


Chapter 15

The Human Factor: Evaluating the Impact of AI on Hospital Staff and Patient Care

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ABSTRACT

This chapter examines how human factors shape the impact of artificial intelligence (AI) on hospital staff and patient healthcare outcomes. As AI technologies expand in healthcare, their influence on human interactions, workflows, and treatment results require thorough analysis. AI-driven clinical support systems, diagnostic tools, and patient interaction technologies enhance healthcare practitioners' competence but also raise concerns about trust, communication, and job satisfaction. AI simultaneously boosts clinical efficiency and reshapes how professionals engage with patients. Using real-world examples and research findings, this chapter explores AI's effects on hospital staff workloads, decision-making, and patient experiences.

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It also addresses algorithmic bias and underscores the need for human-centered AI implementation. Regular evaluation systems are crucial for assessing AI's impact on staff and evolving technology. By fostering AI-professional collaboration, hospitals can improve patient outcomes and satisfaction.

INTRODUCTION

Artificial intelligence (AI) is reshaping healthcare in terms of providing better diagnostics, effectiveness of operations, and delivering care to patients (Sharma, B. K., 2025; Rengaramanujam et al., 2026). Artificial Intelligence (AI): AI can be defined as a mimicry of human intelligence in machines that can think with capabilities of learning and decision-making. Human Factors Engineering (HFE): An interdisciplinary approach devoted to the effort to design a better relationship between humans and technology by looking at design efforts as applied to psychology, ergonomics, and engineering. Clinical Decision Support Systems (CDSS): The prospective brainchild of any AI, CDSS are systems that support clinicians in making informed clinical judgments by examining medical information and presenting recommendations. Whereas AI technology in the form of predictive analytics and administrative automation is reasonably transforming clinical processes, there is a dearth of research in the area of human-oriented outcomes. There is a fear of adapting to a changing workforce, loss of professional autonomy, and maintaining patient care. Medical workers should learn to combine their knowledge in dealing with AI technologies with efficient interpersonal communication. Even as there is much written about the technical aspects of AI, there is little that speaks to the implications of AI on provider roles, job satisfaction, skill development, and patient-provider relationships. This “gap” in the literature is what this chapter will seek to fill by discussing the impact that AI has on both hospital staff and patients, and why more morally and human-focused approaches to integration are necessary.

Most AI-related systems in the health industry favor the performance of machines at the expense of individuals, and thus, implementing them could be difficult. Resistance on the part of clinicians to bad interface design, lack of transparency, and/or insufficient training are among the key barriers. These issues are reflected in the failure of IBM Watson for Oncology, as its restricted diversity of training data and involvement of clinicians resulted in a decrease in trust (Shorrock, S., & Williams, C., 2016). Future AI systems will need to be more inclusive, transparent, and have an emotional aspect to caring to address ethical issues such as algorithmic bias, data privacy, and accountability.

This chapter contributes to other studies because it highlights the implications of the role of AI in personnel and relations between the hospitals and the patients, but

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