

Determinants of Nursing Campuses' Readiness to Use a Computerised Training Tool

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Abstract

The Integrated Management of Childhood Illness Computerised Adaptation and Training Tool (ICATT) is an emergent training tool for improving the efficiency of the Integrated Management of Childhood Illness (IMCI) case management training in an in-service or pre-service context. This article reports on a study that explored nursing campuses' readiness to use ICATT. A qualitative, exploratory, descriptive design was employed at 10 nursing campuses in KwaZulu-Natal (KZN), South Africa. Campus principals, nurse educators and learners were purposively sampled. The inclusion criteria were: for the campus principals – their willingness to participate; for the nurse educators – having received and facilitated IMCI case management training; and for the learners – being either second or third year trainees in the R425 training programme. In-depth semi-structured interviews were conducted to collect data from the seven campus principals, while eight focus group discussions (FGDs) were held with the nurse educators and learners. The interviews were audio-taped and transcribed verbatim. Data analysis was conducted manually, and trustworthiness was ensured. The determinants identified were: a positive attitude; enablers for ICATT implementation; and barriers to ICATT implementation. However, the barriers could have an impact on the adoption of an electronic tool for IMCI case management training. Recommendations include developing the infrastructure at nursing campuses; offering nurse educators training on the implementation of ICATT for teaching; and developing the learners' computer skills. Nurse educators may use ICATT



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effectively in teaching IMCI case management, while also stimulating independent learning and creativity for the learners involved.

Keywords: campus principals; computerised training tool; educators; ICATT; readiness; technology oriented; training programme

Introduction and Background

The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) launched the Integrated Management of Childhood Illness (IMCI) strategy in 1995 (Costello and Dalglish 2016,1). It was aimed at assisting impoverished communities to improve the health of children and reducing under-five mortalities from respiratory infections, diarrhoea, malaria and malnutrition (Rakha et al. 2013, 1). The strategy has three components targeting health worker skills, health systems, and family and community practices to address the complexity of managing child health issues (Costello and Dalglish 2016, 1). More than 100 countries, including South Africa, have since adopted the strategy with its components (Costello and Dalglish 2016, 1; Horwood et al. 2011, 42).

An improvement in the quality of care rendered to sick children, improved counselling practices of healthcare workers and declining child mortality rates were observed after IMCI implementation (Rakha et al. 2013, 6). Nguyen et al. (2013, 7) conducted 46 systematic reviews and 26 meta-analyses of studies which compared the performance of healthcare workers trained in IMCI, with those who were not trained in IMCI. The findings mirrored those of previous research studies, namely, that IMCI training does enhance health worker performance. Despite the positive outcomes documented in several studies, however, global deficiencies remain in implementation and training.

In recent years, there has been considerable interest in exploring a new computerised approach for IMCI training (Titaley et al. 2014, 168) through the development of the Integrated Management of Childhood Illness Computerised Adaptation and Training Tool (ICATT). This innovative software application allows for the IMCI generic guidelines to be adapted based on countries' health priorities and language preferences (Novartis Foundation 2017). The ICATT software can be modified to use different training media, namely, computer-, internet- and satellite-based facilitation. It is suitable for in-service and pre-service settings and distance learning programmes. Twelve countries, including South Africa, have adapted the IMCI guidelines through ICATT. Results of its utilisation for training in Tanzania, Peru and Indonesia have confirmed its time and cost efficiency, and potential to increase the output of IMCI-trained healthcare workers (Novartis Foundation 2017). However, anecdotal evidence suggests that ICATT is not being utilised optimally on all nursing campuses in South Africa. Recognising the fact that the use of ICATT is likely to become an important component of IMCI case management training, the article makes a relevant contribution by

reporting on the readiness of nursing campuses to use ICATT for pre-service training in KwaZulu-Natal (KZN), South Africa.

