



Aniko Der¹

Lecturer

ORCID azonosító:

<https://orcid.org/0009-0009-6418-7306>

Ravinder Babbar²

Associate Lecturer

Dave Easton³

Clinical Skills and Simulation

Lead Technician

Pedro Jr Viquiera⁴

Senior Technician,

Clinical Skills and Simulation

Prof. Dr. Jozsef Betlehem

PhD, habil⁵

Head of Institute

Prof. Dr. Annamaria Pakai

PhD, habil⁶

Deputy Head of Institute,

Director of Campus

Kapcsolattartó szerző:

Aniko Der

121 London Road Redhill RH1 2JQ

United Kingdom

aniko.der@lsbu.ac.uk

+44 7516031775

Critical analysis of factors that help second-year adult nurse BSc students to prepare for ABCDE assessment and seizure management at placement

Másodéves ápoló BSc-hallgatók ABC-DE-állapotfelmérésre és görcsroham-ellátásra való felkészítését támogató tényezők kritikai elemzése

1-4 London South Bank University, College of Health and Life Sciences, School of Nursing and Midwifery, United Kingdom

5-6 University of Pecs Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences, Hungary

Abstract

Aim: To evaluate Adult Nursing BSc students' perceptions of a simulated practice session on Airway, Breathing, Circulation, Disability, and Exposure (ABCDE) assessment and seizure management, and to compare this approach with other teaching methods. **Methods:** A longitudinal mixed-methods study was conducted in 2025 in Phase 1, immediately after simulation (May) and Phase 2, after a 6-week clinical placement (August). Students completed two surveys (SET-M n=40; bespoke questionnaire n=45). Quantitative data were analysed using descriptive statistics and the non-parametric Friedman test. **Results:** Students gave high scores (87–95%) on the SET-M, indicating that the simulation session contributed to learning and increased confidence in ABCDE assessment and seizure management. Compared to other teaching methods, simulation ranked mid-range and not significantly lower, with only seizure management learning in placement ranking significantly lower (Friedman test: $p < 0.001$). **Conclusion:** Simulation enhanced learning and confidence but ranked mid-range, highlighting its role in addressing limited clinical exposure and informing curriculum design.

Keywords: *Simulated practice learning, seizure management, ABCDE assessment, nursing education*

Absztrakt

Célkitűzés: A felnőttápolás BSc szakos hallgatók percepcióinak értékelése egy szimulációs gyakorlati foglalkozás kapcsán, amely a légút (Airway), légzés (Breathing), keringés (Circulation), idegrendszer (Disability) és egész-test/környezet (Exposure) szerinti (ABCDE) állapotfelmérésre, valamint a görcsrohamok ellátására fókuszált; továbbá e megközelítés összehasonlítása más oktatási módszerekkel. **Módszerek:** 2025-ben longitudinális, vegyes módszertanú vizsgálatot végeztünk az 1. fázisban közvetlenül a szimulációt követően (májusban), míg a 2. fázisban egy 6 hetes klinikai gyakorlat után (augusztusban). A hallgatók két kérdőívet töltöttek ki (SET-M, n=40; saját szerkesztésű, n=45). Az adatokat leíró statisztikával és Friedman-tesztel elemeztük. **Eredmények:** A hallgatók magas pontszámokat értek el a SET-M kérdőíven (87–95%), ami arra utal, hogy a szimulációs foglalkozás hozzájárult tanulásukhoz, valamint növelte az állapotfelméréssel és a görcsrohamok ellátásával kapcsolatos magabiztosságukat. A többi oktatási módszerhez viszonyítva a szimuláció közepes (de nem szignifikánsan rosszabb) értékelést kapott. Egyedül a görcsrohamok klinikai gyakorlat során történő ellátásának elsajátítását értékelték szignifikánsan gyengébben (Friedman-teszt: $p < 0,001$). **Következtetés:** A szimuláció elősegítette a tanulást és növelte a hallgatók önbizalmát, de összehasonlításban közepes értékelést kapott. Eredményeink rámutatnak a szimuláció szerepére a korlátozott klinikai tapasztalatszerzési lehetőségek kompenzálásában, valamint a tanterv fejlesztésének támogatásában.

Kulcsszavak: *szimulációalapú gyakorlati tanulás; görcsrohamok ellátása; ABCDE-állapotfelmérés; ápolásképzés*

List of Abbreviations (Alphabetical Order)

CRM: Crisis Resource Management

DDS: Disability and Dyslexia Support

EDI: Equity, Diversity and Inclusion

HFPS: High-Fidelity Patient Simulator

LSBU: London South Bank University

NMC: Nursing and Midwifery Council

PERRLA: Pupils Equal, Round, Reactive to Light
and Accommodation

SBE: Simulation-Based Education

SPL: Simulated Practice Learning

VLE: Virtual Learning Environment

1. Introduction

Systematic patient assessment using the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) framework and seizure management is embedded within the Standards of proficiency for registered nurses set by the Nursing and Midwifery Council (NMC) in the United Kingdom (Nursing and Midwifery Council, 2024). These proficiencies are developed progressively across the Adult Nursing BSc programme, and competency is expected by the end of the third (final) year. Nevertheless, the core teaching and skills development for these competencies occurs predominantly during the second year of the course when at London South Bank University (LSBU), we further develop teaching of the ABCDE assessment by exploring neurological nursing assessments in detail through a variety of learning opportunities and methods, combined with teaching seizure management, thereby providing students with the opportunity to apply nursing assessment skills in an emergency scenario.

