ORIGINAL RESEARCH

Artificial intelligence in nursing education: Student perspectives on benefits, risks, and readiness for NCLEX-RN

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ABSTRACT

Background and objectives: Artificial intelligence (AI) is increasingly embedded in higher education, yet little qualitative research has examined how undergraduate nursing students perceive and use AI in their learning. This study explored students' experiences with AI for personalized learning, ethical decision making, and National Council Licensure Examination for Registered Nurses (NCLEX-RN) preparation.
Methods: A descriptive qualitative phenomenological design was used to capture the perspectives of baccalaureate nursing students at a four year Midwest university. Fifty seven students completed an open ended survey and one student participated in an interview. Data were analyzed using qualitative thematic analysis.
Results: Across the four research questions, students described a wide range of AI supported learning practices and concerns. For general learning use, students reported leveraging AI for personalized learning support, study guide creation, practice questions and exam preparation, and engagement through interactive tools. When describing challenges, students emphasized accuracy and reliability limitations, academic integrity and ethical risks, loss of critical thinking and clinical preparedness. Ethical perceptions are centered on trust, reliability, and patient safety, and accountability. For NCLEX-RN preparation, students highlighted AI's role in exam focused question generation, content summarization, personalized study plans, and noted skepticism regarding AI's alignment with evolving exam standards.
Conclusions: Overall, students viewed AI as a multifaceted learning tool that enhances personalization and exam readiness while simultaneously raising concerns about accuracy, ethics, and the preservation of critical thinking and clinical reasoning skills.

Key Words: Academic integrity, Artificial intelligence, Ethical perceptions, Nursing students, Personalized learning, NCLEX-RN preparation

1. INTRODUCTION

As technology continues to evolve and reshape both patient care and academic environments, nursing faculty play a critical role in helping students understand how to use large language models (LLMs) such as ChatGPT and other artificial intelligence (AI) tools appropriately.[1] Beyond technical proficiency, nurse educators are uniquely positioned to guide students in becoming humane and ethically grounded stewards of these emerging technologies.[2] Supporting students in this work requires meeting them where they currently are in their AI use and understanding the realities of how these tools are already integrated into their learning practices. Leaders in nursing education assert that the integration of AI into teaching and learning is poised to transform the pre-

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vailing paradigm of nursing instruction, and that this shift is both significant and inevitable.[3] Despite this growing recognition, most existing research has focused on faculty perspectives, curricular frameworks, or the potential of AI in simulation and clinical decision making. Far less is known about how undergraduate nursing students themselves perceive and engage with AI in their day-to-day learning. Authors in one study emphasized the need for additional primary research examining AI use from the perspective of user experiences.[4] To address this gap, the present study used a survey and interview approach to explore undergraduate nursing students' experiences with AI, including how they use it for personalized learning, the challenges they encounter, the ethical considerations they identify, and the role they believe AI plays in preparing for the National Council Licensure Examination for Registered Nurses (NCLEX-RN) exam.

1.1 Background

The American Nurses Association (ANA) recently released a revised edition of the ANA Code of Ethics for Nurses, updating the 2015 edition. The newest edition explicitly addresses the use of AI and notes that the expertise of nurses should be used to influence the use of AI in clinical practice. Furthermore, the newest edition of the ANA Code of Ethics for Nurses continues to outline the profession's core ethical principles while expanding guidance related to emerging technologies, stating that when nurses use AI in practice, that use must be balanced with establishing and maintaining client trust, confidentiality, and privacy.[5] AI is transforming healthcare delivery, influencing diagnostics, risk reduction, clinical decision making, care coordination, and access to services. In acute care settings, tools such as sepsis early warning systems, deterioration prediction scores, fall risk algorithms, and pressure injury prediction models are increasingly embedded in routine clinical tasks. Nurses are especially impacted as these technologies intersect with their clinical judgment, communication, and workflow management. In 2021, the ANA also published the *Nursing: Scope and Standards of Practice* which emphasizes that ethical practice is integral to all aspects of nursing. Standard 7, titled Ethics, directs nurses to safeguard sensitive information and uphold ethical, legal, and regulatory expectations, reinforcing the principle of non maleficence.[6] In addition, Standard 17, titled Resource Stewardship, highlights the responsibility to use appropriate resources, including connected health technologies, in ways that support safe and effective patient care.[6] As AI tools such as ChatGPT become increasingly embedded in academic and clinical contexts, understanding how nursing students use these technologies is essential. One study noted that while using LLMs to enhance academic work is not inherently problematic, risks arise when students become overly reliant on these tools or fail to recognize inaccurate information.[2] Within the 2025 ANA Code of Ethics for Nurses nursing educators are called upon to ensure the development of knowledge, skills, and the moral dispositions of nursing students that are essential to clinical practice.[5] Insights from this study may help educators develop policies, learning activities, and syllabus language that align AI use with updated ethical standards and support responsible integration into nursing education and clinical practice.

