

Assessment of the Relationship Between Artificial Intelligence Applications and Healthcare Workers' Perspectives on the Future Workplace in Saudi Arabia

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ABSTRACT

Healthcare is incorporating artificial intelligence (AI) more and more because it presents chances to enhance productivity, patient outcomes, and diagnostic precision. Still, there are worries about how it might affect the future of the healthcare workforce and the job security of healthcare workers. The aim of the study was to evaluate HCWs' perceptions of AI and emerging technologies in relation to their job security among healthcare workers of the family medicine centers belonging to the Royal Commission Health Service Program (RCHSP) in Jubail, Saudi Arabia.

Methodology: A cross-sectional study was conducted in the family medicine centres in Jubail, Saudi Arabia, and included healthcare workers working there. The data were collected through an online questionnaire from February to June 2024. All the participants took a two-part questionnaire that asked about demographic data and STARA awareness to determine how much workers believe these kinds of AI and technologies could replace their jobs. The research project was authorized by the Royal Commission Health Service Program (RCHSP) Institutional Research Board (IRB). Out of the 101 participants who were asked to participate in this investigation, 75% of them responded. The mean score for all items combined was 1.24 (SD = 0.14), which suggests that people are not very concerned about AI taking the place of healthcare professionals. Personal job replacement caused the least amount of concern (M = 1.12, SD = 0.91), whereas the impact on the industry as a whole caused the most (M = 1.4, SD = 1.07). These results imply that rather than endangering their specific roles, healthcare professionals believe AI will more likely change the sector as a whole.

Conclusion: AI is generally seen favorably by healthcare professionals, who see it as an additional tool to supplement human knowledge rather than as a replacement. The findings show a general sense of job security, despite worries about wider organizational and industry-level effects. Maintaining trust and making sure AI integration enhances rather than detracts from healthcare delivery requires proactive workforce training, organizational preparedness, and open AI implementation strategies.

Keywords: Artificial intelligence, Healthcare workers, Workplace transformation, Job security, Digital health

INTRODUCTION

AI's quick development has started to change the way healthcare is delivered; its uses range from administrative task automation and individual therapy planning to imaging for diagnosis and predictive modeling (Topol, 2019; He et al., 2019). Discussions concerning the possible effects of these advancements on healthcare workers have surfaced as they continue to grow. AI has sparked worries about job security, professional roles, and the future of work in healthcare, despite its potential to increase efficiency, decrease errors, and facilitate more patient-centered care (Davenport and Kalakota, 2019; Mesko et al., 2018).

As smart technological methods, artificial intelligence, robots, and algorithmic (STARA) proliferate, service occupations are being replaced by these innovations in technology. In the next few years, STARA are predicted to make up 13% of the workforce. This is because robotic intelligence has advanced significantly. Also, dexterity as well as affordable autonomous units that may be able to perform better than humans in a variety of tasks. Furthermore, STARA is linked to a significant effect on employment and wellness and may have a significant impact on the healthcare field (Brougham and Haar, 2018). STARA awareness has a significant impact on wellness and employment outcomes. An employee's self-evaluation of work accomplishment and career advancement may have an effect on psychological well-being (Chen et al., 2014).

A key role in this change is played by healthcare workers. Their opinions on the implementation of AI are crucial since the effective implementation of new technologies into clinical practice is directly influenced by acceptance and trust in those technologies (Patel et al., 2020). While AI is generally seen as a tool to supplement human expertise rather than replace it, it can take over repetitive and routine tasks, allowing healthcare professionals to concentrate on more complicated and judgment-based elements of patient care (Wang & Preininger, 2019). However, there is still uncertainty about how automation will affect job frameworks, profession stability, and the healthcare sector as a whole in the long run.

Aspects of the quickly changing Saudi healthcare industry that align with Vision 2030 include the digitization of healthcare services and the use of new technological approaches. Because of Saudi Arabia's ambitious Vision 2030 plan, which calls for significant healthcare reform and digital transformation, the issue is especially urgent there. The introduction of digital systems like artificial intelligence (AI) is altering the way healthcare is delivered (Cascio and Montealegre, 2016).

