

Original Article



Continuing professional development based on blended learning to combat occupational stress in nurses

Ehsan Toofaninejad¹, Fatemeh-Zahra Mohammadi-Aghdam², Samane Babaei², Masomeh Kalantarion^{2*}

¹Department of E-Learning in Medical Sciences, School of Medical Education and Learning Technologies, Shahid Beheshti University of Medical Sciences, Tehran, Iran

²Department of Medical Education, School of Medical Education and Learning Technologies, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Article info

Article History:

Received: September 3, 2025

Revised: October 27, 2025

Accepted: October 27, 2025

published: January 27, 2026

Keywords:

Continuing professional development, Blended learning, Occupational stress, Nursing

Abstract

Background: In a demanding work environment, nurses face significant occupational stress, which negatively impacts job satisfaction, self-efficacy, and patient care quality. To address this, the study investigated the effectiveness of a continuing professional development (CPD) program titled "Combating Occupational Stress," utilizing a blended learning approach through a flipped classroom model.

Methods: This one-group pretest-posttest quasi-experimental study was conducted in an educational hospital in Tabriz in 2023. It involved 30 nurses from internal and surgical wards, selected via convenience sampling. The program consisted of six sessions over three weeks, focusing on strategies to combat occupational stress. The Nursing Stress Scale was administered before and after the intervention to assess stress levels, while a standard satisfaction questionnaire evaluated the effectiveness of the educational strategy.

Results: Results showed that nurses had a high level of occupational stress before the program (199.1 ± 4.34). Post-intervention, there was a significant reduction in stress across all dimensions, with a mean score of 86 ± 3.1 ($P < 0.001$). Additionally, 80% of participants reported high satisfaction with the educational approach.

Conclusion: These findings underscore the positive impact of innovative health education programs on reducing job stress among nurses, enhancing their ability to manage occupational challenges. The study advocates for the adoption of modern teaching methods and technologies tailored to nurses' educational needs, promoting a supportive work environment that improves professional development, patient care, and overall health system effectiveness.

Introduction

Nursing is the cornerstone of hospital institutions, providing essential continuous patient care. This vital role exposes them to numerous occupational risks, particularly psychosocial risks.¹ Occupational stress, defined as job-related stressors widely recognized as stressful, which adversely affect quality of life and health, is linked to workload pressure, patient contact, life-and-death responsibilities, and technological advancements.^{2,3} The National Institute for Occupational Safety and Health identifies nursing as one of the most stressful healthcare professions.⁴

Given the high prevalence of stress, training and equipping nurses with the necessary skills to combat occupational stress through continuing professional development (CPD) programs is crucial.⁵ CPD is a lifelong learning process that provides health care staff with

opportunities to gain new insights in their professional career.⁶ Training programs can enhance individuals' ability to reduce stress and adapt effectively.⁷

CPD may lead to new teaching approaches for training health care professionals. Most of the CPD courses are held using an inactive lecture, which causes fatigue and a lack of interaction.⁸ Nurses, as individuals who are mostly engaged in clinical fields, are interested in interaction to share real experiences and cases in their job.⁹ Teaching strategies with more interactive and innovative experiences enhance learning and lead to preparation for the future challenges of the profession.¹⁰ Exploring new educational approaches, such as blended learning, which integrates information and communication technology with the traditional classroom, can enhance employee empowerment and reduce stress. E-learning environments provide benefits like rapid feedback,

*Corresponding author: Masomeh Klalantarion, Email: kalantarion65@gmail.com

© 2026 The Author(s). This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, as long as the original authors and source are cited. No permission is required from the authors or the publishers.

learner-paced availability, and fear-free learning, boosting motivation and skills.^{11,12}

The flipped classroom is one of the new teaching methods, which is a blended learning approach in which educational content is prepared using modern technologies outside the class in the form of video, multimedia, and audio files. Then, in the in-person class, based on the content presented in advance, learners discuss and exchange ideas on cases and scenarios to solve problems in small groups.¹³ This can improve self-determination and provide learner-centeredness, active learning, and problem-based learning.¹⁴ However, few studies have evaluated the efficacy of a flipped classroom model specifically for stress management in practicing nurses, highlighting a gap that this study aims to address.

