Health Sciences Investigations Journal

share

Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

ISSN Online 2704-4890 | ISSN Print 2720-7609

Online first publication

Original Research Article

HSI Journal (2026) Volume 9 (Issue 1):1531-1539. https://doi.org/10.46829/hsijournal.2026.7.9.1.1531-1539

Open Access

Artificial intelligence use in Health Sciences Education in Morocco: perception of Educators from selected tertiary health institutions

Nadia HACHOUMI [1,2,3*], Mohamed EDDABBAH [3], Ahmed Rhassane EL ADIB [1,4,5]

[1] Biosciences and health, Faculty of Medicine and Pharmacy of Marrakesh, Cadi Ayyad University, Marrakesh, Morocco; [2] Higher Institute of Nursing Professions and Health Techniques, Marrakesh, Morocco; [3] Cadi Ayyad University, UCA, Higher School of Technology of Essaouira, LaRTID Laboratory, Marrakech, Morocco; [4] Simulation and Innovation in Health Sciences Center, Faculty of Medicine and Pharmacy of Marrakesh, Cadi Ayyad University, Marrakesh, Morocco; [5] Mohammed VI University of Health Sciences (UM6SS), Mohammed VI Foundation for Health Sciences (FM6SS) Morocco

Received October 2025; Revised February 2026; Accepted April 2026

Abstract

Background: This study explores how health science educators perceive Artificial Intelligence (AI) in the teaching/learning process, specifically looking at their opinions, concerns, and hopes for how it can help students learn better.

Methods: This cross-sectional study occurred in the Marrakech-Safi region of Morocco. A structured, validated questionnaire with 24 questions was used to gather numerical data from n=192 educators at the Faculty of Medicine and Pharmacy, as well as the Higher Institute of Nursing and Health Techniques. The scale reliability was acceptable with a Cronbach's alpha of 0.707.

***Results*:** 50 educators responded to the questionnaire. Descriptive statistics show that while a vast majority (96.0\%) believe AI can improve learning conditions, a high percentage (90.0\%) have never used AI in their teaching practices. A significant positive correlation ($r_s \approx 55$) was found between the belief that 'AI will assist me in decision-making' and 'AI will aid in the remediation stage' ($p = 0.000412$).

Conclusion: Based on the study's results, it is crucial to consider educators' perceptions and the potential outcomes when using AI in health sciences education. Addressing ethical concerns and providing appropriate training are crucial for ensuring successful and equitable AI integration in the curriculum.

Keywords: Artificial intelligence, educational implications, health sciences, educators, perceptions.

Cite the publication as Hachoumi N, Eddabbah M, El Adib RA (2026) Artificial intelligence use in Health Sciences Education in Morocco: perception of Educators from selected tertiary health institutions. HSI Journal 9 (1):1531-1539. https://doi.org/10.46829/ hsijournal.2026.7.9.1.1531-1539

INTRODUCTION

The field of artificial intelligence (AI) represents a broad discipline which focuses on building smart machines that can perform human-like tasks that include natural language comprehension, object recognition, and decision-making [1]. The AI systems learn information through their experience to develop new capabilities which are used for data-based prediction and advisory functions [2]. Artificial intelligence covers different methods like rule-based systems, machine learning, and deep learning. through rule-based systems and machine learning and deep learning systems, among other techniques. The current applications of AI technology include virtual assistants, chatbots, self-driving cars, and medical diagnosis software [3]. The primary objective of AI systems is to create machines that can perform tasks with greater precision and speed than what human workers can achieve, thereby bringing improvements to multiple areas of our existence [4].

Artificial intelligence is revolutionizing multiple industries, which includes healthcare education. The educational sector needs to address the opinions of educators because they represent the key group who need to be consulted about the potential advantages that AI technology will bring to educational processes [5]. Healthcare relies on educators to shape its future, preparing the next generation of professionals.

* *Corresponding author*
Email: nadia.hachoumi@ced.uca.ma

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

Medicine, pharmacy and nursing and related professions need their students to acquire teaching skills to become successful professionals in those fields [6]. It's crucial to look at how teachers feel about AI. The new technologies spread in various fields means we need to prepare workers for a world where AI is everywhere, so understanding educators' views is super important. The AI perceptions of educators depend on their direct experience with the AI technology and its various applications. While many health professionals believe AI can enhance clinical outcomes and patient care, they remain deeply concerned about its broader effects on professional autonomy, job displacement, and social equity.[7].

Existing researches thoroughly covers students' experiences in various educational settings, but there's a significant lack of empirical data on tutors' perceptions in technical and clinical training environments, so more research is needed here. The research of Xin Li and al. studied health science students' attitudes toward AI tools which they used during training. Empirical evidence shows nearly all medical students (99.1%) view AI as essential to future healthcare, yet while many use generative tools like ChatGPT for academic work, most educators regard such use as academic dishonesty[8]. According to Chounta et al., [9] the main issue is that AI tech is way too complicated for educators. They can't master it without proper training, which holds them back from using AI in the classroom. AI technology has advanced at a rapid pace which has brought about fundamental changes to different areas of society.

