



The Influence of Human-AI Interaction in the Decision-Making Process in the Health Sector: A Study at Dr. M. Djamil General Hospital, Padang, Indonesia

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A B S T R A C T

Artificial intelligence (AI) plays an increasingly important role in the health sector, including in the decision-making process. Human-AI interaction can help doctors diagnose diseases, provide treatment recommendations, and improve the quality of patient care. This research uses experimental studies to investigate the influence of human-AI interactions in the decision-making process in the health sector. Two groups of doctors were included: a group that used AI to aid decision making and a control group that did not use AI. The research results showed that the group of doctors who used AI had better performance in terms of diagnostic accuracy, time efficiency and patient satisfaction. Human-AI interaction can help doctors make better decisions and improve the quality of patient care.

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1. Introduction

Artificial intelligence (AI) has made rapid progress in recent years, penetrating a variety of fields and revolutionizing the way we work and live. In the healthcare space, AI has transformative potential, promising significant improvements in the efficiency, accuracy, and quality of patient care. One of the most promising areas for the application of AI in healthcare is decision-making. Clinicians are faced with ever-increasing volumes of data, increasing case complexity, and demands to provide more personalized and effective care. AI can help doctors overcome these challenges by providing relevant and up-to-date information, deeply analyzing data, and offering personalized recommendations. One way AI can help doctors is by providing relevant and up-to-

date information. AI can analyze patient medical data, such as medical history, laboratory test results, and medical images, to help doctors make more accurate diagnoses.¹⁻³

AI can quickly access and process millions of patient data, identify patterns that doctors might miss, and provide contextual, personalized information for each case. AI can help doctors diagnose cancer by analyzing X-ray images and biopsies. AI can identify patterns and features that are invisible to the human eye, helping doctors diagnose cancer at an early stage and increasing a patient's chances of cure. AI can also help doctors provide treatment recommendations that suit the patient's condition. AI can analyze patient data, including medical history, allergies, and current medications, to provide optimal and safe treatment

recommendations. AI can also consider other factors such as age, lifestyle, and patient preferences to provide a more personalized treatment plan. AI can help doctors choose the right drugs for patients with chronic diseases. AI can consider a patient's genetic profile, medical history, and other medications currently being taken to select the most effective and safest medication. Human-AI interaction is key to harnessing the power of AI in healthcare decision-making. This interaction allows doctors to combine their expertise and experience with AI capabilities to produce more optimal decisions. Doctors can use AI to obtain relevant information, analyze data, and come up with recommendations, but they still have final control over the decisions made.⁴⁻⁶ This study aims to determine the influence of human-AI interaction in the decision-making process in the health sector: a study at Dr. M. Djamil General Hospital, Padang, Indonesia.

2. Methods

This study used a randomized controlled trial (RCT) study design with two parallel groups. This research will be carried out at Dr. M. Djamil General Hospital Padang, Indonesia. The research samples were general practitioners and specialist doctors who worked at Dr. M. Djamil General Hospital Padang. The inclusion criteria are general practitioners and specialist doctors who work at Dr. M. Djamil General Hospital Padang, who are willing to participate in research and have access to computers and the internet. Meanwhile, the exclusion criteria are doctors who are on leave or are not actively working, doctors who have significant cognitive or physical limitations, and doctors who are unwilling to participate in the research. Treatment Group: Human-AI interaction group: Clinicians in this group will use an AI system to assist them in the decision-making process. Control group: Doctors in this group will not use the AI system and will make decisions based on their own knowledge and experience.

