ORIGINAL ARTICLES

Application of information and communication technologies in nursing care studies

Uso de las tecnologías de la información y las comunicaciones en la carrera de Enfermería

Adrián Alejandro Vitón Castillo[1]* http://orcid.org/0000-0002-7811-2470
Leydis Marien Ceballos Ramos[1] http://orcid.org/0000-0003-2020-6949
Leandro Alberto Rodríguez Flores[1] http://orcid.org/0000-0001-8785-097X
Luis Alberto Lazo Herrera[1] http://orcid.org/0000-0003-1788-9400
Denis Ariel Pérez Álvarez[1] http://orcid.org/0000-0003-1659-4555

[1] Pinar del Río University of Medical Sciences. Ernesto Guevara de la Serna School of Medical Sciences. Pinar del Río, Cuba.

* Author for correspondence:adrian.viton.97@ucm.pri.sld.cu

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ABSTRACT

Introduction: new technologies favor the scientific and technical development of society, which is why these must be assimilated into the teaching-learning process by nursing care students.
Objective: to characterize the use of information and communication technologies by students of the Degree in Nursing at Pinar del Río University of Medical Sciences between January and March 2018.
Methods: observational, descriptive, and cross-sectional study of second-academic year students of bachelor degree in nursing care. Theoretical and empirical methods were used. Statistical measures were applied as absolute frequency and relative percentage.
Results: it was found that 23.5 % did not have access to any personal computers. Half of the target group said they own a mobile phone with Android or iOS operating system; 59.3 % of

the students did not use the institutional Internet network, 23.5 % used it for teaching purposes; 76.5 % reported using lectures and complementary computerized materials for the individual study; 46. 9% used both computers and conventional aids; 12 % of the students expressed they do not find computer-aided learning useful.

Conclusions: it was found the application of Information and Communication Technologies in the teaching-learning process is very useful, having a high access; where Smartphone is the most used; there is a poor use of Internet network for the teaching-learning and research processes. Computer-aided learning is widely used to the individual study.

MeSH: INFORMATION TECHNOLOGY; EDUCATION, NURSING; HEALTH EDUCATION; BIOMEDICAL TECHNOLOGY; TECHNOLOGICAL DEVELOPMENT.

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RESUMEN

Introducción: las nuevas tecnologías favorecen el desarrollo científico técnico de la sociedad, por lo cual se deben asimilar en el proceso enseñanza aprendizaje por los estudiantes de la carrera.

Objetivo: caracterizar el uso de las tecnologías de la información y las comunicaciones por los estudiantes de la carrera Licenciatura en Enfermería de la Universidad de Ciencias Médicas de Pinar del Río entre enero y marzo de 2018.

Métodos: estudio observacional, descriptivo, y transversal en los estudiantes de segundo año de licenciatura en Enfermería. Se emplearon métodos teóricos y empíricos. Se aplicaron medidas estadísticas como frecuencia absoluta y relativa porcentual.

Resultados: se encontró que el 23,5 % no poseía acceso a ningún medio informático. La mitad del universo de estudio expresó poseer un teléfono móvil con sistema operativo *Android* o *iOS*. El 59,3 % de los estudiantes no empleaban la conexión institucional a Internet, el 23,5 % la emplea para fines docentes. El 76,5 % refirió utilizar las conferencias y materiales complementarios digitalizados para el estudio; el 46,9 % empleó tanto los medios digitales, como los convencionales. El 12 % de los estudiantes expresó que no encuentran útiles los medios informáticos para el aprendizaje.

Conclusiones: Se encontró utilidad en el uso de las Tecnologías de la Información y la Comunicación en el proceso docente, los cuales poseen con elevado acceso; donde los teléfonos inteligentes, son las más empleadas, existiendo una pobre utilización del Internet para el proceso docente e investigativo. Los materiales en soporte digital son ampliamente empleados para el estudio.

DeCS: TECNOLOGÍA DE LA INFORMACIÓN; EDUCACIÓN EN ENFERMERÍA; EDUCACIÓN EN SALUD; TECNOLOGÍA BIOMÉDICA; DESARROLLO TECNOLÓGICO.

