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MULTI-CRITERIA DECISION MAKING FOR PERFORMANCE APPRAISAL OF HEALTHCARE PROFESSIONALS: A LITERATURE REVIEW

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Abstract

This literature review synthesizes contemporary evidence on the application of Multi-Criteria Decision Making (MCDM) methodologies in the performance appraisal of healthcare professionals. Traditional appraisal systems are often critiqued for their limited ability to address the multifaceted nature of healthcare practice, which encompasses clinical competence, patient safety, ethical conduct, communication, and organizational contribution. A comprehensive analysis of seven studies published between 2019 and 2025 reveals that MCDM approaches, particularly AHP, TOPSIS, VIKOR, PROMETHEE, and fuzzy-based models, have been widely employed to structure complex appraisal processes involving multiple and sometimes conflicting criteria. These methods enhance transparency, consistency, and objectivity in appraisal systems, while facilitating the integration of expert judgment and stakeholder participation. Despite these advantages, significant implementation challenges persist, including the difficulty in defining relevant performance criteria, selecting appropriate MCDM methods, and achieving consensus among evaluators. While MCDM is well established in clinical decision-making and healthcare procurement, its direct application to healthcare professional appraisal remains underexplored. Evidence suggests that well-designed MCDM-based systems can improve decision quality and support organizational improvement in healthcare settings. However, empirical data on their impact on professional satisfaction and workforce development are limited, indicating a need for further research. This review underscores the potential of MCDM as a foundational framework for modernizing performance appraisal in healthcare, and identifies critical gaps for future scholarly inquiry.

Keywords: Decision making, Healthcare professionals, MCDM, Performance appraisal, Evaluation systems.

INTRODUCTION

The evaluation and appraisal of healthcare professionals represents a critical function within modern healthcare systems, directly influencing the quality of patient care, organizational efficiency, and professional development outcomes(Bibi & Khan, 2021; Rana et al., 2022). Traditional performance appraisal systems in healthcare have often relied on unidimensional metrics or subjective assessments that fail to capture the multifaceted nature of healthcare professional practice (Rana et al., 2022). However, the complexity inherent in healthcare delivery, encompassing clinical competence, patient safety, interpersonal communication, ethical decision-making, and organizational contribution, necessitates more sophisticated evaluation frameworks that can simultaneously consider multiple, often conflicting criteria(Bibi & Khan, 2021; Singla et al., 2019).

Healthcare professionals operate within increasingly complex organizational and clinical environments where their performance impacts not only individual patient outcomes but also broader healthcare system efficiency and sustainability. The traditional approaches to performance appraisal in healthcare have demonstrated significant limitations in addressing this complexity. Research indicates that conventional appraisal methods often struggle to balance accountability requirements with professional development objectives, creating tension between summative evaluation and formative feedback mechanisms. The evaluation of healthcare professionals must account for both quantifiable metrics such as task completion rates and clinical outcomes and qualitative dimensions including communication effectiveness, ethical reasoning, and collaborative practice. This multidimensional nature of healthcare professional performance underscores the inadequacy of single-criterion evaluation approaches (Alipanah, 2025; Bibi & Khan, 2021; Rana et al., 2022).

The emergence of Multi-Criteria Decision Making (MCDM) methodologies offers a promising framework for addressing these evaluation challenges. MCDM represents a systematic approach to decision-making that integrates objective measurement with value judgment while managing inherent subjectivity in complex decision scenarios (Dai et al., 2022; . When facing situations characterized by multiple and conflicting criteria, objectives, or attributes, MCDM functions as a decision aid that enables stakeholders to summarize complex value trade-offs in a manner that is both consistent and transparent, thereby facilitating fairer decision-making processes (Dai et al., 2022; The application of MCDM in healthcare contexts has expanded considerably, with demonstrated utility in technology assessment, resource allocation, and supply chain management (Oliveira et al., 2019; , Baltussen et al., 2019). However, the systematic application of MCDM specifically to the performance appraisal of healthcare professionals remains an understudied area, despite its significant potential to enhance evaluation rigor and stakeholder engagement.

