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ORIGINAL RESEARCH

Knowledge, Attitude and Practice of Radiologists Regarding Artificial Intelligence in Medical Imaging

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Purpose: This study aimed to investigate the knowledge, attitudes, and practice (KAP) of radiologists regarding artificial intelligence (AI) in medical imaging in the southeast of China.

Methods: This cross-sectional study was conducted among radiologists in the Jiangsu, Zhejiang, and Fujian regions from October to December 2022. A self-administered questionnaire was used to collect demographic data and assess the KAP of participants towards AI in medical imaging. A structural equation model (SEM) was used to analyze the relationships between KAP.

Results: The study included 452 valid questionnaires. The mean knowledge score was 9.01±4.87, the attitude score was 48.96±4.90, and 75.22% of participants actively engaged in AI-related practices. Having a master's degree or above (OR=1.877, P=0.024), 5–10 years of radiology experience (OR=3.481, P=0.010), AI diagnosis-related training (OR=2.915, P<0.001), and engaging in AI diagnosis-related research (OR=3.178, P<0.001) were associated with sufficient knowledge. Participants with a junior college degree (OR=2.139, P=0.028), 5–10 years of radiology experience (OR=2.462, P=0.047), and AI diagnosis-related training (OR=2.264, P<0.001) were associated with a positive attitude. Higher knowledge scores (OR=5.240, P<0.001), an associate senior professional title (OR=4.267, P=0.026), 5–10 years of radiology experience (OR=0.344, P=0.044), utilizing AI diagnosis (OR=3.643, P=0.001), and engaging in AI diagnosis-related research (OR=6.382, P<0.001) were associated with proactive practice. The SEM showed that knowledge had a direct effect on attitude (β=0.481, P<0.001) and practice (β=0.412, P<0.001), and attitude had a direct effect on practice (β=0.135, P<0.001).

Conclusion: Radiologists in southeastern China hold a favorable outlook on AI-assisted medical imaging, showing solid understanding and enthusiasm for its adoption, despite half lacking relevant training. There is a need for more AI diagnosis-related training, an efficient standardized AI database for medical imaging, and active promotion of AI-assisted imaging in clinical practice. Further research with larger sample sizes and more regions is necessary.

Keywords: artificial intelligence, medical imaging, knowledge, attitude, practice, radiologists, cross-sectional study

Introduction

Medical imaging serves as a prevalent modality for medical diagnosis and treatment, with computer technology emerging as a paramount technical support for its advancement.[1,2] In recent years, the enhancement and implementation of artificial intelligence (AI) within the domain of medical imaging have garnered significant attention.[3–5] Within the healthcare sphere, medical imaging has emerged as a pivotal arena for potential AI breakthroughs due to its vast image data and adoption of the universally standardized DICOM storage format.[6] Currently, AI's clinical application in medical imaging predominantly revolves around enhancing imaging diagnosis, with a primary focus on tasks encompassing lesion detection,[7] identification,[8] and the distinction between benign and malignant conditions.[9] On one hand, AI's perceptual

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and cognitive capabilities facilitate medical image identification, extraction of vital information, and provision of assistance to less experienced radiologists;[10] on the other hand, the integration of copious image data and clinical insights through machine learning enables training and refinement of AI.[11] This equips the system with the competence to diagnose diseases, thereby potentially reducing radiologists' diagnostic oversight. In comparison to the existing operational mode of imaging departments, the AI system remains unaffected by external influences, maintaining an efficient and continuous operational state. This perpetual functionality contributes to the enhancement of radiologists' image interpretation efficiency and quality.

The Knowledge, Attitude, and Practice (KAP) model stands as the most frequently employed framework for elucidating the impact of personal knowledge and beliefs on health behavior change.[12] This theory delineates human behavioral transformation into three continuous stages: knowledge acquisition, belief formation, and behavior adoption. KAP research represents a systematic and scientific survey methodology, predominantly involving the design of questionnaires tailored to research subjects and objectives. These questionnaires are employed to gauge the pertinent knowledge, beliefs, and behavioral patterns of the study population.[13] Through questionnaire analysis, comparative group research, interventions, and pragmatic recommendations are proposed. Subsequent to meticulous planning, implementation takes place, and outcomes are examined, culminating in experiential insights for wider adoption. In recent times, KAP research focusing on the perspectives of radiologists or radiographers towards AI-assisted medical imaging has captured researchers' attention.[14–16] Overall, the majority of radiologists or technicians show a positive inclination towards the integration of AI technology in medical imaging.