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INTRODUCTION

The denomination of today's *knowledge*-based *society* recognizes the progressive importance of information as a source of development; the exponential scientific-technical growth has provoked a vertiginous increase in the production of knowledge which transmission acquires relevance. In this way, information and communication technologies (ICT) have brought as a consequence as a vertiginous explosion in the transmission and exchange of data, information and knowledge. [1]

Today we are in an era of influential, important and novel changes. This type of evolution is due, in large part, to the coming and spread of ICTs; therefore, humanity is undergoing a process of globalization in which knowledge and science can be observed in the center. This

situation is a reality that cannot escape the educational institutions, and these are the instances where, to a great extent, knowledge is produced. [2]

Advances in technologies have become part of everyday life, being used as tools present in the daily activities of society, biotechnology, technological industry; as well as in the framework of education. [3]

In this context, universities play a fundamental role in the production and spread of knowledge, but the way in which this knowledge is created and disseminated has changed and, consequently, this institution must adapt to the changes brought about by new technologies and demanded by society in the 21st century. [4]

Cuban Medical Education, both in its universities and in the settings where teaching-learning process takes place, has carried out an arduous work aimed at incorporating ICTs in each of the dimensions of the training of graduates: curricular, university extension and socio-political. From the curricular perspective, the main obstacle appears when attempting to evaluate the use of ICTs within each subject.

The relationship of ICTs with the educational teaching process of the different subjects in the study plan is useful, but they require higher levels of integration on the part of both the students and the teaching staff.

ICTs give rise to a new vision of knowledge and learning; modify the roles played by institutions and participants in the teaching-learning process, the dynamics of creation, the dissemination of knowledge, and the priorities of current curricular concerns. Its use brings multiple advantages to the improvement of the quality of the teaching-learning process, optimizes spatial and length difficulties; and the interaction with information by the different participants of the educational process using the ICTs. [5]

ICT brings a significant group of advantages for the training of professionals due to the optimization of the training process, personalized interaction with information supported in friendly and configurable environments.

However, the way in which ICTs are used by students in terms of the curricular perspective is not sufficiently described. Likewise, a question arose: How are ICTs used by the Nursing Care students?

Hence, the objective of this research is to characterize the use of ICTs by Nursing Care students at Pinar del Rio University of Medical Sciences between January and March 2018.

METHODS

An observational, descriptive and cross-sectional study was carried out at Simón Bolívar Institution affiliated to Pinar del Río University of Medical Sciences in the period from January to March 2018 in Nursing Care specialty. The target group included 81 students in the second-academic year of the degree in Nursing Care.

In this research, theoretical and empirical methods were used. Within the theoretical, historical-logical methods were applied to base the information gathered on the subject and induction-deduction in order to make logical reasoning about the students' motivation towards ICTs. As empirical methods, documentary analysis and a questionnaire as a survey were used in order to gather information regarding the use of ICT.

The survey was designed taking into consideration variables such as: availability of ICT-related media, distribution of computers per student, use of Internet network, use of traditional ways and computers for individual study and assessment of the usefulness of ICT in individual study.

The data collected were stored in a computerized database, and processed through the statistical package SPSS version 21. For the data analysis, descriptive statistical measures were applied as absolute frequency and relative percentage. The ethical principles were respected to develop the research.

RESULTS

When analyzing the availability of ICTs, 29.6 % had a standard access, while 23.5 % had no access to any computer (Table 1).

Table 1. Availability of Computer-aided learning (ICT-related knowledge), in second academic year of nursing students, at Pinar del Rio University of Medical Sciences, January-March 2018.

Availability of Computer-aided learning	No.	%
Access to a computer means	24	29,6
Access to more than one computer means	38	46,9
Without Access to any computer means	19	23,5
Total	81	100

In terms of available means, half of the target group studied expressed having a mobile phone with an Android or iOS operating system, while 29.6 % had none (Table 2).

Table 2- Distribution of computers by students

Means	No.	%
Mobile phone	50	61,7
Tablet and electronic book	30	30,0
Laptop	41	50,6
Desk PC	35	43,2
All of them	18	22,2
None	24	29,6

Regarding students' use of the Internet, 59.3 % of the students surveyed said they did not use the institutional Internet network, while 40.7 % used it for scientific work or for leisure (social networks) and e-mail (Table 3). [15]

Table 3- Use of Internet network by students

Use of institutional Internet Network	No.	%
Do not accede	48	59,3
Use of Internet network by students	33	40,7
Electronic mail and leisure time	33	40,7
Access to the Virtual Health Library	33	40,7
Access to files related to teaching	19	23,5
Access to and publication in scientific journals	12	14,8
Others	8	9,9

On the other hand, when analyzing the methods for the study, 76.5 % referred to the use of digital lectures and complementary materials, while 46.9 % referred to the use of both ICTs and conventional aids (printed bibliography) for their study (Table 4).

