

RESEARCH ARTICLE

EVIDENCE-BASED PRACTICES IN MENTORING STUDENT NURSES IN CLINICAL PLACEMENT: A META-ANALYSIS

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Abstract

Purpose: Mentoring is an essential variable in the learning process of student nurses. This study aimed to identify effective mentoring practices in the clinical placement of student nurses.

Design and methods: Systematic review and meta-analysis were conducted. The main databases used were PubMed, Cochrane Central Register of Controlled Trials, JBI Database of Systematic Reviews and Implementation Reports, CINAHL, and Medline. The risk of bias was assessed utilizing the JBI appraisal tool. The data were summarized and statistically analyzed using the Comprehensive Meta-Analysis version 3.0 software.

Results: Out of 17,946 records screened, six studies met the inclusion criteria. Peer and nurse-led mentoring practices were reported to have positive outcomes in the students' clinical placement. Meta-analysis revealed a statistically significant effect of mentoring in the students' clinical placement (SMD 0.357, 95% CI 0.038, 0.677, I² = 69.26%, p = 0.028). A subgroup analysis resulted in a statistically significant effect of mentoring by nurses and peers in the improvement of students' knowledge and skills (SMD = 0.426, 95% CI, 0.202, 0.650, I² = 0%, p = 0.000).

Conclusions: Mentoring can positively influence the interaction between a conducive clinical learning environment and positive learning outcomes. Specifically, this meta-analysis suggests that student nurses can benefit from peer and nurse-led mentoring in improving knowledge and skills. It is suggested that effective mentoring practices be utilized to inform the development of a student mentoring program.

Keywords: *Mentoring, students, clinical placement, meta-analysis*

Introduction

There is growing evidence in the literature that mentoring students in clinical placement, also known as clinical areas, maybe a viable strategy for producing more humane and caring nurses. This outcome can be achieved by providing learning opportunities congruent and aligned with the philosophy of care that underpins nursing practice (Ness et al., 2010). Implementing mentoring, however, cannot be appreciated if structures that support this strategy are unclear. Therefore, identifying mentoring practices can provide structure by shedding light on how mentors engage in the mentoring process (vanEps et al., 2006).

As an essential variable in clinical placement, mentoring promotes connectedness (Randolph & Johnson, 2008) and

student nurses' overall performance (Olaer, 2013). Despite the benefits, identifying effective mentoring practices becomes challenging due to the variations in mentoring approaches and the absence of a universal agreement in the structure and content of mentoring students, in particular (Jokelainen et al., 2011). Although systematic reviews on mentoring have been conducted, these studies did not focus on the clinical placement of student nurses (Abdullah et al., 2014; Jokelainen et al., 2006; Randolph & Johnson, 2008).

These observations widen the scope of attention in the mentoring process, highlighting the importance of identifying strategies that result in better learning outcomes (Neri, 2009). The identified

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gaps make it worthwhile to investigate studies on the structure of mentoring. Hence, this study sought to identify effective mentoring practices in the clinical placement of student nurses.

Methodology and methods

Search. The study employed systematic review and meta-analysis of RCTs and quasi-experimental studies involving mentoring practices in student nurses' clinical areas. The primary outcomes were the improvement in the knowledge and skills of students. Initial keywords used were "mentoring", "student", "nursing", "clinical placement", and "clinical practice". Similar terms such as "student nurse," "nursing student," "undergraduate," and "mentee" were used to expound the search. The terms "clinical setting," "clinical duty," "simulation laboratories," "hospitals," "clinics," "community health centers," "nursing homes," "related learning experiences settings," and "related clinical practice settings" were also included in the search process as the alternative terms of "clinical placement" and "clinical practice." The Boolean operator AND was utilized in combining the search of different terms and OR to expand the search of similar or alternative terms.

The databases searched were PubMed, Cochrane Central Register of Controlled Trials, JBI Database of Systematic Reviews and Implementation Reports, CINAHL, and Medline. A manual search was also performed in the repository of unpublished thesis and the following grey literature databases: Biomed Central, OpenGrey, EU Clinical Trials Register, and Clinical Trials.gov. Figure 1 showed the flow diagram of the study selection.

Selection Process. Title, abstract, and full-text screening were conducted. Two independent reviewers evaluated the methodological quality of the studies using the JBI critical appraisal tool for experimental studies. A Cohen's kappa value of 0.83, interpreted as a strong agreement of reviewers, was obtained after computing for interrater reliability. The data were extracted using the JBI form for experimental studies.

