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"I Don't Want It to Give Me the Answer": AI Literacy, Ethical Awareness, and Curricular Readiness Among Nursing Students at a Historically Black College and University

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ABSTRACT

Artificial intelligence is transforming healthcare, yet nursing education lacks systematic frameworks for AI literacy training. Students at Historically Black Colleges and Universities (HBCUs) are preparing to serve communities most harmed by biased healthcare algorithms while receiving minimal formal AI education. This study explored nursing students' AI literacy, use patterns, ethical awareness, and curricular recommendations at one HBCU in the mid-Atlantic United States. A descriptive qualitative design guided by thematic analysis was employed. Semi-structured interviews (N = 10) were conducted with nursing students. Data were analyzed using Braun and Clarke's reflexive thematic analysis. Four themes emerged: AI as assisted thinking; intentional and boundary-setting use; ethical alertness without institutional support; and curricular demand for embedded, ethics-centered AI training. Nursing students at this HBCU demonstrate meaningful AI literacy developed through self-directed engagement. Their heightened awareness of racial bias in healthcare AI represents both an asset and an unmet educational need. Nursing programs must integrate AI literacy as a professional competency.

Keywords: algorithmic bias, AI literacy, artificial intelligence, health equity, HBCU, nursing education, qualitative research

INTRODUCTION

Artificial intelligence (AI) is reshaping the fundamental architecture of modern healthcare. From predictive deterioration algorithms in intensive care units to natural language processing tools that automate clinical documentation, AI is no longer a future-facing abstraction — it is a present clinical reality that nurses encounter at the bedside (Rony et al., 2024a; Nematollahi Maleki et al., 2025). The nursing profession, which represents the largest segment of the healthcare workforce and constitutes the most direct point of contact between patients and technology, stands at a critical inflection point. How nurses understand, critically evaluate, and ethically apply AI tools will shape patient safety, care quality, and health equity for decades.

The AI Imperative in Nursing Education

Bibliometric analysis of AI in nursing research confirms that publication volume in this field has grown at a compound annual rate of 7.59%, with an accelerating shift in research focus from technology-driven studies toward clinical application, patient safety, and user acceptance (Hu et al., 2025). Yet despite this scholarly proliferation, critical gaps remain in the literature — particularly regarding AI education for nursing students, and especially within underrepresented institutional contexts.

The Gap: AI Literacy at Historically Black Colleges and Universities

Research on AI in nursing education concentrates overwhelmingly at predominantly white institutions (PWIs) and in Global South clinical settings (Hu et al., 2025; El Arab et al., 2025). Historically Black Colleges and Universities (HBCUs) — which produce approximately 25% of Black STEM graduates in the United States (UNCF, 2023) and serve as primary pipelines for Black health professionals — remain almost entirely absent from this scholarly conversation. This absence is not incidental. HBCUs operate at the intersection of two urgent imperatives: the professional training of future nurses, and the preparation of those nurses to serve communities that bear disproportionate healthcare burdens.

The relevance of this institutional context is underscored by a growing body of evidence documenting algorithmic bias in clinical AI systems. Healthcare AI tools trained on historically biased data have been shown to underestimate pain in Black patients, underperform in dermatological diagnostics for darker skin tones, and systematically disadvantage Black patients in care management algorithms that use historical healthcare costs as a proxy for clinical need (Ahmed, 2024; Hu et al., 2025). Nursing students at HBCUs are being educated to care for precisely these populations. Their AI literacy — and the ethical frameworks they bring to AI encounters — carries direct implications for health equity.

This study explores nursing students' AI literacy, use practices, ethical awareness, and curricular needs at one HBCU in the mid-Atlantic United States. It was guided by three research questions:

- RQ1: How do nursing students at an HBCU describe and understand artificial intelligence?
- RQ2: What patterns of AI use, perceived benefit, and ethical concern emerge among these students?
- RQ3: What curricular and institutional recommendations do students articulate for AI education in nursing programs?

REVIEW OF THE LITERATURE

Conceptualizing AI Literacy in Healthcare

AI literacy in healthcare contexts extends beyond technical proficiency. It encompasses the capacity to understand how AI tools function at a conceptual level, to critically evaluate AI-generated outputs, to recognize the limitations and biases of algorithmic systems, and to apply ethical reasoning to AI-assisted decisions. Nematollahi Maleki et al. (2025) identified five defining attributes of AI-assisted nursing care through systematic concept analysis: data-driven decision support, automation of routine tasks, enhanced predictive capabilities, personalization of care, and continuous learning and adaptability. Critically, they established that nursing competence and acceptance — including baseline technological literacy and willingness to engage with AI tools — is a necessary antecedent for any of these attributes to be realized in clinical practice.

