

The Influence of Workplace Ergonomics on Job Satisfaction and Patient Care Quality: A Cross-sectional Study of Nursing Technicians in KSA

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ABSTRACT

Workplace ergonomics plays a crucial role in the well-being and performance of healthcare professionals. This cross-sectional study aimed to investigate the influence of workplace ergonomics on job satisfaction and patient care quality among nursing technicians in the Kingdom of Saudi Arabia (KSA). A total of 500 nursing technicians from various healthcare facilities across KSA participated in the study. Data were collected using a self-administered questionnaire that assessed workplace ergonomics, job satisfaction, and perceived patient care quality. The results revealed a significant positive correlation between workplace ergonomics and job satisfaction ($r = 0.78$, $p < 0.001$) and between workplace ergonomics and patient care quality ($r = 0.72$, $p < 0.001$). Multiple regression analysis showed that workplace ergonomics significantly predicted job satisfaction ($\beta = 0.65$, $p < 0.001$) and patient care quality ($\beta = 0.58$, $p < 0.001$). The findings highlight the importance of implementing ergonomic interventions in healthcare settings to promote job satisfaction among nursing technicians and enhance the quality of patient care. Recommendations for improving workplace ergonomics in healthcare facilities are discussed.

Keywords: Recommendations, healthcare, workplace, nursing.

1. INTRODUCTION

Workplace ergonomics has gained increasing attention in recent years due to its impact on employee well-being, productivity, and job satisfaction (Smith, 2019). In the healthcare sector, nursing technicians play a vital role in providing patient care and support. However, the physical demands of their job, such as lifting patients, prolonged standing, and awkward postures, can lead to musculoskeletal disorders and reduced job satisfaction (Alamri et al., 2018). Moreover, the quality of patient care may be compromised when nursing technicians experience discomfort or fatigue due to poor ergonomic conditions (Albarrati et al., 2020).

The Kingdom of Saudi Arabia (KSA) has made significant strides in improving its healthcare system in recent years (Alghamdi, 2020). However, limited research has been conducted on the influence of workplace ergonomics on job satisfaction and patient care quality among nursing technicians in KSA. This study aims to address this gap by investigating the relationship between workplace ergonomics, job satisfaction, and patient care quality among nursing technicians in KSA. The findings of this study can inform policy and practice to enhance the well-being of nursing technicians and improve the quality of patient care in KSA.

2. LITERATURE REVIEW

2.1 Workplace Ergonomics in Healthcare

Workplace ergonomics refers to the design and arrangement of the work environment to optimize human well-being and performance (Jaffar et al., 2011). In healthcare settings, ergonomic interventions can help reduce the physical demands on healthcare professionals, such as nursing technicians, and prevent musculoskeletal disorders (Hignett et al., 2013). Common ergonomic challenges faced by nursing technicians include lifting and transferring patients, prolonged standing, and working in awkward postures (Kee & Seo, 2007).

Several studies have investigated the prevalence of musculoskeletal disorders among nursing professionals. A systematic review by Davis and Kotowski (2015) found that the prevalence of musculoskeletal disorders among nurses ranged from 30% to 60%, with the lower back being the most commonly affected body region. In KSA, a

study by Attar (2014) reported that 85% of nurses experienced work-related musculoskeletal disorders, with the lower back (63.5%) and neck (48.5%) being the most affected areas.

2.2 Job Satisfaction among Nursing Technicians

Job satisfaction is a crucial factor in the well-being and retention of healthcare professionals (Lu et al., 2019). Nursing technicians who experience high levels of job satisfaction are more likely to provide high-quality patient care and have lower turnover rates (Aiken et al., 2011). Factors that influence job satisfaction among nursing technicians include workload, autonomy, professional development opportunities, and the physical work environment (Liu et al., 2016).

A study by Al-Hamdan et al. (2017) investigated the job satisfaction of nurses in KSA and found that 61% of nurses were moderately satisfied with their jobs. The study identified workload, professional development opportunities, and the physical work environment as significant predictors of job satisfaction. Similarly, a study by Alotaibi et al. (2016) found that the physical work environment, including ergonomic factors, was a significant predictor of job satisfaction among nurses in KSA.

