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Knowledge and Attitude towards Computer-Aided Learning among Nursing, Pharmacy and Physiotherapy Students

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Abstract

Background: High-quality medical treatment is made possible by the development of computer-aided learning. It also makes things simpler for students to learn using both technology and course materials. **Objective**: To estimate the knowledge and attitudes regarding the CAL among Nursing, Pharmacy and Physiotherapy students. **Materials and Methods**: A descriptive correlation design was used, and 334 samples were chosen using purposive sampling. The study was conducted among UG and PG nursing, pharmacy, and physiotherapy students in the Krupanidhi Group of Institutions. The data was collected with the help of baseline data, self-administered questionnaires, and an attitude scale. **Result**: The description of subjects showed that 60% (201) of subjects were in the age group 18-20 years; 63.2% (211) were female, and 64.1% (214) of the subjects were from the Nursing, Pharmacy and Physiotherapy departments. Most subjects, 56.9% (190), needed prior knowledge of computer-aided learning. In most subjects, 63.2% (211) had adequate knowledge; 58% (195) of subjects had positive attitudes towards computer-aided learning. The Karl Pearson test was applied to investigate the correlation between knowledge and attitude, and the results indicate a significant positive correlation between both variables (r=.198, p=0.001). In order to assess the association between the demographic variables as well as knowledge, the chi-square test was applied. Concerning demographic information, including age and prior knowledge, the range of expertise among students studying nursing, pharmacy and physiotherapy was statistically significant at 5% ($p<0.05$). **Conclusion**: Nursing, pharmacy, and physiotherapy students had sufficient computer knowledge and supported the inclusion of computer-aided learning in their education. This study emphasises that computer-aided learning is valuable for allied health science students. Its incorporation in the education curriculum can enhance knowledge acquisition, foster a positive attitude, and ultimately contribute to

developing highly skilled professionals.

Keywords: Computer-aided learning; Allied health science; Knowledge; Attitude

1 Introduction

Technology in education is increasingly dependent on computer literacy and proficiency. It is impossible to pinpoint the precise year that the phrase "computer-aided learning" (CAL) was first used. Still, from the middle of the 1980s, technology use in the classroom has now been more commonly identified by the acronym CAL. The CAL program was started in 2004 as a medium of teaching to assist teachers in interacting better with students[1].

With the growing accessibility of technology and its potential to improve educational experiences, CAL has risen recently. In India, most undergraduate (87%) and postgraduate (100%) medical students had computer knowledge through self-learning, and internet surfing and e-mail were the most typical objectives for utilising computers[2].

Over the past 20 years, many computer-assisted training tools have been developed due to the enormous amount and complexity of material covered in today's medical courses. CAL implies an educational setting where a computer program, or application as it is most generally called, is utilised to support the user's learning of an area of study[3]. Additionally, there has been a notable rise in articles exploring the use of CAL in the medical field in the past twenty years.

Technology usage has become a central part of the practice in the medical profession. It allows students to work on substantial and challenging topics and simulates the dynamics of professional problem-solving. Using computers in learning will promote the development of the student's thinking skills[4]. CAL trains students to understand the applications while also learning the subject material. It helps students to identify areas of strength and weakness, enabling educators to adapt instructional approaches to individual learning needs[5].

Computer-aided learning and technology integration have the potential to completely change the landscape of education and professional development in the field of allied health science. As allied health professionals play a critical role in healthcare delivery, understanding their knowledge and attitudes towards computer-aided learning becomes even more appropriate[6]. Even in professions like nursing, pharmacy and physiotherapy, technology is a significant factor in today's fast-paced educational environment. Students in these professions use computers, other digital resources, and traditional teaching techniques. In the past, learning might have only taken place in lectures and texts, but nowadays, students in these professions also embrace learning using computers[7]. This research aims to investigate these students' perceptions and familiarity with using computers for their educational journey.

The study of knowledge and attitudes towards computer-aided learning among para-medical practitioners is most significant in an era of medical advancements and evolving healthcare practices. Professionals in disciplines including medical imaging, physiotherapy, medical laboratory technology, and more could improve their skills and competence using digital platforms, virtual simulations, and interactive modules[8,9]. This study explores how CAL influences the knowledge acquisition of nursing, pharmacy and physiotherapy students. Additionally, it seeks to investigate their attitudes towards this mode of learning, examining factors such as ease of use, perceived benefits, and potential challenges. By reviewing both knowledge outcomes and attitudes, the research aims to provide valuable insights into the effectiveness and acceptance of CAL in para-medical education.