1.2 Aims

The purpose of this study was to investigate the experiences of nursing students in utilizing AI for personalized learning, including the challenges faced, ethical considerations, and its role in preparing for the NCLEX-RN exam.

2. METHODS

2.1 Research design

A descriptive qualitative phenomenological design was used to gain an in depth understanding of undergraduate nursing students' experiences with AI. This approach was appropriate for exploring how students make meaning of AI in their academic studies and clinical preparation and/or encounters. Data collection included a semi structured conversational interview and an online survey with open ended questions. The study was guided by four research questions: 1) What opportunities does AI offer for personalized learning? 2)What challenges are associated with using AI in nursing courses? 3)What are students' perceptions of ethical considerations related to AI use in coursework and clinical practice? And 4) How is AI being used to support NCLEX-RN preparation?

Interviews were offered in person, via Zoom, or in small focus group formats and were designed to last 15-30 minutes. With participant permission, interviews were audio recorded and transcribed verbatim using NVivo Transcription services. Data management was supported by NVivo and institutional Google tools. Qualitative thematic content analysis was used to identify patterns and themes.

2.2 Setting and sample

The study was conducted at a four year university in the Midwest. A purposive sampling strategy was used to recruit traditional undergraduate baccalaureate nursing students. Recruitment occurred through word of mouth, flyers distribution, and email invitations. A total of 58 students participated, representing sophomore, junior, and senior academic levels. Freshman were excluded as they are not enrolled in the nursing program.

2.3 Data collection

Data were collected over an eight week period from October to November 2025. One participant completed an individual conversational interview, while the remaining participants completed an anonymous online survey with open ended questions. Surveys were distributed via email to sophomore, junior, and senior level nursing students, and flyers were posted to encourage participation. The researcher also visited six undergraduate nursing classrooms to support recruitment efforts. The interview lasted approximately 15–20 minutes and was audio recorded with participant consent. Verbatim transcription was completed using NVivo Transcription services, and all data were organized and managed using institutional Google tools. Participation was voluntary and confidential, and students were informed that they could withdraw at any time without penalty. Informed consent was obtained prior to the interview and at the start of the online survey. Institutional Review Board (IRB) approval was secured before data collection, and the study was classified as exempt.

2.4 Data analysis

Responses were analyzed using a qualitative thematic analysis approach guided by Braun and Clarke's six phase framework.[7] This method provided a systematic and transparent process for identifying patterns within students' descriptions of their use of AI in learning and test preparation. The analytic process began with repeated readings of survey responses to achieve immersion in the dataset. A coding scheme was developed according to the four research questions. Codes were generated to reflect students' own words and to organize the data. The final codebook was composed of 31 codes. Themes were then reviewed in relation to both the coded extracts and the full dataset to ensure internal consistency and analytic rigor. During this stage, some themes were refined or removed. The final phase involved synthesizing themes into a coherent narrative account supported by quotations from participants' responses. This analytic approach enhanced transparency, credibility, and depth in representing BSN students' perspectives on their use of AI in academic and clinical learning contexts.

Rigor was maintained throughout the study using established criteria for trustworthiness, including credibility, dependability, confirmability, and transferability. Credibility was supported through prolonged engagement with the data, including repeated readings of survey responses and the interview transcript to ensure accurate representation of participants' perspectives. Inductive coding and theme development were conducted systematically, and analytic decisions were documented to maintain transparency. Verbatim transcription of the interview further strengthened accuracy. In addition, a faculty peer not involved in the study reviewed the preliminary themes and illustrative quotations to ensure they were appropriate and grounded in the data. Dependability was enhanced by maintaining a clear audit trail of coding processes and theme refinement using NVivo and institutional Google tools. This documentation ensured that the analytic process was traceable and consistent. Confirmability was supported by deriving interpretations solely from participants expressed perspectives as noted in the survey responses and interview transcript. Transferability was supported by providing detailed descriptions of the study setting, sample characteristics, and data collection procedures.

