



THE EFFECTIVENESS OF THE SIMULATION TRAINING-BASED CLINICAL BASE LEARNING MODEL ON THE SAFETY COMPETENCE OF NURSING STUDENTS IN HOSPITALS

Irwan Hadi^{1*}, Hapipah², Aswati³, Baiq Nurainun Apriani Idris³

¹Departemen of Nursing Management, Institut Kesehatan Yarsi Mataram, Jl. Lingkar Selatan, Pagutan Barat, Mataram, Nusa Tenggara Barat 83361, Indonesia

²Departemen of Medical Nursing, Institut Kesehatan Yarsi Mataram, Jl. Lingkar Selatan, Pagutan Barat, Mataram, Nusa Tenggara Barat 83361, Indonesia

³Departemen of Community Nursing, Institut Kesehatan Yarsi Mataram, Jl. Lingkar Selatan, Pagutan Barat, Mataram, Nusa Tenggara Barat 83361, Indonesia

*Irwanhadi711@gmail.com

ABSTRACT

Patient safety is a fundamental aspect of nursing practice that must be instilled from the time of education. However, many nursing students do not have adequate competence in applying the principles of patient safety during clinical practice. A Simulation Training-based Clinical Base Learning Model (CBL-ST) was developed to answer these challenges. This study uses a mixed methods approach with a sequential explanatory design. The first stage was carried out qualitative exploration through in-depth interviews with 10 clinical supervisors to prepare the CBL-ST intervention module. The second stage used a quasi experiment design. Sample with purposive sampling with the criteria of a student with a minimum of semester 5, have participated in clinical practice and are willing to be respondents as 80 nursing students, divided into intervention and control groups. Patient safety competency was measured using the Patient Safety Attitude (PSA) instrument, analyzed by the t-test. Results showed a significant improvement in scores in the intervention group (pretest 68.5; posttest 85.3; $p < 0.05$) compared to the control group (pretest 67.9; posttest 70.1; $p > 0.05$). The five key themes of the qualitative outcomes include: patient-centered service, patient safety goals, teamwork, effective communication, and safety culture. The CBL-ST model is proven to not only improve cognitive and technical aspects, but also shape professional values and student safety culture. The CBL-ST model is effective in significantly improving the safety competence of nursing student patients. The application of case-based simulation learning can be a systematic clinical education strategy that has a long-term impact on the quality of health services.

Keywords: clinical base learning; clinical competence; patient safety; simulation learning

How to cite (in APA style)

Hadi, I., Hapipah, H., Aswati, A., & Idris, B. N. A. (2025). The Effectiveness of the Simulation Training-Based Clinical Base Learning Model on The Safety Competence of Nursing Students in Hospitals. *Indonesian Journal of Global Health Research*, 7(6), 989–996. <https://doi.org/10.37287/ijghr.v7i6.675>.

INTRODUCTION

Patient safety is a key indicator in the quality of health services in various medical service systems, especially in complex and dynamic hospital environments. Problems related to patient safety are increasingly emerging, along with the increase in cases of unexpected events (KTD) involving many medical personnel who do not fully have adequate clinical competence, including health professional students who are undergoing clinical practice (Hadi et al., 2020). In many educational institutions, clinical practice is still a crucial point in the formation of the professional skills of nursing students. However, the implementation of clinical practices that have minimal supervision and have not accommodated innovative learning approaches are a significant risk factor for procedural errors (Kasmiaty et al., 2021). One of the approaches that is now being widely studied is the integration of simulation-based learning in clinical base learning (CBL) to strengthen patient safety competencies. Simulation training provides a safe and realistic learning environment, allowing students to practice clinical skills without harming patients. This approach shows high relevance in addressing the challenge of effective and safety-oriented clinical learning (Song et al., 2023). In the context of nursing higher education in Indonesia, the integration of simulation-based clinical learning methods is still relatively new and has not been widely implemented and structured

in the curriculum. In fact, this approach has been proven to be able to increase the accuracy of actions, confidence, and the speed of mastering high-risk clinical skills if done directly on patients.

