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Knowledge, Attitude, and Practice of Artificial Intelligence Among Allied Health Professional Students

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ABSTRACT

Background: Artificial intelligence (AI) is transforming healthcare and it assists the professionals with diagnosis and treatment. Instead of its growth the education about still remains limited. Understanding the knowledge, attitudes, and practices of allied health science students is essential to enhance AI's integration into their education and future work.

Objective: The objective of the study is to evaluate the level of Artificial intelligence knowledge, assess attitudes toward Artificial intelligence integration, and examine the current practices of Artificial intelligence. The findings will help bridge the gap between Artificial intelligence advancements and its practical application in allied health education and practice.

Material and Methods: It is a questionnaire study with a sample of 1500 students were included. The inclusion criteria were all Allied Health Professional (AHP) students and exclusion criteria were Non- Allied Health Professional Students.

Results: In this study we evaluated 1500 Allied Health Professional students, 65% of whom are female, found that 93.9% are aware of basic Artificial intelligence. However, only 51.1% understand machine learning. Overall, 55% of the participants have good knowledge, with third-year students showing the highest skills compared to students in other years.

Conclusion: This study highlights the importance of integrating Artificial Intelligence (AI) topics into medical education and addressing existing challenges. To effectively utilize AI for enhanced patient care and medical training, students must be adequately prepared for its integration into healthcare practice.

Keywords: Artificial intelligence, Healthcare, Allied Health Professional Students.

Introduction:

Artificial intelligence (AI) is transforming healthcare, especially in the field of radiology. Artificial intelligence includes different technologies that allow computer systems and applications to imitate human intelligence and work at similar level compared to those of humans [1]. Artificial intelligence (AI) based technologies are used in various fields, such as finance, law, computer science and industrial manufacturing [2]. The rapid growth and development of Artificial intelligence have allowed its use in the healthcare field and Artificial intelligence is now part of oncology for cancer diagnosis. It is also used in gastroenterology, where endoscopes help identify and diagnose abnormal conditions [3]. Artificial intelligence algorithms help radiologists spot unusual traits in images, classify findings, create hypotheses about the patient's condition, decide on the type of procedure, and interpret the results [4]. To educate and train the health professional students Artificial intelligence is being used. For example, a computer-aided learning system has been created to help these students gain diagnostic experience by training a machine learning model with various clinical cases [5].

Artificial intelligence can provide image-based diagnostic solutions and improve a pathologist's interpretation of microscopic slides by using electronic slides and computer-assisted diagnostic techniques. Machine learning and deep learning have been used in cardiology to identify patients at risk of rapid coronary plaque progression, predict the chance of heart attacks, and evaluate prognosis in cases of pulmonary hypertension [6]. In addition, Virtual Patients have become an important tool for students at the undergraduate level. This platform helps them improve their communication skills before interacting with real patients and working with other healthcare professionals during their clinical placements [3]. Artificial intelligence has the potential to eliminate some of the disadvantages associated with conventional methods of diagnosis and treatment. Such disadvantages are characterized by the possibility of errors due to the exhaustion of medical professionals and their related mental health problems, the fast evaluation of a large number of patients, and the stress that patients may experience while meeting a doctor. It is important to have Artificial intelligence as part of medical education because it is capable of providing guidance that can enhance learning and help students understand Artificial intelligence algorithms better [7]. Instead of its growing importance, the adoption of Artificial intelligence education in allied health sciences remain limited [8].

Understanding the knowledge, attitudes, and practices (KAP) of Artificial intelligence among allied health science students is important for improving its integration into their education and future work [9]. This study was conducted to assess the knowledge, attitudes, and practices of Artificial intelligence among allied health professional students. It will also identify the factors that influence their understanding and acceptance of Artificial intelligence in healthcare settings.

Methods:

i. Description of the study and data collection:

It is a questionnaire study performed at Faculty of Allied Health Sciences, DR. M.G.R. Educational and Research institute, Chennai, from a period of Feb 2025 to August 2025 after getting clearance from institutional ethical committee. There were 1500 Allied Health Professional Students included in this study and an informed consent was obtained from all individual participants included in the study.

ii. Statistical analysis:

The data analysis was done carefully and accurately using the Statistical Package for Social Sciences (SPSS version 21) statistical software. The variables were analyzed with the standard chi-square test to check for differences between groups. The p-value of ≤ 0.05 was utilized as the threshold for determining statistical significance, which improved the reliability and validity of analysis.

Results:

The study population included 1500 Allied Health Professional students. This group had 522 males, making up 35% of the total, and 978 females, accounting for 65% of the sample as shown in Table 1.