3. Results

3.1 Demographic characteristics

A total of fifty-eight students participated in the study (N-58), with fifty-seven (n = 57) participants completing the online survey and one completing the interview (n = 1). Most students were between the ages of 18 to 24-years old and Caucasian, with Sophmores level students representing just under half all the participants (see Table 1).

Table 1. Demographics

Variables	% (N)
Age	
18-24 years	83 (48)
25-34 years	14 (8)
35-44 years	3 (2)
Race	
Caucasian	67 (39)
African American/Black	12 (7)
Asian	11 (6)
Hispanic/Latino	5 (3)
Native American/Pacific Islander/Middle Eastern	5 (3)
Academic Level	
Sophomore	45 (26)
Junior	21 (12)
Senior	34 (20)

The results of the current study allowed the researchers to highlight the lived experiences of undergraduate nursing students in utilizing AI in their educational studies. Analysis of participant responses revealed overarching themes within each of the four questions, which describe how undergraduate nursing students are integrating AI into their learning practices. Collectively, these themes illustrate a pattern of students using AI not as a shortcut, but as a strategic learning partner that enhances organization, comprehension, and exam readiness.

3.2 Opportunities AI offers for personalized learning

First, students described AI as a source of personalized learning support (see Table 2). Participants emphasized AI's abil-

ity to tailor explanations and provide clarification when concepts felt overwhelming. Students also used AI to rephrase questions and support idea generation for academic tasks, underscoring its role as a flexible, responsive learning tool. Second, students highlighted AI's value in creating study guides and integrating resources. Many reported uploading lecture notes, PowerPoints, or textbook excerpts to generate concise summaries and structured study materials. This process helped them organize large volumes of content into manageable formats and save time. Third, AI played a prominent role in practice question generation and exam preparation. Students frequently relied on AI to create NCLEX-style questions, quizzes, mock exams, and focal points aligned with course content. These tools supported self-assessment, reinforced key concepts, and helped learners determine their readiness for the licensure exam. Finally, students described increased engagement and retention through AI-supported tools. Flashcards, podcasts, case studies, and randomized question banks were cited as features that made studying more dynamic and helped reinforce learning. Together, these themes demonstrate that students are leveraging AI to personalize their learning, streamline complex information, enhance exam preparation, and engage with content in more interactive ways.

Table 2. Opportunities AI offers for personalized learning

Theme	Direct Student Quotes
Personalized Learning	"You can prompt it to create a learning opportunity for exactly what you need, it is specific practice not generalized" (P29, Sophomore). "It helps clarify topics and information that I need further explanation on" (P39, Sophomore). "AI can compile notes, practice quizzes, outside resources, and other study materials best suited to each student's individual style of learning and what they need to best grasp the course material. This also saves lots of time, which means more time is saved for actually studying and using the resources provided" (P22, Sophomore). "It can offer hyper personalized study content at very quick speeds" (P44, Sophomore). "I think AI is great for personalized learning. I have used it to create study guides, practice questions and understand concepts deeper" (P53, Junior). "Attaining to people's learning needs and style" (P14, Senior). "AI offers lots of opportunities, creating personalized study methods specialized with what you want to primarily focus on" (P18, Senior). "You can look up other tips and information about a topic, and it can help you learn" (P20, Senior). "Synthesis of ideas and different methods of explanation according to student needs" (P13, Senior).
Study Guide Creation	"I'm able to submit my lecture notes… and it will create a study guide specific to what I am currently learning" (P43, Sophomore). "You can easily upload documents, and it generates a study guide" (P35, Sophomore). "I also use it to create study guides or to summarize topics covered in my lectures" (P38, Sophomore). "AI offers lots of opportunities, creating personalized study methods specialized with what you want to primarily focus on" (P47, Sophomore). "AI makes great personalized study guides and quizzes that can help prepare students for exams" (P51, Junior). "Can create study guides from notes and explain difficult topics" (P4, Senior).
Practice Questions and Exam Preparation	"It allows me to generate NCLEX style questions allowing me to assess my learning" (P37, Sophomore). "Helps create practice questions and main focal points for material we learn" (P32, Sophomore). "AI offers great opportunities for me to create personalized quizzes and questions to study" (P48, Junior). "Depending on how specific you are in requests, you can tailor percent of practice tests to SATA, multiple choice, T/F. What percent of each chapter you want, and request "make the next test 10% more challenging" if you are doing well" (P55, Junior). "Helps break down study guides into a simpler form and makes good practice questions" (P6, Senior). "Creating mock exams and simplifying complex topics" (P21, Senior).
Engagement and Retention Through Interactive Tools	"It allows concepts to be simplified for better understanding" (P40, Sophomore). "Good, randomized question, case studies, and NCLEX style quizzes for studying" (P58, Junior). "AI helps make learning feel more personal by adjusting lessons to what each student needs. It can point out where you're struggling, give extra practice, and explain things in different ways. With quick feedback and customized activities, AI can make schoolwork easier to understand and a lot more engaging" (P52, Junior). "Students use AI to explain concepts and create study tools like flashcards and test questions" (P57, Junior). "Faster information retention" (P5, Senior). "I've used AI to create podcasts based on study guides" (P8, Senior). "AI can be used to turn lecture concepts into helpful videos to really dumb down content, so it is easily understandable and easier to remember" (P19, Senior). "Allows me to further my math skills because I can just make AI create an example sheet to study off of" (P10, Senior).

