

ONLINE CLASSES FOR NURSING FRATERNITY: A SYSTEMATIC REVIEW OF THE IMPACT OF ONLINE CLASSES ON KNOWLEDGE, ATTITUDE AND SKILL

Pranita Sharma¹, Dr. Barkha Devi^{1*}, Ranjita Devi², Sandhya Gurung³, Shrijana Pradhan³ and Sujen Cintury⁴

^{1,3} Assistant Professor, ^{1*} Associate Professor, ² Professor, ⁴ Assistant Lecturer

^{1,2,3,4} Sikkim Manipal College of Nursing, Sikkim Manipal University, Sikkim, India

*Corresponding author Email: barkhadevi2@gmail.com

Abstract

In a present situation of pandemic, the use of online mode of teaching and learning has grown as technology is used everywhere in education and training sectors. As per the scholar, “e-learning” is defined as the teaching method which is delivered via various multimedia platforms. Some investigators believed that curriculum of any course challenges or motivate the students. Their concern in their study was to identify the best tools for successful teaching and learning in online courses. Some scholars suggested that lack of experience regarding online course and technology among teaching faculty and students is a major drawback for the successful implementation of online programs. In spite of the volume of literature, a quick review revealed that there are variations in the attitude and perception of nursing students and teachers toward an online method of education. At present, only limited Indian studies are available related to the use of online classes, this review was done to synthesize the evidence. This systematic review is done to examine effect of online classes on knowledge and skill of the nursing fraternity.

INTRODUCTION

The notion of online education is an exclusively new concept. During earlier times correspondence courses used to be held, where teachers used to send lessons and receive student's responses or assignments by mail. The online courses of today are the advanced versions of distance learning.

In a present situation of pandemic, the use of online mode of teaching and learning has grown as technology is used everywhere in education and training sectors. As per the scholar, “e-learning” is defined as the teaching method which is delivered via various multimedia platforms. [1]

The main concern regarding the online classes is whether they are fruitful to modify and enhance the student's knowledge, attitude and skill. Though, academicians' view that knowledge, critical thinking, and attitude can be altered by virtual classes, enriching clinical skills requires real-time interaction and involvement with the students. For example, the skills such as administering injections and performing wound dressing etc. need practice in real hospital settings in a client. Watching videos and attending online lectures will not make the hands skillful which can really provide effective care to the patients.

Some investigators believed that curriculum of any course challenges or motivate the students. Their concern in their study was to identify the best tools for successful teaching and learning in online courses. [2] Some scholars suggested that lack of experience regarding online course and technology among teaching faculty and students is a major drawback for the successful implementation of online programs. [3]

A systematic study was done by the US Department of Education [4] from 1996 to July 2008. They compared an online to traditional class and measured outcomes of students in terms of their learning. They concluded that the results of online classes were not significantly effective in terms of learning.

Need of a review

Online classes are the new normal in the field of nursing education amid lockdown due to COVID-19 pandemic. In Indian scenario, conducting online classes is a numerous challenge owing to limited availability of infrastructure, trained personnel, skill, and other facilities. There is a constant debate whether skills can be taught online as nurses are dealing with real human beings where “touch” is very important.

In spite of the volume of literature, a quick review revealed that there are variations in the attitude and perception of nursing students and teachers toward an online method of education. At present, only limited Indian studies are available related to the use of online classes; this review was done to synthesize the evidence. This systematic review was done to examine effect of online classes on knowledge and skill, among the nursing fraternity.

Methods and Materials

Search strategy

The studies included were published between January 2015 to June 2021 by using the following databases CINAHL, ERIC, Medline, EMBASE, and Dissertations The primary search terms were online classes, knowledge, attitude, skills, nursing students, and nursing faculty. Reference lists of relevant topics were also searched.

Inclusion and exclusion criteria of the review

- a. Study design: Experimental studies (randomized controlled trial [RCT]) and non-RCTs [Table 1].
- b. Participants: Investigators have included nursing students (diploma, undergraduate, and postgraduate), and nursing faculty who are involved in nursing education, that is teaching nursing students. Participants must have exposure to online classes during their study tenure.
- c. Intervention: Investigators defined online classes as any nursing course or programs aimed at its effect on knowledge, attitude, skills, and challenges in conducting online classes and other factors affecting online classes in undertaking the completion of online courses or syllabus.
- d. Outcomes: studies included were reported outcomes related to knowledge, attitude, skills, and challenges in conducting online classes and other factors affecting online classes in undertaking the completion of online classes or syllabus.

Data extraction

Researchers read titles and abstract and dissertations of all the articles published between January 2015 to June 2021. Then, the abstracts and titles were assessed, to analyze whether they met the inclusion criteria. Apparently potential eligible articles were retrieved full for systematic and complete review. Then the researchers synthesized the data narratively. Based on the retrieved complete articles, data were used regarding study design, participants, setting, intervention, control group, and outcome using a self-developed data extraction sheet by the researcher.

Risk Bias Assessment

Risk of bias

The selection bias was not clear in RCTs as information provided on random sequence was insufficient. For non-RCT studies, all studies were evaluated to assess the risk of performance bias as group allocation was not done.