Data Synthesis. The data in the included studies were reported in means and standard deviations, making the Standardized Mean Difference (SMD) the preferred effect size (Borenstein et al., 2009). The SMD and accompanying 95% Confidence Intervals (CI) were combined using a

Figure 1. Flow diagram of study selection

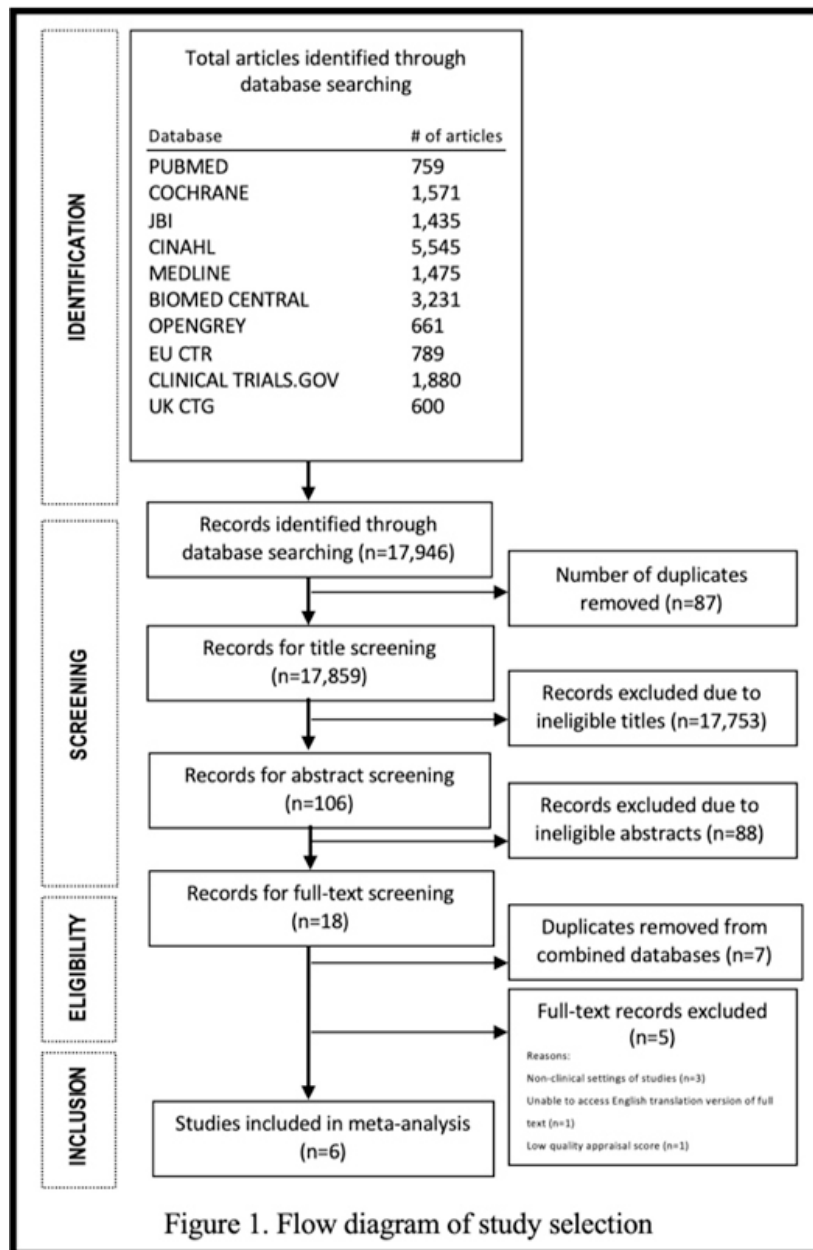


Figure 1. Flow diagram of study selection

DerSimonian and Laird (1986) random-effects model. The Comprehensive Meta-Analysis version 3.0 software at $p < 0.05$ level of significance was used for the statistical analysis. Statistical heterogeneity was explored using the I^2 statistic. The trim-and-fill analysis (Duval & Tweedie, 2000) was utilized to evaluate publication bias.

