

Comparative Study Between Associate Degree Nursing and Bachelor of Science Students for Adopting Case-Based Learning in Medical-Surgical Nursing

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Abstract

Introduction: Despite the important gains of using case studies to engage and enhance student learning, research documenting student satisfaction of using online case studies is limited, especially a comparison between Associate Degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) programs. Comparisons in perception of enhanced learning using online case-based studies were explored between students enrolled in ADN and BSN programs during medical-surgical courses as case-based learning can be used to support clinical decision making when clinical placements are lacking.

Methods: A survey was administered during medical-surgical classes for 110 BSN students and 79 ADN students. Questions were asked about enhanced learning, individual case satisfaction, and overall satisfaction using online case studies. Using descriptive statistics and *t*-test analyses, results showed that ADN student's perceptions of the exercises were more positive, useful, and more applicable to education. However, no difference in enhanced learning was observed between the ADN and BSN groups.

Conclusion: Regardless of BSN or ADN student status, all nursing students expect their education to relate to both theory and practice in the clinical setting. Online case studies enhance and emphasize critical thinking to adapt to constantly changing, complex situations congruent with the American Association of Colleges of Nursing (AACN) Essentials Domain 1: *knowledge for nursing practice* and Domain 2: *person-centered care*.

Keywords

online learning, online education, nursing diploma program, baccalaureate nursing education

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Introduction/Background

Associate Degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) programs continue to be negatively impacted by the COVID-19 pandemic. Despite the return to classroom learning, clinical placements continue to be an ongoing challenge for many ADN and BSN nursing programs in the post-pandemic clinical environment. A combination of factors exacerbates this situation from the shortage of experienced clinical preceptors and a reduction in the number of students accepted for clinical placements (Basso et al., 2022) to a national nursing faculty shortage (AACN, 2022). The purpose of clinical placement is to provide students opportunities to develop knowledge and skills, competence, and confidence in preparation to become professional nurses (Basso et al., 2022). Students

impacted by the loss of reliable and predictable clinical placements may experience increased anxiety and fear of making mistakes (Hawkins et al., 2019); feel unprepared to meet the expectations of working in acute care settings (Sterner et al., 2021); meet the expectations of registered nurses to perform at the same level as experienced nurses (Butler, 2018); or feel

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the lack of clinical placement may affect their future employment decisions or hiring position (Michel et al., 2021).

To augment the instability of clinical placements, online case-based learning can help prepare ADN or BSN students for their clinical activities and future clinical practice. Case-based learning empowers students to combine theory and practice to apply knowledge using critical thinking and clinical reasoning skills using relevant clinical cases to solve complex clinical problems (Lestari et al., 2023). Case-based learning promotes deeper learning extending beyond memorized correct answers (McLean, 2016). Moreover, realistic online clinical case scenarios bridge the gaps between nursing knowledge and clinical application, identifying and applying learned principles to new or changing situations without any harmful consequences. Additionally, case-based learning offers unprecedented opportunities for students needing more time to reflect on certain concepts before progressing forward (Liang et al., 2020). Many nurse educators strongly consider case-based learning as an effective teaching-learning strategy as they provide greater insight into students' abilities to critically analyze and make decisions that are used in clinical practice (Li et al., 2019).

Brief View/Discussion of Topic

Medical-Surgical Nursing, often thought of as the foundation of nursing, relies upon nursing reasoning to solve problems in clinical settings. Medical-Surgical Nursing courses particularly benefit from the use of case studies. Case studies take the student through the step-by-step process of interactive and independent learning enhancing clinical decision-making needed in Medical-Surgical Nursing courses and clinical situations. This form of deeper learning provides nursing students opportunities to gain insight into patient conditions by applying theory in practice and more closely aligns to real-world nursing scenarios (Li et al., 2019), which is consistent with the American Philosophical Association consensus definition of critical thinking (Brooks & Shepherd, 1990; Rane-Szostak & Robertson, 1996).