Problem Statement

In 1997, the WHO developed a training process and materials to support IMCI pre-service training in medical and nursing schools (Haileamlak et al. 2010, 2). In 2006, the KZN College of Nursing incorporated IMCI pre-service training, utilising the traditional approach, into the existing R425 student nurse training programme. Nurse educators trained in IMCI conducted training using IMCI chart booklets, modules, exercise booklets, photographs, DVDs and recording forms.

A study conducted at 32 public nursing colleges in South Africa identified a shortage of both trained facilitators and training material, such as IMCI modules, as challenges to IMCI pre-service training (Ngake 2014, 66, 67). Similarly, the first author identified obstacles, which had an impact on IMCI pre-service training at the nursing campus where she has been employed since 2008, including: a shortage of nurse educators trained in IMCI; a lack of district support for training; the use of outdated training materials; the cost of re-printing training materials; the large number of learners; and the limited time for training.

The Department of Health (SA 2013/2014, 2) has recommended ICATT as an approach for strengthening IMCI pre-service and in-service training in South Africa. Implementing ICATT at all nursing campuses can reduce the financial and human resources burden of training. However, computerised training tools have never been used at nursing campuses in KZN. For ICATT to be implemented successfully, it is necessary to investigate the readiness of nursing campuses, nurse educators and learners to use this technology. According to Hossain et al. (2016, 130), despite higher education institutions having computers for use, teacher-related challenges (i.e. lack of skill, training and interest in the use of computers) and learner-related challenges (i.e. an inadequate number of computers, lack of information and communication technologies [ICTs] infrastructure and, the skills and attitudes of teachers) can hamper readiness to use ICT for education activities. According to a study by Olatunj and Bukar (2017, 67), a shortage of computers, computer laboratories and an inadequate number of teachers trained in computers have an impact on the learners' readiness to use computers for learning activities.

The current study, as part of a broader study, sought to explore and understand the readiness of campus principals, nurse educators and learners to use ICATT at 10 nursing campuses in KZN.

Purpose of the Study

The purpose of the study was to explore and describe the readiness of nursing campuses to use ICATT.

Definitions of Keywords

- **Determinants** are identified factors, which influence whether e-learning (in this research ICATT) is adopted for teaching and learning practice (Ansong, Boateng and Boateng 2017, 32).
- **ICATT** is an electronic learning tool with a computerised software application, which allows for the adaptation of the generic guidelines of the IMCI strategy (Novartis Foundation 2017).
- **Readiness** refers to whether the nursing campuses, campus principals, nurse educators and learners have the motivation, technical and infrastructural preparedness to change from a conventional training strategy to a computer-based training strategy for IMCI case management training (Holt and Vardaman 2013, 9).

Research Methodology

A qualitative, exploratory, descriptive design was used and allowed for the emergence of rich, narrative data based on the participants' viewpoints (Sandelowski 2000, 336). The exploratory approach allowed the researchers to explore the perceived readiness of the campus principals, the nurse educators teaching IMCI case management, and the learners for the implementation of a computerised training tool for IMCI case management at the nursing campuses.

Population and Sampling

The target population were campus principals from 10 nursing campuses offering the R425 nurse training programme; nurse educators trained in IMCI and IMCI facilitation; and second- and third-year learners who had completed IMCI case management in their second year of training. The participants were purposively sampled based on the inclusion criteria and their willingness to participate in the study (Grove, Burns and Gray 2013, 365). The inclusion criteria were as follows: for the learners, being enrolled for the R425 training programme, in their second or third year and having completed IMCI case management training; for the nurse educators, those currently conducting IMCI case management training at their nursing campuses; and for the campus principals, their willingness to participate. Seven campus principals (six females and one male) between 41 to 60 years of age were interviewed. Thirty nurse educators (29 female and one male) trained in IMCI case management were interviewed in eight focus group discussions (FGDs) comprising between three and five participants per group. A

total of 58 second- and third-year learners, including male and female participants, were interviewed in the eight FGDs involving between six and eight participants.