3.3 Challenges associated with using AI in nursing coursework

First, students expressed significant apprehension about the accuracy, reliability, and functional limitations of AI tools. Participants frequently noted that AI-generated content could be incorrect, incomplete, or misaligned with nursing curriculum expectations. They emphasized the need to verify AI generated content. Some also described functional challenges, which limited its usefulness. Second, students highlighted academic integrity and ethical or professional risks. Many respondents associated AI with cheating, plagiarism, and academic dishonesty. They also raised concerns about the credibility of AI-generated references, potential bias, and privacy issues. Third, students worried about the loss of critical thinking, creativity, and clinical preparedness. Participants feared that overreliance on AI could erode essential cognitive skills, including independent judgment, problem-solving, and creative reasoning. Several respondents linked AI use to diminished hands-on practice and practical thinking, raising concerns about readiness for the NCLEX and real-world patient care (see Table 3).

Table 3. Challenges associated with using AI in nursing coursework

Theme	Direct Student Quotes
Accuracy, Reliability, and Functional Limitations	"Making sure that the information is accurate with our textbooks and applies directly to nursing" (P40, Sophomore). "AI isn't always accurate, so it requires some double checking" (P43, Sophomore). "Wrong information is often a challenge… AI does not completely understand curriculum material" (P27, Sophomore) "Using AI in nursing courses comes with challenges like ensuring accuracy, managing ethical issues such as privacy and bias, and preventing students from relying too much on technology. There can also be technical difficulties, limited access to tools, and the risk of reducing essential hands-on clinical experience that nurses need" (P52, Junior). "Sometimes it can be incorrect" (P50, Junior). "Inaccurate information" (P58, Junior). "Often times when I use AI if it's a complex health issue that isn't widely known, I worry about the accuracy of information, but ChatGPT is actually very good at answering what I need to know" (P9, Senior). "Accuracy of information varies! AI has a reputation of being unreliable for accurate info sometimes" (P3, Senior). "AI doesn't always have the most relevant or correct information" (P4, Senior). "Some challenges associated with AI is you may not know if the information is accurate, or from a reliable source" (P20, Senior).
Academic Integrity and Ethical/ Professional Risks	"Potentially a form of plagiarism with some students" (P47, Sophomore). "Lots of ethical challenges… academic dishonesty is a big one. It can also be used to cheat and use a roundabout way of completing assignments that doesn't actually verify the student understand the material" (P22, Sophomore). "Relying on AI and people using AI to cheat" (P23, Sophomore). "The challenges are trusting the material that could be wrong or using the information and someone saying it's from AI and causes plagiarism" (P53, Junior). "Professors do not like the use of AI in their courses" (P51, Junior). "Not knowing the information and using plagiarism" (P56, Junior). "Incorrect information and medical errors" (P6, Senior). "It presents an opportunity for cheating and not actual learning" (P18, Senior).
Loss of Critical Thinking, Creativity, and Clinical Preparedness	"Not being able to provide critical thinking" (P24, Sophomore). "Some of the answers given may not be the real-life experience" (P42, Sophomore). "Lack or loss of critical thinking as nurses are AI does a lot of the thinking for you instead of having to develop the answers for yourself. Writing flashcards yourself is more beneficial than having a machine do it for you just as it is more beneficial to come up with the answers yourself then selecting the correct answer from predeterminer choices" (P57, Junior). "Loss of practical thinking. I will only use it for testing purposes, not for practical applications. I have taken real world medicals and input into AI to see their thoughts, and it is about as useful as WebMD" (P55, Junior). "Risk of reducing essential hands-on clinical experience that nurses need" (P52, Junior). "I think that it is causing a downfall on creativity, I think it is lessening attention spans due to the lack of having to come up with unique individual ideas. I think it can be very helpful but when overused can lead to lessened brain power" (P3, Senior). "It can allow for cheating and can affect how much nurses are actually prepared for taking the NCLEX or how much they are prepared for the real world" (P15, Senior). "The thought of having nurses that used AI to pass classes is a little scary" (P19, Senior).