The use of case-based learning as an effective and engaging teaching-learning strategy in the classroom and online has been very well received by students (Seshan et al., 2021). However, studies tend to show the effects of case-based learning on nursing student learning outcomes, and place little emphasis on students' perspectives, especially among pre-licensure students. The purpose of this study was to explore nursing students' perceptions of enhanced learning and satisfaction using vendor-provided online case-based learning tools, integrated into the Medical-Surgical Nursing courses in both ADN and BSN programs.

Methods

This study used a cross-sectional design and a convenience sampling to assess 110 BSN students and 79 ADN students during a Medical-Surgical Nursing course at a privately-owned nursing school which offered both types of degrees. As no institutional

review board committee was present at this institution, permission to conduct the evaluation was granted by the Medical-Surgical Nursing Committee at the School of Nursing. All students were informed that their participation was voluntary, anonymous, and all information would be kept confidential.

All participants completed the "Case Study Satisfaction Questionnaire" survey developed by the authors. The survey was based on a literature review and teaching experiences. The survey contained three categories of questions. The first category comprised 10 questions that reviewed the overall experiences of students while they engaged in the assigned case studies; ratings used a 5-point Likert scale, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." The second category contained 10 questions that rated student satisfaction with each of the 11 online case studies; ratings used a 5-point Likert scale, with 1 indicating "very poor" and 5 indicating "excellent." General comments and suggestions were also collected at the end of the survey to obtain additional information.

Data Collection

Data were collected from ADN and BSN students during the Medical-Surgical I course, which lasted for two quarters. At the beginning of the course, the same course instructor who was also the primary author assigned for both the ADN and BSN programs, assigned 11 online case studies as a learning resource provided by a nursing education vendor. The course instructor encouraged the students to participate in self-learning and supplemental course lectures during their time off-campus and verbally explained the purpose of the survey, at the end of the course. To motivate students, they were informed there were 1–3 questions from the online tool that would be integrated into each test. During the last class, student responses were collected using a paper survey questionnaire resulting in a 100% response rate. A student was assigned to collect the survey results to prevent respondent-evaluator bias, but the course instructor was available on site to answer questions and provide clarification.

SPSS 26.0 SPSS (SPSS Inc., Chicago, IL, USA) for Windows was used for statistical analysis. Descriptive statistics including the mean (*M*) and standard deviation (*SD*) were used to describe satisfaction items, and *t*-test analysis was computed to determine group differences with satisfaction. The value of $p < .05$ was accepted as the statistical significance limit.

Results

During the last class, student responses were collected using a paper survey questionnaire resulting in a 100% response rate. A student was assigned to collect the survey results to prevent respondent-evaluator bias, but the course instructor was available on site to answer questions and provide clarification.

The results presented in Table 1 compare the overall experience of the ADN and BSN students using the case studies. Comparing the overall experience of the ADN and BSN students using the case studies, the average score ranged from

Table 1. Comparison of BSN and ADN Students' Overall Experience of the Case Studies.

Item	ADN (n = 79)		BSN (n = 111)		t
	Mean ± SD	Rank	Mean ± SD	Rank	
Met learning objectives	4.49 ± 0.64	3	4.36 ± 0.66	1	1.4
Useful for learning ability	4.58 ± 0.63	1	4.35 ± 0.78	2	2.25
Well organized and easy to follow	4.53 ± 0.64	2	4.28 ± 0.81	5	2.4
Quality was good	4.48 ± 0.68	4	4.32 ± 0.69	4	1.65
Able to apply knowledge	4.44 ± 0.71	6	4.35 ± 0.79	2	0.83
Able to interact with patient	3.94 ± 0.95	10	3.76 ± 0.99	9	1.26
Enhance learning process	4.38 ± 0.65	7	4.25 ± 0.83	6	1.19
Important for critical thinking	4.47 ± 0.77	5	4.34 ± 0.79	3	1.1
Recommend as method of learning	3.97 ± 1.03	9	3.84 ± 1.02	8	0.91
More productive on case study	4.34 ± 0.75	8	4.17 ± 0.82	7	0.49

Table 2. Comparison of Satisfaction With Each Case Study for the BSN and ADN Students.

