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Attributes of Employee Perception: A Study on Artificial Intelligence (AI) in Indian Private Hospitals

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Abstract
AI is transforming the way healthcare professionals deliver services and patients receive care. Though AI offers various benefits, it may also have errors. It will be insightful to correct errors and shortcomings since the technology is in its initial stage. Since employees are firsthand users, it is better to take their perception of the effectiveness of this technology in hospitals. The study's objective is to understand the perception of doctors, nurses, and technicians of hospitals and medical colleges on AI applications. The total sample consist of 227 respondents which was taken from Pan India. The sample was collected using purposive sampling. Regression was used for further data analysis through the SPSS 20.0 version. Employees have a positive perception of all three dimensions of AI.

Keywords: Artificial Intelligence, Hospitals, Healthcare, Technology, Employees, Patients

1. Introduction

Artificial Intelligence (AI) has transformed the healthcare sector by enabling advanced technologies to improve patient care, diagnosis, treatment, and overall efficiency. From predictive analytics to personalized medicine, AI is transforming the way healthcare professionals deliver services and patients receive care. Its ability to analyze vast amounts of data, identify patterns, and make informed decisions has the potential to enhance medical outcomes and streamline healthcare processes. As AI continues to evolve, its impact on the healthcare sector is expected to grow significantly, leading to more accurate diagnoses, personalized treatment plans, and improved patient outcomes. By leveraging AI technology, healthcare providers can expedite the diagnosis process and reduce human error. The application of AI showcases how technology can enhance medical imaging interpretation and support healthcare professionals in delivering high-quality care to patients.

By highlighting how AI can enhance diagnostic accuracy, streamline workflows, and improve patient outcomes, healthcare providers can demonstrate the positive impact of AI on their daily tasks. Additionally, offering training programs to help employees develop the necessary skills to work alongside AI systems can boost their confidence and acceptance of these technologies. By fostering a culture of transparency, communication, and collaboration, organizations can ensure that employees perceive AI as a valuable tool that complements their expertise and enhances the quality of care provided to patients. Ultimately, aligning employee perception with the benefits of AI in healthcare can lead to a more successful integration of technology

and improved overall outcomes for both healthcare professionals and patients. AI applications in hospitals offer patients some help, they utilize AI-controlled chatbots. These chatbots can answer health-related questions, advise on symptoms to help decide when hospital care might be necessary or other self-care options may suffice, schedule appointments in AI-supported ways (as Genera works 24/7), provide emotional support, etc. This results in improved efficiencies for medical staff that take up the bulk of a reduced workload, greater patient involvement, and an excellent overall patient journey. Prominent examples are Florence and Babylon Health which help patients track taking medications, send appointment reminders, and monitor symptoms. Medical Tests: AI systems come in handy while examining various medical tests including X-rays, MRIs, CT scans, and blood reports. These systems help healthcare professionals detect abnormalities and early signs of diseases, speeding up the diagnostic process, improving accuracy, and enabling early detection of conditions such as cancer, heart disease, diabetes, etc. The interpretation of imaging data (and other specific information) is an area in which major AI platforms can shine, DeepMind from Google and IBM Watson Health champion examples.

AI algorithms are indispensable in diagnosing the health status of patients, detecting signs predicting future ailments, and providing recommendations on how to avoid them. Using data from wearable devices collected and monitored on an ongoing basis they make it easier to intervene early, meaning patients have better results while hospital readmissions are reduced. Important AI applications include Aidoc and Zebra Medical Vision, which deliver on-the-fly medical data analysis to detect life-threatening issues in patients and suggest needed interventions for healthcare providers. It uses AI to make treatment plans tailored-made for each patient, considering their data such as genetics and lifestyle-like diseases and how they have responded to treatments in the past. Using this method ultimately results in better treatment outcomes, fewer side effects, and higher Patient Satisfaction. For example, IBM Watson for Oncology helps build personalized cancer therapy options by analysis of patient records and comparison with a huge medical database. AI-powered robotic systems help surgeons perform complex surgeries accurately, provide better control, and reduce complications during surgery. Robotic surgeries often allow for smaller incisions, less blood loss, and faster recovery. One of the exemplary AI-powered technology offerings used in minimally invasive surgeries is The Da Vinci Surgical System which has enabled a more effective platform for surgeons to perform complex procedures. AI has the potential to discover different drugs, and more specifically the type of data that can be analyzed using this technique; where it can help predict which compounds in drugs are likely to interact with one another or identify new candidates for clinical trials. It drastically cuts the time and costs involved in drug development where speed of access to new treatments is everything. Atomwise and Benevolent AI, among others, have emerged as leading platforms in developing new drug compounds by sifting through thousands of molecular structure data.