Results

Description of the studies. Six studies met the inclusion criteria. Three studies were conducted in the United States of America, and one each in Iran, Australia, and Taiwan. Two

Table 1. General description of the included papers

Author (s) and year	Country	Design	Sample size	Setting	Sample	Mentoring practice	Duration	Key findings or results
Ajorpaz et al. (2015)	Iran	Randomized controlled trial	60	Operating room	Nurses and Senior students	Nurse mentoring	2 months	Significant increase in knowledge and skills
Ford (2015)	USA	Quasi experimental	43	Extended Care Facility	Senior and Sophomore students	Peer mentoring	3 days	Significant effect on self-concept
Hunt & Ellison (2010)	USA	Quasi experimental	88	Skills laboratory	Senior and Junior students	Peer mentoring	2 days	Enhanced knowledge, confidence, and satisfaction
Lea et al. (2015)	Australia	Quasi experimental	79	Residential Aged Care Facility	Nurses and Sophomore students	Nurse mentoring	3 weeks	Significant increase in knowledge and enhanced learning environment
Li et al. (2011)	Taiwan	Quasi experimental	49	Clinical	Junior students	Peer mentoring	4 weeks	Significant decrease in stress reduction in the experimental group
Walker & Verklan (2016)	USA	Quasi experimental	37	Medical Surgical Ward	Senior and Sophomore students	Peer mentoring	3 weeks	Significant decrease in nursing situation-specific anxiety No significant decrease in general anxiety

research approaches were used, including one RCT and five quasi-experimental studies. Table 1 presented the general description of the included papers.

Mentoring practice. Two studies reported mentoring led by registered nurses (Ajorpaz et al., 2015; Lea et al., 2015). Four studies focused on mentoring by peers, specifically seniors (Ford, 2015; Hunt & Ellison, 2010; Walker & Verklan, 2016), and junior students (Li et al., 2011). Specifically, peer mentoring focused on coaching, teaching, supervising, supporting, modeling professionalism, socializing with the healthcare team, providing feedback, and support even after work through telephone or e-mail. Nurse-led mentoring emphasized the development of educational goals, orientation to the setting, guidance, and consultation, provision of summary and feedback, and providing liaison plans and critical reflection meetings.

Mentor selection and preparation. Ajorpaz et al. (2015) selected registered nurse mentors who are at least BSN degree holders and subjectively showed interest in mentoring. Walker and Verklan (2016) reported the selection of peer mentors by evaluating their grade point average, clinical decision making, and communication skills. Before the mentoring relationship, the mentors were required to complete the orientation on the goals, requirements, and attributes of mentoring, review basic skills, pass quizzes, and undergo training. Hunt and Ellison (2010)

reported that mentees were prepared by informing them of their mentors' role, providing instructions of their expectations, and instructing them to be receptive to mentor's suggestions.

Outcomes. A significant effect in increasing the knowledge and skills was reported (Ajorpaz et al., 2015; Lea et al., 2015). Hunt and Ellison (2010) also reported an improvement in knowledge, although not statistically significant. These studies involved a combination of peer mentoring and nurse-led mentoring. Secondary outcomes include an enhanced confidence and satisfaction of mentors and mentees, enhanced learning environment, statistically significant effect of mentoring in self-concept, reduction of stress, and nursing situation-specific anxiety.

Synthesis of the results. Six studies were included in the analysis. The studies showed a significant effect ($p = 0.028$) of mentoring in student nurses' clinical placement. The pooled SMD, using random-effect analysis among student nurses with a mentor and student nurses without a mentor, was 0.357 (95% CI 0.038, 0.677, Figure 2, Table 2). The trim-and-fill analysis showed less influence of publication bias (SMD = 0.260 (95% CI, -0.071 – 0.591)). The I^2 statistic showed moderate heterogeneity ($I^2 = 69.26\%$), prompting subgroup meta-analysis to determine the relationship between subgroup membership and effect size (Borenstein et al., 2009). The analysis remained significant

(SMD = 0.426, 95% CI, 0.202, 0.650, $p = 0.000$, Figure 3, Table 3) and heterogeneity was significantly reduced ($I^2 = 0\%$) after pooling studies that reported an improvement of knowledge and skills.

Discussion

This meta-analysis showed a significant effect of mentoring in the improvement of students' knowledge and skills. Subgroup analysis suggested that there is a significant effect of combined

mentoring offered by nurses and senior student peer mentors in the knowledge and skills of sophomore, junior, and senior students. Heterogeneity was reduced satisfactorily in the knowledge and skills subgroups, indicating that the studies in this subgroup analysis are highly comparable. The meta-analysis results can be interpreted with confidence.