Jiang et al. (2011) in their study showed that medical students who received simulation training in thoracentesis procedures experienced a significant improvement in their learning curve. Similarly, Barsuk et al. (2012) stated that the simulation-based education method with mastery learning significantly improves students' skills in paracentesis actions, showing that simulation not only supports learning but also guarantees patient safety through the reduction of action errors. In nursing practice, the importance of patient safety is increasingly evident because students are often the direct implementers of basic nursing interventions. (Sellers et al., 2018) Therefore, research on the effectiveness of simulation-based clinical learning models in the context of patient safety is very relevant and needed. What's more, this approach can bridge the gap between theory and practice, especially in the face of complex challenges in the field that cannot always be explained through conventional classroom learning. (Reime et al., 2016; Shen et al., 2018)

Several studies have highlighted the success of simulated learning environments in improving students' critical thinking skills, opportunities to solve problems and practice complex skills in non-threatening environments (Reime et al., 2016). The use of simulation provides Solutions for Health Education with the creation of scenarios that combine the theory and practice behind the clinical skills learned, with consideration of the various human factors that make up the clinical environment (Jiang et al., 2024). Problem-solving strategies can be carried out and adapted for all Health Education in solving the problem of reducing the risk of incidents in patient safety. Where is the need for patient safety training and education for health professionals. Simulation-Based Clinical Base Learning (CBL-ST) is a learning approach that integrates simulation-based clinical experiences to improve students' skills in clinical aspects, including the implementation of patient safety in hospitals. This learning model combines the Clinical Base Learning (CBL) method with Simulation Training (ST) to create a more realistic, interactive, and problem-solving-oriented learning environment. (Lewis et al., 2014)

Previous research that has been conducted by researchers is to look at the implementation of safety by nurses in hospitals (Hadi, 2017) as well as the relationship between communication and the implementation of patient safety in hospitals and the implementation of head of room supervision in the implementation of patient safety in hospitals. In addition, the implementation of patient safety will also have an impact on bullying in students if there is a mistake or patient safety incident. (hadi) The novelty of this research is that there is no research that relates to simulation-based clinical education where this research will be able to make a new contribution to health education by offering a more comprehensive, interactive, and problem-solving-based approach to CBL-ST in patient safety. By combining real-world clinical case studies as well as multi-dimensional evaluation methods, this study is expected to produce healthcare graduates who are better prepared and competent to face real-world patient safety challenges. (Jiang et al., 2024; S. E. Lee et al., 2023)

Although a number of previous studies have described the benefits of simulated learning on students' competence in specific clinical skills, very few studies have specifically examined its impact on patient safety competencies holistically, especially in the context of nursing education in Indonesia. The study of Barsuk et al. (2012) and Jiang et al. (2011) places more emphasis on improving procedural technical skills, while the patient safety aspect as a multidimensional competency involving knowledge, attitudes, and skills has not been widely discussed in an integrated manner. In addition, the integration between Clinical Base Learning and Simulation Training approaches has not been explored as a single complete learning model that has been studied for effectiveness in a clinical context. The approach used in this study is important because it targets to strengthen the dimension of patient safety from the education stage, not just improving technical procedural skills (Kang et al., 2022; Yu et al., 2020). This research aims to find out

effectiveness of the simulation training-based clinical base learning model on the safety competence of nursing students in hospitals.

METHOD

This study uses a mix method approach with a sequential explanatory design, which consists of two main stages. The first stage is a qualitative exploration that aims to explore the perceptions and experiences of nursing students, clinical supervisors, and academic supervisors towards the implementation of patient safety in hospitals. In-depth interviews were conducted with participants who were selected purposively based on their active involvement in clinical practice at Siti Hajar Islamic Hospital Mataram. Qualitative data were analyzed using thematic content analysis with systematic procedures in the form of transcription, open coding, categorization, and preparation of the main theme. The results of this first phase are used as the basis for the preparation of Simulation Training-based Clinical Base Learning intervention modules (CBL-ST), including the development of learning media such as simulation videos and realistic and contextual clinical practice scenarios. The module is designed to simulate complex clinical situations, requiring students to apply patient safety principles in decision-making, team communication, and nursing actions holistically.