AI plays a vital role in optimizing hospital operations like patient admissions, scheduling, and resource management which allows better use of the people and resources available at the hospitals. With this simplified method they ultimately have better patient flow, shorter waiting times, and increased staff efficiency. AI-driven Scheduling tools are an example of this, and it enable hospitals to manage patients effectively. When implementing AI technology in the healthcare sector, it is essential to consider how employees perceive and interact with these advancements. Employee perception plays a crucial role in the successful integration of AI in the healthcare sector. By involving healthcare professionals in the decision-making process and providing adequate training and support, organizations can help employees understand the

benefits of AI technology and alleviate any concerns they may have about its impact on their roles.

India is witnessing a significant surge in AI-driven healthcare applications. From diagnosis to discharge summary creation to real-time patient monitoring, major hospitals in India implement AI and share it with smaller hospitals. According to recent statistics, the Indian healthcare AI market is expected to reach USD 1.6 billion by 2025, with a CAGR of 40.5% from 2020 to 2025 (IANS,2024). It's still very important to understand the perception of employees using AI in the healthcare sector to gain firsthand knowledge of the opportunities and threats this technology can impose. It will be insightful and help correct errors and shortcomings since the technology is in its initial stages.

2. Review of Literature

Healthcare is one of the fastest-growing industries to utilize AI. It is promising to improve diagnosis, treatment planning, and operational efficiency in healthcare. While advantages in improving patient outcomes, diagnostic accuracy, and operations are well-documented, understanding employee perspectives is vital for effective deployment. This literature review examines healthcare perception studies, identifying themes, issues, and future practice implications.

Wu et al. (2019) explored the growing trend in healthcare systems. It highlights the potential for medical data innovation, integration, analysis, and sharing to transform the current system and offer precise and predictive medical assessments. It emphasized the importance of AI in advancing healthcare systems, particularly in China, due to its rapidly developing economy and increasing healthcare needs. Oh, et al. (2019) suggested that Korean doctors and medical students have favorable attitudes toward AI in the medical field. The physicians believed that AI would not replace their roles in the future. Castagno et.al. (2020) studied healthcare staff perceptions of AI, focusing on their attitudes, concerns, and readiness to integrate AI technologies into clinical practice. Healthcare staff viewed AI as a powerful tool for improving diagnostic accuracy, personalizing treatment plans, and optimizing operational efficiency. AI was seen as a means to reduce administrative burdens and streamline repetitive tasks, allowing healthcare professionals to focus more on direct patient care.

Lai et.al. (2020) focused on the perceptions of artificial intelligence (AI) in healthcare among various stakeholders in France. The study conducted interviews with forty French stakeholders with diverse backgrounds in Paris between Oct 2017 and June 2018. It showed that French healthcare professionals were concerned with providing the best care for their patients and were not always keen on incorporating AI tools into their practice. Abdullah et. al. (2020) analyzed Saudi healthcare personnel's AI integration opinions. Using descriptive-analytical and quantitative methods, 250 doctors, nurses, and technicians at four major Riyadh hospitals provided primary data. It is examined that many respondents believed AI would prevail over human beings. Lee et. al. (2021) explored the emergent opportunities and challenges in China associated with contactless healthcare services in the post-COVID-19 era. The authors examined how these services were leveraged to improve healthcare outcomes while addressing potential obstacles.