3.4 Ethical considerations in coursework and clinical practice

Student responses revealed several interconnected ethical concerns related to the use of AI in nursing education and clinical practice. These concerns are clustered into three themes. First, students expressed substantial concerns about trust, reliability, and patient safety. Participants described skepticism toward AI's accuracy and misinformation in outputs. Several students emphasized that inaccurate AI-generated information could pose risks to patient safety, particularly if used without verification. Concerns about confidentiality and potential Health Insurance Portability and Accountability Act (HIPAA) violations further contributed to apprehension about integrating AI into clinical practice. Second, students highlighted academic integrity, accountability, and professional boundaries as central ethical issues. Many respondents associated AI with cheating, plagiarism, and shortcuts that bypass meaningful learning. They worried that AI could obscure accountability in coursework and diminish the expectation that nursing students produce original work. Participants stressed that ethical use requires clear boundaries to ensure that AI supplements, rather than replaces, professional judgment. Third, students described fears of erosion in critical thinking and clinical reasoning. Respondents expressed concern that habitual reliance on AI could weaken cognitive skills, including clinical judgment and problem-solving. Together, these themes illustrate that students view AI as a powerful but ethically complex tool that carries risks which intersect with trust, academic integrity, professional identity, and clinical competence (see Table 4).

Table 4. Ethical considerations in coursework and clinical practice

Theme	Direct Student Quotes
Trust, Reliability, and Patient Safety Concerns	"Potential for patient harm if AI provides the wrong information" (P27, Sophomore). "I feel AI does not give the correct answer sometimes" (P42, Sophomore). "You can't trust it all but have to fact check it sometimes" (P45, Sophomore). "I personally think it's okay to use AI to be more efficient, to complete small tasks that are time-consuming, but it may impact patient trust if the patient thought the nurse was using AI to perform assessment or critically think" (P57, Junior). "There is a lack of trust" (P51, Junior). "Many nursing students and professionals are cautious about using AI. They worry about trusting AI recommendations, keeping patient data safe, and knowing who is responsible if something goes wrong. Some fear AI could weaken the personal connection between nurses and patients, while others believe it can support good decisions without harming relationships" (P52, Junior). "Might be hard to trust but it is easy and accessible" (P12, Senior). "I do not trust them AI gives so much incorrect information" (P6, Senior). "I think that a lot of patients are on the fence about trusting nurses that reference AI just because AI seem to be labeled as the short cut or easy way to learn" (P17, Senior).
Academic Integrity, Accountability, and Professional Boundaries	"People see it as something to fill the gaps of education, like a shortcut" (P44, Sophomore). "It can be helpful but also misused" (P30, Sophomore). "Potentially violating HIPPA if you use real patients' names" (P50, Junior). "Cheating, plagiarism" (P54, Junior). "It is believed that the use of AI is cheating or not using critical thinking to understand the concepts of the nursing course" (P19, Senior). "AI brings the potential for plagiarism that can be more difficult to trace" (P13, Senior).
Erosion of Critical Thinking, Clinical Reasoning, and Human Connection	"It may feel to the patient that their care has become unhumanized" (P33, Sophomore). "It could be too dependent, which causes decrease in true education and critical thinking skills" (P39, Sophomore). "I think the interpersonal dynamics between nurses and patients are what are affected most by the use of AI for nursing coursework and clinical practice. There is a certain pattern and predictability when "speaking" with an AI "patient," and you just can't assume that a real-life patient is going to follow that same predictable conversation style, so the interpersonal relationship building between the nurse and a real-life patient after practicing with an AI "patient" might be diminished" (P22, Sophomore). "I think if you are relying on AI for nursing school, it is the same thing as "phoning a friend" for nursing school. You are not fully learning the material that you may need for the rest of your career" (P55, Junior). "Not being prepared to the best of your abilities when going into the clinical setting. The patients have their trust in you but if you are not prepared, you can do something wrong and potentially hurt the patient "Use in moderation and only if absolutely necessary" (P56, Junior). "It defeats critical thinking skills in my opinion" (P11, Senior). "That using AI means you don't know to assess patients and use critical thinking" (P4, Senior). "…clinical practice could be hindered if nursing students aren't learning and relying on AI for critical thinking" (P16, Senior). "It takes away critical thinking skills by giving a direct answer" (P7, Senior).

