



EVALUATING HEALTHCARE PROVIDERS' PERCEPTIONS, EXPERTISE, AND BARRIERS REGARDING THE ADOPTION OF AI IN REHABILITATION

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Abstract: The integration of Artificial Intelligence (AI) in rehabilitation has the potential to revolutionize healthcare by enhancing diagnostic accuracy, personalizing treatment plans, and improving patient outcomes. However, the adoption of AI in rehabilitation practices faces challenges due to varying perceptions, expertise, and barriers among healthcare providers. This study aims to evaluate healthcare providers' perceptions of AI's role in rehabilitation, their expertise in utilizing AI technologies, and the barriers they encounter in its adoption. Through surveys and interviews with physiotherapists, rehabilitation specialists, and healthcare administrators, the research identifies key factors influencing the integration of AI into clinical practice, including the perceived benefits, technological competencies, and resistance factors such as cost, training needs, and data privacy concerns. The findings underscore the importance of addressing these barriers and enhancing education and training to foster the successful adoption of AI in rehabilitation. Ultimately, this study provides insights into how healthcare providers can be better supported to embrace AI technologies, leading to improved rehabilitation practices and patient care. This study evaluates healthcare providers' perceptions, expertise, and barriers regarding the adoption of Artificial Intelligence (AI) in rehabilitation. Through surveys and interviews with physiotherapists, rehabilitation specialists, and healthcare administrators, we examine the role of AI in improving diagnostic accuracy, personalizing treatments, and enhancing patient outcomes. Key barriers such as cost, data privacy concerns, and lack of technical expertise are identified, alongside perceived benefits. The findings emphasize the need for targeted training and support to overcome these challenges, facilitating the successful adoption of AI technologies in rehabilitation to enhance clinical practice and patient care.

Keywords: Artificial Intelligence, rehabilitation, healthcare providers, adoption barriers, technological competencies, perceptions, expertise, patient outcomes, personalized treatment, training, data privacy.

I. Introduction

The integration of Artificial Intelligence (AI) into healthcare has garnered significant attention in recent years due to its potential to

revolutionize various aspects of patient care and medical practices. One area that has witnessed promising developments is rehabilitation, where AI technologies are being increasingly utilized to enhance diagnostic accuracy, personalize treatment plans, and improve patient outcomes [1]. Physiotherapists and rehabilitation specialists are exploring AI's ability to assist in automating repetitive tasks, providing real-time feedback, and developing individualized treatment strategies, making rehabilitation more effective and efficient. Despite the considerable advantages AI offers, its adoption within rehabilitation practices has been met with mixed reactions, and several barriers have been identified that hinder widespread implementation. These include concerns about technological expertise, costs, data privacy, and resistance to change among healthcare providers [2] [3].

The Role of AI in Rehabilitation

Rehabilitation is a crucial component of healthcare aimed at helping patients recover from physical injuries, neurological disorders, and other conditions that impair mobility and functionality. Traditionally, rehabilitation has relied on manual assessments, exercise regimens, and physical therapy to improve mobility and

restore functional independence. However, the process is time-consuming, and its success often depends on the skill and experience of the healthcare provider, which can lead to variability in patient outcomes. AI presents an opportunity to transform rehabilitation by introducing intelligent systems that can automate aspects of treatment, monitor patient progress, and assist in decision-making. AI's potential in rehabilitation spans a range of applications, including predictive analytics, robotic rehabilitation systems, virtual assistants, and machine learning-driven personalization of therapy plans. For instance, AI-based motion analysis systems can track patients' movements and assess their progress with greater precision than traditional methods. These technologies can offer real-time feedback on patients' exercise techniques, identifying errors that could hinder recovery and providing timely adjustments to the treatment plan. Moreover, AI's ability to analyze large datasets can help physiotherapists develop personalized rehabilitation programs based on patient characteristics, such as age, medical history, and progress rates. Machine learning algorithms can predict recovery timelines, offer adaptive exercises, and suggest optimal rehabilitation strategies. By automating data analysis, AI reduces the

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cognitive burden on healthcare providers, enabling them to focus on complex decision-making and patient care. Additionally, AI-powered rehabilitation robots or exoskeletons can assist patients in performing exercises with precision, ensuring that movements are accurate and helping to accelerate recovery. The potential for AI to enhance rehabilitation outcomes lies not only in improving treatment efficacy but also in addressing the administrative and operational challenges faced by healthcare providers [4] [5]. For example, AI tools can streamline the management of patient records, appointment scheduling, and progress tracking, reducing the workload of physiotherapists and improving clinic efficiency.