In Morocco, the development of artificial intelligence raises significant structural and educational challenges in higher education, as well as in the field of health sciences. Universities and hospitals are therefore facing major changes driven by new AI technologies. Health sciences educational programs currently use AI and machine learning to boost their diagnostic abilities and create personalized treatment methods while traditional Moroccan education systems continue to encounter fundamental operational issues. The research conducted in recent studies examined how nursing students from Meknes used AI for academic stress relief [10]and how AI systems operated within computer science educational programs [11]but there exists a significant gap that shows that educators lack proper training for their teaching responsibilities.

Encouraging positive attitudes in teachers and coordinating their efforts are key for AI to integrate smoothly and last in education. This study aims to empirically analyze the attitudes of health science educators, so we can better understand and support them in this technology. The study aims to explore the attitudes of health science educators regarding integrating AI into their teaching, particularly their views, concerns, and expectations about the contributions of AI to enhance student learning. This study looks at how health science educators feel about integrating AI into teaching. It aims to figure out their demographic profile, their take on AI-based tools, and the benefits they see in using them. The research also checks how prepared these educators are to incorporate these changes based on their views on AI. So, it combines their attitudes with how ready they are technically to make these shifts in their classrooms.

METHODOLOGY

This study follows the positivist paradigm, viewing social reality as objective, external, and quantifiable. Therefore, it assesses educator attitudes and readiness through an unbiased, objective lens, employing strict quantitative methods and statistical proof, to be precise. This approach uses a quantitative methodology to collect and analyze digital data on educators' perceptions of integrating artificial intelligence (AI) in health sciences education. The goal is to test predetermined hypotheses and derive general trends from the results while minimizing the impact of the researcher's personal biases. This paradigm aims to produce generalizable insights for a larger population based on reliable empirical data.

Study design and population

The study employed a cross-sectional research design and a positivist approach to assess how educators perceive the incorporation of Artificial Intelligence (AI) within health sciences education. The research took place during the period from January to February 2023 in the Moroccan region of Marrakesh-Safi. The study was conducted at the Faculty of Medicine and Pharmacy (FMPM) and the Higher Institute of Nursing Professions and Health Techniques (ISPITS) in Marrakesh, in addition to their associated centers in Essaouira and Safi.

Participants and Eligibility

All health science educators who worked at the participating institutions during the study period constituted the target population which numbered 192 educators. The study accepted only active teaching staff members who taught medical programs and nursing programs and health technique programs. The research team selected participants through a convenience sampling method that did not use probability sampling. The study used OpenEpi to compare sample proportions against the target population for representativeness evaluation even though it was an exploratory study.

Variables and Measurement

The study used specific variables to measure the complete demographic profile of participants together with their institutional data: Demographic and Institutional Characteristics: The study required the collection of data which included participants' gender, age and their professional role and the educational institution they were affiliated with; Primary Outcomes: Educators' understanding of AI technology and their previous experience with technology and their assessment of instructional advantages and their apprehensions about AI technology implementation. Measurement Tool: The research employed an online questionnaire which contained 24 structured questions. The research instrument included 24 items which researchers organized into three dimensions: prior technological experience educational

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

achievement and knowledge in computer science and statistics.

Validity and Reliability

To ensure data integrity, the response parameter on the digital survey platform was set to "mandatory." This resulted in a final dataset (n = 50) with no missing values for the 24 items of interest. The internal consistency of the measure was assessed at different thematic levels, as well as for the overall scale. The overall Cronbach's alpha score was 0.707 (95% CI [0.612, 0.794]), meaning that the overall measure was sufficiently reliable. The alpha for the perceived educational benefits subscale reached 0.782 (95% CI [0.685, 0.852]). The item-level analysis calculated item-total correlations to assess the extent to which each question contributed to the overall construct. The correlations for all 24 items were above the minimum acceptable level of 0.30 (ranging from 0.32 to 0.55); therefore, all items were included, in line with the scale's objective. Consequently, it was decided to retain all items, as their removal improved the alpha index. Composite scores for the thematic domain measures were calculated as cumulative scales, with the mean of the items in each subscale being calculated to allow for nonparametric correlation testing.