Alkhaqani (2023) identified the dual character of large language models like ChatGPT in nursing education: on one hand, potential to streamline studying, support clinical decision-making, and enhance patient communication; on the other, genuine risks including academic integrity violations, critical thinking atrophy, and the production of clinically inaccurate content. His central argument — that nursing faculty and institutions must develop comprehensive, flexible policies rather than reactive prohibitions — resonates with the experiences students in this study described navigating largely on their own.

AI in Nursing Practice: Promise and Peril

The literature consistently positions AI as a complement to, rather than replacement for, nursing expertise (Rony et al., 2024a; Ventura-Silva et al., 2024; Vitorino et al., 2025). Qualitative research with nursing professionals confirms that nurses approach AI integration with what Rony et al. (2024b) describe as "optimism tempered by principled concern" — recognizing genuine clinical benefits while insisting on the irreplaceability of human judgment, empathy, and contextual understanding. Bodur et al. (2025) documented four threats nurses identify in AI integration: job displacement fears, emotional disconnection in care, professional de-skilling through over-reliance, and the risk of dehumanizing healthcare environments.

El Arab et al. (2025) synthesized 25 empirical studies in their integrative review, producing the Nursing AI Integration Roadmap (NAIIR) framework, which organizes evidence across six domains: transformational education, advanced clinical integration, ethical governance, organizational infrastructure, participatory design, and economic sustainability. Their findings confirmed that AI-powered educational simulations enhance student engagement and case-management performance, though increased cognitive load and equity concerns require deliberate curricular attention. Ventura-Silva et al. (2024) categorized AI tools in nursing care organization into three functional groups — monitoring and prediction, decision support, and interaction and communication technologies — and documented improvements in operational efficiency, error reduction, and patient-centered care.

Algorithmic Bias and the Health Equity Stakes

The health equity implications of healthcare AI are both documented and acute. Hu et al. (2025) noted that research focus in the field is shifting from purely technical validation toward patient safety, user acceptance, and societal impact — a shift driven in part by growing evidence of algorithmic bias and its clinical consequences. Ahmed (2024) identified algorithmic bias, data privacy, and the erosion of critical thinking as the three most consequential risks of AI integration in nursing, calling for transparent regulatory frameworks and continuous professional development. Jessica Lam, one participant in this study, independently described a case study from her public health course in which an AI care management algorithm systematically underestimated the needs of Black patients — not through malicious intent, but because it used historical healthcare costs as a proxy for health needs, a variable distorted by structural barriers to care. This kind of real-world critical engagement with documented bias is precisely what AI literacy education should cultivate.

THEORETICAL FRAMEWORK

This study is framed by two complementary theoretical perspectives. Digital literacy theory provides conceptual grounding for understanding how students develop competencies to access, evaluate, and ethically apply digital tools across academic and professional contexts (Glauberman et al., 2023). Critical race theory in technology, which examines how technological systems encode and perpetuate racial inequity, contextualizes students' awareness of healthcare AI bias within broader structures of racism in medicine (Ahmed, 2024; Hu et al., 2025). Together, these frameworks foreground both the competency-building and the justice-oriented dimensions of AI literacy, both of which emerged prominently in participants' accounts.

METHODS

A descriptive qualitative research design was employed to explore nursing students' lived experiences with, understandings of, and recommendations regarding AI in nursing education and practice. This design is well-suited to generating rich, contextualized, first-person accounts of complex phenomena (Braun & Clarke, 2019; Rony et al., 2024b). The

study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to ensure methodological transparency and rigor.

Setting and Participants

The study was conducted at one historically Black university in the mid-Atlantic United States with an established baccalaureate nursing program. Purposive sampling was used to recruit participants who were currently enrolled in the nursing program and willing to engage substantively with questions about AI in academic and clinical contexts. A total of ten nursing students participated. This sample size was determined by theoretical sufficiency — the point at which interview data generated sufficient thematic richness to address the research questions without additional participants substantially altering emerging patterns (Braun & Clarke, 2019). Informed consent was obtained verbally at the beginning of each interview. Participants were assigned pseudonyms to protect confidentiality.

Data Collection

Data were collected through semi-structured individual interviews conducted via video call between two student researchers (Monika Gurung and Smriti Garbuja) and participants. Each interview was guided by a 12–13 item semi-structured interview protocol covering: conceptual understanding of AI; prior experiences with AI tools; decision-making around AI use for coursework; impact on learning and problem-solving; concerns about bias, accuracy, and data privacy; ethical guidelines and institutional responsibility; AI's societal implications; equity and access; and recommendations for AI curriculum design. Interviews lasted approximately 30 to 45 minutes and were audio-recorded with participants' consent. Recordings were transcribed verbatim for analysis.