This meta-analysis suggests that mentoring provides students with an opportunity to be nurtured and supported (Walsh, 2014). These learning opportunities can enhance their skill and

Figure 2. Forest plot of overall effect size of mentoring in the clinical placement of students

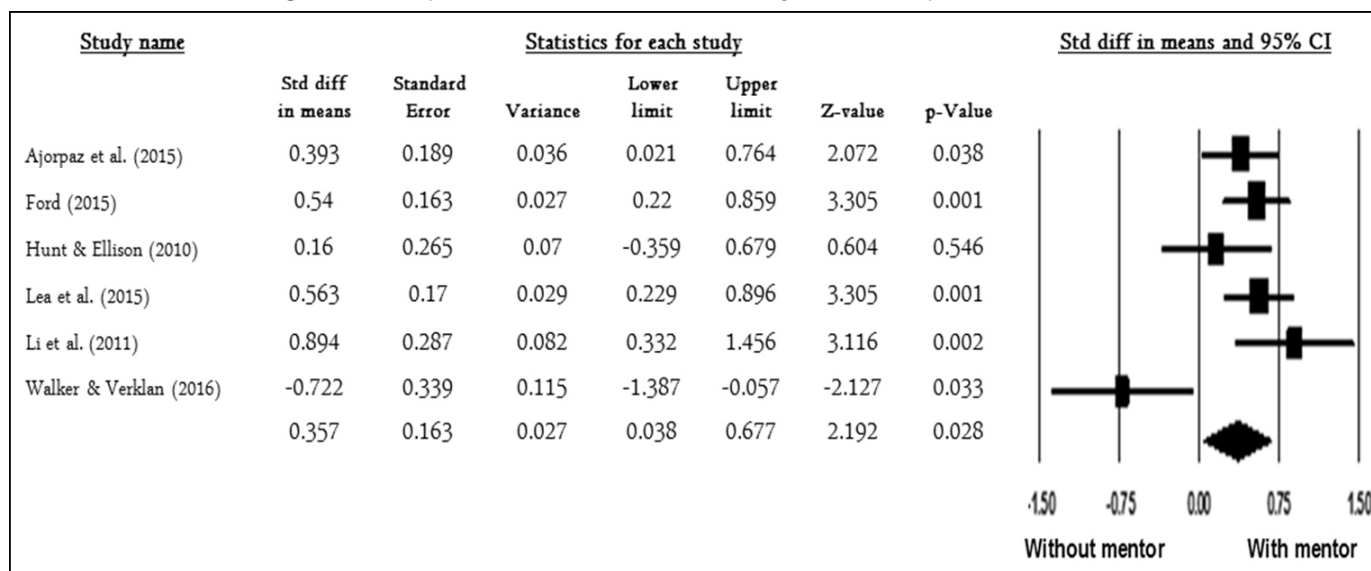


Figure 3. Subgroup analysis on the effectiveness of mentoring in improving knowledge and skills