Nevertheless, various factors such as age, educational background, years of experience, and comprehension of AI exert a discernible influence on radiologists' attitudes and practices.[15,17] Moreover, differing perspectives on the application of AI in imaging persist. As the principal users of AI, radiologists' KAP in relation to AI within medical imaging play a pivotal role in shaping AI's capacity to capitalize on strengths and mitigate weaknesses in the medical field, thus optimizing its positive influence. Thus, this study aimed to investigate the KAP of radiologists concerning AI in medical imaging.

Methods

Study Design and Participants

This cross-sectional study was carried out among radiologists in the Jiangsu, Zhejiang, and Fujian regions from October to December 2022. Ethical approval was obtained from the Clinical Medical College and the University's Ethics Committee (2022sbky221). Before participating, all individuals provided informed consent. Inclusion criteria were as follows: 1) Registered medical practitioners specializing in radiology. 2) Radiologists with at least 6 months of professional experience. Exclusion criteria included trainee radiologists and individuals undergoing standardized resident training or rotation.

Questionnaire and Quality Control

The questionnaire design was informed by previous studies.[14,18,19] After incorporating input from four experts, the initial draft of the questionnaire underwent limited distribution (166 copies). Reliability and validity testing resulted in a high Cronbach's α value of 0.842, confirming the questionnaire's reliability.

The final questionnaire, in Chinese, consisted of four dimensions comprising 37 items. These dimensions encompassed general information (10 items), knowledge (10 items), attitude (13 items), and practice (6 items). Within the knowledge dimension, correct responses were assigned 1 point, while incorrect or ambiguous answers received 0 points. The achievable score ranged from 0 to 20. Using a five-level Likert scale, the attitude dimension ranged from very positive (5 points) to very negative (1 point), yielding a score range of 13 to 65. Responses of "strongly agree" and "agree" were combined as positive, "neither agree nor disagree" as neutral, and "strongly disagree" and "disagree" as negative. Within the practice dimension, assign 1 point for a "Yes" response and 0 point for a "No" response for items 1–4; Items 5–6 will not be assigned values.

The questionnaire was distributed to participants through a questionnaire platform, and QR codes were circulated across various provinces and prefecture-level cities via the Medical Imaging Society of the Chinese Medical Association, with each province being supervised by a dedicated research assistant. After data collection, the research team carefully reviewed the questionnaire responses for quality assurance. Any data showing apparent discrepancies underwent telephonic verification. Questionnaires displaying redundant or incomplete responses were excluded when it was not feasible to establish contact via phone.

Statistical Analysis

The analysis was conducted using Stata 17.0 (Stata Corporation, College Station, TX, USA). Continuous variables were presented as mean and standard deviation. Student's *t*-test was employed for comparing two groups, while ANOVA was used for comparing three or more groups. Categorical variables were reported as n (%). Multivariate regression analysis was performed to identify independent risk factors related to KAP. Knowledge, attitude, and practice scores equal to or exceeding 70% were considered indicative of "sufficient knowledge", a "positive attitude", and "proactive practice", respectively.[20] Variables that demonstrated a significance level of P<0.05 in univariate logistic regression were included in the multivariate regression analysis. The Pearson correlation test was used to evaluate the association between KAP scores, and a structural equation model (SEM) was used to assess the relationship between KAP. The SEM hypotheses were: 1) knowledge positively influences the participants' attitude; 2) knowledge positively influences participants' practice; 3) attitude positively influences participants' practice. The model fitting was evaluated with discrepancy divided by degree of freedom (CMIN/DF), root mean square error of approximation (RMSEA), incremental fit index (IFI), Tucker–Lewis index (TLI), comparative fit index (CFI), and goodness of fit index (GFI). A two-sided P-value less than 0.05 was considered statistically significant.