Bias Management

The study has some biases which distort its results. The main problem arises from selection bias which results from studying 50 respondents who do not reflect the actual distribution of 192 educators. The study results face potential bias because people who strongly believed in technology were more likely to participate in the research. The study results show which educator group most contributes to the results because 66% of the sample comes from nursing educators. The study results face unrepresented view risks because 26% of participants did not respond to the survey. The study results show that digital literacy bias occurs because participants who use WhatsApp and social media for online surveys have better technical skills. People who take self-assessments might feel pressured to provide socially acceptable answers because their self-reports are at risk from social desirability bias. Instrumentation bias might happen when researchers need to understand technical terms during their work unless real-time explanations exist. The mandatory response setting creates a situation which leads to forced-choice bias because respondents who lack certainty tend to answer questions at random. The study results present an initial examination of two groups who use digital technology in different ways at educational institutions located in the Marrakech-Safi region.

Study Size

The study size was determined by the total population of educators at the targeted institutions (N = 192). A final sample of 50 respondents was obtained, yielding a response rate of 26%. With a sample size of n = 50, we can conduct descriptive analyses and identify preliminary bivariate relationships. However, this requires an exploratory approach. The respondent-to-item ratio was lower than the standard 5-to-1 ratio required for a reliable exploratory factor analysis and instrument validation; therefore, the data are not robust enough to support this type of in-depth analysis.

Statistical Methods

The research used Microsoft Excel, SPSS Version 21 and Python to perform data analysis which included multiple analysis stages. The researchers used descriptive statistics to calculate counts and percentages which they planned to use for summarizing demographic patterns and AI knowledge levels. The researchers used Spearman's rank-order correlation coefficient to analyze the relationship between perceptions and readiness because their Likert-scale data had ordinal characteristics that prohibited them from using parametric tests. The statistical tests used a significance threshold of alpha = 0.05 as their alpha level.

Ethical Considerations

The study was conducted in full accordance with the ethical standards of the Declaration of Helsinki. Official authorization was provided by the Marrakesh University Hospital Ethics Committee (No. 29/2022). Participation in this research was voluntary. Informed consent was indirect: participants confirmed their consent to participate by completing and submitting the online questionnaire after reading the research objectives. To ensure data protection, all responses were collected anonymously (no information that could identify participants was collected) and stored securely.

RESULTS

Participants flow and response rate

Of those contacted, A total of 192 health science educators were invited to take part in the study. However, 142 didn't respond. Only 50 completed the questionnaire, giving us a 26.0% response rate. The participant flow diagram shows this drop from the initial invite to the end. The following flowchart shows the process from the initial invitation to the final stage of data analysis:

Invited(N=192) → non respondents (n=142) → completed (n=50) → analyzed (n=50)

Descriptive statistics

The researchers administered surveys to educators at the Faculty of Medicine and Pharmacy and the Higher Institute of Nursing Professions and Health Techniques in Marrakesh (ISPITS). The data collected was examined statistically. The findings revealed disparities in educator's knowledge of artificial intelligence concepts such as image recognition and machine learning. Most educators were favorable about AI, recognizing its potential to assist education, stimulate innovation, and reduce risks in clinical patient management. While some educators had already begun to prepare for AI by researching the issue or changing their teaching methods, others were still in the

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

planning stages. Positive correlations were found between beliefs in AI's ability to facilitate decision-making, improve clinical reasoning, and enhance learning environments. Overall, the study emphasizes the importance of educating educators about AI integration while also addressing ethical issues.

Table 1: Educators sample profile

		n (%)
Gender	Female	24 (48%)
	Male	26 (52%)
Age	25-35	4 (8%)
	36-46	30 (60%)
	47-57	15 (30%)
	58-68	1 (2%)
Profile	Nursing and health techniques teacher	33 (66%)
	Medical Sciences Teacher	17 (34%)
Institution	FMPM	14 (28%)
	ISPITS Marrakech	33 (66%)
	ISPITS Essaouira (annex)	1 (2%)
	ISPITS Safi (annex)	2 (4%)

The demographic information about the study participants is presented in this section. It offers helpful details about the gender distribution, age groups, professional profiles, and affiliations with particular educational institutions, all of which help to provide a thorough understanding of the study's sample population (table 1). The survey data show that 78% of educators' report having computer knowledge. 2% of respondents believe that AI and statistics are the same thing while 8% think that AI and computer science are equivalent. 10% of participants have used AI for their teaching work while 96% of the participants have no formal training in AI. 96% of respondents believe that AI technology can enhance learning environments while 88% of respondents believe that AI technology can help reduce clinical management risks (Table 2).

