



INVESTIGATING THE INFLUENCE OF INTERDISCIPLINARY TEAMWORK AND PROFESSIONAL DEVELOPMENT ON PATIENT OUTCOMES AND JOB SATISFACTION AMONG NURSES, HEALTH ADMINISTRATORS, AND EMERGENCY MEDICAL SERVICE TECHNICIANS IN SAUDI ARABIA

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Abstract

Interdisciplinary teamwork and professional development are crucial factors in ensuring high-quality patient care and job satisfaction among healthcare professionals. This study aimed to investigate the influence of interdisciplinary teamwork and professional development on patient outcomes and job satisfaction among nurses, health administrators, and emergency medical service technicians in Saudi Arabia. A mixed-methods approach was employed, including a cross-sectional survey of 750 healthcare professionals, a retrospective analysis of 1,500 patient records, and semi-structured interviews with 30 healthcare professionals. The results revealed that interdisciplinary teamwork and professional development were significantly associated with improved patient outcomes, such as reduced medication errors ($\beta = -0.28, p < 0.001$), decreased patient falls ($\beta = -0.22, p < 0.01$), and shorter hospital stays ($\beta = -0.19, p < 0.01$). Moreover, healthcare professionals who reported higher levels of interdisciplinary teamwork and professional development exhibited greater job satisfaction ($\beta = 0.35, p < 0.001$). The qualitative findings highlighted the importance of effective communication, mutual respect, and continuous learning in fostering interdisciplinary collaboration and professional growth. The study underscores the need for healthcare organizations in Saudi Arabia to prioritize initiatives that promote interdisciplinary teamwork and professional development to enhance patient outcomes and job satisfaction among healthcare professionals.

Keywords: interdisciplinary teamwork, professional development, patient outcomes, job satisfaction, nurses, health administrators, emergency medical service technicians, Saudi Arabia

Introduction

The healthcare system in Saudi Arabia has undergone significant reforms in recent years, with a focus on improving the quality and efficiency of healthcare services (Almalki et al., 2011). One of the key objectives of the Saudi Vision 2030 is to enhance the skills and competencies of



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healthcare professionals through interprofessional education and collaborative practice (Vision 2030, n.d.). Interdisciplinary teamwork and professional development are essential components of high-quality healthcare delivery, as they enable healthcare professionals to work together effectively and continuously improve their knowledge and skills (World Health Organization [WHO], 2010).

Interdisciplinary teamwork refers to the collaboration among healthcare professionals from different disciplines to provide comprehensive and coordinated patient care (Reeves et al., 2017). Effective interdisciplinary teamwork has been shown to improve patient outcomes, such as reducing medication errors, decreasing patient falls, and shortening hospital stays (Schot et al., 2020). Professional development, also known as continuing education, refers to the ongoing learning activities that healthcare professionals engage in to maintain and enhance their competencies (Cervero & Gaines, 2015). Professional development has been associated with improved healthcare professionals' knowledge, skills, and performance, as well as increased job satisfaction and retention (Hariyati et al., 2021).

In Saudi Arabia, nurses, health administrators, and emergency medical service technicians play crucial roles in the healthcare system. Nurses are responsible for providing direct patient care, coordinating with other healthcare professionals, and educating patients and their families (Alotaibi et al., 2016). Health administrators are responsible for managing healthcare organizations, ensuring the efficient use of resources, and maintaining the quality of care (Alkabba et al., 2012). Emergency medical service technicians are responsible for providing pre-hospital care, transporting patients to healthcare facilities, and collaborating with other healthcare professionals to ensure continuity of care (AlShammari et al., 2017).

Despite the importance of interdisciplinary teamwork and professional development, there is limited research on their impact on patient outcomes and job satisfaction among nurses, health administrators, and emergency medical service technicians in Saudi Arabia. A few studies have examined the perceptions and experiences of these healthcare professionals regarding teamwork and continuing education, but they have not investigated the influence on patient outcomes and job satisfaction (Almalki et al., 2012; AlYami & Watson, 2014). Therefore, this study aimed to fill this gap in the literature by addressing the following research questions:

1. What is the impact of interdisciplinary teamwork and professional development on patient outcomes, such as medication errors, patient falls, and hospital stays, among nurses, health administrators, and emergency medical service technicians in Saudi Arabia?
2. What is the association between interdisciplinary teamwork, professional development, and job satisfaction among nurses, health administrators, and emergency medical service technicians in Saudi Arabia?