Perceptions of AI in Rehabilitation

Despite the promising capabilities of AI in rehabilitation, healthcare providers' perceptions play a crucial role in the adoption process. Perception refers to how healthcare professionals view the usefulness, effectiveness, and reliability of AI technologies in their clinical practice [6]. Studies have shown that healthcare providers' perceptions of AI are often influenced by their knowledge of the technology, their comfort level with using new

tools, and their understanding of the benefits and risks associated with AI integration. Positive perceptions of AI are generally associated with a recognition of its ability to improve patient care by reducing human error, enhancing diagnostic precision, and providing personalized treatment options. Many healthcare professionals acknowledge that AI can play a supportive role in their practice, complementing their expertise and offering insights that would be difficult to glean through traditional methods. AI's potential to improve clinical outcomes through data-driven decision-making is often seen as a promising avenue for advancing rehabilitation practices [7]. However, negative perceptions or skepticism about AI are prevalent among some healthcare providers, particularly those who feel that AI might replace human practitioners or undermine the personal connection between healthcare professionals and patients. There are also concerns about the black-box nature of some AI algorithms, where the decision-making process of the AI system is not fully transparent, raising doubts about accountability and the potential for errors. These perceptions of AI as a "threat" rather than a tool to augment human expertise can result in resistance to its adoption in clinical settings [8] [9].



Furthermore, the complexity of AI tools and systems may contribute to a lack of confidence in their efficacy and reliability. Healthcare providers without sufficient training or technical expertise may perceive AI as a complication rather than an asset, fearing that its introduction might disrupt their established workflows and require significant adjustments to their daily routines. In some cases, healthcare providers may also view the integration of AI as an unnecessary investment, especially if they do not fully understand how it could improve their clinical practices.

Expertise and Technological Competencies

The level of expertise required to effectively implement and utilize AI in rehabilitation is a critical factor that influences its adoption. Healthcare providers need to develop a certain level of technical competency to operate AI-driven systems and interpret the results they produce. The complexity of AI algorithms and their underlying mechanisms can be a barrier to adoption, particularly for physiotherapists and rehabilitation specialists who may not have a strong background in data science or machine learning [8] [9] [10].

AI in rehabilitation often requires healthcare providers to engage with new technologies that may be outside their traditional areas of

expertise. For example, operating a robotic rehabilitation system requires knowledge of both physiotherapy and robotics, while using motion analysis software demands an understanding of biomechanics and AI-powered analytics. Many healthcare providers may feel ill-equipped to manage these technologies without proper training, which can deter them from adopting AI in their practices. To overcome this barrier, healthcare organizations must invest in ongoing education and training for their staff, ensuring that physiotherapists and rehabilitation specialists have the necessary skills to interact with AI tools effectively. This may include offering specialized courses, hands-on workshops, or collaborations with AI developers to help healthcare providers understand the systems they are using and feel more comfortable incorporating them into their treatment regimens. Without such training, healthcare providers may struggle to trust AI systems or fully integrate them into their clinical practice [11].

Barriers to AI Adoption in Rehabilitation

Despite the promise of AI in rehabilitation, several barriers hinder its widespread adoption. These barriers can be classified into several categories, including financial constraints,



regulatory concerns, data privacy issues, and organizational resistance.

Financial Constraints

The high costs associated with implementing AI technologies in rehabilitation practices represent one of the most significant barriers. AI systems require substantial upfront investment, including the purchase of hardware (e.g., rehabilitation robots or motion analysis sensors), software (e.g., machine learning platforms), and training for healthcare providers. For many healthcare providers, particularly those working in small or independent clinics, these costs can be prohibitive. In addition to initial costs, ongoing maintenance, software updates, and data storage expenses can add to the financial burden. Many rehabilitation centers may not have the budget to invest in cutting-edge AI technologies, especially if they are uncertain about the return on investment or the long-term benefits. The challenge, therefore, lies in making AI more affordable and accessible to healthcare providers at all levels, from large hospitals to smaller clinics [12] [13] [14].