Results

A total of 506 questionnaires were collected, out of which 452 valid questionnaires (89.34%) were included in the study. This was done after excluding 50 questionnaires with entirely duplicated responses and 4 questionnaires sharing the same option within the KAP dimensions. The demographic characteristics of the participants are presented in Table 1. The majority of participants (69.91%) were male, while the remaining 30.09% were female. Among the radiologists, the largest segment (43.81%) fell within the 36–50 age range, followed by 27.65% in the 20–35 years category, and 28.54% were aged over 50 years. In terms of education, a majority of respondents (59.51%) held bachelor's degrees, while 29.65% possessed master's or higher degrees, and only 10.84% had junior college qualifications. Most participants (66.59%) were employed in Class III public hospitals, whereas fewer than 5% were associated with private hospitals. A significant proportion (79.87%) worked in hospitals that had already adopted AI-related technologies for image-assisted diagnosis, and a substantial number of participants (82.74%) utilized AI diagnostic systems. However, less than half of the respondents (45.35%) had received training on the principles and operation of AI-assisted diagnosis, and a minority (32.52%) had engaged in AI-assisted diagnosis research.

The mean knowledge score was 9.01±4.87. This score exhibited no significant association with participants' gender, but displayed notable correlations with their age, educational attainment, hospital tier, professional designation, and years of work experience (P<0.05). Among the knowledge-related questions, the query with the highest correct response rate was "Model performance of deep learning is independent of the quality and quantity of the training dataset", achieving 71.46%, while the query with the lowest correct response rate was "During the establishment of an AI model to assist image diagnosis, no matter which model is used, it is necessary to verify robustness", with a rate of 31.64% (Supplementary Table 1). Master or above (OR=1.877, 95% CI=1.086–3.245, P=0.024), 5–10 years of experience in radiology (OR=3.481, 95% CI=1.345–9.013, P=0.010), AI diagnosis-related training (OR=2.915, 95% CI=1.776–4.786, P<0.001) and research (OR=3.178, 95% CI=1.881–5.371, P<0.001) were associated with sufficient knowledge (Table 2).

The mean attitude score was 48.96±4.90. This score displayed no significant correlation with gender and educational attainment. However, it showed associations with age, hospital tier, professional designation, and years of work experience (all P<0.05). Notably, the majority of participants (96.46%) supported the introduction of AI-assisted diagnostic systems in their respective departments. Similarly, the largest percentage of participants (73.9%) disagreed

Table 1 Participants' Demographics and KA Score

Variables	N (%)	Knowledge score		Attitude score		Whether you actively understand the relevant knowledge and research progress of AI medical imaging	
		Mean ± SD	P	Mean ± SD	P	Yes	P
Total	452	9.01±4.87		48.96±4.90		340 (75.22)	
Gender			0.291		0.188		0.943
Male	316(69.91)	8.85±5.08		49.16±5.12		238 (70.00)	
Female	136(30.09)	9.38±4.36		48.50±4.32		102 (30.00)	
Age			0.002		0.006		0.001
20–35	125(27.65)	8.44±4.64		48.11±4.18		90 (26.47)	
36–50	198(43.81)	8.53±5.03		48.80±5.16		138 (40.59)	
>50	129(28.54)	10.31±4.63		50.04±4.45		112 (32.94)	
Educational level			<0.001		0.750		0.095
Junior college	49(10.84)	7.78±5.49		49.41±5.21		33 (9.71)	
Bachelor	269(59.51)	8.49±4.66		48.85±4.82		198 (58.24)	
Master or above	134(29.65)	10.51±4.75		49.03±4.98		109 (32.06)	
Hospital level			<0.001		0.007		0.201
Class I public hospital	20(4.42)	8.75±4.46		47.15±6.21		12 (3.53)	
Class II public hospital	109(24.12)	7.30±4.76		48.40±4.58		82 (24.12)	
Class III public hospital	301(66.59)	9.78±4.80		49.46±4.92		232 (68.24)	
Private hospital	22(4.87)	7.18±4.39		46.64±3.54		14 (4.12)	
Professional title			<0.001		<0.001		<0.001
None	16(3.54)	7.13±4.70		47.63±1.75		7 (2.06)	
Junior	97(21.46)	8.95±4.79		48.80±4.80		73 (21.47)	
Intermediate	92(20.35)	7.09±4.83		46.49±5.42		52 (15.29)	
Associate senior	173(38.27)	9.28±4.82		49.95±4.67		143 (42.06)	
Senior	74(16.37)	11.28±4.17		50.23±4.17		65 (19.12)	
Working years in radiology			0.016		0.002		0.044
≤5	66(14.60)	8.21±4.44		47.59±4.12		46 (13.53)	
(5,10]	70(15.49)	9.19±4.92		48.93±4.72		48 (14.12)	
(10,20]	87(19.25)	8.48±5.76		47.91±6.10		60 (17.65)	
(20,30]	156(34.51)	8.78±4.46		49.54±4.54		124 (36.47)	
>30	73(16.15)	10.71±4.61		50.25±4.41		62 (18.24)	
Work in the hospital that has AI image-assisted diagnosis technologies			<0.001		<0.001		0.001
Yes	361(79.87)	9.57±4.83		49.55±4.76		284 (83.53)	
No	91(20.13)	6.81±4.44		46.64±4.76		56 (16.47)	
Have ever used the AI diagnostic system			<0.001		<0.001		<0.001
Yes	374(82.74)	9.57±4.85		49.60±4.51		301 (88.53)	
No	78(17.26)	6.33±4.03		45.90±5.53		39 (11.47)	
Have attended training on the principles and operation of AI-assisted diagnosis			<0.001		<0.001		0.005
Yes	205(45.35)	10.74±5.10		50.61±4.38		167 (49.12)	
No	247(54.65)	7.58±4.17		47.59±4.89		173 (50.88)	
Have participated in AI-assisted diagnosis research			<0.001		0.002		<0.001
Yes	147(32.52)	12.05±4.27		49.99±4.85		135 (39.71)	
No	305(67.48)	7.55±4.45		48.47±4.86		340 (60.29)	