The rationale for applying MCDM to healthcare professional performance appraisal is multifaceted. First, MCDM methodologies facilitate the incorporation of diverse stakeholder perspectives—including those of healthcare professionals themselves, organizational leadership, patients, and colleagues—into the evaluation process. This participatory approach aligns with contemporary healthcare governance principles emphasizing transparency and accountability (Bibi & Khan, 2021). Second, MCDM frameworks enable the systematic weighting and aggregation of heterogeneous criteria, allowing organizations to explicitly define what constitutes excellent performance across multiple dimensions. Third, the structured nature of MCDM processes supports the development of defensible, evidence-based appraisal systems that can withstand scrutiny and provide clear feedback to healthcare professionals regarding performance expectations and achievements (Dai et al., 2022; Rana et al., 2022).

The literature on performance appraisal in healthcare demonstrates that well-designed appraisal systems can significantly enhance professional performance and job satisfaction. Research indicates that performance appraisal has a substantial impact on healthcare professionals' task performance and can serve as a mechanism for identifying and enhancing productivity at both individual and organizational levels. However, the effectiveness of these systems depends critically on their design, implementation, and the degree to which they are perceived as fair, transparent, and developmentally oriented. The challenge lies in creating appraisal frameworks that simultaneously serve multiple functions (accountability, professional development, resource allocation, and organizational improvement) without compromising the integrity or acceptability of any single function (Bibi & Khan, 2021; Rana et al., 2022).

The integration of shared decision-making principles into healthcare professional appraisal represents another important consideration. Contemporary healthcare emphasizes collaborative decision-making involving multiple stakeholders, and performance appraisal systems should reflect and reinforce these collaborative values. MCDM methodologies, with their emphasis on stakeholder engagement and transparent deliberation, naturally align with shared decision-making principles and can model the collaborative approaches that healthcare organizations seek to promote (Ene et al., 2025). Despite the apparent relevance of MCDM to healthcare professional performance appraisal, a comprehensive synthesis of the literature examining this application remains absent. Existing systematic reviews have addressed MCDA applications in health technology assessment, priority setting, and resource allocation, but have not specifically focused on performance appraisal of healthcare professionals. This gap represents a significant opportunity for advancing both the theoretical understanding of MCDM applications in healthcare and the practical development of more effective appraisal systems (Baltussen et al., 2019; Oliveira et al., 2019). The present literature review addresses this gap by synthesizing evidence regarding the application of MCDM methodologies to the performance appraisal of healthcare professionals.

LITERATURE REVIEW

Multi-Criteria Decision Making

Multi-Criteria Decision Making (MCDM) represents a systematic and structured approach to addressing complex decision-making problems characterized by multiple, often conflicting objectives and criteria provide a comprehensive review of MCDM methods, critically analysing the strengths and limitations of various approaches while investigating applications across business, engineering, environment, healthcare, and public policy domains. This foundational work establishes that both single and integrated MCDM methods have been employed across diverse contexts; however, single MCDM methods remain dominant in practice. Importantly, Chowdhury and Paul (2020) observe through systematic literature review and bibliometric analysis that most integrated methods utilize only two MCDM techniques, and comparative analyses of results obtained from different MCDM methods remain limited. This methodological gap suggests that future research should prioritize comparative effectiveness studies examining how different MCDM approaches yield varying results for identical decision problems (Chowdhury &

Paul, 2020; Dai et al., 2022; Sahoo & Goswami, 2023). The theoretical foundation of MCDM integrates objective measurement with value judgment while managing inherent subjectivity in complex decision scenarios. This integration is particularly valuable in contexts where decisions must balance quantifiable metrics with qualitative dimensions of professional practice. The structured nature of MCDM processes supports the development of defensible, evidence-based decision systems that can withstand scrutiny and provide transparent rationales for decisions made (Chowdhury & Paul, 2020; Dai et al., 2022).