3.5 AI use to support NCLEX-RN preparation

Student responses revealed several interconnected ways in which AI is being used to support NCLEX preparation. These uses clustered into three themes, with a fourth theme reflecting uncertainty (see Table 5). First, students overwhelmingly described using AI for practice question generation. Participants emphasized that AI enables the creation of NCLEX style questions, case studies and med math problems. Students valued the ability to generate an "endless" supply of exam aligned questions, noting that these tools helped reinforce clinical reasoning and promote "thinking like a nurse." Second, students highlighted AI's role in study guide creation, summarization, and resource organization. Many respondents reported uploading lecture slides, notes, and readings into AI tools to produce structured study guides, summaries, and flashcards. This process helped condense large volumes of content, identify weak areas, and streamline their preparation. Students described AI as a tool that made studying more efficient and manageable. Third, students described AI as a source of adaptive, personalized, and feedback driven learning support. Participants noted that AI could tailor study plans, adjust practice questions based on performance, and provide immediate rationales or explanations. These features were perceived as beneficial for targeting individual learning needs and reinforcing understanding through timely feedback. A fourth, less frequently mentioned theme reflected uncertainty. Some students expressed uncertainty or distrust regarding AI's accuracy or alignment with evolving NCLEX formats. Others observed that faculty and commercial platforms already incorporate AI into question banks and instructional materials, suggesting growing institutional acceptance. Lastly, first year students repeatedly noted this question was non-applicable. Together, these themes illustrate that students are using AI as a multifaceted tool to support NCLEX preparation.

Table 5. AI use to support NCLEX-RN preparation

Theme	Direct Student Quotes
Practice Question Generation	"AI can come up with NCLEX style questions which I really enjoy going over" (P37, Sophomore). "AI is used for practice questions and self-studying" (P27, Sophomore). "AI does a great job at creating NCLEX-RN style questions… it is an endless amount of questions available" (P48, Sophomore). "AI can prepare NCLEX style questions to better prepare students for the exam" (P51, Junior). "Practice question formation" (P54, Junior). "I have used AI to make me practice questions, and I have really found it helpful!" (P53, Junior). "Making practice quizzes" (P49, Junior). "By making NCLEX style questions" (P50, Junior). "AI can support NCLEX prep by providing practice questions and other tools to study" (P20, Senior). "Personally, I believe that it can help build practice questions to help study and can offer study tips" (P15, Senior). "Possible for practice questions" (P12, Senior). "It can give you practice questions and even link to resources if you are struggling with a certain topic" (P3, Senior).
Study Guide Creation and Exam Prep	"It is being used to identify weak spots and create individualized study guides" (P44, Sophomore). "I downloaded all PPT, uploaded them to AI and am building a study guide with ATI/NCLEX style questions" (P55, Junior). "I think AI is being used to create NCLEX study preparation like flashcards, tests, and study guides" (P57, Junior). "AI could be beneficial to prep as it could provide a guideline or template to studying" (P11, Senior). "AI is super helpful… it can give you summaries of whatever you need" (P16, Senior).
Adaptive, Personalized, and Feedback-Driven Learning Support	"Helped develop study plans and providing feedback to ideas or work presented" (P46, Sophomore). "Gives rationales and explains the difference between answers" (P56, Junior). "NCLEX style unfolding case study questions, comprehensive questions, med math and other quizzes that help students learn and develop skills" (P58, Junior). "It can be helpful in the development of a personalized study plan, adaptive practice questions, and instant feedback" (P52, Junior). "AI is helpful in breaking down concepts to make it easier to understand the diseases to be able to answer questions about them" (P19, Senior). "Studying, tailoring to NCLEX needs" (P14, Senior). "Assisting with study skills" (P10, Senior).
Uncertainty	"No sure yet" (P40, Sophomore). "I do not know, but probably create practice questions" (P41, Sophomore). "I am honestly not sure" (P43, Sophomore). "Still first semester" (P31, Sophomore). "I don't know" (P23, Sophomore). "Most of the ATI and PrepU questions I get are AI based" (P45, Sophomore). "AI is not comprehensive in its understanding of the NCLEX - especially because the test itself, including the format, changes just about every year to keep adapting to new nursing standards and educational principles that also change just about every year. It's hard for students and instructors to keep up, so it's even harder for AI to keep up" (P22, Sophomore). "I have no idea" (P25, Junior). "I think AI could help with learning the basics of nursing however I don't think that it could offer much help for the NCLEX-RN just because I don't think that it has critical nursing experience included" (P17, Senior). "Personally, I don't trust these but I know they're an option" (P8, Senior) "I am not sure" (P5, Senior). "I don't know" (P4, Senior).