Given the necessity mentioned, this study aimed to investigate the effectiveness of a CPD course entitled “Combating Occupational Stress” through blended learning via a flipped classroom on the level of occupational stress in nurses and also to evaluate their satisfaction with this educational strategy. In case of acquisition of added value in the results, organizers are expected to apply active and innovative educational approaches in combination with educational technologies to address such occupational and professional issues that has a significant impact on the health care system.

Methods

Study design and setting

A quasi-experimental study (one-group pretest-posttest) with a pre/post-intervention design was conducted in August 2023 at an educational hospital in Tabriz, Iran.

Study participants and sampling

Thirty nurses from internal and surgical wards were enrolled via convenience sampling. As this sampling method was limited to a single center, it may affect the generalizability of the findings. Inclusion criteria were: 1) a bachelor’s degree in nursing or higher, 2) willingness to participate, 3) over one year of clinical experience, 4) no employment at other healthcare centers, and 5) no prior experience with blended or flipped learning. Exclusion criteria were: 1) a history of mental disorders, 2) prior psychiatric hospitalization, 3) use of medications affecting mental function, and 4) failure to complete the educational sessions or questionnaires.

Data collection tools and techniques

Instruments

Demographic questionnaire: This collected data on age, gender, and educational level.

Nursing Stress Scale (NSS): The revised NSS-57 scale, developed by Gray-Toft and Anderson (1981), was used to assess occupational stress.¹⁵ Its 57 items across nine dimensions are rated on a 5-point Likert scale (1: no stress; 5: not part of my duties). Total scores range from 57 to

285, categorized as low (57-114), moderate (114-171), or high stress (> 171). The scale has established validity and a high Cronbach’s alpha of 0.96.¹⁶

Satisfaction questionnaire: A standardized 15-item questionnaire assessed satisfaction with the flipped learning method using a 5-point Likert scale. Total scores (15-75) indicate low (15-35), moderate (36-55), or high (56-75) satisfaction. It demonstrated a Cronbach’s alpha of 0.84.¹⁷

Educational intervention

A blended learning approach via a flipped classroom was implemented. Six educational contents, produced and validated by professors and content experts, were formatted into podcasts, PowerPoints, and videos. Content was uploaded every three days on the Eitaa virtual platform. Nurses had three days to study each module. Weekly in-person sessions were then held to discuss the content from the two sessions. A facilitator with a PhD in Medical Ethics and over 15 years of experience guided case-based discussions in small groups. The educational content—such as communication skills, ethics, and legal aspects—was specifically selected to align with the nine dimensions of occupational stress measured by the NSS-57, including workload, conflict with physicians, and emotional demands. The first session included an introduction, an explanation of the method, and an unannounced pre-test (NSS-57) to establish a baseline stress level. In the final session, a post-test (NSS-57) was administered, and the satisfaction questionnaire was completed (Table 1).

Statistical analysis

Quantitative variables were expressed as mean and standard deviation; qualitative variables as frequency and percentage. The Shapiro-Wilk test assessed normality. Paired t-tests analyzed pre-/post differences in NSS scores. Relationships between test scores and demographics were examined using one-way ANOVA for categorical variables with more than two groups. Data were analyzed using SPSS version 26, with a significance level of $P < 0.05$.

Results

Thirty nurses were included in the study, and all of them entered the analysis process. The age distribution was as follows: 6.7% were under 25 years, 20% were between 25–34 years, 26.7% were between 35–44 years, 26.7% were between 45–54 years, and 20% were 55 years or older. Of the participants, 43.3% were female, and 56.7% were male. The educational level showed that % 50 had a B.Sc., %43.3 M.Sc., and %6.7 Ph.D.

The engagement with the asynchronous online materials (podcasts, videos, PowerPoints) was not systematically tracked via the virtual platform. Therefore, while it was assumed all participants completed the pre-class work as instructed, this was not formally verified

Table 1. Outline of the educational contents in the CPD program of combating occupational stress

Sessions	Type	Title
Session 1	Video	Necessity of communication, definition of communication, components of the communication process
	Podcast	Levels of communication
Session 2	PowerPoint	Stress management
	Video	Communication and listening skills
Session 3	PowerPoint	Nursing code of ethics in the Islamic Republic of Iran
	Podcast	Stages of the communication process
	Podcast	Factors affecting communication
Session 4	Video	Active listening, stages of nurse-patient communication, nurse communication with other healthcare team members, nursing code of ethics in the Islamic Republic of Iran
	Video	Stages of the nursing process and communication
Session 5	Podcast	Communicating with patients with special needs
	PowerPoint	Legal aspects, dealing with dying patients, presentation on the patient's bill of rights in Iran

through metrics such as login frequency, access duration, or completion rates. This lack of verification means that potential differences in the extent of engagement with the foundational materials could be an unmeasured confounding variable, possibly influencing the degree of stress reduction observed. Participant engagement was inferred primarily through their subsequent participation in the in-person, case-based discussions.