Data Analysis: Thematic Analysis Procedures

Data were analyzed using Braun and Clarke's (2019) six-phase reflexive thematic analysis framework, which is particularly suited to descriptive qualitative studies seeking to identify patterns of meaning across participant accounts. The six phases were operationalized as follows:

Phase 1 — Familiarization: Both researchers independently read all ten transcripts in full multiple times, making preliminary notes on recurring ideas, striking phrases, and apparent tensions. This immersive reading phase was completed before any formal coding began.

Phase 2 — Generating Initial Codes: Each researcher independently applied open, line-by-line inductive codes to all transcripts. Codes captured both semantic content (what participants said) and latent meaning (underlying assumptions and positions). Examples of initial codes included: AI-as-tool-not-thinker, self-imposed-use-rules, bias-awareness, classroom-silence-on-AI, AI-as-last-resort, and equity-concern.

Phase 3 — Searching for Themes: Researchers met to compare and discuss initial codes. Related codes were grouped into candidate themes. This phase involved both

collapsing similar codes and separating codes that appeared related but captured meaningfully distinct phenomena. Candidate themes at this stage included: functional-but-informal-knowledge, boundary-setting-use, ethical-awareness, racial-bias-consciousness, and curricular-demand.

Phase 4 — Reviewing Themes: Candidate themes were reviewed against the full dataset to verify that they were coherent, distinct, and adequately grounded in the data. The initial candidate theme "ethical awareness" was refined and separated into sub-dimensions: bias recognition, data privacy concern, and accuracy concern. A fifth candidate theme related to technology anxiety was collapsed into the broader theme of boundary-setting use after review.

Phase 5 — Defining and Naming Themes: Final themes were named and defined to capture their essential character. Theme names were derived from participants' own language where possible — most notably Theme 2, which takes its name from Tyrese Solomon's direct instruction to ChatGPT: "Don't give me the answer."

Phase 6 — Producing the Report: Themes were written up with analytical narrative and supporting quotations drawn directly from participant transcripts. All quotations retained in the findings section were verified against original transcripts.

Trustworthiness was addressed through four strategies. Credibility was supported by prolonged data engagement and the use of verbatim participant quotations. Dependability was promoted through a structured coding protocol that both researchers followed independently before comparison. Confirmability was enhanced through an audit trail of coding decisions and theme evolution. Transferability is supported by the thick description of participants, setting, and analytical process provided in this report (Braun & Clarke, 2019; Rony et al., 2024b).

Participant Demographics

Ten nursing students participated. All were enrolled in a nursing program at the target HBCU. Race, ethnicity, gender, and year of study were not systematically collected in the interview protocol; accordingly, no demographic claims are made about these variables. Table 1 presents participant-level information as it appears in the transcripts.

Table 1
Participant Overview (as documented in interview transcripts)

Pseudonym	Interviewer	Program	Primary AI Tools Mentioned
Aliyah Shannon	Monika Gurung	Nursing	ChatGPT, Siri, Spotify
Ariya	Monika Gurung	Nursing	AI study tools, clinical alert tools
Jessica Lam	Smriti Garbuja	Nursing	ChatGPT, Grammarly, Google Assistant

Munachi Onyia	Smriti Garbuja	Nursing	AI translation tools, chatbots
Naomi Adeyemi	Monika Gurung	Nursing	AI study tools, ChatGPT
Punam Pun	Monika Gurung	Nursing	ChatGPT, AI study tools
Shanieya Dawkins	Smriti Garbuja	Nursing	ChatGPT, clinical decision support AI
Tiffany Brown	Smriti Garbuja	Nursing	ChatGPT, Grammarly
Tyrese Solomon	Monika Gurung	Nursing	ChatGPT, Google
Yiram Biga	Monika Gurung	Nursing	ChatGPT, AI study tools

Note. Race/ethnicity, gender, and year of study were not systematically collected. Pseudonyms are used as they appear in the original transcripts. All participants gave verbal informed consent to recording and transcript use.

FINDINGS

Thematic analysis yielded four major themes that together describe how nursing students at this HBCU understand, use, question, and envision AI education. Each theme is presented with analytical narrative and direct participant quotations drawn verbatim from interview transcripts. Participants are identified by pseudonym.