Mistry et al. (2021) described a significant advancement in leveraging AI and blockchain technologies to address the challenges posed by the COVID-19 pandemic. By enhancing data security, improving accuracy and efficiency, and promoting transparency, MedBlock has the potential to transform healthcare delivery. However, addressing the technical, regulatory, and infrastructural challenges is crucial for the successful implementation and adoption of this

innovative system. Lee and Yoon (2021) researched that AI systems are making an impact on improving the efficiency of nursing and managerial activities in hospitals in China. While AI is being perceived positively by healthcare providers, its applications provide both the utopian perspective (new opportunities) and the dystopian view (challenges to overcome).
Kuwaiti et al. (2023) noted that artificial intelligence has become a transformational technology in healthcare, enabling a broad variety of applications that could enhance clinical treatment, outcomes for patients, and managerial activities. Udegbe et al. (2024) reviewed the implementation of artificial intelligence in the healthcare industry, concentrating on the obstacles that it presents technologies, including machine learning, natural language processing, and predictive analytics, are revolutionizing healthcare. Ghazy et al. (2023) examined nurse managers' perceptions and approaches to AI technology in selected hospitals. It showed that in-service training and education programs can improve their understanding of AI benefits, challenges, and implementation issues. It highlighted the need for targeted educational initiatives to address misconceptions and promote positive attitudes towards AI in healthcare settings. Ogolodom et al. (2023) surveyed 263 Nigerian healthcare professionals about AI's role in healthcare. The research found that many support AI integration into all medical specialties, with nearly half having high AI expertise. However, concerns arose about AI replacing human professionals, and some companies prefer AI due to its ability to avoid fatigue or physical constraints. Aiman et al. (2024) examined medical professionals' AI knowledge and acceptability. In 351-person research in Pakistan, 21.3% were acquainted with AI and 16% with its medical use. AI was doubted to outperform physicians. AI trust and AI systems without human elements recreating the doctor-patient relationship were concerns.

2.1 Research Gap

AI can revolutionize healthcare by enhancing diagnosis, treatment planning, and efficiency. However, healthcare worker opinions are studied but it is mainly in China, Saudia Arabia, and other foreign countries. Perceptions of AI applications in Indian hospitals are yet to be explored. In India AI applications in hospitals are in a testing phase. This is the right time to analyze the perception so that effective measures can be taken. Based on this gap following objectives were framed:

3. Objectives of the Study

1. To understand the perception of doctors, nurses, and technicians of hospitals and medical colleges on AI applications.
2. To understand new vistas for research.

Based on the above objective hypotheses were framed to analyze the data:

H_{01}: There is no significant impact of the accessibility of AI on doctors', nurses', and technicians 'perceptions.

H_{02}: There is no significant impact of the accuracy of AI on doctors', nurses', and technicians 'perceptions.

H_{03}: There is no significant impact of the reliability of AI on doctors', nurses', and technicians 'perceptions.

4. Research Methodology

4.1 The sample

The study population included doctors, nurses, and technicians of private hospitals in India in 2023-2024. The total sample consist of 227 respondents which was taken from Pan India. The sample was mainly taken from Pune, Indore, and Ahmedabad hospitals. These cities are representative of the leading states of India. Also, hospitals from which data was taken are private and leaders in their sector. All these hospitals have been working for at least five years and are using AI applications at the initial stage. Doctors, nurses, and technicians were included in the sample of the study. The sample was collected using purposive sampling. The cities from which data was collected are given below.

City	Indore	Bangalore	Pune	Ahmedabad
Respondent count	72	32	65	58

4.2 Tools for data collection:

With the help of an open source 'Google form,' an electronic copy of the questionnaire was generated and sent to medical staff. On the top of the questionnaire, the goal and purpose of the study were mentioned. Participation was completely voluntary, and responses were confidential. Since workers were using some kind of AI applications in their respective areas it was considered that respondents had prior knowledge of it.