The ABCDE approach is a universal framework used in all clinical emergencies to support rapid assessment and immediate treatment. It is widely endorsed by experts in emergency medicine and is believed to enhance patient outcomes by helping healthcare professionals prioritise the most life-threatening issues first. (Resuscitation Council UK, 2024). It is applicable to patients of all ages, including both adults and children. Because the clinical signs of critical illness are often similar regardless of the underlying cause, detailed knowledge of the specific aetiology is not required during the initial assessment. The ABCDE approach should therefore be implemented whenever critical illness or injury is suspected (Thim et al., 2012).

In acute situations, strong ABCDE skills among all members of the care team can save valuable time and optimise overall team performance (Bruinink et al., 2024). It is predominantly utilised in acute hospital settings and by paramedics; however, it can also be applied by healthcare professionals working in community care especially when working independently and helps them to recognise deteriorating or acutely unwell patients early, perform a structured and prioritised assessment, make rapid clinical decisions, escalate care (e.g., call emergency services) when needed (Thim et al., 2012)

At LSBU, teaching on ABCDE assessment and seizure management within the Adult Nursing curriculum has predominantly relied on didactic lectures supported by blended online learning materials, complemented by practical sessions focused on technical skills and reinforced through supervised clinical placement opportunities.

Over the past 2 years, this pedagogical approach has evolved by first incorporating immersive, scenario-based simulation using high-fidelity patient simulators in 2023/2024 academic year followed in 2024/2025 academic year by integrating a virtual-simulation platform to further support the teaching of these proficiencies.

Simulation Based Education (SBE) has expanded significantly within undergraduate nursing programmes, driven by technological advances in virtual reality, augmented reality, and mixed reality environments (Salari et al., 2024). This trend is also reflected within the Adult Nursing BSc programme at LSBU.

Following the introduction of virtual and immersive simulation in, as part of module evaluation process we evaluated students' immediate perceptions of the learning experience using the Simulation Effectiveness Tool–Modified

(SET-M) (Leighton et al., 2015). Findings indicated high levels of perceived effectiveness. However, an outstanding question remained that we wanted further to explore to what extent did the learning gained during simulation transfer into clinical practice, and how influential was simulation relative to other learning resources in preparing students for placement? Therefore, the aim of this study is to address this question and is particularly important given that both ABCDE assessment and seizure management are mandatory NMC proficiencies hence the importance that our students are competent and confident in clinical practice within this proficiency.

2. Material and Methods

Research Aims and Questions

The following research questions guided the enquiry:

1. What are second-year BSc Adult Nursing students' perceptions of a three-hour simulated practice learning (SPL) session on ABCDE assessment and seizure management, delivered through a blended approach combining virtual simulation software and high-fidelity patient simulators, in terms of its contribution to their learning and self-reported confidence in performing these clinical proficiencies?
2. How do students evaluate the usefulness of simulation (virtual and on high-fidelity mannequins) compared to other teaching and learning approaches in preparing them for ABCDE assessment and seizure management?

Methodology

We conducted a longitudinal study at LSBU, Croydon Campus, between 1 May and 4 August 2025 during the 2024/2025 academic year.

The research consisted of two phases.

In the first phase, simulated practice learning sessions were delivered as course content at the beginning of May in 2025, followed by the administration of the first survey. The second phase occurred after students had completed their clinical placements in June and July in 2025, during which the second survey was administered on 4 August 2025.

All students within the cohort were invited to participate in the survey and participation was voluntary. 45 students completed both questionnaires representing 45% of the full cohort, resulting in a self-selected sample. The eligibility criteria included second-year BSc Adult Nursing students who participated in simulation-based teaching sessions on ABCDE assessment and seizure management, and who subsequently completed a 6-week clinical placement. Exclusion criteria were students within the cohort who did not fully engage in the SPL sessions or who failed to complete their clinical placements.

Demographic data were not collected as part of the survey because of the small sample size, to ensure participant anonymity, protect student privacy, and minimise social desirability bias. Nevertheless, the characteristics of the cohort are well established. The cohort can be described as predominantly mature learners, with a high proportion of individuals identifying as female (96%). In addition, the majority of the cohort (84%) identified as belonging to a minority ethnic background including Black, Asian, and other ethnic groups. 33% of the cohort had established Dyslexia and Disability Support (DDS) needs.

Phase 1: Chosen method of teaching ABCDE assessment and seizure management - simulated practice learning

For our 3-hour ABCDE assessment and seizure management SPL session, we used virtual simulation platform of a Medical Simulation software, alongside high-fidelity patient simulators (HFPS), specifically SimMan 3G PLUS manikins with integrated monitoring displaying heart rate, ECG rhythm, oxygen saturation, respiratory rate, blood pressure, and temperature in a simulated acute ward setting. Sessions were delivered in student groups of 15–20. We created a lesson plan that followed realistic patient scenarios which required students to engage in systematic assessment, prioritisation, teamwork, and management of deteriorating patients. This approach facilitated real-time feedback while promoting critical thinking and reflective practice (Elcokany et al., 2021).

Both simulations followed a recognised three-phase structure: pre-briefing, scenario enactment, and debriefing, as described below.

Pre-briefing

Pre-briefing represents the structured preparatory phase preceding simulation activities. This phase is facilitated by an educator and tailored to the participants' prior knowledge and experience, with the aim of promoting psychological safety, learner engagement, and readiness for learning (Brennan, 2021).