Statistical analyses

All the data of included studies were analyzed. The full texts of 35 articles were assessed for inclusion. The total numbers of studies excluded in the study were 15 most commonly on the basis of intervention and participants, and finally 20 were included in the review as shown in tables 2 to 5. The participants ranged from 1st-year students to final year students (diploma and degree courses) in nursing college and faculty members. The sample sizes were ranged from 5 to 740. Most studies evaluated the effects on online classes on knowledge, attitude and skill, while fewer evaluated the comparison of online classes with traditional educational effect [6]. Outcome measures included changes in knowledge (n = 5), changes in skill (n = 5), changes in attitude (n = 6) factors affecting online class success (n = 4).

Results:

Effect of online classes on knowledge of nursing students, and nursing faculty

There is evidence that online classes improve knowledge among nursing students, and nursing faculty. Total five studies [Table 2] were reported for the effect of online classes on knowledge. Two studies have shown that online classes have improved knowledge. Two studies have shown that offline learning and traditional method are effective in improving knowledge.

Effect of online classes on skill of nursing students and nursing faculty

The evidence, about the effect of online classes on skill development of nursing student and nursing faculty was limited. As the total study reported [Table 4] were five, of which two studies have shown improvement in the skill development after the online program while three studies have shown blended learning improves skills better than online learning.

Effect of online classes on change in attitude of nursing students and nursing faculty

The evidence, about the effect of online classes on skill development of nursing student and nursing faculty was limited. The total studies reported [Table 5] were six, of which four studies have shown that online classes have helped the nursing students and nursing faculty to develop positive attitude towards nursing program or profession. Two studies have shown no significant relationship between attitude of nursing students towards technology and online classes. [7]

Other outcomes

Although the researchers did not intend to analyze the challenges and factors contributing to effect of online classes, it was noticed when the researcher collected the data. Two studies reported [Table 5] that communication, administrative support, inefficient use of technology, time management, and cost of the program were the main challenges faced during the online classes which affect the attitude, perception, and behavior of nursing students and teaching faculty toward online classes. Two studies stated that the factors which affect the successful implementation of online classes were motivation, satisfaction, time management skill, self-- efficacy, and increased communication. [8]

Discussion

The result of the present study is reported on the effect of online classes on nursing fraternity. The study suggested that an online class does lead to changes in knowledge and skill. The findings of the current study findings are similar to previous results of online classes review.

Table 1: Inclusion and Exclusion criteria of the review	
Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Effect of online classes among nursing students and nursing faculty. Any language Any articles in indexed journal and publication date, duration from January 2015 to June 2021 Experimental studies and non-experimental studies with any intervention 	<ul style="list-style-type: none"> Certificate courses done by nursing students and nursing faculty Effect of online classes among paramedics and medical staff

Table 2: Effect of online classes on knowledge of nursing students, and nursing faculty (n=5)				
Year	Author	Aim/objective	Methodology (research design, sample size and setting)	Findings
2019	Merja Männistö et al	To evaluate the effectiveness of digital education on learning outcomes.	Research design - Quasi-experimental study n=87 Setting - Traditional classroom	Knowledge was improved by digital education
2019	Rouleau G et al	To measure the effect of e-learning in continues education of nursing care. They assessed behavior, learning, and satisfaction	Research design- Systematic review n=22 reviews published between 2008 and 2018 Setting - Faculty of Nursing, Université Laval , Quebec, QC, Canada	The use of e-learning improves satisfaction and knowledge
2019	Leisi Pei and Hongbin Wu	To evaluate the effect of online learning on learning outcome of undergraduate	Research design - Systematic review n=5 databases during 2000-2017 Setting - Beijing Academy of Educational Sciences, Beijing, China	Offline learning is much better to improve knowledge and skill
2018	Behrambeygi et al	To evaluate the effectiveness of an e-learning program on nurse's knowledge and behavior for caring patient with thromboembolism	Research design - Descriptive comparative study n=100 Setting - American College of Chest Physicians, American Association of Orthopedic Surgeons, and Chinese Orthopaedic Association	E-learning is not more effective than traditional method

Table 3: Effect of online classes on skill of nursing students, and nursing faculty (n=5)

Year	Author	Aim/objective	Methodology (research design, sample size and setting)	Findings
2020	Hossein Moradimokhles et al	To compare the effect of online learning to blended learning in English language skill among nursing students	Research design - Experimental study n=60 Setting - Asadabad Nursing Faculty, Iran	Skill was improved more in blended learning rather than online learning
2018	Karen McCutcheon	To assess the skill via blended learning approach and attitude towards supervision	Research design - Posttest randomized controlled trial n=122 Setting - United Kingdom University	Students who have received blended learning have highest knowledge, satisfaction, and skill
2018	Ewan W. McDonald et al	To examines the effectiveness of digital technologies enhancing skill and knowledge of nursing students in nursing assessment	Research design - Systematic review n=20 Setting - Austin Clinical School, La Trobe University, Australia	E-learning alone cannot improve the skill for that we need to add traditional learning method
2018	Anne Wilson	To determine the effects of online video learning activities in delivering educational activities that improved learners' self-efficacy, knowledge, skills.	Research design – Descriptive n=36 Setting - University of Adelaide, Australia	Online learning improves staff nurses' knowledge and skill
2017	Hye Sun Jeong	To investigate effect of smartphone video recording in nursing education	Research design - Quasi-experimental n=76 Setting - University in Chungnam Province of Korea	Positive effect on improvement in practice, skill, competency, and learning attitude