Data Collection

The individual interviews were used to collect data from the campus principals, and the FGDs were used to collect data separately from the nurse educators and learners. Data collection commenced in August 2014 and ended in March 2015. The interviews were conducted in English. The venue was prepared for the interviews. The main research question was: “How do you feel about implementing ICATT at this nursing campus, for IMCI case management training?”

Paraphrasing, probing questions and prompts were used to explore the participants’ perceptions about the readiness of nursing campuses to implement ICATT. Hence, detailed, in-depth information emerged from the individual interviews and FGDs (Polit and Beck 2012, 537). The individual interviews and FGDs lasted between 30 and 60 minutes and were audio recorded. At the end the participants were thanked. The researcher conducted the interviews and simultaneously analysed the data until category saturation was reached (Sandy and Shaw 2012, 67). The researchers based their decision on “the degree to which new data repeat what was expressed in previous data” (Saunders et al. 2018, 1897).

Data Analysis

The transcripts were cleaned prior to data analysis to ensure accuracy of the audio recordings and consistency between the audio recordings and the transcribed data (Grove, Burns and Gray 2013, 688). The process of data analysis was conducted manually using the six stages suggested by Sandy (2013, 360) based on Smith’s (2005) interpretative phenomenological analysis (IPA) framework. The following stages were used: (1) read the transcripts more than once to gain a clear understanding of the participants’ accounts; (2) make annotations on the transcriptions about anything of relevance; (3) use the annotations to identify specific themes; (4) identify relationships between the emergent themes and group them together; (5) develop a master table of themes with a superordinate theme, themes, sub-themes and quotations for each individual transcript; and (6) use the master table of themes from the individual transcripts to generate a single master table of themes (Sandy 2013, 360).

Ethical Considerations

The principles of beneficence, justice and respect for human dignity are ineradicable standards, which guide researchers’ conduct (Polit and Beck 2012, 152). Central to the principle of beneficence is to do no harm, and in so doing, to protect the rights of the participants and reputation of the institutions on whose behalf the research is being undertaken (Brink, Van der Walt and Van Rensburg 2012, 35, 36). The researchers were cognisant of applying accepted ethical standards and ensuring that the benefits

outweighed the risks of the study. In acknowledgement of this, the researchers sought and obtained ethical clearance (Certificate number HSHDC/259/2013) from the Higher Degrees Committee at the Department of Health Studies of the University of South Africa. Permission to conduct the research study at the campuses of the KZN College of Nursing was obtained from the KZN Health Research Committee, the Acting Head of the KZN College of Nursing, and all the principals of the nursing campuses. The participants were informed that data would be collected only once on an approved date and time for the study, thus ensuring their right to protection from exploitation (Polit and Beck 2012, 153).

The researchers respected the participants' right to choose whether or not to participate in the study. No forms of coercion were used nor incentives offered, thus participation in the study was voluntary. The participants were advised of their right to withdraw from the study without penalty or prejudice and received an information letter outlining the purpose, inclusion criteria and benefits of the study. The researchers informed the participants that an audio-recorder would be used during the interviews to capture their responses. Informed written consent was then obtained from all the participants prior to data collection.

The right to fair treatment and the right to privacy are entrenched in the principle of justice (Polit and Beck 2012, 155). Thus, the researchers ensured that all the participants were fairly selected based on the inclusion criteria of the study, and all terms and agreements were honoured during the data-collection process. The researchers respected the participants' right to privacy by ensuring that their anonymity and confidentiality were maintained throughout by: not identifying them by name during the interviews; processing the audiotaped responses anonymously; storing transcriptions from the interviews in a password-protected computer; and omitting the names of the sites and participants during the presentation of the results.