Performance Appraisal of Healthcare Professionals

Performance appraisal represents a critical organizational function within healthcare systems, serving multiple purposes including accountability assessment, professional development support, and organizational improvement (Binmlafikh et al., 2025; Masarroh, 2024; Trang & Hung, 2020). The evaluation of healthcare professionals is essential because it determines factors such as wage increases and promotions and provides a mechanism for evaluating and developing professional competencies and skills (Nurmaesah et al., 2023). Healthcare professionals operate within complex clinical environments where their performance directly impacts patient safety, care quality, and organizational efficiency. Consequently, developing robust, comprehensive performance appraisal systems is a priority for healthcare organizations seeking to optimize professional practice and organizational outcomes (Singer & Özşahin, 2025).

The significance of healthcare professional performance appraisal extends beyond individual evaluation to encompass organizational strategy and quality improvement. Efficient and effective healthcare delivery relies fundamentally on the optimal performance of healthcare workers. By understanding the key performance factors affecting healthcare professionals, decision-makers can make data-driven decisions and implement targeted improvements to achieve superior results. However, the complexity of healthcare professional roles and the multidimensional nature of healthcare professional performance create challenges for traditional appraisal approaches (Singer & Özşahin, 2025).

The performance of healthcare professionals includes both technical competencies and interpersonal dimensions. Fei et al. (2020) conducted an analysis of human capital indicators for hospital-based nursing workforce, identifying eight distinct dimensions of nursing human capital, including health, employee protection, work attitude, employee stability, general nursing training, competencies, advanced nursing training, and clinical nursing experience. The analysis revealed that health represented the most important factor with a weight of 34.8%, followed by employee protection at 20.4%, and work attitude at 13.7%. This multidimensional conceptualization of healthcare professional performance demonstrates that traditional appraisal approaches focusing solely on clinical competence are inadequate for comprehensive professional evaluation (Fei et al., 2020).

The identification of multiple performance dimensions suggests that healthcare professional appraisal systems must incorporate diverse criteria reflecting the complexity of healthcare professional practice. Kondasani et al. (2019) emphasize that comparative performance assessment in healthcare settings requires evaluation of multiple dimensions of service quality, with results providing insight to healthcare managers regarding how they can improve service quality to match customer expectations and improve business performance. This finding extends to individual healthcare professional appraisal, suggesting that multidimensional evaluation frameworks are essential for comprehensive performance assessment (Kondasani et al., 2019).

METHOD

A comprehensive literature search was conducted across multiple electronic databases including PubMed, Scopus, Web of Science, and Google Scholar to identify relevant studies addressing Multi-Criteria Decision Making (MCDM) applications in healthcare professional performance appraisal. Searches were conducted for studies published between January 2019 and November 2025 to ensure inclusion of the most current evidence and methodological developments in MCDM applications for healthcare professional performance appraisal. The search strategy employed a combination of controlled vocabulary and free-text terms organized into three primary concept clusters: (1) MCDM methodologies and related approaches (MCDM, MCDA, AHP, TOPSIS, VIKOR, fuzzy methods); (2) healthcare professional performance evaluation (performance appraisal, performance assessment, employee evaluation); and (3) healthcare contexts (healthcare professionals, physicians, nurses, allied health professionals). Boolean operators (AND, OR, NOT) were employed to combine these concept clusters and generate comprehensive search strings adapted to each database. Studies were included if they addressed MCDM applications to healthcare professional performance evaluation, described MCDM frameworks applicable to professional appraisal, examined implementation of MCDM-based systems in healthcare settings, or assessed barriers and

facilitators to implementation. Studies were excluded if they addressed MCDM applications in healthcare contexts unrelated to professional performance appraisal, examined performance appraisal without explicit MCDM reference, or lacked sufficient methodological detail. A standardized data extraction form was developed to capture study characteristics including author, year, publication type, MCDM methodology employed, healthcare professional population studied, performance criteria evaluated, stakeholders involved, implementation context, barriers and facilitators identified, outcomes assessed, and key findings. Two independent reviewers conducted data extraction and quality assessment to minimize errors and ensure consistency. The methodological quality of included studies was assessed using appropriate critical appraisal tools selected based on study design, with particular attention to the rigor of MCDM application, clarity of performance criteria definition, and adequacy of stakeholder engagement. Quality assessment results were incorporated into the synthesis process to allow assessment of evidence strength and identification of potential sources of bias. Studies were not excluded based on quality ratings; rather, quality assessments informed interpretation of findings and identification of limitations.

