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Work-Related Musculoskeletal Disorders and Job Instability Among Nursing Professionals: A Comprehensive Analysis

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Abstract

Introduction: The nature of nursing work within hospital units exposes professionals to various risk factors that may contribute to work instability and the development of work-related musculoskeletal disorders (WMSDs), leading to illness and varying levels of work incapacity.

Objectives: This study aims to investigate the relationship between work instability among nursing professionals and the occurrence of WMSDs.

Methods: A descriptive cross-sectional study with a quantitative approach was conducted . The Nurse-Work Instability Scale and the Nordic Musculoskeletal Questionnaire were used to assess nursing professionals working in adult and pediatric intensive care units, as well as orthopedic, neurosurgery, and head/neck surgery units.

Results: A total of 111 nursing professionals participated in the study, with 25.2% showing low risk of work instability, 44.1% medium risk, and 30.6% high risk. Statistical analyses revealed significant associations between work instability and variables such as work sectors ($p = 0.004$) and specific WMSDs in various body regions: neck ($p = 0.001$), shoulders ($p = 0.000$), upper back ($p = 0.007$), elbow ($p = 0.005$), wrist ($p = 0.002$), lower back ($p = 0.046$), hip/thighs ($p = 0.006$), knees ($p = 0.021$), and ankles/feet ($p = 0.011$).

Conclusions: This study demonstrates a clear association between work instability and the presence of WMSDs among nursing professionals. It underscores the importance of implementing interventions to address work instability, which can precede disability and is closely linked to absenteeism and early retirement.

Keywords: work instability, musculoskeletal disorders, occupational health, nursing professionals.

Introduction

Work undergoes constant changes due to advances in organizational forms and new technologies, posing challenges to healthcare workers' health. Nursing professionals, especially in hospital settings, face various risk factors like chemical, physical, biological, and psychosocial elements that can lead to illnesses and work disability. The demanding nature of nursing work, including continuous tasks requiring attention,

physical strain, and poor postures, predisposes them to work-related musculoskeletal disorders (WMSDs), a significant health issue among healthcare workers. (Petersen et al., 2019)

WMSDs, characterized by symptoms like pain, paresthesia, and fatigue, have multifactorial origins involving physical, psychosocial, and organizational factors. Common complaints among nursing professionals include lower back pain, neck pain, shoulder/arm discomfort, and other musculoskeletal issues. These disorders not only impact their health but also hinder their work performance, indicating work instability. (Bezerra et al., 2015)

Work instability refers to a state where the professional's capacity doesn't align with work demands, risking employment if unresolved. Investigating work instability is crucial as it precedes work disability and can lead to presenteeism, absenteeism, and early retirement. Presenteeism, common among nurses, affects productivity and quality of care. (Zayed et al., 2019)

Interventions during the instability period can improve quality of life, reduce absenteeism, and lower costs. This study aims to analyze the association between nursing professionals' work instability and WMSDs, considering individual and occupational characteristics. Research questions include whether nursing professionals exhibit work instability indicators and if there's an association between work instability and WMSD indicators. (Petersen & Marziale, 2014)

Methods

This descriptive cross-sectional study with a quantitative approach was conducted at a university hospital . The study included 160 nursing professionals (registered nurses, licensed practical nurses, and nursing assistants) working in adult and pediatric ICUs, neurosurgery, head and neck surgery, and orthopedics units, chosen for their high patient dependence and the resulting physical and mental strain on nursing staff.

Work instability was assessed using the Brazilian version of the Nurse Work Instability Scale (Nurse-WIS), a 20-item questionnaire with true/false responses focusing on musculoskeletal symptoms. Scores below 7 indicated low risk, 7-13 medium risk, and 14 or more high risk of job retention issues. The Nordic Musculoskeletal Questionnaire evaluated WMSDs in nine anatomical regions over the past 12 months for pain, limitations, consultations, and recent symptoms.

Inclusion criteria were working in nursing for at least a year, experiencing musculoskeletal pain lasting 2 hours or more in the last 3 months, and not having another profession besides nursing. Data were collected in the units after obtaining informed consent, with anonymity assured. Statistical analysis using SPSS and R software included chi-squared and Fisher’s exact tests to assess relationships between variables like sex, professional category, age group, work unit, WMSD symptoms, and work instability categories.

The study followed ethical principles outlined in National Health Council Resolution and was approved by the Research Ethics Committee

Results

Out of 160 professionals approached, 111 (69.3%) participated in the study. Reasons for non-participation included lack of interest (10%), no longer working in selected units or the institution (7.5%), not meeting inclusion criteria (6.8%), being on leave (5.6%), and non-response to questionnaires (0.6%).

Among the participants, 89 (80.2%) were women. The mean age was 38.6 years, ranging from 25 to 64 years. The distribution by professional category was 33 (29.7%) registered nurses, 60 (54.1%) licensed practical nurses, and 18 (16.2%) nursing assistants. Work units included pediatric ICU (29.7%), adult ICU (24.3%), head and neck surgery (22.5%), orthopaedics (14.4%), and neurosurgery (9.0%). Work instability risk categories were low (25.2%), medium (44.1%), and high (30.6%).