Examining how healthcare professionals view AI offers significant understanding into their willingness to adapt to technological change, feelings of job security, and preparedness for the future. This study advances knowledge of how the workforce views the potential and dangers of digital change by evaluating worries regarding AI replacing jobs at personal as well as organizational levels. Such data is necessary to support the creation of policies, direct workforce planning, and guarantee that the application of

AI enhances rather than compromises the continued existence of healthcare systems (Babiker et al., 2025).

The aim of the study was to evaluate HCWs' perceptions of AI and emerging technologies in relation to their job security among healthcare workers of the family medicine centers belonging to the Royal Commission Health Service Program (RCHSP) in Jubail, Saudi Arabia.

METHODOLOGY

The study was cross-sectional and was carried out in April 2024 at the Family Medical Centers (FMCs) in Jubail, Saudi Arabia, belonging to the RCHSP, among all 101 healthcare workers working there to assess the level of STARA awareness. The investigation is being conducted in accordance with the RCHSP's policies and procedures, as well as the ethical principles of Good Clinical Practice (GCP) guidelines, after receiving ethical approval from the RCHSP's Institutional Review Board committee for performing the study among the FMCs' HCWs (Reference number IRB-RCH-52). The study was authorized by the family medicine center administration, which also offered technical assistance for conducting the survey among the HCWs. There were no repercussions for not participating; this survey was anonymous, and participation was entirely voluntary. The team of healthcare professionals received an overview of the investigation's goal and topic prior to the study's commencement.

The information was gathered using two parts of a validated, self-administered questionnaire: The questionnaire's first section evaluates the information on working circumstances and demographics. The second part consists of four items used in this study to determine STARA Awareness, which were based on Armstrong-Stassen's job insecurity measure (Reference Armstrong-Stassen, 2001). When the study first defined STARA, respondents informed that "some workplaces and jobs are expected to change within the next 10 years due to Smart Technology, Automation, Robotics, and Artificial Intelligence (STARA)." "Thinking of your current job, please answer the following" was the question stem that followed (Brougham and Haar, 2018; Babiker et al., 2025). The questions and analyses are as follows:

1. "I believe AI could replace my job."
2. "I personally worry that AI will be able to replace what I do in my job now."
3. "I am concerned about my own future in my company because AI is replacing workers."
4. "As AI replaces workers in my industry, I am personally concerned about my future."

The responses were gathered using a Likert-type scale, where 1 meant "strongly disagree" and 5 meant "strongly agree." Aside from that, this made it possible to measure technical anxiety about artificial intelligence and job insecurity. Greater awareness and worry about the disruptive effects of AI on jobs in the healthcare industry are indicated by higher scores on this measure.

The data was statistically analyzed using IBM SPSS version 26, often known as the Statistical Package for the Social Sciences. Quantitative data analysis employed descriptive statistics for demographic and health-related

areas. Furthermore, data were shown as means and standard deviations or modes with ranges for continuous factors and as percentages and proportions for categorical variables. The effects of demographic factors on perceived differences were examined using the t. test and the Anova test. A P-value below 0.05 was considered statistically significant. To make sociodemographic and working situation data more understandable, percentages and frequencies were computed for categorical and qualitative variables, whereas for continuous variables, mean and standard deviation (SD) were used.

RESULTS

In total, 101 participants were enrolled in this study, with a response rate of 75%. The result calculated the mean and standard deviation of participants' STARA awareness. The study looked into how healthcare professionals thought artificial intelligence (AI) would affect their future jobs. The mean and standard deviation (SD) scores of four statements expressing worries about AI replacing healthcare jobs are shown in Table 1.

Table 1: Mean and standard deviation of artificial intelligence (AI) awareness.