The perspectives of health science educators regarding the prospective effects of artificial intelligence (AI) on education are summarized in the following table (Table 3). The respondents' degrees of agreement with several claims about AI's place in education are shown in

Table 2:Answers to Questions Regarding Awareness and Attitudes of Artificial Intelligence

Questions	n % Yes	n % No	n % I do not know
Do artificial intelligence and statistics have the same mean?	**1 (2.0%)**	**34 (68%)**	**15 (30%)**
Do you have computer knowledge?	**48 (78%)**	**2 (22 %)**	-
Do artificial intelligence and computer science have the same meaning?	**4 (8%)**	**38 (76%)**	**8 (12%)**
Have you ever had the opportunity to use artificial in your teaching practices?	**5 (10%)**	**45 (90%)**	-
Are you already trained in artificial intelligence?	**2 (4%)**	**48 (96%)**	-
Are you afraid of not being able to adapt to this new transformation?	**20 (20%)**	**40 (80%)**	-
Artificial intelligence is an opportunity for training in health sciences?	**16 (32%)**	**33 (66%)**	**1 (2%)**
Artificial intelligence can help reduce the risks of the clinical management of patients?	**44 (88%)**	-	**6 (12%)**
Can artificial intelligence improve learning conditions?	**48 (96%)**	-	**2 (4%)**

Table 3: Educators' Perceptions of the Benefits of Artificial Intelligence in Education

Statement	Completely Agree	Agree	Disagree	Completely Disagree	I do not know
AI will allow promoting innovation	**33 (66%)**	**16(32%)**	-	-	**1 (2%)**
AI will help teachers motivate learners	**24 (48%)**	**23(46%)**	**1 (2%)**	-	**2 (4%)**
AI will assist me in making decisions	**17 (34%)**	**22(44%)**	**7 (14%)**	**1 (2%)**	**3 (6%)**
AI will help me gather information	**23 (46%)**	**22(44%)**	**4 (8%)**	**1 (2%)**	-
AI will enhance learners clinical reasoning	**24 (48%)**	**22(44%)**	**3 (6%)**	-	**1 (2%)**
AI will support me during the learning assessment phase	**22 (44%)**	**19(38%)**	**7 (14%)**	-	**2(4 %)**
AI will aid in the remediation stage	**19 (38%)**	**23(46%)**	**4 (8%)**	**1 (2%)**	**3 (6%)**

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

Table 4 : Educators' Attitudes and Actions towards Preparing for Artificial Intelligence in Education

As a teacher	Learn about AI	Become aware of what AI has already changed in my work	Become aware of what AI could change in my work as a teacher	Change my teaching/learning practices to best prepare for the arrival of AI
I didn't even consider the subject	24(48%)	26 (52%)	18 (36 %)	21 (42%)
I started to read up on the subject	21(42%)	18 (36%)	26 (52%)	24 (48%)
I have begun to make arrangements to do so	3 (6%)	5 (10%)	4 (8%)	5 (10%)
It's in progress	2 (4%)	1 (2%)	2 (4%)	-

the table. The replies are divided into five categories: "Completely Agree," "Agree," "Disagree," "Completely Disagree," and "I Do not Know" in order to provide insight into the viewpoints of the educators on AI in relation to education.

An interesting investigation into health science viewpoints of educators and their intentions for using artificial intelligence (AI) in the classroom can be found in **Table 4**. The table groups respondents into various levels of AI familiarity and ability. These stages range from 'I didn't even consider the subject' to 'I started to read up on the subject,' 'I have begun to make arrangements to do so,' and 'It's in process.

Regarding the respondents' knowledge of statistics, the majority (83.3%) reported having some level of understanding of the subject, while a small percentage (14.3%) indicated having strong knowledge. Only one respondent (2.4%) reported having no prior exposure to statistics. In terms of computer knowledge, the majority of respondents (66.7%) reported having some level of familiarity, while 31.0% claimed to have professional knowledge and experience. Only one respondent (2.4%) reported having no basis in computer knowledge.

Correlations Among Educators' Perceptions of AI in Education

The findings found many significant relationships between educators' perspectives of artificial intelligence (AI) in health education. First, a significant positive correlation of 0.553693 with a p-value of 0.000412 was discovered between "AI will assist me in decision-making" and "AI will aid in the remediation stage". Second, a significant positive correlation of 0.519376 with a p-value of 0.00761 was discovered between "AI will assist me in decision-making" and "AI will help me gather information". Third, a correlation of 0.480557 with a p-value of 0.00899 was found between "AI will assist me in decision-making" and "AI will enhance learners clinical reasoning,"(figure 1):

DISCUSSION

This study suggests that acceptance of AI among educators is primarily pedagogical and ethical rather than technical. The findings indicate that health science educators, especially those teaching nursing and health technology, seem to be quite positive yet somewhat skeptical about AI. Guneyli et al[12] commented on the conflicting emotions expressed by educators in the study. Most teachers in this study generally knew something about AI, but this knowledge differed according to the age and subject areas of the teachers [12]. Because of this observation, Abdelaal and Sawi [13]commented that there is indeed association between the level of acquaintance with AI and the kind of training received about it, especially in allied subjects in which access to technology is mostly indirect [13].

Most of the respondents were aged 36 to 57 years, an age that Wang and al [14]argue is generally more supportive of technological innovations while remaining critical in terms of ethical and pedagogical implications. This watchfulness is enhanced among nursing lecturers, who constituted 66.0% of our sample and seem to take cognizance of potential threats to the humanization of learning, a concern already raised in the study by Wang et al[14]. This profile suggests a cautious-optimism regarding AI, prioritizing ethical, relational, and practical aspects over purely technical adoption [14].