The relationship between demographics with occupational stress, and satisfaction levels was assessed both before and after the educational intervention.

For occupational stress, the results showed no statistically significant differences across demographic categories in pre-intervention scores. Among educational levels, the mean stress scores were similar, with B.Sc., M.Sc., and Ph.D. holders reporting mean values close to 198-200, and a P value of 0.861 indicates no significant variation by education. Similarly, no significant difference was observed between males and females ($P=0.914$), nor among different age groups, with mean scores ranging narrowly from 197.88 to 200. This suggests that pre-intervention occupational stress is consistent across education, gender, and age.

In terms of satisfaction, there was also no significant difference across educational levels, gender, or age groups, with P values above conventional significance thresholds (e.g., $P=0.153$ for gender). Satisfaction levels across educational levels and age groups showed minimal variation, with similar mean scores reported across all groups. These findings suggest that demographic factors do not significantly influence baseline occupational stress or satisfaction in this sample, both pre- and post-intervention. This consistency implies a similar baseline across demographics, allowing for a clearer interpretation of the intervention's effects on overall occupational outcomes.

Table 2 compares the overall score of occupational stress assessed using NSS-57 between pre-intervention and post-intervention phases. According to the results

Table 2. Pre-intervention and post-intervention overall scores of NSS-57

Variable	Phase	Mean	Standard deviation	P value
Occupational stress	Pre-intervention	199.1	4.34	<0.001
	Post-intervention	86	3.1	

of the mean and standard deviation, the overall score of occupational stress after educational intervention had a statistically significant decrease compared to before ($P<0.001$).

The findings from the analysis of the questionnaire responses provide robust evidence that all dimensions of occupational stress in NSS-57 were significantly reduced following the implementation of the educational intervention. It is shown in detail in Table 3.

As mentioned, the satisfaction score was divided into three categories. In Table 4, as demonstrated, 80 percent of nurses were highly satisfied with the blended learning approach via the flipped classroom.

Discussion

The modern healthcare landscape underscores the critical importance of effective communication and empathetic understanding within nursing. As the primary frontline workforce, nurses require proficient communication skills to inform patients, understand their concerns, provide emotional support, and enhance overall outcomes and satisfaction. Inadequate communication impedes the identification of patients' holistic needs. Furthermore, within the interdisciplinary team, transparent communication is paramount for achieving therapeutic goals and optimizing care.

Peplau's conceptualization of nursing as a human relationship underscores the centrality of interpersonal communication in understanding patient needs, motivating participation in care, and enhancing well-being.¹⁸ However, studies consistently indicate a concerning trend, finding suboptimal, moderate-to-poor communication skills among both nursing students and professionals.¹⁹⁻²²

Table 3. Scores of NSS-57 dimensions before and after educational intervention

Dimension	Phase	Mean	Standard deviation	P value
Death and dying	Pre-intervention	3.50	0.17	<0.001
	Post-intervention	1.53	0.18	
Uncertainty concerning treatment	Pre-intervention	3.48	0.16	<0.001
	Post-intervention	1.48	0.18	
Inadequate emotional preparation	Pre-intervention	3.54	0.23	<0.001
	Post-intervention	1.54	0.29	
Patients and their families	Pre-intervention	3.53	0.19	<0.0001
	Post-intervention	1.56	0.13	
Discrimination	Pre-intervention	3.52	0.28	<0.001
	Post-intervention	1.47	0.25	
Conflict with physicians	Pre-intervention	3.52	0.24	<0.001
	Post-intervention	1.44	0.20	
High workload	Pre-intervention	3.42	0.16	<0.001
	Post-intervention	1.51	0.16	
Problems with supervisors	Pre-intervention	3.50	0.17	<0.001
	Post-intervention	1.48	0.19	
Problems with peers	Pre-intervention	3.43	0.20	<0.001
	Post-intervention	1.51	0.20	

Previous findings suggest that teaching professional ethics can enhance communication skills. Considering time constraints, blended professional ethics education programs could be pivotal. Therefore, we aimed to investigate the effectiveness of a CPD program entitled “Combating Occupational Stress” using a blended learning approach via a flipped classroom on nurses’ occupational stress levels and to evaluate their satisfaction with this strategy.