Statement	Mean	Standard Deviation (SD)
I think my job could be replaced by AI	1.15	0.99
I am personally worried that what I do now in my job will be able to be replaced by AI	1.12	0.91
I am personally worried about my future in my organization due to AI replacing employees	1.36	1.09
I am personally worried about my future in my industry due to AI replacing employees	1.4*	1.07
Total Mean	1.26	0.14

- AI replacement of jobs perceived by respondents ($M = 1.15$, $SD = 0.99$): Most respondents did not agree that AI could replace their jobs, indicating a low level of fear of direct substitution.
- Individual concern regarding replacement of current job ($M = 1.12$, $SD = 0.91$): The fact that this mean was the lowest suggests that most healthcare workers do not perceive AI as a personal threat to their daily work.
- Concern over the future of the organization ($M = 1.36$, $SD = 1.09$): This item indicated somewhat greater concern that AI might affect their job security within their company, though it was still low.
- Concern over the future of the industry as a whole ($M = 1.4$, $SD = 1.07$): The statement with the highest mean expressed a comparatively higher, albeit still modest, level of concern that AI might upend the healthcare sector overall.

According to the overall mean score ($M = 1.26$, $SD = 0.14$), healthcare professionals generally show little concern about AI taking their jobs or the healthcare industry as a whole.

DISCUSSION

According to the research, healthcare workers now view AI as a tool to supplement their jobs rather than take their place. According to research that highlights AI's potential to improve efficiency, support decision-making, and decrease repetitive administrative tasks rather than replace clinical jobs, the low means for all items point to a general sense of job security (Topol, 2019; Davenport and Kalakota, 2019). The finding is consistent with research demonstrating that AI is seen as a supplement to healthcare rather than a substitute, especially for positions involving complex decision-making, empathy, and patient interaction (Babiker et al., 2025).

While individual health care providers may feel secure, broader technological advances in healthcare delivery, such as automation of diagnostics, administrative workflows, or telemedicine, could have long-term effects on workers, as evidenced by the marginally higher professional level ($M = 1.4$) when compared to the personal level ($M = 1.12$) (Wang and Preininger, 2019; Patel et al., 2020). Furthermore, this may be a result of awareness of AI's expanding use in administrative tasks automation, and diagnostics (e.g., radiology AI) (Wiens et al., 2019).

This optimistic view is consistent with evidence from around the world that AI in healthcare is more likely to change roles than to replace them. For instance, doctors and nurses are supposed to focus more on patient-centered care, teamwork, and critical decision-making and less on tedious paperwork (He et al., 2019). Given the low level of concern, healthcare organizations should concentrate on training employees to successfully integrate AI (Bohr and Memarzadeh, 2020). However, to preserve confidence and reduce ambiguity regarding the future of AI integration, continuous professional development and organizational preparedness are crucial (Mesko et al., 2018).

This analysis included a large number of risk factors that have been previously reported in published publications and other studies. Based on the most recent studies available, the questionnaire was developed with consideration for the characteristics that have been connected to affect AI awareness. Other elements, which were regrettably not included in the parameters of our study, might, nevertheless, also have an impact.

The outcomes of the study might have been subject to some restrictions. Given the current study's cross-sectional methodology, longitudinal research would be necessary to clarify the causal relationships between the variables being examined. Additionally, the study's findings are not generalizable to other organizations because it only examined one department that was impacted by use of technology in the healthcare sector. The influence of the study questionnaire on SATARA awareness was not evaluated because it did not ask about the participants' personality traits. Additionally, the study did not assess the impact of various coping strategies on AI awareness.

CONCLUSION

The findings show that healthcare workers' opinions about the use of AI in the workplace are largely secure and favorable. The low mean scores for

all items indicated little concern about their current roles being replaced by AI. Overall sentiment suggests confidence in AI's complementary rather than substitutive role, despite respondents' slightly higher level of apprehension regarding the technology's wider impact on the healthcare sector relative to their individual positions.

These results imply that rather than viewing AI as a direct threat to job security, healthcare professionals view it as a tool to improve productivity and assist clinical decision-making. The small worries expressed at the industry and organizational levels, however, emphasize the significance of open communication regarding AI adoption, ongoing professional development, and proactive workforce planning. In order to preserve trust and get the healthcare workforce ready for future change, it will be essential to make sure AI is integrated strategically and ethically.

Positive attitudes toward AI among healthcare workers can be maintained through ongoing training, open communication, a phased introduction of AI with staff participation, the establishment of explicit national policies and ethical standards, and the inclusion of AI literacy in health education to prepare the workforce of the future.

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