Item	ADN (n = 79)		BSN (n = 111)		t
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
Hypertension	4.66 ± 0.90	4.42 ± 0.96	4.42 ± 0.96	4.42 ± 0.96	1.75
Heart failure with atrial fibrillation	4.59 ± 1.09	4.45 ± 1.01	4.45 ± 1.01	4.45 ± 1.01	0.9
Laryngeal cancer	4.47 ± 1.10	4.42 ± 1.01	4.42 ± 1.01	4.42 ± 1.01	0.32
COPD with pneumonia	4.70 ± 1.03	4.43 ± 1.00	4.43 ± 1.00	4.43 ± 1.00	1.79
Peptic ulcer disease	4.72 ± 0.97	4.39 ± 1.01	4.39 ± 1.01	4.39 ± 1.01	2.27
Colonoscopy with bowel perforation	4.59 ± 1.04	4.37 ± 1.08	4.37 ± 1.08	4.37 ± 1.08	1.42
Inflammatory bowel disease	4.65 ± 1.06	4.40 ± 1.03	4.40 ± 1.03	4.40 ± 1.03	1.59
Chronic renal failure	4.71 ± 1.00	4.43 ± 1.04	4.43 ± 1.04	4.43 ± 1.04	1.88
Thyroid disorder	4.54 ± 1.13	4.37 ± 1.13	4.37 ± 1.13	4.37 ± 1.13	1.03
Diabetes	4.66 ± 1.06	4.44 ± 1.07	4.44 ± 1.07	4.44 ± 1.07	1.41
Rheumatoid arthritis with joint arthroplasty	4.51 ± 1.14	4.37 ± 1.10	4.37 ± 1.10	4.37 ± 1.10	0.81

3.94 ± 0.95 to 4.58 ± 0.63 for the ADN group and from 3.76 ± 0.99 to 4.36 ± 0.66 for the BSN group. The three most highly rated overall experiences related to the case study by ADN students were (1) *useful for learning ability* (4.58 ± 0.63), (2) *well-organized and easy to follow* (4.53 ± 0.64), and (3) *met learning objectives* (4.49 ± 0.64), whereas those rated most highly by BSN students were (1) *met learning objectives* (4.36 ± 0.66), (2) *useful for learning ability* (4.35 ± 0.78), and (3) the equally ranked *able to apply knowledge* (4.35 ± 0.79), and *important for critical thinking* (4.34 ± 0.79). Comparative *t*-tests were performed to determine that no difference between the two groups was identified regarding overall experience. The satisfaction of BSN and ADN students for each of the 11 case studies was also measured. Comparative *t*-tests performed showed no difference between the two groups regarding the satisfaction with each of the case studies (Table 2).

Open-ended questions regarding general comments and suggestions were collected and analyzed from students about their learning experiences using case studies. The ADN nursing students provided the following comments: “the online case study shows practical applications in real-life scenarios;” “the combination of online case studies with classroom teaching is very useful;” “good critical thinking exercises;” and “shows complications we may face.” The BSN students’ comments included: “it helped me realize how much I understood the material and what material I needed to study harder;” “increased incentive to perform extra tasks;” “a nice interactive approach in which we could apply the information that we had learned;” and “a great way to practice what we learned in class.” Feedback from both student groups indicated positive perceptions using case studies to enhance learning, better met learning outcomes, and satisfaction with the effectiveness of online case-studies to assist with obtaining multiple transferable skills.

Analysis

This study compared student perceptions of enhanced learning using online case studies following classroom instruction between the programs. Offering online case studies on Medical-Surgical subjects outside of class provides students with a sense of control in their learning. Students access the case studies at their convenience and spend as much time as desired on each case. This study’s results also add validity to previous studies that found case studies have been used as a successful teaching and learning strategy in a variety of nursing courses to develop and support critical thinking.

