

The Application of Artificial Intelligence in Midwifery Education at The University of Tchnology. Caribbean School of Nursing, Western Campus Jamaica: Students' Perspectives

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Abstract

Background: De Gagne (2023) posited that as the continuum of healthcare evolves and becomes more intricate, nursing education should also evolve in order to keep abreast with the changing landscape. The integration of artificial intelligence will play a critical role in the development of higher education with the potential for transforming education by providing individualized and independent learning experiences for students. However, little is known about how students will perceive AI as integral to their education.

Methodology: A quantitative research approach was used to conduct this study. The population consisted of 60 midwifery students at the University of Technology, Western Campus, Jamaica. The sample size was 53 students.

Results: The concept of AI is new to many, 86.05% of the respondents were familiar while 13.95% were not familiar with AI. A notable 16.28% of participants, were dismissive of the efficacy of such integration.

Conclusion: The study emphasises the necessity for proactive educational measures aiming at increasing AI literacy among students.

Recommendations: Considering the strong student support for integrating of AI-based learning tools, it is recommended that the university proceed with this initiative by initially implementing a pilot program.

Keywords: Artificial intelligence, AI and decision making, AI and nursing education.

Background

According to De Gagne (2023), as the continuum of healthcare evolves and becomes more intricate, nursing education must also evolve. Artificial intelligence (AI) integration may play a crucial role in the development of nursing education, having the potential to transform education by providing individualized learning experiences for students but little is known about how students perceive the application of AI in their education. Artificial intelligence (AI) is defined as the ability of computers and machines to perform tasks which are normally performed by intelligent beings (Copeland, 2025). The integration of artificial intelligence (AI) in healthcare education has been a topic of growing interest and relevance in recent years.

Since the initial concept of Alan Turing of "thinking machines" in 1950, research in AI has made significant strides across disciplines. In the realm of education, the emergence of new technologies ushered in transformative changes in teaching and learning method.

The US Education Sector is projected to experience a remarkable growth of 41.14% between the years 2022 and 2027 (TechNavio, 2023). In October 2016, the United Nations Educational, Scientific and Cultural Organization (UNESCO) announced a global teacher shortage of approximately 70 million (UNESCO, 2016). AI is perceived as the tool to expand access to educational opportunities, amplify the reach of learning experiences and refine strategies to achieve satisfactory learning outcomes. With Jamaica experiencing a chronic teacher shortage (Appleton, 2006) that also affects the University of Technology, Jamaica, can AI be seen as the ultimate solution?

Purpose

To assess how AI technologies can be incorporated in midwifery education, the impact AI may have on students' learning experiences and the perception of AI among midwifery students.

Problem Statement

Artificial intelligence gained momentum as an educational tool in healthcare training. Its integration into midwifery education at the Caribbean School of Nursing, Western Campus, is uncharted territory. A knowledge gap exists in the perception of midwifery students to the use of AI tools in their education. It is, therefore, important to understand the student's perspective to enable educational leaders to make informed decisions regarding the incorporation of the technology in educational programs.

Objectives

The objectives of this study were to:

- Investigate how midwifery students perceive the integration of AI-based learning tools into their curriculum.
- Investigate factors influencing students' opinions on AI incorporation into midwifery education.
- Investigate ways in which the Caribbean School of Nursing can optimize the integration of AI to enhance midwifery education.
- Identify challenges associated with the use of AI in the teaching/learning process.

Significance of the Study

This study holds significant implications for both the field of midwifery education and the broader landscape of healthcare training in the Caribbean region. In an era marked by rapid advancements in technology, the integration of AI into educational practices is an urgent matter. This shed light on the experiences and perceptions of midwifery students at the Western Campus, Caribbean School of Nursing regarding the use of AI in their education. By exploring students' perspectives, valuable insights into the effectiveness of AI-based educational tools, potential challenges, and opportunities for integration were obtained. The findings of this research will inform educators, policymakers, and institutions about the strategic integration of AI in midwifery education. The goal is to enhance the quality of education, have better prepared students ready to face the realities of practice as midwives, and improving maternal and child health outcomes.

Research Question

1. How do midwifery students perceive the integration of AI-based learning tools into their curriculum?
2. What factors influence students' perspective on AI being incorporated into midwifery education?
3. In what ways can the Caribbean School of Nursing optimize the integration of artificial intelligence to enhance the teaching learning process?
4. What are potential challenges associated with the application of AI at the Caribbean School of Nursing?

Inclusion Criteria

This research included only years 1, 2 and 3 students who are currently enrolled in the midwifery program at the Caribbean School of Nursing, Western Campus.

Exclusion Criteria

Year 4 midwifery students who attend the Caribbean School of Nursing were excluded from the research.

