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"I can no longer give take-home exams": Health professionals educators' experiences and perceptions regarding the use of artificial intelligence in health professions education in Uganda

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Abstract

Introduction Artificial intelligence (AI) tools offer immense opportunities and challenges for medical education. However, there is limited information about the use of AI among health professional educators, particularly in low- and middle-income countries. We aimed to explore the experiences and perceptions regarding AI use in health professional education.

Methods and materials We collected qualitative data using in-depth interviews with 19 health professional educators. The interviews were audio-recorded and transcribed verbatim. We used Atlas Ti version 9.1 to organise the data. We used Braun and Clarke's six-step thematic analysis for data analysis. The study was approved by the Busitema University Research and Ethics Committee (BUFHS-2023-79).

Results Three major themes were identified from the data: uptake and use of AI, perceived benefits of AI in health professional education, and concerns regarding AI use. We noted initial reluctance to support AI use, while its use varied from no or infrequent use to frequent use. Health professional educators used AI for various reasons, such as for teaching, student assessment, research, and personal work. AI was perceived to be beneficial in improving the clarity of writing, providing access to individual-tailored information, teaching, learning, and assessment, and research purposes. The barriers to AI use included a lack of institutional policies to guide AI use, limited capacity to afford paid AI versions, and reluctance to use AI. AI was seen to have inherent limitations, which included inaccurate information and a lack of contextual information for resource-limited settings. The fears of AI use included the risk of over-reliance on AI, academic misconduct, examination malpractice, ethical conflicts, and integrity.

Conclusion AI use in health professional education was perceived to have some benefits, amidst concerns that may derail its use in health professional education. The lack of policy and guidelines to govern the use of AI in

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health professions education underscores the need to develop policies and guidelines that safeguard and promote responsible and ethical use of AI.

Keywords Health professional education, Artificial intelligence, Educators, Uganda

Introduction

Artificial intelligence (AI) is an open-source large language model that can produce human-like text [1]. Over 500 million people actively use AI, with medical education being one of the fields where it is extensively used by both students and educators [2, 3]. When used responsibly, AI tools can potentially revolutionize medical education [4]. Medical students can use AI for their assignments, search for information, prepare for examinations, and aid in academic writing [5]. In addition, AI has important applications among health professional educators, including setting examinations, creating new content, and grading of assignments [6].

AI tools have the advantage of quick access to information and improving personalized learning [6]. AI has been reported to present information to students with more clarity and to be more organized than other sources [7]. Thus, they can be helpful, especially in resource-limited settings where other learning resources and educators may not be sufficient to meet the required standards. However, there are several limitations associated with the use of AI in health professions education, which include the risk of examination malpractice and concerns that students might lose their critical thinking capacity and innovation [3, 8].

Incorporating the use of AI in health professions education, therefore, requires that measures be put in place to ensure its responsible use. Health professional educators will be directly involved in the supervision of students regarding the use of AI languages. As such, health professional educators need critical thinking to enable them to promote responsible and ethical use of AI in health professions education. There is, however, limited information about the use of AI among health professional educators in low- and middle-income countries. The study aimed to explore the health professional educators' experiences and perceptions regarding the use of AI in health professions education.

Methods and materials

Study design and setting

This was a qualitative descriptive study to explore experiences and perceptions regarding the use of AI among health professional educators [9]. The study was conducted at two higher education institutions in Uganda. The higher education institutions were public universities. The two settings were chosen to enable the collection of diverse perspectives regarding AI use. The settings were chosen given their respective locations in urban and

rural settings. The two higher education institutes offered higher health education, including undergraduate and postgraduate programs in nursing, medicine, and pharmacy, among others.

Study population and participant selection

The study population was health professional educators (HPE) at the two universities in Uganda. These included nursing, medical, public health, and biomedical educators. We included participants who consented to participate in the study. Health professional educators on leave at the time of study were excluded. We recruited 19 health professional educators until data saturation was reached. Purposive sampling was used to select participants with considerable experience in academia and experience with AI use. Purposive sampling was based on the criteria of work experience, variation in age, and AI use to select participants who could provide rich in-depth information. The age of the respondents was chosen since it is a key determinant in the uptake of technology. The selected educators were approached physically, through a phone call or WhatsApp, and the study was explained to them. We scheduled an interview with participants who consented to participate in the study.