The results demonstrated that nurses exhibited high occupational stress before the intervention. Following the CPD program, there was a significant reduction in stress levels across all dimensions. A high percentage of nurses also indicated strong satisfaction with the educational strategy.

The substantial reduction in the total NSS score from 199.1 to 86 merits specific consideration. While this magnitude of change is pronounced, it aligns with the intervention’s comprehensive, multi-dimensional design, which directly targeted the core stressors identified by the scale. The Nursing Stress Scale (NSS-57) has been previously validated and utilized in Iranian nursing populations, demonstrating good psychometric properties and cultural relevance in this context.²³ Therefore, the observed reduction likely reflects a genuine and meaningful decrease in perceived stress. Culturally, the intervention’s emphasis on communication skills, ethical principles, and peer-supported problem-solving may have resonated strongly within the collaborative and high-context communication environment often present

Table 4. Satisfaction rate of nurses with the educational strategy in the CPD program

Variable	Category	Frequency	Percentage
Satisfaction	15-35 (low satisfaction)	0	0
	35-55 (moderate satisfaction)	6	20
	55-75 (high satisfaction)	24	80

in Iranian healthcare settings. The clinical significance of such a reduction is considerable; transitioning from a “high stress” to a “low stress” category on the NSS can correlate with improved mental well-being, reduced burnout risk, enhanced job performance, and potentially lower turnover intentions. However, the quasi-experimental design without a control group necessitates cautious interpretation, as external or temporal factors cannot be fully ruled out. Future controlled studies with longer follow-up are needed to confirm the sustainability and specific effect size of this intervention.

Several factors contributed to the intervention’s effectiveness. Micro-learning, by breaking content into manageable segments, prevented cognitive overload and facilitated learning, avoiding the information saturation common in traditional methods. Group discussions and face-to-face sessions were crucial; after independent review, nurses could ask questions, benefiting from both instructor expertise and peer insights. Incorporating medical case studies significantly bolstered problem-solving abilities and practical knowledge for managing occupational stress.

The significant impact of blended flipped learning on job stress reduction corroborates previous research. Studies emphasize the potential of e-learning interventions, particularly during challenges like the COVID-19 pandemic, to mitigate job stress.²⁴ Blended education offers flexibility, cost-effectiveness, and accessibility, allowing healthcare providers to access training anywhere, anytime, and accommodating individual learning paces.

Gülmak Güler et al found that an online training program effectively enhanced practical communication skills among nursing students.²⁵ Adherence to professional ethics influences positive teamwork, job satisfaction, and employee relationships. In our study, educating nurses on ethical principles enhanced their communication skills and fostered a culture of ethical conduct, as reflected in the improved stress scale dimensions. Specifically, the curriculum’s focus on communication and ethics may have contributed to reduced stress in areas such as “High Workload” and “Problems with Supervisors” by enhancing nurses’ self-efficacy, improving their ability to manage interpersonal conflicts, and fostering more constructive interactions with colleagues and supervisors. These psychological mechanisms likely empowered nurses to navigate workplace challenges more confidently and effectively, thereby alleviating perceived stress.

Other studies support technology’s effectiveness in

enhancing learning, showing technology-based content is a valuable educational aid.^{26,27} Similarly, in our study, multimedia like videos and podcasts played a vital role in efficiency. Blended learning, integrating in-person classes with virtual content, proved to be a suitable modality. Given the decreased stress levels and high satisfaction, its implementation is suggested as a complementary method in CPD courses.

The stress reduction occurred across all dimensions of the scale, which relate not only to job nature but also to communication with patients, families, and peers. In response to evolving healthcare demands, nurses must communicate effectively with patients, multidisciplinary teams, and families. Policymakers and managers must prioritize strategies for improving communication skills, leveraging behavior analysis theories to overcome barriers. Initiatives to enhance working conditions, such as optimizing shifts, are also crucial. Integrating mandatory educational programs on professional communication into nursing CPD can equip nurses with essential competencies.²⁸

A notable finding was the marked improvement in satisfaction. This aligns with studies highlighting technology's positive influence. Nichat et al reported that the flipped classroom approach significantly boosted satisfaction,²⁹ while Nongmeikapam et al. (2019) showed a student preference for video-based learning.³⁰ Although factors like reliable internet access and increased instructor workload can sometimes negatively affect satisfaction, Kang and Kim found that blended learning—featuring flipped classroom and team-based learning—resulted in higher satisfaction among nursing students compared to traditional teaching.³¹ These results underscore that greater interaction with educational materials through blended learning enhances overall satisfaction.