Importantly, nurses and health sciences teachers constituted 66% of our sample, which may explain the emphasis placed on ethical, relational, and practical aspects surrounding the integration of AI. Compared to their more numerous complements, those teaching in medicine appeared to be more open to recognizing AI as an analysis and decision-making tool, a finding consistent with those of Olawade and al[15]. A slight gender majority (52% male and 48% female) does not seem to play a strong role in influencing overall perceptions of AI, although there are mentions that some studies [16] suggest there might be a few differences, depending on gender, in trust towards technology, especially in technical education.

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

The study relayed considerable variables in general areas of understanding of artificial intelligence (AI) by educators in health sciences from a rather focused perception of advanced technologies such as neural networks, deep learning, and virtual agents. Generally, participants recognized AI as beneficial for enhancing learning environments, clinical decision-making, and risk management; this, however, seems to be markedly disconnected from their specific area of technical competence.

These findings agree with previous studies by Hirani and al[17] and Alowais and al[18], which point toward the increasing interest in AI but, at the same time, the depressed preparedness among the participants [18] [17]. Another study highlighted that AI should be embedded in the formation of educators, but mostly in the ethical rather than technical dimension. The gap between perceived value and actual competence emphasizes the immediate need to develop AI literacy targeted at health education [19].

The literature reveals that, while healthcare educators understand the potential benefits of AI in improving patient outcomes, they are concerned about accuracy, reliability, and the influence on their own job and function [20]. Appropriate communication and participation are vital for dispelling myths regarding the use of AI technology in healthcare. Health science educators have also expressed concerns about the potential impact of AI on their job and role in their field. The safe and effective use of AI technology in clinical practice requires suitable training, education, and continuing support [21].

All respondents had heard of artificial intelligence, but only a few were familiar with specific technologies including bots, neural networks, predictive analytics, virtual agents, deep learning, and machine learning. Our findings are consistent with those of Andrea-Mariana Budeanu and colleagues, who investigated the adoption of AI-based bots at Indian colleges. They emphasized their potential to improve learning experiences, develop problem-solving and critical thinking skills, but also underlined problems such as specialized assistance, knowledge management, and future research changes in the positions of human educators[22]. Facial recognition and image recognition were the most familiar technology among participants. Furthermore, the majority of participants saw artificial intelligence as a chance for training and professional development.

[23]. However, the study's findings indicate a considerable need for knowledge and education about artificial intelligence and associated technology. Healthcare educator's perceptions of artificial intelligence (AI) in healthcare are nuanced and multifaceted, necessitating careful evaluation of numerous issues. Existing research indicates that healthcare workers have a positive attitude toward AI in healthcare, acknowledging its potential benefits for improving patient outcomes. However, worries concerning the accuracy and reliability of AI technology, as well as the necessity for suitable training and continued education, have been highlighted[24].

In the following section, we will look deeper into these associations and consider their significance for health science education. To gain a better understanding of the processes underlying this link, we will look at the limits of our work and make recommendations for future research. Python-based data analysis revealed correlations between a number of non-parametric variables that are very