Table 2 Multivariate Analysis of Sufficient Knowledge

	OR (95% CI)	P
Educational level		
Junior college	1.189 (0.485 2.911)	0.705
Bachelor	Ref.	
Master or above	1.877 (1.086 3.245)	0.024
Level of hospital		
Class I public hospital	1.552 (0.494 4.873)	0.452
Class II public hospital	0.729 (0.381 1.396)	0.341
Class III public hospital	Ref.	
Private hospital	0.790 (0.233 3.245)	0.705
Professional title		
None	0.563 (0.114 2.789)	0.482
Junior	Ref.	
Intermediate	0.599 (0.216 1.662)	0.325
Associate senior	1.066 (0.346 3.284)	0.911
Senior	2.062 (0.564 7.539)	0.274
Working years in radiology		
≤5	Ref.	
(5,10]	3.481 (1.345 9.013)	0.010
(10,20]	3.439 (0.966 12.242)	0.057
(20,30]	2.637 (0.709 9.803)	0.148
>30	3.189 (0.772 13.172)	0.109
Work in the hospital that has AI image-assisted diagnosis		
Yes	0.883 (0.402 1.938)	0.757
No	Ref.	
Have ever used the AI diagnostic system		
Yes	1.772 (0.758 4.141)	0.186
No	Ref.	
Have attended training on the principles and operation of AI-assisted diagnosis		
Yes	2.915 (1.776 4.786)	<0.001
No	Ref.	
Have participated in AI-assisted diagnosis research		
Yes	3.178 (1.881 5.371)	<0.001
No	Ref.	

with the notion that AI would replace radiologists in the future (Supplementary Table 2).The multivariate regression analysis showed that junior college degree (OR=2.139, 95% CI=1.084–4.220, P=0.028), 5–10 years of radiology experience (OR=2.462, 95% CI=1.013–5.983, P=0.047), and AI diagnosis-related training (OR=2.264, 95% CI=1.430–3.586, P<0.001) were associated with positive attitudes (Table 3).

When their own assessments aligned with those of AI, 96.24% of radiologists chose to trust their own judgment. Conversely, when their evaluations differed from AI, 96.00% of respondents opted to place their trust in AI. Importantly, a significant 75.22% of participants actively sought out relevant knowledge and research advancements in medical imaging AI. A majority of participants acquired information related to AI-assisted diagnosis through avenues such as training lectures, medical literature, and online media. Primary factors influencing radiologists' acquisition of AI-assisted diagnosis knowledge included a lack of authoritative learning materials and demanding work schedules (Figure 1).