Prior to the scenarios, participants engaged in a 20-minute facilitator-led pre-briefing session. This session outlined the learning objectives, clarified roles, established ground rules and expectations, and provided orientation to the simulation environment and equipment.

Simulation scenario

Participants completed two simulation components.

The first was a 25-minute virtual simulation undertaken in computer laboratories at LSBU, enabling individual practice. The scenario involved performing an ABCDE assessment on a young patient with type 1 diabetes presenting with acute confusion due to hypoglycaemia, who developed a seizure during the nursing assessment.

The second component was a 15-minute immersive HFPS simulation conducted in the simulation laboratory. This scenario similarly required students to perform an ABCDE assessment for a patient admitted with a stroke, who began to seize at the end of the nursing assessment. The intended learning objectives were to develop effective patient communication; maintain patient safety and comfort; obtain a history of the presenting complaint, including collateral history; and establish medical, medication, and allergy histories. Students were required to follow the ABCDE approach while completing a full set of observations and calculating the National Early Warning Score 2. As the scenario progressed to seizure activity, students were expected to manage the airway, administer oxygen where required, perform an SBAR (Situation, Background, Assessment, Recommendation) structured handover, request urgent medical review, and administer prescribed medications. Additional objectives included effective teamwork and interprofessional communication, reassessment following seizure activity, and the application of clinical knowledge to support timely and appropriate decision-making in response to patient deterioration.

The virtual simulation enabled all students to engage in individual hands-on practice. In contrast, during the HFPS, three volunteer students actively participated in the simulation, while the remaining students undertook structured

observation roles and contributed to facilitated peer feedback during debriefing. Formative peer assessment enables students to receive clear, specific, and actionable feedback, identifying both successful elements and areas requiring further practice. At the same time, it promotes learner autonomy, fosters effective communication, and encourages reflective practice (Gaynor, 2020). This approach contributes to the development of assessment literacy, self-evaluation skills, and critical thinking, aligning with established educational principles (Black & Wiliam, 1998).

Debriefing

Debriefing sessions consist of structured, reflective discussions conducted following simulation activities. These sessions provide learners with the opportunity to review their performance, reflect on their experiences, identify areas for improvement, and connect theory to practice. Several approaches to debriefing have been identified in the literature, including plus-delta, oral debriefing, video-assisted debriefing, peer-led written debriefing, and self-debriefing (Salari et al., 2024). In our SPL session, debriefing was conducted as a structured, facilitator-led oral discussion, with an emphasis on performance, clinical decision-making, and teamwork. Crisis Resource Management (CRM) principles were used to inform the debriefing process. Effective and safe patient care depends on coordinated, team-based approaches and CRM principles shift the focus beyond clinical outcomes to include communication, leadership, and prioritisation skills that are essential for patient safety. The facilitator guided the discussion by focusing on team behaviours and strategies for improvement, ensuring that learning points were explicitly linked to CRM

principles and the predefined learning objectives (Lei & Palm, 2023).

At the conclusion of the SPL session, participating students completed the initial survey.

Data collection: after the ABCDE assessment and seizure management simulation session we assessed students' perceptions by using the Simulation Effectiveness Tool-Modified (SET-M). The tool employs a three-point Likert scale across five domains addressing confidence, learning, and the effectiveness of pre-briefing, scenario enactment, and debriefing (Leighton et al., 2015). We analysed questionnaire responses from 45 students, of which 5 questionnaires were excluded as they were not completed in full.

Data analysis approach: For each domain, total achieved scores were compared with maximum possible scores to calculate satisfaction ratios, which served as indicators of perceived effectiveness.

Phase 2: Critical analysis of factors that help second-year adult nurse BSc students prepare for ABCDE assessment and seizure management during placement - survey

After the SPL teaching session, the students undertook a 6-week clinical placement and later attended an academic event on 4th of August 2025, where the second survey was conducted.

Data collection: A bespoke questionnaire was developed, incorporating multiple-choice, dichotomous, and three-point Likert-scale questions alongside open-ended items. This mixed-methods approach enabled exploration of student confidence, clinical exposure, and perceptions of the usefulness of different learning resources in preparation for ABCDE assessment and seizure management.

Data analysis approach: Quantitative data were analysed using descriptive statistics (frequencies and graphical visualisations, such as bar and pie charts). A Friedman test was conducted in IBM SPSS Statistics to examine differences in students' ratings of the usefulness of eight teaching methods. This approach was appropriate as the data were obtained from a three-point Likert scale, generating ordinal, repeated measures data from a relatively small sample, with the same participants rating all methods (significance set at $p < 0.05$). Qualitative responses were analysed thematically to provide context for the quantitative findings; however, the present study focuses on quantitative data analysis.

Ethical considerations

Informed and voluntary consent was obtained from all participants. Students were provided with both written information (via an invitation letter) and verbal explanations of the purpose of the study. They were given the opportunity to ask questions in person, and contact details were provided for any further enquiries. Participation was entirely voluntary, and students were informed that they could withdraw from the study at any time prior to submitting the survey.

In relation to privacy, anonymity and confidentiality, no identifiable information was collected through the survey. Participants were also asked to provide consent for the use of anonymised quotations in the dissemination of findings. No incentives were offered or used in the recruitment or participation process for this study.

Ethical approval was granted by the University Ethics Committee at London South Bank University (approval number: 4335120).