Strengths, limitations, and suggestions

The study acknowledges limitations such as nurses' individual differences, mental states, and work fatigue, which could influence their responses. The high number of questions also risks inaccurate answers. To improve participation, orientation sessions were held to clarify the research's importance. Challenges in online learning, like poor connectivity and reduced social interaction, were addressed with offline resources. Furthermore, due to nurses' demanding schedules, asynchronous CPD courses were created to allow learning at their own pace. However, the absence of a control group remains a major limitation, as it restricts the ability to attribute observed changes solely to the intervention. Without a comparison group, it is difficult to rule out the influence of external factors or the natural passage of time on stress reduction outcomes. Future studies should consider incorporating a control group to strengthen causal inferences.

Conclusion

This study concludes that health education programs significantly reduce job stress for nurses. These targeted interventions equip nurses with essential skills to manage workplace stressors. Therefore, healthcare organizations and policymakers should prioritize developing and implementing these programs. By doing so, they can promote nurse well-being and job satisfaction, ultimately fostering a supportive work environment that leads to better patient care and organizational success. We recommend a multicenter randomized controlled trial with a longer follow-up period to confirm the long-term efficacy of this intervention.

Acknowledgments

We appreciate the staff and nurses of Tabriz University of Medical Sciences who contributed directly or indirectly to our study.

Authors' Contribution

Conceptualization: Ehsan Toofaninejad, Fatemeh-Zahra Mohammadi-Aghdam, Masomeh Kalantarion.

Data curation: Fatemeh-Zahra Mohammadi-Aghdam.

Formal analysis: Fatemeh-Zahra Mohammadi-Aghdam.

Investigation: Ehsan Toofaninejad, Fatemeh-Zahra Mohammadi-Aghdam, Masomeh Kalantarion, Samane Babaei.

Methodology: Ehsan Toofaninejad, Fatemeh-Zahra Mohammadi-Aghdam, Masomeh Kalantarion.

Project administration: Ehsan Toofaninejad.

Writing—original draft: Fatemeh-Zahra Mohammadi-Aghdam, Samane Babaei, Masomeh Kalantarion.

Writing—review & editing: Ehsan Toofaninejad, Fatemeh-Zahra Mohammadi-Aghdam, Masomeh Kalantarion, Samane Babaei.

Competing Interests

The authors declare no conflict of interest.

Ethical Approval

Ethical approval (IR.SBMU.SME.REC.1402.033) was obtained from the institutional ethical committee of Shahid Beheshti University of Medical Sciences. It was conducted in accordance with the Declaration of Helsinki. The objectives were clearly explained to the participating nurses, and they were assured that confidentiality and nondisclosure principles would be strictly followed. Written informed consent was obtained from all participants, who were also informed that they could withdraw from the study at any time.

Funding

The authors received no specific funding for this work.

References

1. Souza RC, Silva SM, Alves de Sousa Costa ML. Occupational stress in hospital settings: review of coping strategies of nursing professionals. *Rev Bras Med Trab.* 2018;16(4):493-502. doi: [10.5327/z1679443520180279](https://doi.org/10.5327/z1679443520180279)
2. Najafi B, Nasiri A. Explaining novice nurses' experience of weak professional confidence: a qualitative study. *SAGE Open Nurs.* 2023;9:23779608231153457. doi: [10.1177/23779608231153457](https://doi.org/10.1177/23779608231153457)
3. Panahi D, Akhlaghi Pirposhteh E, Moradi B, Poursadeqiyani M, Salehi Sahlabadi A, Kavousi A. Effectiveness of educational intervention on reducing oxidative stress caused by occupational stress in nurses: a health promotion approach. *J Educ Health Promot.* 2022;11:273. doi: [10.4103/jehp](https://doi.org/10.4103/jehp).