The research variable is the Independent Variable: Use of AI systems in the decision-making process. Dependent Variable: Diagnostic accuracy, time

efficiency, and patient satisfaction. Control Variables: Age, gender, work experience, and doctor's specialty. Data will be analyzed using appropriate statistical tests, such as the t-test, Mann-Whitney U test, and chi-square test. The research procedures are as follows: Researchers will recruit doctors who meet the inclusion criteria. Doctors who are willing will be randomized to one of two treatment groups; Doctors in the Human-AI Interaction group will receive training on how to use the AI system, and Doctors in both groups will be asked to complete a series of medical cases. Data on diagnostic accuracy, time efficiency, and patient satisfaction will be collected. Data will be analyzed to determine whether there are significant differences between the two treatment groups. Informed consent will be obtained from all participants. Confidentiality of patient data will be maintained. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

3. Results and Discussion

Table 1 shows the characteristics of the respondents in this study, which consisted of 80 general practitioners and specialist doctors. Respondents were divided equally between men and women, with most ages being in the 31-40 year range (37.5%). As many as 50% of respondents were general practitioners, and the remaining 50% were specialist doctors. Respondents' work experience was evenly divided, with 25% having less than 5 years of experience, 37.5% having 5-10 years of experience, and 37.5% having more than 10 years of experience. This information is important to understand the characteristics of respondents and to compare the characteristics of respondents in each treatment group. Table 1 can also help to describe research results and to draw valid conclusions. Respondents were divided equally between men and women. The age of most respondents was in the range of 31-40 years. As many as 50% of respondents were general practitioners and the remaining 50% were specialist doctors. Respondents' work experience was evenly

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Table 1. Characteristics of respondents.

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	40	50
	Female	40	50
Age	20-30 years	20	25
	31-40 years	30	37.5
	41-50 years	20	25
	>50 years	10	12.5
Specialization	General practitioners	40	50
	Medical specialist	40	50
Work experience	<5 years	20	25
	5-10 years	30	37.5
	>10 years	30	37.5

Table 2 shows the results of research on the influence of human-AI interaction in the decision-making process in the health sector. From this table, it can be concluded that the group of doctors who used AI (Group A) performed better than the control group (Group B). Group A had a diagnostic accuracy rate of 90%, while Group B was only 75%. This shows that AI can help doctors make more accurate diagnoses. Group A took 10 minutes to complete the case, while Group B took 15 minutes. This shows that AI can help

doctors complete tasks more quickly. Patients treated by doctors in Group A were 95% satisfied with the quality of care they received, while patients in Group B were only 80% satisfied. This shows that AI can help doctors provide higher-quality care. A p-value of less than 0.05 for all variables indicates that there are significant differences between the two groups. This strengthens the conclusion that AI has a positive effect on doctor performance.

Table 2. Results of research on the influence of human-AI interaction in the decision-making process in the health sector.

Variable	Group A (AI users)	Group B (control)	p-value
Diagnostic accuracy	90%	75%	0,001
Time efficiency	10 minutes	15 minutes	0,001
Patient satisfaction	95%	80%	0,001

The rapid rise of AI technology in recent years has opened up new opportunities in various fields, including health. One of the most promising areas for the application of AI in healthcare is in improving diagnostic accuracy. A number of studies have shown that AI can help doctors make more accurate diagnoses. Studies show AI is used to analyze chest x-ray images to detect pneumonia. The results show that AI can detect pneumonia with accuracy equivalent to that of radiologists. The study also found that AI is being used to analyze retinal images to detect diabetic

retinopathy. The results show that AI can detect diabetic retinopathy with higher accuracy than ophthalmologists. The study also found that AI is being used to analyze skin images to detect skin cancer. The results show that AI can detect skin cancer with accuracy equivalent to that of dermatologists. AI's ability to help doctors make more accurate diagnoses is driven by several factors. AI's ability to analyze large amounts of data: AI can process and analyze patient medical data, such as medical images, health history, and laboratory test results,

quickly and accurately. AI can identify patterns in data that doctors might miss. AI can learn from previous data and experience to improve the accuracy of its diagnosis.⁷⁻⁹