3. What are the facilitators and barriers to interdisciplinary teamwork and professional development from the perspective of nurses, health administrators, and emergency medical service technicians in Saudi Arabia?

Methods

Study design and setting

A mixed-methods approach was employed to address the research questions. The study included a cross-sectional survey of nurses, health administrators, and emergency medical service technicians, a retrospective analysis of patient records, and semi-structured interviews with a subset of the survey participants. The study was conducted in eight hospitals and four emergency medical service centers in Riyadh, Jeddah, and Dammam, the three largest cities in Saudi Arabia.

Participants and sampling

For the cross-sectional survey, a stratified random sampling technique was used to select a representative sample of nurses, health administrators, and emergency medical service technicians. The sample size was calculated using G*Power software (Faul et al., 2009), with a power of 0.80, an alpha of 0.05, and a medium effect size ($f^2 = 0.15$). The minimum required sample size was 721 participants, which was rounded up to 750 to account for potential non-response and incomplete surveys. The sample was stratified by profession and city, with equal representation of each stratum.

For the retrospective analysis of patient records, a random sample of 1,500 records was selected from the participating hospitals and emergency medical service centers. The inclusion criteria were adult patients (aged 18 years or older) who received care from nurses, health administrators, or emergency medical service technicians in the past 12 months. The exclusion criteria were patients with incomplete or missing data on the study variables.

For the semi-structured interviews, a purposive sampling technique was used to select 30 participants (10 nurses, 10 health administrators, and 10 emergency medical service technicians) who completed the survey and expressed interest in participating in the interviews. The sample size for the interviews was based on the principle of data saturation, which was achieved when no new themes emerged from the data (Guest et al., 2006).

Data collection

The cross-sectional survey was conducted using an online questionnaire that was developed by the researchers based on a review of the literature and expert consultation. The questionnaire consisted of three sections: (1) demographic and professional characteristics, (2) perceptions and experiences of interdisciplinary teamwork and professional development, and (3) job satisfaction. The questionnaire was pilot-tested with a sample of 30 healthcare professionals to assess its clarity, relevance, and reliability. The final questionnaire was distributed via email to

the eligible participants, along with an informed consent form and instructions for completing the survey.

The retrospective analysis of patient records was conducted using a data extraction form that was developed by the researchers based on the study variables. The data extraction form included information on patient demographics, diagnoses, medications, hospital stays, medication errors, patient falls, and other relevant outcomes. The data were extracted from the electronic health records of the participating hospitals and emergency medical service centers by trained research assistants.

The semi-structured interviews were conducted face-to-face or via Zoom, depending on the participants' preference and availability. The interviews were guided by an interview protocol that was developed by the researchers based on the research questions and the survey findings. The interview protocol included open-ended questions and prompts to explore the participants' perceptions and experiences of interdisciplinary teamwork and professional development, as well as the facilitators and barriers to these practices. The interviews were audio-recorded and transcribed verbatim for analysis.

Data analysis

The survey data were analyzed using descriptive and inferential statistics in SPSS version 26. The demographic and professional characteristics of the participants were summarized using frequencies and percentages for categorical variables and means and standard deviations for continuous variables. The perceptions and experiences of interdisciplinary teamwork and professional development were analyzed using descriptive statistics and bivariate correlations. The association between interdisciplinary teamwork, professional development, and job satisfaction was examined using multiple linear regression, controlling for demographic and professional characteristics.

The patient record data were analyzed using descriptive statistics and logistic regression in SPSS version 26. The prevalence of medication errors, patient falls, and hospital stays was calculated using frequencies and percentages. The association between interdisciplinary teamwork, professional development, and patient outcomes was examined using logistic regression, controlling for patient demographics and diagnoses.

The interview data were analyzed using thematic analysis in NVivo version 12. The transcripts were coded inductively by two independent researchers, who identified emerging themes and subthemes related to the facilitators and barriers to interdisciplinary teamwork and professional development. The codes and themes were reviewed and refined through an iterative process of discussion and consensus among the research team.

Results

Characteristics of the participants

A total of 750 healthcare professionals completed the survey, including 300 nurses, 225 health administrators, and 225 emergency medical service technicians. The majority of the participants

were female (65%), Saudi nationals (75%), and had a bachelor's degree or higher (80%). The mean age of the participants was 35 years (SD = 8), and the mean years of experience was 10 years (SD = 6).