Ethical Considerations

Ethical approval was obtained from the Ethics committee of the College of Health Sciences, University of Technology, Jamaica. informed consent was obtained from participants after objectives and procedures were explained so that the participants could understand what was expected during the research. Privacy and autonomy of data were assured.

Limitation

The sample size was restricted to a small cross-section of the University's population. Generalization cannot b made to the entire student population.

Results

A total of 43 participants who are enrolled in the midwifery programme from the university's western campus completed the questionnaire.

Of the 43 respondents, 86.05% were familiar with artificial intelligence whilst 13.95% stated they were not. When asked about their belief that the integration of AI in the midwifery curriculum will enhance the understanding of concepts, 83.72% said yes while 16.28% said no. In relation to how the students viewed AI-based tools in their curriculum, 69.77% had a positive view with 27.91% being indifferent and 2.33% had a negative view. In response to how confident respondents were with adapting to and effectively utilize AI-based learning tools as part of their regular study routine, 24 (55.81) were somewhat confident, 16 (37.21%) were very confident, and 3 (6.98%) were not confident.

Figure 1: Perception of the effectiveness of AI-based learning in preparation for real-world scenarios in comparison with traditional teaching methods.

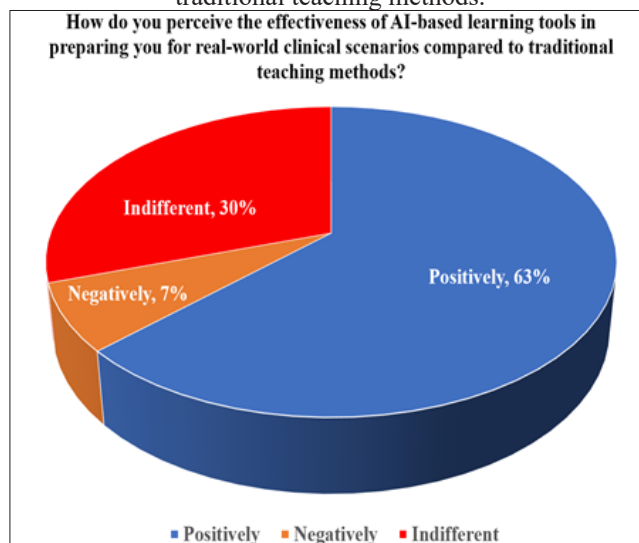
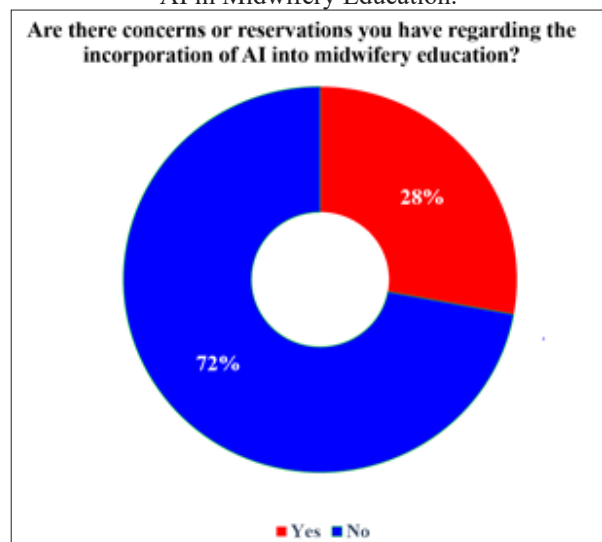


Table 1: Can you state specific areas or topics within midwifery education where you believe the integration of AI applications or tools would be most beneficial?

Specific Areas or Topics	Frequency	Percent
Anatomy and physiology	19	44.2
Anatomy and Physiology, Intranatal and Postnatal Care	1	2.3
Anatomy and psychology & Care plans	1	2.3
Biochemistry	2	4.7
Biochemistry and Microbiology	1	2.3
Biostatistics	1	2.3
High Risk Management and Biochemistry	1	2.3
Intranatal Care	2	4.7
Neonatology, Intranatal and postnatal Care	1	2.3
Teaching pathophysiology	3	7
Teaching Pharmacology	3	7
Prenatal Care	4	9.3
Prenatal Care and Intranatal Care	2	4.7
Prenatal care, Intranatal care, High Risk Management, pharmacology	1	2.3
Teaching Venipuncture	1	2.3
Total	43	100.0

Figure 2: Concerns or Reservations regarding Incorporation of AI in Midwifery Education.