2 Materials and Methods

2.1 Design and samples

This study used a descriptive research design and a non-experimental survey approach. The investigation occurred at Bangalore's Krupanidhi Group of Institutions' health science institute. The sample comprised 334 male and female nursing, pharmacy and physiotherapy students in the Krupanidhi Group of Institutions. The samples consist of undergraduate and postgraduate nursing, pharmacy and physiotherapy students. The samples were chosen based on inclusion and exclusion criteria. Those who were willing to participate and could understand English were included in the sample by the researcher. The study's researcher excluded people who were absent on that particular day. The participants were informed about the purpose and scope of the study. Participants were added to the survey after receiving informed consent. Consequently, the sample was chosen using the purposive sampling technique.

The study questionnaire consists of 3 different sections, as mentioned below:

Section I: Demographic Performa- It consisted of details related to baseline characteristics, such as age, sex, course, batch, and prior knowledge about computer-aided learning before joining the course.

Section II: A self-administered questionnaire was created to measure the students' familiarity with computer-aided learning. It comprised fifteen questions. Each correct response received one mark, while the incorrect response received zero. Five nursing professionals and one statistician established the tool's content validity. The tool's dependability was calculated using the test-retest method.

Section III: To evaluate their attitudes toward computer-aided learning among nursing, pharmacy and physiotherapy students using an attitude scale. The attitude scale consisted of 9 questions that describe computer-aided learning. On a 5-point scale, one strongly disagrees, two disagree, three neutral, four agree, and five strongly agree. Five nursing professionals and one statistician validated it. The tool's dependability was calculated using the test-retest method.

2.2 Data Collection Method

An ethical clearance was received once the research proposal was presented to the ethical committee. Before their consent was obtained, the study's purpose was explained to the nursing, pharmacy, and physiotherapy students. Once the consent form was received, the Google forms were sent to the nursing, pharmacy and physiotherapy students through their official class WhatsApp group. Data were collected by administering an open-ended questionnaire and an attitude scale.

2.3 Statistical Analysis

The collected data were entered and analysed using a statistical tool for Statistical Package for Social Science (SPSS), version 20. Karl Pearson's correlation coefficient correlated knowledge and attitude concerning computer-aided learning. In order to assess the association between the demographic factors and knowledge, the chi-square test was used.

3 Results

Section-I Dissemination of subjects based on baseline characteristics among health science students

Table 1. Subjects are disseminated based on baseline trait (n =334)

Baseline trait	Number	Percent
Age in years:		
18-20	201	60.0
21-23	114	34.0
24-26	19	6.0
Gender:		
Male	123	36.8
Female	211	63.2
Course:		
Nursing	90	26.9
Pharmacy	214	64.1
BPT	30	9.0
Prior knowledge of CAL Before course:		
No	190	56.9
Yes	144	43.1

The most significant number of the subjects, 60% (210), were female and aged between 18 and 20 years; the majority of the subjects, 64.1 % (214), belonged to the pharmacy departments. 56.9% (190) of the individuals reported having no prior knowledge of computer-aided learning [Table 1].

Section-II Dissemination of subjects based on level of knowledge regarding computer-aided learning among allied health science students

Table 2. Description of subjects based on level of knowledge (n =334)

Knowledge	Range	Frequency	Percentage
Adequate	8-15	212	63.5
Inadequate	1-7	122	36.5
Total	15	334	100

The more significant number of subjects, 63.5% (212), had adequate knowledge, and 36.5 % (122) subjects had inadequate knowledge regarding computer-aided learning [Table 2].

The level of attitude towards computer-aided learning among nursing, pharmacy and physiotherapy students was that 3% (10) of subjects had a negative attitude, 39 % (129) had a neutral attitude, and 58 % (195) of subjects had a positive attitude towards computer-aided learning [Table 3].

Section III: Dissemination of the subjects based on the level of attitude toward computer-aided learning among nursing, pharmacy and physiotherapy students

Table 3. Description of the subjects based on level of attitude (n =334)

Level of attitude	Range	Frequency	Percentage
Negative	9-20	10	3.00
Neutral	21-30	129	39.0
positive	30-50	195	58.0

Section IV: Correlation between students studying nursing, pharmacy and physiotherapy' knowledge and their attitudes toward computer-aided learning

Table 4. Correlation between knowledge and attitude towards computer-aided learning (n =334)

Parameter	Mean	St. Deviation	Correlation	Significance
Knowledge	8.6317	3.84446	.198	0.01*
Attitude	31.3084	5.16376		

*S: Significance

Karl Pearson correlation coefficient was computed, and a significant positive correlation (r=0.198, p=0.01) was observed between knowledge and attitude towards computer-aided learning [Table 4].