Data collection

In-depth interviews (IDI) were conducted from 06th November 2023 to 31st January 2024 using a semi-structured interview guide. Data were collected by authors D.M., R.N., and P.K., who have experience in qualitative data collection. The interviews were conducted online and in person. All the interviews were conducted in English language. The interviews were audio recorded, and they lasted on average 40 min. We did not collect any field notes from the study. During the interview, educators were asked about their age, sex, department, and working experience. The questions in the interview guide explored the use of AI in teaching, learning, and assessment, including its perceived influence on students' learning. Further probing was done to ensure clarity and the collection of rich in-depth data (Appendix 1).

Data analysis

We used the Atlas TI version 9.0 in data analysis. Data analysis was conducted by JE, PK, and FK. Disagreements in the coding were resolved unanimously. Data was analysed using inductive thematic analysis following the six steps proposed by Braun and Clarke [10]. The first step was to read the transcripts thoroughly to become familiar

with the data [10]. The second step involved identifying meaningful statements from phrases and sentences to generate the initial codes [10]. During the third step, we identified the potential themes and sub-themes by combining the appropriate codes into categories [10]. The fourth step was to review and modify themes by scrutinizing and comparing the codes with the themes [10]. We then defined and renamed the themes as necessary [10]. The final step was to prepare the report by selecting and reporting the quotes in the participants' own words without any change to ensure precision [10].

Trustworthiness and rigor

The study strived to maintain the trustworthiness and rigor of the study findings in diverse ways. Credibility was maintained through triangulation, prolonged engagement, and peer debriefing [11]. Triangulation was done through the use of different researchers to conduct interviews and to analyse the data [11]. Peer debriefing involved discussion of the coding process and identification of themes to minimize bias and to ensure objective interpretation of the data [11]. The researchers were familiar with the study context, which served to enhance a comprehensive understanding of the participants' experiences and perceptions regarding AI use. We have strived to describe the study methods and setting to enable replication, dependability, and transferability of our study findings to other settings [11]. Confirmability has been ensured through the authors' conscientious use of bracketing to control for biases during data collection and analysis [11].

Results

Description of participants

We conducted 19 interviews with the health professional educators from the two higher education institutes (Table 1). The educators were from biomedical (e.g., pharmacology, physiology, anatomy, and biochemistry), nursing, and medical backgrounds. The years of experience varied from one year to 20 years.

Perceptions of HPEs regarding the use of AI

Three major themes were identified from the study: (1) the uptake and use of AI; (2) perceived benefits of AI use, and (3) concerns regarding AI use (Fig. 1).

Theme 1: uptake and use of AI in health professionals' training

AI uptake and use were noted among health professional educators (HPEs). HPEs learned about AI, and they were introduced to it by their reference sources. HPEs used different AI sources for various reasons. They made adjustments to accommodate its use in the health professional training, while they devised different measures to detect AI misuse among students.

Learning about AI

HPE learned about AI from family, friends, students, mentors, colleagues, online sources, and training sessions. One participant described how they had learned about AI.

"Through colleagues, through students' community.... students will always agitate with anything new.... They ask you, there's this that we have heard

Table 1 Description of the study participants

Interviews	Sex	Age	Background/disciplines	Work experience
1	Male	47	Nursing background	Missing value
2	Male	35	Biomedical sciences	10
3	Male	29	Biomedical sciences	1
4	Male	33	Nursing background	10
5	Male	45	Biomedical sciences	13
6	Male	36	Biomedical sciences	10
7	Male	37	Biomedical sciences	4
8	Male	47	Biomedical sciences	Missing value
9	Male	36	Medical background	4
10	Male	28	Medical background	5
11	Male	42	Medical background	18
12	Male	38	Medical background	9
13	Female	38	Medical background	5
14	Female	43	Medical background	16
15	Male	40	Medical background	15
16	Female	49	Medical background	20
17	Male	32	Medical background	3
18	Male	32	Medical background	3
19	Male	Missing value	Medical background	Missing value