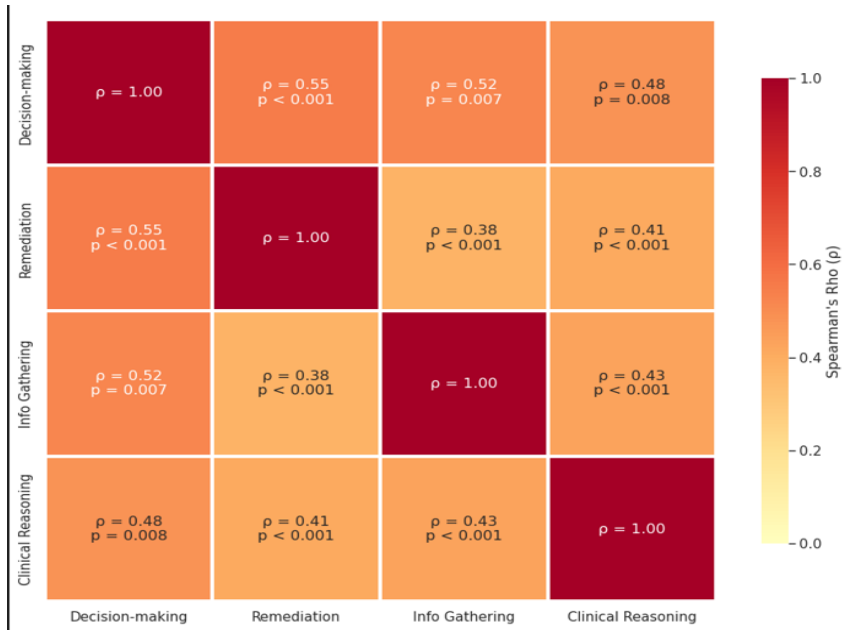

Figure 1: Significant Correlations in AI Perception Survey Data heatmap

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

significant. These correlations demonstrated statistically significant links between the various elements of the survey, as measured by Spearman's correlation coefficient and P-value. With a p-value of 0.000412, there was a significant positive relationship between the questions "AI will improve learners' clinical reasoning" and "AI will help me in decision making". There was also a significant relationship (p-value=0.000123) between "AI will improve learners' clinical reasoning" and "AI will help in the remediation phase". The data analysis revealed a significant link between "AI will improve learners' clinical reasoning" and "AI will help me gather information" (p-value = 0.00157). Furthermore, a significant relationship (p-value = 0.00761) was discovered between "AI will help teachers motivate learners" and "AI will help in the remediation phase". Spearman's rank-order correlation coefficient was used to evaluate relationships among educators' perceptions of AI, as it is suitable for non-parametric data. The significance level for all statistical tests was set at $\alpha = 0.05$.

As a teacher, I study about artificial intelligence, and there is a statistically significant relationship between these two variables (p-value = [0.00899]. Our findings, as evidenced by the considerable correlations between the non-parametric variables, emphasize the importance of artificial intelligence in education and suggest to promising routes for its integration. Our findings reflect earlier studies, such as a study that explores the role of AI in supporting intelligent decision-making by giving correct information and real-time analysis, which can assist network operators better manage network resources and improve the user experience[3]. Similarly, another study shows the potential for AI to automate regular tasks, personalize learning, and provide access to more types of educational resources and lifelong learning possibilities[25]. Furthermore, the study emphasizes AI's potential to assist healthcare practitioners in making more educated, accurate, and timely judgments.

Moreover, a correlation heatmap generated using Python-based data analysis allows us to see the relationships between different pairs of non-parametric variables. The colors in this heatmap represent the strength of the association: blue indicates a mild correlation, while red indicates a significant link. The more vibrant the color, whether red or blue, the stronger the association. The statistical significance of observed correlations is represented by p-values, which are shown in the legend next to the heatmap. Higher values indicate higher correlations in the legend. Spearman's rank-order correlation coefficient was used to evaluate relationships among educators' perceptions of AI, as it is suitable for non-parametric data. The significance level for all statistical tests was set at $\alpha = 0.05$.

The results revealed a statistically significant positive association ($r_s = 0.55$, $p = 0.000412$) between the perception that “AI will assist me in decision-making” and “AI will assist me in the remediation phase.” This moderate to strong correlation suggests that educators view AI as an integrated tool that supports the entire educational and clinical process, from informed decision-making (diagnosis/strategy) to targeted intervention (remediation). This perception has important practical significance, as it indicates a willingness to use AI for complex educational activities, not just for administrative purposes. These findings underscore the significance of AI as a prospective tool in health sciences education, as well as the relevance of evaluating the statistical validity of these connections using related p-values.

However, the research shows that Moroccan health sciences face a paradox because people show strong belief in AI's potential yet do not use it in real medical situations. The 96% of educators who think AI will enhance learning environments at our institution yet 90% who have not yet used the technology in their classrooms. The Moroccan medical students in Agadir show the same 'adoption gap' as they acknowledge AI's transformative power yet lack knowledge about essential AI terminology and technical skills [26]. The research found a strong link between AI clinical decision support and its educational use because Moroccan educators see AI technology as an advanced teaching tool that should not replace them [27]. The research findings show that Morocco needs to create national health policies which extend from infrastructure development to faculty training programs which Oujda uses for interdisciplinary development [28] to help all staff members and students understand the ethical challenges and practical issues which come with AI-powered healthcare systems.

In summary, the results of our study show that the opportunities offered by AI in health science education are increasingly recognized, but that there is also a significant need for lifelong learning and awareness-raising to address gaps in understanding and concerns about the impact of these technologies on educational and professional practices. This research has some methodical limitations that must be acknowledged. First, the study utilized a non-probability convenience sampling technique, and so it does not fully represent generalizability of findings. The final sample size of n=50 coupled with the recruitment process may have introduced a self-selection bias, as educators with prior interest in technology or artificial intelligence could have been more willing to participate and, because of this, the estimated positive perceptions and readiness for acceptance of AI would be exaggerated.

The data have been collected from health science institutions confined to the Marrakech-Safi region in Morocco (namely, FMP Marrakech and ISPITS sites in Marrakech, Essaouira and Safi). So, whatever perceptions and attitudes are reported here may reflect the local institutional cultures rather than generalizable to the rest of health science educators in Morocco or different international contexts. Finally, since this study is maximal in nature, it will only give a "snapshot" of perceptions at any given point in an evolving fast-paced field. These

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

limitations mean that the findings should be treated as exploratory and preliminary. The findings show that respondents highly perceived artificial intelligence optimistically but only represent a specific group of early growers. Further, a broad national representation should be provided by conducting future studies such that random sampling involves several regions.

