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Review

Investigation of blended learning video resources to teach health students clinical skills: An integrative review

Elisabeth Coyne[a,*], Hazel Rands[a], Valda Frommolt[b], Victoria Kain[c], Melanie Plugge[a], Marion Mitchell[d]

[a] School of Nursing & Midwifery, Menzies Health Institute, Griffith University, 4131, Queensland, Australia
[b] School of Nursing & Midwifery, Menzies Health Institute Queensland, Griffith University, 4131, Queensland, Australia
[c] Menzies Health Institute Queensland, Griffith University, 4111, Queensland, Australia
[d] Menzies Health Institute Queensland, Griffith University and Princess Alexandra Hospital, Brisbane, Australia

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ABSTRACT

Objectives: The aim of this review is to inform future educational strategies by synthesising research related to blended learning resources using simulation videos to teach clinical skills for health students.
Design: An integrative review methodology was used to allow for the combination of diverse research methods to better understand the research topic. This review was guided by the framework described by Whittemore and Knafl (2005),
Data Sources: Systematic search of the following databases was conducted in consultation with a librarian using the following databases: SCOPUS, MEDLINE, COCHRANE, PsycINFO databases. Keywords and MeSH terms: clinical skills, nursing, health, student, blended learning, video, simulation and teaching.
Review Methods: Data extracted from the studies included author, year, aims, design, sample, skill taught, outcome measures and findings. After screening the articles, extracting project data and completing summary tables, critical appraisal of the projects was completed using the Mixed Methods Appraisal Tool (MMAT).
Results: Ten articles met all the inclusion criteria and were included in this review. The MMAT scores varied from 50% to 100%. Thematic analysis was undertaken and we identified the following three themes: *linking theory to practice*, *autonomy of learning* and *challenges of developing a blended learning model*. Blended learning allowed for different student learning styles, repeated viewing, and enabled links between theory and practice. The video presentation needed to be realistic and culturally appropriate and this required both time and resources to create.
Conclusions: A blended learning model, which incorporates video-assisted online resources, may be a useful tool to teach clinical skills to students of health including nursing. Blended learning not only increases students' knowledge and skills, but is often preferred by students due to its flexibility.

1. Background

The development of clinical skills across the health profession is a crucial component required for safe practice. The primary aim of clinical education is to facilitate health students' acquisition of both skill proficiency and professional socialization (Levett-Jones and Lathlean, 2009). Clinical skills need to be developed to a level of competence for safe patient care to fulfil the registration requirements for health practitioners (Australian Health Practitioner Regulation Agency, 2017; Coyne and Needham, 2012). Specially, high level interpersonal and communication skills are crucial to nursing practice, and are of paramount importance within nursing programs for optimum person-centred patient care (Australian Commission on Safety and Quality in Health Care, 2012; Yeonja et al., 2015).

A range of patient situations and clinical simulation scenarios offer opportunities for health students to improve their clinical and communication skills under supervision (Abelsson et al., 2016). In the university environment, health students' clinical skill acquisition can be enhanced by simulation including videos that depict real-world clinical situations (Yeonja et al., 2015). Simulation is the presentation of a realistic situation to simulate real life conditions without risk to the student or patient (Abelsson et al., 2016). Simulation also provides

* Corresponding author at: School of Nursing & Midwifery, Griffith University, Logan Campus, University Drive, Meadowbrook, QLD 4131.
E-mail addresses: e.coyne@griffith.edu.au (E. Coyne), v.frommolt@griffith.edu.au (H. Rands), v.kain@griffith.edu.au (V. Frommolt), m.plugge@griffith.edu.au (V. Kain), h.rands@griffith.edu.au (M. Plugge), marion.mitchell@griffith.edu.au (M. Mitchell).

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opportunities for developing critical thinking and understanding culture in a safe learning environment (Johnston et al., 2017; MacLean et al., 2017). Importantly, in order to ensure that health students link the relevance of theory to their future practice it is imperative that teaching methods provide supportive instruction for the development of clinical skills (Coyne et al., 2012). It is argued that traditional classroom based teaching methods fail to transfer crucial problem-solving techniques (Forbes et al., 2016). In contrast, videos and simulation that include problem-solving skills prepare health students for the complexities associated with their future professional role including provision of culturally appropriate care (Coyne and Needham, 2012; Johnsen et al., 2016; Johnston et al., 2017). Simulation is useful in providing students with patient scenarios without risk to patients (Berragan, 2014; Bland and Tobbell, 2016; Schiavenato, 2009) The content of videos allows for the demonstrations of clinical situations that undergraduate students are yet to experience; such as mental health nursing (Rigby et al., 2012), basic life support (Park et al., 2016), midwifery assessment (Sidebotham et al., 2014) thus providing them with a contextualized opportunity for learning.