Multivariate regression analysis demonstrated that knowledge scores (OR=5.240, 95% CI=2.391–11.486, P<0.001), associate senior (OR=4.267, 95% CI=1.187–15.337, P=0.026), 5–10 years of experience in radiology (OR=0.344, P=0.044), AI diagnosis use (OR=3.643, 95% CI=1.739–7.631, P=0.001) and AI diagnosis-related research (OR=6.382, 95% CI=2.949–13.812, P<0.001) were associated with proactive practice (Table 4). A SEM was used to analyze the relationships between KAP (Figure 2). The SEM showed that knowledge had a direct effect on attitude (β=0.481,

Table 3 Multivariate Analysis of Positive Attitude

	OR (95% CI)	P
Knowledge score	1.013 (0.967 1.062)	0.579
Age		
20–35	Ref.	
36–50	1.820 (0.714 4.643)	0.210
>50	2.835 (0.874 9.193)	0.083
Educational level		
Junior college	2.139 (1.084 4.220)	0.028
Bachelor	Ref.	
Master or above	1.028 (0.616 1.715)	0.917
Working years in radiology		
≤5	Ref.	
(5,10]	2.462 (1.013 5.983)	0.047
(10,20]	1.838 (0.607 5.561)	0.281
(20,30]	1.705 (0.545 5.341)	0.359
>30	1.682 (0.444 6.383)	0.444
Have ever used the AI diagnostic system		
Yes	1.293 (0.726 2.304)	0.382
No	Ref.	
Have attended training on the principles and operation of AI-assisted diagnosis		
Yes	2.264 (1.430 3.586)	<0.001
No	Ref.	

P<0.001), and attitude had a direct effect on practice (β=0.135, P<0.001), which indicated an indirect effect of knowledge on practice. Also, the knowledge had a direct effect on practice (β=0.412, P<0.001) (Table 5). The indices showed that SEM fitting was good (Supplementary Table 3).

Discussion

In the modern context, medical imaging functions as a digital diagnostic field in which computers play a crucial role. This discipline primarily focuses on the skillful utilization of advanced technical tools, such as AI, to accurately detect lesions, pinpoint their precise locations, and evaluate their conditions. These capabilities are immensely valuable in improving the diagnostic efficiency of radiologists.

While previous research has explored patient attitudes towards AI within healthcare contexts[21,22] scant attention has been directed towards its specific application among radiologists.[23,24] This cross-sectional study endeavors to gauge the KAP levels among radiologists concerning the integration of AI within medical imaging—a critical undertaking for the development of AI systems within the domain of medical diagnosis. Our study's multivariate analysis results highlight that higher educational attainment, 5–10 years of experience in radiology, and engagement in AI-related diagnostic training collectively contribute to elevated knowledge and attitude scores. Moreover, active participation in AI-assisted diagnosis research is positively associated with higher knowledge and practice scores. Furthermore, factors such as knowledge proficiency, professional designation, years of professional experience, and familiarity with AI diagnostic systems significantly impact practice scores.

Although our study largely supported previous researches, there may also be discrepancies with previous findings due to some underlying reasons. Huisman et al emphasized the specific need for radiologists to acquire expertise in AI.[25] The findings of our multivariate regression analysis underscore that radiologists who partook in training focused on the principles and operation of AI-assisted diagnosis, or engaged in research related to AI-assisted diagnosis, displayed a propensity for obtaining comprehensive knowledge about medical imaging AI technology. Participation in AI medical imaging training or related research stands as an instrumental avenue for acquiring professional insights into AI-assisted