The questionnaire was adopted by Abdullah and Fakieh (2020). The questions were divided into two sets. The first set consists of the demographics of the healthcare workers. Their age, job type, and years of experience were asked in the first set of questions. The study is based on Artificial Intelligence which is related to technology. The study has taken three types of health workers doctors, nurses, and technicians. In the demographic part, the age of the respondent was asked. Since technology is complicated to use and understand, perception can differ age-wise. Another variable is the type of job. Doctors, nurses, and technicians have different literacy and understanding of technology. The benefits and applicability of this technology vary from job to job. Hence it is important to measure perception jobwise. Experience in the same job has also impacted the perception of the health workers. Those who have high knowledge and experience in the field may consider the use of technology differently from those who have less experience.

Another set of questions was related to the attitude and concerns of healthcare workers on AI applications. Since the questionnaire was developed earlier for Saudi Arabian countries, further reliability and validity were checked from an Indian perspective. A panel of experts was selected to check the validity of the questionnaire consisting of 16 employees. Employees in the medical and AI fields were given two weeks to validate the questionnaire. The reliability of the data was checked by Cronbach alpha. It is valued is 8.759 which shows that the data is reliable. Regression was used for further data analysis through the SPSS 20.0 version..

Demographic details of the respondents are given below:

Demographic and Variable	**Frequency**
Type of Job	
Doctor	89
Nurse	64
Technician	74
Total	**227**
Age (Years)	
Below 30	20
31-40	73
41-50	113

50 and above	21
Total	**227**
Years of Experience	
0-5	39
6-10	85
11 and above	103
Total	**227**

5. Analysis and Interpretation

Results show that most of the respondents in the study were doctors having the age group of 41-50 years with 11 or more years of experience. Three dimensions were identified from the already-developed scale of Abdullah and Fakieh (2020). These were the accessibility, accuracy, and reliability of AI. The 'accessibility' dimension consists of four items and is related to the ease of use of the technology. AI applications are used in hospitals in various ways algorithms monitor patient's critical symptoms like heart rate and blood pressure and alarm healthcare workers in case of any change in these rates and preventive actions can be taken timely. However, the effectiveness of these devices depends on how easy they are to use. These devices should be easily understandable and usable. Another dimension is 'accuracy'. Items that comprise this dimension are related to the speed and accuracy of AI applications. Algorithms convert massive patient data speedily and accurately. This helps healthcare providers to take immediate action on patient diseases. AI algorithms enable analysis of patient X-ray and MRI scans and diagnose anomalies in the human body which helps in earlier and more accurate treatment of the patient. Identifying this pattern and anomalies might be difficult for human minds to perform. The third dimension is 'reliability'. AI models should be designed in such a way that it provides reliable results. It should provide improve clinical decisions and protect human life. Since it is a technology-based system, it may fail. Health-related matters are sensitive sometimes, they may need human intervention.

Regression analysis was used to identify the relationship between employee perception and AI applications. AI applications were independent variables while employee perception was a dependent variable. The value in the model summary shows how much variation is explained by the dependent variable in the regression model.

Table 1
Multiple regression analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.343[a]	.117	.105	.98219
a. Predictors: (Constant), AI applications				

In the table 1, R square value is .117 this shows that 11.7 percent of the variation in employee perception can be explained by the variability of AI applications.

Table 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.477	3	9.492	9.840	.000[b]
	Residual	214.164	223	.965		
	Total	242.642	226			
a. Dependent Variable: Employee perception						
b. Predictors: (Constant), AI applications						

Table 2 depicts the value of the F-statistic is 9.480 and the significant value is 0.000, this reflects that AI applications significantly predict employee perception.