Table 4- Use of traditional and computerized aids for individual study

Aids used for the individual study	No.	%
Textbooks and classroom notes	51	63,0
Computerized bibliography	40	49,4
Computerized lectures and complementary materials	62	76,5
All sources of information	38	46,9

When assessing the usefulness of ICTs for individual study, only 12 % of students expressed that they were of little use.

DISCUSSION

The computer means, properly used in the teaching-learning process, can favor the individualized attention of the students on the part of professors according to the development reached by each one and, therefore, they offer the possibility of offering the necessary help, not only from the interaction professor-student and student-student, but from the own exchange with the content, which takes importance in all the modalities of Higher Education. [6]

However, for some professors as well as for students, due to the high price of these equipments and the family income, it is impossible for them to acquire them. For this reason, health institutions work to maintain in adequate condition the technological equipments they have, to be used by those students who do not have them.

Advances in mobile technology in recent years have led to its use not only in communications, or sending messages; they become into a smaller computer than a laptop, although having lower storage capacity, but performing the same functions with less weight and often with a longer battery life. Tablets and electronic books are other convenient alternatives for storing, consuming and transforming information.

However, these aids can be detrimental to their misuse and abuse; causing addiction, inability to "disconnect," and alienation behaviors. This would translate into a decrease in academic performance and interaction with the rest of the social actors, according to Garrote Rojas et al. [7]

ICTs are increasingly used, accessible and adaptable as tools that educational institutions incorporate for the purpose of making changes in the conceptions of traditional pedagogy and teaching towards more constructive learning. Thus, the PC contains the information and promotes the development of skills and abilities. It is clear that its use increases the ease of serving more people at the same time, thus extending the possibility of education reaching the family circle much more. [8]

The professor, as facilitator of the teaching-learning process for the learners, must be in control of the information but must also use the ICTs to be able to put them at the service of the students as tools that support the teaching process, to become a scientific and methodological advisor, capable of providing assistance throughout the process, thereby raising the motivation, commitment and enthusiasm of the learner when motivating him/her to learn, as well as achieving the active participation of the learner in the construction of his/her own learning. Machines have expanded physical capabilities; ICTs have extended intellectual capabilities, empowered some and opened up new possibilities. [9]

The skills needed to optimize the use of ICT in undergraduate training require constant updating due to the rapid changes that are constantly occurring in this field. [8] It is important that people in the so-called "Information Age", not only learn to have access to it, but even more significantly: manage, analyze, criticize, verify and transform it into usable knowledge. To choose what is important, leaving aside what is not important. It is in these objectives that research, based on the use of ICTs and especially Internet, finds its main development and concern. [10]

Through Internet network one can find an important compilation of information that contributes to the training of the student, but its use has been limited to a great extent to the use of social networks, electronic mail and leisure time; making a bad use or underutilizing other options. One of the objectives of Internet network is the use of resources that favor the scientific development of the student, and therefore scientific publication. If one assesses the number of students in the Medical Sciences and their scientific production, it can be noticed that there is a very low rate of publication, which has been reported in several studies. [11, 12]

Likewise, the Virtual Health Library (VHL) approach a virtual space that links and shares numerous health resources, maintains specific functions of a sort of collection of computerized documents with the flexibility offered by the use of ICTs, and promotes conditions for networking. It arises in the evolutionary process of the Internet from the development of computerized libraries, founded in the 6th Meeting of the Latin American Information System of Health Sciences, held in San José, Costa Rica, in March 1998, defined as a network of information management, knowledge exchange and scientific evidence in health that is established through the cooperation among institutions and professionals in the production, the mediation and the use of scientific health information sources, in the open and universal access of computerization [13]

A study carried out by Gonzáles Rodríguez et al. [14], they found that there was a lack of motivation to use the VHL, where there is a deficit of electronic equipment and limited access to Internet. Prolonged waiting and the time limit are some of the causes of this demotivation.

Cala Calviño[15] et al. found little use of information technology and computerized information during the study, and a greater use of printed bibliography, coinciding with the present study. The fact that some students cannot represent that the use of technologies is favorable for

their learning is due to the traditional models that represent education; where they have been framed in a model that is reactive to change, seeing ICT as a simple recreational means and not as an enriching and solid alternative. In addition, the limited use of computerized files may be due to the availability of media for their consumption, a fact that has been repeatedly reported. [14]

In conclusions, the students found useful information and communication technologies when they have a high access for them, where Smartphone, laptops and tablets were the most used, there has being a low use of Internet, especially for teaching and research processes. The materials in computerized support were widely consulted for the individual study.

Conflict of interest

The authors state that there is no conflict of interest.

Authors' contribution

The authors contributed equally to the design of the study.

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