Given the anticipated heterogeneity of included studies regarding MCDM methodologies, healthcare professional populations, and performance criteria, a narrative synthesis approach was employed as the primary synthesis method. The narrative synthesis was structured around key themes identified through iterative review of the literature, including: (1) MCDM methodologies employed in healthcare professional appraisal; (2) performance criteria and dimensions incorporated into MCDM-based systems; (3) stakeholder engagement approaches; (4) implementation approaches and organizational contexts; (5) barriers and facilitators to implementation; and (6) outcomes and impacts on healthcare professional performance and satisfaction. Within each thematic area, findings from individual studies were synthesized to identify patterns, consistencies, and discrepancies across the literature. Thematic analysis was employed to identify recurring patterns and themes, with conceptual mapping used to illustrate relationships between MCDM methodologies, implementation approaches, and outcomes

RESULTS AND DISCUSSION

A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, and Google Scholar databases to identify studies addressing Multi-Criteria Decision Making (MCDM) applications in healthcare professional performance appraisal. The search strategy employed controlled vocabulary and free-text terms combining MCDM methodologies (MCDM, MCDA, AHP, TOPSIS, VIKOR, PROMETHEE, fuzzy methods), healthcare professional performance evaluation terms (performance appraisal, performance assessment, employee evaluation), and healthcare contexts (healthcare professionals, physicians, nurses, allied health professionals). From the initial search results, 7 studies were selected based on inclusion criteria addressing MCDM applications to healthcare professional performance evaluation, MCDM frameworks applicable to professional appraisal, implementation of MCDM-based systems in healthcare settings, or assessment of barriers and facilitators to implementation. The selected studies represent diverse healthcare contexts, MCDM methodologies, and implementation approaches, providing comprehensive evidence regarding MCDM applications in healthcare professional performance appraisal.

Characteristics of Included Studies

The following table presents the characteristics of the 15 included studies examining MCDM applications in healthcare professional performance appraisal and related healthcare decision-making contexts.

Table 1. Characteristics of Included Studies

No	Author	MCDM Methodology Employed	Performance Criteria Evaluated	Outcomes Assessed	Key Findings
1	(Sahoo & Goswami, 2023)	AHP, TOPSIS, VIKOR, PROMETHEE, Fuzzy methods	Multiple dimensions across healthcare domains	Methodological rigor, applicability across domains	Both single and integrated MCDM methods used; single methods dominant; limited comparison of results from different methods
2	(Chowdhury & Paul, 2020)	AHP, TOPSIS, VIKOR,	Sustainability performance,	Sustainability performance improvement,	Single MCDM methods dominant; most integrated methods use

		integrated MCDM approaches	environmental criteria	organizational efficiency	only two techniques; need for comparative effectiveness studies
3	(Köksalmış et al., 2019)	AHP, TOPSIS	Time-related, patient-related, recovery-related, complication-related factors (11 subcriteria)	Treatment selection quality, clinical decision support	AHP and TOPSIS effectively prioritize surgical treatment alternatives; time-related and patient-related factors most important
4	(Öztürk et al., 2020)	Fuzzy TOPSIS, Fuzzy VIKOR, Goal Programming	Treatment effectiveness, patient outcomes, cost, accessibility	Treatment selection quality, healthcare resource allocation	Fuzzy MCDM methods effectively compare healthcare technology alternatives; peritoneal dialysis preferred in specific contexts
5	(Nowrouzi-Kia et al., 2021)	Systematic review methodology	Work performance, mental health, job satisfaction	Healthcare worker performance, mental health outcomes, job satisfaction	Regular interventions including telehealth improve healthcare worker performance and mental health during pandemics
6	(Dolatabad et al., 2025)	Multiple appraisal methods (360-degree feedback, MBO, rating scales)	Task performance, contextual performance, job satisfaction, professional development	Healthcare worker performance, job satisfaction, professional development	Objective evaluation, customization, and rater relevance critical for improving healthcare worker performance outcomes
7	(Vagiona, 2021)	TOPSIS, VIKOR, PROMETHEE, AHP	Site suitability, environmental impact, accessibility, cost	Site selection quality, facility planning effectiveness	Comparative analysis shows TOPSIS, VIKOR, and PROMETHEE produce consistent rankings; AHP produces different results; method selection impacts outcomes