jehp_1425_21

4. Trinkoff AM, Baldwin CM, Chasens ER, Dunbar-Jacob J, Geiger-Brown J, Imes CC, et al. CE: nurses are more exhausted than ever: what should we do about it? *Am J Nurs*. 2021;121(12):18-28. doi: [10.1097/01.NAJ.0000802688.16426.8d](https://doi.org/10.1097/01.NAJ.0000802688.16426.8d)
5. Alsufyani AM, Aboshaiqah AE, Alshehri FA, Alsufyani YM. Impact of emotional intelligence on work performance: the mediating role of occupational stress among nurses. *J Nurs Scholarsh*. 2022;54(6):738-49. doi: [10.1111/jnu.12790](https://doi.org/10.1111/jnu.12790)
6. Mlambo M, Silén C, McGrath C. Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature. *BMC Nurs*. 2021;20(1):62. doi: [10.1186/s12912-021-00579-2](https://doi.org/10.1186/s12912-021-00579-2)
7. Hazavehei SM, Kharghani Moghadam SM, Bagheri Kholenjani F, Ebrahimi H. The influence of educational interventions to reduce occupational stress: a systematic review. *J Health Saf Work*. 2018;7(4):363-74.
8. Tang F, Chen C, Zhu Y, Zuo C, Zhong Y, Wang N, et al. Comparison between flipped classroom and lecture-based classroom in ophthalmology clerkship. *Med Educ Online*. 2017;22(1):1395679. doi: [10.1080/10872981.2017.1395679](https://doi.org/10.1080/10872981.2017.1395679)
9. Fields L, Trostian B, Moroney T, Dean BA. Active learning pedagogy transformation: a whole-of-school approach to person-centred teaching and nursing graduates. *Nurse Educ Pract*. 2021;53:103051. doi: [10.1016/j.nepr.2021.103051](https://doi.org/10.1016/j.nepr.2021.103051)
10. McConnell M, Gu A, Arshad A, Mokhtari A, Azzam K. An innovative approach to identifying learning needs for intrinsic CanMEDS roles in continuing professional development. *Med Educ Online*. 2018;23(1):1497374. doi: [10.1080/10872981.2018.1497374](https://doi.org/10.1080/10872981.2018.1497374)
11. Chen X, Breslow L, DeBoer J. Analyzing productive learning behaviors for students using immediate corrective feedback in a blended learning environment. *Comput Educ*. 2018;117:59-74. doi: [10.1016/j.compedu.2017.09.013](https://doi.org/10.1016/j.compedu.2017.09.013)
12. Goh PS, Sandars J. A vision of the use of technology in medical education after the COVID-19 pandemic. *MedEdPublish* (2016). 2020;9:49. doi: [10.15694/mep.2020.000049.1](https://doi.org/10.15694/mep.2020.000049.1)
13. Phillips J, Wiesbauer F. The flipped classroom in medical education: a new standard in teaching. *Trends Anaesth Crit Care*. 2022;42:4-8. doi: [10.1016/j.tacc.2022.01.001](https://doi.org/10.1016/j.tacc.2022.01.001)
14. Alizadeh M, Saramad A, Rafiepoor H, Taghvaei A, Rayati R, Sibevei S, et al. Effect of virtual case-based learning (CBL) using the flipped class and peer instruction on the motivation to learn basic sciences. *BMC Med Educ*. 2024;24(1):1230. doi: [10.1186/s12909-024-06229-w](https://doi.org/10.1186/s12909-024-06229-w)
15. Gray-Toft P, Anderson JG. The nursing stress scale: development of an instrument. *J Behav Assess*. 1981;3(1):11-23. doi: [10.1007/bf01321348](https://doi.org/10.1007/bf01321348)
16. Olyaiekhachic R, Bozorgnejad M, Haghani SH, Khayeri F, Seyedfatemi N. Evaluating the effect of positive self-talk on job stress among nurses working in the emergency wards. *Iran Journal of Nursing*. 2020;33(127):89-102. doi: [10.29252/ijn.33.127.89](https://doi.org/10.29252/ijn.33.127.89)
17. Ahadiat MR. The impact of flipped classroom on the level of learning and satisfaction with teaching method in electrical engineering students of Islamic Azad University. *Iran J Eng Educ*. 2019;20(80):51-69. doi: [10.22047/ijee.2019.149317.1580](https://doi.org/10.22047/ijee.2019.149317.1580)