Table 4: Effect of online classes on attitude among nursing students, staff nurses, and nursing faculty (n=6)

Year	Author	Aim/objective	Methodology (research design, sample size and setting)	Findings
2021	Pratima Thapa et al.	To identify the nursing students' attitude towards the practice of e- learning amidst covid-19	Research design-a descriptive web based cross sectional study n- 470 setting- various colleges and universities of Nepal	Majority of the nursing students showed a positive attitude regarding e- learning but they had internet problems and technological issues
2018	Ullah, Obaid	To measure the attitude of nursing students toward technology and online classes	Research design – Descriptive n=83 Setting - University of Peshawar at tertiary level	No significant relationship presents between attitude of nursing students toward technology and online classes
2017	Yangoz, Tugba	To determine the satisfaction level of e- learning on nursing education	Research design - Systematic review n=6 manuscripts during 2011-2016 Setting-Department of Public Health Nursing, Faculty of Health Sciences, Akdeniz University, Antalya, Turkey	No significant difference between satisfaction level toward online learning than traditional learning
2017	Zohreh Sohrabi et al.	To assess the attitude of nursing students toward online learning	Research design - pre-and post-quasi-experimental n=25 Fifth-semester nursing students Setting - Saveh University	Positive attitude toward online learning
2016	Ali et a	To assess the nursing student's attitude toward e-learning	Research design - Descriptive n=120 Setting - North Batinah Region of Oman	Nursing students were having favorable attitude toward e- learning
2015	Isafaa Rashad Mahmoud et al	To assess the attitudes of students and teaching staff toward e-learning	Research design – Descriptive n=90 teaching staff and 650 students Setting - Faculty of Nursing, Assiut University	Teaching staff and students were having positive attitude toward e- learning

Year	Author	Aim/objective	Methodology (research design, sample size and setting)	Findings
2020	Deepika Nambiar	To conduct online survey regarding teachers' and students' perception and experience related to online classes.	Research Design- Online survey method n= 70 teachers & 407 students Setting-various universities and colleges in Bangalore city.	The following areas are important for teacher and student satisfaction with online classes like quality and timely interaction between professor and students, technical support availability, structured online class modules and modifications to accommodate conduction of practical classes.
2020	Ulrica Langegard	To describe and evaluate nursing students' experiences of the pedagogical transition from traditional campus-based learning to distance learning using digital tools	Research design- combination of qualitative and quantitative design n=96 setting- Gothenburg, Sweden	The findings showed that the pedagogical transition to distance education reduced the possibility for student's social interaction in their learning process.
2018	Huei-Chuan Wei	To assess online learning perceptions and online learning readiness affect, student online learning performance, and course satisfaction	Research design - Descriptive study n=356 Setting – Taiwan	Student's computer and internet self-efficacy for online learning have a moderate effect on perception and satisfaction.
2016	Nancy P Wingo	To find out the benefits and challenges of teaching nursing courses online	Research design - Cross-case analysis n=21 Setting - Schools of nursing in the South Eastern United States	The study found the gap in perspective between group that indicate a need for institutions to address communication issues, training program, policy success, and satisfaction

This systematic review included 20 primary studies reporting the effect of online classes among nursing students and faculty members. Most included studies demonstrated a statistically significant effect on knowledge.[4] Only limited number of studies evaluated effect of online classes on nursing skill.[2] There were few studies that have shown the challenges and factors which may be associated with the successful implementation of online classes program.[2] .Online classes were also effective in bringing about the change in knowledge[2] among nursing students and nursing faculty, but there were limited data that present significant changes in skill [2] improvement. In the review majority of the studies have shown significant improvement in knowledge, and lesser number of the studies have shown significant skill improvement. The result of the study is applicable to nursing fraternity from different universities and colleges. As per one study, nursing students are ready to adopt online learning and are able to utilize in education, but they consider the difficulties with technical support. The study has many strengths. The review was based on a thorough search of available literature. The review includes experimental studies (RCT), non-RCTs, controlled before and after the implementation of an intervention, and controlled observational studies. To ensure the quality of data, article was screened properly and data extraction was done independently by both the authors to avoid subjective bias

Conclusion

The findings suggest that, in the present review, some evidence supports the provision of online class's implementation, particularly for undergraduate nursing students. The age of the nursing students also varied between the studies; hence, no conclusion can be drawn with the effect of age on online classes. Only two studies were reviewed which have included the challenges during online class's implementation, and the other two studies have included the factors effecting online classes. Thus, further research should be done regarding the factors which has positive effect on online class's

implementation; we should also do further research on the challenges that comes across during the online class's implementation so that policy development and the successful implementation of online classes program can be done.

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