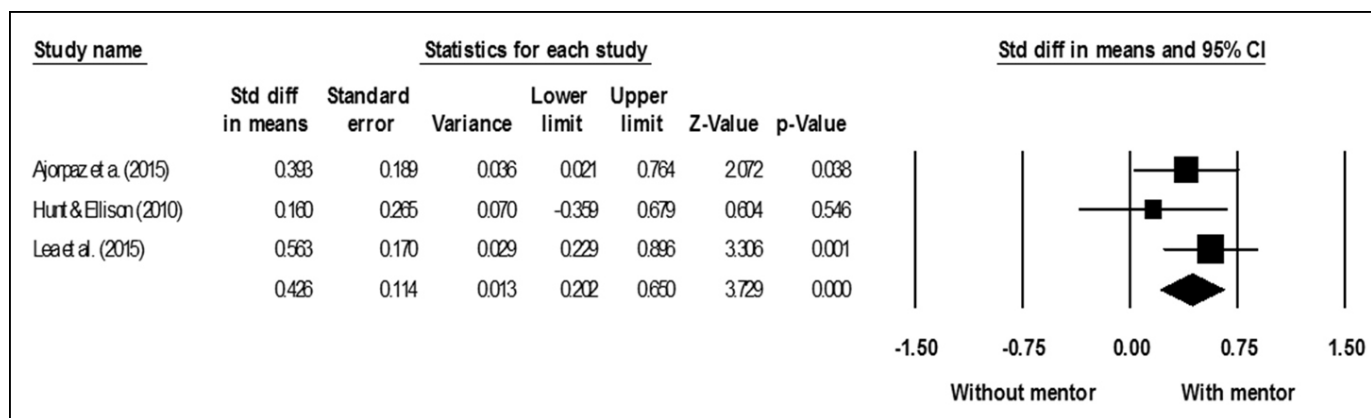


Table 2. Overall effect size of mentoring in the clinical placement of students

Effect size and 95% CI			Heterogeneity		Test of null	
Point estimate	Lower limit	Upper limit	Tau ²	I ²	Z-value	p-value
0.357	0.038	0.677	0.325	69.26%	2.192	0.028

Table 3. Effect size on the effectiveness of mentoring in improving in improving knowledge and skills

Effect size and 95% CI			Heterogeneity		Test of null	
Point estimate	Lower limit	Upper limit	Tau ²	I ²	Z-value	p-value
0.426	0.202	0.650	0.000	0%	3.729	0.000

knowledge acquisition and other learning outcomes (Henderson et al., 2011). In line with the result of nurse-led mentoring, senior student peer mentors' positive impact can be attributed to their theoretical and practical competencies that were developed and can be at par with beginning professional nurses. Through peer mentoring, senior students can demonstrate the capacity to teach and support other students with less knowledge and experience.

The results show that mentoring practices tend to be effective when delivered before and after the clinical exposure and not only during the actual clinical placement. As a process, mentoring goes beyond the student's ability to perform and master a skill during actual patient care. This point is supported by another study where students who received support outside the clinical placement can develop critical thinking and diagnostic reasoning (Papathanasiou et al., 2014).

The synergistic outcome of mentors' knowledge, skills, and experiences allows them to gradually assist their mentees in moving from a myopic view to a position where understanding is developed from the multiple lenses of knowing. As students prepare to become caring professionals, the emphasis on nursing education relies not only on the scientific process of understanding nursing concepts but also considers the humanness and value of care. This caring experience can become transformative as students can translate a caring learning experience into their practice. Studies have shown that the caring environment received by students allows them to think and act accordingly, resulting in higher academic performance (Kim et al., 2013). Levett-Jones et al. (2007) assert that this support is valuable as it stimulates the students' independence and self-directed learning. This study suggests that mentoring relationships support students' holistic learning experience and equip them with knowledge and skills as they transition in becoming a professional nurse.

The author recognizes limitations in this study. First, only a few studies fulfilled the inclusion criteria. Second, the search was restricted to studies available in the English language. Finally, studies with similar outcomes used different measurement tools. The variety of tools used to measure the effect of mentoring on student nurses' knowledge and skills makes it prone to measurement inconsistencies.

Conclusions and Recommendations

Mentoring can positively influence the interaction between a conducive clinical learning environment and positive learning outcomes. Specifically, this meta-analysis suggests that student nurses can benefit from peer and nurse-led mentoring in improving knowledge and skills in their clinical placement. This

study further emphasizes the critical role of a holistic approach in transforming students to become caring professionals. The presence of supportive peers and clinical educators can contribute to the personal and professional development of students.

This study recommends that the schools of nursing revisit their programs on clinical educators' supervision to their students in clinical placement. The learning outcomes of students can be enhanced by conducting orientation and goal setting before clinical duties and monitoring even after the clinical rotation. Building the capacity of students as peer mentors can be included in the student programs of nursing schools. This strategy suggests that this study's results serve as one of the bases to inform the development of a student mentoring program.

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Note: References marked with an asterisk indicate studies included in the meta-analysis.

ABOUT THE AUTHOR



Mark Job G. Bascos, PhD, RN, earned his nursing degrees at Saint Louis University School of Nursing, Baguio City. He graduated in Bachelor of Science in Nursing in 2007, Masters in Nursing, Major in Adult Health in 2011, and Doctor of Philosophy in Nursing in 2018. His research interests include evidence-based practice, adult health nursing, and teaching-learning strategies.

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“Nurses and midwives play a vital role in providing health services. These are the people who devote their lives to caring for mothers and children; giving lifesaving immunizations and health advice; looking after older people and generally meeting everyday essential health needs. They are often, the first and only point of care in their communities. The world needs 9 million more nurses and midwives if it is to achieve universal health coverage by 2030. **That's why the World Health Assembly has designated 2020 the International Year of the Nurse and the Midwife.**”

--WHO, 2020