MCDM Methodologies Employed in Healthcare Professional Appraisal

The reviewed literature demonstrates that multiple MCDM methodologies have been applied to healthcare professional performance evaluation and related healthcare decision-making contexts (Chowdhury & Paul, 2020; Köksalmış et al., 2019; Öztürk et al., 2020; Sahoo & Goswami, 2023). The Analytic Hierarchy Process (AHP) as the employed MCDM methodology, appearing in 2 of the 7 included studies (Köksalmış et al., 2019; Sahoo & Goswami, 2023). AHP's popularity in healthcare contexts reflects its capacity to structure complex decision problems hierarchically, facilitate expert judgment integration, and provide transparent criterion weighting mechanisms (Köksalmış et al., 2019). Köksalmís et al., (2019) demonstrate AHP's effectiveness in medical decision-making by employing AHP-TOPSIS methodology to evaluate surgical treatment alternatives for pediatric patients, with expert panels of 31 pediatric surgeons rating treatment factors using standardized scales (Köksalmış et al., 2019). TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) represents the second most frequently employed methodology, appearing in 4 of the 7 studies (Köksalmış et al., 2019; Öztürk et al., 2020; Sahoo & Goswami, 2023; Vagiona, 2021). TOPSIS's widespread adoption reflects its computational efficiency, intuitive logic of measuring proximity to ideal solutions, and suitability for ranking alternatives across multiple criteria (Vagiona, 2021). Integrated MCDM approaches combining multiple methodologies appear in 1 studies (Chowdhury & Paul, 2020). Chowdhury and Paul, (2020) note that most integrated approaches employ only two MCDM methods, and

comparative analyses of results from different MCDM methods remain limited, suggesting an important research gap (Chowdhury & Paul, 2020).

Performance Criteria and Dimensions Incorporated into MCDM-Based Systems

The reviewed literature reveals substantial diversity in performance criteria incorporated into MCDM-based healthcare evaluation systems, reflecting the multidimensional nature of healthcare professional performance (Dolatabad et al., 2025; Köksalmış et al., 2019; Öztürk et al., 2020; Putro et al., 2025; Sahoo & Goswami, 2023). Köksalmış et al. (2019), identify four main criterion categories for surgical treatment evaluation: time-related factors (operation duration, preoperative preparation time), patient-related factors (age, weight), recovery-related factors (length of hospital stay, recovery period), and complication-related factors (recurrence, infection risk, vital function impact). This multidimensional framework demonstrates the complexity of healthcare professional performance evaluation, encompassing temporal, patient-centered, recovery, and safety dimensions (Köksalmış et al., 2019).

Healthcare technology assessment contexts incorporate broader performance criteria. Öztürk et al. (2020), employ fuzzy TOPSIS, fuzzy VIKOR, and goal programming to evaluate dialysis treatment alternatives, incorporating treatment effectiveness, patient outcomes, cost, and accessibility criteria. The application of fuzzy MCDM methods reflects recognition that healthcare performance criteria often involve uncertainty and imprecision, requiring sophisticated methodological approaches (Öztürk et al., 2020). Dolatabad et al. (2025), identify that healthcare worker performance appraisal should evaluate task performance, contextual performance, job satisfaction, and professional development outcomes. This comprehensive framework extends beyond traditional clinical competence metrics to encompass organizational citizenship behaviors and professional growth dimensions, aligning with contemporary understanding of healthcare professional performance as multidimensional (Dolatabad et al., 2025).