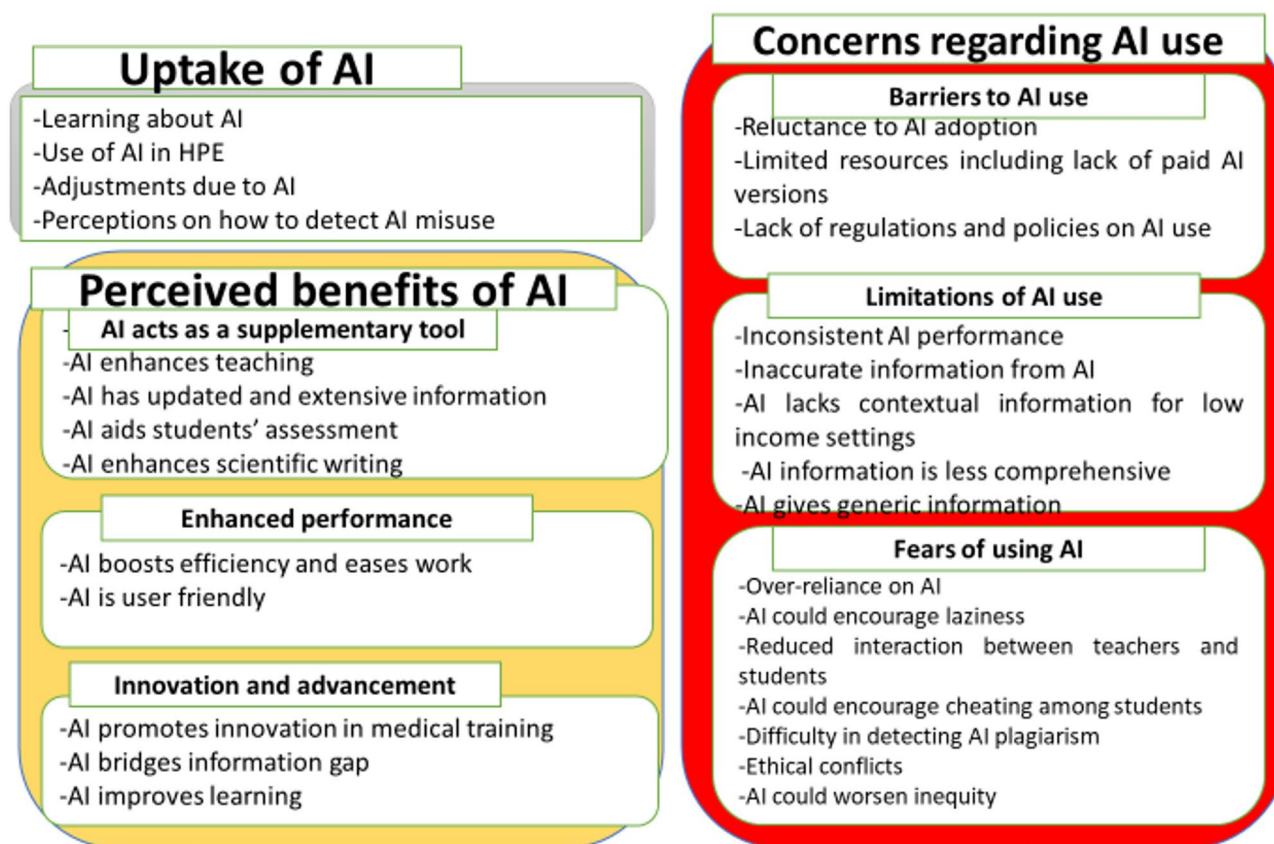


Fig. 1 Perceptions of HPEs regarding the use of AI in health professional education

of..., have you ever used it?" (Biomedical, 10 years of experience in HPE).

The use of AI among HPE

Adoption of AI ranged from initial reluctance and infrequent use of AI to frequent and daily use of AI for routine activities. Regular AI use translated to subscription of premium versions of AI. Some HPEs even introduced AI to their students, encouraged them to use it to improve their effectiveness, and guided them on how to use AI responsibly. Some HPEs explored AI to check how it worked and whether it could be helpful to students. However, other HPEs did not attempt to use AI.

"...I think during my research course, I told the students about it. I showed them that there is this, and you use it, but you must use it with caution. Because now, it is made by someone. And therefore, we can even detect that someone has used it..." (Medical educator, 16 years of HPE).

HPEs used AIs such as ChatGPT, Quill bot, Consensus, SCISPACE, Capitol, Litmaps, Grammarly, and Elicit. HPEs who used AI reported using it alongside other materials. Most of the HPEs used different information

sources in addition to AI. Some first used AI to gain a preliminary understanding of the concepts before visiting credible sources. Some HPEs were reported to have used more than one AI source, utilizing the strengths of each AI while taking into account the weaknesses. Lastly, some HPEs maintained the human touch while using AI, utilizing AI carefully without allowing it to replace their brains.

