The effects of teaching methods on academic motivation in nursing students: A systematic review

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Abstract:

Motivation is one of the key factors in educational achievement. Like any other field of study, motivation in nursing is highly critical. The instructor's knowledge about the teaching methods that are effective in academic motivation of students enables them to adopt proper measures to improve the teaching efficiency. The present paper is a systemic review of the efficiency of instructional interventions in improvement of academic motivation in nursing students. The published papers related to the study from 2000 to February 2020 were searched at different databases such as PubMed, Scopus, Web of Science, PsycInfo, and ERIC. To examine the quality of the articles, critical appraisal instrument for reports of educational interventions was used. Totally, 18 articles entered the study for structured review. The majority of the articles reported that educational interventions improved academic motivation in nursing students. The effective teaching methods described in the reviewed articles that led to an improvement in academic motivation were simulation, case-based learning, cooperative learning, learning contract, peer assessment, and self-assessment using video typing. As the findings showed, implementation of applied and participatory methods in teaching process improved the academic motivation of nursing students. Therefore, using such methods, nursing instructors can improve the academic motivation of their students.

Keywords:

Motivation, nursing, students, systematic review, training techniques

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Introduction

Academic motivation is a key aspect of learning and educational performance of students. It has both direct and indirect effects on learning process.[1] The importance of academic motivation lies with the fact that motivated students tend to be more engaged with learning activities and achieving success in educational environments. Motivated students pay more attention to curriculum activities and tend to choose proper learning and studying styles or ask for help if needed.[2-4] Academic motivation in nursing education is as important as or even more important than that in other fields of studies.[5] The provision of quality nursing services entails training nursing students with enough motivation to receive a great volume of information and skills, as well as a will to continuously learn and re-learn as the field develops.[6] The high rate of dropouts among nursing students and the need for highly motivated nurses is a major concern for any health system.[7]

Taking into account the importance of academic motivation in nursing education, it is imperative to survey and identify the effective solutions and interventions to improve the academic motivation of students. It is possible to improve motivation in nursing students through proper interventions. Identifying the effective interventions to improve academic motivation in nursing students gives more space to the instructor to choose proper

measures and learning–teaching activities, to have effective interaction with learners, and eventually improve the efficiency of teaching.[8]

One of the main roles played by instructors is to motivate students through the design and presentation of education contents.[9] Time, place, and educational condition dictate what method is the best.[10] Efficient teaching needs to be regular, motivating, reviving, and innovative and improve performance in students.[11]

Taking into account the importance of academic motivation in nursing students and that a systematic review study is a good way to organize, summarize, and determine the available contents about a topic, the present study is a systematic review of the efficiency of the instructional intervention in improvement of academic motivation of nursing students.

Materials and Methods

The review was carried out using the Performed Reporting Items for Systematic Reviews and Meta-Analyses checklist.[12] The study was carried out as a systematic review through reviewing online papers about the efficiency of teaching method interventions in academic motivation in nursing students.

Search strategy
Published articles between 2000 and February 2020 were searched at different databases including PubMed, Scopus, Web of Science, PsycInfo, and ERIC, using relevant MeSH terms. All searches were done using "advanced search" option, which enables searching different combinations of search queries and finding more pertinent articles. The detailed search for each specific database is shown in Table 1.

Eligibility criteria
The eligibility criteria in terms of study population, type of study, intervention, and the outcomes were nursing students (all programs), interventional, educational interventions related to teaching and learning method, and academic motivation, respectively. Exclusion criteria were descriptive and noninterventional studies and studies with outcomes other than academic motivation. In addition, the articles that had basic methodological problems were excluded. The eligibility and exclusion criteria are listed in Table 2.

Article selection process
The primary search resulted in 1752 papers. In addition, 25 papers were found through manual search in the references list. After removing the duplicates, title and abstract of the rest of the papers were studied and irrelevant cases were removed. At the end of this stage,

58 articles remained in the study were examined based on the eligibility criteria and in terms of quality. Forty papers were excluded based on eligibility and exclusion criteria, including 15 papers due not assessing academic motivation, 17 papers as noninterventional studies, 3 papers due covering issues irrelevant to teaching methods, and 2 papers because of unavailability of the English full text. Moreover, three other papers were excluded through quality assessment process due to low quality of methodology. Finally, 18 papers entered the systematic review process [Figure 1].