Stakeholder Engagement Approaches in MCDM-Based Systems

The reviewed literature demonstrates diverse approaches to stakeholder engagement in MCDM-based healthcare decision-making systems (Köksalmış et al., 2019). Expert panel engagement represents the most common stakeholder engagement approach, with multiple studies employing structured expert judgment to define criteria and weight preferences. Köksalmış et al. (2019), engaged 31 pediatric surgeons as expert panelists, requesting standardized ratings of surgical treatment factors using 1-9 scales. This approach ensures that performance criteria and weightings reflect professional expertise and clinical judgment . The reviewed literature reveals limited explicit discussion of healthcare professional engagement in defining performance criteria and weighting preferences for their own appraisal systems. While Dolatabad et al. (2025) emphasize the importance of objective evaluation and rater relevance, the specific mechanisms for engaging healthcare professionals as stakeholders in MCDM-based appraisal system development remain underdeveloped in the reviewed literature. This represents an important gap, as contemporary healthcare governance principles emphasize shared decision-making and professional engagement in processes affecting professional practice (Dolatabad et al., 2025). Patient and family engagement in healthcare decision-making appears in limited studies. Öztürk et al., (2020) note that healthcare technology assessment should incorporate patient perspectives, yet the specific mechanisms for patient engagement in MCDM processes remain underdeveloped. This gap is significant given contemporary emphasis on patient-centered care and shared decision-making in healthcare contexts (Öztürk et al., 2020).

Implementation Approaches and Organizational Contexts

The reviewed literature demonstrates diverse implementation approaches and organizational contexts for MCDM applications in healthcare settings (Chowdhury & Paul, 2020; Dolatabad et al., 2025; Köksalmış et al., 2019; Öztürk et al., 2020; Sahoo & Goswami, 2023). Medical decision-making contexts represent a primary implementation area. Köksalmış et al. (2019), demonstrating MCDM application to surgical treatment selection for pediatric patients. The structured expert panel approach employed provides a replicable model for healthcare professional appraisal, where expert clinicians define performance criteria and evaluate professional performance against these criteria (Köksalmış et al., 2019). Healthcare technology assessment represents another significant implementation context, with employing fuzzy MCDM methods to evaluate dialysis treatment alternatives. This implementation demonstrates how MCDM can support complex healthcare technology decisions involving multiple stakeholders, competing objectives, and uncertainty regarding outcomes. The application of fuzzy MCDM methods reflects recognition that healthcare decision-making often involves imprecision and uncertainty requiring sophisticated methodological approaches (Öztürk et al., 2020) .

Healthcare facility planning and infrastructure contexts appear in the study. Researcher demonstrated MCDM application to healthcare facility location selection, comparing TOPSIS, VIKOR, PROMETHEE, and AHP methodologies. The comparative analysis reveals that TOPSIS, VIKOR, and PROMETHEE produce consistent rankings, while AHP produces different results, highlighting the importance of method selection in healthcare facility planning (Vagiona, 2021).

Barriers and Facilitators to Implementation

The reviewed literature identifies multiple barriers and facilitators to MCDM implementation in healthcare contexts (Chowdhury & Paul, 2020; Dolatabad et al., 2025; Köksalmış et al., 2019; Nowrouzi-Kia et al., 2021; Sahoo & Goswami, 2023). Criterion definition and weighting represent significant implementation barriers across multiple studies. Köksalmış et al. (2019), note that clear definition of surgical treatment criteria and subcriteria was essential for expert panel engagement and consensus building. Sim Stakeholder consensus building represents both a barrier and facilitator to MCDM implementation. The study note that expert panel engagement requires structured processes for building consensus regarding criterion importance and alternative evaluation. The use of standardized rating scales (1-9) facilitates expert judgment integration, yet achieving consensus among diverse experts represents an ongoing challenge (Köksalmış et al., 2019; Nowrouzi-Kia et al., 2021).

Sensitivity analysis and robustness testing emerge as important facilitators to MCDM implementation. Vagiona, (2021) demonstrates that sensitivity analysis examining how criterion weight changes affect alternative rankings provides important information regarding decision robustness (Vagiona, 2021). Dolatabad et al. (2025), identify that objective evaluation, customization, and rater relevance represent critical facilitators to healthcare worker performance appraisal effectiveness. The emphasis on objective evaluation suggests that MCDM's structured, transparent approach to criterion definition and weighting may facilitate implementation of more objective healthcare professional appraisal systems (Dolatabad et al., 2025). Limited discussion of organizational barriers to MCDM implementation appears in the reviewed literature. The study note that organizational capacity for integrating multiple MCDM methods represents a barrier, yet specific organizational factors such as leadership support, technical capacity, and resource availability receive limited attention (Chowdhury & Paul, 2020).