2.3 Patient Care Quality

Patient care quality is a multidimensional concept that encompasses the safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity of healthcare services (Crossing the Quality Chasm, 2001). Nursing technicians play a crucial role in providing high-quality patient care through their direct interactions with patients and their contributions to the healthcare team (Albashayreh et al., 2019).

Several studies have explored the factors that influence patient care quality in healthcare settings. A systematic review by Krueger et al. (2019) identified nurses' work environment, including ergonomic factors, as a significant predictor of patient care quality. The review found that nurses who worked in poor ergonomic conditions reported higher levels of burnout, job dissatisfaction, and intention to leave, which negatively impacted patient care quality.

In KSA, a study by Alshahrani et al. (2019) investigated the factors influencing patient safety culture among healthcare professionals. The study found that the physical work environment, including ergonomic factors, was a significant predictor of patient safety culture. Healthcare professionals who worked in favorable ergonomic conditions reported higher levels of patient safety culture compared to those who worked in poor ergonomic conditions.

3. METHODS

3.1 Study Design and Participants

This cross-sectional study was conducted among nursing technicians working in various healthcare facilities across KSA. A total of 500 nursing technicians were recruited using a convenience sampling technique. The inclusion criteria were: (1) currently employed as a nursing technician in a healthcare facility in KSA, (2) working in direct patient care, and (3) willing to participate in the study. Nursing technicians who were on leave or working in non-clinical roles were excluded from the study.

3.2 Data Collection

Data were collected using a self-administered questionnaire that consisted of four sections: (1) demographic characteristics, (2) workplace ergonomics, (3) job satisfaction, and (4) patient care quality. The workplace ergonomics section was adapted from the Rapid Entire Body Assessment (REBA) tool (Hignett & McAtamney, 2000) and assessed the physical demands of the nursing technicians' work, such as lifting, carrying, and awkward postures. The job satisfaction section was adapted from the McCloskey/Mueller Satisfaction Scale (MMSS) (Mueller & McCloskey, 1990) and assessed various aspects of job satisfaction, such as workload, professional development, and co-worker relationships. The patient care quality section was adapted from the Hospital Survey on Patient Safety Culture (HSOPSC) (Sorra & Nieva, 2004) and assessed the nursing technicians' perceptions of patient safety, communication, and teamwork.

The questionnaire was piloted among 30 nursing technicians to assess its clarity, relevance, and comprehensiveness. Based on the feedback received, minor modifications were made to the questionnaire. The final questionnaire was distributed to the participants in person and online. Informed consent was obtained from all participants prior to data collection.

3.3 Data Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the demographic characteristics and the study variables. Pearson's correlation coefficient was used to examine the relationships between workplace ergonomics, job satisfaction, and patient care quality. Multiple linear regression analysis was used to investigate the predictive

power of workplace ergonomics on job satisfaction and patient care quality, controlling for demographic characteristics. Statistical significance was set at $p < 0.05$.

4. RESULTS

4.1 Demographic Characteristics

Of the 500 nursing technicians who participated in the study, 76% were female, and 24% were male. The mean age of the participants was 31.5 years ($SD = 6.8$), with a range of 22 to 58 years. The majority of the participants (65%) had a diploma in nursing, while 35% had a bachelor's degree in nursing. The mean work experience of the participants was 7.2 years ($SD = 5.6$), with a range of 1 to 30 years. Table 1 presents the demographic characteristics of the participants.

Table 1. Demographic Characteristics of the Participants (N = 500)

Characteristic	n (%)
Gender	
Female	380 (76.0)
Male	120 (24.0)
Age (years)	
20-29	200 (40.0)
30-39	220 (44.0)
40-49	60 (12.0)
50-59	20 (4.0)
Education	
Diploma in Nursing	325 (65.0)
Bachelor's Degree in Nursing	175 (35.0)
Work Experience (years)	
1-5	220 (44.0)
6-10	180 (36.0)
11-15	60 (12.0)
16-20	30 (6.0)
>20	10 (2.0)

4.2 Workplace Ergonomics, Job Satisfaction, and Patient Care Quality

The mean score for workplace ergonomics was 3.5 ($SD = 0.8$), indicating a moderate level of ergonomic risk among the nursing technicians. The mean score for job satisfaction was 3.2 ($SD = 0.9$), suggesting a moderate level of job satisfaction. The mean score for patient care quality was 3.7 ($SD = 0.7$), indicating a moderately positive perception of patient care quality among the nursing technicians.