The second stage of this study is a quasi-experiment with a pre-test and post-test with control group design, to test the effectiveness of the CBL-ST module in improving the safety competence of nursing student patients. The subjects of this stage of research were sixth-semester students undergoing clinical practice, with a sample of 50 people who were divided into two groups purposively: the intervention group that received training with the CBL-ST module and the control group that followed conventional clinical learning. The instrument used to measure patient safety competency is a Patient Safety Attitude (PSA) questionnaire that has been modified and validated beforehand. This questionnaire covers aspects of student knowledge, attitudes, and skills in implementing patient safety. Quantitative data analysis was carried out using paired t-test and independent t-test statistical tests to see the difference in scores before and after the intervention between the two groups. The entire intervention process lasted for 4 weeks, with 2 simulation sessions per week, each lasting 90 minutes. Each session consists of a pre-briefing, simulation implementation, and structured debriefing facilitated by pre-trained lecturers and clinical supervisors.

RESULT

This research was carried out at the RSI Siti Hajar Mataram which is one of the local government-owned hospitals with a city-level referral service capacity. This hospital serves various types of cases with medium to high levels of complexity, as well as being a place to practice student clinics from various health education institutions. The research was carried out on sixth-semester nursing students who were undergoing clinical practice at the hospital. The total number of respondents involved in this study was 80 students, which were divided into two large groups, namely 40 students in the intervention group who received training using the Clinical Base Learning model based on Simulation Training (CBL-ST), and 40 students in the control group who participated in conventional clinical learning.

Table 1.
Characteristics of Nursing Student Respondents (n = 80)

Characteristics	Category	Intervention Group (n=40)	Control Group (n=40)	Total (n=80)
Gender	Laki-laki	10	12	22
	Perempuan	30	28	58
Grade	Semester 6	40	40	80
Clinical Practice Experience	< 3 bulan	25	27	52
	≥ 3 bulan	15	13	28
Patient Safety Training	Pernah	8	6	14
	Belum Pernah	32	34	66

The gender distribution was relatively balanced between the intervention group (10 males, 30 females) and the control group (12 males, 28 females). All respondents were in semester 6, which was the final stage of the academic study period and the beginning of entering intensive clinical practice. Most respondents, both in the intervention and control groups, had less than 3 months of clinical practice experience (52 out of 80 people or 65%). Most respondents had never attended patient safety training before (66 out of 80 or 82.5%). This was equally true in both groups: 32 people in the intervention group and 34 people in the control group.

Table 2.

Characteristics of Clinical Supervisor Informants (n = 10)

Informant Code	Gender	Education	Length of Experience (years)	Work Unit
Informan 1 (I1)	Female	Ners	5	Inpatient Room
Informan 2 (I2)	Male	Ners	7	Inpatient Room
Informan 3 (I3)	Female	S.Kep., Ners	10	Inpatient Room
Informan 4 (I4)	Female	S.Kep., Ners	4	Inpatient Room
Informan 5 (I5)	Male	Ners	6	Inpatient Room
Informan 6 (I6)	Female	S.Kep., Ners	8	Inpatient Room
Informan 7 (I7)	Female	Ners	9	Inpatient Room
Informan 8 (I8)	Male	S.Kep., Ners	12	Inpatient Room
Informan 9 (I9)	Female	Ners	3	Inpatient Room
Informan 10 (I10)	Female	S.Kep., Ners	6	Inpatient Room