4. DISCUSSION

Findings from this study show students perceive AI as a multi-functional tool for personalized learning that also poses challenges due to inaccuracies and the potential loss of critical thinking skills. The findings also underscore the awareness of ethics and risks associated with academic integrity and accountability. While many students primarily see the use of AI as a question generator for NCLEX-RN preparation, others remain uncertain about how to incorporate it into their study strategies for this highstakes exam.

This study demonstrates that undergraduate nursing students view AI as both a valuable learning tool and a source of ethical concern. Students' use of AI for personalized learning, content organization, and exam preparation aligns with emerging literature showing that AI can enhance self directed learning and support adaptive feedback when used intentionally.[4]

4.1 Opportunities AI offers for personalized learning

For learning in general, students reported using AI to support personalized learning, organize content, and enhance exam preparation. AI was described as a flexible tool that could adapt explanations, generate study guides, and create practice questions aligned with course content. Students also highlighted the value of interactive modalities such as flashcards and scenario-based prompts that increased engagement and supported retention. The emphasis on interactive tools and personalized support reflects broader trends in AI-enabled education.[8] However, students also identified substantial challenges, particularly related to accuracy, reliability, and academic integrity. These concerns mirror national guidance emphasizing the need for human oversight, verification of AI-generated content, and clear boundaries.[9, 10]

4.2 Challenges associated with using AI in nursing courses work

In describing challenges, students emphasized substantial concerns regarding accuracy, reliability, and functional limitations. Many students noted that AI outputs required verification and did not always align with nursing curriculum expectations. Academic integrity emerged as a central theme, with students expressing worry that AI could facilitate cheating, plagiarism, or superficial learning. Concerns over open access to AI, such as ChatGPT, and potential student plagiarism was also identified in another study.[11] Students also voiced concerns about diminished critical thinking and clinical preparedness and the need to preserve core nursing competencies. Together, these themes illustrate that while students recognize AI's potential, they also perceive substantial risks. This aligns with a study conducted with practicing nurses in which they indicated that AI tools need to provide meaningful clinical support that aligns with clinicians' professional judgment.[12] In another study, practicing nurses praised the rapid analytical capabilities of AI and AI's efficiency to offer insights into changing patient conditions, but nurses were quick to note how patients seek virtues that transcend AI's capabilities, such as compassion and understanding.[13]

These findings underscore the need for clear guidance and faculty-supported strategies to ensure responsible integration of AI in nursing education and use of AI in clinical practice, which both preserve core nursing values and human connection, and focus on improving patient outcomes. Additionally, students also raised concerns about the credibility of AI-generated references, potential bias, and privacy issues. These concerns reflected a strong sense of professional accountability and the importance of maintaining trust in nursing education. To help reduce student anxiety around AI use, faculty should establish clear policies and guidelines and intentionally integrate AI into the curriculum, so students have structured opportunities to develop critical thinking, problem-solving, and independent reasoning skills.[8] Furthermore, these policies could mirror policies within healthcare systems which currently utilize AI to improve nursing workflows and assist providers in early detection and interventions as patient conditions change; therefore, enhancing clinical decision-making.[13]

4.3 Ethical considerations in coursework and clinical practice

Ethical perceptions added further complexity, often overlapping with the themes identified within the challenges.

Students questioned whether AI could be trusted in clinical contexts, citing risks to patient safety, confidentiality, and professional accountability. They also expressed concern that AI mediated interactions could erode human connection and interpersonal skills essential to nursing practice. Authors in one study reinforced this point by emphasizing that nurses must use AI in ways that are thoughtful, ethical, and rooted in transparency, accountability, and empathy to support truly human centered care.[12] Despite these concerns, some students acknowledged that AI could be used ethically when applied with moderation and transparency. These findings are similar to what two others studies noted in regard to safeguarding patient data, identifying algorithmic bias, ensuring transparency, and upholding professional accountability when using AI tools in nursing education and clinical practice.[13, 14] Furthermore, practicing nurses had similar reservations as nursing students in this study, in that they had concerns about the preservation of nursing expertise and

the unique human connection central to nursing when AI is integrated in clinical practice.[13]