Conclusion

In conclusion, our findings revealed significant correlations between various aspects of the integration of artificial intelligence (AI) in health education, emphasizing the role of AI in increasing student engagement, assisting teachers in their educational actions, and facilitating informed decision-making. We discovered that AI can personalize learning and motivate students, confirming its effectiveness as a teaching tool. Furthermore, the AI supports educators in their efforts to improve educational achievement. However, our findings highlight the significance of addressing ethical concerns and data protection for a successful AI integration. Access to AI technologies for all students remains a must, and this will be dependent on the implementation of appropriate policies and training for educators.

Also, this research shows Artificial Intelligence's considerable potential to improve health sciences education, but it also presents ethical and equity challenges that must be solved. These findings highlight the need to further investigate the options AI-driven education holds, while ensuring that its deployment is made for the fair and ethical benefit of all students. Therefore, we suggest a threefold approach to implement this: first, design programs with AI literacy and ethics as compulsory modules to bridge the knowledge gap of teachers and prepare future practitioners; second, implement particular faculty training programs focused on the use of AI for pedagogical decision-making and remediation as identified by educators as most useful; and third, develop very strong institutional policies and equity measures to facilitate equitable access to AI technology for all students and to substantiate ethical guidelines on data protection and use.

DECLARATIONS

Funding Support

None

Declaration of Interest

The authors declare no conflict of interest.

Data Availability

Data is available upon request to the corresponding Author.

REFERENCES

1. B. JackCopel and Diane Proudfoot, “Artificial intelligence: History, foundations, and philosophical issues - ScienceDirect.” Accessed: Aug. 12, 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/B9780444515407500323
2. B.J. Copeland, “artificial intelligence | Definition, Examples, Types, Applications, Companies, & Facts | Britannica.” Accessed: Aug. 12, 2022. [Online]. Available: https://www.britannica.com/technology/artificial-intelligence
3. G. Luo, Q. Yuan, J. Li, S. Wang, and F. Yang, “Artificial Intelligence Powered Mobile Networks: From Cognition to Decision,” Dec. 08, 2021, arXiv: arXiv:2112.04263. Accessed: Oct. 24, 2023. [Online]. Available: http://arxiv.org/abs/2112.04263
4. L. Petersson et al., “Challenges to implementing artificial intelligence in healthcare: a qualitative interview study with healthcare leaders in Sweden,” BMC Health Serv. Res., vol. 22, no. 1, p. 850, Jul. 2022, doi: 10.1186/s12913-022-08215-8.
5. M. İçen, “The future of education utilizing artificial intelligence in Turkey,” Humanit. Soc. Sci. Commun., vol. 9, no. 1, Art. no. 1, Aug. 2022, doi: 10.1057/s41599-022-01284-4.
6. E. N. A. of Sciences et al., “Educating Nurses for the Future,” in The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity, National Academies Press (US), 2021. Accessed: Jul. 04, 2023. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK573912/
7. S. J. Fritsch et al., “Attitudes and perception of artificial intelligence in healthcare: A cross-sectional survey among patients,” Digit. Health, vol. 8, p. 20552076221116772, Aug. 2022, doi: 10.1177/20552076221116772.
8. X. Li, M. Y. Jiang, M. S. Jong, X. Zhang, and C. Chai, “Understanding Medical Students’ Perceptions of and Behavioral Intentions toward Learning Artificial Intelligence: A Survey Study,” Int. J. Environ. Res. Public. Health, vol. 19, no. 14, p. 8733, Jul. 2022, doi: 10.3390/ijerph19148733.
9. I.-A. Chounta, E. Bardone, A. Raudsep, and M. Pedaste, “Exploring Teachers’ Perceptions of Artificial Intelligence as a Tool to Support their Practice in Estonian K-12 Education,” Int. J. Artif. Intell. Educ., vol. 32, no. 3, pp. 725–755, Sep. 2022, doi: 10.1007/s40593-021-00243-5.
10. D. Benammi, S. Jaouhar, Z. Toujami, O. el bouazzi, and B. Oumokhtar, “The use of artificial intelligence and stress management among health students: A correlational study in a Moroccan higher education context,” Multidiscip. Sci. J., vol. 8, Jul. 2025, doi: 10.31893/multiscience.2026106.
11. M. E. Khayati, A. Courr, I. Kich, and F.-Z. Hibbi, “Integrating Artificial Intelligence into High-School Computer Science Curriculum: A Perspective Study in Morocco,” J. Curric. Stud. Res., vol. 7, no. 1, pp. 26–46, Mar. 2025, doi: 10.46303/jcsr.2025.2.
12. A. Guneyli et al., “Exploring Teacher Awareness of Artificial Intelligence in Education: A Case Study from Northern Cyprus,” Eur. J. Investig. Health Psychol. Educ., vol. 14, pp. 2358–2376, Aug. 2024, doi: 10.3390/ejihpe14080156.
13. N. M. Abdelaal and I. A. Sawi, “Perceptions, Challenges, and Prospects: University Professors’ Use of Artificial Intelligence in Education,” Aust. J. Appl. Linguist., vol. 7,