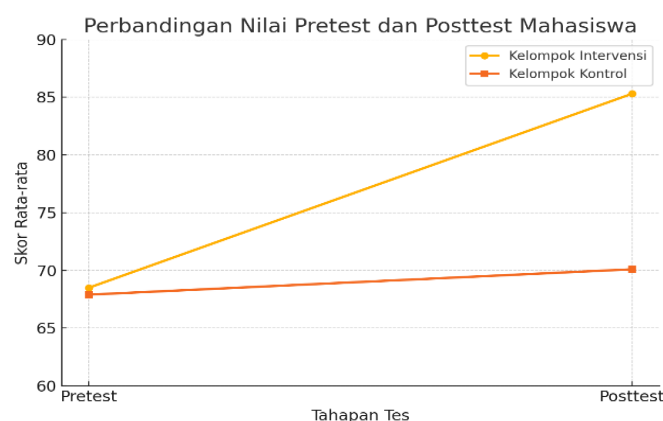
The majority of informants are women as many as 7 people who represent the general proportion of nursing personnel in Indonesia. However, male representation remains (I2, I5, I8), so the point of view is not homogeneous. In terms of education, most of them have completed their professional education as nurses, and 6 informants have an additional S.Kep. degree, showing the involvement of informants who already have a strong academic and clinical foundation. The range of experience of the clinical counselors ranges from 3 to 12 years. The general characteristics of the respondents showed an equal distribution between the intervention and control groups in terms of semester, academic background, and length of clinical practice experience. Quantitative research was conducted using the Patient Safety Attitude (PSA) instrument which includes three main dimensions: patient safety knowledge, attitude towards patient safety, and skills in applying patient safety principles. Data were collected before and after the intervention for both groups. The pretest results showed that both groups had almost equal average scores in terms of patient safety competence. However, after being given an intervention in the form of CBL-ST training, the intervention group showed a significant improvement in scores across all dimensions compared to the control group.(Carrillo et al., 2024).

Table 3.

Summary of Pretest and Posttest Mean Scores

Group	Pretest (Mean)	Posttest (Mean)	t-test Test score
Intervention 68,5	85,3	+16,8	p < 0.05
Control 67,9	70,1	+2,2	p > 0.05

The results of the t-test showed that the increase in scores in the intervention group was statistically significant (p < 0.05), while in the control group the increase was not statistically significant (p > 0.05). This shows that CBL-ST-based interventions effectively improve student competence in the aspect of patient safety.



DISCUSSION

This research was conducted at RSI Siti Hajar Mataram by involving 80 sixth-semester nursing students who were undergoing clinical practice. They were proportionally divided into two groups, namely 40 intervention group respondents who participated in Simulation Training-based Clinical Base Learning (CBL-ST) training, and 40 control group respondents who followed conventional practice methods. Preliminary data suggest that both groups have relatively balanced basic characteristics in terms of gender, practical experience, and previous training status. This is important to ensure the validity of the comparison of pretest and posttest results between groups, so that the effects of the CBL-ST intervention can be objectively identified. Quantitative results showed a significant improvement in the intervention group after the CBL-ST training was applied. The pretest score in the intervention group had an average of 68.5 and increased to 85.3 in the posttest. In contrast, the control group only increased from 67.9 to 70.1. The results of the statistical test using the t-test showed that the score increase in the intervention group was statistically significant ($p < 0.05$), while in the control group it was not significant ($p > 0.05$).

These findings show that CBL-ST interventions are able to significantly improve patient safety competencies and are stronger than ordinary clinical learning methods. This supports the statement of that simulation-based learning with a mastery learning approach is effective in improving students' clinical skills. These quantitative findings are strengthened by qualitative data from in-depth interviews with 10 clinical supervisors at RSI Siti Hajar Mataram. The results of the thematic analysis show five dominant themes: patient-centered service, patient safety goals, teamwork, effective communication, and patient safety culture. The supervisors emphasized the importance of instilling the principles of patient-centered care as the foundation in every nursing action. They stated that students who underwent training Simulatives tend to show higher empathy and sensitivity to patient needs, compared to students who do not receive similar training. This shows that the simulation approach not only improves technical ability, but also the affective dimension of the student's professional competence.(Prentice & O'rourke, 2013)

On the theme of patient safety goals, the supervisors mentioned that students who received CBL-ST training were more aware of the application of standard procedures such as patient identification, the use of SBAR communication, and awareness of the risk of falls or nosocomial infections. The clinic supervisor assessed that students' understanding of safety indicators increased after participating in the case-based simulation.(Cohen et al., 2025) This is in line with the findingswho showed that simulated learning not only improves procedural skills, but also increases awareness of clinical risks and confidence in decision-making.(Abbaszade et al., 2021)