Medical-Surgical Nursing courses assist students in preparing for their roles and responsibilities within a complex health care system. Statistical results from this study confirm that case-based learning experiences demonstrate that online learning supplementation provides a theoretical, practical, and interactive learning experience for students rather than passive learning experience. As such, students can successfully apply both theoretical and practical knowledge to the patient scenarios (e.g., hypertension, chronic

obstructive pulmonary disease, etc.). Using case-based learning provides instructor insight into students analytical thought processes as they determine a course of action based on nursing knowledge acquired in the classroom without harming a patient. Competency-based curriculum centers on the demonstrated achievements of skills and knowledge attained through active learning. In competency-based programs students assume greater responsibility for their learning by putting knowledge into action (AACN, 2021). The findings of this study reveal that self-directed and independent learners can use online learning to develop professional skills.

One unique finding of this study is the researchers found no difference in enhanced learning or satisfaction with online case studies between the programs, providing a reference for comparisons between both programs. The results of this study show that the students “agreed” to “strongly agreed” that the overall experience of using case studies was satisfying, and that each of the individual case studies was rated as “very good” or “excellent” by both BSN and ADN students. The results indicate that nursing students were positive about the use of online self-learning tools, which offer a useful supplemental learning process for them as they begin their careers as health care professionals. Nursing students in both programs are eligible to take the NCLEX licensing examination required for employment. Case-based learning is a reasonable tool which further develops clinical skills such as problem-solving and clinical reasoning skills and supports enhanced critical thinking.

To evaluate achievement of course objectives and program student learning outcomes, the researchers compared satisfaction between the ADN and BSN groups and their overall experience using case studies. Specifically, three top ADN student experiences using case studies focused on the use of knowledge in indispensable daily tasks, including most of the duties and responsibilities of nursing care which is generally consistent with Black’s (2020) discussion about shortened ADN program outcomes. The top three related experiences using case studies for BSN students were directed toward applying knowledge in complex clinical situations, a position supported by AACN (2019). This explains that faculty who utilize active learning strategies, such as online resources to enhance acquisition of knowledge also augment principles of adult learning and Bloom’s taxonomy.

Study limitations are the inability to evaluate changes in critical thinking after the use of case studies. Additionally, no demographic data were collected to determine if any variables had significant relationships with programs. Also, the study’s sample set came from accessible participants without power analysis limiting the feasibility of generalization of results to other institutions. Future investigations, such as online surveys utilization, should include multiple institutions to collect and process data, which can overcome cost and geographical limitations and increase transferability.

Conclusion/Importance to Nursing Profession

Recovering from COVID-19 in the clinical arena is going to take more time. This study can serve as a pilot study for future research to report feedback from students regarding learning outcome achievements after case studies have been used to enhance learning to develop clinical competence and confidence either in-person or virtual instructions. Nurses have specific knowledge that is vital for the safety of patients and for assisting their health and wellbeing. Critical thinking is a crucial skill that demonstrates that a nursing student is qualified to practice nursing. BSN or ADN prepared nursing students expect that what they learned will relate to their future practice. Online case-based learning can assist students to feel better qualified to think through changing conditions, more competent in their actions, and possibly less fearful of making mistakes. These practices are congruent with the expected outcomes of the AACN Essentials in Domain 1: *knowledge for nursing practice* and Domain 2: *person-centered care*.