"...it gives me simple answers, you can use it as your first point of contact. And then after getting, like, the outline, you go to, say, the textbook of physiology or something. And you say, OK, now what does this exactly mean? Where does this go?" (Biomedical educator, 5 years of experience in HPE).

Adjustments due to AI

HPEs adjusted their work to suit the inevitability of AI introduction in health professionals' training. The adjustments were related to the integration of AI in their work, but also, the changes were made to reduce the misuse of AI among students. AI changed the mode of teaching of health professionals. HPE used a student-centered approach instead of a traditional teacher-centered approach and encouraged students to search for

information on their own from the available sources, including AI.

"...instead of me coming in class and standing in front and pouring all the abstract things to them, I can come and then tell them, okay, you use your different browsers, someone searches about this, summarize for us, someone searches about this, summarize for us, and then we have a discussion..." (Biomedical educator, 10 years of experience in HPE).

AI use also made HPEs change the way health professional students were assessed and examined. HPE stopped using open-book assignments with straightforward questions whose answers could easily be copied from AI sources. Some of the HPEs preferred to ask for hand-written assignments instead of typed assignments. Handwriting was believed to stimulate students to think about their work. HPEs preferred physical to online examinations. Moreover, practical examinations were preferred and trusted compared to theoretical examinations. If they were to set theoretical examinations, HPEs preferred to set real-life cases that students had met on clinical wards. Some HPEs set small tasks that would not require students to go to AI, whilst some set reflection essays which prompted students to think as they wrote.

"...I can no longer give take-home exams. I cannot give them topics that go and research on these topics, and then we discuss it here. Because if you do it, they will just be copying and pasting what you have already internalized to them..." (Medical educator, 16 years of experience in HPE).

"Because now I can't ask them to type an essay. They have to write it, handwrite it. Because at least then I'm sure they'll use their brain a bit." (Medical educator, 5 years of experience in HPE).

Perceptions on how to detect AI misuse among students

Health professions educators learned ways to recognize students' use of AI. This was achieved by paying close attention to the work submitted by students to see if the work had been copied from AI. They probed students to check for understanding of their work and cross-checked the work that the students submitted against information in AI to check if they had gotten it from there. The good work and English that AI could produce were not expected by the HPEs from their students who were not native English speakers. Some HPEs knew the capabilities of their students and the kind of work they could produce. Lastly, HPEs used plagiarism checkers to check the similarity index of the student's work. They set limits for the similarity above which they could not tolerate.

"...I know my students and I know how they write and how they structure their things. So, I'm able to tell who has used AI and who has not used AI..." (Nurse educator, 10 years of experience in HPE).

"... from way back we have been using software to just look at similarity index and when that AI revolution came up, they have embedded these AI detectors just to always check and see if someone is actually what, then it purely as themselves or they have used AI to generate it because they have added those algorithms in those checkers." (Biomedical educator, 10 years of experience in HPE).

Theme: Perceived benefits of using AI among health professional educators

HPEs expressed several benefits of AI use, including AI as a supplementary tool, enhanced performance, and innovation and advancement. The perceived benefits of AI use were derived from their experiences of using AI, whilst others were basing their expectations on what they heard.

Supports teaching, learning, assessment and research

AI was seen to support teaching, learning, and assessment. AI aids in developing teaching materials like PowerPoint presentations and generating graphics such as images. AI was perceived to aid lecture delivery. The AI platforms to deliver lectures online reduced congestion and the need for physical space, especially given the limited resources and infrastructure in the teaching institutions.

"...Sometimes you can use it to get an idea of how your learning material should be structured, but also sometimes, you go in there and you find that the information is good and you can use it..." (Nurse educator, 10 years of experience in HPE).

HPEs used AI to develop questions to use in the assessment and grading of students' examinations. AI was also used to cross-check the originality of students' work. AI improved the efficiency in setting and grading assignments. As a result, AI was reported to reduce the workload and improve their efficiency.

"I've been using it, one, I've used it not many times in the setting [of examinations], but then two, I've tried to use it in the marking process." (Biomedical educator, 1 year of experience in HPE).

AI was also perceived to enable students and teachers to search for new information. Because of the wide information AI offers, it would open up students' minds and motivate them to read more. AI was seen to enable

students to understand hard concepts, due to the simplified information it gave, which students could easily process and understand.

“...A lecturer is stuck; students are stuck in class. These languages can help you get to that or consult as quickly as possible...” (Medical educator, 16 years of experience in HPE).