4.4 AI use to support NCLEX-RN preparation

Regarding NCLEX-RN preparation, students described AI as a powerful tool for generating exam-focused practice questions, summarizing content, and providing personalized study plans with immediate feedback. However, students also expressed uncertainty about AI's ability to keep pace with evolving exam formats and emphasized the need for caution when relying on AI for high-stakes preparation. Taken together, these findings illustrate that undergraduate nursing students view AI as a multifaceted educational resource that enhances personalization, efficiency, and exam readiness, yet simultaneously raises concerns about accuracy, ethics, and the preservation of essential nursing competencies. These findings align with recommendations from other studies that noted how AI could be used as a teaching strategy in nursing education to support critical thinking through the generation of adaptive quizzes, case study generation, and automated feedback.[15] Furthermore, it is recommended that nursing faculty should embrace emerging technologies with intentionality.[16]

4.5 Implications for practice

Faculty have an opportunity to role model use of AI and provide structured guidance to students. The findings of this study underscore the need for nursing programs to establish clear guidelines for ethical and responsible AI use. National organizations emphasize that AI should augment, not replace, clinical reasoning and professional judgment.[9] Integrating AI literacy into curricula may help students navigate issues of accuracy, bias, and confidentiality while strengthening their ability to use AI as a supplemental learning tool.[14] Programs should also consider how AI supported study strategies can complement traditional teaching without undermining critical thinking or academic integrity.[15] Lastly, nursing students reported improvements in learning outcomes, clinical practice, and overall satisfaction when using AI tools, thus faculty should embrace these new methods of learning.[4]

4.6 Future research

Future studies should explore how AI influences learning outcomes, clinical judgment, and NCLEX-RN performance over time. Longitudinal research could examine whether early exposure to AI supported learning strengthens or weakens critical thinking and clinical preparedness. Finally, research examining the effectiveness of structured AI guidelines or curricular interventions could inform best practices in nursing education.

4.7 Limitations

Several limitations should be considered when interpreting the findings of this study. First, the sample was drawn from a single four year Midwest university, which may limit transferability to other nursing programs with different curricular structures, student demographics, or institutional cultures. The reliance on self reported perceptions may also introduce response bias, as students who hold strong positive or negative views about AI may have been more likely to participate. Additionally, the study captured student experiences during a period of rapid evolution in AI technologies and NCLEX-RN testing formats. As AI tools and exam expectations continue to change, students' perceptions may shift, and some findings may become time bound. The study also focused on students' reported behaviors rather than direct observation of AI use, which may limit insight into how AI is actually integrated into study routines or clinical preparation. Finally, because the survey was administered online, participants may have interpreted questions differently, and the absence of follow up probing for most respondents may have constrained the depth of individual responses. Despite these limitations, the study offers meaningful insights into how undergraduate nursing students perceive and engage with AI across learning, ethics, and NCLEX-RN preparation. The findings provide a foundation for future research exploring faculty perspectives, longitudinal changes in AI adoption, and the development of evidence based guidelines for responsible AI integration in nursing education.

5. Conclusions

This study provides a comprehensive exploration of how undergraduate nursing students perceive and engage with artificial intelligence across general learning, challenges, ethical considerations, and NCLEX-RN preparation. Students described AI as a multifaceted academic support tool that enhances personalized learning, organizes complex content, and offers extensive opportunities for exam focused practice. At the same time, they identified substantial concerns related to accuracy, academic integrity, ethical boundaries, and the preservation of critical thinking and clinical reasoning skills. Across all four research questions, students emphasized that AI is most beneficial when used as a supplement rather than a substitute for traditional learning and clinical preparation. They recognized its potential to streamline study processes and individualize learning, yet remained cautious about overreliance, patient safety implications, and the risk of diminishing essential humanistic and cognitive competencies. Overall, the findings highlight the importance of developing clear expectations and faculty supported strategies to promote responsible AI use in nursing education.

Current literature delivers a consistent message: the integration of AI into nursing education is inevitable;[17] therefore, as AI continues to expand within academic and clinical environments, nursing programs must balance innovation with the core values of the profession, ensuring that technology enhances, rather than replaces, the critical thinking, clinical judgment, and human connection central to safe and effective nursing practice.

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AUTHORS CONTRIBUTIONS

The author was solely responsible for the study conception and design, data collection and analysis, and drafting and revising the manuscript. The author approved the final version of the manuscript.

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