Table 1: Demographic characteristics of participants (n=1500)

Demographic variable	n (%)
Gender	
Male	522(34.8%)
Female	978(65.2%)
Specialty	
Physician assistant	183 (12.2%)
Radiology and imaging science technology	185 (12.3%)
Medical laboratory technology	119 (7.9%)
Operation theater and anesthesia technology	381 (25.4%)
Optometry	102 (6.8%)
Cardiac perfusion technology	214 (14.3%)
Cardiac care technology	273 (18.2%)
Renal dialysis technology	43 (2.9%)
Current academic level	
1 st year	387 (25.8%)
2 nd year	438 (29.2%)
3 rd year	431 (28.7%)
4 th year	244 (16.3%)

Knowledge of AI:

As shown in Table 2, participants were asked about their understanding of Artificial intelligence, its basic concept, and its subcategories, including machine learning (ML), deep learning (DL), and various applications. The results revealed that 1,408 individuals (93.9%) had a basic understanding of Artificial intelligence. However, only 766 individuals (51.1%) knew about ML and DL, while 838 individuals (55.9%) were aware of Artificial intelligence applications in the medical field. On the other hand, 92 individuals (6.1%) did not understand the basic concept of AI. Additionally, 734 individuals (48.9%) were unfamiliar with ML and DL, and 662 individuals (44.1%) did not know about any applications of Artificial intelligence in healthcare. Overall, 55% of students had good knowledge of Artificial intelligence, while 45% had inadequate knowledge. Knowledge levels varied noticeably between the batches ($p = 0.043$). Students in the third year demonstrated the strongest knowledge (16%), followed by the first- and second-year groups (15% each). The fourth-year group had the lowest percentage of students with good knowledge (9%). This suggests that the year of study plays a meaningful role in how well students understand Artificial intelligence, as shown in table 5.

Table 2: Knowledge of Artificial intelligence among the participants (n=1500)

Questions	Yes	No
Do you know what artificial intelligence is?	1,408 (93.9%)	92 (6.1%)
Do you know about machine learning and deep learning (sub types of Artificial intelligence)?	766 (51.1%)	734 (48.9%)
Do you know about any application of Artificial intelligence in the medical field	838 (55.9%)	662 (44.1%)
Have you ever been taught about Artificial intelligence in medical school?	592 (39.5%)	908 (60.5%)
Do you familiar with any (Artificial intelligence) AI- powered tools currently used in healthcare?	591 (39.4%)	909 (60.6%)

Attitude toward AI:

In the health sector, people were surveyed about their views on the necessity of Artificial intelligence in medicine. 1,137 participants (75.8%) agreed, while 363 individuals (24.2%) disagreed. Regarding the belief that Artificial intelligence helps healthcare professionals make early diagnoses and assess disease severity, 895 (59.7%) agreed and 605 (40.3%) disagreed. When asked if Artificial intelligence could eventually replace doctors, 815 (54.3%) agreed, and 968 (64.5%) thought that Artificial intelligence would take over the jobs of technologists in the future. However, 769 individuals (51.3%) believe that Artificial intelligence may create challenges for practitioners. Most disagreed with the idea that Artificial intelligence would result in a higher rate of diagnostic errors. 963 participants (64.2%) opposed this notion, as shown in table 3. Most students displayed a positive attitude, with 73% showing good attitude and 27% showing insufficient attitude scores. A significant association was found between academic year and attitude levels ($p = 0.0039$).

Table 3: Attitude of Artificial intelligence among the participants (n=1500)

Questions	Yes	No
Do you believe AI is essential in the medical field?	1137 (75.8%)	363 (24.2%)
Do you think AI should be included in the curriculum in medical school as well as specialist training?	1033 (68.9%)	467 (31.1%)
Do you think that AI aids practitioners in early diagnosis and assessment of the severity of disease?	895 (59.7%)	605 (40.3%)
Do you believe that AI will replace physicians in the future?	815 (54.3%)	685 (45.7%)
Do you believe that AI will replace technologist in the future?	968 (64.5%)	532 (35.5%)
Do you think the introduction of AI is essential in the medical emergencies?	1008 (67.2%)	492 (32.8%)
Do you believe AI would be a burden for practitioners?	769 (51.3%)	731 (48.7%)
Do you believe the budget should be allocated for AI to be used in medical field?	900 (60%)	600 (40%)
Do you believe AI would increase the percentage of errors in diagnosis?	963 (64.2%)	537 (35.8%)

The third-year students again showed the highest positive attitude (22%), followed by first-year (20%), second-year (19%), and fourth-year students (12%). These results indicate that attitudes toward Artificial intelligence generally improve as students advance academically, although the pattern is not perfectly linear, as shown in table 3.

Practice of artificial intelligence:

Regarding practice of Artificial intelligence, 752 individuals, or 50.1%, have never used Artificial intelligence in their work. In contrast, 748 people, which accounts for 49.9%, have some hands-on experience with Artificial intelligence. Among the 748 who used Artificial intelligence, 458, or 60.9%, found it easy to use. Additionally, 611 individuals, about 81.3%, believed that Artificial intelligence makes tasks simpler. It's not surprising that most people see the important role of physicians in incorporating and evaluating Artificial intelligence in medicine, with a total of 1003, or 66.9%. Looking ahead, 987 individuals, or 65.8%, said they are open to working with Artificial intelligence in the future, as shown in table 4.