Trustworthiness

Lincoln and Guba's framework of trustworthiness (1985, as cited in Amankwaa 2016, 121), involving credibility, transferability, dependability and confirmability, was used to ensure the scientific rigor of the study. The credibility of the findings was further strengthened through member checking by providing feedback to the participants after the interviews so they could endorse the findings as a reflection of the discussions. The purposive sampling of the participants and providing an audit trail of rich descriptive data and quotations from the participants' excerpts during the presentation of the results ensured transferability. Piloting the interview schedules, using semi-structured interview guides and recording the interviews provided an audit trail and ensured dependability. To ensure confirmability, the researcher used a research assistant to take notes during the individual interviews and FGDs, while the data analysis was done independently by the researcher and an expert qualitative researcher.

Findings

According to the study findings, three main themes emerged: (1) a positive attitude; (2) enablers for ICATT implementation; and (3) barriers to ICATT implementation. The emergent themes were similar for the campus principals, nurse educators and learners and are therefore presented together. The themes, sub-themes and participants' verbatim statements have an accompanying key at the end of each quotation: individual interview (In); focus group discussion of nurse educators (FGN); and focus group discussion of learners (FGL). The individual interviews and FGDs are numbered. This number appears first, followed by the page numbers of the transcriptions where the quotations appear and are presented as such: (1, 2).

Theme 1: A Positive Attitude

The participants expressed a positive attitude towards the implementation of ICATT for IMCI case management. The emergent sub-themes related to the ICATT software and the: (1) characteristics of nurse educators; (2) use of technology by nurse educators and learners; and (3) nurse educators who have received training in IMCI and ICATT.

Sub-theme 1.1: Characteristics of Nurse Educators

The campus principals viewed the use of a computerised training tool in a positive manner, embracing the use of a new technology for nurse training. They identified positive character traits of nurse educators such as being innovative, dedicated, enthusiastic, and adaptable to new teaching methods:

It is a good thing to have this ICATT. I am positive about it. (In: 3, 1)

Everything today starting from the basic cell phone is technology oriented ... therefore the younger students and the younger staff seemed to be more au fait in the actual ease of use and handling of technology. (In: 1, 1)

Sub-theme 1.2: Use of Technology by Nurse Educators and Learners

The nurse educators agreed that ICATT should be used as an alternative to the conventional method of facilitation for case management training at the nursing campuses. They concurred that it would not be a challenge and would be stimulating for learners who are attuned to technology:

It won't be a problem adjusting to ICATT as it is computerised. It's actually a wonderful idea. (FGN: 1, 1)

Learners are going to enjoy it because they love things that are not paper-based. ICATT will be exciting and more interesting. (FGN: 2, 1)

The learners acknowledged that adopting ICATT for case management training would provide favourable outcomes, allowing them to keep abreast of technology:

Using the ICATT software would actually be advantageous. (FGL: 1, 1)

It's a great idea because I love computers and I think it's in keeping with the technological era. (FGL: 6, 1)

Sub-theme 1.3: Nurse Educators Who Have Received Training in IMCI and ICATT

The campus principals' expressions of positivity about ICATT use can be attributed to the fact that nurse educators are trained in IMCI case management and a few have received training in the use of ICATT:

We have staff that did IMCI case management training. (In: 8, 1)

I must say following the training that two of our lecturers had in Durban, which I think was about ICATT ... (In: 6, 2)

Theme 2: Enablers for ICATT Implementation

As sub-themes, the study participants identified the following enablers for implementing ICATT for (1) nursing campuses, (2) nurse educators and (3) learners; and (4) the benefits of using computers, that is, ICATT for teaching and learning.

Sub-theme 2.1: Nursing Campuses

The campus principals were of the opinion that ICATT implementation provided nursing campuses with the opportunity to be aligned with universities in terms of technology integration for teaching and learning. Also, as fewer nurse educators were utilised to conduct training, it would allow them to be engaged in other campus activities.