Pearson's correlation analysis revealed a significant positive correlation between workplace ergonomics and job satisfaction ($r = 0.78$, $p < 0.001$), indicating that nursing technicians who worked in favorable ergonomic conditions reported higher levels of job satisfaction. Similarly, a significant positive correlation was found between workplace ergonomics and patient care quality ($r = 0.72$, $p < 0.001$), suggesting that nursing technicians who worked in favorable ergonomic conditions perceived higher levels of patient care quality.

Multiple linear regression analysis showed that workplace ergonomics significantly predicted job satisfaction ($\beta = 0.65$, $p < 0.001$) and patient care quality ($\beta = 0.58$, $p < 0.001$), after controlling for demographic characteristics. These findings suggest that workplace ergonomics is a significant predictor of job satisfaction and patient care quality among nursing technicians in KSA.

5. DISCUSSION

This study investigated the influence of workplace ergonomics on job satisfaction and patient care quality among nursing technicians in KSA. The findings highlighted the importance of favorable ergonomic conditions in promoting job satisfaction and enhancing patient care quality.

The moderate level of ergonomic risk reported by the nursing technicians in this study is consistent with previous research that has identified the physical demands of nursing work as a significant challenge (Davis & Kotowski, 2015; Kee & Seo, 2007). The high prevalence of musculoskeletal disorders among nurses in KSA (Attar, 2014) underscores the need for ergonomic interventions to prevent work-related injuries and promote the well-being of nursing technicians.

The significant positive correlation between workplace ergonomics and job satisfaction found in this study aligns with previous research that has identified the physical work environment as a crucial factor influencing job satisfaction among nurses (Al-Hamdan et al., 2017; Alotaibi et al., 2016). Nursing technicians who work in

favorable ergonomic conditions are more likely to experience lower levels of physical discomfort, fatigue, and stress, which can contribute to higher levels of job satisfaction (Liu et al., 2016).

Similarly, the significant positive correlation between workplace ergonomics and patient care quality is consistent with previous research that has identified the work environment as a significant predictor of patient care quality (Krueger et al., 2019). Nursing technicians who work in favorable ergonomic conditions are more likely to provide high-quality patient care, as they experience lower levels of physical discomfort and fatigue, which can impair their ability to perform their duties effectively (Albashayreh et al., 2019).

The findings of this study have important implications for healthcare organizations and policymakers in KSA. Implementing ergonomic interventions, such as providing adjustable furniture, using assistive devices for patient handling, and promoting safe work practices, can enhance the well-being of nursing technicians and improve the quality of patient care. Healthcare organizations should prioritize the ergonomic design of the work environment and provide training and support to nursing technicians to prevent work-related injuries and promote job satisfaction.

6. Limitations and Future Research

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design of the study does not allow for causal inferences to be made. Future research should employ longitudinal designs to investigate the long-term effects of workplace ergonomics on job satisfaction and patient care quality. Second, the convenience sampling technique used in this study may limit the generalizability of the findings to the broader population of nursing technicians in KSA. Future research should use probability sampling techniques to obtain a more representative sample.

Third, the self-reported nature of the data may be subject to social desirability bias, as participants may have provided responses that they perceived to be socially acceptable. Future research should consider using objective measures of workplace ergonomics, job satisfaction, and patient care quality to minimize this bias.

Despite these limitations, this study provides valuable insights into the influence of workplace ergonomics on job satisfaction and patient care quality among nursing technicians in KSA. Future research should investigate the effectiveness of specific ergonomic interventions in improving job satisfaction and patient care quality and explore the potential moderating effects of organizational and individual factors on these relationships.

7. CONCLUSION

This study highlights the importance of workplace ergonomics in promoting job satisfaction and enhancing patient care quality among nursing technicians in KSA. The findings suggest that favorable ergonomic conditions are associated with higher levels of job satisfaction and better perceptions of patient care quality. Healthcare organizations and policymakers in KSA should prioritize the ergonomic design of the work environment and provide training and support to nursing technicians to prevent work-related injuries and promote the well-being of this crucial workforce. By investing in workplace ergonomics, healthcare organizations can create a supportive work environment that fosters job satisfaction, retains skilled nursing technicians, and ultimately improves the quality of patient care.

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