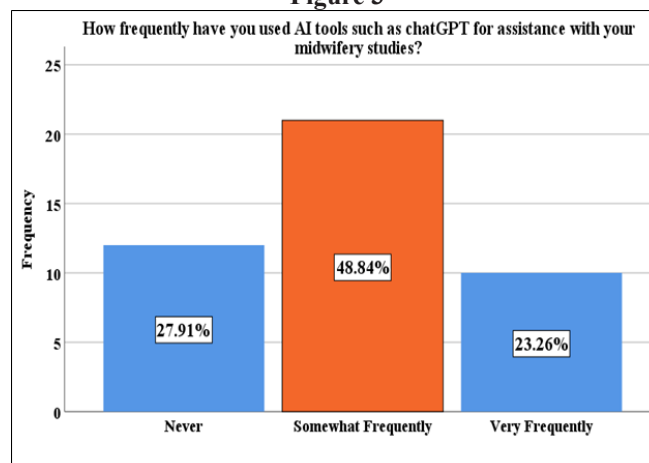
The chart above indicates that 72% of the respondents had no concerns or reservations regarding the incorporation of AI into midwifery education while 28% indicated having concerns or reservations.

Table 2: Primary Factors Influencing Reservations.

Concerns or Reservations Stated	Number of Respondents	Percentage (%)
Actual lecturers teaching is better than using AI	3	21.43
Students' will become too dependent on using AI tools	6	42.86
The effectiveness of using AI and the emotional impact	2	14.29
The accuracy of AI tools	1	7.14
Unrealistic and faulty learning	1	7.14
Simulation	1	7.14
Total	14	100

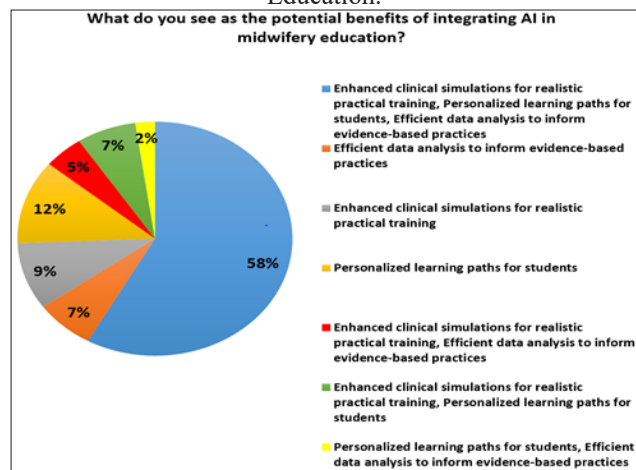
The table above represents the primary factors influencing their concerns or reservation which is represented in the above table.

Figure 3



The graph above highlights that 48.84% of respondents have somewhat frequently used AI tools such as ChatGPT for assistance in their midwifery studies, 23.3 % utilized AI tools very frequently while 27.9% had never used AI tools in their midwifery studies.

Figure 4: Potential Benefits of Integrating AI in midwifery Education.



Pie Chart depicts the perceived potential benefits of integrating AI in Midwifery Education. Of the respondents 25 (58%) stated that the integration of AI in Midwifery Education would enhance clinical simulations for realistic practical training, personalized learning paths for students and efficient data analysis to inform evidence-based practices, 3 (7%) efficient data analysis to inform evidence-based practices, 4 (9%) stated enhanced clinical simulations for realistic practical training, 5 (12%) personalized learning paths for students, 2 (5%) see enhanced clinical simulations for realistic practical training, and efficient data analysis to inform evidence-based practices as the only benefits, 3 (7%) selected enhanced clinical simulations for realistic practical training and personalized learning paths for students, and the remaining 1 (2%) stated personalized learning paths for students, and efficient data analysis to inform evidence-based practices as being the only benefit

When asked about the Essential Strategies or Practices for Integrating AI into the Curriculum 86.05% expressed the opinion that gradual integration with clear learning objectives, continuous evaluation and adaptation of AI tools, and comprehensive training programs for educators was best, 4.65% opined that gradual integration with clear learning objectives was most essential, 4.65% selected comprehensive training programs for educators as being most essential, 2.33% chose both gradual integration with clear learning objectives and comprehensive training programs for educators and 2.33% opted for continuous evaluation and adaptation of AI tools.

Discussion

This research explored midwifery students' perception of integrating AI-based learning tools into their curriculum at the University of Technology, College of Health Sciences, Caribbean School of Nursing Western Campus, Jamaica. It was conducted among first-year to third-year midwifery students. A total of 43 registered midwifery student, participated.