HPEs also noted that AI was useful in academic writing. Those studying postgraduate programs used AI in writing their research proposals and theses. AI was used in research and academic writing to check and correct grammar, paraphrase and help in sentence construction and ensuring coherence and logical writing. During the literature review, AI was used to identify research papers, summarize existing literature, and identify the knowledge gap. AI was perceived to be helpful in transcription, analysing quantitative and qualitative data, and reporting research findings, including the use of infographics. The benefits of AI in academic writing were perceived to make one more efficient and result in more research outputs, including the number of research publications.

“If I want to write a proposal and I want to make sure that the grammar is good, I have used ChatGPT.... the ones for transcription I have used them as well.” (Nurse educator, 10 years of experience in HPE).

“These days when you publish a paper. These infographics are important.... But, if you say this is my key message create an infographic. I’m sure it[AI] can produce a very nice one.” (Medical educator, 18 years of experience in HPE).

AI was perceived as beneficial for personal and professional work. These included drafting documents like letters, emails, memos, and curriculum vitae. HPEs used AI to acquire soft skills such as those in graphics and generating images and computer codes.

“...It can write for me letters. If I want to write...I don’t have to start gambling, how do I write? I just ask ChatGPT...” (Medical educator, 16 years of experience in HPE).

AI enhances performance

AI was seen to simplify work, thus promoting efficiency. AI reduced workload and saved time by simplifying information search. HPEs reported that AI provides easy access to information as it quickly searches across many internet sources, allowing one to access the required information without being confused by the wide range of information on the internet. Compared to the existing

sources of information, AI was found to be more accurate, updated, and easily understandable. HPEs emphasized the importance of current information, especially in the dynamic medical field.

“If you get a paper from Google Scholar and put it there, you generate. It will bring for you like 10 of them that are similar or related to the paper you are trying to get to read. So, that reduces the hassle of going through Google Scholar and you are going author by author.” (Biomedical educator, 10 years of experience in HPE).

AI was reported to present information in a friendly manner that was easy to understand using simple and non-technical language. Furthermore, AI presented information in a creative manner that was attractive for a person to keep visiting it. Additionally, getting information from AI was like conversing with another person, generating a conversation-like response with a human connection.

“...it’s like the responses are tailored. It’s like somebody you can talk to if you have anything you want to know, instead of going to Google, you can just go to ChatGPT and give you a response specific to your question. So, it gives you a response which is tailored towards the need that you have...” (Nurse educator, 10 years’ experience in HPE).

“My point is they might bring out information in a more friendly way. In a more friendly way, maybe an easier way to assimilate.” (Biomedical educator, 4 years of experience in HPE).

AI promotes innovation and advancement in health professions training.

Some health professions educators believed that AI had the potential to revolutionize health professions education. They considered AI a new technology that could face resistance from some people, but embraced with time. Just like other technologies, AI could perform some human tasks. Additionally, HPEs believed that AI could reduce the information gap by simplifying communication between low- and middle-income countries. Lastly, HPEs hoped AI would improve with time. They recognized that AI still had challenges, but they emphasized that it would be limited for a short time as it was improving daily. Additionally, HPEs believed AI to be in evolution, and it would not fail; instead, the HPEs were supposed to adapt.

“...This is education in evolution, which is a normal process. Yes, it started with simple tools like Google,

but it's getting better and better every day..." (Medical educator, 9 years of experience in HPE).

"Even before we talk about AI, the internet has kind of narrowed that gap. Right now, you can sit in the same class as an MIT student learning about something" (Medical educator, 9 years of experience in HPE).

Theme: concerns regarding AI use among health professional educators

Despite expressing several benefits of AI, HPEs raised concerns regarding AI use in health professions education. The concerns were related to barriers to AI use, the inherent limitations of AI, and real and anticipated fears regarding AI (mis)use.

Barriers to AI use in health professions education

Health professional educators noted hesitancy and resistance among some HPEs in using AI in health professionals' training. As such, some of them failed to embrace and accept the use of AI. Some HPEs discouraged the use of AI among students. The reluctance to use AI was partly related to fears about AI and a lack of knowledge of how AI works, and its impact on health professions training. The university leadership was equally reluctant to support AI use, and a lack of policies barred its use. Another barrier to AI use was related to the few HPEs who were using AI compared to the students. Few students and faculty used AI, partly related to limited resources to access the paid-up versions of AI.