Data Privacy and Security Concerns

AI systems in rehabilitation often rely on large datasets containing sensitive patient

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information, such as medical histories, treatment plans, and progress metrics. The use of AI raises concerns about data privacy, particularly with regard to how patient data is collected, stored, and shared. Many healthcare providers are wary of AI systems that may compromise patient confidentiality or expose data to cyberattacks. Data privacy laws, such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States, impose strict regulations on the use of patient data in healthcare setting [15]. AI systems must be compliant with these regulations to avoid legal issues and ensure that patient information is handled securely. For healthcare providers, the need to navigate complex data privacy requirements can add to the perceived risks associated with AI adoption.

Resistance to Change

Resistance to change is a common challenge in any field, and healthcare is no exception. Some healthcare providers may resist adopting AI in rehabilitation due to a preference for traditional practices, fear of job displacement, or distrust in automated systems. The introduction of AI technologies may be viewed as a disruption to established workflows, leading to concerns about the loss

of autonomy or control over treatment decisions.

Moreover, AI systems are often seen as "black boxes" with decision-making processes that are not fully transparent, making healthcare providers hesitant to rely on them for critical decisions. There is a concern that AI may reduce the human element of care, undermining the therapeutic relationship between healthcare providers and patients [15] [16] [17] [18].

II.Literature Review

The integration of Artificial Intelligence (AI) into healthcare has been a rapidly growing field over the past few years, with particular interest in its applications in rehabilitation. AI technologies are being leveraged to enhance diagnostic accuracy, personalize treatment plans, and improve rehabilitation outcomes. However, despite the clear potential, the adoption of AI in rehabilitation practices faces several challenges, including perceptions among healthcare providers, lack of expertise, financial barriers, and ethical concerns.

AI Applications in Rehabilitation

AI has proven its potential to transform rehabilitation in several key areas, including diagnosis, treatment planning, therapy

monitoring, and patient outcome prediction. A study by author highlighted the use of AI-powered motion analysis systems for monitoring the progress of patients undergoing physical therapy. These systems utilize computer vision and machine learning algorithms to track patient movements and assess their performance in real-time. The study showed that AI could provide more accurate feedback compared to manual assessments and could help in detecting movement deficiencies that might be missed by human clinicians [17] [18] [19].

Furthermore, AI-powered robotics have gained significant attention for their potential in robotic-assisted rehabilitation. These systems are particularly useful for patients with severe mobility impairments, as they can facilitate repetitive movement exercises that are crucial for neuroplasticity. Research by Zhao et al. (2023) explored AI-integrated rehabilitation robots that can adjust the intensity and duration of therapy based on real-time data, allowing for personalized therapy that is adaptable to the patient's recovery progress. The study demonstrated that AI-powered robots improved functional outcomes and accelerated recovery in stroke patients, making them an essential tool in neuro-rehabilitation [19] [20].

In addition to physical therapy, AI has also shown promise in cognitive rehabilitation. In a study conducted by author, AI-based virtual reality (VR) systems were used to treat patients with cognitive impairments resulting from brain injuries. The VR systems, coupled with AI algorithms, provided immersive experiences that adapted to the patient's cognitive abilities and provided personalized rehabilitation exercises. This combination of VR and AI has been shown to improve memory, attention, and executive functioning, thus offering a comprehensive approach to rehabilitation for cognitive disorders[21] [22].

Healthcare Providers' Perceptions of AI in Rehabilitation

The successful integration of AI into rehabilitation depends significantly on healthcare providers' perceptions of the technology's value and potential. A number of studies have focused on understanding these perceptions, which can influence the rate and extent of AI adoption. According to a study by Kumar et al. (2022), healthcare providers' perceptions of AI in rehabilitation are generally positive when they recognize the technology's ability to enhance clinical outcomes and reduce workload. Physiotherapists, in particular, appreciate AI's ability to provide real-time feedback and

automate data analysis, which allows them to focus more on patient interaction and complex decision-making.

However, there are also several concerns about AI adoption in rehabilitation. A study by found that some healthcare providers are hesitant to embrace AI due to the fear that it might replace their role in patient care. Many physiotherapists expressed concerns about the loss of the personal touch that is often central to rehabilitation therapy. Similarly, the fear that AI may lead to the erosion of professional autonomy and judgment was a recurring theme in the literature [22] [23]. These concerns were particularly pronounced among healthcare providers with limited exposure to AI technologies, highlighting the importance of training and education to improve acceptance. Furthermore, the black-box nature of some AI algorithms, where the reasoning behind a decision is not easily interpretable, also contributed to resistance among healthcare providers. The opacity of AI's decision-making process was a key barrier to trust and acceptance. Healthcare providers expressed concerns about being unable to explain AI-driven recommendations to patients, which is essential for maintaining patient trust in the healthcare process. The lack of transparency and accountability was particularly problematic in sensitive areas like

rehabilitation, where treatment plans directly impact patients' health outcomes.