3. Results

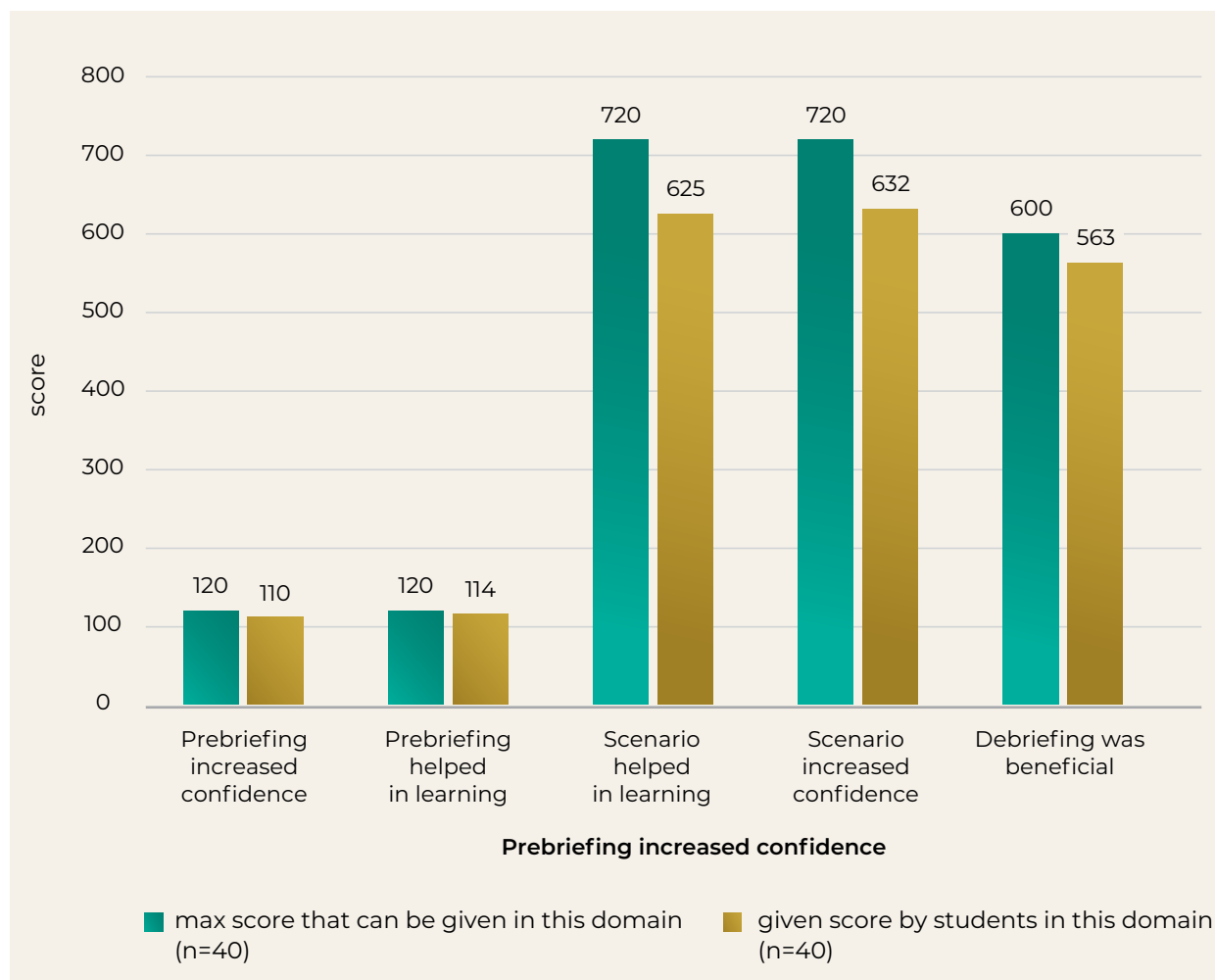
The perception of ABCDE assessment and seizure management simulation teaching session by students

Using a modified SET-M standardised questionnaire, we analysed students' perceptions of the ABCDE assessment and seizure management simulation teaching session across five domains: whether pre-briefing increased confidence, whether pre-briefing supported learning, whether the scenario facilitated learning, whether the scenario increased confidence, and whether debriefing was beneficial and contributed to learning. For each domain, we calculated the maximum achievable score based on the three-point Likert scale and compared it with the total score obtained from student responses. The ratio between these two values was used as an indicator of satisfaction levels and perceived effectiveness.

For the SET-M analysis, complete responses were available for 40 students (40/45).

For the pre-briefing, students reported a 91% (scoring 110/120) satisfaction rate for increasing confidence and a 95% (scoring 114/120) satisfaction rate for helping to learn. For the scenario, the satisfaction rate was 87% (scoring 625/720) for helping to learn and 88% (scoring 632/720) for increasing confidence. Finally, for the debriefing, students reported a 94% (scoring 563/600) satisfaction rate for it being beneficial (Figure 1.).

Figure 1.: The perception of ABCDE assessment and seizure management simulation session by students - using Modified SET - M standardised questionnaire (n=40)



How many students practised proficiencies ABCDE assessment and seizure management at placement, and what confidence level was achieved?

While ABCDE assessment is commonly practised in Year 2 (93% of students practised it), seizure management is encountered less frequently, with only 31% of students having observed or assisted in such situations. Seizure management may not be routinely encountered in clinical placements due to the limited occurrence of such cases in certain ward settings (Figure 2.).

This difference is also evident in students' confidence levels, with 82% reporting being fairly or very confident in conducting an ABCDE assessment, whereas only 49% indicated confidence in seizure management (Figure 3.).