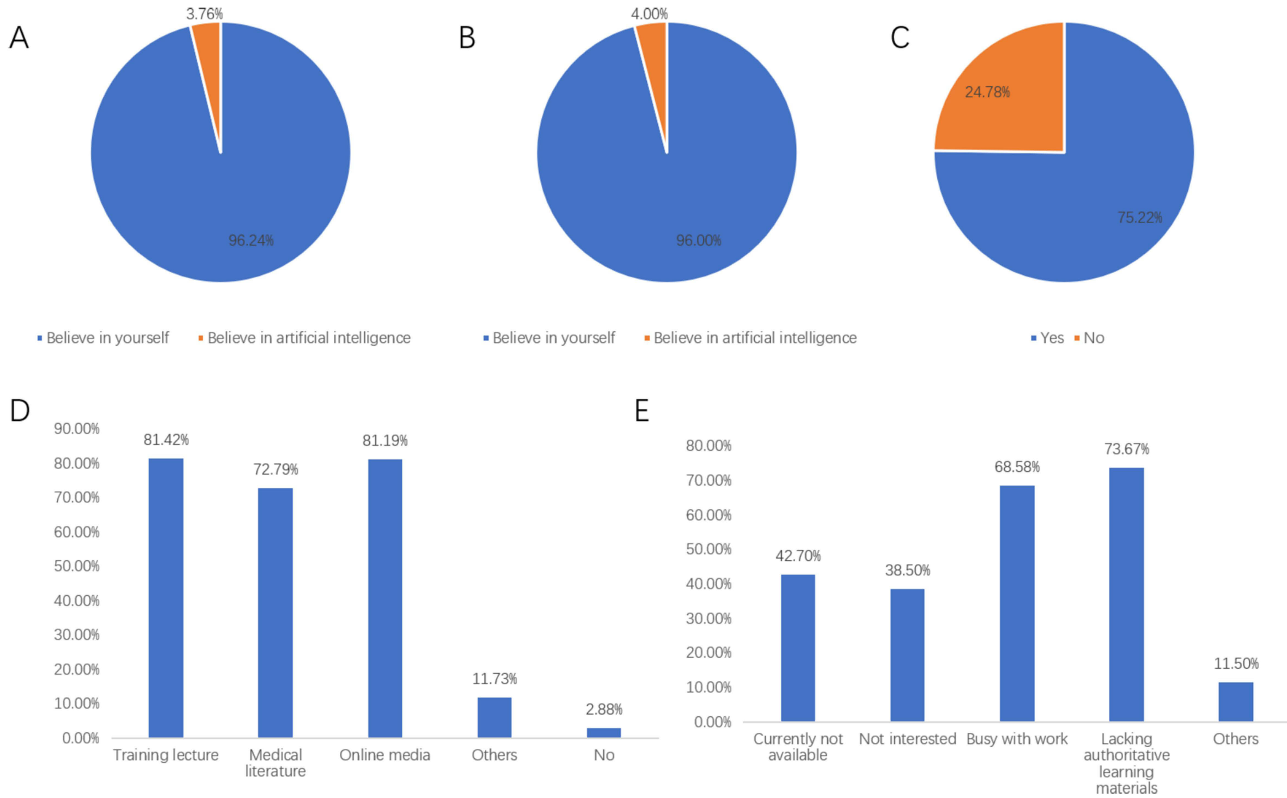

Figure 1 Distribution of practice dimension. (**A**) Who do you believe more when your own judgment is consistent with that of AI; (**B**) Who do you believe more when your own judgment is inconsistent with that of AI; (**C**) Whether you actively understand the relevant knowledge and research progress of AI medical imaging; (**D**) Understand the information channels related to AI-assisted diagnosis; (**E**) Factors influencing imaging physicians' learning of AI-assisted diagnosis related knowledge. AI, artificial intelligence.

diagnosis. A preceding questionnaire-based investigation demonstrated radiologists' keenness to engage in vocational training or AI research, with over three-quarters expressing their intent to bolster their AI-related knowledge.[26] Our study observed that the majority of participants were not well-acquainted with the fundamental principles and applications of deep learning, diverging from Qurashi et al's findings.[14] To conclude, the integration of AI within radiologist training is a requisite measure. Both undergraduate and continuing education should incorporate a structured and professional program to adequately prepare for the effective implementation of AI.[27,28] The findings unequivocally demonstrate a prevailing positive attitude among the participants towards AI-assisted diagnosis. This outcome is consistent with a previous KAP study conducted by Waymel et al, which explored radiologists' perceptions and anticipations of AI within radiography, thus revealing a universally favorable disposition.[29] Similarly, Coakley et al's research unveiled radiographers' widespread enthusiasm and constructive outlook towards the proliferation of AI.[15] In consonance with these findings, a significant majority of our study's participants exhibited a distinct inclination towards the introduction of AI-assisted diagnostic systems and voiced concurrence with the inevitability of AI-assisted diagnostic systems within the medical sphere. Furthermore, our KAP study revealed that radiologists possessing junior college degrees were more likely to adopt a positive attitude towards AI medical imaging. This may be attributed to the potential enhancement in diagnostic proficiency achieved through the aid of AI systems. Additionally, participants with associate senior titles demonstrated more proficient practice, while those without professional titles exhibited comparatively lower levels of practice. However, this inference may be influenced by the limited pool of participants without professional titles, numbering only 16. Notably, radiologists who had utilized the AI diagnostic system or engaged in AI-assisted diagnosis research showcased elevated practice capabilities. This could be attributed to their more comprehensive grasp of AI-assisted diagnosis systems. A prior study accentuates the recognition of AI's presence within medical imaging practice.[30]