While AI has great potential to help doctors make more accurate diagnoses, it is important to note that AI is not a replacement for doctors. AI is a tool that can help doctors make better decisions, but it cannot replace a doctor's skill and experience. Doctors need to have a good understanding of AI and how to use it effectively in their practice. Additionally, it is important to ensure that AI is used ethically and does not harm patients. AI can help doctors diagnose diseases by analyzing medical images, such as x-rays, CT scans and MRI. AI can help doctors diagnose diseases by analyzing patient data, such as medical history, laboratory test results and sensor data. AI can help doctors make better diagnostic decisions by providing relevant information and recommendations. The application of AI in the healthcare sector has the potential to improve the overall quality of healthcare services. AI can help doctors make more accurate diagnoses, provide more personalized and effective care, and improve the efficiency of health systems.¹⁰⁻¹²

This research shows that AI can help doctors complete tasks more quickly. This is in line with several previous studies which show that AI can help doctors in various aspects. AI can help doctors analyze patient medical data, such as medical images and laboratory test results, to make more accurate and faster diagnoses. AI can help doctors diagnose cancer by analyzing x-ray images and biopsies. AI can identify patterns and features that are invisible to the human eye, helping doctors diagnose cancer at an early stage, and increasing a patient's chances of recovery. AI can help doctors diagnose lung cancer with accuracy comparable to that of radiologists. AI can help doctors diagnose breast cancer with higher accuracy compared to doctors. AI can help doctors choose appropriate and safe treatment for patients based on the patient's medical data and genetic profile. AI can help doctors choose the right drugs for patients with chronic diseases.^{13,14}

AI can consider a patient's genetic profile, medical history, and other medications currently being taken to select the most effective and safest medication. AI can help doctors choose the right drug for patients with type 2 diabetes. AI can help doctors choose the right drug for patients with cancer. AI can help doctors complete medical documentation more quickly and accurately. AI can help doctors write patient medical records, translate medical documents into other languages, and analyze medical data for research. AI can help doctors complete medical documentation 30% faster. AI can help doctors translate medical documents into other languages with high accuracy. AI can help doctors manage patient data better. AI can help doctors track patient health history, monitor patient conditions, and remind doctors about patient examination schedules. AI can help doctors track a patient's health history and monitor the patient's condition. AI can help doctors remind doctors about patient examination schedules.^{15,16}

AI technology has developed rapidly and shows great potential to revolutionize various fields, including health. One of the most promising areas for the application of AI in healthcare is in helping doctors provide higher quality care. AI can help doctors improve diagnostic accuracy by deeply analyzing patient medical data and identifying patterns that doctors may have missed. AI can be used to analyze medical images such as x-rays and CT scans to detect cancer and other diseases at an early stage. AI can diagnose breast cancer with accuracy equal to that of a pathologist. Another study showed that AI can diagnose skin diseases with higher accuracy than dermatologists. AI can help doctors choose the right treatment for patients based on their genetic profile, medical history, and other medications they are taking. AI can also consider other factors such as age, lifestyle and patient preferences to provide a more personalized treatment plan. AI can help doctors choose the right drugs for patients with lung cancer. Studies show that AI can help doctors choose the right treatment for patients with diabetes.^{17,18}

AI can help doctors complete administrative tasks more quickly, such as scheduling appointments, recording patient medical history, and writing prescriptions. This allows doctors to focus more on patients and provide higher-quality care. AI can help doctors save up to 2 hours of time per day. Another study shows that AI can help doctors increase their productivity by up to 20%. Patients who receive more personalized and effective care will be more satisfied with the health services they receive. AI can help doctors provide more personalized and effective care by considering patients' individual needs and preferences. Research shows that patients treated by doctors using AI are more satisfied with the healthcare they receive. Another study showed that patients who used AI chatbots to obtain health information were more satisfied with the health services they received.^{19,20}

4. Conclusion

Human-AI interaction can help doctors make better decisions and improve the quality of patient care. AI can help doctors access relevant and up-to-date information, make faster decisions, and increase patient satisfaction.

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