Figure 2.: Level of students' engagement in ABCDE assessment and seizure management at clinical placement (n=45)

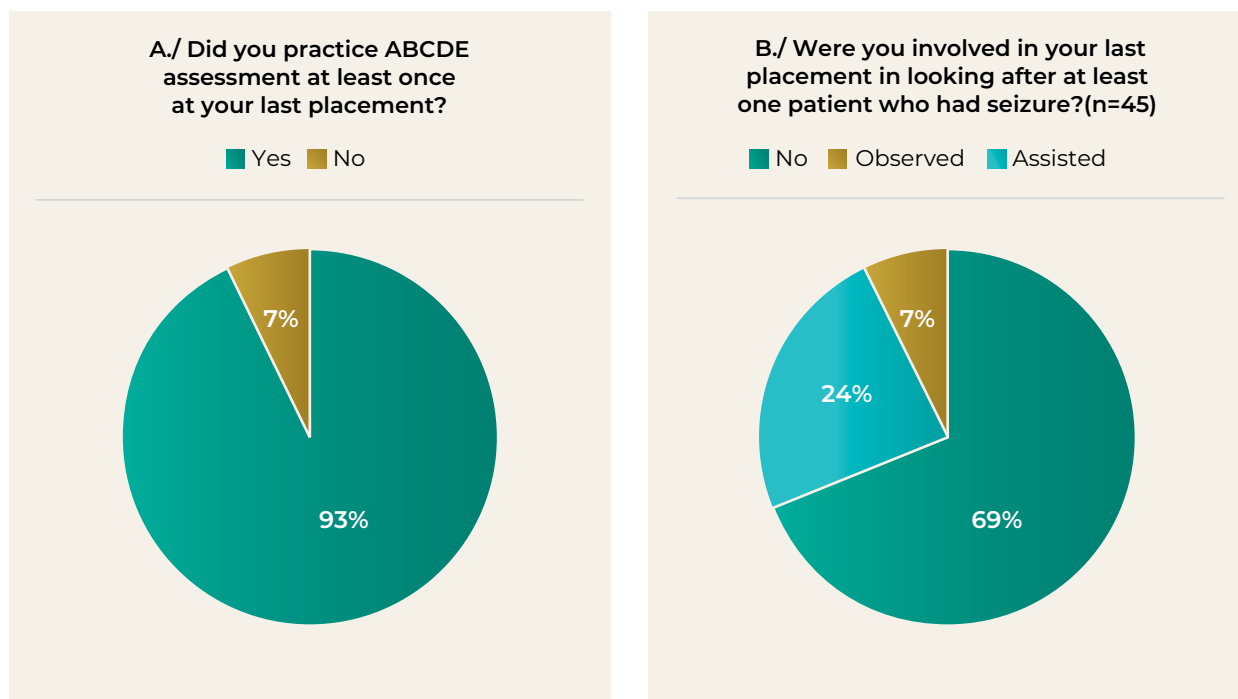
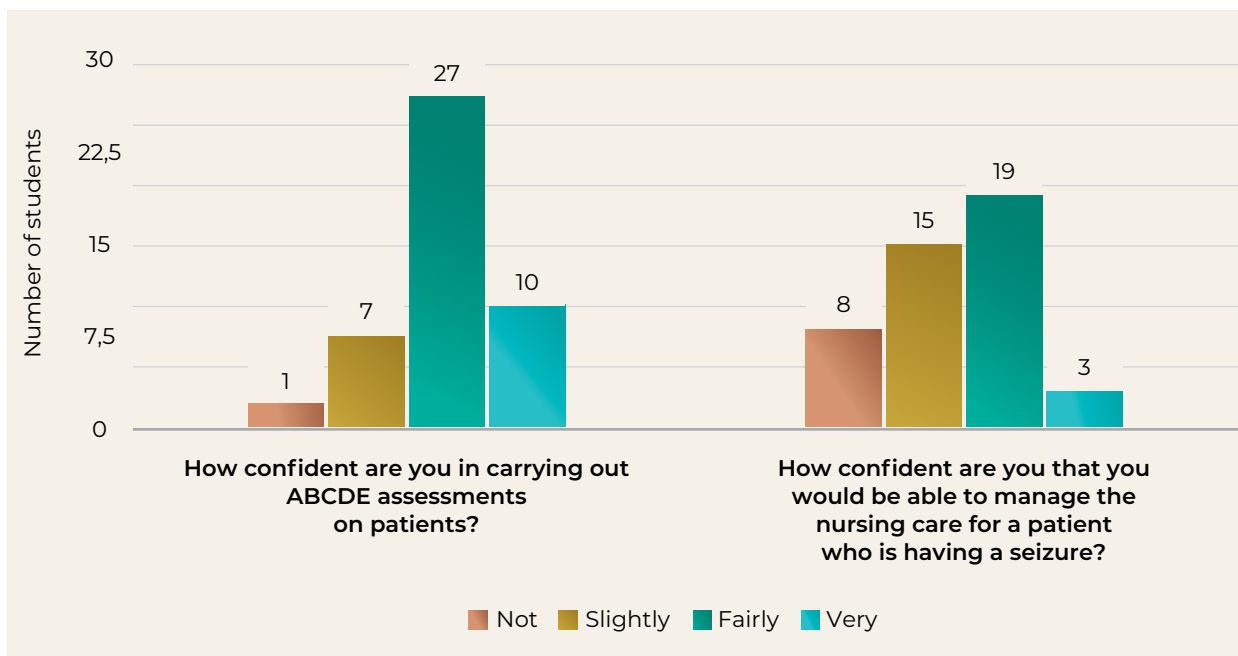