Table 4 Multivariate Analysis of Proactive Practice

	OR (95% CI)	P
Knowledge score	5.240 (2.391 11.486)	<0.001
Attitude score	1.509 (0.829 2.746)	0.179
Age		
20–35		
36–50	0.318 (0.081 1.250)	0.101
>50	0.886 (0.160 4.902)	0.890
Professional title		
None	0.171 (0.042 0.704)	0.014
Junior	Ref.	
Intermediate	1.791 (0.591 5.4240	0.303
Associate senior	4.267 (1.187 15.337)	0.026
Senior	4.342 (0.984 19.165)	0.053
Working years in radiology		
≤5	Ref.	
(5,10]	0.344 (0.121 0.974)	0.044
(10,20]	0.634 (0.135 2.979)	0.564
(20,30]	0.966 (0.195 4.772)	0.966
>30	0.491 (0.069 3.474)	0.476
Work in the hospital that has AI image-assisted diagnosis		
Yes	0.698 (0.345 1.411)	0.317
No	Ref.	
Have ever used the AI diagnostic system		
Yes	3.643 (1.739 7.631)	0.001
No	Ref.	
Have attended training on the principles and operation of AI-assisted diagnosis		
Yes	0.743 (0.413 1.336)	0.321
No	Ref.	
Have participated in AI-assisted diagnosis research		
Yes	6.382 (2.949 13.812)	<0.001
No	Ref.	

Moreover, the results unearthed that the primordial drivers influencing practice awareness of AI were demanding work schedules and the scarcity of authoritative learning materials.

However, this survey does exhibit several limitations. Primarily, owing to our utilization of a cross-sectional design, we are precluded from establishing definitive causal relationships from the outcomes. Furthermore, the self-administration of questionnaires by participants could entail deliberate omission of certain information, potentially resulting in a social desirability bias and compromising the findings' validity. Moreover, our study's scope was confined to the Jiangsu, Zhejiang, and Fujian regions, which, while economically developed within China, might not accurately represent the broader populace despite the study's multicenter nature. The pronounced economic disparities in China engender varying levels of technology adoption and expertise across regions. Affluent areas, such as Beijing, Shanghai, Zhejiang, Jiangsu, Guangdong, and Fujian, tend to draw individuals with higher educational attainments and swiftly integrate advanced technologies like AI-assisted diagnostic systems. Conversely, regions with limited economic development might lack requisite equipment and training, thus engendering disparities in KAP levels. Consequently, the generalizability of our findings should be judiciously interpreted and might not be universally applicable. Lastly, the modest sample size constitutes a weakness of this study.

AI-assisted diagnosis brings enormous potential to the medical field, but it also faces some security risks and existing issues. Data privacy and security are crucial issues. Due to the sensitivity of medical data, ensuring the privacy and security of patient data is essential. And algorithm interpretability is another challenge. Doctors and patients need to