Section V: Association between knowledge and demographic variables towards computer-aided learning among allied health science students.

The chi-square test investigated the association between demographic factors and knowledge. The level of knowledge of nursing, pharmacy and physiotherapy students was statistically significant (p = 0.001) with demographic variables such as age and previous knowledge. There is an association between knowledge and demographic variables such as age and previous knowledge, as the p-value is 0.01. This data reveals no association between other demographic variables, such as gender and course [Table 5].

Table 5. Association between knowledge and demographic variable (n =334)

Demographic variables	Adequate knowledge (8-15)	Inadequate knowledge (1-7)	Chi-square	P value	Inference
Age:					
18-23	112	89	15.033	0.001	S*
21-23	83	31			
24-26	17	2			
Gender:					
Male	84	39	1.951	0.1	NS*
Female	128	83			
Course:					
Nursing	46	44	9.220	0.10	NS*
BPT	23	7			
Pharmacy	143	71			
Previous knowledge:					
Yes	108	36	14.507	.000	S*
No	104	86			

*S: significance, NS: Not significant

4 Discussion

Computer-aided learning has become a potent tool in contemporary education, changing student engagement with reading content and improving learning. It has become increasingly popular in education because it can potentially engage students and provide personalised learning experiences. This study aimed to identify participants' knowledge and attitudes toward computer-aided learning. The study's conclusions reveal essential light on how computer-aided learning is understood and regarded in the context of education. In the current study, 63.2% of the subjects were female, and more than half of the subjects were between the ages of 18 and 20. Similarly, a previous study has shown that a more significant number of subjects, 59.3% (112), were female[1].

A more significant number of the subjects in the current study had adequate knowledge, 63.2% (212), and 58 % (122) of subjects had inadequate knowledge. Participants demonstrated a basic understanding of the concept and its potential benefits in enhancing outcomes. In a study conducted at Benha University Egypt: Knowledge, Attitude, Limitations, and Suggestions, the researcher concluded that a more significant % of participants, 61%, had adequate knowledge, and 39% had insufficient understanding. Also, more participants were familiar with utilising computers, which is essential[2].

The study findings on computer knowledge among medical students conducted in 2008 by Ameh et al. revealed that out of the 237 students, 120 (50.6%) were knowledgeable about computer technology and its use, while 117 (49.4%) were inadequately knowledgeable about computers and their use[9].

Current analysis revealed that 58% of the participants had a positive attitude towards computer-aided learning. Most subjects expressed willingness to incorporate computer-aided learning into their educational practices. Similarly, previous study findings showed that they had a positive attitude towards including computer-aided learning[7].

These findings align with the previous research that suggests a significant association between knowledge and demographic variables towards computer-aided learning ($p = 0.001$) [8].

A study was conducted in 2018 to evaluate students at Kenya Medical Training College's (KMTC) familiarity with computer-aided learning systems. 189 KMTC students were approached during the survey and took part by filling out and returning the questionnaire. The study concluded that knowledge and demographic elements, such as sex, were significantly associated ($p = 0.001$) [1].

This analysis represents the importance of computer-aided learning for students pursuing paramedical students. Many learners supported using computers in their educational background and had sufficient knowledge of computer-aided learning. Almost all of the individuals had favourable opinions of computer-aided learning.

It is recommended that nursing, pharmacy, and physiotherapy students track progress, achievements, and areas of improvement within computer-aided learning modules in the future. This can boost motivation and help them recognise their growth. It helps to develop tailored education material, including models, videos and online resources and fosters a supporting learning environment.

5 Limitations

This investigation is based on only two parameters: knowledge and attitude. The study includes only nursing, pharmacy and physiotherapy students. This can be emphasised further by conducting a larger-scale study involving students from other courses besides health science students.

6 Conclusion

Computer-aided learning is an effective learning method that every medical school and college should adopt. The current study revealed that Allied health science students had sufficient knowledge of computer bases and supported the inclusion of computers in their education. A more significant number of the students had a positive attitude towards computer-aided learning. This study emphasises that computer-aided learning is valuable for allied health science students. Its incorporation into the education curriculum can enhance knowledge acquisition, foster a positive attitude and ultimately contribute to developing highly skilled professionals. The exploration of allied health science students' knowledge and attitude towards computer-aided learning underscores the growing significance of technology in education. As technology evolves, computer-aided learning will likely continue to refine and elevate the education provided in allied health science.

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