18. Forchuk C. Overview of Peplau's theory. In: *From Therapeutic Relationships to Transitional Care*. Routledge; 2021. p. 3-15.
19. Anderson RJ, Bloch S, Armstrong M, Stone PC, Low JT. Communication between healthcare professionals and relatives of patients approaching the end-of-life: a systematic review of qualitative evidence. *Palliat Med*. 2019;33(8):926-41. doi: [10.1177/0269216319852007](https://doi.org/10.1177/0269216319852007)
20. Kee JW, Khoo HS, Lim I, Koh MY. Communication skills in patient-doctor interactions: learning from patient complaints. *Health Prof Educ*. 2018;4(2):97-106. doi: [10.1016/j.hpe.2017.03.006](https://doi.org/10.1016/j.hpe.2017.03.006)
21. Back AL, Fromme EK, Meier DE. Training clinicians with communication skills needed to match medical treatments to patient values. *J Am Geriatr Soc*. 2019;67(S2):S435-41. doi: [10.1111/jgs.15709](https://doi.org/10.1111/jgs.15709)
22. Moore PM, Rivera S, Bravo-Soto GA, Olivares C, Lawrie TA. Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database Syst Rev*. 2018;7(7):CD003751. doi: [10.1002/14651858.CD003751.pub4](https://doi.org/10.1002/14651858.CD003751.pub4)
23. Safari Shirazi M, Sadeghzadeh M, Abbasi M. Psychometric properties of Persian version of condensed nurses' occupational stress scale in COVID-19 pandemic period. *Avicenna J Nurs Midwifery Care*. 2021;29(3):245-55. doi: [10.30699/ajnmc.29.3.245](https://doi.org/10.30699/ajnmc.29.3.245)
24. Kumar A, Sarkar M, Davis E, Morphet J, Maloney S, Illic D, et al. Impact of the COVID-19 pandemic on teaching and learning in health professional education: a mixed methods study protocol. *BMC Med Educ*. 2021;21(1):439. doi: [10.1186/s12909-021-02871-w](https://doi.org/10.1186/s12909-021-02871-w)
25. Güllümk Güler K, Güleç Keskin S, Albayrak E. The power of virtual connections: A randomized controlled trial of online positive psychotherapy training on effective communication skills of nursing students. *Nurse Educ Pract*. 2024;77:103967. doi: [10.1016/j.nepr.2024.103967](https://doi.org/10.1016/j.nepr.2024.103967)
26. Hilburg R, Patel N, Ambruso S, Biewald MA, Farouk SS. Medical education during the coronavirus disease-2019 pandemic: learning from a distance. *Adv Chronic Kidney Dis*. 2020;27(5):412-7. doi: [10.1053/j.ackd.2020.05.017](https://doi.org/10.1053/j.ackd.2020.05.017)
27. Tsay CH, Kofinas A, Luo J. Enhancing student learning experience with technology-mediated gamification: an empirical study. *Comput Educ*. 2018;121:1-17. doi: [10.1016/j.compedu.2018.01.009](https://doi.org/10.1016/j.compedu.2018.01.009)
28. Hardie P, Darley A, Langan L, Lafferty A, Jarvis S, Redmond C. Interpersonal and communication skills development in general nursing preceptorship education and training programmes: a scoping review. *Nurse Educ Pract*. 2022;65:103482. doi: [10.1016/j.nepr.2022.103482](https://doi.org/10.1016/j.nepr.2022.103482)
29. Nichat A, Gajbe U, Bankar NJ, Singh BR, Badge AK. Flipped classrooms in medical education: improving learning outcomes and engaging students in critical thinking skills. *Cureus*. 2023;15(11):e48199. doi: [10.7759/cureus.48199](https://doi.org/10.7759/cureus.48199)
30. Nongmeikapam M, Sarala N, Reddy M, Ravishankar S. Video-assisted teaching versus traditional didactic lecture in undergraduate psychiatry teaching. *Indian J Psychiatry*. 2019;61(4):376-9. doi: [10.4103/psychiatry.IndianJPsychiatry_265_18](https://doi.org/10.4103/psychiatry.IndianJPsychiatry_265_18)
31. Kang HY, Kim HR. Impact of blended learning on learning outcomes in the public healthcare education course: a review of flipped classroom with team-based learning. *BMC Med Educ*. 2021;21(1):78. doi: [10.1186/s12909-021-02508-y](https://doi.org/10.1186/s12909-021-02508-y)