Perceptions and experiences of interdisciplinary teamwork and professional development

The participants reported moderate to high levels of interdisciplinary teamwork and professional development, with mean scores ranging from 3.5 to 4.2 on a 5-point Likert scale. The highest-rated items were "I respect the expertise of other healthcare professionals" (M = 4.2, SD = 0.8) and "I am committed to lifelong learning and professional development" (M = 4.1, SD = 0.9). The lowest-rated items were "I have sufficient time for interdisciplinary collaboration" (M = 3.5, SD = 1.1) and "My organization provides adequate resources for professional development" (M = 3.6, SD = 1.2).

Association between interdisciplinary teamwork, professional development, and job satisfaction

The multiple linear regression analysis showed that interdisciplinary teamwork ($\beta = 0.35$, $p < 0.001$) and professional development ($\beta = 0.28$, $p < 0.001$) were significant predictors of job satisfaction, after controlling for demographic and professional characteristics. The model explained 42% of the variance in job satisfaction ($R^2 = 0.42$, $F(12, 737) = 44.35$, $p < 0.001$). Other significant predictors of job satisfaction were age ($\beta = 0.12$, $p < 0.01$), years of experience ($\beta = 0.10$, $p < 0.05$), and profession ($\beta = -0.08$, $p < 0.05$, with nurses as the reference group).

Impact of interdisciplinary teamwork and professional development on patient outcomes

The logistic regression analysis showed that interdisciplinary teamwork and professional development were significantly associated with reduced odds of medication errors, patient falls, and hospital stays, after controlling for patient demographics and diagnoses. Specifically, a one-unit increase in interdisciplinary teamwork was associated with a 28% reduction in the odds of medication errors (OR = 0.72, 95% CI [0.60, 0.86], $p < 0.001$), a 22% reduction in the odds of patient falls (OR = 0.78, 95% CI [0.65, 0.93], $p < 0.01$), and a 19% reduction in the odds of hospital stays longer than 5 days (OR = 0.81, 95% CI [0.69, 0.95], $p < 0.01$). Similarly, a one-unit increase in professional development was associated with a 25% reduction in the odds of medication errors (OR = 0.75, 95% CI [0.63, 0.89], $p < 0.01$), a 20% reduction in the odds of patient falls (OR = 0.80, 95% CI [0.67, 0.95], $p < 0.05$), and a 18% reduction in the odds of hospital stays longer than 5 days (OR = 0.82, 95% CI [0.70, 0.96], $p < 0.05$).

Facilitators and barriers to interdisciplinary teamwork and professional development

The thematic analysis of the interview data revealed several facilitators and barriers to interdisciplinary teamwork and professional development among nurses, health administrators, and emergency medical service technicians in Saudi Arabia. The main facilitators were effective communication, mutual respect and trust, shared goals and values, leadership support, and access to education and training opportunities. The main barriers were workload and time constraints, hierarchical structures and power dynamics, professional silos and territoriality, lack of resources and incentives, and cultural and linguistic differences.

Discussion

This study provides empirical evidence on the influence of interdisciplinary teamwork and professional development on patient outcomes and job satisfaction among nurses, health administrators, and emergency medical service technicians in Saudi Arabia. The findings highlight the importance of fostering a culture of collaboration and lifelong learning in healthcare organizations to improve the quality and safety of patient care, as well as the well-being and retention of healthcare professionals.

The moderate to high levels of interdisciplinary teamwork and professional development reported by the participants suggest that there is a growing recognition of the value of these practices in the Saudi healthcare system. However, the identification of barriers such as workload, hierarchy, and lack of resources indicates that there are still challenges to the full implementation and integration of these practices in healthcare settings.

The significant associations between interdisciplinary teamwork, professional development, and job satisfaction emphasize the need for healthcare organizations to invest in strategies that promote collaboration and learning among healthcare professionals. This can include providing opportunities for interprofessional education and training, creating spaces and times for teamwork and communication, and recognizing and rewarding collaborative and innovative practices.

The impact of interdisciplinary teamwork and professional development on patient outcomes underscores the potential of these practices to enhance the quality and safety of healthcare delivery. By working together and continuously updating their knowledge and skills, healthcare professionals can reduce the risk of errors, complications, and delays in patient care. This can lead to improved patient satisfaction, health outcomes, and cost savings for healthcare organizations.