While the concept of artificial intelligence (AI) in its modern form is new to many, 86.05% of the respondents stated that they were familiar with artificial intelligence with only 13.95% not being familiar. This suggests a strong awareness of artificial intelligence (AI) within the surveyed population as well as the existence of a small awareness gap. The majority of the students (83.72%) expressed belief in its potential to enhance their learning, this is consistent with the literature which states that generally students display positive attitudes towards the integration of AI-based learning tools (Tominc & Rozman, 2023). The study indicates a widespread interest in using AI technology for educational purposes within the surveyed population. However, a notable minority were dismissive of such integration. Their scepticism suggests the existence of barriers around AI that would need to be addressed. Overall, the data reflects a positive attitude towards integrating AI in curricula.

When measuring the perceived effectiveness of AI learning tools versus traditional teaching methods it was noted that a majority, (63%) of respondents, viewed AI-based learning more

positively when compared to traditional teaching methods, indicating a widespread belief in its efficacy. Conversely, a minority (7%), holds a negative perception, suggesting some uncertainties towards AI-based approaches. Almost one-third of the respondents neither oppose or support the integration of AI-based learning into the curriculum. This indicates that intervention may be necessary to address the topic among the undecided students. The lack of awareness, the belief that AI is not relevant to their program of study, or mental fatigue with the term could be reasons for indifference. This signals a need for improved communication and engagement. The level of indifference may lead to reluctance in participating in any AI-related activities.

Primary factors influencing students' attitudes showed varying responses. Of the 14 students who responded to the question regarding primary factors influencing students' attitudes toward AI in education, there were divergent concerns. The most stated concern expressed by six respondents (42.86%) was the belief that there could be too much dependence on AI technologies. This suggests a concern that AI technologies may compromise independent learning and critical thinking skills especially in midwifery practice where prompt decision making is critical. Concern was also raised about the psychological impact, reflecting possibly fears of decreased empathy and a lack of authenticity. Respondents concerns regarding a preference for classroom teacher learning is contradicted by Edwards and Cheok (2018) who stated that in light of the shortage of teachers, there is a need for innovative ways to fill the void created by the shortage. The significance of addressing the emotional as well as the practical implications of the use of AI in midwifery education is highlighted. There must be a careful balance traditional teaching methodologies and responsible use of AI.

Engagement with AI tools varied among respondents with 48.84% reported somewhat frequently used tools such as ChatGPT to enhance learning. This indicates the use of AI to supplement their academic pursuit. A further 23.3% indicated that they used the tool very frequently. This suggests that a group of students have embedded AI technologies in their regular study routine. The lack of engagement with the technology could stem from limited access, limited awareness or a preference for the traditional methods of learning. The findings indicate the significance of a sustainable structure to guide integration into the midwifery program.

The research also revealed ways the respondents believed AI should be leveraged in the teaching learning process. The most commonly cited area of application is Anatomy and Physiology, with 44.2% of the respondents acknowledging the potential for AI to aid understanding of concepts. There is also interest in using AI for teaching Pathophysiology and Pharmacology. This is an indication that the respondents recognised the potential to enhance understanding of complex concepts. According to Connolly et al. (2023) AI-based tools are valuable in nursing education. This is further supported by Buchanan et al. (2021) who stated that the trend of AI will be transformative across all domains of nursing practice including

policy, clinical care and research. Therefore, the Caribbean School of Nursing can optimise its integration in midwifery education.

Implications for Midwifery Education

The findings reveal that the possibility of integrating AI into midwifery education is promising. The majority of the respondents acknowledged that AI has the potential to enhance learning. There is a need to engage AI simulations which mimic clinical realities. This will help with the mastery of complex clinical skills. The data points to a need for the training of students in data literacy. This will assist in the development of interpretive skills required to function in the modern data and AI driven environment. A significant proportion of students shared the concern of too much reliance on AI technologies and the loss of empathy. Therefore, ethical principles must be embedded in training.

Recommendations

The Caribbean School of Nursing should explore ways of implementing AI-learning tools in the midwifery curriculum. It is recommended that;

1. The school conducts a broader study of both campuses to engage more students to gather feedback or as a pilot study before implementations.
2. Policy makers, educators and students should advocate for the inclusion of new AI technologies in the curriculum.
3. The school should keep the channels of communication open to address student concerns and adjust as necessary.
4. There should be a robust AI infrastructure with clearly defined guidelines regarding ethical use.

Conclusion

The study revealed the need to exercise caution as well as enthusiasm among the respondents. AI tools such as ChatGPT was used by students to support their education and assist with decision-making in an educational environment. Key concerns were also highlighted and included fears of emotional compromise, over-reliance on AI and a preference for the traditional mode of instructions. While AI has proven to be a useful resource, integration should be approached with caution. Integration should not compromise the human factors such as critical thinking and empathy. AI tools should enhance human capacity, not substitute it.

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