"...most of the lecturers haven't embraced the use of AI or it comes down to just the knowledge. I don't think they know about how powerful these tools can help you do your work much better and easier. So, they haven't embraced it much and they are fixated on actually fighting its use among students..." (Medical educator, 5 years of experience in HPE).

"...Because even here, if you get a student cheating using AI, you do nothing, right? You don't have evidence. Because there is no policy. And there is no evidence..." (Biomedical educator, 10 years of experience in HPE).

"I think the affordability is an aspect.... you can try the trials and all those others, trying to get into it. But if you want the latest, you may not afford it." (Medical educator, 16 years of experience in HPE).

Limitations of AI use

Participants mentioned several limitations associated with AI use in health professions education. First, AI was reported to be unreliable, and its performance depended on the user, the type of AI used, and how it was used. AI requires students to know how to use AI,

including how to search for information from credible sources before using AI. Failure to appropriately use AI was perceived to destroy the reading culture of students, promote laziness, and kill creativity. HPEs also noted that AI was user-dependent, and it would be useful to those who were knowledgeable about how to use AI to search for the right information and had prior knowledge about the topic they were searching for. AI was perceived to be unhelpful for a user who was not an expert in using it. Lastly, AI was limited by the package being used, with the paid-up version giving the best experience and reliable information. The free version of AI did not provide access to critical information but provided shallow information, some of which was inaccurate.

"...these technologies if you know what you want. They are good to guide you in your work. But if you're not an expert in that area that you're venturing in there, then AI may also not also help you..." (Nurse educator, 10-year experience in HPE).

"It can breed laziness because the student knows that I'll go to AI and get my assignment done." (Bio-medical educator, 4 years of experience in HPE).

HPEs also reported AI being limited in some areas. These included its use in clinical settings and certain departments. AI was perceived not to train soft skills and attitudes, while certain areas required a step-by-step approach, which AI could not offer. Participants reported that AI sometimes provided wrong and inaccurate information, whilst it sometimes made up information completely, which they referred to as hallucination. As a result, they found it hard to trust information from AI. This was worsened by the fact that some AI versions, especially free versions, did not provide references, which made them question the authenticity of the information given. Lastly, HPEs said that AI gave information that was not comprehensive. AI was perceived to give an insight into a topic, but not the details. Therefore, one needs basic knowledge to understand information from AI. Another limitation was that it provided generic information, which lacked a local context.

"Even the text generation is inaccurate. It's, it's hallucination. Yeah. Because if you get an expert in that area to read your work, they won't make sense out of it.... It's very vague. It will use very complicated words and lose the meaning..." (Medical educator, 5 years of experience in HPE).

"When you ask anything related to medicine, one of the words they tell you is that I'm not a medical doctor. So for any medical aspects or medical questions you have to refer to the respective sites, which deal

with medical questions or medical answers.” (Medical educator, 16 years of experience in HPE).

Fears towards AI use in health professions education

HPEs expressed both experienced and anticipated fears of AI use. Firstly, HPEs feared that AI would worsen cheating and malpractice among students, both in written assignments and examinations. Most of HPEs thought that students would use AI to answer assignments without understanding the work, and would be tempted to smuggle phones into examination rooms. Some HPEs were already facing the challenges of students cheating after finding out a large similarity between the work the students submitted and the work in ChatGPT.

“...Some time back I actually issued out an assignment, and then I went back and then typed the same question into ChatGPT. To my surprise actually, most of the students’ responses that I received were similar to the information I was getting in ChatGPT...” (Biomedical educator, 1 year of experience in HPE).

HPEs feared AI could make assessment and grading difficult because its use would not reflect students’ competencies. Average students who used AI would score highly, while exceptional students who did not use AI would perform poorly. The difficulty in grading students because of AI would affect students’ ranking in academia. HPEs also feared that AI would reduce human interaction among students, including their interaction with HPE. The reduced interaction between students and HPE would deter them from fully understanding the capabilities of students.

“...students themselves can amount to pressure and say, no, what is happening is wrong, now people are not doing this and they are getting marks. I did my work, I have gotten 50, this man just copied things in and submitted it. Why is it that they have gotten marks?” (Biomedical educator, 4 years of experience in HPE).

Over-reliance on AI was another fear raised by HPEs. The over-reliance on AI meant that students and health professions educators would be handcuffed without AI. The overuse of AI was feared to increase laziness, reduce life-long learning, student self-directed reading, and the ability to learn new skills, such as writing skills, critical thinking, and innovation. AI was feared to reduce the motivation of students to learn, promote last-minute reading, late submission of assignments, and preparation for examinations. Additionally, lecturers would use

AI to reduce their workload. Ultimately, AI would impair learning and produce half-baked professionals.