Table 4: Practice of Artificial Intelligence among the participants (n=1500)

Questions	Yes	No	Never applied
Have you ever applied AI technology in any field?	748 (49.9%)	752 (50.1%)	-
Was it easy for you to apply AI?	458 (60.9%)	294 (39.1%)	752 (50.1%)
Did AI make your task easy?	611 (81.3%)	141 (18.7%)	752 (50.1%)
Do you think physician role is important in application and evaluation of AI in the medical field?	1003 (66.9%)	497 (33.1%)	-
Would you like to work on AI in future?	987 (65.8%)	513 (34.2%)	-

When it came to applying Artificial intelligence in practice, 70% reported good practice habits, while 30% had insufficient practice. This domain showed a highly significant association with academic year ($p = 0.00036$). Higher practice levels were seen in the third-year and first-year groups (20% each), followed by the second-year group (19%).

Table 5: Knowledge, attitude and practice score of Artificial Intelligence Among AHP students (n=1500)

YEAR	GOOD		INSUFFICIENT		P-value
	Count	Percentage	Count	Percentage	
Knowledge of AI - Artificial Intelligence					
I Year	231	15%	156	10%	p-value* 0.043
II Year	219	15%	219	15%	
III Year	241	16%	190	13%	
IV Year	131	9%	113	7%	
	822	55%	678	45%	
Attitude of Artificial Intelligence					
I Year	293	20%	94	6%	p-value* 0.0039
II Year	291	19%	147	10%	
III Year	329	22%	102	7%	
IV Year	179	12%	65	4%	
	1092	73%	408	27%	
Practice of Artificial Intelligence					
I Year	303	20%	84	6%	p-value* 0.00036
II Year	289	19%	149	10%	
III Year	299	20%	132	8%	
IV Year	160	11%	84	6%	
	1051	70%	449	30%	

The fourth-year students had the lowest practice level (11%). This highlights a strong relationship between academic progression and practical exposure to Artificial intelligence, as shown in table 5. Across all three domains knowledge, attitude, and practice there were statistically significant differences between the academic years. This indicates that students' understanding, perception, and use of Artificial intelligence evolve meaningfully as they progress through their program, reflecting varied exposure, curriculum influence, and practical opportunities.

Discussion

The use of Artificial intelligence in various medical fields has grabbed a lot of attention for its ability to improve diagnostic accuracy, simplify treatment plans, and change the educational system [8]. This study was done in Faculty of Allied Health Science, DR.M.G.R. Educational and Research institute Chennai, involved the participation of 1500 students. This study aimed to identify the essential factors influencing their understanding and adoption of Artificial intelligence in Medical Education which helps to assess the knowledge, attitude and practice of Artificial intelligence among Allied health professional students.

The results obtained from this study are classified based on their characteristics such as age group, gender and their speciality of various departments. Out of 1500 students, 35% were male and 65% are female with age group ranged from 17 to 26 years. Different questionnaire is asked based on their understanding of Artificial intelligence regarding the basic concepts, Machine learning, Deep learning and various applications. It shows majority of students 93.9% has the basic understanding of Artificial intelligence when compared with other application like Machine Learning of 51.1% and Deep Learning 55.9% which has lack in depth of knowledge. Similar result was observed in research carried out in Nepal, Oman and Pakistan. [8,14,15]. The interpretation results of KAP framework shows positive attitude in that 75.8% agreed while 24.2% individuals disagreed regarding the disease severity, diagnosis and future challenges of medical practitioners. Majority of the student (64.2%) believe that Artificial intelligence would increase the diagnosis errors. But A study by Ahmed Z and his team in Pakistan, found that using Artificial intelligence in healthcare would lower the risk of diagnostic errors [4]. Based upon the practice of Artificial Intelligence on some of individuals which is compared with hands-on experience of about 50.1% and individuals who never used AI is 49.9%.

Similar observations were reviewed on a study done in Jordan by Al-Qerem W *et al.* attitudes, knowledge and skills towards Artificial intelligence among healthcare students which results limited skills in working with Artificial intelligence [3] and similarly, A study done in Syria by Swed et al. found that healthcare professionals lacked formal training in Artificial intelligence, this shows the need for structured education in this field. [8]

Conclusion

According to the observed result, this study describes that even though many students in this study population have good knowledge about Artificial intelligence but still, some have low level of knowledge. Artificial intelligence-based seminars, lecture and training should be given to all Allied Health Professional students which will help in understanding and adoption of Artificial intelligence in healthcare settings.

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