To examine the quality of the papers, critical appraisal instrument for reports of educational interventions was used. The instrument is designed and validated by Morrison *et al.*[13] for educational interventions. It is comprised of nine statements designed as three alternative questions (yes, no, and no idea). Since the designers have determined no scoring system for the tool, the authors decided that five "yes" answers would be enough to ensure the quality of a paper. Based on this, three papers were excluded for low methodological quality. Figure 2 illustrates the results of quality assessments.

Data extraction
After quality assessment, the data of papers including authors' name, year of publication, country, objective, sample size, sampling method, type of study, motivation measurement method, type of intervention, intervention method, and a summary of the results are collected and listed in Table 3.

Results

Totally 18 articles were selected for the systematic review. Table 3 lists the information of these 18 articles.

General information of the articles
The sample group size ranged from 32 to 184. The majority of the studies used both genders in their sample
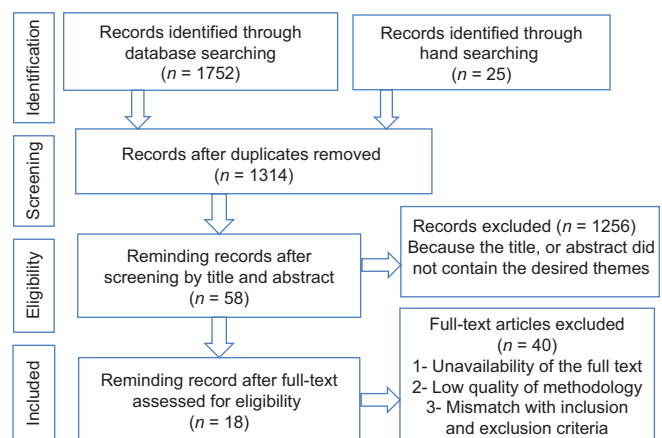

Figure 1: PRISMA flow diagram of the review process

Table 1: Search strategy in databases

Databases	Search strategies
PubMed	#18 Search (((((((((teaching[MeSH Terms]) OR education[MeSH Terms]) OR training[Title]) OR simulation training[MeSH Terms]) OR intervention[Title])) AND (((((((((motivation[MeSH Terms]) OR motivate[Title]) OR motive[Title]) OR engage[Title]) OR encourage[Title]) OR desire[Title]) OR provocation[Title]) OR interest[Title]) OR inclination[Title])) AND Students, Nursing[MeSH Terms]
	#17 Search (((((((((motivation[MeSH Terms]) OR motivate[Title]) OR motive[Title]) OR engage[Title]) OR encourage[Title]) OR desire[Title]) OR provocation[Title]) OR interest[Title]) OR inclination[Title]
	#16 Search (((((teaching[MeSH Terms]) OR education[MeSH Terms]) OR training[Title]) OR simulation training[MeSH Terms]) OR intervention[Title]
	#15 Search Students, Nursing[MeSH Terms]
	#14 Search inclination[Title]
	#13 Search interest[Title]
	#12 Search provocation[Title]
	#11 Search desire[Title]
	#10 Search encourage[Title]
	#9 Search engage[Title]
	#8 Search motive[Title]
	#7 Search motivate[Title]
	#6 Search motivation[MeSH Terms]
	#5 Search intervention[Title]
	#4 Search simulation training[MeSH Terms]
	#3 Search training[Title]
	#2 Search education[MeSH Terms]
	#1 Search teaching[MeSH Terms]
Scopus	(((KEY (teach* OR educat* OR tain*)) AND (KEY (motiv* OR engage OR encourag* OR desire OR provocat* OR interest)) AND (TITLE (nurs* AND student*))
Web of science	# 4 - #3 AND #2 AND #1
	# 3 - TI=(nurs* AND student*)
	# 2 - TI=(motiv* OR engage OR encourag* OR desire OR provocat* OR interest)
	# 1 - TS=(teach* OR educat* OR tain*)
PsycInfo	(Teach* OR educat* OR train* OR intervention) AND (motivation OR motivate OR motive OR engage OR encourage OR desire OR provocation OR interest) AND "nursing student*"
ERIC	(Teach* OR educat* OR train* OR intervention) AND (motivation OR motivate OR motive OR engage OR encourage OR desire OR provocation OR interest) AND "nursing student*"

Table 2: Eligibility and exclusion criteria

Criteria	Eligibility	Exclusion
Type of study	Original papers published in creditable scientific journal and dissertations defended in creditable universities Interventional studies including experimental, quasi-experimental, before and after, single group, mixed methods studies (with intervention like action research)	Papers represented in a conference, as a chapter of book, noninterventional, descriptive, observational studies, and so on
Objective of study	Studies aimed at determining the effect of an intervention in teaching method on academic motivation of nurses	Studies aimed at determining the effect of other interventions on nonnursing students
Type of measured outcome	The outcomes pertinent to motivation of nursing students including academic motivation, learning motivation, achievement motivation, and the like	Any outcomes unrelated to motivation
Type publication	Full text available	Full text unavailable
Study population	Undergraduate and Postgraduate students of Nursing	Students in fields other than nursing
Publication time	From 2000 to 2020	Beyond the time limit

group; however, girls were the majority in all studies. The majority of the studies were on undergraduate students and mostly on students in the 2nd and 3rd years.