Figure 3.: Students' confidence level (n=45)

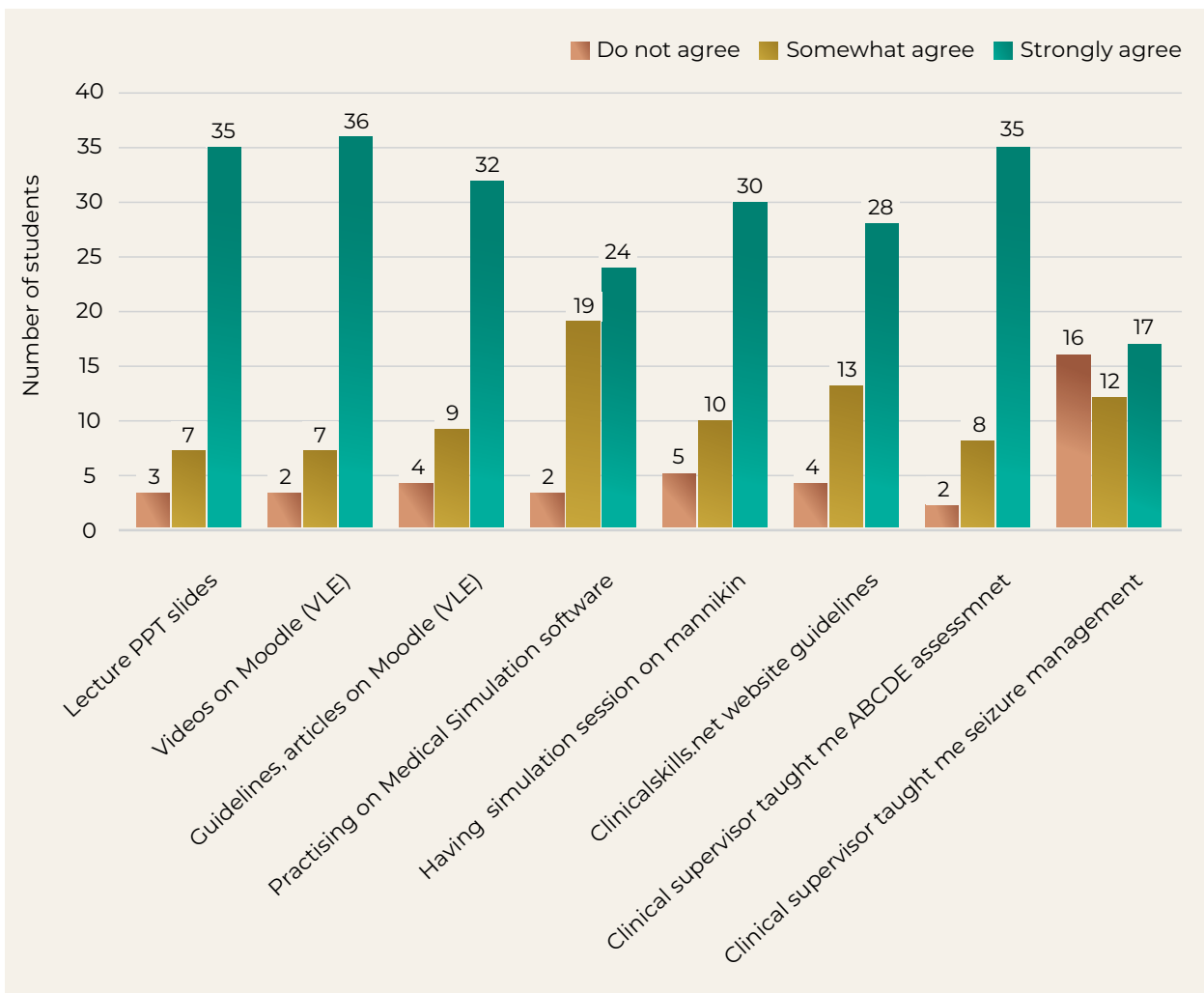


Which teaching/learning resources were perceived as most beneficial to prepare for ABCDE assessment and seizure management?

Students were asked to give their opinions on which resources were most useful for learning about ABCDE assessment and seizure management by rating the teaching resources that were offered on a three-point Likert scale (1 = do not agree that it was useful, 2 = somewhat agree that it was useful, 3 = strongly agree that

it was useful). All teaching methods, except one, had a median of 3 (strongly agree). This suggests that most students perceived these resources as useful. However clinical supervisor teaching of seizure management had a median of 2 (somewhat agree) correlating with the previous finding that many students did have less consistent learning experiences in seizure management in clinical placements (Figure 4.).

Figure 4.: Which resources were the most useful to learn ABCDE assessment and seizure management (n=45)?



A Friedman test was conducted to examine differences in students' ratings of the usefulness of eight teaching methods for learning ABCDE assessment and seizure management. While overall ratings differed across teaching methods, the only significant difference was the lower perceived usefulness of seizure management teaching in placements compared to other resources ($\chi^2(7) = 56.998$, $p < .001$)

The videos uploaded to the Moodle platform were considered the most useful learning resource (36 students strongly agreed), followed by ABCDE teaching provided by practice supervisors during clinical placements (35 students strongly agreed) and lecture slides (35 students strongly agreed). These methods also achieved the highest mean ranks (5.16, 5.04, and 5.02, respectively), indicating consistently high levels of student acceptance and perceived usefulness. Educational approaches that received moderately positive evaluations included professional guidelines and articles available on Moodle, guidelines from the Clinicalskills.net website, practice using a patient simulator manikin, and the use of medical simulation software. These methods achieved moderately high mean ranks (4.76, 4.47, 4.40, and 4.18, respectively), suggesting that students generally found them useful, although opinions regarding their effectiveness were less uniform.