It is good that the campuses are actually being involved so that they can also keep pace with development ... (In: 1, 3)

Using ICATT will help in IMCI case management, and the effective utilisation of staff. (In: 4, 1)

The nurse educators agreed that long-term savings for nursing campuses would occur if ICATT were implemented. This was measured against the costs of photocopying the IMCI training modules, an ongoing occurrence due to the frequent updating of the training material. The ICATT software incorporates videos, also making additional copies of IMCI DVDs unnecessary:

ICATT will be cost effective as there is no need to photocopy all the modules. (FGN: 7, 1)

It's a burden on our budget because although we use the government printers they charge us. The printing of modules is very expensive and I took 13 modules for printing. (FGN: 8, 1)

Sub-theme 2.2: Nurse Educators

The campus principals' opinion was that implementing ICATT would provide nurse educators with a novel way of delivering content in the classrooms. In addition, using technology would allow nurse educators greater flexibility in managing their time and teaching responsibilities:

Technology is actually being used as a method ... It provides more innovative ideas for guiding the students. (In: 1, 2)

Nurse educators can schedule their times the way they want to using technology. (In: 7, 5)

The nurse educators identified a myriad of benefits for teaching if ICATT were to replace the conventional case management training, emphasising that the ICATT software can easily be revised allowing for updated information. The ICATT software design highlights "READ" sections, and incorporates videos in the "SEE" section, making training materials more accessible and training more efficient:

Information in the discipline of community nursing science is continuously changing . . . The ICATT software can be easily updated and allows for new information to be easily disseminated . . . (FGN: 8, 2)

. . . the software has a read section and videos that are easy to access. (FGN: 7, 1)

The participants reiterated the view that using the ICATT software would save time and labour as fewer facilitators are required:

It's very important because it will save time. (FGN: 3, 1)

It's going to be more efficient because it does not need many facilitators. One facilitator may be adequate. (FGN: 2, 1)

The nurse educators identified that the conventional way of facilitating IMCI case management training using modules and the facilitation method was burdensome. They believed that ICATT use may lessen their workload as the learning activities are accessible to the learners on the software:

When we are using the old way of lecturing where you actually use the hard copies it takes time. (FGN: 3, 1)

It also reduces the burden on the lecturer because you can actually leave the student to work on the programme on their own ... (FGN: 8, 1)

Sub-theme 2.3: Learners

The campus principals identified that ICATT implementation would motivate learners to engage in independent learning, which is part of the teaching and learning process in the R425 programme:

I actually think with guidance and proper orientation they will be able to work on their own. (In: 1, 3)

Giving them computers allows them to learn on their own. (In: 7, 3)

An added benefit identified for nurse educators was that learners would become computer literate allowing them to work independently at their own speed:

It is advantageous for the learners as they now have an introduction into basic computer literacy ... (FGN: 5, 1)

If we are presenting it in the classroom, we expect all learners to keep up. ICATT allows the learners to work on their own. (FGN: 8, 2)

The nurse educators viewed ICATT as a stimulus for critical thinking, self-learning and self-evaluation based on the “READ, SEE, PRACTISE and TEST” sections:

The use of ICATT facilitates active listening as it allows them to read, see and practise. (FGN: 3, 1)

They can evaluate themselves in the TEST section. (FGN: 3, 1)

The nurse educators reported that learning could continue outside the classroom, with learners accessing and using learning material at their convenience:

The students can download the software onto their personal laptops or a memory stick, so that they can go home and work on it. (FGN: 8, 2)

Start to think critically ... (FGN: 4, 1)

Sub-theme 2.4: Benefits of Using ICATT

The nurse educators were positive that using ICATT would be a stimulus to the nursing campuses in terms of identifying and adopting computerised tools for learning in other

disciplines of nursing. They espoused the advantages of the ICATT software, which contains videos and pictures with interactive graphics providing enhanced learning opportunities for learners:

Once we start with ICATT, I see it spreading to other subjects. (FGN: 1, 3)