Simulation has also been shown to be effective in forming teamwork skills. In training sessions, students must collaborate in solving complex scenarios, which demand an active role in collective decision-making. The supervisor stated that after the training, students were better able to interact with nurses, doctors, and other health workers cooperatively. They learn how to divide tasks, give feedback, and resolve minor conflicts professionally. This shows that simulation learning focuses

not only on the individual, but also on the team dynamics that are so important in patient safety. This supports the argument of Susanti and Putri (2023) who highlight the importance of mentoring and collaborative coaching in instilling the values of professionalism. In addition to teamwork, effective communication is an important theme that comes up in interviews. Students who received CBL-ST training showed an improvement in the ability to convey information in a structured and targeted manner. Communication between professions that was initially rigid or unsystematic turned into more directed and professional after the simulation. The supervisor mentioned that this directly affects the safety of the patient, because miscommunication is often the root of the problem in clinical errors. Communication strengthening is one of the important indicators that is improved through simulation approaches, as also expressed by Tolsgaard et al. (2015) in their study on simulation-based ultrasound training.(Stevanin et al., 2018)

Patient safety culture is also an important aspect formed through CBL-ST training. Clinic supervisors stated that students who had undergone simulative training were more open in discussing mistakes, more honest in self-reflection, and did not hesitate to report unexpected events. This shows that simulation learning not only instills skills, but also shapes a professional mindset and ethics. The reflective and non-punitive culture instilled during debriefing sessions has been shown to have an impact on student attitudes during clinical practice. Thus, simulation learning plays a strategic role as a strategic tool in shaping a patient safety culture from the beginning of the education period.(Indarwati et al., 2023; Said Bodur, 2010)

From all these results, it can be seen that the application of CBL-ST makes a significant contribution in shaping the safety competencies of nursing student patients. Not only does it have an impact on technical and cognitive abilities, it also strengthens affective aspects such as empathy, teamwork, communication, and professional responsibility. These findings also show that conventional learning models have not been able to comprehensively accommodate all students' clinical learning needs. The integration of CBL with simulation addresses this gap by providing an immersive, safe, and realistic learning experience. In the context of higher nursing education in Indonesia, this model has the potential to become a more effective and adaptive standard of clinical learning.(Carrillo et al., 2024; Scott et al., 2025).

Although the results of this study show strong effectiveness, some limitations need to be noted. First, the scope of the research is limited to one hospital and one educational institution, so the generalization of the findings needs to be tested in a broader context. Second, the absence of direct quotes from informants in this report is a limitation in providing authentic voices from the field. Third, although the short-term effects are obvious, follow-up studies are needed to assess the long-term effects of simulation-based learning on students' clinical practice after they graduate. Therefore, this research opens up space for further exploration, both longitudinally and multicontextually.

Overall, the results of this study make an important contribution to the development of clinical learning models based on simulations and real cases. The CBL-ST model has proven to be effective in improving the safety competencies of nursing student patients and establishing a positive professional culture. With the support of relevant literature, these findings reinforce the argument that simulated learning should be an integral part of the health education curriculum. Therefore, educational institutions and hospitals need to synergize in developing and implementing systematic and sustainable simulation-based training programs as the main strategy in improving the quality and safety of future health services.(Birkeli et al., 2022; H. Lee & Lee, 2025)

CONCLUSION

This study shows that the Simulation Training-based Clinical Base Learning (CBL-ST) model is an effective learning strategy in improving the competence of nursing students in the implementation of patient safety in hospitals. Through a quasi-experimental approach involving 80 students,

supported by qualitative data from 10 clinical supervisors, it was found that the group that received the CBL-ST intervention experienced a significant increase in average scores from pretest to posttest, from 68.5 to 85.3. In contrast, the control group showed only a minimal increase from 67.9 to 70.1, which was not statistically significant. These results reinforce previous findings that structured and real-skills oriented simulations are able to accelerate the understanding and internalization of students' clinical competencies. In addition to the quantitative findings, the results of in-depth interviews showed that the clinic supervisors identified five key themes as rapidly developing aspects in CBL-ST post-training students, namely: patient-centered service, understanding of patient safety goals, increased teamwork, effective communication, and strengthening the patient safety culture. These findings underscore that the CBL-ST model not only impacts the cognitive and technical aspects, but also touches on the affective and ethical dimensions of nursing competencies. Thus, this research makes a real contribution to the development of clinical pedagogy that is more contextual, comprehensive, and in accordance with the challenges of today's health service quality.