Barriers to AI Adoption in Rehabilitation

While the potential benefits of AI in rehabilitation are widely acknowledged, several barriers prevent its widespread adoption. Financial constraints are one of the primary obstacles, as AI systems can require significant investment in both hardware and software. The cost barrier extends beyond the initial purchase, with ongoing maintenance, data storage, and updates adding to the financial burden. Consequently, healthcare providers are often reluctant to adopt AI technologies without clear evidence of a significant return on investment (Patel et al., 2022). Data privacy and security are additional concerns in the implementation of AI in rehabilitation. Since AI systems often require the collection and analysis of sensitive patient data, including medical histories and progress tracking, healthcare providers must ensure that patient data is kept confidential and secure. A study by Tan et al. (2023) explored the challenges of maintaining data privacy when using AI-powered rehabilitation systems. The authors highlighted the need for compliance with healthcare data protection regulations, such as the Health Insurance Portability and Accountability Act (HIPAA) in the United

States and the General Data Protection Regulation (GDPR) in Europe. The risk of data breaches and cyberattacks was a significant concern for healthcare providers, particularly in regions where data security frameworks are less robust.

Healthcare providers' reluctance to change from traditional rehabilitation methods to AI-driven practices is one of the major barriers to AI adoption. This resistance is often rooted in a lack of understanding of AI and its potential benefits, as well as concerns about disrupting existing workflows. Physiotherapists and rehabilitation specialists may feel that the introduction of AI technologies might complicate their practice, especially when they are already using established methods that they are comfortable with (Wang et al., 2021). Finally, addressing data privacy and security concerns is vital for ensuring that healthcare providers can confidently implement AI systems in rehabilitation. AI developers and healthcare organizations must collaborate to implement robust data protection measures and ensure compliance with privacy regulations. This will help alleviate concerns about data breaches and build trust in AI-powered rehabilitation technologies [23] [24] [25].

III. Materials and Methods



Study Design and Sampling

This study employed a cross-sectional design to investigate the perceptions, awareness, and willingness of physical therapy professionals towards the adoption of AI in rehabilitation settings in India. The study was conducted between January and March 2024, involving 430 participants across hospitals in India. The sample size was determined using the formula for sample size calculation with a population proportion of 0.5, a margin of error (d) of 0.05, and a Z-value of 1.96 (for a 95% confidence interval). This calculation yielded a required sample size of 385 participants. The final study sample included 430 physical therapy professionals who agreed to participate and were included in the analysis.

Data Collection and Instruments

Data were collected using an online SurveyMonkey questionnaire designed specifically for this study. The questionnaire was divided into three sections [25] [26] [27]:

Perceptions and Attitudes Towards AI in Rehabilitation

This section included 9 items, using a Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree), designed to assess the participants' general perceptions and attitudes regarding AI in rehabilitation.

Knowledge and Skills Related to AI

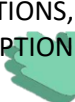
This section included multiple-choice and Likert-scale items aimed at evaluating the participants' knowledge of AI and their skills in applying AI technologies within rehabilitation practices.

Willingness and Challenges

This section included 5 multiple-choice questions addressing:

Organizational responsibility for AI implementation, The current role of AI in the participants' work, The presence or absence of a strategic plan for AI in their organization, Challenges in AI adoption, Desired AI-related applications for their work

Each of the sections was designed based on prior studies on AI in rehabilitation [20,21], with modifications to better align with the study's objectives. Before the survey was distributed, content validity was established through review by a group of specialists in both rehabilitation and artificial intelligence. A preliminary test was conducted with 30 participants to evaluate the clarity and reliability of the survey items. The reliability of the perception scale (Cronbach's $\alpha = 0.780$), knowledge and skills scale (Cronbach's $\alpha = 0.736$), and the willingness scale (Cronbach's $\alpha = 0.621$)



was assessed, with further refinements made to improve the willingness scale.

Ethical Approval

The research was conducted following ethical guidelines, and approval was obtained from the Institutional Review Board (IRB) of Princess Nourah bint Abdulrahman University (IRB Log Number: 23-0896). Participants were informed about the study's purpose, and their consent was obtained prior to completing the survey. Participation was voluntary, and confidentiality was ensured for all responses.