Motivation assessment tools in the majority of the studies were Instructional Materials Motivation Survey,[14-17] Learning Motivation Scale,[18] Motivated Strategies for Learning Questionnaire,[19-23] Harter's Academic Motivation Questionnaire,[24,25] Intrinsic Motivation Inventory,[26] and Researcher Designed Questionnaires.[27-31] The majority of the studies supported validity and reliability of the tools. Some of the studies used semi-structured interviews along with a questionnaire for data analysis.[20,30]

Type of studies

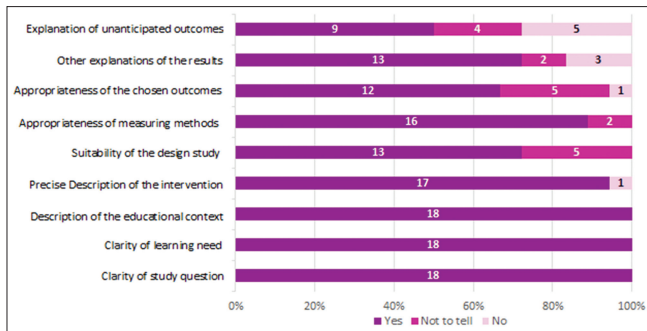The majority of the studies were quasi-experimental studies with control and intervention groups and pretest/

Figure 2: Quality of included studies

posttest design.[15-18,20,23-25] In addition, some studies were experimental[22,26,28] and quasi-experimental with posttest design.[19,27,29] There were also two quasi-experimental studies with one group and before/after design.[14,21] Moreover, Kuznar study[20] was a mixed method and Chien *et al.*'s study[30] was an action research.

The majority of the studies used a control group to control interruptive variables except for Park *et al.*, Roh and Kim, and Chien *et al.* studies.[14,21,30] The control group in most of the studies was taught through traditional methods or lecturing.

Participants in the majority of studies were selected through convenient sampling, and the participants were grouped into intervention and control groups randomly.

In some studies, the intervention and control groups were from two different colleges[19,20,27] or at different terms.[15,29]

Type of interventions
Instructional interventions to improve motivation in nursing students were based on student-centered approaches that were categorized into three categories:
1. Applied teaching methods including high-quality simulation and using standard patient,[14,19-22,26] designed game simulation,[28] mobile-based video learning,[17] case-based learning,[15] problem-based learning,[21,27] and self-assessment using video typing[16]
2. Participatory teaching methods including cooperative and team-based learning,[23-25,29] peer review,[18] and learning contract[30]
3. Remote teaching including virtual clinical excursion[26] and e-learning.[31]

Most of the interventions were related to simulation and high-quality human patient simulation in particular.

Efficiency of the interventions
The majority of the studies reported that the instructional interventions led to an improvement of academic motivation in nursing students. In addition, the mean score of academic motivation before and after the intervention in the intervention groups changed significantly compared with the control groups. The effective instructional interventions that improved the academic motivation of students were simulation with high quality and using standard patient, mobile-based video learning, case-based learning, game simulation, self-assessment using video typing, cooperative and team-based learning, learning contract, and peer assessment.

Remote learning methods including e-learning were not effective in improvement of motivation in students despite the fact that they empower students and bring independence to them compared with face-to-face methods like lecturing.[31] In addition, according to Dykes,[26] virtual clinical excursion was not effective in academic motivation of students compared with more realistic methods like human patient simulation, although it improved self-efficacy in the students.

Roh and Kim[21] demonstrated that problem-based learning used along with simulation improved motivation in nursing students. However, without simulation, it did not have a significant effect on motivation of students.

Discussion

The effects of interventions related to teaching on academic motivation of nursing students were reviewed. The reviewed studies showed that using applied and participatory teaching methods (including high-quality simulation using standard patient and game simulation, mobile-based video learning, case-based learning, self-assessment using video typing, cooperative learning, learning contract, and peer assessment) had a preferred effect on academic motivation in nursing students.