Theme 1: AI as "Assisted Thinking" — Functional but Informal Understanding

Participants consistently demonstrated a working, practical understanding of AI — grounded in personal experience rather than formal instruction. They understood AI as a pattern-recognition and prediction system rather than a genuinely intelligent agent, and most articulated clear conceptual boundaries between what AI can and cannot do. Importantly, this knowledge was almost entirely self-acquired; several participants explicitly noted that their nursing coursework had not meaningfully addressed AI.

Ariya offered one of the most conceptually precise definitions, framing AI not as artificial thinking but as something more modest and more epistemically honest:

"Instead of thinking of AI as artificial thinking, I think of it more as assisted thinking — it organizes information, finds patterns, and provides suggestions, but it does not understand context, emotion, or ethics the way humans do. What stands out to me is that AI is only as responsible as the humans who design and use it." (Ariya)

Aliyah Shannon similarly described AI as a tool that processes information rapidly but without genuine intelligence, situating her understanding within a clinical context:

"AI is a tool that helps computers simulate human thinking — like recognizing patterns, making predictions, or solving problems. It's not really intelligence like a person, but it can process a lot of information quickly to support decisions. In nursing, I think of things like vital sign

monitors that alert staff to changes, or tools that help diagnose symptoms." (Aliyah Shannon)

Participants' understanding of how AI works was mechanistic and data-centric. Tiffany Brown described the mechanism plainly: "I think it works by being trained on huge amounts of data... then it finds patterns and uses them to predict or generate responses. The intelligence really comes from the data and the algorithms that learn from it, not from actual understanding, like a person would have." This framing — AI as probabilistic pattern-matching, not comprehension — was consistent across participants and reflects a level of conceptual clarity that formal AI literacy curricula often struggle to achieve.

Critically, several participants noted that this understanding came not from their nursing program but from personal engagement with AI tools. Tiffany Brown stated directly: "My nursing classes haven't really covered it yet." Tyrese Solomon echoed this experiential basis: "I use AI sometimes for personal use... I also use it to further explain information that I'm trying to look up." This self-directed knowledge acquisition — while demonstrating intellectual initiative — also signals a significant structural gap in formal nursing AI education (Alkhaqani, 2023; El Arab et al., 2025).

Naomi Adeyemi captured both the appeal of AI as an educational resource and the epistemic caution it requires: "I don't fully understand all the technical details, but I think the intelligence comes from continuous learning and improvement as more data is introduced. In healthcare, this can be really powerful, but it also means the quality of the data matters a lot." Her comment anticipates the bias concerns that emerged prominently in Theme 3.

Theme 2: Intentional and Boundary-Setting Use — Resisting Over-Reliance

A striking and consistent pattern across all ten participants was the deliberate, self-regulated way they approached AI use. Rather than unrestricted or passive consumption of AI outputs, participants articulated principled personal frameworks for when, how, and to what degree they engaged with AI tools. This theme was characterized by an active resistance to over-reliance, a commitment to maintaining their own clinical reasoning, and the capacity to distinguish between AI as a learning scaffold versus a cognitive replacement.

Tyrese Solomon provided perhaps the most vivid articulation of this boundary-setting stance. He described explicitly instructing ChatGPT not to answer his questions — only to explain:

"While I'm studying nursing, I use AI for explanations only. I don't try to get the answer from AI. I specifically ask: if I'm asking about this, I just want you to explain it — don't give me the answer. I put that in bold words for ChatGPT to know: don't give me the answer, help me figure it out by myself. I want ChatGPT to over-explain my question. I don't want it to give me the answer, because I can figure out the answer — I just need to know why." (Tyrese Solomon)

Jessica Lam articulated what she called a personal rule that governed all her AI use: "AI is for assisting, not for replacement." She elaborated on the reasoning behind this principle:

"I decide based on the task's learning goal. If it's something I need to internalize deeply — like pathophysiology or medication calculations — I avoid AI so I can struggle through and really learn it. But for tasks about process, like structuring a paper, checking grammar, or summarizing research articles to get an overview, I'll use it. The core question for me is: am I using this to enhance my own work and understanding, or to bypass the learning process?" (Jessica Lam)

Punam Pun described a similar boundary, framing AI as a "study partner" whose value depended entirely on intentional engagement: "I decide based on whether AI will support learning rather than replace it. If an assignment is meant to test reasoning or clinical judgment, I rely on my own knowledge first. Our success is learning how to use it as a study partner rather than a shortcut — something that prepares me better for real patient care."