“...what happens if we over-rely on it? Like we have already been over-relying on our phones, computers, calculators, and then it can’t work. That day, shall we be able to move back into the classroom if I’ve been using AI to teach or if you are a student and you have been using AI to shine?” (Medical educator, 4 years of experience in HPE).

Health professional educators raised several ethical dilemmas regarding AI use, which included the failure of people to defend their own work and data privacy issues due to the sharing of personal information with AI. Lastly, HPEs expressed fear of AI causing inequity among students, lecturers, and between students and lecturers. The inequity was related to the inability of some students to afford gadgets and subscriptions, unfavorable backgrounds of some students, especially those from villages compared to those from town/city settings, plus the gap in knowledge and experience in using AI between students and lecturers.

“...students are not at the same level. Some have a good history [good academic background], the ones who are from Kampala [urban settings]. They have been using these gadgets. They will have a competitive advantage over students from rural settings...” (Biomedical educator).

Discussion

The study was conducted to explore the experiences and perceptions of health professionals regarding the use of AI in health professionals’ education. Our study noted initial reluctance to AI use, although there were early adopters of AI in health professionals’ education. Health professionals used AI in all spheres of their professional work, but also adjusted their work to accommodate the use and misuse of AI in health professionals’ training. Overall, health professionals opined on the benefits of AI in health professionals’ training and education, but also expressed concerns and fears related to the inherent limitations of AI and the potential for misuse in health professionals’ education.

Our study findings underscore variable uptake of AI in health professionals’ training, from infrequent or no use of AI to frequent and daily use of AI. Healthcare students were perceived to use AI more often than their health professional educators, while in some cases, health professional educators encouraged students to use AI. Study findings have highlighted the low uptake of AI in sub-Saharan Africa (SSA) compared to other regions [12]. The low uptake affects students in SSA from experiencing

the gains of using AI in health professional education brought [13]. In our study, AI was used to help in teaching and learning, assessment of students, and professional and scholarly writing, a finding that was similar to that reported in the literature [13, 14]. Although concerns about misuse of AI have been reported [14], health professionals seem to exhibit proper use of AI in their professional work. Some health professionals adjusted to accommodate the existence of AI, which reflects a positive attitude towards AI in health professions education.

Previous studies have underscored the benefits of using AI in health professions education and training [13, 14]. Consistent with previous studies [13–15], our study noted that AI was a supportive tool for teaching, learning, and assessment; enhanced performance and efficiency, reduced workload, and is user-friendly. AI was noted to provide students with easy access to accurate, comprehensible, and updated information, a finding that was equally cited in the literature [13, 14, 16]. The human-like conversation and tailor-made information were valuable in reducing the workload among educators because of the frequent inquiries from students [14, 16]. Health professionals found AI helpful in preparing their lecture materials, especially since AI helped improve the graphics of their PowerPoint lectures. The creative and comprehensible reporting of information in AI was perceived to motivate students to engage in self-directed learning, while AI also helped improve the efficiency of educators in setting and grading assignments [16]. Particularly, AI was noted to be valuable in academic writing as it helped correct the grammar and improve the clarity and coherence of writing when drafting administrative letters, emails, research proposals, motivation letters, and manuscripts [12]. Non-native English speakers find AI critical in improving the quality of writing [12]. AI was used to correct grammar, especially for non-native English speakers, which may help reduce inequality in scientific publishing [13].

Health educators in our setting had limited knowledge surrounding AI use, while a lack of policies, leadership, and inadequate resources, especially to subscribe to premium AI models, hindered its use. Previous studies have equally underlined limited knowledge among health professional educators regarding AI [12, 17, 18]. Consequently, limited knowledge affects the proper use and maximization of the benefits of AI in health professional education [14]. Following the advent of AI, calls have been made to develop policies concerning AI use, but also the need to integrate AI into curricula of health professionals' programs [18, 19]. Ultimately, the development of policies and integration of AI in health professions curricula will assuage the existing barriers to AI adoption and it will also promote the proper use of AI in health professions training [14]. The limited resources to

access paid-up versions of AI were noted as one of the major barriers to AI use in resource-constrained settings like ours. Previous studies have consistently noted the role of inadequate resources in widening inequities from variable access to AI [12, 18].