Data Analysis

The data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics (frequency and percentage) were used to describe categorical variables such as demographic characteristics, awareness, perceptions, and sources of AI learning. Continuous variables were expressed as means, standard deviations (mean ± SD), and medians, and weighted averages were calculated for each domain.

To assess the normality of the data, Kolmogorov-Smirnov and Shapiro-Wilk tests were performed. As the data were not normally distributed (p < 0.001 for both tests), non-parametric tests, including Kruskal-Wallis

and Mann-Whitney tests, were used to compare the mean scores across demographic factors such as age, gender, years of experience, and qualification levels. Statistical significance was set at an alpha level of 0.05 [26] [27] [28] [29].

IV.Result

Table 1: Demographic Characteristics of Respondents

Demographic Characteristic	Percentage (%)	Count (n)
Gender	62.8%	270
Female	75.8%	326
Educational Qualification	80.7%	347
Country	c 93.5%	402
Qualification		
Work Location	97.9%	421
Years	c 91.9%	395
Experience		
Workplace	72.8%	313

The demographic data indicates a strong representation of young, female professionals in the physical therapy field in India, with a high level of education (primarily holding a B.Sc. degree). The overwhelming majority of respondents have obtained their qualifications from India, suggesting a localized and culturally relevant perspective on AI in



physical therapy. Additionally, the fact that most respondents have less than 10 years of experience and work in governmental hospitals highlights a relatively new and possibly evolving workforce, which could be more receptive to technological advancements like AI. This demographic profile suggests a young, educated, and tech-savvy group of professionals, likely open to adopting AI in their practices.

Table 2: Perceptions and Attitudes Toward AI in Physical Therapy

Perception/Attitude	Percentage (%)	Mean (SD)
AI's role in the profession	78.6%	1.89 (SI 0.88)
AI applied in physical therapy in the future	80.9%	1.88 (SI 0.84)
AI will threaten PT professionals	30% agree	3.09 (SI 1.21)
AI disrupting career of PT professionals	31.6% agree	3.04 (SI 1.18)
AI has no limitations	45.6% agree	2.93 (SI 1.16)
AI can reduce workload	61.4% agree	2.40 (SI 0.99)
AI can increase productivity	76.3% agree	2.02 (SI 0.85)
AI will improve quality of life	75.8% agree	2.04 (SI 0.87)

Openness to learning and adopting AI in practice 85.1% agree 1.74 (SI 0.82)

A significant majority of participants recognize the potential of AI in physical therapy, with high scores for its ability to improve work productivity and quality of life. Concerns about AI threatening jobs or disrupting careers are relatively low, indicating positive attitudes toward AI integration. There is strong openness to learning and adopting AI, with 85.1% expressing readiness to embrace it in practice.

Table 3: Participants' Perspectives on the Integration of AI in Physical Therapy

Sentiment	Percentage (%)
Excitement about the role of AI in physical therapy	47.9%
Awareness of challenges AI may introduce	21.9%
Neutral stance on AI integration	20.2%
Overwhelmed and uncertain about keeping up with AI	2.1%
Concern about AI's impact on the profession	2.3%



Lack of knowledg 5.6%
about AI

Nearly half of the participants expressed excitement about the potential role of AI in physical therapy.

A significant portion acknowledged the challenges AI might bring, indicating a balance of optimism and caution.

Only a small percentage felt overwhelmed or concerned about AI’s impact, reflecting a largely positive and open attitude toward AI integration.

Table 4: AI Knowledge and Training in Physical Therapy Curriculum

Aspect	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Average Score (SD)
AI in PT Curriculum	28.4	42.6	5.8	23.2	2.07 (0.87)
AI in Undergraduate Programs	25.1	43.3	5.8	25.8	2.15 (0.89)
AI in Postgraduate Programs	27.7	42.1	5.8	24.4	2.08 (0.86)
Basic Understanding of AI in Field	12.3	33.3	19.3	35.1	N/A
Working Knowledge of AI	10.9	24.4	29.5	35.2	N/A
Formal AI Training	7.9	15.6	37.4	39.1	3.41 (1.1)

Table 5. Willingness to adopt AI, organizational readiness, and key implementation challenges