Regarding associations with work instability risk categories, significant findings were observed for work units ($p = 0.004$). Pediatric ICU and head and neck surgery units showed higher frequencies of high-risk professionals. In terms of professional characteristics, women were predominant in medium risk (47.2%), and men in high risk (40.9%). Nursing assistants and registered nurses had higher rates of high risk (38.9% and 39.4%, respectively), while licensed practical nurses were mostly medium risk (53.3%).

WMSDs were most prevalent in the lower back (60.4%), upper back (54.9%), shoulders (53.1%), ankles/feet (49.5%), neck (48.6%), and knees (47.7%). Significant associations were found between WMSDs and work instability risk categories for various anatomical regions ($p < 0.05$).

In summary, work units and specific anatomical regions showed significant associations with work instability and WMSDs among nursing professionals, highlighting the importance of addressing these issues for better occupational health management.

Table 1: Personal and occupational characteristics of nursing professionals of a university hospital and their distribution into risk categories of work instability

Variables	Low risk (n = 28)	Medium risk (n = 49)	High risk (n = 34)	p-value
Sex				0.380*
Female	22 (78.6%)	42 (85.7%)	25 (73.5%)	
Male	6 (21.4%)	7 (14.3%)	9 (26.5%)	
Professional category				0.402*
Registered nurse	8 (28.6%)	12 (24.5%)	13 (38.2%)	
Licensed practical nurse	15 (53.5%)	31 (63.3%)	14 (41.2%)	
Certified nursing assistant	5 (17.9%)	6 (12.2%)	7 (20.6%)	
Age group (years)				0.160†
25-29	6 (21.4%)	4 (8.2%)	2 (5.9%)	
30-39	15 (53.6%)	24 (49.0%)	14 (41.2%)	
40-49	6 (21.4%)	19 (38.8%)	13 (38.2%)	
50 or older	1 (3.6%)	2 (4.0%)	5 (14.7%)	
Units				0.004†
Pediatric ICU	10 (35.7%)	11 (22.4%)	12 (35.3%)	
Adult ICU	11 (39.3%)	11 (22.4%)	5 (14.7%)	
Head and neck surgery	7 (25.0%)	8 (16.3%)	10 (29.5%)	
Orthopaedics	0.0	10 (20.4%)	6 (17.6%)	
Neurosurgery	0.0	9 (18.4%)	1 (2.9%)	

Bold indicates statistically significant values. ICU = intensive care unit.

- Pearson's chi-squared test. † Fisher's exact test.

Table 2: Musculoskeletal problems, by affected body part, among nursing professionals of a teaching hospital

Variables	Total (n)	Low risk n (%)	Medium risk n (%)	High risk n (%)	p-value
Neck					0.001*
Symptoms (last 12 months)	54	5 (9.3%)	31 (57.4%)	18 (33.3%)	
Activity limitation (last 12 months)	14	0 (0.0%)	7 (50.0%)	7 (50.0%)	
Medical appointments (last 12 months)	14	1 (7.1%)	9 (64.3%)	4 (28.6%)	
Symptoms (last 7 days)	23	1 (4.3%)	10 (43.5%)	12 (52.2%)	
Shoulders					0.000*
Symptoms (last 12 months)	60	6 (10.0%)	32 (53.3%)	22 (36.7%)	
Activity limitation (last 12 months)	19	1 (5.3%)	8 (42.1%)	10 (52.6%)	
Medical appointments (last 12 months)	19	1 (5.9%)	10 (58.8%)	6 (35.3%)	

