving License

Participants' computer literacy

Many studies used the mean as the cutoff point to measure the CL level (Graves and Corcoran, 1989; Marasovic et al., 1997; Lee et al., 2005; Mei Hsu et al., 2009). The higher scores indicated a higher level of CL. In the current study, the mean of the CL was 14.0. A high proportion of the students had adequate CL levels ($n = 226$; 51.2%).

Many students (35.1%) had never taken a computer course and one third (41.5%) of the students reported that they are not interested in computers. Students use the computer for different applications. More specifically, a high proportion of nursing students (58%) used the computer for word processing applications, 34.2% used the computer for electronic email and 60.3% using the World Wide Web. Many undergraduate students reported that they were not using computers for other applications, such as research data analysis, computer graphics, educational tutorials or computer programming applications. Moreover, the students reported many reasons for not using computers. A high proportion (89.9%) of nursing students in the present study reported that there is no need to have a computer at home or at work. More than two thirds (83.9%) do not have computers at home.

Research questions

Q1- What are the factors that predict computer anxiety of nursing students at the JUST?

The Pearson correlation coefficient was used to examine the association between computer anxiety and students' age, year of education and computer experience. Data revealed a relatively significant medium negative correlation between a student's year of education ($r = -0.36$), computer experiences ($r = -0.35$) and computer anxiety. The students' age has a small significant negative correlation ($r = -0.221$, $P < 0.05$) when dealing with computer anxiety. Additional analysis using independent *t*-tests to compare gender difference was performed; the results showed no significant differences between gender ($P = 0.41$).

Stepwise linear regression analysis was performed to assess the predictors of computer anxiety at undergraduate level. Age, gender, year of education and years of computer experience were entered into the equation. The model accounted for 41% of the variance (Adj. $R^2 = 0.41$, $F = 10.382$, $P < 0.05$). Mainly computer experience and years of education significantly predicted computer anxiety, whereby computer experience explained (38%) of the variance. Year of education accounted for 32%. Age and gender did not show any significant effect on students' computer anxiety.

Q2- What is the relationship between computer anxiety and CL?

The Pearson correlation coefficient was used to examine the association between computer anxiety and CL. Data revealed a significant large negative correlation ($r = -0.5$; $P < 0.05$) between computer anxiety and CL.

Discussion

The purpose of the current study was to identify the factors that influence computer anxiety and literacy among undergraduate nursing students enrolled at the JUST. We found that the computer anxiety of undergraduate nursing students is influenced by two variables: computer experience and student year of education. The result of the current study is congruent with the results from previous studies of computer anxiety amongst nursing

students (Beckers and Schmidt, 2001; Bozionelos, 2001; Wilfong, 2006; McDowell and Ma, 2007; Ternus and Shuster, 2008). Age, though, in contradiction to other studies, was not revealed to have any significant impact on computer anxiety in this study (Dyck and Smither, 1994; Brosnan and Lee, 1998; Chua et al., 1999; Sleutel and Guinn, 1999; Bozionelos, 2001; Lee et al., 2005; Tekinarlan, 2008; Mei Hsu et al., 2009). The most probable reason is that the age distribution of the participants is from 19 to 22 years. Moreover, regression results revealed variant levels of anxiety among undergraduate students at different years, even though all had computer-related anxiety. Students during the first and second year of education showed significantly higher computer anxiety levels than third and fourth year students. These findings are consistent with previous studies (Bozionelos, 2001; Tekinarlan, 2008), which suggest that student computer experience could influence computer anxiety level. It explained why students have computer-related anxieties and how frequent use of the computer can enhance the student's skills. Students' computer experience influences computer anxiety and CL, which coincides with other relevant research (Chua et al., 1999; Bozionelos, 2001; Hsu et al., 2006; Wilfong, 2006). Students' computer anxiety level, therefore, may be decreased through increasing computer experience. Students' computer experience can be increased by providing opportunities and encouragement to not only own a computer, but also if this is not feasible then to provide access to computers. It seems likely that, when students have more opportunities to access computers, they have more chances to use them, thereby improving their usage levels and therefore their computer experience. This could be related to a policy in Jordan whereby the Ministry of Higher Education provides each undergraduate student with the ability to own a computer through a loan with repayment. In addition, a point worth mentioning is students who use computers frequently would have more experience. Thus, CL is enhanced. Therefore, it is suggested that nursing faculties and hospitals introduce more practical computer courses during the curricula education and training activities.

A significant negative relationship between computer anxiety and CL was also demonstrated. Therefore, it is essential to offer computer sessions and supply reinforcement when using computers to assist with reducing student anxiety. In Jordan, there are only a few computer courses offered in nursing programs. The computer courses taken by nursing students revolve around computer concepts and applications related to Microsoft Office[®]. Most nursing faculties in Jordan provide only three to six credit hours (one or two courses), which means the limited computer courses offered by the faculty do not meet the technological demands of the nursing practice. In light of this study's results, the current nursing education curricula at the JUST has been revised. The revision has come after assessment revealed that the few computer courses that were available for nursing students and did not meet students' needs. Not having a computer course that would provide more understanding and correction of the misconceptions of computer use would affect the students' interest in using computers. This appears clearly in undergraduate students, who report a fear of losing information and files, which leads students to report no need for using a computer. This also explains the presence of computer anxiety among nursing students. Therefore, the JUST has now changed the curricula by replacing one of the computer courses with a health informatics course, supporting one of its core principles of teaching computer use. The research findings of this study will advocate nursing instructors and administrators to provide more computer courses in universities and work environments.