Application of the taught materials in professional life was one of the factors effective in the growth of learning motivation in the students.[3] According to Jones's academic motivation theory, to create academic motivation in students, instructors need to create opportunities to engage students with using the instructional materials in practice and in the real world.[2] The review showed that the goal of the majority of studies was to improve academic motivation by emphasizing on using the materials in real world through simulation, game, case study, and problem-solving. One of the applied teaching methods that were mentioned by several studies as an effective method to improve the academic motivation of students was high quality or close to reality simulation.[19-21] Simulation refers to activities that mimic the realities of clinical setting. It is designed to demonstrate processes, decision-making, and critical thinking using techniques like role-playing and

Table 3: Summary of reviewed studies

Author(s)/year	Aim of the study	Main findings
Sanaie *et al*., 2019	To compare the effect of Jigsaw teaching strategies and lecture on the nursing students' self-regulated learning and academic motivation	The mean scores of self-regulated learning and academic motivation were significantly higher in Jigsaw group than that of the lecture group (*P*=0.000)
Sarikoc *et al*., 2017	To assess the effect of using standardized patients on the motivation and perceived learning of the nursing students	Posttest scores of motivation and perceived learning were significantly higher in the experimental group compared to pretest scores and the scores of the control group (*P*=0.001).
Park *et al*., 2017	To evaluate the effect of simulation teaching strategy on critical thinking, self-efficacy, and learning motivation of nursing students	Students showed significant improvements over time in learning motivation (*P*<0.001)
Lee *et al*., 2016	To examine the effects of a mobile-based video clip on learning motivation, competence, and class satisfaction in nursing students	The intervention group showed significantly higher levels of learning motivation and class satisfaction than did the control group (*P*=0.003)
Fawaz and Hamdan-Mansour 2016	To examine the effect of using high-fidelity simulation on clinical judgment and motivation of nursing students	The intervention group had a higher mean score of motivation than the control group (*P*<0.001)
Yoo and Park 2015	To assess the effects of case-based learning on communication skills, problem-solving ability, and learning motivation in nursing students	The intervention group showed significantly greater motivation than the control group (*P*<0.001)
Whittaker 2015	To compare the effects of TBL with traditional IL learning, on self-regulated online learning outcomes of nursing students	The TBL group demonstrated a significantly higher percentage (*P*<0.001) of self-regulated learning activities than the IL control group
Roh and Kim 2015	To assess the effect of PBL and simulation on motivation of nursing students	There was no significant difference between motivation scores before and after PBL sessions, but there was a significant increase of motivation scores after simulation sessions (*P*<0.01)
Gandhi *et al*., 2015	To compare traditional and modern teaching strategies on learning perception of nursing students	Modern teaching strategies were significantly (*P*<0.05) effective in enhancing the self-directed learning and motivation for learning in students
Moonaghi *et al*., 2014	To compare the effects of cooperative learning method to lecture method on the motivational beliefs and self-regulating learning strategies	The scores of motivational beliefs and self-regulating strategies in intervention group were significantly more than lecture group (*P*<0.05)
Mogharab *et al*., 2013	To compare the effects of education through TMTD and lecture on nursing students' learning and motivation	The mean of academic motivation scores in the intervention group was higher than the control group (*P*=0.001)
Navidad 2013	To evaluate the effect of devised games-simulations on motivation and achievement of nursing students in mathematics	The score of posttest motivation was significantly higher in the experimental group than in the control group (*P*=0.02)
Yoo and Chae 2011	To investigate the effects of video-based peer review on communication skills and learning motivation among nursing students	The learning motivation of intervention group was significantly higher than control group (*P*<0.001)
Mehrdad *et al*., 2011	To compare the effectiveness of e-learning and face-to-face methods in nursing education	Students reported better capability and independency in e-learning method and higher scores in effectiveness on learning and motivation in lecture method
Dykes 2011	To compare the effects of the HPS with virtual clinical excursion on self-efficacy and intrinsic motivation of nursing students	Overall motivation scores were significantly (*P*<0.001) higher for HPS than for VCE, both types of simulation were motivational and effective teaching methods
Yoo *et al*., 2010	To assess the effects of self-assessment using a video recording of Foley catheterization on students' competence, communication skills, and learning motivation of nursing students	The intervention group showed significantly greater motivation than the control group (*P*=0.018)
Kuznar 2009	To assess the effects of high-fidelity HPS on self-efficacy, motivation, and learning of first-semester nursing students	Extrinsic motivation, learning beliefs and self-efficacy of intervention group were significantly increased after simulation
Chien *et al*., 2002	To evaluate the use of learning contracts during a mental health clinical placement with cohort nursing students	Students' autonomy and motivation in clinical learning increased through the use of learning contracts