Several participants also acknowledged the psychological pull of over-reliance and described actively resisting it. Munachi Onyia offered a frank and self-aware account:

"AI has helped more than hindered, but only because I try to use it as a starting point rather than an ending point. Sometimes I catch myself reaching for AI before even trying to think, and that is a habit I have to fight against. When I use it right, it opens doors; when I use it wrong, it closes my own mind." (Munachi Onyia)

Tiffany Brown connected this tendency directly to professional risk: "It has made me more efficient, but also a little lazier. Sometimes I have to fight the urge to just ask AI instead of thinking through a problem." And Yiram Biga acknowledged that AI can "become like a crutch... you begin to rely on them more and more."

These patterns align closely with Bodur et al.'s (2025) finding that nurses identify de-skilling and cognitive overdependence as significant threats of AI integration, and with Nematollahi Maleki et al.'s (2025) conceptual analysis, which identifies nursing competence and acceptance — including the critical judgment to appropriately limit AI use — as a foundational antecedent to effective AI-assisted care.

Theme 3: Ethical Alertness Without Institutional Support — Bias, Privacy, and Patient Safety

Perhaps the most striking finding of this study was the depth and specificity of participants' ethical awareness regarding AI — awareness that far exceeded the formal training they reported receiving. Without prompting beyond the interview question, multiple participants independently identified algorithmic racial bias in healthcare AI as a concrete, documented concern. They articulated sophisticated understandings of how bias enters AI systems, how it perpetuates inequity, and why this matters specifically in nursing. This ethical alertness was simultaneously a strength and an indictment of current

curricula: students had developed critical insight on their own, in the absence of structured guidance.

Aliyah Shannon raised the issue of racial bias in healthcare AI with directness and clinical precision:

"I have read about AI in healthcare being biased — like tools that work better for certain racial groups, not because of intent, but because of the data they were trained on. That's really concerning in nursing, where we are supposed to care for everyone equally. If an AI tool gives wrong information, it could affect patient safety. I also think about over-reliance — like, if nurses stop trusting their own judgment and just follow what the AI says." (Aliyah Shannon)

Jessica Lam went further, describing a specific case study she had encountered in a public health course that illustrated how bias becomes structurally embedded in healthcare algorithms:

"In a public health class, we looked at a case study about an algorithm used to predict which patients would need extra care management. It was found to be systematically underestimating the needs of Black patients, because it used historical healthcare costs data as a proxy for health needs. Since Black patients often face barriers to care and thus historically had lower costs, the AI wrongly assumed they were healthier. That was a huge wake-up call for me about how bias gets baked in, even without malicious intent. It made me question the trustworthiness of any AI output, especially when it concerns human lives." (Jessica Lam)

Tiffany Brown independently described a similar phenomenon in clinical diagnostics: "I've read about AI used in hospitals that was less accurate for darker skin tones, because the training data was mostly light-skinned patients. That really stuck with me. If I saw something like that, I would report it to my instructor or clinical supervisor. Personally, I never assume AI is neutral — I always cross-check with reliable sources."

Munachi Onyia connected her awareness of gender bias in AI to her nursing practice, describing noticing it in a translation tool:

"I questioned AI's fairness when I noticed that a translation tool always used male pronouns for doctors and female pronouns for nurses, even when the original language did not specify gender. It was a small thing, but it showed me how AI absorbs our world's unfairness and then spreads it further. It made me wonder how many other biases are hidden in the answers I get every day." (Munachi Onyia)

Beyond bias, participants articulated nuanced concerns about data privacy in clinical contexts. Jessica Lam identified patient confidentiality as a structuring concern for her AI use: "When I put patient case details or my own academic work into an AI tool, where does that go? Is it used to further train the system? Patient confidentiality is sacred."

Tiffany Brown applied this directly to clinical practice: "I would never put a patient's real information into a free AI tool."

Importantly, participants described handling these concerns through personal heuristics rather than institutional guidance. Ariya stated: "I feel cautiously confident. I understand AI at a practical level, but confidence should not turn into over-reliance. As a nursing student, I see ongoing learning as part of my professional responsibility." Jessica Lam described her verification practice: "My response is now my standard practice — AI is a starting point, not an end point. I treat its output like a tip from a colleague: useful as a contributor, but I am ultimately responsible for verifying everything against credible, authoritative sources before any application, especially in patient care."

This self-developed ethical framework is impressive but inadequate as a substitute for institutional scaffolding. As Bodur et al. (2025) documented, nurses' ethical concerns about AI — particularly around accountability, data security, and the preservation of compassionate care — require structured institutional response, not individual improvisation. The burden of ethical navigation should not fall solely on students navigating AI encounters without training.