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References

- American Association of Colleges of Nursing (2019). *The impact of education on nursing practice*. <https://www.aacnnursing.org/Portals/42/News/Factsheets/Education-Impact-Fact-Sheet.pdf>.
- American Association of Colleges of Nursing (2021). *The essentials: Core competences for professional nursing education*. <https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf>.
- American Association of Colleges of Nursing (2022). *Fact sheet: Nursing faculty shortage*. <https://www.aacnnursing.org/Portals/42/News/Factsheets/Faculty-Shortage-Factsheet.pdf>.
- Basso, I., Gonella, S., Londa, M., Airolti, C., Chilin, G., Follenzi, A., Dal Molin, A., & Dimonte, V. (2022). Readiness for practice in undergraduate nursing students during the COVID-19 pandemic: A cross sectional study. *Annali Di Igiene: Medicina Preventiva e di Comunita*, 34(6), 558–571. <https://doi.org/10.7416/ai.2022.2513>

- Black, B. P. (2020). *Professional nursing: Concepts & challenges* (7th ed.). Elsevier.
- Brooks, K. L., & Shepherd, J. M. (1990). The relationship between clinical decision-making skills in nursing and general critical thinking abilities of senior nursing students in four types of nursing programs. *Journal of Nursing Education, 29*(9), 391–399. <https://doi.org/10.3928/0148-4834-19901101-05>
- Butler, C. (2018). Nurses' experiences of managing patient deterioration following a post-registration education programme: A critical incident analysis study. *Nurse Education in Practice, 28*, 96–102. <https://doi.org/10.1016/j.nepr.2017.10.014>
- Hawkins, N., Jeong, S., & Smith, T. (2019). Coming ready or not! an integrative review examining new graduate nurses' transition in acute care. *International Journal of Nursing Practice, 25*(3), e12714. <https://doi.org/10.1111/ijn.12714>
- Lestari, E., Rahmawatie, D. A., & Wulandari, C. L. (2023). Does online interprofessional case-based learning facilitate collaborative knowledge construction? *Journal of Multidisciplinary Healthcare, 16*, 85–99. <https://doi.org/10.2147/JMDH.S391997>
- Li, S., Ye, X., & Chen, W. (2019). Practice and effectiveness of “nursing case-based learning” course on nursing student's critical thinking ability: A comparative study. *Nurse Education in Practice, 36*, 91–96. <https://doi.org/10.1016/j.nepr.2019.03.007>
- Liang, Y. J., Chen, W. J., Zhou, S., Wang, L., Liao, Q. Y., Lu, W. X., & Lin, C. L. (2020). An innovative approach of using online problem-based learning and case-based learning in teaching disaster nursing during the COVID-19 pandemic. *Journal of Integrative Nursing, 2*(4), 196. https://doi.org/10.4103/jin.jin_44_20
- McLean, S. F. (2016). Case-based learning and its application in medical and health-care fields: A review of worldwide literature. *Journal of Medical Education and Curricular Development, 3*, <https://doi.org/10.4137/JMECD.S20377>
- Michel, A., Ryan, N., Mattheus, D., Knopf, A., Abuelezam, N. N., Stamp, K., Branson, S., Hekel, B., & Fontenot, H. B. (2021). Undergraduate nursing students' perceptions on nursing education during the 2020 COVID-19 pandemic: A national sample. *Nursing Outlook, 69*(5), 903–912. <https://doi.org/10.1016/j.outlook.2021.05.004>
- Rane-Szostak, D., & Robertson, J. F. (1996). Issues in measuring critical thinking: Meeting the challenge. *Journal of Nursing Education, 35*(1). <https://doi.org/10.3928/0148-4834-19960101-04>
- Seshan, V., Matua, G. A., Raghavan, D., Arulappan, J., Al Hashmi, I., Roach, E. J., Sunderraj, S. E., & Prince, E. J. (2021). Case study analysis as an effective teaching strategy: Perceptions of undergraduate nursing students from a middle eastern country. *SAGE Open Nursing, 7*, <https://doi.org/10.1177/23779608211059265>
- Sterner, A., Ramstrand, N., Palmér, L., & Hagiwara, M. A. (2021). A study of factors that predict novice nurses' perceived ability to provide care in acute situations. *Nursing Open, 8*(4). <https://doi.org/10.1002/nop2.871>