Besides the limited number of courses provided for students, there is also a lack of knowledge about information technology (IT) and its importance among nursing instructors and managers. A possible solution to bridge the computer education gap is the establishment of an infrastructure support system, such as residential experts for consultation purposes around computer-related problems. This, in turn, could be helpful in furthering CL among nursing students.

It is obvious from the study results that Jordan is very different from some other countries. Some students reported no need for computers at home. This may be why a high proportion of students do not own a computer at home, which is consistent with the study by Tekinarslan (2008), demonstrating that avoidance of computer use is different according to the student's PC ownership. Some students also reported that they do not have enough time to use computers. In addition, this research indicated that the level of basic computer skills of undergraduate students is not at a sufficient level. The most known computer functions are word processing, electronic mail and using the World Wide Web. On the other hand, presentations by computer applications, using educational tutorials, research data analysis, authoring computer-assisted instruction programs and computer programming are not familiar applications to undergraduate students. The results raise a question as to what extent effective education concerning computers provides students with information about how to effectively and efficiently use the computer. Education may ensure computer applications will offer the greatest benefits to the work process and save work time, which may in turn facilitate adoption. Therefore, it is important to ensure computer applications support student work, have useful content and that a reinforcement environment is provided in using computers, which would improve student interest in using IT applications. Today most hospitals are equipped with computers and nursing practice should be based on research evidence, which makes it more important for nurses to be proficient in using computers.

Limitation

Our findings are subject to several limitations. Firstly, we utilised a convenience sample limited to one governmental university; each university has varying resources and capacity, which could limit generalisability of the study. Using a stratified proportional sample gives a more representative sample of the students, given the variation in the number of students during different academic years. Secondly, the use of a self-report questionnaire could introduce bias, in that participants might not always give full descriptions of their computer experience. However, as this method is effective in collecting data from a high number of students and in minimising participant embarrassment, we suggest the benefits of the self-report questionnaire outweigh this possible limitation.

Nursing implications

The results of the study have had implications addressing different aspects. The study gave new knowledge on the factors influencing CL. The contents and effectiveness of computer education curricula should be evaluated. In nursing education, it is important to develop education and training courses that correspond with a student's individual needs and meets student requirements in clinical practice, with more attention being paid to nursing student

computer experience. In addition, addressing computer anxiety takes time for instructors and nursing students; therefore, treating the symptoms of anxiety and teaching relaxation techniques before starting computer training, including developing a checklist for computer competencies, may lead the student to assess and face their terrifying fears.

Recommendations

The study highlights the areas worth attention among nursing students and nursing staff. Future studies are needed using random sampling, considering an interventional study to evaluate the effectiveness of the programs and the courses provided using experimental design. Qualitative research could also help in explaining the phenomena in greater depth and explores factors contributing to either reduce or increase computer anxiety levels and improve CL as well.

Conclusion

In general, CL is important for nursing in the 21st century. This study surveyed a sample of nursing students in Jordan. The results confirmed some conclusions of previous research, as well as contradicting others. The study aimed at determining the factors influenced CL levels and computer anxiety.

The study has added to previous work providing information about CL levels in Jordan. The inability to effectively use a computer may be an obstacle for students to overcome when performing their future job activities. This study has provided a useful model, which may serve as a reference for nursing educators to consider when evaluating current CL programs and current curricula. Adaptation to the IT transformation in the health care setting needs preparation. This ensures maximum job site effectiveness and allows health care providers to give quality care to their patients. This present research raises serious issues for Jordanian educators and researchers.

Key points

- In nursing education, it is important to develop education and training courses that correspond with a student's individual needs and meets student requirements in clinical practice with more attention being paid to the nursing student computer experience.
- Treating the symptoms of anxiety and teaching relaxation techniques before starting computer training, including developing a checklist for computer competencies, may lead the student to assess and face their terrifying fears.
- Today, most hospitals are equipped with computers and nursing practice should be based on research evidence, which makes it more important for nurses to be proficient using computers.
- Frequent use of the computer would reduce computer anxiety and thus enhance CL rates.

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Conflict of interest statement

We are the researchers certify that all the content of the paper is our original work and we have no conflict of interest.