The videos in the SEE section of ICATT are interactive. One can see clinical signs that are being discussed. (FGN: 7, 1)

The learners expressed their views on using ICATT, including access to computers, the opportunity to strengthen their computer skills and access to updated information on IMCI case management:

It will be a great experience for learners from disadvantaged backgrounds who have not been exposed to computers . . . provides an opportunity to develop their computer skills . . . (FGL: 1, 2)

Books become outdated ... Computers are frequently updated ... (FGL: 8, 1)

The learners expressed a strong desire to use ICATT instead of adhering to the conventional case management training. They based their preference for ICATT on its efficiency, self-directed learning and available and accessible learning material:

I think it's going to be a more efficient way of doing IMCI. (FGL: 5, 1)

I think we can become independent learners because we don't need our nurse educators to read through the modules. (FGL: 3, 2)

Theme 3: Barriers to ICATT Implementation

In terms of sub-themes, the campus principals and nurse educators identified barriers related to (1) human resources; (2) material resources; and (3) the infrastructure at nursing campuses, while the nurse educators expressed (4) "concerns" about the readiness of the nursing campuses to adopt ICATT for IMCI pre-service training.

Sub-theme 3.1: Human Resources

The campus principals and nurse educators expressed concern about the literacy of nurse educators and the difficulties they experienced when using a computer and its applications:

Some of our lecturers can't actually do a simple task on a computer. Some of them if we say read emails, open an attachment, it's a challenge. (In: 6, 1)

It's going to be okay if nurse educators are computer literate. (FGN: 6, 1)

Both the campus principals and nurse educators indicated that the majority of the nurse educators are not yet trained in the use of the ICATT software:

Nurse educators will require training and orientation on the use of ICATT before they use it to teach the learners. (In: 1, 1)

A few lecturers are trained in ICATT. (FGN: 5, 1)

The nursing campuses have not employed information technology (IT) technicians to date; thus, they lack technical support for the installation and maintenance of the ICATT software:

We do not have technical support for the campus, but we do have technical support in the hospital. However, 50 learners on computers would be too much for him to handle. (In: 8, 2 and 3)

We need to have a technician to assist us. (FGN: 5, 1)

The campus principals and learners expressed concern about the computer illiteracy of many of the learners:

My worry is that not all students are computer literate, which is also a problem. (In: 3, 1)

It's not good because most of the learners are not computer literate so it's going to be difficult for them to use the computers. (FGL: 1, 1)

Sub-theme 3.2: Material Resources

The campus principals, nurse educators and learners agreed on the lack of computers for teaching and learning; nursing campuses do not have enough computers to facilitate a one-to-one ratio of learners to computers. A few nursing campuses further lacked additional material resources, for example laptops and data projectors, hampering the use of ICATT in a classroom-based setting using data projectors:

We cannot do it because we lack the computers here. But it is in the pipeline. We are hoping . . . (In: 4, 1)

We are really short of equipment like computers. We as lecturers don't have computers and it is worse for the students at this campus. (FGN: 3, 1)

Sub-theme 3.3: Infrastructural Challenges

Infrastructural challenges related to the lack of computer laboratories and local area networks were identified by campus principals and nurse educators. They expressed

frustration, stating that even if computers were provided, ICATT use would be hampered due to the lack of computer laboratories to accommodate them:

We don't have a computer laboratory. (FGN: 4, 1)

Even if you give me the computers, I do not have the infrastructure like a huge hall or a big classroom to convert into a computer laboratory. (In: 8, 1)

Concerns about Readiness to Adopt ICATT

The findings present an overall picture of the understanding of the campus principals, nurse educators and learners about ICATT implementation, which has an impact on the state of readiness of the nursing campuses.