The acquisition of clinical proficiency is a gradual process, and technology can assist in its development (Cardoso et al., 2012). Universities are responding to students' needs and are offering more flexible delivery and learning options to study online, off-campus and at a more convenient time for the individual (Sidebotham et al., 2014). Many students appreciate being able to study independently and at their location of choice (Smyth et al., 2012). This flexibility enables students to learn across various media platforms, where diverse electronic learning methods and communication approaches are possible (Glogowska et al., 2011).

However, one size does not fit all and students have differing preferred learning styles (Farley et al., 2011). One way to support individual student needs is to offer a pedagogical combination of both online and face-to-face education through the use of a “blended learning” approach. Blended learning refers to an educational approach that combines traditional classroom face-to face methods with online materials and activities (Garrison and Kanuka, 2004; Park et al., 2016). Blended learning provides opportunities for synchronous and the asynchronous delivery of information to personalize student learning (Kaur, 2013). Specifically, in this review of literature the use videos for the purpose of skill development within a health context were reviewed.

Although blended learning is considered crucial for today's health students' education (Walker et al., 2013), there are only a small number of studies which include the use of videos as a blended learning strategy to support clinical skills development. Therefore, the aim of this integrative review was to contribute to the knowledge on blended learning, in particular looking at video assisted learning materials in relation to health students' learning and clinical skills. For the purpose of this review the term ‘student’ refers to any health student, primarily undergraduate nursing students but also includes midwifery, medicine and postgraduate registered nurses. Specifically, this integrative review aimed to answer the research question “Does blended learning resources using video simulation enable interactive teaching of clinical skills for health students?” This synthesis of the literature will inform future use of blended learning as an educational strategy for teaching clinical skills.

2. Methodology

An integrative review methodology permitted the inclusion of all research designs, including experimental and non-experimental studies, and ensured a comprehensive examination of the research topic (Whittemore and Knafl, 2005). The authors evaluated the retrieved articles using the five stages of an integrative review as outlined by Whittemore and Knafl (2005): *problem identification*, *literature search*, *data evaluation*, *data analysis* and *presentation of findings*.

2.1. Study Selection Criteria

Searches were conducted by two authors (MP, EC) across SCOPUS, MEDLINE, COCHRANE and PsycINFO databases using the key words and MeSH terms: ‘clinical assessment’ OR ‘nursing’ OR ‘nurse’ OR ‘nursing skill’ OR ‘nursing student’ OR ‘health’ AND ‘blended learning’ OR ‘video’ OR ‘simulation’ OR ‘interactive’ OR ‘teaching’ OR ‘video assessment’ in August 2016. Searches were limited to peer reviewed journals, English language and published from 2006 to 2016. The key words were developed in consultation with a health librarian to ensure relevant manuscripts were included and identified the need to look more broadly across the health disciplines rather than only including nursing.

As stated previously, the definition for blended learning combined both face-to-face learning with online learning using video-assisted teaching methods (Garrison and Kanuka, 2004). Articles were included if they measured the effects of blended learning with the specific element of video-assisted teaching technique as a component of the study. The total database search revealed 874 records and a further 25 articles were identified through grey literature. Duplicate publications were removed leaving 562 articles. In the database search phase, title and abstract were reviewed for relevance by team members (EC, HR, VC, VF, and MP) resulting in a further 525 articles being excluded. In the next stage full articles was retrieved and screened for relevance, a total of 37 full text articles were reviewed and those excluded did not include both blended learning and video resources, or did not include the target population. Ten studies met all inclusion criteria for review (see Fig. 1).

2.2. Methods for Data Extraction

Data extraction was undertaken and included the following; *author*, *year*, *aims*, *design*, *sample including discipline*, *skill taught*, *outcome measures and findings*. The review process was designed and adapted with reference to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement (Liberati et al., 2009).The data were compiled into an excel spreadsheet to allow data comparison and synthesis.

2.3. Quality Assessment

Quality assessment was undertaken using the Mixed Methods Appraisal Tool (MMAT) – Version 2011, a critical appraisal tool that was chosen due to the heterogeneity of included studies (Pluye et al., 2011). The benefit of this appraisal tool is that it can be used to assess all research designs, through the use of a quality scoring system of zero, 25%, 50%. 75% or 100%, with a higher score indicating higher quality (Pluye et al., 2009; Pluye and Hong, 2014). Previous researchers support the content validity, reliability and efficiency of the MMAT tool (Pace et al., 2012). Three researchers [EC, MP, and VF] independently scored articles, and scores were compared to identify differences, which were resolved through discussion. All ten articles were included irrespective of their MMAT scores, as the researchers considered that the use of MMAT allowed for a description of the quality of the studies from which the evidence was gathered, further contributing to a comprehensive integrative review.

2.4. Data Analysis

The compilation of tables and comparative data analysis is suggested by Whittemore and Knafl (2005) as being supportive of a robust integrative review. Qualitative thematic analysis was conducted as a means to develop emergent themes from recurring categories and patterns from the included articles. Studies were read and analyzed independently by the authors, who separately identified the surfacing themes based on linkages of concepts; these were later compared to create predominant themes (Pluye and Hong, 2014).