share
Send us an email: hsijournal@ug.edu.gh
Visit us: https://www.hsijournal.ug.edu.gh

no. 1, 2024, Accessed: Aug. 02, 2025. [Online]. Available: https://eric.ed.gov/?id=EJ1425147

14. S. Wang, F. Wang, Z. Zhu, J. Wang, T. Tran, and Z. Du, "Artificial intelligence in education: A systematic literature review," Expert Syst. Appl., vol. 252, p. 124167, Oct. 2024, doi: 10.1016/j.eswa.2024.124167.
15. D. B. Olawade, A. C. David-Olawade, O. Z. Wada, A. J. Asaolu, T. Adereni, and J. Ling, "Artificial intelligence in healthcare delivery: Prospects and pitfalls," J. Med. Surg. Public Health, vol. 3, p. 100108, Aug. 2024, doi: 10.1016/j.glmedi.2024.100108.
16. C. Russo, L. Romano, D. Clemente, L. Iacovone, T. E. Gladwin, and A. Panno, "Gender differences in artificial intelligence: the role of artificial intelligence anxiety," Front. Psychol., vol. 16, May 2025, doi: 10.3389/fpsyg.2025.1559457.
17. R. Hirani et al., "Artificial Intelligence and Healthcare: A Journey through History, Present Innovations, and Future Possibilities," Life, vol. 14, no. 5, p. 557, Apr. 2024, doi: 10.3390/life14050557.
18. S. A. Alowais et al., "Revolutionizing healthcare: the role of artificial intelligence in clinical practice," BMC Med. Educ., vol. 23, no. 1, p. 689, Sep. 2023, doi: 10.1186/s12909-023-04698-z.
19. B. Hassan, "AI in Higher Education: Balancing Pedagogical Benefits and Ethical Challenges," vol. 2, pp. 1–22, Jul. 2024, doi: 10.6084/m9.figshare.26349289.
20. A. O. Akinrinmade et al., "Artificial Intelligence in Healthcare: Perception and Reality," Cureus, vol. 15, no. 9, p. e45594, 2023, doi: 10.7759/cureus.45594.
21. J. S. Reuben, H. Meiri, and H. Arien-Zakay, "AI's pivotal impact on redefining stakeholder roles and their interactions in medical education and health care," Front. Digit. Health, vol. 6, Nov. 2024, doi: 10.3389/fdgth.2024.1458811.
22. A.-M. Budeanu, D. Țurcanu, and D. Rosner, "European Perceptions of Artificial Intelligence and Their Social Variability. An Exploratory Study," 2023. doi: 10.1109/CSCS59211.2023.00075.
23. G. K. Randhawa and M. Jackson, "The role of artificial intelligence in learning and professional development for healthcare professionals," Healthc. Manage. Forum, vol. 33, no. 1, Art. no. 1, Jan. 2020, doi: 10.1177/0840470419869032.
24. L. Shinners, S. Grace, S. Smith, A. Stephens, and C. Aggar, "Exploring healthcare professionals' perceptions of artificial intelligence: Piloting the Shinners Artificial Intelligence Perception tool," Digit. Health, vol. 8, p. 20552076221078110, Jan. 2022, doi: 10.1177/20552076221078110.
25. D. Jungwirth and D. Haluza, "IJERPH | Free Full-Text | Artificial Intelligence and Public Health: An Exploratory Study." Accessed: Oct. 24, 2023. [Online]. Available: https://www.mdpi.com/1660-4601/20/5/4541
26. I. Chakri, O. El Khayali, and L. Lahlou, "Knowledge and Perceptions of AI Among Medical Students in Morocco: Cross-Sectional Study," JMIR Form. Res., vol. 9, pp. e66156–e66156, Sep. 2025, doi: 10.2196/66156.
27. N. Hachoumi, M. Eddabbah, and A. R. El Adib, "Artificial intelligence in health sciences education: A mini-review of clinical reasoning development and educator perceptions," Artif. Intell. Health, p. 025410088, Dec. 2025, doi: 10.36922/AIH025410088.
28. S. Lamti, M. el Malhi, R. Sekhsoukh, and N. Kerzazi, "Intelligent Tutoring System for Medical Students: Opportunities and Challenges," 2024, pp. 242–251. doi: 10.1007/978-3-031-66850-0_27.