TMTD=Team member teaching design, PBL=Problem-based learning, TBL=Team-based learning, IL=Instructor-led, HPS=Human patient simulation, VCE=Virtual clinical excursion

using learning aid tools like videos or interactive models.[32] High-quality simulation fills the gap between theory and clinical setting and creates an opportunity where the students can employ theoretical knowledge in practice. Through this, the learning process is facilitated and academic motivation of nursing students is improved.[19]

Educational games are one type of simulation, and according to Navidad, they have a positive effect on motivation of nursing students and their success in mathematics.[28] Using video game can help the process of transferring knowledge and skills to nursing students and, at the same time, creates interest and vitality in

the students. Consequently, students will have more motivation for learning.[33]

Among various technology resources, video clips are the most effective for knowledge acquisition.[34] Application of mobile-based video clips in nursing skill education increases accessibility to these videos and improves learning outcomes. These videos simulate nursing procedures and promote clinical skills, learning motivation, and satisfaction of nursing students.[17]

Another applied approach to teaching method was case-based learning. Yoo and Park mentioned this as one of the effective teaching methods to motivate nursing students.[15] Through this, the teacher helps the students to solve case-based problems that might happen in the real world, and through this, abstract knowledge is used in practice.[35] Therefore, case-based learning triggers self-guided learning, problem-solving, interest, curiosity, and inner attention in the students. It also improves active participations, self-efficacy, and learning motivation consequently.[15,36]

Giving students the opportunity to Learn through interaction with each other was another motivational intervention. Participatory and team learning has been reported by several studies as an effective method to improve academic motivation in students.[23-25,29] Participatory learning is a student-centered method where the learners work together in small groups to achieve shared objectives.[23] Team and group works are key educational strategies in nursing education that can create and improve cooperative attitudes, social skills, and professional skills in nursing students.[25] Through higher motivation in the learning process and improving interactions among the students, this method leads to a higher self-guided learning and motivation.

Peer review was another participatory approach that improved academic motivation in students. Yoo and Chae[18] showed that peer review based on recorded video of students' performance improved learning motivation and communicational skills in nursing students. Peer review is a comprehensive evaluation of learning performance and activities by peers. It is a student-centered method and, while improving participation of the learner, motivates them to take part in class activities and discussions.[37] Peer review is an effective process both for learning and evaluating.[38] Peer review process not only measures the outcomes of learning but also functions as a learning method that motivates the active participation of the learners in learning process.[39]

Learning contract was another intervention that according to Chien *et al*.[30] led to a higher motivation in students. Learning contract is a written agreement between the instructor and student clearly highlighting what the student needs to do to achieve a specific learning outcome.[30] It is a teaching method that motivates independent learning in students[40] so that they are motivated to achieve higher independence and enjoy the right to choose as far as learning and fulfilling the learning needs are concerned.[30] Customization of education that takes place in contract learning and the mutual respect and trust between instructors and teachers improves self-guided learning and learning motivation in students.[41]

Despite the benefits of virtual teaching and e-learning, the reviewed studies reported no positive outcomes by such methods in terms of academic motivation in students.[31,42] One reason for this might be the soulless, artificial, and apathetic nature of online education, which is rooted in the absence of a direct relationship between the instructor and learner.[31] Taking these into account, e-teaching planners need to create an opportunity for interaction between the instructor and students in the virtual world such as providing feedbacks to students and live video conference between the instructor and students. Through this, the students are motivated while enjoying the benefits of e-learning.

Limitation
The study had some limitations. Given that the studies on the effect of teaching methods on motivation of nursing students were different in terms of type of intervention, outcomes, and study design, it was not possible to carry out meta-analysis. In this study, only English-language studies were selected and limited databases were searched. Because of language and availability limitations, some studies may be missing.

Despite the benefits of virtual teaching and e-learning, this method did not have a positive effect on students' motivation, and therefore, it is suggested that studies be conducted to design more attractive e-learning for motivating nursing students.

Conclusion

The review revealed the teaching methods effective in academic motivation of nursing students. The majority of such methods focused on applicability of the contents and participation of the students. As the results recommended, the instructors can use novel student-centered approaches based on the capabilities of the leaners to motivate and activate the students in the learning process and improve self-guided learning.

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Conflicts of interest

There are no conflicts of interest.

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