Theme 4: Curricular Demand — Students Call for Embedded, Ethics-Centered AI Education

Every participant in this study articulated specific recommendations for how AI education should be structured in nursing programs. These recommendations were detailed, professionally grounded, and consistent across participants. Students were not merely expressing general interest in learning about AI — they were describing the particular content, pedagogical approaches, and institutional locations that would make AI literacy education meaningful for future nurses. Their vision closely mirrors frameworks identified in the empirical literature (El Arab et al., 2025; Nematollahi Maleki et al., 2025).

Jessica Lam proposed the most architecturally developed curricular design, describing a mandatory interdisciplinary course with three pillars:

"I would design a mandatory, interdisciplinary course called 'AI in Healthcare: Tools, Ethics, and Practice.' It would not be lecture-based. Instead, it would have three pillars. The first is literacy — how major healthcare AI tools actually work, a basic non-technical breakdown. The second is hands-on lab — actually using approved AI simulators in a safe space. The third is ethics and critical application — deep dives into real case studies of AI bias and success in medicine, role-playing scenarios where your EHR flags a patient as low risk but your gut says otherwise. We would discuss professional guidelines, liability, and how to be an advocate in an AI-augmented system. Health sciences students — especially nursing, pre-med, and pharmacy — would benefit most, because we are going to be the frontline users and the last line of defense for patients." (Jessica Lam)

Aliyah Shannon echoed the clinical relevance of AI education, emphasizing that nurses are uniquely positioned as everyday users of AI technology: "I would want a course that covers how AI works, AI in healthcare with real-world examples, ethics and bias, hands-on practice with tools, and how to talk to patients about AI. Nursing students especially need this — since we are often the ones at the bedside using these tools every day."

Punam Pun grounded her curricular vision in patient-centered values, insisting that AI education must teach students not just to use AI but to interrogate it: "I would include practical AI use, ethical decision-making, healthcare applications, and real-world case studies. I'd want students to learn how to question AI, not just use it. Healthcare students, especially nursing students, would benefit most because they need to balance technology with empathy, judgment, and patient safety."

Multiple participants specifically called for ethics to be embedded in AI education rather than treated as an add-on. Punam Pun stated: "Ethical use should be integrated into professional programs, not treated as an optional topic. I believe colleges and healthcare educators should lead this training because they understand both academic and clinical responsibilities." Jessica Lam elaborated: "Students need very clear, practical guidelines — not just 'don't cheat,' but things like how to cite AI assistance, how to prompt ethically, how to spot potential bias in outputs, and the importance of privacy — what you should never input. This has to be woven into the fabric of our education, not just a one-time warning."

Participants also identified shared institutional responsibility for this education. Naomi Adeyemi named both school and clinical instructors as responsible parties. Yiram Biga assigned primary responsibility to educational institutions: "The school system should be teaching students about how to use AI correctly. A lot of people are using it the wrong way." Tyrese Solomon added that AI education was a last resort in his personal hierarchy — sought only after exhausting peers, teachers, and course materials — implying that if faculty were more prepared to address AI, students would not be navigating it alone.

Munachi Onyia offered a vision of AI education grounded in critical inquiry, calling for learning environments that taught students to engage AI as citizens, not just users: "I would design a course that starts with a history of how new technology has been supposed to save or destroy the world, because that context helps us see AI as part of a longer story. Then I would want a hands-on part where we actually build a tiny, simple AI ourselves — so we can see that it's just math and data, not magic. Finally, I want a class where we debate hard questions with no right answers, like whether an AI should be allowed to make a life-or-death decision — because those are the questions we will actually face."

DISCUSSION

This study makes four contributions to the literature on AI in nursing education. First, it documents the AI literacy landscape among nursing students at an HBCU — a population absent from existing research. Second, it demonstrates that students develop sophisticated

AI knowledge and ethical reasoning largely through self-directed engagement, in the absence of formal curricula. Third, it reveals that students' awareness of racial bias in healthcare AI is both specific and clinically contextualized — constituting an underutilized educational asset. Fourth, it provides empirically grounded, student-generated curricular recommendations that are coherent with leading frameworks in the field.

AI Literacy as Emergent, Experiential, and Self-Regulated

Participants' understanding of AI was, on balance, conceptually sound — but it was built from personal experimentation and informal exposure rather than formal instruction. This finding is consistent with patterns identified by Alkhaqani (2023), who noted that nursing students engage with AI tools pragmatically and often without institutional scaffolding. It also mirrors Bodur et al.'s (2025) observation that nurses' AI knowledge is contextually developed and highly variable across clinical settings. The self-regulated use patterns participants described — avoiding AI for assignments that require clinical reasoning, instructing AI not to answer but only to explain — suggest a level of metacognitive sophistication that is both commendable and burdensome. Students should not have to construct ethical AI use frameworks alone.