Symptoms (last 7 days)	21	2 (9.5%)	10 (47.6%)	9 (42.9%)	
Upper back					0.007*
Symptoms (last 12 months)	61	9 (14.8%)	34 (55.7%)	18 (29.4%)	
Activity limitation (last 12 months)	17	2 (11.8%)	6 (35.3%)	9 (62.9%)	
Medical appointments (last 12 months)	14	2 (14.3%)	9 (64.3%)	3 (21.4%)	
Symptoms (last 7 days)	27	3 (11.1%)	11 (40.7%)	13 (48.1%)	
Elbows					0.005†
Symptoms (last 12 months)	15	0 (0.0%)	6 (40.0%)	9 (60.0%)	
Activity limitation (last 12 months)	6	0 (0.0%)	2 (33.3%)	4 (66.7%)	
Medical appointments (last 12 months)	5	0 (0.0%)	3 (60.0%)	2 (40.0%)	
Symptoms (last 7 days)	6	0 (0.0%)	3 (50.0%)	3 (50.0%)	
Wrists					0.002†
Symptoms (last 12 months)	42	4 (9.5%)	19 (45.2%)	19 (45.2%)	
Activity limitation (last 12 months)	19	0 (0.0%)	7 (36.8%)	12 (63.2%)	
Medical appointments (last 12 months)	14	0 (0.0%)	6 (42.9%)	8 (57.1%)	
Symptoms (last 7 days)	23	1 (4.3%)	9 (39.1%)	13 (56.5%)	
Lower back					0.046*
Symptoms (last 12 months)	67	13 (19.4%)	28 (41.8%)	26 (38.8%)	
Activity limitation (last 12 months)	32	4 (12.5%)	12 (37.5%)	16 (50.0%)	
Medical appointments (last 12 months)	28	4 (14.3%)	12 (42.9%)	12 (42.9%)	
Symptoms (last 7 days)	35	3 (8.6%)	13 (37.1%)	19 (54.3%)	
Hips/thighs					0.006†
Symptoms (last 12 months)	34	3 (8.8%)	15 (44.1%)	16 (47.1%)	
Activity limitation (last 12 months)	12	0 (0.0%)	2 (16.7%)	10 (83.3%)	
Medical appointments (last 12 months)	9	0 (0.0%)	4 (44.4%)	5 (55.6%)	
Symptoms (last 7 days)	11	0 (0.0%)	2 (18.2%)	9 (81.8%)	
Knees					0.021*
Symptoms (last 12 months)	53	10 (18.9%)	20 (37.7%)	23 (43.4%)	
Activity limitation (last 12 months)	27	3 (11.1%)	8 (29.6%)	16 (59.3%)	
Medical appointments (last 12 months)	18	4 (22.2%)	4 (22.2%)	10 (55.6%)	
Symptoms (last 7 days)	24	1 (4.2%)	9 (37.5%)	14 (58.3%)	
Ankles and feet					0.011*
Symptoms (last 12 months)	55	10 (18.2%)	21 (38.2%)	24 (43.6%)	
Activity limitation (last 12 months)	25	2 (8.0%)	7 (28.0%)	16 (64.0%)	
Medical appointments (last 12 months)	22	5 (22.7%)	6 (27.3%)	11 (50.0%)	

Symptoms (last 7 days)	25	4 (16.0%)	7 (28.8%)	14 (56.0%)	

Discussion

This study sheds light on the associations between work instability and musculoskeletal disorder (WMSD) symptoms among nursing professionals in a hospital setting. Additionally, it explores the connection between work units and the risk categories of work instability, providing insights into the risks of presenteeism, absenteeism, and job abandonment within different hospital units. (Moraes & Bastos, 2013)

Analyzing the distribution of participants into work instability categories across units revealed that medium and high instability scores combined exceeded 59% in all studied units. This suggests a strong correlation between the degree of dependence on patients, organizational work aspects, and daily activities exposing workers to risk factors. As work instability increases, it adversely affects work ability, job satisfaction, health-related quality of life, and ultimately compromises patient care quality. (Santos et al., 2018)

Most nursing professionals in this study were female, aligning with the demographic trends in this profession. Interestingly, the study found that sex and work instability categories were independent, with a higher proportion of women classified as medium risk and men as high risk for work instability. (Silva et al., 2019)

The study categorized professionals into low, medium, and high risk of work instability, revealing a significant concentration in the medium risk category (44.1%). This aligns with findings from similar studies in Germany, indicating a common trend in healthcare settings. However, the prevalence of high instability (30.6%) in this study falls within the range observed in other German studies, highlighting variability in work instability across different healthcare contexts. (Li et al., 2019)

While the literature often associates older age with higher work instability risk, this study did not find statistically significant associations between age groups and work instability categories. The underrepresentation of younger professionals in this study may contribute to this observation. Nonetheless, professionals aged 25-29 showed higher rates of low-risk classifications, contrasting with higher prevalence of high-risk classifications among those aged 50 or older. (Ribeiro et al., 2017)

Professional categories also played a role, with licensed practical nurses and nursing assistants showing higher risk classifications compared to registered nurses. This likely stems from the nature of their work responsibilities, often involving more physically demanding tasks directly related to patient care. (Klein et al., 2018)

Regarding WMSDs, the study identified neck, shoulders, upper back, lower back, ankles, and feet as the most affected regions, corroborating findings from prior research. These regions are prone to strain due to physically demanding activities common in nursing, such as patient handling and care procedures. (Bargas & Monteiro, 2014)

The high prevalence of WMSDs among nursing professionals underscores a pressing public health concern. These disorders not only predispose individuals to work instability but also lead to varying degrees of work disability, presenteeism, and absenteeism. The consequences extend to compromised patient care quality, highlighting the urgent need for interventions to preserve occupational health and reduce absenteeism and early retirement rates among nursing professionals. (Luan et al., 2018)

Conclusion

This study reveals significant indicators of work instability among nursing professionals in hospital units, showcasing associations between work instability and musculoskeletal disorders (WMSDs), as well as a notable correlation with specific work units. These findings highlight the importance of addressing work instability early on to mitigate risks of presenteeism, absenteeism, and job abandonment among nursing staff. Interventions targeting occupational health promotion and disease prevention within hospital environments are essential, as work instability often precedes disability and can impact absenteeism and early retirement rates. By implementing strategic actions informed by these insights, healthcare organizations can enhance the well-being of nursing professionals and improve the quality of patient care delivery.

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