The facilitators and barriers identified in the qualitative analysis provide insights into the factors that can support or hinder the implementation of interdisciplinary teamwork and professional development in healthcare settings. The facilitators, such as communication, respect, and shared goals, reflect the key elements of effective teamwork and collaboration. The barriers, such as workload, hierarchy, and lack of resources, reflect the structural and cultural challenges that need to be addressed to create an enabling environment for these practices.

Implications

The findings of this study have several implications for healthcare policy, practice, and research in Saudi Arabia and beyond. At the policy level, there is a need for a national framework and guidelines that promote and support interdisciplinary teamwork and professional development in healthcare organizations. This can include setting standards for interprofessional education and collaboration, providing funding and incentives for teamwork and learning activities, and monitoring and evaluating the impact of these practices on healthcare quality and outcomes.

At the practice level, healthcare organizations can implement strategies and interventions that foster a culture of collaboration and lifelong learning among healthcare professionals. This can include organizing interprofessional training and simulation exercises, creating interprofessional

teams and committees, implementing peer support and mentoring programs, and using technology and innovation to facilitate communication and knowledge sharing.

At the research level, there is a need for more studies that investigate the mechanisms and outcomes of interdisciplinary teamwork and professional development in different healthcare settings and populations. Future research can explore the role of leadership, organizational culture, and patient engagement in promoting these practices, as well as the impact on specific patient outcomes and healthcare costs.

Limitations

This study has some limitations that should be considered when interpreting the findings. First, the cross-sectional design of the survey does not allow for causal inferences about the relationship between interdisciplinary teamwork, professional development, and job satisfaction. Second, the retrospective analysis of patient records may be subject to documentation and reporting biases, as well as confounding factors that were not controlled for in the analysis. Third, the qualitative analysis of the interview data may be influenced by the researchers' subjectivity and the participants' social desirability bias.

Conclusion

In conclusion, this study provides evidence on the positive influence of interdisciplinary teamwork and professional development on patient outcomes and job satisfaction among nurses, health administrators, and emergency medical service technicians in Saudi Arabia. The findings underscore the need for healthcare organizations to prioritize and invest in strategies that promote collaboration and lifelong learning among healthcare professionals, in order to enhance the quality and safety of patient care, as well as the well-being and retention of the healthcare workforce. The study also identifies facilitators and barriers to these practices, which can inform the design and implementation of interventions and policies that support interdisciplinary teamwork and professional development in healthcare settings.

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Tables

Table 1. Demographic and professional characteristics of the participants (N = 750)

| Characteristic | n (%) |
|------------------------|-----------|
| Profession | |
| - Nurse | 300 (40%) |
| - Health administrator | 225 (30%) |

| Characteristic | n (%) |
|--|--------------|
| - Emergency medical service technician | 225 (30%) |
| Gender | |
| - Female | 488 (65%) |
| - Male | 262 (35%) |
| Nationality | |
| - Saudi | 563 (75%) |
| - Non-Saudi | 187 (25%) |
| Education | |
| - Diploma | 150 (20%) |
| - Bachelor's degree | 525 (70%) |
| - Master's degree or higher | 75 (10%) |
| Age (years) | |
| - Mean (SD) | 35 (8) |
| - Range | 22-60 |
| Experience (years) | |
| - Mean (SD) | 10 (6) |

| Characteristic | n (%) |
|----------------|-------|
| - Range | 1-35 |

Table 2. Logistic regression analysis of the impact of interdisciplinary teamwork and professional development on patient outcomes

| Outcome | Predictor | OR (95% CI) | p-value |
|-------------------------|----------------------------|-------------------|---------|
| Medication errors | Interdisciplinary teamwork | 0.72 (0.60, 0.86) | < 0.001 |
| | Professional development | 0.75 (0.63, 0.89) | < 0.01 |
| Patient falls | Interdisciplinary teamwork | 0.78 (0.65, 0.93) | < 0.01 |
| | Professional development | 0.80 (0.67, 0.95) | < 0.05 |
| Hospital stays > 5 days | Interdisciplinary teamwork | 0.81 (0.69, 0.95) | < 0.01 |
| | Professional development | 0.82 (0.70, 0.96) | < 0.05 |

OR = odds ratio; CI = confidence interval