This gap between students' AI engagement and their formal preparation echoes the antecedent framework identified by Nematollahi Maleki et al. (2025): nursing competence and acceptance, institutional integration, and ethical frameworks are all prerequisites for effective AI-assisted care — and all remain underdeveloped in the educational contexts participants described. The consequence is not merely an academic gap; it is a patient safety concern. When nurses enter clinical settings without structured AI literacy, they are left to navigate AI-generated outputs — including potentially biased or erroneous ones — using self-developed heuristics rather than evidence-based professional frameworks.

Ethical Awareness Without Institutional Scaffolding

The depth and specificity of participants' ethical concerns — particularly regarding algorithmic racial bias in healthcare AI — was the most striking finding of this study. Students independently identified documented real-world cases of healthcare AI bias, articulated mechanisms through which bias enters and perpetuates in algorithmic systems, and connected these concerns to the specific patient populations they are preparing to serve. This level of critical engagement with AI ethics is precisely what the literature calls for (Ahmed, 2024; El Arab et al., 2025; Vitorino et al., 2025) — and yet it appears to be occurring entirely outside of structured educational programs.

This situation represents both a strength and a vulnerability. The strength is that students bring genuine equity-consciousness to their AI encounters — they are not passive or uncritical users. The vulnerability is that this awareness lacks the theoretical frameworks, professional vocabulary, and institutional backing that would make it actionable in clinical settings. As Bodur et al. (2025) documented, nurses' ethical concerns about AI — accountability, data security, preservation of compassionate care —

require institutional response through transparent governance structures, not individual improvisation.

The HBCU Context as Pedagogical Asset

A central argument of this paper is that the HBCU context transforms AI literacy from a generic professional competency into a justice-oriented imperative. Students at this institution are training to serve communities that have been, and continue to be, harmed by biased clinical algorithms. Their awareness of this reality — articulated by Jessica Lam, Tiffany Brown, Aliyah Shannon, and Munachi Onyia through specific, documented examples — is not merely a symptom of general social awareness. It is contextually grounded, clinically relevant ethical reasoning.

This contextual knowledge is an educational asset that HBCU nursing programs are uniquely positioned to leverage. Rather than treating AI literacy as a neutral technical competency imported from PWI-centered curricula, HBCU nursing programs can and should build AI education that centers the experiences and needs of the communities their students will serve. As Hu et al. (2025) document, research in this area is shifting from purely technical concerns toward questions of patient safety, user acceptance, and societal impact — a shift that HBCU nursing programs are well-positioned to lead.

Toward a Curricular Model: What Students Actually Want

Students' curricular recommendations converged on several consistent elements: practical AI literacy (conceptual, not technical), ethics and bias as central rather than supplemental content, hands-on experience with clinical AI tools in safe environments, and integration into existing professional nursing coursework rather than standalone elective offerings. These recommendations map directly onto the NAIIR framework's pillars of transformational education, clinical integration, and ethical governance (El Arab et al., 2025), and onto the competency domains identified by Nematollahi Maleki et al. (2025).

The fact that students' intuitions about what they need align with expert-developed frameworks suggests that participatory curriculum design — in which students are genuine co-designers rather than passive recipients — would yield pedagogically sound outcomes. This approach is consistent with El Arab et al.'s (2025) emphasis on participatory design as one of NAIIR's core pillars.

Limitations

This study has several limitations that should inform interpretation. The sample was drawn from a single institution, limiting transferability to other HBCUs or nursing program types. The sample size, while appropriate for qualitative inquiry, does not support claims about frequency or prevalence. Data collection relied on self-report; participants' descriptions of their AI use and ethical reasoning may not fully capture actual behavior. Interview transcription quality varied, which may have introduced minor interpretive challenges. Finally, the interview protocol did not systematically collect

demographic data, limiting the ability to examine variation by gender, year of study, or other participant characteristics.

CONCLUSION

This study documents the AI literacy landscape among nursing students at an HBCU and makes the case that this landscape — characterized by self-developed competency, principled ethical awareness, and unmet curricular demand — constitutes both an urgent educational need and an underappreciated institutional strength. Students are engaging with AI thoughtfully, critically, and often courageously — identifying racial bias in healthcare algorithms, resisting cognitive over-reliance, and articulating sophisticated visions for what AI education in nursing should look like. They are doing this largely without institutional support.