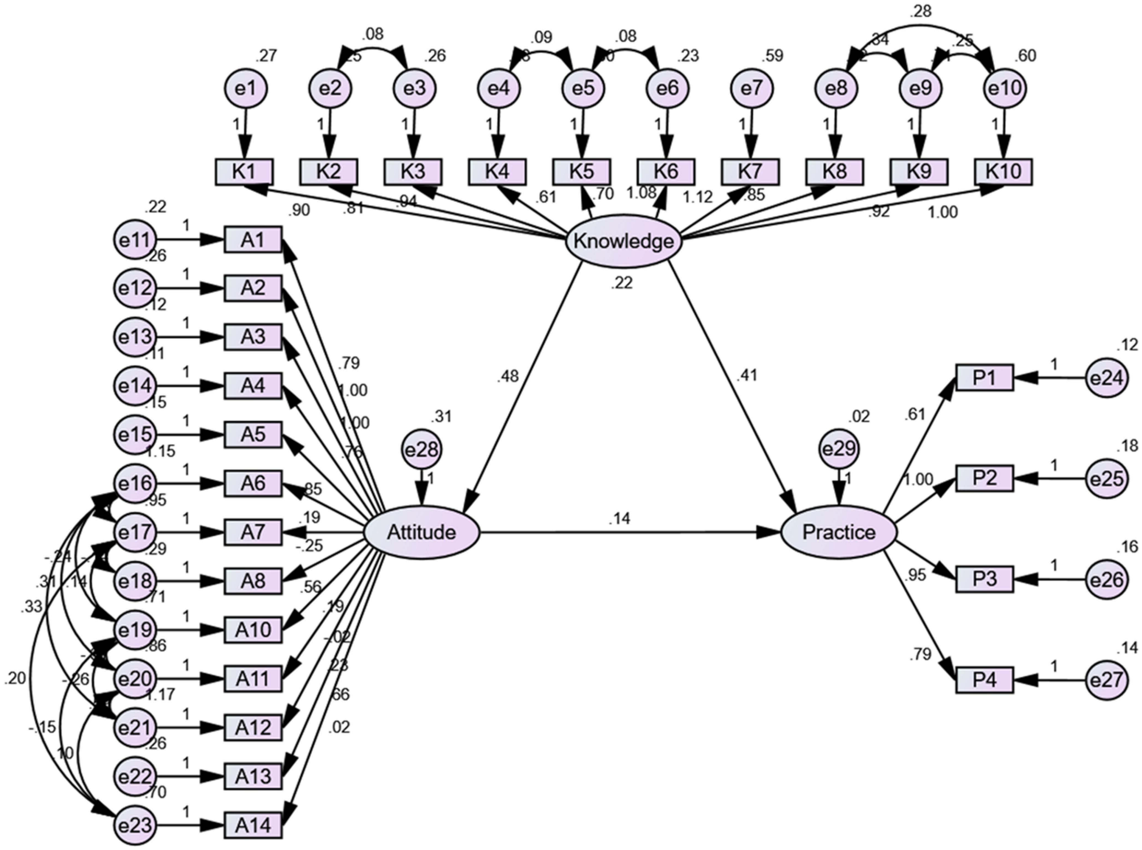

Figure 2 SEM for KAP.

understand how AI-assisted diagnosis systems work to ensure trust and comprehension of diagnostic results. Additionally, data bias is a potential problem. If the training dataset is not comprehensive or biased, AI systems may produce inaccurate diagnostic results, especially for minority groups or specific disease types. Finally, the reliability and stability of the technology are also considerations. If AI systems have vulnerabilities or errors, it may severely impact diagnostic results, even leading to serious consequences. Therefore, to fully harness the potential of AI-assisted diagnosis, measures need to be taken to address these security risks and issues to ensure patient safety and diagnostic accuracy. Due to workload constraints, most previous studies have also been based on limited or specific populations, lacking thorough consideration of the limitations of AI-assisted diagnosis and comprehensive evaluation of clinical utility, neglecting some challenges and constraints in actual medical settings. Conducting research in more diverse populations in the future would be more conducive to real clinical application.

Overall, the future trend of AI-assisted diagnosis in the medical field is diversification and popularization. With continuous technological advancements and data accumulation, the performance and accuracy of AI algorithms will further improve. This will enable diagnostic assistance systems to better identify diseases, predict the progression of patient conditions, and provide personalized treatment recommendations, thereby assisting physicians and enhancing

Table 5 Results of SEM

			Estimate	P
Attitude	<—	Knowledge	0.481	<0.001
Practice	<—	Attitude	0.135	<0.001
Practice	<—	Knowledge	0.412	<0.001

diagnostic accuracy and efficiency. Additionally, AI-assisted diagnosis will promote the rational allocation of medical resources, help healthcare institutions optimize diagnosis and treatment processes, and improve the quality and efficiency of medical services. Lastly, as understanding of AI-assisted diagnosis technology deepens, acceptance by both physicians and patients will gradually increase. AI-assisted diagnosis will become an important direction for development in the medical field, providing more intelligent and personalized healthcare services.

Ethics Approval

This research adhered to the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Clinical Medical College and the University's Ethics Committee (2022sbky221).

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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