ACKNOWLEDGEMENTS

Thank you to the DPPM of the Ministry of Education and Science for providing funding in the Beginner Grant Research, LP2M Yarsi Mataram Health Institute and the Research Team for helping. For information, please contact irwanhadi711@gmail.com / +6281907632181

REFERENCES

- Abbaszade, A., Assarroudi, A., Armat, M. R., Stewart, J. J., Rakhshani, M. H., Sefidi, N., & Sahebkar, M. (2021). Evaluation of the Impact of Handoff Based on the SBAR Technique on Quality of Nursing Care. *Journal of Nursing Care Quality*, 36(3), E38–E43. <https://doi.org/10.1097/NCQ.0000000000000498>
- Birkeli, G. H., Jacobsen, H. K., & Ballangrud, R. (2022). Nurses' experience of incident reporting culture before and after implementing the Green Cross method: A quality improvement project. In *Intensive & critical care nursing* (Vol. 69, p. 103166). <https://doi.org/10.1016/j.iccn.2021.103166>
- Carrillo, I., Skoumalová, I., Bruus, I., Klemm, V., Guerra-Paiva, S., Knežević, B., Jankauskiene, A., Jovic, D., Tella, S., Buttigieg, S. C., Sruловичi, E., Madarasová Gecková, A., Pölluste, K., Strametz, R., Sousa, P., Odalovic, M., & Mira, J. J. (2024). Psychological Safety Competency Training During the Clinical Internship From the Perspective of Health Care Trainee Mentors in 11 Pan-European Countries: Mixed Methods Observational Study. *JMIR Medical Education*, 10, e64125. <https://doi.org/10.2196/64125>
- Cohen, T. N., Nuckols, T. K., Berdahl, C. T., Seferian, E. G., McCleskey, S. G., Henreid, A. J., Leang, D. W., Lupera, M. A., & Coleman, B. L. (2025). Training Hospital Nurses to Write Detailed Narratives and Describe Contributing Factors in Incident Reports: The SAFER Education Program. In *Joint Commission journal on quality and patient safety*. <https://doi.org/10.1016/j.jcjq.2025.01.002>
- Hadi, I. (2017). *Manajemen keselamatan pasien (Teori dan Aplikasi)*. Yogyakarta: Deepublish.
- Hadi, I., Idris, B. N. A., Halid, S., & Haris, Z. A. (2020). The Relation of Team Work and Communication With Patient Safety Implementation in Nursing Staff. 30(Ichd), 413–416. <https://doi.org/10.2991/ahsr.k.201125.070>
- Indarwati, R., Efendi, F., Fauziningtyas, R., Fauziah, A., & Sudarsiwi, N. P. (2023). Efforts to Improve the Safety Culture of the Elderly in Nursing Homes: A Qualitative Study. In *Risk management and healthcare policy* (Vol. 16, pp. 393–400). <https://doi.org/10.2147/RMHP.S399826>
- Jiang, Y., Cai, Y., Zhang, X., & Wang, C. (2024). Interprofessional education interventions for healthcare professionals to improve patient safety: a scoping review. *Medical Education Online*, 29(1), 2391631. <https://doi.org/10.1080/10872981.2024.2391631>
- Kang, M., Nagaraj, M. B., Campbell, K. K., Nazareno, I. A., Scott, D. J., Arocha, D., & Trivedi, J. B. (2022). The role of simulation-based training in healthcare-associated infection (HAI)