Outcomes and Impacts on Healthcare Professional Performance and Satisfaction

The reviewed literature demonstrates diverse outcomes and impacts of MCDM applications in healthcare contexts, though limited evidence specifically addresses impacts on healthcare professional performance and satisfaction. Medical decision-making outcomes represent the most extensively documented impact area. The study demonstrating that AHP-TOPSIS methodology effectively prioritizes surgical treatment alternatives, with time-related and patient-related factors identified as most important. The structured MCDM approach provides transparent rationales for treatment selection, potentially enhancing clinical decision quality and professional confidence in treatment decisions (Köksalmış et al., 2019). Healthcare technology assessment outcomes demonstrate that MCDM can support complex technology evaluation decisions. Öztürk et al. (2020) employ fuzzy MCDM methods to evaluate dialysis treatment alternatives, with results informing healthcare resource allocation decisions. The application of fuzzy MCDM methods to technology assessment demonstrates how MCDM can manage uncertainty and support evidence-based technology adoption decisions (Öztürk et al., 2020).

Nowrouzi-Kia et al. (2021), provide evidence that regular interventions, including use of information and communication technologies such as telehealth, improve healthcare worker performance and mental health outcomes during pandemics. While not explicitly employing MCDM methodologies, this finding suggests that structured, evidence-based approaches to healthcare worker performance management can improve outcomes (Nowrouzi-Kia et al., 2021). Dolatabad et al. (2025), identify that effective performance appraisal systems can enhance healthcare worker performance, job satisfaction, and professional development when appropriately designed and implemented. The emphasis on objective evaluation, customization, and rater relevance suggests that MCDM-based appraisal systems incorporating these characteristics may produce superior outcomes compared to traditional appraisal approaches (Dolatabad et al., 2025). Limited evidence addresses impacts of MCDM-based appraisal systems on healthcare professional satisfaction, retention, or organizational outcomes. This represents a significant gap in the literature, as understanding the impact of MCDM-based appraisal systems on healthcare professional outcomes is essential for justifying implementation investments and identifying improvement opportunities (Alipanah, 2025; Chowdhury & Paul, 2020; Dolatabad et al., 2025; Sahoo & Goswami, 2023)

CONCLUSION

This literature review reveals that Multi-Criteria Decision Making (MCDM) offers a structured, transparent, and methodologically sound framework for evaluating healthcare professional performance. The evidence gathered from diverse healthcare settings underscores a fundamental insight: the multifaceted nature of healthcare work, encompassing clinical competence, patient safety, interpersonal communication, ethical conduct, and organizational contribution, resists adequate capture through traditional single-criterion or subjective appraisal approaches. MCDM methodologies, particularly AHP, TOPSIS, VIKOR, PROMETHEE, and fuzzy-based variants, facilitate systematic weighting of heterogeneous performance dimensions while meaningfully integrating stakeholder perspectives. This integration enhances objectivity, consistency, and accountability in appraisal processes.

The review identifies substantive implementation challenges that warrant careful consideration. These include establishing contextually appropriate evaluation criteria, achieving genuine stakeholder consensus, and selecting MCDM methods best suited to specific organizational contexts. Despite these complexities, the evidence suggests that MCDM-based frameworks generate more defensible and evidence-informed evaluation outcomes, enhance decision quality across clinical and administrative domains, and strengthen alignment between individual performance expectations and broader organizational goals. However, a notable gap persists: empirical evidence directly connecting MCDM-based appraisal systems to tangible improvements in healthcare professional satisfaction, organizational effectiveness, and sustained workforce development remains surprisingly limited.

Successful implementation will require deliberate attention to participatory design processes that authentically engage healthcare professionals in system development. Organizations should prioritize the incorporation of patient-centered performance indicators, conduct thorough organizational readiness assessments before deployment, and employ methodological triangulation to strengthen both scientific rigor and professional acceptance. Critically, the field needs robust empirical research examining how MCDM-based appraisal systems influence real-world outcomes: professional development trajectories, sustained performance improvement, and ultimately, the quality of patient care delivered.

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