Accuracy and precise information are important in health professions education [14]. In our study, concerns about the accuracy of information inherent in AI sources were reported to affect their use in health professionals' training. AI modalities possess large amounts of data, but are still prone to providing inaccurate and misleading information [13, 14]. The accuracy, credibility, and reliability of AI sources are questionable [13]. AI sources tend to present generic and reasonable responses, which makes it difficult for naïve students to recognize inaccurate data [14]. Students who primarily use AI as their main source of information may likely have reduced knowledge of clinical subjects, which potentially affects healthcare delivery and patient safety [14]. The use of AI as a primary source of information also kills the creativity, critical thinking, and problem-solving skills of students [14].

Health professional educators expressed fears regarding overreliance on AI. The overreliance on AI was thought to worsen the existing addiction to electronic gadgets like phones, while utter dependence on AI would affect the independent delivery of healthcare in cases when AI breaks down. Previous studies have underscored the dangers of over-reliance on AI in health professionals' education, including replacing the roles of human educators [13, 17, 20], reducing the quality of human interaction and personal attention, and reducing educational experience [14]. Over-reliance on AI affects the cognitive processes of the mind for critical thinking, innovation, and problem-solving skills [13].

Health professionals expressed fears that AI would increase examination malpractice for mostly written essays, assignments, and research proposals or theses, a finding that is mostly reported in other studies [13, 14]. AI, with its tailor-made information, likely increases the likelihood of plagiarism, copying, and pasting among students, often without understanding the information [13]. Consequently, AI use was thought to affect the proper grading and assessment of students, which may ultimately affect patient safety [14]. Measures to mitigate examination malpractice from AI use may include using AI plagiarism detectors and setting examinations that require critical thinking that may not be found in AI [13, 14]. This was similar to our setting, where health professional educators probed students to check for understanding of their work, used plagiarism detectors, verified the similarity index with AI sources, and checked the grammar used in the submitted work. While such measures can help curb AI-driven examination malpractice,

because some students use AI that helps them avoid detection, some of the AI-driven examination malpractice may not be detected [14]. Health professional educators should devise innovative ways of assessing students that elude examination malpractice from AI.

Study limitations

The study has inherent strengths and limitations. To the best of our knowledge, this is the first study in Uganda to explore the perceptions regarding the use of AI in health professionals' education. The study may be limited by a lack of students' perspectives and attitudes toward AI use in health professions education. Further studies should explore healthcare students' perspectives and attitudes towards AI in health professions education.

Conclusion

Our study reports variable use of AI in health professional education marked with initial reluctance, infrequent use, and regular and daily use of AI for teaching, learning, assessment, and scholarly writing. Building the capacity of health professionals' educators is critical to enable them to use and change their attitudes towards the role of AI in health education. AI was perceived to be beneficial in enhancing the efficiency of teaching, learning, and grading, including helping in preparing lecture materials, writing, assessment, and research purposes. Healthcare professionals observed barriers to AI use in the institution related to a knowledge gap, attitudes resistant to AI use, inherent limitations of AI modalities, concerns about data accuracy, fears of misuse, and examination malpractice. Developing policies to safeguard against AI misuse and examination malpractice is needed to support the inevitable use of AI in health professions education. Measures need to be instituted to promote ethical use of AI in health professions education.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-025-07933-x>.

Supplementary Material 1.

Authors' contributions

DM, RN, JE, KP, FK, BJ, EA, AA, MWM, IGM, SK, and AGM participated in designing the study. DM, RN, KP, FK, EA, AA, BJ and JE participated in data collection. DM, KP, BJ, FK, EA, AA, and JE analyzed the data for the study. DM wrote the first draft of the manuscript, while RN, KP, JE, FK, BJ, EA, AA, MWM, IGM, SK, and AGM revised the manuscript. All authors have reviewed and approved the manuscript for publication.

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and does not necessarily represent the official views of the National Institutes of Health.

Data availability

The data is available upon reasonable request from the corresponding author.

Declarations

Ethics approval and consent to participate

The study was conducted according to the Declaration of Helsinki and in line with the principles of Good Clinical Practice and Human Subject Protection [21]. Ethics approval to conduct the study was granted by the Busitema University Faculty of Health Sciences Research Ethics Committee (BUFHS-2023-79). Written informed consent was obtained from the educators before recruitment into the study. There was no coercion for participation in the study, and a participant was free to withdraw from the study at any time. The data collected was kept in a locked folder on the computer's hard drive, which was password-protected and only accessible to the investigators.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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