In contrast, seizure management training delivered by practice supervisors during clinical placements was rated the least useful (mean rank = 2.98). This method received the highest number of disagreement responses (16 students), while only 17 students strongly agreed with its usefulness. The Friedman test indicated that this method was rated significantly lower than the other educational methods.

4. Discussion

Research has demonstrated that simulation-based education (SBE) is an effective method for teaching seizure management (Kahraman et al., 2019; Topbaş & Üstün, 2022). In our study, where ABCDE assessment and seizure management were taught using simulation-based techniques, we achieved high levels of perceived usefulness. Students reported that the pre-briefing, scenario, and debriefing all increased their confidence and supported their learning. SBE methods used in the education of future healthcare professionals have been described as a form of "cultural compression," whereby not only theoretical and practical clinical knowledge is enhanced, but also professional ideologies, values, and beliefs are transmitted with considerable intensity (Purdy et al., 2019). A recent analysis identified a significant increase in research on simulation-based nursing education after 2014, with a further surge during and following the COVID-19 pandemic (Mun et al., 2025).

An important finding was that opportunities for students to gain experience in seizure management during clinical placements are often limited, resulting in fewer than half of the participating students feeling confident in this area. This reinforces the importance of the academic component of the programme, where simulation can play a crucial role in ensuring that students develop the necessary skills and confidence to manage such clinical situations.

In response to the question of how simulation compares with other teaching and learning resources in preparing students for ABCDE assessment and seizure management, the main finding was that simulation-based methods were rated moderately. This suggests that, whi-

le perceived as useful, they may require further development to maximise their effectiveness. Students and faculty may experience difficulties navigating complex simulation interfaces, which can hinder effective use (Padilha et al., 2019). We found a similar explanation based on both our experiences as facilitators during the SPL sessions and students' responses to an open-ended survey question regarding their learning experience. Although these were not primary study variables and were not systematically investigated within the presented data, we identified two main contributing factors, as practical reflections, that may have led to lower ratings of virtual simulation: challenges with IT literacy and learning difficulties associated with neurodiversity, requiring Disability and Dyslexia Support (DDS).

The main challenges arise from several interconnected factors. The content and skills delivered within the module are aligned with mandatory NMC proficiencies that all students must achieve to practise safely; therefore, these requirements are non-negotiable. While a range of inclusive teaching and demonstration methods have been embedded to support neurodiverse students, the intended level of inclusivity has not yet been fully realised. In particular, students requiring DDS would benefit from extended time to complete tasks, especially during practical sessions. This continues to present a significant challenge, largely due to persistent time constraints within the curriculum. In addition, the development and implementation of DDS passports, adapted for use within clinical placement settings, would further support students with identified learning needs. To support effective engagement with the platform, access to additional modular IT support is recommended where needed. Greater consi-

deration is also required when organising peer assessment activities to ensure both fairness and effectiveness. One proposed strategy is to evaluate students' prior knowledge and experience in advance, allowing for more appropriate pairing or grouping based on differing levels of competence. This approach has the potential to enhance both the educational value and psychological safety of the peer assessment process; however, identifying a consistent and practical method for implementation remains challenging.

At LSBU, classrooms reflect a highly diverse student population, comprising individuals from a wide range of ages, cultural backgrounds, nationalities, and levels of confidence. While some students are highly motivated to participate in simulation-based education (SBE), others may be less engaged. Despite these differences, such diversity enriches the learning environment and creates valuable opportunities for shared learning (Abbeglen et al., 2020; ASPiH, 2023; Mutch et al., 2024).

Methodological limitations

The findings of this study should be interpreted with caution due to methodological limitations. Firstly, the study was conducted within a single-site setting, which may limit the generalisability of the findings to other institutions, educational contexts, or student populations. Secondly, the study relied on self-reported outcome measures, which are subject to response bias, including social desirability bias and individual differences in perception. In addition, the use of a three-point Likert scale, while appropriate for capturing subjective perceptions, provides limited sensitivity and may restrict variability in responses. Finally, the relatively small, self-selected sample represents a form

of non-probability sampling, which may introduce response bias, as participants who chose to respond may differ systematically from those who did not, reduce the statistical power of the study, and further limit the extent to which the findings can be generalised.

Notwithstanding these limitations, the study provides valuable preliminary insights into students' perceptions of teaching methods and contributes to the understanding of approaches to evaluating teaching effectiveness within a nursing module.

5. Conclusion

This study examined how second-year Adult Nursing BSc students perceive a three-hour simulated practice learning session on ABCDE assessment and seizure management, delivered using a combination of virtual simulation software and high-fidelity patient simulators. It also explored how simulation compares with other teaching and learning resources in preparing students for ABCDE assessment and seizure management.

The findings indicate that students actively used and valued these resources; however, there is scope to further optimise the use of simulation to maximise its educational impact. Additionally, further improvements are required to better support neurodiverse students. An important finding was that seizure management is encountered less frequently during clinical placements, which increases the importance of content delivered within the academic component of the programme.

The findings of this study have been applied to inform the principles underpinning our teaching approach across all module topics, including ABCDE assessment and seizure management. This approach aims to better support students, particularly those with diverse learning needs and neurodivergence.