Table 3

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.467	.194		12.707	.000
	f1	.408	.109	.356	3.751	.000
	f2	.247	.106	.237	2.332	.021
	f3	.314	.090	.302	3.509	.001
a. Dependent Variable: Employee perception						

Table 3 shows the coefficient value. The coefficient â of accessibility of AI applications is 0.356, the t value is 3.751 and the significant value is 0.000 which indicates that null hypothesis H_{01} is rejected. The accessibility of AI applications has a significant impact on employee perception of the healthcare sector. Statistically, it has been proved that the accessibility of AI has a positive relationship with employee perception. This reflects that if the accessibility of AI increases, employees will also start to perceive AI applications positively. Accessibility is related to the ease of using this technology. Employees in the medical field consider AI superior to humans and could be useful in their field, for them ease of this technology is very important. Its user-friendliness will increase the faith among the employees. Since AI is a technology that is not easy to use and learn especially if employees are of a higher age. To overcome this problem hospitals, must conduct timely effective training sessions to make it easy for their employees. The coefficient â of the accuracy of AI applications is 0.237, the t-value is 2.332 and the significant value is 0.021 which indicates that the null hypothesis H_{02} is rejected. Accuracy of AI has a positive impact on employee perception. AI provides accurate and speedy work. Speeding up the process with accuracy in medical services is the main advantage of AI. It could be said that employees perceive positively that AI converts huge amounts of information in an accurate, speedy, and efficient way that is further useful for decision-making.

â coefficient of the accuracy of AI applications is .302, the t-value is 3.509 and the significant value is 0.001 which shows that the null hypothesis H_{03} is rejected. The reliability of AI applications has a positive impact on employee perception. In medical services safety and quality of patient care plays a key role. AI works on data being recorded into algorithms. A poor design or wrong entry of data may create errors. These errors may create patient injury or other health problems. Employees perceive the reliability of AI positively this shows if AI applications are reliable and provide hassle-free services it also increases employee's trust in it.

6. Conclusion, Findings and Suggestions

The study identified the dimensions that lead to AI applications in the healthcare sector. These dimensions are the accessibility, accuracy, and reliability of the AI. These factors explain the major attributes of AI. This result is similar to the study of Ogolodom (2023). The present study was conducted on doctors, nurses, and technicians of hospitals and medical colleges. The main objective of the study was to identify the perception of different groups of employees towards AI applications in the healthcare sector. It was found that the perceptions of the doctors, nurses, and technicians are the same for the accessibility, accuracy, and reliability of AI. This result is matched with the study of Chaieb & Ali (2023) which highlighted the perception of healthcare professionals in Saudi Arabia. In their study healthcare professionals significantly perceived the accessibility of AI. According to them, AI is easy to use and helpful in decision-making. Castagno & Khalifa (2020) found that healthcare staff had a significant perception of the accuracy of AI. Healthcare staff perceived that AI is highly applicable in their field of work and it provides accurate and speedy data. The present study shows that there is a significant relationship between employees' perceptions and the reliability of AI in the healthcare sector. This result is also consistent with the study of Abdullah & Fakieh (2020) in which respondents expressed that AI is reliable and, in the future, computers and robots can do human jobs, although doctors feel they can be easily replaced.

The present study determines the relationship between employee perception and dimensions of AI in the healthcare sector. This study concluded that employees have a significant perception of the accessibility, accuracy, and reliability of Artificial Intelligence in the healthcare sector. This shows that all three dimensions of AI are important to employees and have a higher impact on them. Artificial intelligence (AI) has the potential to completely transform the healthcare industry, but realizing these advantages would require skillfully resolving employee concerns and establishing a welcoming and encouraging work atmosphere. Healthcare companies should better connect employee views with the potential benefits of AI by emphasizing ethical considerations, open communication, and continuous education. This will result in more successful and long-lasting technological integration. This research offers valuable insights into healthcare workers; and presents perspectives on artificial intelligence (AI) and practical suggestions for overcoming adoption hurdles.

This research offers valuable insights into healthcare workers; and presents perspectives on artificial intelligence (AI) and practical suggestions for overcoming adoption hurdles. This study is useful for hospitals, those who are planning to adopt AI also those who are using it. This study had some limitations. Only three job types in the healthcare sector were taken, a further study can also be done by taking the perception of the patient. Also, respondents are very limited due to time constraints. By increasing the sample size more realistic results can be found. An important limitation is that the questionnaires were administered randomly between doctors, nurses, and technicians. This approach doesn't capture the perceptions and attitudes of each segment separately. It would be interesting to examine the differences between these groups independently.

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