Discussion of Findings

A Positive Attitude

The study results provided evidence that campus principals, nurse educators and learners have positive attitudes towards computerisation of learning material, mirroring the findings of two earlier studies, which demonstrate that nurses have positive attitudes to computer use (Chong et al. 2016, 360; Topkaya and Kaya 2014, 141). The findings of Kipturgo et al. (2014, 1) on the attitudes of nurses to computerisation and factors that influence attitudes indicated that nurses under the age of 40 years and who attended university had more positive attitudes to computer use. These findings support the opinions of the campus principals that nurse educators who were young and possessed post-basic qualifications were more inclined to use computers. The campus principals had positive attitudes to ICATT adoption as nurse educators and learners already use technology for teaching and learning, demonstrating a level of readiness. Studies conducted by Maboe and De Villiers (2011, 94), and Usher et al. (2014, 99) provided evidence of learners and nurse educators using ICTs.

The positive attitude displayed by the study participants can be seen as a demonstration of the commitment of the role-players to explore new avenues to prepare future professional nurses for their roles. While the research focussed on training in IMCI, the computer-assisted training can also be expanded to other fields of nursing training.

Enablers for ICATT Implementation

In the context of the study, the researchers viewed “enablers” as supportive factors. Campus principals’ belief that nurse educators’ training in IMCI and ICATT prepared them to successfully use an electronic training tool in the classroom is contradicted by the findings of Ruggiero and Mong (2013, 12), which stated that pre-service teachers, despite undertaking a basic technology course, were ill-equipped to use technology to teach.

The participants cited cost-effectiveness (less money spent on updating resources), efficiency (fewer facilitators to conduct training and shortened training) and independent learners as enablers for utilising ICATT. Kudlova and Lejnev (2011, 14) cited improved facilitator : participant ratios of 1:10–15 and reduced training over six to eight days as advantages of ICATT use.

According to Harerimana et al. (2016, 69), e-learning encourages learners to take responsibility for their own learning. The nurse educators believe this method of teaching stimulates independent learning and critical thinking. Additionally, the participants in this study are knowledgeable of the advantages that the computerised training programme will offer them in terms of flexibility and cost savings.

Barriers to ICATT Implementation

The researchers identified the term “barriers” to mean impediments or challenges to ICATT implementation. According to Khan, Hasan and Clement (2012, 72), the lack of knowledge and skill in ICTs can limit the use of ICT tools in teaching and learning. Chigona, Chigona and Davids (2014, 5) opine that the lack of technical support and learners with limited computer skills can hinder technology integration into a teaching and learning environment. Tarus, Gichoya and Muumbo (2015, 131) state that inadequate infrastructure such as the lack of computers, network and internet connectivity and computer laboratories are barriers to e-learning implementation.

Access to computers and the internet is a requirement for computer-assisted learning. However, the participants’ expressed concern that computer illiteracy of nurse educators and learners, and the lack of computer laboratories, computers and technical support are barriers to ICATT implementation.

Recommendations

There is a need to train nurse educators in the use of computerised training tools to facilitate successful integration of e-learning into the nursing curriculum. Similarly, learners should receive computer training to strengthen their computer skills and enable the use of computerised training tools on the nursing campuses. Lastly, the management of nursing campuses should explore public-private partnerships for the provision of laptops for learners at preferential rates or through the Department of Health bursary system.

Limitations of the Study

The study was limited to a public nursing education institution in KZN and its nursing campuses, therefore the results cannot be generalised to other nursing institutions in South Africa. The research was also limited to IMCI training with ICATT and does not include other computerised learning programmes.

Conclusion

The study results demonstrated that the college principals, nurse educators and learners all displayed a positive attitude to the implementation of ICATT for IMCI case management and identified several enablers to assist in this process. The campus principals and nurse educators, however, expressed their concern about the lack of human and material resources and infrastructure and regarded them as barriers to the successful implementation of the training programme.

Therefore, there is a need to look into the factors that may affect the implementation of ICATT for IMCI case management negatively. The KZN Department of Health should assist the campuses financially and in providing the necessary resources and infrastructure.

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