- prevention. *Antimicrobial Stewardship & Healthcare Epidemiology*, 2(1), e20.
- Kasmiaty, Baharuddin, Fattah, M. N., Mulfiyanti, D., Ermawati, Umanailo, M. C. B., & Hadi, I. (2021). The influence of supervision of heads of rooms and knowledge of implementing nurses on patient safety through the quality of nursing services at the regional hospital. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 3214–3222.
- Lee, H., & Lee, N.-J. (2025). An Exploration of Safety Culture, Second Victim Phenomenon and Negative Work Outcomes in Health Care Settings. In *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing*. <https://doi.org/10.1111/jnu.13048>
- Lee, S. E., Repsha, C., Seo, W. J., Lee, S. H., & Dahinten, V. S. (2023). Room of horrors simulation in healthcare education: A systematic review. *Nurse Education Today*, 126, 105824. <https://doi.org/10.1016/j.nedt.2023.105824>
- Lewis, S. L. M., Dirksen, S. R., Heitkemper, M. M., & Bucher, L. (2014). *Medical-Surgical Nursing: Assessment and Management of Clinical Problems*.
- Prentice, D., & O'rourke, T. (2013). Safe practice: using high-fidelity simulation to teach blood transfusion reactions. *Journal of Infusion Nursing : The Official Publication of the Infusion Nurses Society*, 36(3), 207–210. <https://doi.org/10.1097/NAN.0b013e318288a3d9>
- Reime, M. H., Johnsgaard, T., Kvam, F. I., Aarflot, M., Breivik, M., Engeberg, J. M., & Brattebø, G. (2016). Simulated settings; powerful arenas for learning patient safety practices and facilitating transference to clinical practice. A mixed method study. *Nurse Education in Practice*, 21, 75–82. <https://doi.org/10.1016/j.nepr.2016.10.003>
- Said Bodur1*†, E. F. (2010). Validity and reliability of Turkish version of “Hospital Survey on Patient Safety Culture” and perception of patient safety in public hospitals in Turkey Said. *BMC Health Services Research*, 10(28).
- Scott, J., Sykes, K., Waring, J., Spencer, M., Young-Murphy, L., Mason, C., Newman, C., Brittain, K., & Dawson, P. (2025). Systematic review of types of safety incidents and the processes and systems used for safety incident reporting in care homes. In *Journal of advanced nursing* (Vol. 81, Issue 1, pp. 69–115). <https://doi.org/10.1111/jan.16264>
- Sellers, M. M., Berger, I., Myers, J. S., Shea, J. A., Morris, J. B., & Kelz, R. R. (2018). Using Patient Safety Reporting Systems to Understand the Clinical Learning Environment: A Content Analysis. In *Journal of surgical education* (Vol. 75, Issue 6). <https://doi.org/10.1016/j.jsurg.2018.08.004>
- Shen, C.-Y., Lin, C.-C., Liu, Y.-Y., Huang, C.-C., Chen, H.-T., Yang, H.-W., Su, P.-H., Yu, T.-H., Cheng, Y.-J., & Tsai, W. (2018). A Preliminary Study of Simulation in Emergency Medicine Training in A Taiwanese Teaching Hospital. *醫學教育*, 22(1), 1–8.
- Song, M. O., Yun, S. Y., & Jang, A. (2023). Patient Safety Error Reporting Education for Undergraduate Nursing Students: A Scoping Review. In *The Journal of nursing education* (Vol. 62, Issue 9, pp. 489–494). <https://doi.org/10.3928/01484834-20230712-04>
- Stevanin, S., Causero, G., Zanini, A., Bulfone, G., Bressan, V., & Palese, A. (2018). Adverse events witnessed by nursing students during clinical learning experiences: Findings from a longitudinal study. In *Nursing & health sciences* (Vol. 20, Issue 4, pp. 438–444). <https://doi.org/10.1111/nhs.12430>
- Yu, J., Kim, M., Choi, S., Lee, S., Kim, S., Jung, Y., Kwak, D., Jung, H., Lee, S., Lee, Y., Hyun, S., Kang, Y., Kim, S. M., & Lee, J. (2020). Effectiveness of simulation-based interprofessional education for medical and nursing students in South Korea : a pre-post survey. *BMC Medical Education*, 20(20), 1–9. <https://doi.org/10.1186/s12909-020-02395-9>