These findings will inform future developments in the teaching of ABCDE assessment and seizure management at LSBU. Furthermore, they may support closer alignment between theoretical instruction and clinical practice, ultimately contributing to a reduction in the theory-practice gap among second-year adult nursing students in relation to these proficiencies.

Author Contributions

AD – Concept, expertise, data processing, statistical analysis, editing

RB – Expertise

PJV – Expertise

JB – Expertise

AP – Expertise, editing

Funding and/or Conflict of interests

This research received no external funding.

The authors declare no conflicts of interest.

Ethical Considerations

The respondents provided their consent to participate in the study by completing the questionnaire. Completion of the questionnaire was entirely anonymous and voluntary, and the data collected were used exclusively for scientific purposes in a manner that did not allow individual identification. The study was conducted in full accordance with the Declaration of Helsinki and applicable data-protection regulations.

References

- Abegglen, S., Burns, T., & Sinfield, S. (2020). Supercomplexity: Acknowledging students' lives in the 21st-century university. *Innovative Practice in Higher Education*, 4(1) 20-38.
- Association for Simulated Practice in Healthcare. (2023). ASPIH standards 2023 for simulation-based practice. <https://aspih.org.uk/standards-2>
- Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7–74. <https://doi.org/10.1080/0969595980050102>
- Brennan, B. A. (2021). Prebriefing in healthcare simulation: A concept analysis. *Clinical Simulation in Nursing*, 56, 155–162. <https://doi.org/10.1016/j.ecns.2021.04.015>
- Bruinink, L. J., Linders, M., de Boode, W. P., Fluit, C. R. M. G., & Hogeveen, M. (2024). The ABCDE approach in critically ill patients: A scoping review of assessment tools, adherence and reported outcomes. *Resuscitation Plus*, 20, 100763. <https://doi.org/10.1016/j.resplu.2024.100763>
- Elcokany, N. M., Abdelhafez, A. I., Sharaby, V. M. S., & Belal, S. (2021). Use of computer-based scenarios for clinical teaching: Impact on nursing students' decision-making skills. *Healthcare (Basel)*, 9(9), 1228. <https://doi.org/10.3390/healthcare9091228>
- Gaynor, J. W. (2020). Peer review in the classroom: Student perceptions, peer feedback quality and the role of assessment. *Assessment & Evaluation in Higher Education*, 45(5), 758–775.
- Kahraman, A., Gümüş, M., Binay, S., Zengin, D., Uzşen, H., Sevgili, S. A., Özdemir, H. N. C., & Başbakal, Z. (2019). The effect of simulation-based education on childhood epileptic seizure management knowledge, skills, and attitudes of nursing students. *Epilepsy & Behavior*, 100, 106497. <https://doi.org/10.1016/j.yebeh.2019.106497>
- Lei, C., & Palm, K. (2023). Crisis Resource Management Training in Medical Simulation. [Updated 2023 Jul 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK551708/>
- Leighton, K., Ravert, P., Mudra, V., & Macintosh, C. (2015). Updating the Simulation Effectiveness Tool: Item modifications and reevaluation of psychometric properties. *Nursing Education Perspectives*, 36(5), 317–323. <https://doi.org/10.5480/15-1671>
- Mun, M., Kim, M., & Woo, K. (2025). Advancements in simulation-based nursing education: Insights from a bibliometric analysis of temporal trends. *Nurse Education Today*, 151. <https://doi.org/10.1016/j.nedt.2025.106719>
- Mutch, S. J., Ellaway, R. H., Khamis, N. N., & Harvey-Lloyd, J. (2024). Equity, diversity and inclusion

in simulation-based education: Constructing a developmental framework for medical educators. *Advances in Simulation*, 9(1), 20. <https://doi.org/10.1186/s41077-024-00292-5>

Nursing and Midwifery Council. (2024). Standards of proficiency for registered nurses. Available from: <https://www.nmc.org.uk/globalassets/sitedocuments/standards/2024/standards-of-proficiency-for-nurses.pdf>

Padilha, J. M., Machado, P. P., Ribeiro, A., Ramos, J., & Costa, P. (2019). Clinical virtual simulation in nursing education: Randomized controlled trial. *Journal of Medical Internet Research*, 21(3), e11529. <https://doi.org/10.2196/11529>

Purdy, E., Alexander, C., Caughley, M., Bassett, S., & Brazil, V. (2019). Identifying and transmitting the culture of emergency medicine through simulation. *AEM Education and Training*, 3(2), 118–128. <https://doi.org/10.1002/aet2.10325>

Resuscitation Council UK. (2024). The ABCDE approach. Available from: <https://www.resus.org.uk/library/abcde-approach>

Salari, N., Moghadami, M., Zarei, S., & Khalili, R. (2024). 24 years of nursing education: Challenges and opportunities. A systematic review study. *Teaching and Learning in Nursing*. <https://doi.org/10.1016/j.teln.2024.11.029>

Thim, T., Krarup, N. H. V., Grove, E. L., Rohde, C. V., & Løfgren, B. (2012). Initial assessment and treatment with the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach. *International Journal of General Medicine*, 5, 117–121. <https://doi.org/10.2147/IJGM.S28478>

Topbaş, E., & Üstün, G. (2022). The effect of assertiveness training on teamwork attitudes during epileptic seizure simulation: A randomized controlled study. *Archives of Epilepsy*, 28(3), 127–133. <https://doi.org/10.5152/ArchEpilepsy.2022.220610>