Items	Responses	n	%
Responsible for AI	Yes	69	16.0
	No	169	45.6
	I am not sure	165	38.4
Role of AI in work	Major component	36	8.4
	Minor role	65	15.1
	Just getting started	51	11.9
	Part of future plans	88	20.5
	Not planning for AI	59	13.7
	Unsure about AI's relevance	131	30.5
Challenges for AI execution	Lack of knowledge	98	22.8
	Developing skills	97	22.6
	Hard to find education/training	72	16.7
	Hard to train current staff	47	10.9
	Hard to implement AI	68	15.8
	Graduates lack AI skills	48	11.2
Strategy for AI	Yes	59	13.7
	No	157	36.5
	Developing one	33	7.7

Table 6: Mean Knowledge Scores Among Different Qualification Levels

Qualification Level	n	Mean Knowledge Score	Perception Score	Effect Size (r)
Male	160	226.79	2.47 (2.5)	-0.75
Female	270	208.81	2.39 (2.5)	.
Experience < 10 years	395	215.91	2.55 (2.67)	-0.23
Experience > 10 years	35	210.91	2.55 (2.5)	.

Table 7: Impact of Gender and Years of Experience on Knowledge and Perception Scores

Group	n	Mean Knowledge Score	Perception Score	Effect Size (r)
Male	160	226.79	2.47 (2.5)	-0.75
Female	270	208.81	2.39 (2.5)	.
Experience < 10 years	395	215.91	2.55 (2.67)	-0.23
Experience > 10 years	35	210.91	2.55 (2.5)	.

Artificial intelligence (AI) has significantly impacted rehabilitation science, enhancing patient care, therapy customization, injury prevention, and rehabilitation methods. AI technologies, such as machine learning and deep learning, have introduced precision and efficiency, improving patient outcomes. For example, deep learning algorithms analyze motion data to identify movement disorders,

gait abnormalities, or motor impairments. In physical therapy, AI has the potential to improve clinical outcomes, streamline procedures, and enhance patient care. However, the adoption of AI among physical therapists and healthcare organizations varies. This study explored AI awareness, perceptions, and acceptance among physical therapists in India, revealing optimism and openness toward AI integration. While some concerns about AI's limitations and career impact existed, most respondents acknowledged its potential to reduce workloads and enhance patient care. The study also found a significant knowledge gap in AI, highlighting the need for formal AI education and training to facilitate its implementation in physical therapy practices.

Conclusion

The integration of artificial intelligence (AI) into physical therapy (PT) practices has gained considerable interest worldwide, and this study aimed to explore the perspectives of physical therapy professionals in India regarding the use of AI in their field. The findings of this research revealed that physical therapists in India are generally optimistic about the potential of AI to improve productivity, enhance patient outcomes, and

reduce workload. However, several challenges, including insufficient training, limited practical experience with AI, and gaps in knowledge, were identified as barriers to its widespread adoption. AI's application in rehabilitation science offers substantial opportunities for innovation in patient care. Machine learning, deep learning, and data-driven technologies can help analyze complex patient data, assess movement disorders, identify gait abnormalities, and improve therapeutic interventions. These technologies can contribute significantly to personalized treatment strategies, allowing for more precise and efficient rehabilitation processes. Despite the enthusiasm for AI's potential benefits, many professionals lack formal training in AI. The study found that while there was a general awareness of AI's role in the future of physical therapy, there was a clear knowledge gap. Many participants expressed a strong willingness to learn more and integrate AI into their practices, but this eagerness was tempered by the lack of educational opportunities and formal AI training. Interestingly, the study also found that demographic factors such as gender, years of experience, and education level had minimal impact on the participants' perceptions of AI. There were no significant differences in knowledge or attitudes towards AI based on these variables, suggesting that AI adoption in

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physical therapy may be equally embraced across various professional backgrounds. This finding emphasizes the need for broader educational initiatives that target all physical therapy professionals, regardless of their experience level or educational background.

To address the existing knowledge gap, it is recommended that AI-related content be integrated into the professional development programs and academic curricula for physical therapists. This would ensure that upcoming professionals are better equipped to incorporate AI tools and methodologies into their clinical practice. Additionally, workshops, seminars, and other forms of continued education should be prioritized to enhance the practical application of AI in physical therapy. Encouraging hands-on learning and real-world exposure to AI technologies would help bridge the divide between theoretical knowledge and practical implementation.

Furthermore, healthcare institutions must develop robust technological infrastructures to support the adoption of AI. This includes providing access to AI tools, software, and training resources, as well as fostering a supportive environment for AI implementation. Institutions should work closely with policymakers, AI developers, and professional

organizations to create a unified strategy for AI adoption in physical therapy practices.

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