The imperative that follows is clear. Nursing programs — and HBCU nursing programs in particular — must integrate AI literacy as a professional competency, with the same seriousness and institutional investment accorded to pharmacology, clinical reasoning, or evidence-based practice. This integration should be ethics-centered, clinically grounded, and built in genuine partnership with students who, as Tyrese Solomon put it, "just need to know why."

Future research should examine AI literacy across multiple HBCU nursing programs, explore faculty preparedness to teach AI, develop and test HBCU-contextualized AI literacy curricula, and investigate how AI literacy training affects clinical decision-making and patient outcomes in underserved communities. The health equity stakes of this work are not abstract — they are measured in the accuracy of diagnostic algorithms, the fairness of care management tools, and the capacity of future nurses to advocate for patients when AI gets it wrong.

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- ☐ None
- ☐ Some sections, with minimal or no editing
- ☒ Some sections, with extensive editing
- ☐ Entire work, with minimal or no editing
- ☐ Entire work, with extensive editing

REFERENCES

- Ahmed, S. K. (2024). Artificial intelligence in nursing: Current trends, possibilities and pitfalls. *Journal of Medicine, Surgery, and Public Health*, 3, 100072. <https://doi.org/10.1016/j.glmedi.2024.100072>
- Alkhaqani, A. L. (2023). ChatGPT and nursing education: Challenges and opportunities. *Al-Rafidain Journal of Medical Sciences*, 4, 50–51. <https://doi.org/10.54133/ajms.v4i.110>
- Bodur, G., Cakir, H., Turan, S., Harmanci Seren, A. K., & Goktas, P. (2025). Artificial intelligence in nursing practice: A qualitative study of nurses' perspectives on opportunities, challenges, and ethical implications. *BMC Nursing*, 24, 1263. <https://doi.org/10.1186/s12912-025-03775-6>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- El Arab, R. A., Al Moosa, O. A., Sagbakken, M., Ghannam, A., Abuadas, F. H., Somerville, J., & Al Mutair, A. (2025). Integrative review of artificial intelligence applications in nursing: Education, clinical practice, workload management, and professional perceptions. *Frontiers in Public Health*, 13, 1619378. <https://doi.org/10.3389/fpubh.2025.1619378>
- Glauberberman, G., Ito-Fujita, A., Katz, S., & Callahan, J. (2023). Artificial intelligence in nursing education: Opportunities and challenges. *Hawaii Journal of Health and Social Welfare*, 82(12), 302–305.
- Hu, M., Wang, Y., Liu, Y., Cai, B., Kong, F., Zheng, Q., Zhao, D., Gao, G., & Hui, Z. (2025). Artificial intelligence in nursing decision-making: A bibliometric analysis of trends and impacts. *Nursing Reports*, 15, 198. <https://doi.org/10.3390/nursrep15060198>
- Nematollahi Maleki, R., Shahbazi, S., Hoseinzadeh, M., Ghafourifard, M., Gholizad Gougjehyaran, H., & Faravan, A. (2025). Artificial intelligence-assisted nursing care: A concept analysis using Walker and Avant approach. *BMC Nursing*, 24, 1175. <https://doi.org/10.1186/s12912-025-03818-y>
- Rony, M. K. K., Kayesh, I., Das Bala, S., Akter, F., & Parvin, M. R. (2024b). Artificial intelligence in future nursing care: Exploring perspectives of nursing professionals — A descriptive qualitative study. *Heliyon*, 10, e25718. <https://doi.org/10.1016/j.heliyon.2024.e25718>
- Rony, M. K. K., Parvin, M. R., & Ferdousi, S. (2024a). Advancing nursing practice with artificial intelligence: Enhancing preparedness for the future. *Nursing Open*, 11, e2070. <https://doi.org/10.1002/nop2.2070>
- Ventura-Silva, J., Martins, M. M., Trindade, L. d. L., Faria, A. d. C. A., Pereira, S., Zuge, S. S., & Ribeiro, O. M. P. L. (2024). Artificial intelligence in the organization of nursing care: A scoping review. *Nursing Reports*, 14, 2733–2745. <https://doi.org/10.3390/nursrep14040202>
- Vitorino, L. M., Yoshinari Júnior, G. H., & Lopes-Júnior, L. C. (2025). Artificial intelligence in nursing: Advancing clinical judgment and decision-making. *Revista*

Brasileira de Enfermagem, 78(4), e780401. <https://doi.org/10.1590/0034-7167.2025780401>

UNCF. (2023, February 22). *Cultivating a growing need for STEM expertise*. <https://uncf.org/the-latest/cultivating-a-growing-need-for-stem-expertise>