References

- Baloglu M and Cevik V (2008) Multivariate effects of gender, ownership, and the frequency of use on computer anxiety among high school students. *Computers in Human Behavior* 24: 2639–2648.
- Beckers J and Schmidt HG (2001) The structure of computer anxiety: a six-factor model. *Computers in Human Behavior* 17: 35–49.
- Bozionelos N (2001) Computer anxiety: relationship with computer experience and prevalence. *Computers in Human Behavior* 17: 213–224.
- Brosnan M and Lee W (1998) A cross-cultural comparison of gender differences in computer attitudes and anxieties: the United Kingdom and Hong Kong. *Computers in Human Behavior* 14: 559–577.
- Chua S, Chen D and Wong AF (1999) Computer anxiety and its correlates: a meta-analysis. *Computers in Human Behavior* 15: 609–623.
- Cohen J (1992) A power primer. *Psychiatric Bulletin* 112: 155–159.
- Dyck J and Smither J (1994) Age differences in computer anxiety: the role of computer experience, gender and education. *Journal of Educational Computing Research* 10: 239–248.
- Fetter MS (2009) Baccalaureate nursing students' information technology competence – agency perspectives. *Journal of Professional Nursing* 25: 42–49.
- Gassert C and McDowell D (1995) Evaluating graduate and undergraduate nursing students' computer skills to determine the need to continue teaching computer literacy. *Medinfo* 8: 370–379.
- Graveley E, Lust B and Fullerton J (1999) Undergraduate computer literacy. Evaluation and intervention. *Computers in Nursing* 17: 166–170.
- Graves J and Corcoran S (1989) The study of nursing informatics. *Image J Nurs Sch* 21: 227–231.
- Hsu H, Hsiao H, Huang I and Lin I (2006) Factors associated with computer literacy among nurses. *Studies in Health Technology and Informatics* 122: 190–193.
- Lee T, Lee T, Lin K and Chang P (2005) Factors affecting the use of nursing information systems in Taiwan. *Journal of Advanced Nursing* 50: 170–178.
- Marasovic C, Kenney C, Elliot D and Sindhusake D (1997) Attitudes of Australian nurses toward the implementation of a clinical information system. *Computers in Nursing* 15: 91–98.
- McDowell D and Ma X (2007) Computer literacy in baccalaureate nursing students during the last 8 years. *Computers Informatics Nursing* 25: 30–36.
- McIlroy D, Sadler C and Boojawon N (2007) Computer phobia and computer self-efficacy: Their association with undergraduates' use of university computer facilities. *Computers in Human Behavior* 23: 1285–1299.
- McNeil B, Elfrink V, Beyea S, Pierce S and Bickford C (2006) Computer literacy study: report of qualitative findings. *Journal of Professional Nursing* 22: 52–59.
- Mei Hsu H, Hui Hou Y, Chiu Chang I and Yen D (2009) Factors influencing computer literacy of Taiwan and South Korea nurses. *Journal of Medical Systems* 33: 133–139.
- Murthy U (2004) Individual differences and the use of collaborative technologies in education: An empirical investigation. In: *Proceedings of the 37th Hawaii international conference on system sciences*.
- Li N and Kirkup G (2007) Gender and cultural differences in Internet use: a study of China and the UK. *Computers and Education* 48: 301–317.
- Panagiotakopoulos C and Koustourakis G (2001) Dealing with 1st year university students computer anxiety. *Themes in Education* 2: 35–46.
- Rajab L and Baqain Z (2005) Use of information and communication technology among dental students at the University of Jordan. *Journal of Dental Education* 69: 387–398.
- Sam H, Othman A and Nordin Z (2005) Computer self-efficacy, computer anxiety, and attitudes toward the internet: a study among undergraduates in Unimas. *Educational Technology & Society* 8: 205–219.
- Shortliffe E and Blois M (2001) The computer meets medicine and Biology: Emergence of a discipline. In: Shortliffe EH and Perrault LE (eds) *Medical Informatics: Computer Applications in Healthcare*. New York: Springer.
- Slutel M and Guinn M (1999) As good as it gets? Going online with a clinical information system. *Computers in Nursing* 17: 181–185.
- Staggers N, Gassert C and Curran C (2001) Informatics competencies for nurses at four levels of practice. *Journal of Nursing Education* 40: 303–316.
- Tekinarslan E (2008) Computer anxiety: a cross-cultural comparative study of Dutch and Turkish university students. *Computers in Human Behavior* 24: 1572–1584.
- Ternus M and Shuster G (2008) Computer literacy in a traditional nursing program: a 7 year study to identify computer based skills needed for success. *Journal of Online Learning and teaching* 4: 24–36.
- Vekiri I and Chronaki A (2008) Gender issues in technology use: perceived social support, computer self-efficacy and value beliefs, and computer use beyond school. *Computers and Education* 51: 1392–1404.
- Weil M and Rosen L (1995) The psychological impact of technology from a global perspective: a study of technological sophistication and technophobia in university students from twenty three countries. *Computers in Human Behavior* 11: 95–133.

Winter S, Chudoba K, Gutek B and Barbara A (1997) Misplaced resources? Factors associated with computer literacy among end-users. *Information and Management* 32: 29–42.

Wilfong J (2006) Computer anxiety and anger: the impact of computer use, computer experience, and self-efficacy beliefs. *Computers in Human Behavior* 22: 1001–1011.

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